

***Bibliography on***  
**COLD REGIONS**  
**SCIENCE AND TECHNOLOGY**

**VOLUME 53, PART 1, 1999**

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**COLD REGIONS**  
**SCIENCE AND TECHNOLOGY**

**VOLUME 53, PART 1**

**R.W. Goldblatt and C. Minkus, Editors**

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**Volume 53, Part 1**

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The present volume contains material accessioned between October 1998 and September 1999. It contains full citations of 5301 items, in many cases with abstracts. Indexing for the volume is issued as Volume 53, Part 2.

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*Roberta W. Goldblatt*  
*Carl Minkus*  
*Cold Regions Bibliography Project*  
*Federal Research Division*  
*Library of Congress*

53-1

Observation of stratospheric trace gases over Ny-Alesund, Spitzbergen, using a groundbased microwave-radiometer. [Messung stratosphärischer Spurengase über Ny-Alesund, Spitzbergen, mit Hilfe eines bodengebundenen Mikrowellen-Radiometers]

Raffalski, U., *Berichte zur Polarforschung*, 1998, No.278, 106p., In German with English summary. Refs. p.101-106.

Atmospheric composition, Ozone, Chemical properties, Radiation measuring instruments, Norway—Spitzbergen

53-2

Implication of the northeast water polynya on the sedimentation by NE-Greenland and Late-Quaternary paleo-oceanic investigations. [Die Auswirkungen der "NorthEastWater"-Polynya auf die Sedimentation vor NO-Grönland und Untersuchungen zur Paläo-Ozeanographie seit dem Mittelweichsel]

Notholt, H., *Berichte zur Polarforschung*, 1998, No.275, 183p., In German with English summary. Refs. p.171-182.

Polynyas, Sediments, Chemical composition, Geochemistry, Carbon isotopes, Greenland Sea

53-3

"Coordinated program of antarctic research." Abstracts of colloquium reports on the topic "Antarctic research compared with similar investigations in Arctic ice regions". ["Koordiniertes Programm Antarktisforschung." Berichtskolloquium im Rahmen des Koordinierten Programms "Antarktisforschung mit vergleichenden Untersuchungen in arktischen Eisgebieten"]

Miller, H., ed, *Berichte zur Polarforschung*, 1998, No.277, 124p., Predominantly in German with some reports in English. Refs. passim.

Meetings, Research projects

53-4

Operational parameters for mechanical freezing of alum sludge.

Martel, C.J., Affleck, R.T., Yushak, M., *MP 5218, Water research*, 1998, 32(9), p.2646-2654, 12 refs.

Ice physics, Sewage treatment, Waste treatment, Sludges, Freeze thaw cycles, Ice crystal growth, Ice solid interface, Particles, Grain size, Freezing rate, Mechanical tests, Equipment, Cost analysis

Freezing tests were conducted with alum sludge that had been dewatered to a solids content typically produced by a gravity thickener, vacuum filter and belt press. These sludges were then frozen at various rates in thin layers to simulate a horizontal belt freezer. The tests indicate that a low freezing rate and a high initial solids content produce larger alum sludge particles. Curing time has no effect on grain size. The maximum freezing rates for the gravity-thickened, vacuum-filtered and belt-pressed sludges were 6.6, 15.5 and 19.8 kg/h/m<sup>2</sup>, respectively. The electrical cost of freezing sludge with this device was estimated to be \$0.004/m<sup>3</sup>. These tests show that dewatering prior to freezing not only saves energy because it reduces the amount of sludge to be frozen, but it improves the final product in terms of a larger effective grain size.

53-5

CO...H<sub>2</sub>O bonding in and on porous ices.

Givan, A., Loewenschuss, A., Nielsen, C.J., *Vibrational spectroscopy*, 1998, Vol.16, p.85-88, 16 refs.

Ice physics, Hydrogen bonds, Molecular structure, Surface structure, Adsorption, Ice solid interface, Porosity, Aggregates, Ice spectroscopy, Infrared spectroscopy, Spectra, Radiation absorption

53-6

Observations of fish mortality associated with ice blasting on the Lower Rideau River, Ottawa, Ontario.

Schaap, P.R.H., Thomas, C.J., Reid, B.A., *Canadian field-naturalist*, 1998, 112(2), p.241-244, 6 refs.

River ice, Flood control, Ice control, Ice blasting, Biomass, Classifications, Survival, Statistical analysis, Environmental impact, Explosion effects, Sampling, Canada—Ontario—Lower Rideau River, Canada—Ontario—Ottawa

53-7

Free-OH stretching frequencies of 3-coordinated H<sub>2</sub>O in water clusters and on ice surfaces.

Jiang, J.C., Chang, J.C., Wang, B.C., Lin, S.H., Lee, Y.T., Chang, H.C., *Chemical physics letters*, June 12, 1998, Vol.289, p.373-382, 26 refs.

Ice physics, Water structure, Ice water interface, Molecular structure, Surface structure, Hydrogen bonds, Classifications, Resonance, Infrared spectroscopy, Radiation absorption, Molecular energy levels

53-8

Smart ice detection systems based on resonant piezoelectric transducers.

Roy, S., Izad, A., DeAnna, R.G., Mehregany, M., *Sensors and actuators*, Sep. 15, 1998, A69(3), p.243-250, 9 refs.

Aircraft icing, Safety, Ice detection, Electronic equipment, Sensors, Ice accretion, Vibration, Resonance, Computer applications, Design, Performance, Semiconductors (materials)

53-9

Documentation of glacier tongue variations and lake development in the Cordillera Blanca, Peru.

Ames, A., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1998, 34(1), p.1-36, With German summary. 50 refs.

Mountain glaciers, Glacier oscillation, Glacier melting, Glacier tongues, Glacial lakes, Glacier surveys, Aerial surveys, Periodic variations, Peru—Cordillera Blanca

53-10

Regime of Muravlev Glacier in the Djungarskiy Alatau Range of Kazakhstan, central Asia.

Akhmetova, G.D., Cherkasov, P.A., Hastenrath, S., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1998, 34(1), p.37-46, With German summary. 19 refs.

Mountain glaciers, Glacier surveys, Glacier mass balance, Glacier oscillation, Glacier flow, Radio echo soundings, Topographic features, Periodic variations, Kazakhstan—Dzhungarskiy Alatau

53-11

Existence of glaciers in Bavaria, demonstrating climatic limitations of mountain glaciation.

Glazirin, G., Escher-Vetter, H., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1998, 34(1), p.47-56, With German summary. 14 refs.

Mountain glaciers, Alpine glaciation, Glacier oscillation, Ice volume, Altitude, Snow cover distribution, Climatic changes, Climatic factors, Forecasting, Statistical analysis, Germany—Bavaria

53-12

Age of the Köfels event. Relative, <sup>14</sup>C and cosmogenic isotope dating of an early Holocene landslide in the Central Alps (Tyrol, Austria).

Ivy-Ochs, S., et al, *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1998, 34(1), p.57-68, With German summary. 35 refs.

Geomorphology, Alpine landscapes, Landslides, Wood, Rock streams, Quaternary deposits, Gamma irradiation, Isotope analysis, Radioactive age determination, Correlation, Geochronology, Austria—Alps

53-13

Aerophotogrammetric study of ice movement in surging glaciers.

Knizhnikov, I.U.F., Gelman, R.N., Osipova, G.B., Tsvetkov, D.G., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1998, 34(1), p.69-84, With German summary. 2 refs.

Glacier oscillation, Glacier surges, Glacier surveys, Velocity measurement, Glacier tongues, Icefalls, Photogrammetric surveys, Stereomapping, Stereoscopy, Diurnal variations, Russia—Pamir-Alai

53-14

1995 glacier measurement in the vicinity of the Pasterze (Glockner Group). [Gletschermessungen 1995 an und in der Umgebung der Pasterze (Glocknergruppe)]

Lieb, G.K., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1998, 34(1), p.85-88, In German.

Glacier surveys, Glacier flow, Mountain glaciers, Profiles, Glacier oscillation, Seasonal variations, Austria—Pasterze

53-15

1996 and 1997 glacier measurements of the Pasterze (Glockner Group). [Gletschermessungen 1996 und 1997 an der Pasterze (Glocknergruppe)]

Lieb, G.K., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1998, 34(1), p.89-94, In German with English summary. 2 refs.

Mountain glaciers, Glacier surveys, Glacier oscillation, Altitude, Velocity measurement, Seasonal variations, Glacial meteorology, Austria—Pasterze

53-16

Modification of braided outwash surfaces by afeufs: an example from Pedersenbreen, Svalbard.

Bennett, M.R., Huddart, D., Hambrey, M.J., Ghienne, J.F., *Zeitschrift für Geomorphologie*, Mar. 1998, 42(1), p.1-20, With German and French summaries. 21 refs.

Geomorphology, Glacial hydrology, Glacial geology, Subpolar regions, Naleds, Landforms, Classifications, Sedimentation, Outwash, Moraines, Correlation, Norway—Svalbard

53-17

Problems of stability and drainage of ice masses, as surficial sediments, and applications to the late Weichselian glacial event in the north of Ireland.

Knight, J., *Zeitschrift für Geomorphologie*, Mar. 1998, 42(1), p.57-73, With German and French summaries. 27 refs.

Pleistocene, Geomorphology, Glacier ice, Stability, Degradation, Sedimentation, Glacial geology, Glacial hydrology, Glacier oscillation, Lake bursts, Subglacial drainage, Theories, United Kingdom—Ireland

53-18

Relative contributions of summer and cool-season precipitation to groundwater recharge, Spring Mountains, Nevada, USA.

Winograd, I.J., Riggs, A.C., Coplen, T.B., *Hydrogeology journal*, June 1998, 6(1), p.77-93, With French and Spanish summaries. 40 refs.

Watersheds, Hydrogeochemistry, Springs (water), Ground water, Water flow, Precipitation (meteorology), Snow composition, Snowfall, Snowmelt, Seasonal variations, Sampling, Isotope analysis, United States—Nevada—Spring Mountains

53-19

Lidar observation of the cirrus cloud in the tropopause at Chung-Li (25°N, 121°E).

Nee, J.B., Len, C.N., Chen, W.N., Lin, C.I., *Journal of the atmospheric sciences*, June 15, 1998, 55(12), p.2249-2257, 22 refs.

Clouds (meteorology), Cloud cover, Cloud physics, Optical properties, Ice crystals, Ice detection, Lidar, Classifications, Taiwan—Chung-Li

53-20

Quaternary history of the antarctic circumpolar current: evidence from the Scotia Sea.

Pudsey, C.J., Howe, J.A., *Marine geology*, June 1998, 148(1-2), p.83-112, 77 refs.

Marine geology, Oceanography, Bottom sediment, Quaternary deposits, Sedimentation, Ocean currents, Ice rafting, Radio echo soundings, Drill core analysis, Lithology, Geochronology, —Scotia Sea

- 53-21**  
**Effects of sublimation-condensation region on heat and mass transfer during microwave freeze drying.**  
 Wang, Z.H., Shi, M.H., *Journal of heat transfer*, Aug. 1998, 120(3), p.654-660, 16 refs.  
 Ice physics, Freeze drying, Porous materials, Ice sublimation, Saturation, Heat transfer, Mass transfer, Vapor transfer, Microwaves, Mathematical models, Simulation
- 53-22**  
**Heat and moisture transfer in energy wheels during sorption, condensation, and frosting conditions.**  
 Simonson, C.J., Besant, R.W., *Journal of heat transfer*, Aug. 1998, 120(3), p.699-708, 26 refs.  
 Heat pumps, Coatings, Humidity, Moisture transfer, Heat transfer, Ice formation, Frost, Condensation, Absorption, Cold weather operation, Mathematical models
- 53-23**  
**Summer biomass of a population of *Phyllophora antarctica* (Phylloporaceae, Rhodophyta) from Antarctica.**  
 Cormaci, M., Furnari, G., Scammacca, B., Alongi, G., Catra, M., *Hydrobiologia*, 1998, Vol.362, p.85-91, 37 refs.  
 Marine biology, Biomass, Algae, Growth, Sampling, Statistical analysis, Antarctica—Terra Nova Bay
- 53-24**  
**Distribution of methane in waters of the Okhotsk and western Bering Seas, and the area of the Kuril Islands.**  
 Dafner, E., Obzhairov, A., Vereshzhagina, O., *Hydrobiologia*, 1998, Vol.362, p.93-101, 24 refs.  
 Oceanography, Marine biology, Ecosystems, Biomass, Subpolar regions, Water chemistry, Geochemistry, Natural gas, Saturation, Distribution, Sampling, Bering Sea, Russia—Kuril Islands, Okhotsk Sea
- 53-25**  
**Formation and growth of ice particles in stationary ultrasonic fields.**  
 Bauerecker, S., Niedhart, B., *Journal of chemical physics*, Sep. 8, 1998, 109(10), p.3709-3712, 27 refs.  
 Ice physics, Cloud physics, Aerosols, Ice fog, Ice formation, Particles, Aggregates, Snowflakes, Sound waves, Infrared spectroscopy, Ultrasonic tests
- 53-26**  
**Comparison of the structural and orientational glass-transition dynamic in ethanol.**  
 Miller, M.A., Jimenez-Ruiz, M., Bermejo, F.J., Birge, N.O., *Physical review B*, June 1, 1998, 57(22), p.R13,977-R13,980, 15 refs.  
 Hydrocarbons, Liquid cooling, Supercooling, Phase transformations, Dielectric properties, Temperature effects, Spectroscopy, Spectra, Low temperature tests
- 53-27**  
**Stratified classification of digitized aerial photography to avoid misclassification of subarctic vegetation types in northern Finland.**  
 Pellikka, P., *Photogrammetric journal of Finland*, 1997, 15(2), p.21-30, 15 refs.  
 Aerial surveys, Photography, Subarctic landscapes, Forest ecosystems, Vegetation patterns, Sensor mapping, Classifications, Photointerpretation, Accuracy, Image processing, Computer programs, Finland
- 53-28**  
**Metastable T-P phase diagram and anomalous thermodynamic properties of supercooled water.**  
 Poniatovskii, E.G., Sinityn, V.V., Pozdniakova, T.A., *Journal of chemical physics*, Aug. 8, 1998, 109(6), p.2413-2422, 48 refs.  
 Ice physics, Amorphous ice, Water structure, Water temperature, Supercooling, Temperature variations, Thermodynamic properties, Atmospheric pressure, Phase transformations, Thermal expansion, Mathematical models, Molecular energy levels
- 53-29**  
**Glacial geology: ice sheets and landforms.**  
 Bennett, M.R., Glasser, N.F., Chichester, England, John Wiley & Sons, 1996, 364p., Numerous refs. passim.  
 DLC GB581.B45 1996  
 Glacial geology, Glaciation, Ice sheets, Glacial erosion, Glacial deposits, Glacier mass balance, Glacier flow, Subglacial drainage, Glacial till, Moraines, Sediment transport, Landforms, Geomorphology
- 53-30**  
**Loads and stresses. National building codes of Russia, Chicago, SNIP Register, Inc., 1997, 66p. + 8 fold. maps, SNIP 2.01.07-89, Translated from "Stroitel'nye normy i pravila".**  
 Building codes, Snow loads, Wind pressure, Ice storms, Ice loads, Temperature effects, Cold weather construction, Design criteria, Design, Russia
- 53-31**  
**LIRA Workshop on Landscape Evolution. A multidisciplinary approach to the relationship between Cenozoic climate change and tectonics in the Ross Sea area, Antarctica.**  
 Van der Wateren, F.M., ed, Verbers, A.L.L.M., ed, Tessensohn, F., ed, LIRA Workshop on Landscape Evolution, Haarlem, Netherlands, Sep. 28-Oct. 2, 1992, Haarlem, Netherlands, Rijks Geologische Dienst, 1994, 152p., Refs. passim. For selected papers see 53-32 through 53-50.  
 DLC QE690.L56 1992  
 Tectonics, Glacial geology, Marine geology, Paleoclimatology, Climatic changes, Ice sheets, Antarctica—Ross Sea
- 53-32**  
**Discussion of workshop results.**  
 Van der Wateren, F.M., Verbers, A.L.L.M., Tessensohn, F., LIRA Workshop on Landscape Evolution, Haarlem, Netherlands, Sep. 28-Oct. 2, 1992: a multidisciplinary approach to the relationship between Cenozoic climate change and tectonics in the Ross Sea area, Antarctica. Proceedings. Edited by F.M. van der Wateren, A.L.L.M. Verbers, and F. Tessensohn, Haarlem, Netherlands, Rijks Geologische Dienst, 1994, p.13-24, Refs. p.20-22.  
 DLC QE690.L56 1992  
 Tectonics, Glacial geology, Glaciation, Marine geology, Ice sheets, Antarctica—Transantarctic Mountains
- 53-33**  
**Role of the cratonic interior, intracratonic basins and Transantarctic Mountains regions of East Antarctica in deciphering Late Mesozoic-Cenozoic tectonic and palaeoclimate history.**  
 Webb, P.N., LIRA Workshop on Landscape Evolution, Haarlem, Netherlands, Sep. 28-Oct. 2, 1992: a multidisciplinary approach to the relationship between Cenozoic climate change and tectonics in the Ross Sea area, Antarctica. Proceedings. Edited by F.M. van der Wateren, A.L.L.M. Verbers, and F. Tessensohn, Haarlem, Netherlands, Rijks Geologische Dienst, 1994, p.25-33, Refs. p.31-33.  
 DLC QE690.L56 1992  
 Tectonics, Glacial geology, Paleoclimatology, Ice sheets, Subglacial observations, Antarctica—East Antarctica
- 53-34**  
**Episodic Cenozoic uplift and tectonism along the shoulder escarpment of the West Antarctic rift system.**  
 Behrendt, J.C., LIRA Workshop on Landscape Evolution, Haarlem, Netherlands, Sep. 28-Oct. 2, 1992: a multidisciplinary approach to the relationship between Cenozoic climate change and tectonics in the Ross Sea area, Antarctica. Proceedings. Edited by F.M. van der Wateren, A.L.L.M. Verbers, and F. Tessensohn, Haarlem, Netherlands, Rijks Geologische Dienst, 1994, p.37-39, 18 refs.  
 DLC QE690.L56 1992  
 Tectonics, Glacial geology, Volcanoes, Ice sheets, Antarctica—West Antarctica
- 53-35**  
**Uplift of the Transantarctic Mountains: constraints from fission track thermochronology.**  
 Fitzgerald, P.G., LIRA Workshop on Landscape Evolution, Haarlem, Netherlands, Sep. 28-Oct. 2, 1992: a multidisciplinary approach to the relationship between Cenozoic climate change and tectonics in the Ross Sea area, Antarctica. Proceedings. Edited by F.M. van der Wateren, A.L.L.M. Verbers, and F. Tessensohn, Haarlem, Netherlands, Rijks Geologische Dienst, 1994, p.41-45, 9 refs.  
 DLC QE690.L56 1992  
 Tectonics, Glacial geology, Geochronology, Paleoclimatology, Antarctica—Transantarctic Mountains
- 53-36**  
**Geology and tectonics of the Mt. Gerlache area, Prince Albert Mountains, Antarctica.**  
 Stackebrandt, W., LIRA Workshop on Landscape Evolution, Haarlem, Netherlands, Sep. 28-Oct. 2, 1992: a multidisciplinary approach to the relationship between Cenozoic climate change and tectonics in the Ross Sea area, Antarctica. Proceedings. Edited by F.M. van der Wateren, A.L.L.M. Verbers, and F. Tessensohn, Haarlem, Netherlands, Rijks Geologische Dienst, 1994, p.49-52, 4 refs.  
 DLC QE690.L56 1992  
 Tectonics, Glacial geology, Glacial deposits, Antarctica—Gerlache, Mount
- 53-37**  
**Marine geological record of Ross Sea glacial history.**  
 Anderson, J.B., LIRA Workshop on Landscape Evolution, Haarlem, Netherlands, Sep. 28-Oct. 2, 1992: a multidisciplinary approach to the relationship between Cenozoic climate change and tectonics in the Ross Sea area, Antarctica. Proceedings. Edited by F.M. van der Wateren, A.L.L.M. Verbers, and F. Tessensohn, Haarlem, Netherlands, Rijks Geologische Dienst, 1994, p.65-68, 9 refs.  
 DLC QE690.L56 1992  
 Marine geology, Glaciation, Glacial geology, Seismic surveys, Ice sheets, Antarctica—Ross Sea
- 53-38**  
**Structural evolution across a section south of the Drygalski Ice Tongue (Victoria Land Basin).**  
 Brancolini, G., De Santis, L., Buseti, M., Cooper, A., LIRA Workshop on Landscape Evolution, Haarlem, Netherlands, Sep. 28-Oct. 2, 1992: a multidisciplinary approach to the relationship between Cenozoic climate change and tectonics in the Ross Sea area, Antarctica. Proceedings. Edited by F.M. van der Wateren, A.L.L.M. Verbers, and F. Tessensohn, Haarlem, Netherlands, Rijks Geologische Dienst, 1994, p.69-75, Refs. p.73-75.  
 DLC QE690.L56 1992  
 Structural analysis, Marine geology, Glacial geology, Geochronology, Seismic surveys, Glacier tongues, Antarctica—Drygalski Ice Tongue
- 53-39**  
**Evidence of Cenozoic tectonics in the sedimentary record of the Ross Sea continental margin.**  
 Cooper, A., Brancolini, G., Hinz, K., Traube, V., Zayatz, I., LIRA Workshop on Landscape Evolution, Haarlem, Netherlands, Sep. 28-Oct. 2, 1992: a multidisciplinary approach to the relationship between Cenozoic climate change and tectonics in the Ross Sea area, Antarctica. Proceedings. Edited by F.M. van der Wateren, A.L.L.M. Verbers, and F. Tessensohn, Haarlem, Netherlands, Rijks Geologische Dienst, 1994, p.77-83, Refs. p.82-83.  
 DLC QE690.L56 1992  
 Tectonics, Glacial geology, Marine geology, Seismic surveys, Antarctica—Ross Sea

53-40

**Cenozoic glacial record from drill-holes in the Ross Sea region.**

Hambrey, M.J., Barrett, P.J., LIRA Workshop on Landscape Evolution, Haarlem, Netherlands, Sep. 28-Oct. 2, 1992: a multidisciplinary approach to the relationship between Cenozoic climate change and tectonics in the Ross Sea area, Antarctica. Proceedings. Edited by F.M. van der Wateren, A.L.L.M. Verbers, and F. Tessensohn, Haarlem, Netherlands, Rijks Geologische Dienst, 1994, p.85-89, Refs. p.88-89.

DLC QE690.L56 1992

Marine geology, Glacial geology, Paleoclimatology, Ice cover thickness, Climatic changes, Glaciation, Antarctica—Ross Sea

53-41

**Main stages of development of the Eastern Basin, Ross Sea, imprinted in its structure.**

Traube, V., Zayatz, I., LIRA Workshop on Landscape Evolution, Haarlem, Netherlands, Sep. 28-Oct. 2, 1992: a multidisciplinary approach to the relationship between Cenozoic climate change and tectonics in the Ross Sea area, Antarctica. Proceedings. Edited by F.M. van der Wateren, A.L.L.M. Verbers, and F. Tessensohn, Haarlem, Netherlands, Rijks Geologische Dienst, 1994, p.91-94, 8 refs.

DLC QE690.L56 1992

Tectonics, Glacial geology, Marine geology, Structural analysis, Antarctica—Ross Sea

53-42

**Correlating antarctic marine and terrestrial sediments by marine diatoms.**

Harwood, D.M., LIRA Workshop on Landscape Evolution, Haarlem, Netherlands, Sep. 28-Oct. 2, 1992: a multidisciplinary approach to the relationship between Cenozoic climate change and tectonics in the Ross Sea area, Antarctica. Proceedings. Edited by F.M. van der Wateren, A.L.L.M. Verbers, and F. Tessensohn, Haarlem, Netherlands, Rijks Geologische Dienst, 1994, p.97-100, Refs. p.99-100.

DLC QE690.L56 1992

Glacial geology, Sediments, Algae, Biomass, Paleoclimatology, Ice volume

53-43

**Continuing debate on Pliocene antarctic deglaciation.**

Harwood, D.M., LIRA Workshop on Landscape Evolution, Haarlem, Netherlands, Sep. 28-Oct. 2, 1992: a multidisciplinary approach to the relationship between Cenozoic climate change and tectonics in the Ross Sea area, Antarctica. Proceedings. Edited by F.M. van der Wateren, A.L.L.M. Verbers, and F. Tessensohn, Haarlem, Netherlands, Rijks Geologische Dienst, 1994, p.101-105, Refs. p.104-105.

DLC QE690.L56 1992

Marine geology, Fossils, Glacial geology, Paleoclimatology, Glaciation, Ice volume

53-44

**Glaciological and climatological probabilities and improbabilities of alternative glaciation models of Antarctica.**

Huybrechts, P., LIRA Workshop on Landscape Evolution, Haarlem, Netherlands, Sep. 28-Oct. 2, 1992: a multidisciplinary approach to the relationship between Cenozoic climate change and tectonics in the Ross Sea area, Antarctica. Proceedings. Edited by F.M. van der Wateren, A.L.L.M. Verbers, and F. Tessensohn, Haarlem, Netherlands, Rijks Geologische Dienst, 1994, p.107-111, 5 refs.

DLC QE690.L56 1992

Tectonics, Glacial geology, Ice volume, Glaciation, Paleoclimatology, Ice models, Antarctica—Transantarctic Mountains

53-45

**Pagodroma Tillite and the Sirius Group—a comparison.**

McKelvey, B., LIRA Workshop on Landscape Evolution, Haarlem, Netherlands, Sep. 28-Oct. 2, 1992: a multidisciplinary approach to the relationship between Cenozoic climate change and tectonics in the Ross Sea area, Antarctica. Proceedings. Edited by F.M. van der Wateren, A.L.L.M. Verbers, and F. Tessensohn, Haarlem, Netherlands, Rijks Geologische Dienst, 1994, p.113-116, 18 refs.

DLC QE690.L56 1992

Tectonics, Glacial geology, Fossils, Geochronology, Glacial deposits, Paleoclimatology, Antarctica—East Antarctica

53-46

**Upper Fleming Sirius till: evidence for local glaciation and warmer climates during the Neogene.**

Stroeven, A.P., Borns, H.W., Jr., Prentice, M.L., Fastook, J.L., Oglesby, R.J., LIRA Workshop on Landscape Evolution, Haarlem, Netherlands, Sep. 28-Oct. 2, 1992: a multidisciplinary approach to the relationship between Cenozoic climate change and tectonics in the Ross Sea area, Antarctica. Proceedings. Edited by F.M. van der Wateren, A.L.L.M. Verbers, and F. Tessensohn, Haarlem, Netherlands, Rijks Geologische Dienst, 1994, p.117-121, Refs. p.119-121.

DLC QE690.L56 1992

Tectonics, Glacial geology, Glacial deposits, Glaciation, Paleoclimatology, Antarctica—McMurdo Dry Valleys

53-47

**Differential tectonic uplift of fault blocks in the West Antarctic rift system and their landscape evolution histories.**

Van der Wateren, F.M., Verbers, A.L.L.M., LIRA Workshop on Landscape Evolution, Haarlem, Netherlands, Sep. 28-Oct. 2, 1992: a multidisciplinary approach to the relationship between Cenozoic climate change and tectonics in the Ross Sea area, Antarctica. Proceedings. Edited by F.M. van der Wateren, A.L.L.M. Verbers, and F. Tessensohn, Haarlem, Netherlands, Rijks Geologische Dienst, 1994, p.125-128, 23 refs.

DLC QE690.L56 1992

Tectonics, Glacial geology, Landscape development, Glacier flow, Antarctica—Victoria Land

53-48

**Victoria orogeny: impact of Transantarctic Mountain evolution on Cenozoic palaeoclimates, palaeoenvironments and biogeography.**

Webb, P.N., LIRA Workshop on Landscape Evolution, Haarlem, Netherlands, Sep. 28-Oct. 2, 1992: a multidisciplinary approach to the relationship between Cenozoic climate change and tectonics in the Ross Sea area, Antarctica. Proceedings. Edited by F.M. van der Wateren, A.L.L.M. Verbers, and F. Tessensohn, Haarlem, Netherlands, Rijks Geologische Dienst, 1994, p.129-132, Refs. p.131-132.

DLC QE690.L56 1992

Tectonics, Glacial geology, History, Structural analysis, Glacial deposits, Antarctica—Transantarctic Mountains

53-49

**Micromorphological observations on some till samples from Antarctica.**

Van der Meer, J.J.M., Mûcher, H.J., Höffe, H.C., LIRA Workshop on Landscape Evolution, Haarlem, Netherlands, Sep. 28-Oct. 2, 1992: a multidisciplinary approach to the relationship between Cenozoic climate change and tectonics in the Ross Sea area, Antarctica. Proceedings. Edited by F.M. van der Wateren, A.L.L.M. Verbers, and F. Tessensohn, Haarlem, Netherlands, Rijks Geologische Dienst, 1994, p.143-145, 10 refs.

DLC QE690.L56 1992

Structural analysis, Geocryology, Landscape development, Glacial geology, Glacial deposits, Soil analysis, Glacial till, Antarctica—Victoria Land, Antarctica—Shackleton Range

53-50

**Till provenance in North Victoria Land: a pilot study based on geochemistry.**

Vermeulen, F.J.M., LIRA Workshop on Landscape Evolution, Haarlem, Netherlands, Sep. 28-Oct. 2, 1992: a multidisciplinary approach to the relationship between Cenozoic climate change and tectonics in the Ross Sea area, Antarctica. Proceedings. Edited by F.M. van der Wateren, A.L.L.M. Verbers, and F. Tessensohn, Haarlem, Netherlands, Rijks Geologische Dienst, 1994, p.147-148, 3 refs.

DLC QE690.L56 1992

Soil analysis, Geochemistry, Geochronology, Glacial geology, Moraines, Glacial till, Antarctica—Victoria Land

53-51

**Global change in Europe's cold regions.**

Heal, O.W., ed, Callaghan, T.V., ed, Cornelissen, J.H.C., ed, Körner, C., ed, Lee, S.E., ed, *Commission of the European Communities, Luxembourg. Ecosystems research report*, 1998, No.27, 137p., Report on the Arctic-Alpine Terrestrial Ecosystems Research Initiative (ARTERI) workshops in Copenhagen, Denmark, Nov. 8-10 (Part 1) and Nov. 4-7 (Part 2), 1996. For Part 1 see 53-52 and for Part 2 see 53-53.

Global warming, Environmental impact, Ecosystems, Tundra climate, Tundra vegetation, Tundra soils, Plant ecology, Plant physiology, Soil microbiology, Nutrient cycle, Biomass

53-52

**Scenarios for ecosystem responses to global change.**

Callaghan, T.V., Körner, C., Heal, O.W., Lee, S.E., Cornelissen, J.H.C., *Commission of the European Communities, Luxembourg. Ecosystems research report*, 1998, No.27, Global change in Europe's cold regions. Part 1, p.11-63, 39 refs.

Global warming, Environmental impact, Ecosystems, Plant ecology, Plant physiology, Vegetation patterns, Nutrient cycle, Biomass, Tundra vegetation, Tundra climate, Regional planning

53-53

**Impacts of global change on tundra soil biology.**

Heal, O.W., Broll, G., Hooper, D.U., McConnell, J., Webb, N.R., Wookey, P.A., *Commission of the European Communities, Luxembourg. Ecosystems research report*, 1998, No.27, Global change in Europe's cold regions. Part 2, p.65-137, Refs. p.121-134.

Global warming, Environmental impact, Ecosystems, Tundra soils, Tundra vegetation, Tundra climate, Plant ecology, Plant physiology, Soil microbiology, Biomass, Nutrient cycle, Research projects

53-54

**Changes in the vegetation of sub-Antarctic Marion Island resulting from introduced vascular plants.**

Gremmen, N.J.M., Antarctic communities: species, structure and survival. Edited by B. Battaglia, J. Valencia and D.W.H. Walton, Cambridge, England, University Press, 1997, p.417-423, 23 refs.

Introduced plants, Plant ecology, Vegetation patterns, Revegetation, Environmental impact, Environmental protection, Marion Island

53-55

**Impact of the introduced grass *Agrostis stolonifera* on vegetation and soil fauna communities at Marion Island, sub-Antarctica.**

Gremmen, N.J.M., Chown, S.L., Marshall, D.J., *Biological conservation*, 1998, Vol.85, p.223-231, 40 refs.

Introduced plants, Grasses, Environmental impact, Ecosystems, Plant ecology, Vegetation patterns, Animals, Environmental protection, —Marion Island

- 53-56**  
**Delicate stability of lichen symbiosis: comparative studies on the photosynthesis of the lichen *Mastodia tessellata* and its free-living phycobiont, the alga *Prasiola crispa*.**  
 Huiskes, A.H.L., Gremmen, N.J.M., Francke, J.W., Antarctic communities: species, structure and survival. Edited by B. Battaglia, J. Valencia and D.W.H. Walton, Cambridge, England, University Press, 1997, p.234-240, 23 refs.  
 Lichens, Algae, Plant ecology, Plant physiology, Photosynthesis, Vegetation patterns, Antarctica—Argentine Islands
- 53-57**  
**Finnish Ice Service of the Finnish Institute of Marine Research 1919-1994. [Merentutkimuslaitoksen Jääpalvelu 1919-1994]**  
 Seinä, A., Palosuo, E., Grönvall, H., *Finnish Institute of Marine Research (Merentutkimuslaitos). Report series. Meri (the sea)*, 1997, No.32, 82p. + appends., In Finnish with English summary. Refs. p.78-82.  
 Ice surveys, Sea ice distribution, Ice conditions, Ice detection, Ice forecasting, Ice reporting, Ice routing, Ice navigation, Organizations, History, Finland, Baltic Sea
- 53-58**  
**Winter conditions in the East Antarctic pack ice: a report on the 1995 HIHO HIHO ice drift and deformation experiment.**  
 Lytle, V.I., et al, *Australia. Cooperative Research Centre for the Antarctic and Southern Ocean Environment. Antarctic CRC research report*, June 1998, No.13, Var. p., 17 refs.  
 Ice surveys, Sea ice distribution, Ice conditions, Ice growth, Ice cover thickness, Ice deformation, Drift, Ice temperature, Ice heat flux, Snow ice interface, Snow depth, Air ice water interaction, Antarctica—Adélie Coast, Antarctica—George V Coast
- 53-59**  
**Mineral assessment of Ahtna, Inc. selections in the Wrangell-St. Elias National Park and Preserve, Alaska: 1997 preliminary report.**  
 Meyer, M.P., Shepherd, A.D., *U.S. Bureau of Land Management. Alaska State Office, Anchorage. BLM-Alaska open file report*, Aug. 1998, No.71, 164p., Refs. p.21-29.  
 Geological surveys, Exploration, Geochemistry, Minerals, Mining, Natural resources, Economic development, United States—Alaska—Wrangell-Saint Elias National Park and Preserve
- 53-60**  
**Enumeration of adult salmon and hydrologic data at a resistance board weir on Beaver Creek, Alaska, 1996-1997.**  
 Collin, N., Kostohrys, J., *U.S. Bureau of Land Management. Alaska State Office, Anchorage. BLM-Alaska open file report*, May 1998, No.70, 20p., 9 refs.  
 Hydraulic structures, River flow, Stream flow, Water level, Environmental impact, Ecology, Animals, Statistical analysis, United States—Alaska—Beaver Creek
- 53-61**  
**Building partnerships in polar research and education.**  
 Arctic Science Education Workshop, New Orleans, LA, Apr. 6-8, 1997, Fairbanks, AK, Arctic Research Consortium of the United States (ARCUS), 1998, 35p.  
 Research projects, Education, Regional planning
- 53-62**  
**Toward an arctic system synthesis: results and recommendations.**  
 Arctic System Science (ARCSS) Program All-Hands Workshop, Snowbird, UT, Apr. 30-May 3, 1996, Fairbanks, AK, Arctic Research Consortium of the United States (ARCUS), 1998, 165p., Refs. passim.  
 Regional planning, International cooperation, Research projects, Polar atmospheres, Marine atmospheres, Air ice water interaction, Paleoclimatology, Air pollution, Water pollution, Global warming
- 53-63**  
**Durability of shotcrete.**  
 Reading, T.J., *Concrete international: design & construction*, Jan. 1981, p.27-33, 8 refs.  
 Concrete placing, Concrete durability, Concrete strength, Concrete admixtures, Air entrainment, Water cement ratio, Frost resistance, Freeze thaw tests
- 53-64**  
**BST management study for Yukon highways.**  
 MacLeod, D.R., Ottawa, Canada, Department of Public Works, 1989, Var. p., MIC 97-01666, Numerous pages missing.  
 Highway planning, Road maintenance, Subgrade maintenance, Pavements, Bitumens, Protective coatings, Sealing, Waterproofing, Cost analysis, Canada—Yukon Territory
- 53-65**  
**Resistance of concrete incorporating granulated blast-furnace slags to the action of de-icing salts.**  
 Bilodeau, A., Carette, G.G., Malhotra, V.M., International Workshop on Granulated Blast-Furnace Slag in Concrete, Toronto, Ontario, Oct. 22-23, 1987, Detroit, American Concrete Institute, [1987], p.461-483, 8 refs.  
 Concrete admixtures, Concrete durability, Frost resistance, Salting, Corrosion, Freeze thaw tests
- 53-66**  
**Control of concrete pavement scaling caused by chloride salts.**  
 Tallamy, B.D., *American Concrete Institute. Journal*, Mar. 1949, 20(7), p.513-520, Presented at the ACI 45th annual convention, New York, Feb. 23, 1949.  
 Road icing, Sanding, Salting, Concrete pavements, Concrete durability, Corrosion, Waterproofing, Road maintenance
- 53-67**  
**Studies on ice elicit information on adhesive/separation properties and on nature of hydrogen bonds. *Materials Research Society. MRS bulletin*, June 1998, p.12.**  
 Ice adhesion, Ice electrical properties, Ice removal, High pressure ice, Ice crystal structure, Molecular structure, Molecular energy levels, Hydrogen bonds, Proton transport
- 53-68**  
**Fe (III) speciation in the high nutrient, low chlorophyll Pacific region of the southern ocean.**  
 Nolting, R.F., Gerringa, L.J.A., Swagerman, M.J.W., Timmermans, K.R., De Baar, H.J.W., *Marine chemistry*, Nov. 1998, 62(3-4), p.335-352, 40 refs.  
 Marine biology, Sea water, Nutrient cycle, Water chemistry, Biomass, Chlorophylls, Organic nuclei, Metals, Colloids, Sampling, Hydrography, Antarctica—Bellingshausen Sea
- 53-69**  
**Piercement shale diapirism in the deep-water Vema Dome area, Vøring basin, offshore Norway.**  
 Hovland, M., Nygaard, E., Thorbjørnsen, S., *Marine and petroleum geology*, May 1998, 15(3), p.191-201, 24 refs.  
 Marine geology, Tectonics, Subpolar regions, Ocean bottom, Topographic features, Hydrocarbons, Sedimentation, Migration, Seismic surveys, Exploration, Norway
- 53-70**  
**Tectonostratigraphic framework for the Mid-Norway region.**  
 Swiecicki, T., Gibbs, P.B., Farrow, G.E., Coward, M.P., *Marine and petroleum geology*, May 1998, 15(3), p.245-276, 70 refs.  
 Marine geology, Pleistocene, Subpolar regions, Tectonics, Glacial erosion, Stratigraphy, Hydrocarbons, Reservoirs, Exploration, Norway
- 53-71**  
**Snowmelt-generated runoff and soil erosion in Fife, Scotland.**  
 Wade, R.J., Kirkbride, M.P., *Earth surface processes and landforms*, Feb. 1998, 23(2), p.123-132, 26 refs.  
 Geomorphology, Soil erosion, Water erosion, Snow hydrology, Snowmelt, Rain, Runoff, Classifications, Meteorological factors, Snow composition, Forecasting, United Kingdom—Scotland
- 53-72**  
**Structure and sedimentology of relict talus, Trotternish, northern Skye, Scotland.**  
 Hinchliffe, S., Ballantyne, C.K., Walden, J., *Earth surface processes and landforms*, June 1998, 23(6), p.545-560, 68 refs.  
 Geomorphology, Sedimentation, Mass transfer, Talus, Fines, Slope processes, Weathering, Lithology, Particle size distribution, Sampling, United Kingdom—Scotland
- 53-73**  
**Freezing and melting with multiple phase fronts along the outside of a tube.**  
 Vick, B., Nelson, D.J., Yu, X., *Journal of heat transfer*, May 1998, 120(2), p.422-429, 16 refs.  
 Heat recovery, Phase transformations, Freeze thaw cycles, Pipes (tubes), Ice solid interface, Boundary value problems, Thermal diffusion, Mathematical models, Stefan problem
- 53-74**  
**Effects of vibration on ice contact melting within rectangular enclosures.**  
 Quan, L., Zhang, Z., Faghi, M., *Journal of heat transfer*, May 1998, 120(2), p.518-520, 12 refs.  
 Ice physics, Ice melting, Phase transformations, Ice solid interface, Convection, Heat transfer, Vibration, Simulation
- 53-75**  
**Determining basal ice-sheet conditions in the Dome C region of East Antarctica using satellite radar altimetry and airborne radio-echo sounding.**  
 Siegert, M.J., Ridley, J.K., *Journal of glaciology*, 1998, No.146, p.1-8, 18 refs.  
 Ice sheets, Surface structure, Glacial hydrology, Subglacial observations, Radiometry, Radio echo soundings, Height finding, Lake water, Detection, Water transport, Correlation, Antarctica—East Antarctica
- 53-76**  
**2 m temperatures along melting mid-latitude glaciers, and implications for the sensitivity of the mass balance to variations in temperature.**  
 Greuell, W., Böhm, R., *Journal of glaciology*, 1998, No.146, p.9-20, 26 refs.  
 Glacial hydrology, Glacial meteorology, Glacier melting, Glacier mass balance, Air temperature, Surface temperature, Temperature distribution, Heat transfer, Ice air interface, Mathematical models, Wind factors, Thermodynamics, Austria—Pasterze
- 53-77**  
**Temperature history and accumulation timing for the snowpack at GISP2, central Greenland.**  
 Shuman, C.A., et al, *Journal of glaciology*, 1998, No.146, p.21-30, 56 refs.  
 Glacial meteorology, Ice sheets, Surface temperature, Snow accumulation, Stratigraphy, Isotope analysis, Radiometry, Brightness, Snow water equivalent, Profiles, Correlation, Greenland
- 53-78**  
**Simple model for the influence of push-moraine banks on the calving and stability of glacial tide-water termini.**  
 Fischer, M.P., Powell, R.D., *Journal of glaciology*, 1998, No.146, p.31-41, 32 refs.  
 Glacial hydrology, Glacier oscillation, Grounded ice, Ice solid interface, Basal sliding, Ice override, Calving, Stress concentration, Moraines, Mathematical models

53-79

**Discrimination of glacier facies using multi-temporal SAR data.**

Partington, K.C., *Journal of glaciology*, 1998, No.146, p.42-53, 25 refs.

Glacial hydrology, Glacier surveys, Ice sheets, Surface structure, Snow cover structure, Wet snow, Snow line, Backscattering, Synthetic aperture radar, Spaceborne photography, Image processing, Greenland, United States—Alaska—Wrangell Mountains

53-80

**Thin-sectioning of wet snow after flash-freezing.**

Brzoska, J.B., Coléou, C., Lesaffre, B., *Journal of glaciology*, 1998, No.146, p.54-62, 25 refs.

Snow hydrology, Snow physics, Wet snow, Water content, Bubbles, Laboratory techniques, Thin sections, Cold chambers, Artificial freezing, Temperature measurement

53-81

**Glacial retreat and its geomorphologic effects on Mexico's active volcanoes, 1994-95.**

Palacios, D., De Marcos, J., *Journal of glaciology*, 1998, No.146, p.63-67, 12 refs.

Geomorphology, Glacial geology, Glacier oscillation, Volcanoes, Glacial erosion, Slope processes, Talus, Sedimentation, Ice temperature, Ice solid interface, Insulation, Mexico—Popocatepetl

53-82

**Crevasse patterns and the strain-rate tensor: a high-resolution comparison.**

Harper, J.T., Humphrey, N.F., Pfeffer, W.T., *Journal of glaciology*, 1998, No.146, p.68-76, 32 refs.

Glacier flow, Ice mechanics, Velocity measurement, Crevasse, Ice deformation, Orientation, Classifications, Shear strain, Statistical analysis, Correlation, United States—Alaska—Worthington Glacier

53-83

**Synthetic aperture radar interferometry over Rutford Ice Stream and Carlson Inlet, Antarctica.**

Frolich, R.M., Doake, C.S.M., *Journal of glaciology*, 1998, No.146, p.77-92, 22 refs.

Ice sheets, Glacier surveys, Glacier flow, Glacier surfaces, Surface structure, Velocity measurement, Spaceborne photography, Synthetic aperture radar, Image processing, Antarctica—Carlson Inlet, Antarctica—Rutford Ice Stream

53-84

**Altitudinal gradient of mass-balance sensitivity to climatic change from 18 years of observations on glacier d'Argentiére, France.**

Vallon, M., Vincent, C., Reynaud, L., *Journal of glaciology*, 1998, No.146, p.93-96, 17 refs.

Mountain glaciers, Glacier oscillation, Climatic changes, Glacier mass balance, Altitude, Air temperature, Seasonal variations, Statistical analysis, France—Mont Blanc

53-85

**Improving digital elevation models over ice sheets using AVHRR-based photogrammetry.**

Scambos, T.A., Fahnestock, M.A., *Journal of glaciology*, 1998, No.146, p.97-103, 26 refs.

Ice sheets, Glacier surveys, Topographic surveys, Spaceborne photography, Sensor mapping, Radiometry, Photometry, Image processing, Height finding, Profiles, Topographic maps, Greenland

53-86

**Theory of ice-sheet surges.**

Fowler, A.C., Schiavi, E., *Journal of glaciology*, 1998, No.146, p.104-118, 33 refs.

Ice sheets, Glacier surges, Glacial hydrology, Oscillations, Ice water interface, Subglacial drainage, Ice melting, Water pressure, Basal sliding, Mathematical models, Theories

53-87

**Elevation, volume and terminus changes of nine glaciers in North America.**

Sapiano, J.J., Harrison, W.D., Echelmeyer, K.A., *Journal of glaciology*, 1998, No.146, p.119-135, 32 refs.

Geophysical surveys, Glacier surveys, Glacier oscillation, Sensor mapping, Profiles, Topographic features, Altitude, Ice volume, Seasonal variations, Statistical analysis, Climatic factors, North America

53-88

**Structural glaciology of Kongsvegen, Svalbard, and its role in landform genesis.**

Glasser, N.F., Hambrey, M.J., Crawford, K.R., Bennett, M.R., Huddart, D., *Journal of glaciology*, 1998, No.146, p.136-148, 46 refs.

Geomorphology, Glacial geology, Ice mechanics, Ice deformation, Sediment transport, Surface structure, Crevasse, Stratification, Landforms, Structural analysis, Mapping, Norway—Svalbard

53-89

**Radar reflections reveal a wet bed beneath stagnant Ice Stream C and a frozen bed beneath ridge BC, West Antarctica.**

Bentley, C.R., Lord, N., Liu, C., *Journal of glaciology*, 1998, No.146, p.149-156, 19 refs.

Ice sheets, Glacier surveys, Radio echo soundings, Glacier beds, Glacier thickness, Sensor mapping, Reflectivity, Antarctica—West Antarctica

53-90

**Rapid sea-level rise from a West Antarctic ice-sheet collapse: a short-term perspective.**

Bentley, C.R., *Journal of glaciology*, 1998, No.146, p.157-163, 51 refs.

Ice sheets, Stability, Glacial hydrology, Glacier melting, Meltwater, Sea level, Forecasting, Theories, Antarctica—West Antarctica

53-91

**Mapping subglacial surfaces of temperate valley glaciers by two-pass migration of a radio-echo sounding survey.**

Welch, B.C., Pfeffer, W.T., Harper, J.T., Humphrey, N.F., *Journal of glaciology*, 1998, No.146, p.164-170, 18 refs.

Glacial geology, Glacier beds, Bedrock, Glacier surveys, Radio echo soundings, Ice solid interface, Sensor mapping, Profiles, Wave propagation, Migration, Resolution, Data processing, United States—Alaska—Worthington Glacier

53-92

**Precise dielectric profiling of ice cores: a new device with improved guarding and its theory.**

Wilhelms, F., Kipfstuhl, J., Miller, H., Heinloth, K., Firestone, J., *Journal of glaciology*, 1998, No.146, p.171-174, 19 refs.

Glaciology, Ice cores, Ice electrical properties, Dielectric properties, Measuring instruments, Portable equipment, Electrical measurement, Profiles, Ice density, Performance, Design

53-93

**ECLIPSE drill: a field-portable intermediate-depth ice-coring drill.**

Blake, E.W., Wake, C.P., Gerasimoff, M.D., *Journal of glaciology*, 1998, No.146, p.175-178, 6 refs.

Glaciology, Ice coring drills, Portable equipment, Design, Performance, Drill core analysis

53-94

**New portable ice-core drilling machine: application to tephra studies.**

Casas, J.M., Sàbat, F., Vilaplana, J.M., Parés, J.M., Pomeroy, D.M., *Journal of glaciology*, 1998, No.146, p.179-181, 3 refs.

Glaciology, Ice coring drills, Portable equipment, Stratigraphy, Sediments, Volcanic ash, Design, Performance, Antarctica—Livingston Island

53-95

**Detection of hills from radar data in central-northern Greenland.**

Legarsky, J., Wong, A., Akins, T., Gogineni, S.P., *Journal of glaciology*, 1998, No.146, p.182-184, 4 refs.

Glacier surveys, Radio echo soundings, Aerial surveys, Imaging, Glacier thickness, Ice solid interface, Subglacial observations, Topographic features, Detection, Greenland

53-96

**Determination of the surface and bed topography at Dome C, East Antarctica.**

Tabacco, I.E., Passerini, A., Corbelli, F., Gorman, M., *Journal of glaciology*, 1998, No.146, p.185-191, 14 refs.

Ice sheets, Glacier surveys, Glacier beds, Drilling, Site surveys, Radio echo soundings, Bedrock, Topographic surveys, Antarctica—East Antarctica

53-97

**Comments on "Some comments on climatic reconstructions from ice cores drilled in area of high melt" by Roy M. Koerner.**

Zagorodnov, V.S., Koerner, R.M., *Journal of glaciology*, 1998, No.146, p.191-193, For pertinent paper see 51-5655. 23 refs. Includes reply.

Paleoclimatology, Ice sheets, Glacier mass balance, Glacier melting, Ice cores, Stratigraphy, Drill core analysis, Profiles, Accuracy, Russia

53-98

**Polyphase structural, intrusive and metamorphic evolution of the Bockfjorden area, NW Spitsbergen.**

Wyss, M., Hermann, J., Müntener, O., Benning, L., *Schweizerische Mineralogische und Petrographische Mitteilungen*, 1998, 78(1), p.87-106, 28 refs.

Pleistocene, Tectonics, Earth crust, Geothermy, Subpolar regions, Magma, Sedimentation, Rock properties, Lithology, Geochemistry, Classifications, Geochronology, Norway—Spitsbergen

53-99

**Middle atmosphere climatologies from the troposphere-stratosphere configuration of the UKMO's Unified Model.**

Butchart, N., Austin, J., *Journal of the atmospheric sciences*, Sep. 1, 1998, 55(17), p.2782-2809, 46 refs.

Climatology, Global change, Polar atmospheres, Atmospheric circulation, Friction, Air temperature, Stratosphere, Seasonal variations, Mathematical models, Simulation, Antarctica—South Pole

53-100

**Role of ice particle shapes and size distributions in the single scattering properties of cirrus clouds.**

Macke, A., Francis, P.N., McFarquhar, G.M., Kinne, S., *Journal of the atmospheric sciences*, Sep. 1, 1998, 55(17), p.2874-2883, 41 refs.

Climatology, Radiation balance, Cloud physics, Ice crystal optics, Ice crystal structure, Probes, Particle size distribution, Radiation absorption, Light scattering, Attenuation, Statistical analysis, Analysis (mathematics)

53-101

**Planning for snow and ice control.**

Hibbs, J.O., *Public works*, Aug. 1998, 129(9), p.18,20.

Road maintenance, Winter maintenance, Ice control, Ice prevention, Ice detection, Vehicles, Sensors, Chemical ice prevention, Environmental impact, Environmental protection

53-102

**Increased ratio of photosynthesis to respiration at low temperatures is a prerequisite for winter wheat cold acclimation.**

Klimov, S.V., *Russian journal of plant physiology*, May-June 1998, 45(3), p.359-363, Translated from *Fiziologiya rastenii*: 34 refs.

Plant physiology, Grasses, Photosynthesis, Cold weather survival, Low temperature tests, Acclimatization, Frost resistance, Light effects

## 53-103

**Stochastic weather generation model for Alaska.** Skiles, J.W., Richardson, C.W., *Ecological modeling*, July 22, 1998, 110(2), p.211-232, 22 refs. Climatology, Weather forecasting, Precipitation (meteorology), Air temperature, Temperature variations, Ecosystems, Subpolar regions, Simulation, Seasonal variations, Mathematical models, United States—Alaska

## 53-104

**Presentation and analysis of a model simulating epilimnetic and hypolimnetic temperatures in lakes.**

Ottosson, F., Abrahamsson, O., *Ecological modeling*, July 22, 1998, 110(2), p.233-253, 15 refs. Limnology, Subpolar regions, Lake water, Water temperature, Stratification, Turbulent diffusion, Mathematical models, Forecasting, Simulation, Seasonal variations, Sweden

## 53-105

**Anti-hall rocket system.** *Russian sci-tech*, 1997, Vol.2, p.6.

Precipitation (meteorology), Clouds (meteorology), Cloud seeding, Artificial nucleation, Weather modification, Hail prevention, Spacecraft, Design

## 53-106

**Snow avalanche control and intentional avalanche triggering in mountainous regions.** *Russian sci-tech*, 1997, Vol.2, p.17.

Avalanche triggering, Avalanche protection, Safety

## 53-107

**Postglacial sea-level change on a rotating earth.**

Milne, G.A., Mitrovica, J.X., *Geophysical journal international*, Apr. 1998, 133(1), p.1-19, 38 refs. Pleistocene, Sea level, Glacial geology, Isostasy, Viscoelasticity, Mathematical models, Forecasting

## 53-108

**Primary platinum-bearing copper from the Lesnaya Varaka ultramafic alkaline complex, Kola Peninsula, northwestern Russia.**

Barkov, A.Y., Tarkian, M., Laajoki, K.V.O., Gehör, S.A., *Mineralogy and petrology*, 1998, 62(1-2), p.61-72, With German summary. 47 refs. Earth crust, Subpolar regions, Magma, Geologic processes, Sediments, Minerals, Geochemistry, Rock properties, Sampling, Spectroscopy, Electron microscopy, Russia—Kola Peninsula

## 53-109

**Nationwide comparisons of hail size with WSR-88D vertically integrated liquid water thermodynamic sounding data.**

Edwards, R., Thompson, R.L., *Weather and forecasting*, June 1998, 13(2), p.277-285, 20 refs.

Precipitation (meteorology), Hail, Thunderstorms, Sounding, Hailstone structure, Spectra, Water content, Thermodynamic properties, Meteorological data, Statistical analysis, Weather forecasting, United States

## 53-110

**Enhanced hail detection algorithm for the WSR-88D.**

Witt, A., Eilts, M.D., Stumpf, G.J., Johnson, J.T., Mitchell, E.D., Thomas, K.W., *Weather and forecasting*, June 1998, 13(2), p.286-303, 38 refs.

Precipitation (meteorology), Thunderstorms, Turbulent boundary layer, Hail, Hailstone structure, Spectra, Detection, Radar echoes, Reflectivity, Weather forecasting, Mathematical models

## 53-111

**Radar "Three-body scatter spike": an operational large-hail signature.**

Lemon, L.R., *Weather and forecasting*, June 1998, 13(2), p.327-340, 24 refs.

Precipitation (meteorology), Thunderstorms, Atmospheric disturbances, Hail, Detection, Sounding, Radar echoes, Scattering, Velocity, Reflectivity, Imaging, Theories

## 53-112

**Sticky, dirty snow.**

Cutlip, K., *Weatherwise*, May-June 1998, 51(3), p.11-12.

Climatology, Snow physics, Air pollution, Snowflakes, Snow composition, Scavenging, Adsorption, Snow air interface, Impurities, Chemical analysis, Laboratory techniques

## 53-113

**Glazed over.**

Grenci, L., *Weatherwise*, May-June 1998, 51(3), p.50-51.

Climatology, Weather observations, Ice storms, Glaze, Meteorological factors, United States

## 53-114

**Two new species of isopod crustaceans of the genus *Neoarcturus* (Isopoda, Valvifera) from the western Antarctic.**

Kusakin, O.G., Vasina, G.S., *Russian journal of marine biology*, Mar.-Apr. 1998, 24(2), p.84-90, Translated from *Biologiya moria*. 7 refs.

Marine biology, Ocean bottom, Biomass, Sampling, Classifications, Structural analysis, —Scotia Sea

## 53-115

**Solid electrical conductivity (ECM) from four Agassiz ice cores, Ellesmere Island NWT, Canada: high-resolution signal and noise over the last millennium and low resolution over the Holocene.** Zheng, J.C., Kudo, A., Fisher, D.A., Blake, E.W., Gerasimoff, M., *Holocene*, July 1998, 8(4), p.413-421, 20 refs.

Climatology, Volcanic ash, Fallout, Ice sheets, Ice cores, Ice composition, Chemical properties, Drill core analysis, Electrical measurement, Statistical analysis, Geochronology, Accuracy, Canada—Northwest Territories—Ellesmere Island

## 53-116

**Deglaciation, shore displacement and early-Holocene vegetation history in eastern middle Sweden.**

Wastegård, S., Björck, J., Risberg, J., *Holocene*, July 1998, 8(4), p.433-441, 63 refs.

Geomorphology, Subpolar regions, Geological surveys, Glacier oscillation, Quaternary deposits, Lacustrine deposits, Drill core analysis, Lithology, Sea level, Shoreline modification, Palynology, Radioactive age determination, Geochronology, Sweden—Närke

## 53-117

**High-resolution palaeoclimatic records for the last millennium: interpretation, integration and comparison with General Circulation Model control-run temperatures.**

Jones, P.D., Briffa, K.R., Barnett, T.P., Tett, S.F.B., *Holocene*, July 1998, 8(4), p.455-471, Refs. p.469-471.

Paleoclimatology, Climatic changes, Air temperature, Periodic variations, Quaternary deposits, Sediments, Sampling, Models, Geochronology, Statistical analysis, Correlation, Accuracy

## 53-118

**Late-Holocene (<2600 BP) glacial advance in the south-central Andes (29°S), northern Chile.**

Grosjean, M., Geyh, M.A., Messerli, B., Schreier, H., Veit, H., *Holocene*, July 1998, 8(4), p.473-479, 36 refs.

Paleoclimatology, Climatic changes, Precipitation (meteorology), Moisture transfer, Glacial geology, Quaternary deposits, Moraines, Mountain glaciers, Glacier oscillation, Soil formation, Radioactive age determination, Geochronology, Chile—Andes

## 53-119

**Historical fluctuations of the Gualas and Reicher glaciers, North Patagonian Icefield, Chile.**

Harrison, S., Winchester, V., *Holocene*, July 1998, 8(4), p.481-485, 12 refs.

Paleoclimatology, Climatic changes, Geomorphology, Precipitation (meteorology), Glacier oscillation, Glacial meteorology, Sediments, Paleocology, Age determination, Correlation, Chile—Patagonia

## 53-120

**Results of complex studies of cumulus congestus features after modification.**

Dovgaliuk, I.U.A., et al, *Russian meteorology and hydrology*, 1997, No.11, p.13-19, Translated from *Meteorologiya i gidrologiya*. 10 refs.

Climatology, Cloud physics, Cloud seeding, Artificial nucleation, Ice formation, Cloud electrification, Electric fields, Heterogeneous nucleation, Weather modification, Sounding, Mathematical models

## 53-121

**Calculation of suspended and bed load dynamics in the southeastern Barents Sea.**

Lonin, S.A., Lapshin, V.B., Borisov, E.V., *Russian meteorology and hydrology*, 1997, No.11, p.66-72, Translated from *Meteorologiya i gidrologiya*. 9 refs. Oceanography, Subpolar regions, Waste disposal, Suspended sediments, Sediment transport, Turbulent diffusion, Ocean bottom, Environmental impact, Mathematical models, Hydrodynamics, Barents Sea

## 53-122

**Long-term variability of ice phenomena dates on rivers as an indicator of climate variations in transitional seasons.**

Ginzburg, B.M., Soldatova, I.I., *Russian meteorology and hydrology*, 1997, No.11, p.73-78, Translated from *Meteorologiya i gidrologiya*. 10 refs.

Climatology, Climatic changes, Global warming, River ice, Freezeup, Ice breakup, Seasonal variations, Statistical analysis, Correlation, Russia

## 53-123

**Electrification of convective clouds over northwestern Russia.**

Ponomarev, I.U.F., Sinkevich, A.A., *Russian meteorology and hydrology*, 1997, No.6, p.56-61, Translated from *Meteorologiya i gidrologiya*. 15 refs.

Cloud physics, Aerial surveys, Cloud electrification, Electric fields, Cloud seeding, Artificial nucleation, Ice formation, Heterogeneous nucleation, Electrical measurement, Russia

## 53-124

**Variations of air temperature and precipitation in the Russian tundra.**

Zukert, N.V., Zamolodchikov, D.G., *Russian meteorology and hydrology*, 1997, No.8, p.33-38, Translated from *Meteorologiya i gidrologiya*. 19 refs.

Climatology, Climatic changes, Tundra climate, Ecosystems, Air temperature, Precipitation (meteorology), Seasonal variations, Carbon dioxide, Sampling, Statistical analysis, Russia

## 53-125

**Seasonal variability of freshwater balance components in the North Atlantic.**

Dobroljubov, S.A., Logunov, O.G., *Russian meteorology and hydrology*, 1997, No.8, p.39-47, Translated from *Meteorologiya i gidrologiya*. 21 refs.

Oceanography, Ocean currents, Subpolar regions, Water transport, Water balance, Estuaries, Runoff, Precipitation (meteorology), Hydrography, Statistical analysis, Seasonal variations, North Atlantic Ocean

## 53-126

**Conditions and forecast of ice motions during the Neva freezing.**

Buzin, V.A., *Russian meteorology and hydrology*, 1997, No.8, p.67-72, Translated from *Meteorologiya i gidrologiya*. 7 refs.

River ice, River flow, Water level, Ice mechanics, Freezeup, Drift, Ice floes, Ice cover thickness, Ice forecasting, Mathematical models, Ice cover effect, Russia—Neva River

## 53-127

**<sup>129</sup>I and <sup>137</sup>Cs tracer measurements in the Arctic Ocean.**

Smith, J.N., Ellis, K.M., Kilius, L.R., *Deep sea research I*, June 1998, 45(6), p.959-984, Refs. p.983-984.

Oceanography, Water pollution, Hydrography, Water transport, Oceanographic surveys, Water chemistry, Radioactive wastes, Radioactive isotopes, Fallout, Environmental tests, Sampling, Arctic Ocean, Barents Sea, Russia—Kara Sea



53-128

**Incidence of glacier surging in Svalbard: evidence from multivariate statistics.**

Jiskoot, H., Boyle, P., Murray, T., *Computers & geosciences*, May 1998, 24(4), p.387-399, 30 refs.

Glacial hydrology, Glacial geology, Glacier surges, Glacier oscillation, Ice mechanics, Ice solid interface, Bedrock, Lithology, Topographic effects, Classifications, Statistical analysis, Norway—Svalbard

53-129

**Generation of Icelandic rhyolites: silicic lavas from the Torfajökull central volcano.**

Gunnarsson, B., Marsh, B.D., Taylor, H.P., Jr., *Journal of volcanology and geothermal research*, July 1998, 83(1-2), p.1-45, Refs. p.41-45.

Earth crust, Subpolar regions, Volcanoes, Geologic processes, Magma, Geothermal thawing, Rock properties, Geochemistry, Lithology, Iceland—Torfajökull

53-130

**Volcanogenic sedimentation in the Iceland Basin: influence of subaerial and subglacial eruptions.**

Lacasse, C., Carey, S., Sigurdsson, H., *Journal of volcanology and geothermal research*, July 1998, 83(1-2), p.47-73, Refs. p.71-73.

Pleistocene, Marine geology, Subpolar regions, Volcanoes, Fallout, Magma, Lake bursts, Ocean currents, Turbidity, Sedimentation, Stratigraphy, Drill core analysis, Iceland

53-131

**Palaeoproductivity at the antarctic continental margin: opal and barium records for the last 400 ka.**

Bonn, W.J., Gingele, F.X., Grobe, H., Mackensen, A., Fütterer, D.K., *Palaeogeography, palaeoclimatology, palaeoecology*, May 1998, 139(3-4), p.195-211, Refs. p.208-211.

Pleistocene, Oceanography, Sedimentation, Biomass, Paleocology, Geochemical cycles, Lithology, Stratigraphy, Sea ice distribution, Drill core analysis, Isotope analysis, Geochronology, Antarctica—Weddell Sea

53-132

**Implications of late Eocene to early Miocene clay mineral assemblages in McMurdo Sound (Ross Sea, Antarctica) on paleoclimate and ice dynamics.**

Ehrmann, W., *Palaeogeography, palaeoclimatology, palaeoecology*, May 1998, 139(3-4), p.213-231, Refs. p.229-231.

Pleistocene, Paleoclimatology, Glacier oscillation, Marine geology, Clay minerals, Sedimentation, Marine deposits, Weathering, Drill core analysis, Lithology, Stratigraphy, Geochronology, Antarctica—McMurdo Sound

53-133

**Dynamic pressure rise in the drying chamber as a remote sensing method for monitoring the temperature of the product during the primary drying stage of freeze drying.**

Liapis, A.I., Sadikoglu, H., *Drying technology*, July 1998, 16(6), p.1153-1171, 19 refs.

Freeze drying, Ice physics, Mass transfer, Cold chambers, Water vapor, Vapor pressure, Porous materials, Ice solid interface, Ice temperature, Surface temperature, Profiles, Forecasting, Mathematical models

53-134

**Re-assessment of high elevation treeline positions and their explanation.**

Körner, C., *Oecologia*, July 1998, 115(4), p.445-459, Refs. p.456-459.

Climatology, Alpine landscapes, Forest lines, Snow line, Altitude, Forest canopy, Heat flux, Soil temperature, Growth, Temperature effects, Theories

53-135

**Optimal control of the primary and secondary drying stages of bulk solution freeze drying in trays.**

Sadikoglu, H., Liapis, A.I., Crosser, O.K., *Drying technology*, Mar.-May 1998, 16(3-5), p.399-431, 18 refs.

Freeze drying, Porous materials, Frozen liquids, Mass transfer, Vapor transfer, Ice sublimation, Hygroscopic water, Mathematical models, Ice vapor interface, Thermal diffusion, Boundary value problems

53-136

**Energetics of hydrogen ordering in ice.**

Lekner, J., *Physica B*, July 1998, 252(1-2), p.149-159, 24 refs.

Ice physics, Molecular structure, Cubic ice, Ice electrical properties, Static electricity, Charge transfer, Molecular energy levels, Hydrogen bonds, Proton transport, Analysis (mathematics)

53-137

**Role of extensional instability in creating Ganymede grooved terrain: insights from Galileo high-resolution stereo imaging.**

Collins, G.C., Head, J.W., III, Pappalardo, R.T., *Geophysical research letters*, Feb. 1, 1998, 25(3), p.233-236, 19 refs.

Extraterrestrial ice, Ice mechanics, Ice deformation, Regolith, Tectonics, Satellites (natural), Spaceborne photography, Stereophotography, Topographic features, Stress concentration

53-138

**Recent results with an MF radar at McMurdo, Antarctica: characteristics and variability of motions near 12-hour period in the mesosphere.**

Fritts, D.C., Riggins, D.M., Balsley, B.B., Stockwell, R.G., *Geophysical research letters*, Feb. 1, 1998, 25(3), p.297-300, 12 refs.

Climatology, Wind (meteorology), Polar atmospheres, Atmospheric boundary layer, Gravity waves, Resonance, Diurnal variations, Radar echoes, Spectroscopy, Antarctica—McMurdo Station

53-139

**Interhemispheric comparison of ozone mini-hole climatologies.**

James, P.M., *Geophysical research letters*, Feb. 1, 1998, 25(3), p.301-304, 11 refs.

Climatology, Polar atmospheres, Atmospheric composition, Degradation, Ozone, Radiometry, Seasonal variations, Correlation

53-140

**Estimate of the effect of unresolved structure on modeled ozone loss from aircraft observations of ClO.**

Sparling, L.C., Douglass, A.R., Schoeberl, M.R., *Geophysical research letters*, Feb. 1, 1998, 25(3), p.305-308, 10 refs.

Climatology, Polar atmospheres, Atmospheric composition, Aerosols, Ozone, Degradation, Photochemical reactions, Aerial surveys, Models

53-141

**Depolarization of lidar returns by small ice crystals: an application to contrails.**

Mishchenko, M.I., Sassen, K., *Geophysical research letters*, Feb. 1, 1998, 25(3), p.309-312, 21 refs.

Climatology, Cloud physics, Aerosols, Condensation trails, Ice crystal optics, Ice crystal size, Ice crystal structure, Lidar, Polarization (waves), Particle size distribution

53-142

**Contrail formation and impacts on aerosol properties in aircraft plumes: effects of fuel sulfur content.**

Yu, F.Q., Turco, R.P., *Geophysical research letters*, Feb. 1, 1998, 25(3), p.313-316, 24 refs.

Climatology, Cloud physics, Condensation trails, Condensation nuclei, Ice formation, Heterogeneous nucleation, Scavenging, Aerosols, Fuels, Chemical composition

53-143

**High resolution climate record from the Beijing area during the last glacial-interglacial cycle.**

Liu, X.M., Hesse, P., Liu, T.S., Bloemendal, J., *Geophysical research letters*, Feb. 1, 1998, 25(3), p.349-352, 30 refs.

Paleoclimatology, Climatic changes, Loess, Soil formation, Remanent magnetism, Geomagnetism, Ice sheets, Ice cores, Stratigraphy, Correlation, Sampling, China—Beijing, Greenland, Antarctica—Vostok Station

53-144

**Preservation of glaciochemical timer-series in snow and ice from the Penny Ice Cap, Baffin Island.**

Grumet, N.S., Wake, C.P., Zielinski, G.A., Fisher, D., Koerner, R., Jacobs, J.D., *Geophysical research letters*, Feb. 1, 1998, 25(3), p.357-360, 15 refs.

Climatology, Glacial hydrology, Ice cores, Ice composition, Snow composition, Snowmelt, Meltwater, Seepage, Ion density (concentration), Sampling, Periodic variations, Canada—Northwest Territories—Baffin Island

53-145

**Relay protection of rectified installations for ice-melting with a direct current.**

Levchenko, I.I., Alliluev, A.A., Zasyupkin, A.S., *Electrical technology*, 1997, No.3, p.135-141, Translated from *Elektrichestvo*. English edition published Dec. 1997. 2 refs.

Power line icing, Ice control, Ice melting, Electric equipment, Electrical resistivity, Charge transfer, Protection

53-146

**Methods of switching-off a faulty rectified unit in an ice-deposit melting installation.**

Levchenko, I.I., Alliluev, A.A., Zasyupkin, A.S., *Electrical technology*, 1997, No.4, p.77-84, Translated from *Elektrichestvo*. English edition published April 1998. 3 refs.

Power line icing, Ice control, Ice melting, Electric equipment, Electrical resistivity, Charge transfer, Countermeasures

53-147

**Current level of contamination of bottom deposits in Pechenga Bay, Barents Sea with chlorinate and petroleum hydrocarbons.**

Matishov, G.G., Savinov, V.M., Dahle, S., Savinova, T.N., Killie, B., *Doklady biological sciences*, July-Aug. 1998, Vol.361, p.355-357, Translated from *Doklady Akademii nauk*. 14 refs.

Oceanography, Subpolar regions, Air pollution, Water pollution, Bottom sediment, Aerosols, Environmental tests, Hydrocarbons, Chemical analysis, Sampling, Barents Sea

53-148

**Content of pollutants in the snow cover of the Kara Sea and the Sea of Pechora.**

Matishov, G.G., Golubeva, N.I., Afanas'ev, M.I., Butseva, L.V., *Doklady biological sciences*, July-Aug. 1998, Vol.361, p.386-389, Translated from *Doklady Akademii nauk*. 8 refs.

Oceanography, Climatology, Subpolar regions, Air pollution, Aerosols, Metals, Snow cover, Snow impurities, Snow composition, Snow ice interface, Sampling, Environmental tests, Russia—Kara Sea, Russia—Pechora Sea

53-149

**Analysis of the toxicity of drilling fluids used in oil and gas prospecting on the arctic sea shelf.**

Matishov, G.G., Shaparkovskii, I.A., Muraveiko, V.M., *Doklady biological sciences*, July-Aug. 1998, Vol.361, p.390-393, Translated from *Doklady Akademii nauk*. 6 refs.

Oceanography, Subpolar regions, Marine biology, Ecosystems, Water pollution, Hydrocarbons, Drilling fluids, Environmental tests, Sampling, Environmental protection, Barents Sea



## 53-150

**Fall contour ripping increases water infiltration into frozen soil.**

Pikul, J.L., Jr., Aase, J.K., *Soil Science Society of America Journal*, July-Aug. 1998, 62(4), p.1017-1024, 30 refs.

Frozen ground mechanics, Soil erosion, Surface structure, Topographic features, Modification, Freeze thaw cycles, Soil water, Seepage, Runoff, Soil stabilization, Mechanical tests

## 53-151

**Forest peatland drainage and subsidence affect soil water retention and transport properties in an Alberta peatland.**

Silins, U., Rothwell, R.L., *Soil Science Society of America Journal*, July-Aug. 1998, 62(4), p.1048-1056, 51 refs.

Forest ecosystems, Hydrology, Peat, Soil water, Water table, Water retention, Flow control, Subsidence, Subsurface drainage, Frozen ground chemistry, Drill core analysis, Sampling, Canada—Alberta

## 53-152

**Nitrous oxide emissions from agricultural soils of the boreal and parkland regions of Alberta.**

Lemke, R.L., Izaurralde, R.C., Malhi, S.S., Arshad, M.A., Nyborg, M., *Soil Science Society of America Journal*, July-Aug. 1998, 62(4), p.1096-1102, 33 refs.

Soil physics, Climatology, Soil air interface, Vapor transfer, Aerosols, Seasonal freeze thaw, Snowmelt, Frozen ground chemistry, Clay soils, Seasonal variations, Environmental tests, Statistical analysis, Canada—Alberta

## 53-153

**Texture control of freeze-dried resorcinol-formaldehyde gels.**

Kocklenberg, R., et al, *Journal of non-crystalline solids*, Apr. 1998, Vol.225, International Symposium on Aerogels, 5th, Montpellier, France, Sep. 8-10, 1997. Proceedings, p.8-13, 12 refs.

Ice physics, Ice sublimation, Freeze drying, Frozen liquids, Hydrocarbons, Porosity, Microstructure, Ice crystal growth, Ice vapor interface, X ray analysis, Indexes (ratios)

## 53-154

**Simulations of two last glacial maximum ocean states.**

Bigg, G.R., Wadley, M.R., Stevens, D.P., Johnson, J.A., *Paleoceanography*, Aug. 1998, 13(4), p.340-351, 62 refs.

Paleoclimatology, Ice age theory, Oceanography, Ocean currents, Turbulent diffusion, Meltwater, Icebergs, Drift, Air ice water interaction, Models, Simulation, Thermodynamics

## 53-155

**Sequence of events surrounding Termination II and their implications for the cause of glacial-interglacial CO<sub>2</sub> changes.**

Broecker, W.S., Henderson, G.M., *Paleoceanography*, Aug. 1998, 13(4), p.352-364, Refs. p.362-364. Paleoclimatology, Oceanography, Ice age theory, Climatic changes, Atmospheric composition, Carbon dioxide, Aerosols, Geochemical cycles, Ice sheets, Ice cores, Sea level, Geochronology, Antarctica—Vostok Station

## 53-156

**New aspects of organic carbon deposition and its paleoceanographic implications along the northern Barents Sea margin during the last 30,000 years.**

Knies, J., Stein, R., *Paleoceanography*, Aug. 1998, 13(4), p.384-394, 80 refs.

Pleistocene, Paleoclimatology, Oceanography, Ice age theory, Subpolar regions, Marine deposits, Sedimentation, Glacial erosion, Biomass, Geochemical cycles, Stratigraphy, Drill core analysis, Arctic Ocean

## 53-157

**Ocean, ice, and atmosphere: Interactions at the antarctic continental margin.**

Jacobs, S.S., ed, Weiss, R.F., ed, *American Geophysical Union. Antarctic research series*, 1998, Vol.75, 380p., Refs. passim. For individual papers see 53-158 through 53-177.

Oceanographic surveys, Ocean currents, Water transport, Sea water, Water temperature, Salinity, Air ice water interaction, Ice shelves, Ice water interface, Meltwater, Subglacial observations, Antarctica

## 53-158

**Water masses and mixing near the Antarctic Slope Front.**

Whitworth, T., III, Orsi, A.H., Kim, S.J., Nowlin, W.D., Jr., *American Geophysical Union. Antarctic research series*, 1998, Vol.75, Ocean, ice, and atmosphere: interactions at the antarctic continental margin. Edited by S.S. Jacobs and R.F. Weiss, p.1-27, 66 refs.

Oceanographic surveys, Ocean currents, Water transport, Sea water, Water temperature, Salinity

## 53-159

**Observations and modelling of antarctic downslope flows: a review.**

Baines, P.G., Condie, S., *American Geophysical Union. Antarctic research series*, 1998, Vol.75, Ocean, ice, and atmosphere: interactions at the antarctic continental margin. Edited by S.S. Jacobs and R.F. Weiss, p.29-49, 95 refs.

Oceanographic surveys, Ocean currents, Water transport, Sea water, Water temperature, Salinity, Antarctica—Weddell Sea

## 53-160

**Interaction of the katabatic-land-sea wind system of Antarctica with the high latitude southern ocean.**

Goodrick, S.L., McNider, R.T., Schroeder, W.W., *American Geophysical Union. Antarctic research series*, 1998, Vol.75, Ocean, ice, and atmosphere: interactions at the antarctic continental margin. Edited by S.S. Jacobs and R.F. Weiss, p.51-65, 53 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Ocean currents, Wind (meteorology), Wind pressure, Air ice water interaction, Drift, Polynyas, Ice models, Computerized simulation

## 53-161

**Thermohaline variability of the waters overlying the west Antarctic Peninsula continental shelf.**

Hofmann, E.E., Klinck, J.M., *American Geophysical Union. Antarctic research series*, 1998, Vol.75, Ocean, ice, and atmosphere: interactions at the antarctic continental margin. Edited by S.S. Jacobs and R.F. Weiss, p.67-81, 33 refs.

Oceanographic surveys, Ocean currents, Water transport, Sea water, Water temperature, Surface temperature, Salinity, Antarctica—Antarctic Peninsula, Antarctica—Bransfield Strait

## 53-162

**Oceanic erosion of a floating antarctic glacier in the Amundsen Sea.**

Hellmer, H.H., Jacobs, S.S., Jenkins, A., *American Geophysical Union. Antarctic research series*, 1998, Vol.75, Ocean, ice, and atmosphere: interactions at the antarctic continental margin. Edited by S.S. Jacobs and R.F. Weiss, p.83-99, 59 refs.

Glacier tongues, Ice shelves, Calving, Glacier mass balance, Glacier oscillation, Glacier melting, Meltwater, Ice bottom surface, Ice water interface, Ocean currents, Sea water, Water temperature, Salinity, Antarctica—Pine Island Glacier

## 53-163

**Winter atmospheric forcing of the Ross Sea Polynya.**

Bromwich, D.H., Liu, Z., Rogers, A.N., Van Woert, M.L., *American Geophysical Union. Antarctic research series*, 1998, Vol.75, Ocean, ice, and atmosphere: interactions at the antarctic continental margin. Edited by S.S. Jacobs and R.F. Weiss, p.101-133, 43 refs.

Sea ice distribution, Ice conditions, Polynyas, Air ice water interaction, Polar atmospheres, Marine atmospheres, Atmospheric pressure, Atmospheric disturbances, Wind velocity, Wind factors, Antarctica—Ross Sea

## 53-164

**Interannual ocean and sea ice variability in the Ross Sea.**

Jacobs, S.S., Giulivi, C.F., *American Geophysical Union. Antarctic research series*, 1998, Vol.75, Ocean, ice, and atmosphere: interactions at the antarctic continental margin. Edited by S.S. Jacobs and R.F. Weiss, p.135-150, 79 refs.

Ocean currents, Water transport, Sea water, Water temperature, Salinity, Air ice water interaction, Sea ice distribution, Ice conditions, Ice edge, Drift, Antarctica—Ross Sea

## 53-165

**On the origin and influence of Adélie Land Bottom Water.**

Rintoul, S.R., *American Geophysical Union. Antarctic research series*, 1998, Vol.75, Ocean, ice, and atmosphere: interactions at the antarctic continental margin. Edited by S.S. Jacobs and R.F. Weiss, p.151-171, 59 refs.

Oceanographic surveys, Ocean currents, Water transport, Sea water, Water temperature, Salinity, Water chemistry, Oxygen, Antarctica—Adélie Coast

## 53-166

**Ocean-ice shelf interaction and possible bottom water formation in Prydz Bay, Antarctica.**

Wong, A.P.S., Bindoff, N.L., Forbes, A., *American Geophysical Union. Antarctic research series*, 1998, Vol.75, Ocean, ice, and atmosphere: interactions at the antarctic continental margin. Edited by S.S. Jacobs and R.F. Weiss, p.173-187, 26 refs.

Oceanographic surveys, Ocean currents, Water transport, Sea water, Water temperature, Salinity, Ice shelves, Ice water interface, Meltwater, Antarctica—Amery Ice Shelf, Antarctica—Prydz Bay

## 53-167

**Acoustical techniques in antarctic oceanography.**

Penrose, J.D., *American Geophysical Union. Antarctic research series*, 1998, Vol.75, Ocean, ice, and atmosphere: interactions at the antarctic continental margin. Edited by S.S. Jacobs and R.F. Weiss, p.189-202, 63 refs.

Oceanographic surveys, Underwater acoustics, Ice water interface, Ice acoustics, Ice detection, Subglacial observations, Ocean currents, Bottom topography, Marine biology, Biomass

## 53-168

**Transport and water masses of the Antarctic Slope Front system in the eastern Weddell Sea.**

Heywood, K.J., Locarnini, R.A., Frew, R.D., Dennis, P.F., King, B.A., *American Geophysical Union. Antarctic research series*, 1998, Vol.75, Ocean, ice, and atmosphere: interactions at the antarctic continental margin. Edited by S.S. Jacobs and R.F. Weiss, p.203-214, 34 refs.

Oceanographic surveys, Ocean currents, Water transport, Sea water, Water temperature, Water chemistry, Salinity, Ice shelves, Ice water interface, Glacier melting, Meltwater, Antarctica—Weddell Sea

53-169

**Western Weddell Sea thermohaline stratification.**  
Gordon, A.L., *American Geophysical Union. Antarctic research series*, 1998, Vol.75, Ocean, ice, and atmosphere: interactions at the antarctic continental margin. Edited by S.S. Jacobs and R.F. Weiss, p.215-240, 78 refs.

Oceanographic surveys, Ocean currents, Water transport, Sea water, Water temperature, Water chemistry, Salinity, Ice shelves, Glacier melting, Ice water interface, Meltwater, Drift stations, Antarctica—Weddell Sea

53-170

**Transient tracer observations from the western Weddell Sea during the drift and recovery of Ice Station Weddell.**

Mensch, M., Smethie, W.M., Jr., Schlosser, P., Wepernig, R., Bayer, R., *American Geophysical Union. Antarctic research series*, 1998, Vol.75, Ocean, ice, and atmosphere: interactions at the antarctic continental margin. Edited by S.S. Jacobs and R.F. Weiss, p.241-256, 60 refs.

Oceanographic surveys, Ocean currents, Water transport, Sea water, Water temperature, Water chemistry, Salinity, Ice shelves, Ice water interface, Meltwater, Drift stations, Antarctica—Weddell Sea

53-171

**Interactions between floating ice platelets and ocean water in the southern Weddell Sea.**

Bombosch, A., Jenkins, A., Sandhäger, H., *American Geophysical Union. Antarctic research series*, 1998, Vol.75, Ocean, ice, and atmosphere: interactions at the antarctic continental margin. Edited by S.S. Jacobs and R.F. Weiss, p.257-266, 35 refs.

Sea water freezing, Frazil ice, Ice formation, Ice melting, Ice shelves, Ice water interface, Sea water, Water temperature, Salinity, Ice volume, Ice models, Mathematical models, Antarctica—Weddell Sea

53-172

**Impact of grounded icebergs on the hydrographic conditions near the Filchner Ice Shelf.**

Nøst, O.A., Østerhus, S., *American Geophysical Union. Antarctic research series*, 1998, Vol.75, Ocean, ice, and atmosphere: interactions at the antarctic continental margin. Edited by S.S. Jacobs and R.F. Weiss, p.267-284, 33 refs.

Ice shelves, Icebergs, Grounded ice, Drift, Ice water interface, Oceanographic surveys, Ocean currents, Water transport, Sea water, Water temperature, Salinity, Antarctica—Filchner Ice Shelf

53-173

**Physical controls on ocean circulation beneath ice shelves revealed by numerical models.**

Williams, M.J.M., Jenkins, A., Determann, J., *American Geophysical Union. Antarctic research series*, 1998, Vol.75, Ocean, ice, and atmosphere: interactions at the antarctic continental margin. Edited by S.S. Jacobs and R.F. Weiss, p.285-299, 62 refs.

Ice shelves, Ice bottom surface, Ice water interface, Ice melting, Ocean currents, Tides, Water transport, Sea water, Water temperature, Salinity, Ice models, Computerized simulation

53-174

**Ocean circulation beneath the western Ronne Ice Shelf, as derived from in situ measurements of water currents and properties.**

Nicholls, K.W., Makinson, K., *American Geophysical Union. Antarctic research series*, 1998, Vol.75, Ocean, ice, and atmosphere: interactions at the antarctic continental margin. Edited by S.S. Jacobs and R.F. Weiss, p.301-318, 38 refs.

Oceanographic surveys, Ocean currents, Water transport, Sea water, Water temperature, Salinity, Ice shelves, Ice bottom surface, Ice water interface, Ice melting, Subglacial observations, Antarctica—Ronne Ice Shelf

53-175

**Marine ice beneath Filchner Ice Shelf: evidence from a multi-disciplinary approach.**

Grosfeld, K., Hellmer, H.H., Jonas, M., Sandhäger, H., Schulte, M., Vaughan, D.G., *American Geophysical Union. Antarctic research series*, 1998, Vol.75, Ocean, ice, and atmosphere: interactions at the antarctic continental margin. Edited by S.S. Jacobs and R.F. Weiss, p.319-339, 94 refs.

Ice shelves, Ice cover thickness, Ice bottom surface, Ice heat flux, Ice water interface, Ice melting, Sea water freezing, Ice formation, Ice growth, Subglacial observations, Radio echo soundings, Antarctica—Filchner Ice Shelf

53-176

**Tides in the Weddell Sea.**

Robertson, R., Padman, L., Egbert, G.D., *American Geophysical Union. Antarctic research series*, 1998, Vol.75, Ocean, ice, and atmosphere: interactions at the antarctic continental margin. Edited by S.S. Jacobs and R.F. Weiss, p.341-369, 84 refs.

Oceanographic surveys, Tides, Tidal currents, Ice shelves, Ice water interface, Ice cover effect, Subglacial observations, Computerized simulation, Antarctica—Weddell Sea

53-177

**New bathymetric charts of the Weddell Sea: AWI BCWS.**

Schenke, H.W., Dijkstra, S., Niederjasper, F., Schöne, T., Hinze, H., Hoppman, B., *American Geophysical Union. Antarctic research series*, 1998, Vol.75, Ocean, ice, and atmosphere: interactions at the antarctic continental margin. Edited by S.S. Jacobs and R.F. Weiss, p.371-380, 37 refs.

Oceanographic surveys, Ocean bottom, Bottom topography, Sounding, Subglacial observations, Topographic maps, Data processing, Antarctica—Weddell Sea

53-178

**Geotechnical study of the runway at the Eduardo Frei Station. [Análisis geotécnico preliminar del umbral sur del aeródromo de Base Presidente Frei, isla Rey Jorge, Antártica]**

Villanueva López, V., *Boletín Antártico Chileno*, Nov. 1997, 16(2), p.11-16, In Spanish with English summary. 5 refs.

Runways, Aircraft landing areas, Climatic changes, Soil air interface, Surface drainage, Soil trafficability, Soil erosion, Thaw weakening, Antarctica—Eduardo Frei Station

53-179

**Dealing with marine plastic wastes in areas not covered by the Antarctic Treaty. [Sugerencias para minimizar la contaminación marítima con desechos plásticos de fuera del Área del Tratado Antártico]**

Torres N., D., *Boletín Antártico Chileno*, May 1997, 16(1), p.13-17, In Spanish with English summary. 18 refs.

Water pollution, Plastics, Waste disposal, Environmental protection, Marine biology, Legislation

53-180

**Plasma insuline and growth hormone during antarctic residence.**

Malhotra, A.S., Pal, K., Prasad, R., Bajaj, A.C., Kumar, R., Sawhney, R.C., *Japanese journal of physiology*, Apr. 1998, 48(2), p.167-169, 11 refs.

Physiological effects, Cold exposure, Chemical properties, Antarctica

53-181

**Arthrobacter, Brachybacterium and Planococcus isolates identified from Antarctic sea ice brine. Description of *Planococcus mcmeekinii*, sp. nov.**

Junge, K., Gosink, J.J., Hoppe, H.G., Staley, J.T., *Systematic and applied microbiology*, June 1998, 21(2), p.306-314, Refs. p.313-314.

Marine biology, Sea ice, Bacteria, Brines, Microbiology, Antarctica

53-182

**Interaction of microwaves with sea ice.**

Golden, K.M., IMA Volumes in Mathematics and its Applications, No.96. Wave propagation in complex media. Edited by G. Papanicolaou, New York, Springer-Verlag, 1997, p.75-94, 27 refs.

DLC QA927.W3784 1998

Sea ice, Pack ice, Ice surveys, Remote sensing, Microwaves, Backscattering, Ice optics, Ice microstructure, Porosity, Dielectric properties, Mathematical models

53-183

**Three-dimensional model simulation of the impact of Mt. Pinatubo aerosol on the antarctic ozone hole.**

Knight, J.R., Austin, J., Grainger, R.G., Lambert, A., *Royal Meteorological Society. Quarterly journal A*, July 1998, 124(549), p.1527-1558, Refs. p.1555-1558.

Climatology, Polar atmospheres, Cloud physics, Polar stratospheric clouds, Heterogeneous nucleation, Ozone, Aerosols, Volcanic ash, Photochemical reactions, Degradation, Models, Simulation, Environmental impact, Antarctica

53-184

**Snow scavenging of polychlorinated biphenyls and polycyclic aromatic hydrocarbons in Minnesota.**

Franz, T.P., Eisenreich, S.J., *Environmental science & technology*, June 15, 1998, 32(12), p.1771-1778, 82 refs.

Climatology, Precipitation (meteorology), Air pollution, Hydrocarbons, Aerosols, Particles, Falling snow, Scavenging, Snow air interface, Sampling, Statistical analysis, United States—Minnesota

53-185

**Evaporation of intercepted snow: measurement and modelling.**

Lundberg, A., Calder, I., Harding, R., *Journal of hydrology*, May 1998, 206(3-4), p. 151-163, 25 refs. Snow hydrology, Forest canopy, Precipitation (meteorology), Snowfall, Interception, Snow evaporation, Snow air interface, Water balance, Snow water equivalent, Gamma irradiation, Scintillation, Mathematical models, United Kingdom—Scotland

53-186

**Organic matter sources and early diagenetic alterations in arctic surface sediments (Lena River delta and Laptev Sea, eastern Siberia). II. Molecular and isotopic studies of hydrocarbons.**

Zegouagh, Y., Derenne, S., Largeau, C., Bardoux, G., Mariotti, A., *Organic geochemistry*, 1998, 28(9-10), p.571-583, Refs. p.580-583.

Subpolar regions, Oceanography, Water chemistry, Hydrocarbons, Geochemistry, Sediments, Deltas, Marine deposits, Spectroscopy, Carbon isotopes, Isotope analysis, Origin, Environmental tests, Russia—Siberia, Russia—Laptev Sea, Russia—Lena River

53-187

**Biodegradation of aircraft deicing fluids in an upflow anaerobic sludge blanket (UASB) reactor.**

Darlington, C., Kennedy, K.J., *Journal of environmental science and health*, Apr. 1998, A33(3), p.339-351, 10 refs.

Aircraft icing, Ice removal, Antifreezes, Runoff, Waste disposal, Sludges, Water treatment, Microbiology, Decomposition, Environmental protection

53-188

**Resonance interactions of waves in an ice channel.**

Marchenko, A.V., *Journal of applied mathematics and mechanics*, May 1998, 61(6), p.931-940, Translated from Prikladnaia matematika i mekhanika. 11 refs.

Hydrodynamics, Ships, Velocity, Channels (waterways), River ice, Liquid solid interfaces, Ice water interface, Wave propagation, Gravity waves, Oscillations, Resonance, Ice cover effect, Mathematical models

53-189

**Multiparameter radar observations of time evolution of convective storms: evaluation of water budgets and latent heating rates.**

Tong, H., Chandrasekar, V., Knupp, K.R., Stalker, J., *Journal of atmospheric and oceanic technology*, Oct. 1998, 15(5), p.1097-1109, 16 refs.

Precipitation (meteorology), Storms, Radar echoes, Reflectivity, Polarization (waves), Water content, Phase transformations, Ice water interface, Ice detection, Latent heat, Profiles

53-190

**Bistatic dual-polarization scattering from rain and hail at S- and C-band frequencies.**

Aydin, K., Park, S.H., Walsh, T.M., *Journal of atmospheric and oceanic technology*, Oct. 1998, 15(5), p.1110-1121, 46 refs.

Precipitation (meteorology), Hail, Raindrops, Radar echoes, Polarization (waves), Scattering, Classifications, Ice detection, Hailstone structure, Spectra, Mathematical models

53-191

**End of the present interglacial: how and when?**

Broecker, W.S., *Quaternary science reviews*, Aug. 1998, 17(8), p.689-694, 21 refs.

Pleistocene, Paleoclimatology, Climatic changes, Ocean currents, Greenhouse effect, Glacier oscillation, Atmospheric circulation, Ice air interface, Ice age theory, Ice cover effect

53-192

**Estimating changes in terrestrial vegetation and carbon storage: using palaeoecological data and models.**

Peng, C.H., Guiot, J., Van Campo, E., *Quaternary science reviews*, Aug. 1998, 17(8), p.719-735, Refs. p.731-735.

Pleistocene, Paleoclimatology, Paleoecology, Palynology, Vegetation patterns, Climatic changes, Carbon dioxide, Geochemical cycles, Forecasting, Ice age theory

53-193

**Deforming bed/debris-rich basal ice continuum and its implications for the formation of glacial landforms (flutes) and sediments (melt-out till).**

Hart, J.K., *Quaternary science reviews*, Aug. 1998, 17(8), p.737-754, Refs. p.751-754.

Pleistocene, Glacial geology, Geomorphology, Landforms, Glacier beds, Sediments, Stratification, Bottom ice, Deformation, Shear properties, Ice solid interface

53-194

**Fission-track dating of the Punta de Vacas glaciation in the Río Mendoza valley, Argentina.**

Espizua, L.E., Bigazzi, G., *Quaternary science reviews*, Aug. 1998, 17(8), p.755-760, 12 refs.

Pleistocene, Glacial geology, Glacial deposits, Glacier oscillation, Volcanic ash, Quaternary deposits, Stratigraphy, Geochronology, Radioactive age determination, Argentina

53-195

**New Interfacial stage in Poland (Augustovian) and the problem of the age of the oldest Pleistocene till.**

Ber, A., Janczyk-Kopikowa, Z., Krzyszkowski, D., *Quaternary science reviews*, Aug. 1998, 17(8), p.761-773, 60 refs.

Pleistocene, Glacial geology, Lacustrine deposits, Paleoclimatology, Paleoecology, Palynology, Boreholes, Stratigraphy, Profiles, Geochronology, Correlation, Glacial till, Poland

53-196

**Late glacial ice advances in the Strait of Magellan, southern Chile.**

McCulloch, R.D., Bentley, M.J., *Quaternary science reviews*, Aug. 1998, 17(8), p.775-787, 30 refs.

Pleistocene, Glacial geology, Geomorphology, Glacier oscillation, Quaternary deposits, Volcanic ash, Glacial lakes, Shoreline modification, Stratigraphy, Radioactive age determination, Chile—Magellan, Strait

53-197

**Localization of expression of three cold-induced genes, *btl101*, *btl4.9*, and *btl 14*, in different tissues of the crown and developing leaves of cold-acclimated cultivated barley.**

Pearce, R.S., et al, *Plant physiology*, July 1998, 117(3), p.787-795, 33 refs.

Plant physiology, Grasses, Plant tissues, Frost resistance, Cold tolerance, Acclimatization, Molecular structure, Chemical analysis, Classifications, Temperature effects

53-198

**Apoplastic sugars, fructans, fructan exohydrolase, and invertase in winter oat: responses to second-phase cold hardening.**

Livingston, D.P., III, Henson, C.A., *Plant physiology*, Jan. 1998, 116(1), p.403-408, 32 refs.

Plant physiology, Frost resistance, Grasses, Plant tissues, Chemical composition, Acclimatization, Low temperature tests, Temperature effects, Chemical analysis

53-199

**Electrochemical stability of redox active ions and molecules in liquid and frozen stoichiometric electrolytes.**

Opallo, M., *Journal of electroanalytical chemistry*, Apr. 15, 1998, 446(1-2), p.39-45, 28 refs.

Solutions, Frozen liquids, Hydrates, Ion exchange, Melting points, Electrical resistivity, Stability, Electrical measurement, Temperature effects

53-200

**Specific features of water-salt systems at low temperature.**

IAtsenko, O.B., Kotova, D.L., Selemenev, V.F., Ugai, I.A., Krysanova, T.A., *Russian journal of applied chemistry*, Dec. 1997, 70(12), p.1860-1866, Translated from Zhurnal Prikladnoi khimii. 7 refs.

Water chemistry, Ice physics, Salt ice, Solutions, Salt water, Ice water interface, Ice crystal growth, Ice melting, Phase transformations, Low temperature tests, Chemical analysis

53-201

**Mass-transfer in freezing.**

Kutsakova, V.E., Frolov, S.V., IAkovleva, M.I., *Russian journal of applied chemistry*, Dec. 1997, 70(12), p.1978-1980, Translated from Zhurnal prikladnoi khimii. 4 refs.

Mass transfer, Porous materials, Freeze drying, Ice vapor interface, Ice sublimation, Vapor pressure, Humidity, Moisture transfer, Heat transfer coefficient, Analysis (mathematics), Temperature effects

53-202

**Turbulence characteristics of the stable boundary layer over a mid-latitude glacier. Part I: a combination of katabatic and large-scale forcing.**

Smeets, C.J.P.P., Dwynerkerke, P.G., Vugts, H.F., *Boundary-layer meteorology*, Apr. 1998, 87(1), p.117-145, 42 refs.

Glacial meteorology, Atmospheric boundary layer, Ice air interface, Heat flux, Wind velocity, Turbulent flow, Velocity measurement, Surface roughness, Profiles, Sounding, Spectra, Austria—Pasterze

53-203

**Snow cover investigations—data about air quality.**

Taraškevičius, R., *Clinical reviews in analytical chemistry*, June 1998, 28(2), National Science Foundation-Funded Workshop on Environmental Chemistry—Baltic Republics. Proceedings, p.155.

Air pollution, Snow cover, Snow air interface, Snow composition, Snow impurities, Aerosols, Sampling, Environmental tests, Statistical analysis, Lithuania

53-204

**Investigation of ice-solid interfaces by force microscopy: plastic flow and adhesive forces.**

Pittenger, B., Cook, D.J., Slaughterbeck, C.R., Fain, S.C., Jr., *Journal of vacuum science & technology A*, May-June 1998, 16(3)pt.II, National Symposium of the American Vacuum Society, 44th, San Jose, CA, Oct. 20-24, 1997. Selected papers, pt.II, p.1832-1837, 19 refs.

Ice physics, Ice strength, Ice solid interface, Ice adhesion, Mechanical properties, Plastic deformation, Plastic flow, Vacuum freezing, Electrical measurement

53-205

**Modeling the cyclic loading response of sea ice.**

Cole, D.M., MP 5219, *International journal of solids and structures*, Nov. 1998, 35(31-32), p.4067-4075, 22 refs.

Sea ice, Ice models, Ice mechanics, Ice solid interface, Strain tests, Dynamic loads, Ice relaxation, Porosity, Brines, Elastic properties, Mathematical models

This paper describes a physically based model of the elastic and anelastic behavior of sea ice subjected to zero-mean-stress cyclic loading. It incorporates the influence of porosity and fabric. The work demonstrates that despite the complexity of the sea ice microstructure, it is possible to develop links between its physical and mechanical properties through careful experimentation and detailed physical properties measurements. The model accounts directly for the influence of temperature on the effective elastic properties (both through the lattice constants and through the total porosity), and on the dominant dislocations and grain boundary relaxation processes. It is shown via compliance measurements that the strength of the dislocation relaxation (and by inference the grown-in dislocation density) increases dramatically with the brine porosity. Discussion centers on the physical basis of the model and it is shown that the model predictions compare favorably with the available experimental data.

53-206

**Northwest outlet channels of Lake Agassiz, isostatic tilting and a migrating continental drainage divide, Saskatchewan, Canada.**

Fisher, T.G., Souch, C., *Geomorphology*, Oct. 1998, 25(1-2), p.57-73, 33 refs.

Geomorphology, Glacial geology, Glacial lakes, Flooding, Surface drainage, Water erosion, Quaternary deposits, Lacustrine deposits, Isostasy, Drill core analysis, Stratigraphy, Geochronology, Canada—Saskatchewan

53-207

**Bacterial extracellular ice nucleator effects on freezing of foods.**

Li, J.K., Lee, T.C., *Journal of food science*, May-June 1998, 63(3), p.375-381, 25 refs.

Microbiology, Bacteria, Porous materials, Colloids, Ice nuclei, Heterogeneous nucleation, Freezing rate, Freezing points, Temperature measurement, Temperature control

53-208

**Biogeochemical activity of anaerobic microorganisms from buried permafrost sediments.**

Rivkina, E., Gilichinskii, D., Wagener, S., Tiedje, J.M., McGrath, J., *Geomicrobiology journal*, July-Sep. 1998, 15(3), p.187-193, 23 refs.

Pleistocene, Permafrost, Sediments, Soil analysis, Tundra soils, Soil microbiology, Biomass, Bacteria, Viability, Sampling, Geochemistry, Russia—Siberia

53-209

**Influence of daylight on potential biodegradation of diesel and crude oil in antarctic seawater.**

Delille, D., Bassères, A., Dessommes, A., Rosiers, C., *Marine environmental research*, Apr. 1998, 45(3), p.249-258, 57 refs.

Marine biology, Microbiology, Biomass, Ecosystems, Water pollution, Crude oil, Decomposition, Sunlight, Light effects, Environmental tests, Simulation, Chemical analysis, Antarctica—Adélie Coast

53-210

**Influence of light conditions on the release of volatile halocarbons by antarctic macroalgae.**

Laternus, F., Wiencke, C., Adams, F.C., *Marine environmental research*, Apr. 1998, 45(3), p.285-294, 27 refs.

Marine biology, Climatology, Aerosols, Greenhouse effect, Microbiology, Biomass, Algae, Plant physiology, Vapor transfer, Simulation, Light effects, Environmental impact, Antarctica

53-211

**Where ice isn't nice.**

Goodman, B., *Bioscience*, Aug. 1998, 48(8), p.587-591.

Marine biology, Cryobiology, Biomass, Cold weather survival, Antifreezes, Chemical composition, Chemical analysis, Origin, Antarctica

53-212

**Glacial and oceanic history of the polar North Atlantic margins: an overview.**

Elverhøi, A., Dowdeswell, J.A., Funder, S., Mangerud, J., Stein, R., *Quaternary science reviews*, Jan.-Mar. 1998, 17(1-3), p.1-10, 35 refs.

Pleistocene, Paleoclimatology, Oceanography, Marine geology, Ice sheets, Climatic changes, Glacier oscillation, Ocean currents, Ice rafting, Sedimentation, Quaternary deposits, Research projects, Greenland, Norway—Svalbard, North Atlantic Ocean

53-213

**Fluctuations of the Svalbard-Barents Sea ice sheet during the last 150,000 years.**

Mangerud, J., et al., *Quaternary science reviews*, Jan.-Mar. 1998, 17(1-3), p.11-42, 76 refs.

Pleistocene, Marine geology, Glacial geology, Ice sheets, Glacier oscillation, Marine deposits, Ice rafting, Insolation, Sedimentation, Stratigraphy, Drill core analysis, Luminescence, Geochronology, Barents Sea, Norway—Svalbard

53-214

**Late glacial maximum of Svalbard and the Barents Sea area: ice sheet extent and configuration.**

Landvik, J.Y., et al., *Quaternary science reviews*, Jan.-Mar. 1998, 17(1-3), p.43-75, Refs. p.72-75.

Pleistocene, Glacial geology, Marine geology, Ice sheets, Glacier thickness, Glaciation, Ice edge, Isostasy, Quaternary deposits, Stratigraphy, Radioactive age determination, Mathematical models, Barents Sea, Norway—Svalbard

53-215

**History of a stable ice margin—East Greenland during the Middle and Upper Pleistocene.**

Funder, S., Hjort, C., Landvik, J.Y., Nam, S.I., Reeh, N., Stein, R., *Quaternary science reviews*, Jan.-Mar. 1998, 17(1-3), p.77-123, Refs. p.119-123.

Pleistocene, Glaciation, Paleoclimatology, Glacial geology, Marine geology, Sedimentation, Glacier oscillation, Quaternary deposits, Ice rafting, Stratigraphy, Geochronology, Greenland

53-216

**Paleoceanography of the last interglacial/glacial cycle in the polar North Atlantic.**

Hebbeln, D., Henrich, R., Baumann, K.H., *Quaternary science reviews*, Jan.-Mar. 1998, 17(1-3), p.125-153, Refs. p.149-153.

Pleistocene, Oceanography, Ocean currents, Mass transfer, Marine geology, Marine deposits, Sedimentation, Glacier melting, Ice rafting, Stratigraphy, Drill core analysis, North Atlantic Ocean

53-217

**Late Cenozoic seismic stratigraphy and glacial geological development of the East Greenland and Svalbard-Barents Sea continental margins.**

Solheim, A., et al., *Quaternary science reviews*, Jan.-Mar. 1998, 17(1-3), p.155-184, Refs. p.182-184.

Pleistocene, Marine geology, Glacial geology, Glacial deposits, Glacier oscillation, Sedimentation, Stratigraphy, Seismic reflection, Geochronology, Greenland, Barents Sea, Norway—Svalbard

53-218

**Late Cenozoic history of the polar North Atlantic: results from ocean drilling.**

Thiede, J., et al., *Quaternary science reviews*, Jan.-Mar. 1998, 17(1-3), p.185-208, Refs. p.205-208.

Pleistocene, Marine geology, Glacial geology, Glacier oscillation, Sedimentation, Ice rafting, Marine deposits, Quaternary deposits, Stratigraphy, Drill core analysis, Geochronology, Insolation, North Atlantic Ocean

53-219

**Late Cenozoic erosion and sediment yield from the Svalbard-Barents Sea region: implications for understanding erosion of glacierized basins.**

Elverhøi, A., Hooke, R.L., Solheim, A., *Quaternary science reviews*, Jan.-Mar. 1998, 17(1-3), p.209-241, Refs. p.238-241.

Pleistocene, Glacial geology, Marine geology, Glacial erosion, Water erosion, River basins, Glacial deposits, Bedrock, Sediment transport, Seismic velocity, Drill core analysis, Correlation, Norway—Svalbard, Barents Sea

53-220

**Glacimarine sedimentary processes and facies on the polar North Atlantic margins.**

Dowdeswell, J.A., Elverhøi, A., Spielhagen, R., *Quaternary science reviews*, Jan.-Mar. 1998, 17(1-3), p.243-272, Refs. p.269-272.

Pleistocene, Glacial geology, Marine geology, Quaternary deposits, Ice sheets, Glacier oscillation, Sedimentation, Ice rafting, Ice scoring, Meltwater, Drill core analysis, Models, North Atlantic Ocean

53-221

**Norwegian-Greenland Sea continental margins: morphology and Late Quaternary sedimentary processes and environment.**

Vorren, T.O., et al., *Quaternary science reviews*, Jan.-Mar. 1998, 17(1-3), p.273-302, Refs. p.300-302.

Pleistocene, Marine geology, Ocean bottom, Geomorphology, Mass flow, Slope processes, Quaternary deposits, Sedimentation, Ice rafting, Stratigraphy, Seismic reflection, Profiles, Geochronology, Norwegian Sea, Greenland Sea

53-222

**Metazoan meiofauna in its biochemical environment: the case of an antarctic coastal sediment.**

Vanhove, S., Lee, H.J., Beghyn, M., Van Gansbeke, D., Brockington, S., Vincx, M., *Marine Biological Association of the United Kingdom. Journal*, May 1998, 78(2), p.411-434, Refs. p.432-434.

Marine biology, Bottom sediment, Geochemistry, Antarctica—Signy Island

53-223

**Synchronous climate changes in Antarctica and the North Atlantic.**

Steig, E.J., et al., *Science*, Oct. 2, 1998, 282(5386), p.92-95, Refs. p.94-95.

Climatic changes, Ice cores, Geochemistry, Sediments, Global change, Paleoclimatology, Greenland, Antarctica—Taylor Dome, Antarctica—Ross Sea

53-224

**Past temperatures directly from the Greenland Ice Sheet.**

Dahl-Jensen, D., et al., *Science*, Oct. 9, 1998, 282(5387), p.268-271, Refs. p.271.

Ice cores, Ice temperature, Research projects, History, Greenland

53-225

**Isolation of acidophilic methane-oxidizing bacteria from northern peat wetlands.**

Dedysh, S.N., Panikov, N.S., Liesack, W., Grosskopf, R., Zhou, J.Z., Tiedje, J.M., *Science*, Oct. 9, 1998, 282(5387), p.281-284, Refs. p.283-284.

Peat, Wetlands, Bacteria, Russia—Siberia

53-226

**Simulated influence of carbon dioxide, orbital forcing and ice sheets on the climate of the Last Glacial Maximum.**

Weaver, A.J., Eby, M., Fanning, A.F., Wiebe, E.C., *Nature*, Aug. 27, 1998, 394(6696), p.847-853, 50 refs.

Carbon dioxide, Ice sheets, Paleoclimatology, Global change, Thermal regime, Models

53-227

**Ultrahigh temperature granulite metamorphism (1050 °C, 12 kbar) and decompression in garnet (Mg70)-orthopyroxene-sillimanite gneisses from the Rauer Group, East Antarctica.**

Harley, S.L., *Journal of metamorphic geology*, July 1998, 16(4), p.541-562, Refs. p.560-562.

Mineralogy, Geologic structures, Tectonics, Thermal regime, Antarctica—East Antarctica, Antarctica—Rauer Islands

53-228

**Cyanobacterial assemblages in permanent ice covers on antarctic lakes: distribution, growth rate, and temperature response of photosynthesis.**

Fritsen, C.H., Priscu, J.C., *Journal of phycology*, Aug. 1998, 34(4), p.587-597, 42 refs.

Bacteria, Algae, Photosynthesis, Microbiology, Sediments, Ice cover, Frozen lakes, Lake ice, Ice cover effect, Antarctica—McMurdo Dry Valleys

53-229

**RUBISCO adaptation to low temperatures: a comparative study in psychrophilic and mesophilic unicellular algae.**

Devos, N., Ingouff, M., Loppes, R., Matagne, R.F., *Journal of phycology*, Aug. 1998, 34(4), p.655-660, 34 refs.

Algae, Plant physiology, Plant ecology, Cryobiology, Cold tolerance, Acclimatization, Microbiology, Molecular structure

53-230

**Proceedings.**

International Symposium on Gravity, Geoid and Marine Geodesy, Tokyo, Japan, September 30-October 5, 1996, Segawa, J., ed, Fujimoto, H., ed, Okubo, S., ed, *International Association of Geodesy Symposia*, 1997, Vol.117, 746p., Refs. passim. For selected papers see 53-231 through 53-237.

DLC QB330.G69 1997

Geodetic surveys, Geophysical surveys, Earth crust, Continental drift, Tectonics, Subglacial observations, Sea level, Polar regions

53-231

**Arctic airborne gravity measurement program.**

Brozena, J.M., Peters, M.F., Salman, R., *International Association of Geodesy Symposia*, 1997, Vol.117, International Symposium on Gravity, Geoid and Marine Geodesy, Tokyo, Japan, Sep. 30-Oct. 5, 1996. Proceedings. Edited by J. Segawa, H. Fujimoto and S. Okubo, p.131-138, 8 refs.

DLC QB330.G69 1997

Research projects, Geodetic surveys, Gravity, Geomagnetism, Mapping, Subglacial observations, Ice cover effect, Polar regions

53-232

**Airborne geoid measurements in the Arctic Ocean.**

Forsberg, R., Brozena, J.M., *International Association of Geodesy Symposia*, 1997, Vol.117, International Symposium on Gravity, Geoid and Marine Geodesy, Tokyo, Japan, Sep. 30-Oct. 5, 1996. Proceedings. Edited by J. Segawa, H. Fujimoto and S. Okubo, p.139-146, 6 refs.

DLC QB330.G69 1997

Geodetic surveys, Oceanographic surveys, Gravity anomalies, Height finding, Models, Polar regions

53-233

**Predictions of deformation and gravity change caused by recent melting of the Vatnajökull ice cap, Iceland.**

Wolf, D., Barthelmes, F., Sigmundsson, F., *International Association of Geodesy Symposia*, 1997, Vol.117, International Symposium on Gravity, Geoid and Marine Geodesy, Tokyo, Japan, Sep. 30-Oct. 5, 1996. Proceedings. Edited by J. Segawa, H. Fujimoto and S. Okubo, p.311-319, 11 refs.

DLC QB330.G69 1997

Geodetic surveys, Tectonics, Gravity anomalies, Glacier melting, Models, Global warming, Ice deformation, Iceland

53-234

**Gravity, geoid, isostasy and Moho depth in the Ross Sea, Antarctica.**

Marson, I., Stoka, M., Velicogna, I., Coren, F., Zanolla, C., *International Association of Geodesy Symposia*, 1997, Vol.117, International Symposium on Gravity, Geoid and Marine Geodesy, Tokyo, Japan, Sep. 30-Oct. 5, 1996. Proceedings. Edited by J. Segawa, H. Fujimoto and S. Okubo, p.351-359, 8 refs.

DLC QB330.G69 1997

Geodetic surveys, Isostasy, Gravity anomalies, Geophysical surveys, Mapping, Models, Ocean bottom, Antarctica—Ross Sea

53-235

**Tectonic implications of Geosat-GM geoid in the southern oceans, 30°S - 72°S.**

Jung, W.Y., Vogt, P.R., *International Association of Geodesy Symposia*, 1997, Vol.117, International Symposium on Gravity, Geoid and Marine Geodesy, Tokyo, Japan, Sep. 30-Oct. 5, 1996. Proceedings. Edited by J. Segawa, H. Fujimoto and S. Okubo, p.415-422, 18 refs.

DLC QB330.G69 1997

Tectonics, Height finding, Mapping, Data processing, Geodetic surveys, Ocean bottom, Oceanographic surveys, Gravity anomalies, Earth crust

53-236

**Arctic and Antarctic oceans gravity field from ERS1 altimetric data.**

Sarrailh, M., Balmino, G., Doublet, D., *International Association of Geodesy Symposia*, 1997, Vol.117, International Symposium on Gravity, Geoid and Marine Geodesy, Tokyo, Japan, Sep. 30-Oct. 5, 1996. Proceedings. Edited by J. Segawa, H. Fujimoto and S. Okubo, p.437-444, 7 refs.

DLC QB330.G69 1997

Geodetic surveys, Height finding, Oceanographic surveys, Data processing, Gravity anomalies, Mapping, Imaging, Antarctica—Weddell Sea

53-237

**Mean sea-level and its seasonal change observed at Syowa Station, East Antarctica.**

Odamaki, M., Michida, Y., Oka, K., Oikawa, K., *International Association of Geodesy Symposia*, 1997, Vol.117, International Symposium on Gravity, Geoid and Marine Geodesy, Tokyo, Japan, Sep. 30-Oct. 5, 1996. Proceedings. Edited by J. Segawa, H. Fujimoto and S. Okubo, p.659-665, 9 refs.

DLC QB330.G69 1997

Oceanographic surveys, Sea level, Seasonal variations, Ocean currents, Instruments, Antarctica—Showa Station

53-238

**Measurement of the field of the Pasterze (Glockner Group) in 1991. [Nachmessungen im Bereich der Pasterze (Glocknergruppe) im Jahr 1991]**

Lieb, G.K., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1997, 33(2), p.197-201, In German.

Mountain glaciers, Glacier surveys, Glacier flow, Glacial geology, Moraines, Seasonal variations, Austria—Pasterze

53-239

**Glacial survey of the Pasterze and its vicinity (Glockner Group) in 1992. [Gletschermessungen an der Pasterze und deren Umgebung (Glocknergruppe) im Jahr 1992]**

Lieb, G.K., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1997, 33(2), p.203-207, In German.

Mountain glaciers, Glacier surveys, Glacier oscillation, Glacial geology, Moraines, Profiles, Seasonal variations, Austria—Pasterze

53-240

**Glacier survey of the Pasterze (Glockner Group) and vicinity in 1993. [Gletschermessungen 1993 an und in der Umgebung der Pasterze (Glocknergruppe)]**

Lieb, G.K., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1997, 33(2), p.209-212, In German.

Mountain glaciers, Glacier surveys, Glacier oscillation, Glacial geology, Moraines, Profiles, Seasonal variations, Austria—Pasterze

53-241

**Glacier survey of the Pasterze (Glockner Group) and vicinity in 1994. [Gletschermessungen 1994 an und in der Umgebung der Pasterze (Glocknergruppe)]**

Lieb, G.K., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1997, 33(2), p.213-216, In German.

Glacier surveys, Mountain glaciers, Glacier oscillation, Glacial geology, Profiles, Seasonal variations, Austria—Pasterze

53-242

**Cold-weather clean.**

Martel, C.J., MP 5220, *Water environment & technology*, Aug. 1998, 10(8), p.50-53.

Water treatment, Waste treatment, Cold weather operation, Sludges, Freeze thaw cycles, Sublimation, Snow manufacturing, Artificial snow, Storage, Hydraulic structures, Air temperature

After several years of research, the U.S. Army Corps of Engineers Cold Regions Research and Engineering Laboratory (CRREL) in Hanover, NH, developed the freezing bed as a low-cost method of sludge dewatering at U.S. Army and U.S. Air Force bases in cold regions. The bed consists of an in-ground concrete structure deep enough to freeze several layers of sludge. The ramp on one end evenly distributes incoming sludge within the bed and allows vehicle access. The opposite end of the bed is equipped with an overflow gate or drain valves to draw off excess sludge or supernatant produced during thaw. The bottom of the bed is covered with 60 to 100 mm of sand, which allows the meltwater to drain. The meltwater is then collected in the sump and pumped back to the head of the plant. The bed is covered with a roof to keep out rain and snow, preventing snow from insulating the bed and slowing the freezing rate. It also stops rain from rewetting the sludge after it has thawed and the water has drained. The freezing bed is used to dewater sludge, and snowmaking is used to treat and store wastewater in the form of ice.

53-243

**Precious pipe.**

Coutermarsh, B.A., MP 5221, *Water environment & technology*, Aug. 1998, 10(8), p.55-57.

Water pipelines, Underground pipelines, Frost resistance, Frost protection, Excavation, Pipeline insulation, Polymers, Shells, Computer programs, Performance

In general, engineers are uncomfortable with insulating pipe and burying it at a shallow depth. Instead of empirical case studies, they want hard data. The U.S. Army Corps of Engineers' Cold Regions Research and Engineering Laboratory in Hanover, NH, has provided such data. Researchers at the Cold Regions Lab believe shallow burial technology has merit for the U.S. construction industry and the municipal governments it serves. If a sound procedure can be developed to keep pipelines from freezing, utility installations can be sped up, saving in labor costs, especially where pipe must be buried in ledge. Because ledge has a generally higher thermal conductivity than soil, pipes in ledge must be buried deep to be protected from freezing. A shallow burial option would avoid the extra time and considerable expense associated with blasting and excavating ledge.

53-244

**Historical perspectives on the Arctic Program at the Office of Naval Research.**

Curtin, T.B., *Naval research reviews*, 1998, No.1, p.6-8, 1 ref.

Research projects, Oceanography, Climatology, History, Exploration, Arctic Ocean

53-245

**Arctic climate variability: observations and model simulations.**

Walsh, J.E., *Naval research reviews*, 1998, No.1, p.9-11, 7 refs.

Climatology, Polar atmospheres, Climatic changes, Sea ice distribution, Surface temperature, Seasonal variations, Simulation, Statistical analysis

53-246

**Bottom water formation and distribution in the Weddell Sea.**

Gordon, A.L., *Naval research reviews*, 1998, No.1, p.13-16, 4 refs.

Oceanography, Ice shelves, Ocean currents, Ocean bottom, Hydrography, Salinity, Antarctica—Weddell Sea

53-247

**Sea ice growth in antarctic leads: top freezing vs. bottom melting.**

Ackley, S.F., MP 5222, *Naval research reviews*, 1998, No.1, p.17-18, 4 refs.

Oceanography, Ice openings, Sea ice, Heat flux, Ice growth, Ice melting, Ice water interface, Ice cover effect, Models, Antarctica

Ice growth in leads (covered with thin ice) is typically treated as a one-dimensional heat transfer problem, with the energy balance at the bottom ice surface balanced between three terms: conduction of heat upward through the overlying ice, upward ocean heat flux and the latent heat of the phase change from water to ice at the ice bottom. Observations, however, show a radically different behavior for ice growth in antarctic sea ice leads than is currently used in models. During the winter Antarctic Zone Flux Experiment, the authors installed thermistor strings and ice thickness gauges into leads and sea ice at the beginning of two drift experiments. The sites were measured at 15 minute intervals for temperature, twice daily for ice thickness changes and periodically for ice structure during the experiment. Two dilemmas summarize the conflict of the observations with some models: the direct melting of sea ice by the ocean heat flux is observed rather than ventilation through leads, and ice of observed mean thickness or thinner is predicted to melt prematurely when typical heat flux models are used.

53-248

**Modeling sea ice behavior.**

Pritchard, R.S., *Naval research reviews*, 1998, No.1, p.19-22, 23 refs.

Oceanography, Sea ice distribution, Ice openings, Ice models, Ice cover strength, Ice mechanics, Anisotropy, Ice plasticity, Mathematical models

53-249

**Sea ice thickness distribution as a state variable.**

Thorndike, A., *Naval research reviews*, 1998, No.1, p.23-24.

Oceanography, Sea ice distribution, Ice cover thickness, Pack ice, Statistical analysis, Simulation, Theories

53-250

**Project SPINNAKER; ICESHELF 1988-1996 and beyond.**

Newton, J.L., *Naval research reviews*, 1998, No.1, p.25-28.

Oceanography, Ice shelves, Oceanographic surveys, Research projects, Subglacial observations, Underwater acoustics, Sensors, Ocean currents, Hydrography, Lincoln Sea

53-251

**Interdisciplinary interaction in arctic research.**

Niebauer, H.J., *Naval research reviews*, 1998, No.1, p.29-31.

Research projects, Oceanography, Marine meteorology, Sea ice, Ice edge, Air ice water interaction, Advection, Research projects, Arctic Ocean

53-252

**Electrophysiological investigation of frost resistance in plants. 2. Bioelectrical responses to light of three contrasting cultivars of *Triticum aestivum* at various temperatures.**

Martynenko, A.I., *Russian journal of plant physiology*, Sep.-Oct. 1998, 45(5), p.595-599, Translated from Fiziologiya rastenii. 11 refs.

Plant physiology, Grasses, Photosynthesis, Cold tolerance, Frost resistance, Low temperature tests, Temperature effects, Light effects, Electrical measurement, Statistical analysis

53-253

**Freeze-thaw stability of three waxy maize starch pastes measured by centrifugation and calorimetry.**

Yuan, R.C., Thompson, D.B., *Cereal chemistry*, July-Aug. 1998, 75(4), p.571-573, 12 refs.

Ice physics, Frozen liquids, Polymers, Ice crystal growth, Freeze thaw cycles, Freeze thaw tests, Stability, Liquid phases, Temperature measurement, Mechanical tests, Enthalpy

53-254

**Mr. Freeze.**

Grenci, L., *Weatherwise*, July/Aug. 1998, 51(4), p.50.

Weather observations, Snowstorms, Lake effects, Lake ice, Ice formation, Air ice water interaction, Water temperature, Density (mass/volume), Temperature effects, United States—Erie, Lake

53-255

**Effects of Quaternary sea level cycles on strontium in seawater.**

Stoll, H.M., Schrag, D.P., *Geochimica et cosmochimica acta*, Apr. 1998, 62(7), p.1107-1118, 46 refs.

Pleistocene, Marine geology, Sea level, Water chemistry, Weathering, Geochemical cycles, Quaternary deposits, Chemical analysis, Isotope analysis, Models, Accuracy, Indexes (ratios)

53-256

**Effect of thawing conditions on the recovery of reactive silicic acid from frozen natural water samples.**

Zhang, J.Z., Ortner, P.B., *Water research*, Aug. 1998, 32(8), p.2553-2555, 18 refs.

Water chemistry, Water treatment, Sampling, Preserving, Cold storage, Frozen liquids, Thawing rate, Laboratory techniques

53-257

**Deglaciation of the Port Huron moraine in north-western lower Michigan.**

Blewett, W.L., *Great Lakes geography*, 1995, 2(1), p.1-15, 15 refs.

Pleistocene, Glacial geology, Landforms, Glacier oscillation, Ice edge, Moraines, Outwash, Glacial erosion, Geochronology, United States—Michigan

53-258

**Environmental magnetic record of antarctic palaeoclimate from Eocene/Oligocene glaciomarine sediments, Victoria Land Basin.**

Sagnotti, L., Florindo, F., Verosub, K.L., Wilson, G.S., Roberts, A.P., *Geophysical journal international*, Sep. 1998, 134(3), p.653-662, 35 refs.

Paleoclimatology, Pleistocene, Marine geology, Glacial geology, Marine deposits, Sedimentation, Rock magnetism, Remanent magnetism, Lithology, Weathering, Drill core analysis, Stratigraphy, Antarctica—Victoria Land

53-259

**Inconsistent palaeomagnetic recording of the Blake event in Chinese loess related to sedimentary environment.**

Zhu, R.X., Coe, R.S., Guo, B., Anderson, R., Zhao, X.X., *Geophysical journal international*, Sep. 1998, 134(3), p.867-875, 57 refs.

Pleistocene, Geomagnetism, Sedimentation, Loess, Soil formation, Remanent magnetism, Stratigraphy, Mineralogy, Correlation, China—Loess Plateau

53-260

**New seismic data support Cenozoic rifting in George VI Sound, Antarctic Peninsula.**

Bell, A.C., King, E.C., *Geophysical journal international*, Sep. 1998, 134(3), p.889-902, 52 refs.

Tectonics, Geological surveys, Earth crust, Sedimentation, Geologic structures, Thermal stresses, Glacial geology, Ice solid interface, Seismic reflection, Synthetic aperture radar, Antarctica—George VI Sound

53-261

**Antarctic meteorological data, 1996. Vol.37. Meteorological data at Syowa Station and Dome Fuji Station. [Nankyoku kisho shiryō 1996 nen Showa kichi oyobi Domu Fuji kansoku kyoten]** Japanese Antarctic Research Expedition, 37th (dai-37-ji Nihon Nankyoku chiiki kansokutai), Tokyo, Japan Meteorological Agency (Kishocho), 1997, n.p., In Japanese. CD-ROM only.

Polar atmospheres, Meteorological data, Weather observations, Weather stations, Synoptic meteorology, Solar radiation, Ultraviolet radiation, Radiation measurement, Ozone, Turbidity, Antarctica—Showa Station, Antarctica—Dome Fuji Station

53-262

**Proceedings.**

Workshop on Preparing for an Uncertain Future: Impacts of Short- and Long-Term Climate Change on Alaska, Fairbanks, AK, Sep. 1995, Anderson, P., ed, Weller, G., ed, Fairbanks, University of Alaska, Center for Global Change and Arctic System Research, 1996, 43p., Refs. passim. Workshop held during the Arctic Science Conference, Fairbanks, AK, Sep. 1995.

Climatic changes, Global warming, Air pollution, Environmental impact, Ecosystems, Regional planning, United States—Alaska

53-263

**Ice sheets.**

Hughes, T.J., New York, Oxford University Press, 1998, 343p., Refs. p.321-338.

DLC GB2403.2.H84 1997

Glaciation, Ice sheets, Ice shelves, Glacial geology, Glacial meteorology, Glacier flow, Glacier oscillation, Isostasy, Sea level, Global change, Ice age theory, Mathematical models

53-264

**Air void system and frost resistance of concrete containing superplasticizers.**

Roberts, L.R., Scheiner, P., International Conference on Developments in the Use of Superplasticizers in Concrete, Ottawa, June 1981. ACI publication SP-68. Edited by V.M. Malhotra, Detroit, American Concrete Institute, 1981, p.189-213, 14 refs.

Concrete durability, Concrete admixtures, Frost resistance, Frost protection, Air entrainment, Freeze thaw tests

53-265

**Freeze-thaw resistance of superplasticized concretes.**

Okada, E., Hisaka, M., Kazama, Y., Hattori, K., International Conference on Developments in the Use of Superplasticizers in Concrete, Ottawa, June 1981. ACI publication SP-68. Edited by V.M. Malhotra, Detroit, American Concrete Institute, 1981, p.215-231, 17 refs.

Concrete strength, Concrete durability, Concrete admixtures, Air entrainment, Water cement ratio, Frost resistance, Frost protection, Freeze thaw tests

53-266

**Chloride penetration in standard concrete, water-reduced concrete and superplasticized concrete.**

Lukas, W., International Conference on Developments in the Use of Superplasticizers in Concrete, Ottawa, June 1981. ACI publication SP-68. Edited by V.M. Malhotra, Detroit, American Concrete Institute, 1981, p.253-267, 15 refs.

Reinforced concretes, Concrete durability, Concrete admixtures, Air entrainment, Water cement ratio, Frost resistance, Salting, Corrosion, Waterproofing, Freeze thaw tests

53-267

**Frost resistance of superplasticized concrete.**

Kobayashi, M., Nakakuro, E., Kodama, K., Negami, S., International Conference on Developments in the Use of Superplasticizers in Concrete, Ottawa, June 1981. ACI publication SP-68. Edited by V.M. Malhotra, Detroit, American Concrete Institute, 1981, p.269-282, 5 refs.

Concrete durability, Concrete admixtures, Air entrainment, Water cement ratio, Frost resistance, Frost protection, Freeze thaw tests

53-268

**Mechanical properties and durability of superplasticized semi-lightweight concrete.**

Malhotra, V.M., International Conference on Developments in the Use of Superplasticizers in Concrete, Ottawa, June 1981. ACI publication SP-68. Edited by V.M. Malhotra, Detroit, American Concrete Institute, 1981, p.283-305, 9 refs.

Lightweight concretes, Concrete durability, Concrete strength, Concrete admixtures, Frost resistance, Frost protection, Freeze thaw tests

53-269

**Aspects of cement and energy economy in precast plants by the use of superplasticizers.**

Ispas, T., Ionescu, I., International Conference on Developments in the Use of Superplasticizers in Concrete, Ottawa, June 1981. ACI publication SP-68. Edited by V.M. Malhotra, Detroit, American Concrete Institute, 1981, p.319-335, 14 refs.

Precast concretes, Concrete admixtures, Cements, Concrete durability, Frost resistance, Freeze thaw tests, Romania

53-270

**Long-term fluctuation of hydroclimate elements in north-eastern Europe.**

Gutry-Korycka, M., Boryczka, J., *Institute of Geography and Spatial Organization. Polish Academy of Sciences. Conference papers*, 1990, No.6, Global Change Regional Research Centres: Scientific Problems and Concept Developments, Warsaw, Poland, Sep. 25-29, 1989. Seminar papers and IGBP WG2 report. Edited by A. Brey Meyer, p.33-47, 12 refs.

DLC QC981.8.C5G64 1990

Climatic changes, Global change, Precipitation (meteorology), Air temperature, Runoff, Limnology, Storage, Human factors

53-271

**Litter mass-loss rates in a climatic transect in north-western Europe - Effects of climate and substrate quality.**

Berg, B., Jansson, P.E., McClaugherty, C., *Institute of Geography and Spatial Organization. Polish Academy of Sciences. Conference papers*, 1990, No.6, Global Change Regional Research Centres: Scientific Problems and Concept Developments, Warsaw, Poland, Sep. 25-29, 1989. Seminar papers and IGBP WG2 report. Edited by A. Brey Meyer, p.49-74, Refs. p.70-72.

DLC QC981.8.C5G64 1990

Global change, Climatic factors, Litter, Decomposition, Soil analysis, Air temperature

53-272

**Search for RRCs program in ecosystem ecology.**

Brey Meyer, A., *Institute of Geography and Spatial Organization. Polish Academy of Sciences. Conference papers*, 1990, No.6, Global Change Regional Research Centres: Scientific Problems and Concept Developments, Warsaw, Poland, Sep. 25-29, 1989. Seminar papers and IGBP WG2 report. Edited by A. Brey Meyer, p.75-79, 12 refs.

DLC QC981.8.C5G64 1990

Research projects, Ecosystems, Ecology, Climatic changes, Litter, Climatic factors, Decomposition

53-273

**Ten years of climate observations at the Artowski and Bellingshausen stations (King George Is., South Shetlands, Antarctica).**

Martianov, V., Rakusa-Suszczewski, S., *Institute of Geography and Spatial Organization. Polish Academy of Sciences. Conference papers*, 1990, No.6, Global Change Regional Research Centres: Scientific Problems and Concept Developments, Warsaw, Poland, Sep. 25-29, 1989. Seminar papers and IGBP WG2 report. Edited by A. Brey Meyer, p.80-87, 6 refs.

DLC QC981.8.C5G64 1990

Weather observations, Climatic changes, Weather stations, Ice air interface, Meteorological factors, Glacier melting, Antarctica—King George Island, Antarctica—Bellingshausen Sea



53-274

**Satellite radio-M1 (AMSAT OSCAR-21).**

Chepyzhenko, V.I., Labutin, L.M., Meiner, K., International Conference on Satellite Communications, 2nd, Sep. 23-27, 1996, Moscow, Russia. Proceedings of ICSC'96, Vol.1.3, 1996, p.140-153, 4 refs.

DLC TK5104.I5688 1996

Spacecraft, Radio communication, Computers, Electronic equipment, Telemetering equipment, Telecommunication, Data processing

53-275

**Growth and hardening of four provenances of containerized white spruce (*Picea glauca* (Moench) Voss) seedlings in response to the duration of 16 h long-night treatments.**

Coursolle, C., Bigras, F.J., Margolis, H.A., Hébert, C., *New forests*, Sep. 1998, 16(2), p.155-166, With French summary. 22 refs.

Plant physiology, Trees (plants), Forestry, Cold tolerance, Freezing, Damage, Frost resistance, Growth, Light effects, Low temperature tests, Statistical analysis

53-276

**Two-phase numerical model of powder avalanche theory and application.**

Naaim, M., Gurer, I., *Natural hazards*, Mar. 1998, 17(2), p.129-145, 20 refs.

Avalanche mechanics, Avalanche modeling, Avalanche tracks, Snow air interface, Aerosols, Fluid dynamics, Turbulent flow, Internal friction, Mathematical models, Mapping

53-277

**Phase diagram for the ice VI-VII-VIII transitions.**

Yurtseven, H., Salihoğlu, D., *Modern physics letters B*, Apr. 10, 1998, 12(8), p.271-279, 29 refs.

Ice physics, Ice models, Phase transformations, High pressure ice, Cubic ice, Ice crystal structure, Molecular structure, Orientation, Thermodynamics, Analysis (mathematics), Theories

53-278

**Exponential neutral stability of a floating ice layer.**

Brevdo, L., Il'ichev, A., *Zeitschrift für angewandte Mathematik und Physik*, May 1998, 49(3), p.401-419, 22 refs.

Ice mechanics, Floating ice, Ice water interface, Stability, Wave propagation, Ice breaking, Ice structure, Stratification, Mathematical models, Theories

53-279

**AMS and microprobe analysis of combusted particles in ice and snow.**

Biegalski, S.R., Currie, L.A., Fletcher, R.A., Klouda, G.A., Weissenböck, R., *Radiocarbon*, 1998, 40(1), International Radiocarbon Conference, 16th, Groningen, Netherlands, June 16-20, 1997. Proceedings, Pt.I. Edited by W.G. Mook and J. van der Plicht, p.3-10, 28 refs.

Climatology, Air pollution, Hydrocarbons, Aerosols, Snow composition, Ice cores, Particles, Sublimation, Carbon isotopes, Ions, Spectroscopy, Environmental tests, Greenland

53-280

**Pursuit of isotopic and molecular fire tracers in the polar atmosphere and cryosphere.**

Currie, L.A., et al, *Radiocarbon*, 1998, 40(1), International Radiocarbon Conference, 16th, Groningen, Netherlands, June 16-20, 1997. Proceedings, Pt.I. Edited by W.G. Mook and J. van der Plicht, p.381-390, 21 refs.

Climatology, Polar atmospheres, Atmospheric composition, Forest fires, Biomass, Aerosols, Particles, Snow composition, Ice cores, Carbon isotopes, Isotope analysis, Correlation, Origin, Greenland

53-281

**Extension of the  $^{14}\text{C}$  calibration curve to ca. 40,000 cal BC by synchronizing Greenland  $^{18}\text{O}/^{16}\text{O}$  ice core records and North Atlantic foraminifera profiles: a comparison with U/Th coral data.**

Jöris, O., Weninger, B., *Radiocarbon*, 1998, 40(1), International Radiocarbon Conference, 16th, Groningen, Netherlands, June 16-20, 1997. Proceedings, Pt.I. Edited by W.G. Mook and J. van der Plicht, p.495-504, 44 refs.

Pleistocene, Geochronology, Paleoecology, Radioactive age determination, Carbon isotopes, Marine deposits, Ice cores, Profiles, Stratigraphy, Statistical analysis, Correlation, Greenland, Atlantic Ocean

53-282

**Correlation of marine  $^{14}\text{C}$  ages from the Nordic seas with the GISP2 isotope record: implications for  $^{14}\text{C}$  calibration beyond 25 ka bp.**

Voelker, A.H.L., et al, *Radiocarbon*, 1998, 40(1), International Radiocarbon Conference, 16th, Groningen, Netherlands, June 16-20, 1997. Proceedings, Pt.I. Edited by W.G. Mook and J. van der Plicht, p.517-534, Refs. p.527-530.

Pleistocene, Paleoclimatology, Geochronology, Paleoecology, Sedimentation, Meltwater, Ice cores, Radioactive age determination, Carbon isotopes, Marine deposits, Correlation, Geomagnetism, Greenland, Iceland

53-283

**Flood basalts and magmatic Ni, Cu, and PGE sulphide mineralization: comparative geochemistry of the Noril'sk (Siberian Traps) and West Greenland sequences.**

Lightfoot, P.C., Hawkesworth, C.J., Large igneous provinces. Continental, oceanic, and planetary flood volcanism. Geophysical Monograph No.100. Edited by J.J. Mahoney and M.F. Coffin, Washington, D.C., American Geophysical Union, 1997, p.357-380, Refs. p.377-380.

DLC QE462.B3 L37 1997

Geologic processes, Earth crust, Subpolar regions, Sedimentation, Magma, Degradation, Solubility, Geochemistry, Mineralogy, Stratigraphy, Russia—Siberia, Greenland

53-284

**Climatic change at high elevation sites: an overview.**

Beniston, M., Diaz, H.F., Bradley, R.S., Climatic change at high elevation sites. Edited by H.F. Diaz, M. Beniston and R.S. Bradley, Dordrecht, Kluwer Academic Publishers, 1997, p.1-19, Refs. p.15-19. For another source see 52-40.

Climatology, Global change, Surface temperature, Mountains, Alpine landscapes, Hydrologic cycle, Wind factors, Ice cores, Seasonal variations

53-285

**Temperature variations during the last century at high elevation sites.**

Diaz, H.F., Bradley, R.S., Climatic change at high elevation sites. Edited by H.F. Diaz, M. Beniston and R.S. Bradley, Dordrecht, Kluwer Academic Publishers, 1997, p.21-47, Refs. p.45-47. For another source see 52-41.

Climatology, Climatic changes, Global change, Mountains, Air temperature, Temperature variations, Statistical analysis, Correlation, Altitude

53-286

**Variations of snow depth and duration in the Swiss Alps over the last 50 years: links to changes in large-scale climatic forcings.**

Beniston, M., Climatic change at high elevation sites. Edited by H.F. Diaz, M. Beniston and R.S. Bradley, Dordrecht, Kluwer Academic Publishers, 1997, p.49-68, 30 refs. For another source see 52-42.

Climatology, Climatic changes, Alpine landscapes, Snow cover distribution, Snow depth, Altitude, Seasonal variations, Atmospheric pressure, Atmospheric circulation, Statistical analysis, Correlation, Switzerland—Alps

53-287

**Climatic change and debris flows in high mountain regions: the case study of the Ritigraben torrent (Swiss Alps).**

Rebetz, M., Lugon, R., Baeriswyl, P.A., Climatic change at high elevation sites. Edited by H.F. Diaz, M. Beniston and R.S. Bradley, Dordrecht, Kluwer Academic Publishers, 1997, p.139-157, Refs. p.154-157. For another source see 52-43.

Climatology, Climatic changes, Precipitation (meteorology), Alpine landscapes, Discontinuous permafrost, Ground thawing, Permafrost hydrology, Mass flow, Seasonal variations, Statistical analysis, Switzerland—Alps

53-288

**Glacial varve thickness and 127 years of instrumental climate data: a comparison.**

Ohlendorf, C., Niessen, F., Weissert, H., Climatic change at high elevation sites. Edited by H.F. Diaz, M. Beniston and R.S. Bradley, Dordrecht, Kluwer Academic Publishers, 1997, p.159-179, Refs. p.177-179. For another source see 52-44.

Climatology, Climatic changes, Alpine landscapes, Lacustrine deposits, Glacial deposits, Glacier oscillation, Snow accumulation, Glacier melting, Meltwater, Sedimentation, Seasonal variations, Statistical analysis, Switzerland—Alps

53-289

**Regional snowfall patterns in the high, arid Andes.**

Vuille, M., Ammann, C., Climatic change at high elevation sites. Edited by H.F. Diaz, M. Beniston and R.S. Bradley, Dordrecht, Kluwer Academic Publishers, 1997, p.181-191, 31 refs. For another source see 52-45.

Climatology, Climatic changes, Mountains, Synoptic meteorology, Precipitation (meteorology), Snow accumulation, Snow cover distribution, Snow surveys, Statistical analysis, Periodic variations, Andes

53-290

**Developing a proxy climate record for the last 3000 years in the Canadian Rockies—some problems and opportunities.**

Luckman, B.H., Climatic change at high elevation sites. Edited by H.F. Diaz, M. Beniston and R.S. Bradley, Dordrecht, Kluwer Academic Publishers, 1997, p.223-244, Refs. p.242-244. For another source see 52-46.

Climatology, Climatic changes, Meteorological data, Glacier oscillation, Mountain glaciers, Paleoecology, Age determination, Statistical analysis, Correlation, Canada—Rocky Mountains

53-291

**Research strategies in dendroecology and dendroclimatology in mountain environments.**

Tessier, L., Guibal, F., Schweingruber, F.H., Climatic change at high elevation sites. Edited by H.F. Diaz, M. Beniston and R.S. Bradley, Dordrecht, Kluwer Academic Publishers, 1997, p.267-285, Refs. p.282-285. For another source see 52-47.

Climatology, Climatic changes, Forest lines, Vegetation patterns, Trees (plants), Growth, Plant ecology, Age determination

53-292

**Isotope records from Mongolian and alpine ice cores as climate indicators.**

Schotterer, U., Frölich, K., Gäggeler, H.W., Sandjordi, S., Stichler, W., Climatic change at high elevation sites. Edited by H.F. Diaz, M. Beniston and R.S. Bradley, Dordrecht, Kluwer Academic Publishers, 1997, p.287-298, 24 refs. For another source see 52-48.

Climatology, Climatic changes, Precipitation (meteorology), Mountain glaciers, Ice cores, Sampling, Oxygen isotopes, Seasonal variations, Air temperature, Correlation, Switzerland—Alps, Mongolia

53-293

**Phototactic responses of phytoplankton forming discrete layers within the water column of Lake Bonney, Antarctica.**

Priscu, J.C., Neale, P.J., *Antarctic journal of the United States*, 1995, 30(5), p.301-303, 5 refs.

Lake water, Algae, Photosynthesis, Ice cover effect, Biomass, Antarctica—Bonney, Lake

53-294

**Responses of bacterial growth to inorganic and organic nutrient enrichment in the lakes of the dry valleys, Antarctica.**

Takacs, C.D., Priscu, J.C., *Antarctic journal of the United States*, 1995, 30(5), p.303-305, 8 refs.

Lake water, Water chemistry, Nutrient cycle, Bacteria, Limnology, Antarctica—McMurdo Dry Valleys

53-295

**Some metamorphic processes in the lake ice of the McMurdo Dry Valleys.**

Adams, E.E., Priscu, J.C., Sato, A., *Antarctic journal of the United States*, 1995, 30(5), p.307-309, 9 refs.

Lake ice, Air ice water interaction, Freezing, Ice mechanics, Bubbles, Frozen lakes, Ice temperature, Ice heat flux, Ice optics, Antarctica—Bonney, Lake

53-296

**Soil chemistry along a glacial chronosequence on Andrews Ridge, Taylor Valley.**

Ho, M.C., Virginia, R.A., Powers, L.E., Freckman, D.W., *Antarctic journal of the United States*, 1995, 30(5), p.310-311, 4 refs.

Soil chemistry, Desert soils, Glaciation, Soil dating, Paleoclimatology, Antarctica—Andrews Ridge

53-297

**Ultraviolet-B radiation and vascular plant performance in Antarctica.**

Day, T.A., McGraw, J.B., *Antarctic journal of the United States*, 1995, 30(5), p.313-314, 6 refs.

Ultraviolet radiation, Plant physiology, Ozone, Physiological effects, Plant ecology

53-298

**Effects of random variability of cloud optical thickness on the derivation of total ozone abundance.**

Zeng, J., Stamnes, K., *Antarctic journal of the United States*, 1995, 30(5), p.315-316, 6 refs.

Ozone, Clouds (meteorology), Ultraviolet radiation, Measurement

53-299

**Volcanic aerosol and polar stratospheric clouds observed by lidar at McMurdo Station during 1994.**

Adriani, A., Di Donfrancesco, G., *Antarctic journal of the United States*, 1995, 30(5), p.317-318, 3 refs.

Aerosols, Volcanoes, Polar stratospheric clouds, Measurement, Volcanic ash, Lidar, Antarctica—McMurdo Station

53-300

**High-resolution ultraviolet spectral irradiance monitoring program. Contrasts in ultraviolet exposure in Antarctica and the Americas.**

Booth, C.R., Lucas, T.B., Mestechkina, T., Schmidt, J., Tussion, J., IV, *Antarctic journal of the United States*, 1995, 30(5), p.318-320, 3 refs.

Ultraviolet radiation, Measurement, Research projects, Physiological effects, Antarctica

53-301

**Long-term responses by antarctic phytoplankton to solar ultraviolet radiation.**

Villafañe, V.E., Helbling, E.W., Holm-Hansen, O., Diaz, H., *Antarctic journal of the United States*, 1995, 30(5), p.320-323, 18 refs.

Ultraviolet radiation, Plant physiology, Physiological effects, Ozone, Marine biology, Biomass, Antarctica

53-302

**Ultraviolet-absorbing compounds in natural assemblages of antarctic phytoplankton.**

Dunlap, W.C., Rae, G.A., Helbling, E.W., Villafañe, V.E., Holm-Hansen, O., *Antarctic journal of the United States*, 1995, 30(5), p.323-326, 12 refs.

Ultraviolet radiation, Physiological effects, Plant physiology, Marine biology, Photochemical reactions, Ozone, Plankton, Antarctica

53-303

**Physics of ice-covered seas. Lecture notes.**

Advanced Study Institute-Summer School on Physics of Ice-Covered Seas, Savonlinna, Finland, June 6-17, 1994, Leppäranta, M., ed, Helsinki, University, Department of Geophysics, 1998, 823p. (2 vols.), Refs. passim. For individual papers see 53-304 through 53-323. For papers from the same study institute-summer school previously published as selected papers see 51-263 through 51-273.

Sea ice, Air ice water interaction, Ice water interface, Ice heat flux, Ice cover effect, Drift, Ocean currents, Atmospheric circulation

53-304

**On the history of research on sea ice.**

Weeks, W.F., Advanced Study Institute-Summer School on Physics of Ice-Covered Seas, Savonlinna, Finland, June 6-17, 1994. Lecture notes. Vol.1. Edited by M. Leppäranta, Helsinki, University, Department of Geophysics, 1998, p.1-24, Refs. p.21-24.

Research projects, Expeditions, History, Sea ice, Ice surveys

53-305

**Growth conditions and the structure and properties of sea ice.**

Weeks, W.F., Advanced Study Institute-Summer School on Physics of Ice-Covered Seas. Lecture notes. Vol.1. Edited by M. Leppäranta, Helsinki, University, Department of Geophysics, 1998, p.25-104, Refs. p.92-104.

Sea water freezing, Sea ice, Ice formation, Ice growth, Ice crystal structure, Ice structure, Ice composition, Ice salinity, Brines, Ice cover strength

53-306

**Introduction to crystallization phenomena in natural and artificial sea ice.**

Wettlaufer, J.S., Advanced Study Institute-Summer School on Physics of Ice-Covered Seas, Savonlinna, Finland, June 6-17, 1994. Lecture notes. Vol.1. Edited by M. Leppäranta, Helsinki, University, Department of Geophysics, 1998, p.105-194, Refs. p.187-194.

Sea ice, Ice crystal growth, Ice crystal structure, Water structure, Molecular structure, Hydrogen bonds, Sea water freezing, Ice heat flux, Ice heat loss, Ice formation, Ice structure, Phase transformations, Mathematical models

53-307

**Optical properties of sea ice.**

Perovich, D.K., MP 5223, Advanced Study Institute-Summer School on Physics of Ice-Covered Seas, Savonlinna, Finland, June 6-17, 1994. Lecture notes. Vol.1. Edited by M. Leppäranta, Helsinki, University, Department of Geophysics, 1998, p.195-230, Refs. p.226-230.

Sea ice, Ice optics, Ice heat flux, Solar radiation, Light scattering, Light transmission, Optical absorption, Radiation balance, Albedo

53-308

**Sea ice morphology.**

Wadhams, P., Advanced Study Institute-Summer School on Physics of Ice-Covered Seas, Savonlinna, Finland, June 6-17, 1994. Lecture notes. Vol.1. Edited by M. Leppäranta, Helsinki, University, Department of Geophysics, 1998, p.231-287, Refs. p.281-287.

Ice surveys, Sea ice distribution, Ice conditions, Ice cover thickness, Air ice water interaction, Pressure ridges, Ice surface, Ice bottom surface, Global warming, Statistical analysis

53-309

**Thermodynamics of sea ice.**

Makshtas, A.P., Advanced Study Institute-Summer School on Physics of Ice-Covered Seas, Savonlinna, Finland, June 6-17, 1994. Lecture notes. Vol.1. Edited by M. Leppäranta, Helsinki, University, Department of Geophysics, 1998, p.289-304, 29 refs.

Sea ice, Ice thermal properties, Ice temperature, Ice heat flux, Snow ice interface, Air ice water interaction, Ice models, Mathematical models

53-310

**Dynamics of sea ice.**

Leppäranta, M., Advanced Study Institute-Summer School on Physics of Ice-Covered Seas, Savonlinna, Finland, June 6-17, 1994. Lecture notes. Vol.1. Edited by M. Leppäranta, Helsinki, University, Department of Geophysics, 1998, p.305-342, Refs. p.339-342.

Sea ice, Ice floes, Drift, Ice friction, Ice cover strength, Ice deformation, Ice cover thickness, Air ice water interaction, Wind factors, Ocean currents, Mathematical models

53-311

**Ice dynamics models.**

Timokhov, L.A., Advanced Study Institute-Summer School on Physics of Ice-Covered Seas, Savonlinna, Finland, June 6-17, 1994. Lecture notes. Vol.1. Edited by M. Leppäranta, Helsinki, University, Department of Geophysics, 1998, p.343-380, 21 refs.

Sea ice distribution, Ice conditions, Ice floes, Drift, Ice friction, Ice cover strength, Ice deformation, Air ice water interaction, Wind factors, Ocean currents, Ice models, Mathematical models

53-312

**Marginal ice zone.**

Squire, V.A., Advanced Study Institute-Summer School on Physics of Ice-Covered Seas, Savonlinna, Finland, June 6-17, 1994. Lecture notes. Vol.1. Edited by M. Leppäranta, Helsinki, University, Department of Geophysics, 1998, p.381-446, Refs. p.438-446.

Sea ice distribution, Ice edge, Ice floes, Ice conditions, Ice cover thickness, Ice cover effect, Ice water interface, Ocean waves, Wave propagation, Air ice water interaction, Ice friction, Ice deformation, Ice models, Mathematical models

53-313

**Circulation in ice-covered waters.**

Pavlov, V.K., Advanced Study Institute-Summer School on Physics of Ice-Covered Seas, Savonlinna, Finland, June 6-17, 1994. Lecture notes. Vol.2. Edited by M. Leppäranta, Helsinki, University, Department of Geophysics, 1998, p.447-481, 35 refs.

Sea ice distribution, Drift, Ice cover effect, Ice water interface, Ocean currents, Water transport

53-314

**Freezing estuaries and semi-enclosed basins.**

Omstedt, A., Advanced Study Institute-Summer School on Physics of Ice-Covered Seas, Savonlinna, Finland, June 6-17, 1994. Lecture notes. Vol.2. Edited by M. Leppäranta, Helsinki, University, Department of Geophysics, 1998, p.483-516, Refs. p.512-516.

Estuaries, River flow, Runoff, Sea water freezing, Ice formation, Ice heat flux, Ice water interface, Ice melting, Salinity, Mathematical models

53-315

**Aspects of arctic oceanography.**

Rudels, B., Advanced Study Institute-Summer School on Physics of Ice-Covered Seas, Savonlinna, Finland, June 6-17, 1994. Lecture notes. Vol.2. Edited by M. Leppäranta, Helsinki, University, Department of Geophysics, 1998, p.517-568, Refs. p.562-568.

Oceanographic surveys, Ocean currents, Water transport, Sea water, Water temperature, Salinity, Air ice water interaction, Heat balance, Mathematical models



53-316

**Circulation and water masses in the Weddell Sea.** Fahrbach, E., Schröder, M., Klepikov, A., Advanced Study Institute-Summer School on Physics of Ice-Covered Seas, Savonlinna, Finland, June 6-17, 1994. Lecture notes. Vol.2. Edited by M. Leppäranta, Helsinki, University, Department of Geophysics, 1998, p.569-603, Refs. p.598-603.

Oceanographic surveys, Ocean currents, Water transport, Sea water, Water temperature, Salinity, Ice shelves, Ice water interface, Meltwater, Antarctica—Weddell Sea

53-317

**Snow cover on sea ice.**

Granberg, H.B., Advanced Study Institute-Summer School on Physics of Ice-Covered Seas, Savonlinna, Finland, June 6-17, 1994. Lecture notes. Vol.2. Edited by M. Leppäranta, Helsinki, University, Department of Geophysics, 1998, p.605-649, Refs. p.643-649.

Sea ice, Snow ice interface, Metamorphism (snow), Snow stratigraphy, Snow heat flux, Snow air interface, Snowdrifts, Snow erosion, Wind erosion, Snow accumulation, Snowmelt, Regelation

53-318

**Arctic sea ice contamination: major characteristics and consequences.**

Lange, M.A., Pffirman, S.L., Advanced Study Institute-Summer School on Physics of Ice-Covered Seas, Savonlinna, Finland, June 6-17, 1994. Lecture notes. Vol.2. Edited by M. Leppäranta, Helsinki, University, Department of Geophysics, 1998, p.651-681, Refs. p.677-681.

Air pollution, Water pollution, Atmospheric circulation, Air ice water interaction, Ocean currents, River flow, Sea ice, Ice composition, Impurities, Drift, Ice rafting, Sediment transport, Nutrient cycle

53-319

**Atmosphere/sea ice interaction in global climate models: a review.**

Nagurny, A.P., Advanced Study Institute-Summer School on Physics of Ice-Covered Seas, Savonlinna, Finland, June 6-17, 1994. Lecture notes. Vol.2. Edited by M. Leppäranta, Helsinki, University, Department of Geophysics, 1998, p.683-714, Refs. p.710-714.

Air ice water interaction, Sea ice, Ice heat flux, Ice air interface, Ice cover thickness, Ice cover effect, Snow ice interface, Snow air interface, Atmospheric circulation, Global warming, Ice models, Mathematical models, Computerized simulation

53-320

**Atmospheric boundary layer over polar marine surfaces.**

Andreas, E.L., MP 5224, Advanced Study Institute-Summer School on Physics of Ice-Covered Seas, Savonlinna, Finland, June 6-17, 1994. Lecture notes. Vol.2. Edited by M. Leppäranta, Helsinki, University, Department of Geophysics, 1998, p.715-773, Refs. p.767-773.

Polar atmospheres, Marine atmospheres, Atmospheric boundary layer, Wind pressure, Ice air interface, Ice heat flux, Ice cover effect, Turbulent exchange, Atmospheric circulation, Heat balance, Mathematical models

53-321

**Arctic meteorology and air/ice coupling.**

Overland, J.E., Advanced Study Institute-Summer School on Physics of Ice-Covered Seas, Savonlinna, Finland, June 6-17, 1994. Lecture notes. Vol.2. Edited by M. Leppäranta, Helsinki, University, Department of Geophysics, 1998, p.775-786, 17 refs.

Polar atmospheres, Marine meteorology, Air ice water interaction, Ice air interface, Sea ice, Ice heat flux, Heat balance, Atmospheric circulation, Atmospheric disturbances, Surface temperature

53-322

**Chemical oceanography in polar oceans.**

Anderson, L.G., Advanced Study Institute-Summer School on Physics of Ice-Covered Seas, Savonlinna, Finland, June 6-17, 1994. Lecture notes. Vol.2. Edited by M. Leppäranta, Helsinki, University, Department of Geophysics, 1998, p.787-809, 38 refs. Oceanographic surveys, Sea ice, Ice salinity, Ice cover effect, Ice water interface, Meltwater, Sea water, Water temperature, Salinity, Water chemistry

53-323

**Summer school report.**

Leppäranta, M., Vihma, T., Haapala, J., Advanced Study Institute-Summer School on Physics of Ice-Covered Seas, Savonlinna, Finland, June 6-17, 1994. Lecture notes. Vol.2. Edited by M. Leppäranta, Helsinki, University, Department of Geophysics, 1998, p.811-823, 1 ref.

Education, Meetings, Research projects, Sea ice

53-324

**Repeat ground track analysis for the Geosciences Laser Altimeter System.**

Lim, S.S., Schutz, B.E., *Advances in the astronautical sciences*, 1996, 93(2), AAS/AIAA Spaceflight Mechanics Conference, 6th, Austin, TX, Feb. 12-15, 1996. Proceedings. Spaceflight mechanics 1996, edited by G.E. Powell, et al, p.1615-1622, 3 refs. DLC TL787.A6A2 1996

Geodetic surveys, Geophysical surveys, Lasers, Height finding, Mapping, Radar tracking, Lidar, Antarctica—South Pole

53-325

**Estimation of ice sheet surface elevation change from the EOS laser altimeter satellite (ICESat) crossover simulation.**

Choe, C.J., Schutz, B.E., *Advances in the astronautical sciences*, 1996, 93(2), AAS/AIAA Spaceflight Mechanics Conference, 6th, Austin, TX, Feb. 12-15, 1996. Proceedings. Spaceflight mechanics 1996, edited by G.E. Powell, et al, p.1623-1638, 12 refs. DLC TL787.A6A2 1996

Ice sheets, Sea ice, Land ice, Lasers, Spacecraft, Ice surface, Ice surveys, Height finding, Topographic surveys, Simulation, Periodic variations, Global change, Glacier surfaces, Glacier surveys, Lidar, Antarctica

53-326

**Antarctic automatic weather stations: 1994-1995.**

Holmes, R.E., Stearns, C.R., Weidner, G.A., *Antarctic journal of the United States*, 1995, 30(5), p.327-329, 3 refs.

Weather stations, Meteorological instruments, Maintenance, Weather observations, Site surveys, Antarctica

53-327

**Use of automatic weather station data for forecasting high wind speed events at Pegasus Runway.**

Holmes, R., Stearns, C., *Antarctic journal of the United States*, 1995, 30(5), p.329-331, 2 refs. Weather stations, Weather forecasting, Wind velocity, Safety, Aircraft landing areas, Antarctica—Ross Island, Antarctica—Ross Ice Shelf

53-328

**Assessment of snow accumulation and transport dynamics using glass microspheres.**

Braaten, D.A., *Antarctic journal of the United States*, 1995, 30(5), p.331-333, 4 refs.

Snow accumulation, Blowing snow, Snow survey tools, Wind factors, Weather stations, Antarctica

53-329

**Case study of antarctic mesolow using satellite-derived fields of atmospheric humidity and wind.** McMurdie, L., Claud, C., Katsaros, K., *Antarctic journal of the United States*, 1995, 30(5), p.333-335, 6 refs.

Marine meteorology, Atmospheric pressure, Humidity, Wind factors, Antarctica

53-330

**Seasonal changes in surface pressure over Antarctica.**

Parish, T.R., Walsh, M.E., *Antarctic journal of the United States*, 1995, 30(5), p.335-337, 5 refs. Atmospheric pressure, Seasonal variations, Air temperature, Wind factors, Antarctica

53-331

**Ice core record of CO variations during the last two millennia: atmospheric implications and chemical interactions within the Greenland ice.**

Haan, D., Raynaud, D., *Tellus*, July 1998, 50B(3), p.253-262, 36 refs. Paleoclimatology, Atmospheric composition, Gases, Age determination, Ice sheets, Ice cores, Ice composition, Decomposition, Turbulent diffusion, Indexes (ratios), Statistical analysis, Greenland, Antarctica—Vostok Station

53-332

**Study of the 2.5-25 $\mu$ m spectrum of H<sub>2</sub>O ice.**

Maldoni, M.M., Smith, R.G., Robinson, G., Rookyard, V.L., *Royal Astronomical Society. Monthly notices*, July 21, 1998, 298(1), p.251-258, 27 refs. Ice physics, Cosmic dust, Extraterrestrial ice, Ice optics, Radiation absorption, Amorphous ice, Ice spectroscopy, Infrared spectroscopy, Spectra, Phase transformations, Simulation

53-333

**Dry deposition and desorption of toxic gases to and from snow surfaces.**

Karlsson, E., Nyholm, S., *Journal of hazardous materials*, July 1998, 60(3), p.227-245, 36 refs. Snow physics, Snow hydrology, Snow impurities, Air pollution, Gases, Adsorption, Snow air interface, Ice vapor interface, Snowmelt, Mathematical models, Simulation

53-334

**Distribution limits of *Pyrgo* species at the biogeographic boundaries of the arctic and the North-Atlantic boreal regions.**

Gudmundsson, G., *Journal of foraminiferal research*, July 1998, 28(3), p.240-256, 69 refs.

Marine biology, Biomass, Subpolar regions, Ocean bottom, Distribution, Ocean currents, Biogeography, Sampling, Statistical analysis, Classifications, North Atlantic Ocean, Arctic Ocean

53-335

**Infrared, surface-assisted laser desorption ionization mass spectrometry on frozen aqueous solutions of proteins and peptides using suspensions of organic solids.**

Kraft, P., Alimpiev, S., Dratz, E., Sunner, J., *American Society for Mass Spectrometry. Journal*, Sep. 1998, 9(9), p.912-924, 47 refs.

Ice physics, Hydrocarbons, Solutions, Chemical composition, Ice spectroscopy, Infrared spectroscopy, Lasers, Ionization, Spectra

53-336

**On the use of multi-year ice ERS-1  $\sigma^0$  as a proxy indicator of melt period sea ice albedo.**

Thomas, A., Barber, D.G., *International journal of remote sensing*, Sep. 20, 1998, 19(14), p.2807-2821, 24 refs.

Climatology, Radiation balance, Ice cover effect, Sea ice, Albedo, Ice melting, Classifications, Seasonal variations, Synthetic aperture radar, Spaceborne photography, Backscattering, Models, Sensor mapping, Arctic Ocean

53-337

**Chemistry at the surfaces of ice and sulfuric acid: toward an understanding of adsorption at molecular solids.**

Roberts, J.T., *Accounts of chemical research*, July 1998, 31(7), p.415-421, 50 refs.

Climatology, Polar stratospheric clouds, Cloud physics, Ice physics, Amorphous ice, Surface structure, Monomolecular films, Ice vapor interface, Ice sublimation, Adsorption, Infrared spectroscopy, Simulation

53-338

**Comparative methods of estimating freezing temperatures and freezing injury in leaves of chaparral shrubs.**

Boorse, G.C., Bosma, T.L., Meyer, A.C., Ewers, F.W., Davis, S.D., *International journal of plant sciences*, May 1998, 159(3), p.513-521, 39 refs.

Plant physiology, Trees (plants), Plant tissues, Frost resistance, Freezing points, Damage, Supercooling, Temperature effects, Luminance, Viability, Statistical analysis, Cold weather survival

53-339

**Freezing tolerance of selected *Pennisetum* species.** Stair, D.W., Dahmer, M.L., Bashaw, E.C., Hussey, M.A., *International journal of plant sciences*, July 1998, 159(4), p.599-605, 35 refs.

Plant physiology, Grasses, Plant tissues, Cold tolerance, Frost resistance, Acclimatization, Electrical measurement, Cold weather tests, Simulation, Temperature effects

53-340

**Dynamic nucleation of ice induced by a single stable cavitation bubble.**

Ohsaka, K., Trinh, E.H., *Applied physics letters*, July 6, 1998, 73(1), p.129-131, 18 refs.

Ice physics, Solidification, Nucleation rate, Freezing points, Cavitation, Bubbles, Oscillations, Luminescence, Sound waves, Ultrasonic tests

53-341

**Freeze-thaw durability of concretes with and without Class C fly ash.**

Ouyang, C., Lane, O.J., *Materials Engineering Conference*, 4th, Washington, D.C., Nov. 10-14, 1996. Proceedings, Vol.2. Materials for the new millennium. Edited by K.P. Chong, New York, American Society of Civil Engineers, 1996, p.939-948, 4 refs.

DLC TA401.3.M3762 1996 Vol.2  
Concrete pavements, Concrete durability, Concrete admixtures, Modification, Porosity, Freeze thaw tests, Freeze thaw cycles, Thermal expansion, Air entrainment, Microstructure, Scanning electron microscopy

53-342

**Glaciers caused zooplankton mortality?**

Weslawski, J.M., Legeżyńska, J., *Journal of plankton research*, July 1998, 20(7), p.1233-1240, 22 refs.  
Marine biology, Ecology, Glacial hydrology, Meltwater, Turbulent diffusion, Sedimentation, Biomass, Plankton, Sampling, Survival, Norway—Svalbard

53-343

**Thin saline ice thickness retrieval using time-series C-band polarimetric radar measurements.**

Shih, S.E., Ding, K.H., Nghiem, S.V., Hsu, C.C., Kong, J.A., Jordan, A.K., *IEEE transactions on geoscience and remote sensing*, Sep. 1998, 36(5), p.1589-1598, 32 refs.

Remote sensing, Sea ice, Radar echoes, Backscattering, Salt ice, Brines, Ice growth, Ice cover thickness, Statistical analysis, Models, Forecasting

53-344

**Aerial transport of keratinaceous substrate and distribution of the fungus *Geomyces pannorum* in antarctic soils.**

Marshall, W.A., *Microbial ecology*, Sep.-Oct. 1998, 36(2), p.212-219, 21 refs.

Soil microbiology, Fungi, Ecology, Distribution, Sediment transport, Substrates, Particles, Decomposition, Nutrient cycle, Wind factors, Sampling, Antarctica—Signy Island

53-345

**Significance of ice sheet's leading-edge roughness in relation to ice load.**

Takeuchi, T., Akagawa, S., Saeki, H., *International journal of offshore and polar engineering*, Sep. 1998, 8(3), p.161-166, 8 refs.

Ice solid interface, Sea ice, Offshore structures, Ice mechanics, Ice deformation, Ice loads, Ice edge, Surface roughness, Mechanical tests

53-346

**Laboratory simulation of wet icing buildup on H.V. insulators.**

Farzaneh, M., Laforte, J.L., *International journal of offshore and polar engineering*, Sep. 1998, 8(3), p.167-172, 12 refs. For another version see 51-5744.

Power lines, Electrical insulation, Precipitation (meteorology), Wet snow, Ice accretion, Water content, Meltwater, Hoarfrost, Electrical resistivity, Ice solid interface, Snow cover effect, Cold weather performance, Simulation, Laboratory techniques

53-347

**Signature of the last shelf-centered glaciation at a key section in the Pechora basin, arctic Russia.**

Tveranger, J., Astakhov, V., Mangerud, J., Svendsen, J.I., *Journal of Quaternary science*, May-June 1998, 13(3), p.189-203, 41 refs.

Pleistocene, Glacial geology, Tectonics, Ice sheets, Quaternary deposits, Glacier oscillation, Moraines, Clays, Stratigraphy, Geochronology, Radioactive age determination, Russia—Pechora

53-348

**Late Pleistocene marine clay succession at Krieger Flak, westernmost Baltic, southern Scandinavia.**

Klingberg, F., *Journal of Quaternary science*, May-June 1998, 13(3), p.245-253, 48 refs.

Pleistocene, Geological surveys, Marine geology, Quaternary deposits, Clays, Sedimentation, Paleogeology, Palynology, Stratigraphy, Lithology, Radioactive age determination, Baltic Sea

53-349

**Late Devensian glaciation of the eastern Lley Peninsula, North Wales: evidence for terrestrial depositional environments.**

Thomas, G.S.P., Chester, D.K., Crimes, P., *Journal of Quaternary science*, May-June 1998, 13(3), p.255-270, 50 refs.

Pleistocene, Ice sheets, Glacial deposits, Glacial geology, Glacier oscillation, Ice edge, Land ice, Landforms, Geomorphology, Stratigraphy, Quaternary deposits, Theories, United Kingdom—Wales

53-350

**Evidence for the occurrence of Vedde Ash in Sweden: radiocarbon and calendar age estimates.**

Wastegård, S., Björck, S., Possnert, G., Wohlfarth, B., *Journal of Quaternary science*, May-June 1998, 13(3), p.271-274, 22 refs.

Pleistocene, Paleoclimatology, Lacustrine deposits, Quaternary deposits, Sedimentation, Volcanic ash, Geochemistry, Geochronology, Radioactive age determination, Sweden

53-351

**Support for the Innuitian ice sheet in the Canadian High Arctic during the Last Glacial Maximum.**

England, J., *Journal of Quaternary science*, May-June 1998, 13(3), p.275-280, 36 refs.

Pleistocene, Paleoclimatology, Ice sheets, Quaternary deposits, Glacial deposits, Glacier oscillation, Ice edge, Glacier thickness, Coalescence, Glacial geology, Geochronology, Theories, Canada—Northwest Territories—Ellesmere Island

53-352

**Energy balance over an alpine snowcover—point measurements and areal distribution.**

Plüss, C., *Zürcher Geographische Schriften*, 1997, No.65, 115p., With German summary. Refs. p.100-106.

DLC QC883.86.S9 P58 1997

Climatology, Alpine landscapes, Snow hydrology, Snowmelt, Albedo, Radiation balance, Surface energy, Heat flux, Turbulent boundary layer, Snow air interface, Snow cover effect, Wind factors, Models, Runoff forecasting, Switzerland—Alps

53-353

**Chemical studies of snow, ice and meltwaters from Naradu glacier area.**

Kalsotra, B.L., Sheikh, H.N., Kumar, R., Kumar, A., Singh, B.P., *Indian journal of environmental protection*, Aug. 1995, 15(8), p.585-593, 5 refs.

Glacial hydrology, Watersheds, Water chemistry, Glacier surveys, Surface drainage, Meltwater, Snow composition, Geochemistry, Weathering, Sampling, Ion density (concentration), Seasonal variations, Environmental tests, India

53-354

**Shackleton Glacier Project, 1995-1996.**

Elliot, D.H., *Antarctic journal of the United States*, 1996, 31(2), p.1-3, 7 refs.

Research projects, Low temperature research, Geological surveys, Glacier surveys, Antarctica—Transantarctic Mountains

53-355

**Permian to Jurassic palynological collections in the Shackleton Glacier area.**

Askin, R.A., Cully, T.J., *Antarctic journal of the United States*, 1996, 31(2), p.3-5, 7 refs.

Geological surveys, Glacier surveys, Palynology, Glacial geology, Paleobotany, Antarctica—Shackleton Glacier

53-356

**Permian and Triassic biogenic structures, Shackleton Glacier and Mount Weaver areas, Transantarctic Mountains.**

Miller, M.F., Smail, S.E., *Antarctic journal of the United States*, 1996, 31(2), p.5-7, 11 refs.

Geological surveys, Glacier surveys, Glacial geology, Continental drift, Paleogeology, Antarctica—Transantarctic Mountains

53-357

**Preliminary analysis of Triassic vertebrates from the Shackleton Glacier region.**

Hammer, W.R., Hickerson, W.J., Collinson, J.W., *Antarctic journal of the United States*, 1996, 31(2), p.8-9, 6 refs.

Geological surveys, Glacier surveys, Fossils, Glacial geology, Antarctica—Shackleton Glacier

53-358

**New observations on the Triassic stratigraphy of the Shackleton Glacier region.**

Collinson, J.W., Hammer, W.R., *Antarctic journal of the United States*, 1996, 31(2), p.9-11, 5 refs.

Geological surveys, Glacier surveys, Glacial geology, Stratigraphy, Fossils, Antarctica—Shackleton Glacier

53-359

**Late Cenozoic Sirius Group of the upper Shackleton Glacier region, Transantarctic Mountains.**

Webb, P.N., et al., *Antarctic journal of the United States*, 1996, 31(2), p.12-13, 9 refs.

Geological surveys, Glacier surveys, Glacial geology, Glacial deposits, Antarctica—Shackleton Glacier

53-360

**Sub-Sirius Group erosion surface at Roberts Massif, upper Shackleton Glacier region, Transantarctic Mountains.**

Webb, P.N., Harwood, D.M., Hambrey, M.J., Krissek, L.A., Ashworth, A.C., Mabin, M.C.G., *Antarctic journal of the United States*, 1996, 31(2), p.14-15, 8 refs.

Geological surveys, Glacier surveys, Glacial geology, Glacial erosion, Antarctica—Roberts Massif

53-361

**Stratigraphy of the Sirius Group, upper Shackleton Glacier region, Transantarctic Mountains.**

Webb, P.N., Harwood, D.M., Hambrey, M.J., Krissek, L.A., Ashworth, A.C., Mabin, M.C.G., *Antarctic journal of the United States*, 1996, 31(2), p.16-17, 13 refs.

Geological surveys, Glacier surveys, Glacial geology, Stratigraphy, Antarctica—Shackleton Glacier

53-362

**New geologic constraints on basement rocks from the Shackleton Glacier region.**

Grunow, A., Encarnacion, J., Paulsen, T., Rowell, A.J., *Antarctic journal of the United States*, 1996, 31(2), p.18-19, 5 refs.

Geological surveys, Glacier surveys, Tectonics, Glacial geology, Geochronology, Rocks, Antarctica—Shackleton Glacier

53-363

**Geologic and thermochronologic studies along the front of the Transantarctic Mountains near the Shackleton and Liv Glaciers.**

Fitzgerald, P.G., Baldwin, S.L., Miller, S.R., Dingle, G., *Antarctic journal of the United States*, 1996, 31(2), p.20-22, 13 refs.

Geological surveys, Glacier surveys, Mapping, Glacial geology, Thermal properties, Antarctica—Transantarctic Mountains

53-364

**Structural and geomorphological observations at Cape Surprise, Shackleton Glacier area.**

Miller, S.R., Fitzgerald, P.G., Baldwin, S.L., Dingle, G., *Antarctic journal of the United States*, 1996, 31(2), p.23-25, 16 refs.

Geological surveys, Glacier surveys, Geomorphology, Glacial geology, Antarctica—Surprise, Cape

53-365

**Lakes in dry valleys at 85°S near Mount Heekin, Shackleton Glacier.**

Elliot, D.H., Collinson, J.W., Green, W.J., *Antarctic journal of the United States*, 1996, 31(2), p.25-27.

Topographic surveys, Limnology, Deserts, Geomorphology, Water flow, Drainage, Geochemistry, Glacier surveys, Glacial lakes, Frozen lakes, Antarctica—McMurdo Dry Valleys

53-366

**Seed fern reproductive organs from the Shackleton Glacier area.**

Taylor, E.L., Taylor, T.N., Cúneo, N.R., Archangel'sky, A., Kerp, H., *Antarctic journal of the United States*, 1996, 31(2), p.27-29, 4 refs.

Geological surveys, Glacier surveys, Paleobotany, Plant physiology, Glacial deposits, Stratigraphy, Antarctica—Shackleton Glacier

53-367

**Permian and Triassic paleosols and paleoenvironments of the central Transantarctic Mountains, Antarctica.**

Retallack, G.J., Krull, E.S., Robinson, S.E., *Antarctic journal of the United States*, 1996, 31(2), p.29-32, 4 refs.

Geological surveys, Glacial geology, Paleocology, Soil surveys, Stratigraphy, Soil classification, Soil chemistry, Soil formation, Antarctica—Transantarctic Mountains

53-368

**Paleoenvironment of the Triassic therapsid *Lystrosaurus* in the central Transantarctic Mountains, Antarctica.**

Retallack, G.J., Hammer, W.R., *Antarctic journal of the United States*, 1996, 31(2), p.33-35, 14 refs.

Geological surveys, Fossils, Paleocology, Soil surveys, Glacial geology, Stratigraphy, Antarctica—Transantarctic Mountains

53-369

**Late Triassic hummocky coals near Schroeder Hill, central Transantarctic Mountains, Antarctica.**

Krull, E.S., *Antarctic journal of the United States*, 1996, 31(2), p.35-37, 9 refs.

Geological surveys, Glacial geology, Paleobotany, Paleoclimatology, Peat, Coal, Antarctica—Schroeder Hill

53-370

**Geologic studies on rocks of the Jurassic Ferrar Group.**

Elliot, D.H., Fleming, T.H., Gero, C.M., *Antarctic journal of the United States*, 1996, 31(2), p.37-38, 5 refs.

Geological surveys, Glacier surveys, Rocks, Glacial geology, Geochemistry, Paleocology, Antarctica—Shackleton Glacier

53-371

**Global positioning system static sites along the Victoria Land coast of Antarctica.**

Berkman, P.A., Goad, C.M., Kwon, J.H., *Antarctic journal of the United States*, 1996, 31(2), p.44-45, 6 refs.

Geodetic surveys, Beaches, Sea level, Glacier oscillation, Glacial geology, Antarctica—Victoria Land

53-372

**Re-evaluation of the structure and stratigraphy of the Heritage Range, Ellsworth Mountains.**

Duebendorfer, E.M., Rees, M.N., *Antarctic journal of the United States*, 1996, 31(2), p.46-47, 7 refs.

Geological surveys, Glacial geology, Stratigraphy, Geomorphology, Mapping, Continental drift, Antarctica—Heritage Range

53-373

**Future of the west antarctic ice sheet.**

Bindschadler, R., *Science*, Oct. 16, 1998, 282(5388), p.428-429, Refs. p.429.

Ice sheets, Sea level, Ice shelves, Mass balance, Antarctica—West Antarctica

53-374

**Short circuit in thermohaline circulation: a cause for Northern Hemisphere glaciation?**

Driscoll, N.W., Haug, G.H., *Science*, Oct. 16, 1998, 282(5388), p.436-438, Refs. p.438.

Moisture transfer, Glaciation, Ocean currents, Water temperature, Salinity, Paleoclimatology, Global change, Ice age theory, Arctic Ocean

53-375

**North Atlantic oscillation dynamics recorded in Greenland ice cores.**

Appenzeller, C., Stocker, T.F., Anklin, M., *Science*, Oct. 16, 1998, 282(5388), p.446-449, Refs. p.448-449.

Ice cores, Climatic changes, Greenland

53-376

**Antarctic elevation change from 1992 to 1996.**

Wingham, D.J., Ridout, A.J., Scharroo, R., Arthern, R.J., Shum, C.K., *Science*, Oct. 16, 1998, 282(5388), p.456-458, Refs. p.458.

Ice sheets, Altitude, Height finding, Mass balance, Antarctica

53-377

**Heavy metals in antarctic ice from Law Dome: initial results.**

Hong, S., Boutron, C.F., Edwards, R., Morgan, V.I., *Environmental research, Section A*, Aug. 1998, 78(2), p.94-103, 61 refs.

Metals, Ice cores, Sea spray, Air masses, Marine atmospheres, Air pollution, Ice composition, Impurities, Antarctica—Law Dome

53-378

**Antarctic ice sheet as a model in search of life on other planets.**

Abyzov, S.S., et al., *Advances in space research*, Aug. 1998, 22(3), Life sciences: exobiology. Symposium of COSPAR Scientific Commission F. Proceedings, July 14-21, 1996, Birmingham, UK, p.363-368, 16 refs.

Ice sheets, Climate, Microbiology, Cryobiology, Antarctica—Vostok Station

53-379

**Numerical simulations of wind deflection fins to control snow accumulation in building steps.**

Sundsbo, P.A., *Journal of wind engineering and industrial aerodynamics*, Apr.- Aug. 1998, Vol.74-76, p.543-552, Selected papers presented at the 2nd European & African Conference on Wind Engineering, 2 EACWE, 22-26 June 1997, Genova, Italy. Edited by G. Solari. 18 refs.

Snow accumulation, Simulation, Wind velocity, Mathematical models, Blowing snow, Snowdrifts, Windbreaks, Buildings

53-380

**Snowdrifting simulation around Antarctic buildings.**

Delpech, P., Palier, P., Gandemer, J., *Journal of wind engineering and industrial aerodynamics*, Apr.- Aug. 1998, Vol.74-76, p.567-576, Selected papers presented at the 2nd European & African Conference on Wind Engineering, 2 EACWE, 22-26 June 1997, Genova, Italy. Edited by G. Solari. 11 refs.

Wind factors, Simulation, Buildings, Blowing snow, Snowdrifts, Antarctica—Charlie, Dome, Antarctica—Concordia Station

53-381

**Snow and wind experimental analysis in the design of long-span sub-horizontal structures.**

Majowiecki, M., *Journal of wind engineering and industrial aerodynamics*, Apr.- Aug. 1998, Vol.74-76, p.795-807, Selected papers presented at the 2nd European & African Conference on Wind Engineering, 2 EACWE, 22-26 June 1997, Genova, Italy. Edited by G. Solari. 5 refs.

Structural analysis, Snow loads, Wind pressure, Design criteria

53-382

**Transformations and neof ormations of clay in the cryogenic environment: examples from Transbaikalia (Siberia) and Patagonia (Argentina).**

Vogt, T., Larqué, P., *European journal of soil science*, Sep. 1998, 49(3), p.367-376, 39 refs.

Pleistocene, Geocryology, Alluvium, Periglacial processes, Permafrost transformation, Clay minerals, Frozen ground mechanics, Desiccation, Mineralogy, Cryoturbation, Scanning electron microscopy, Russia—Siberia, Argentina

53-383

**Organochlorine pesticides and enantiomers of chiral pesticides in Arctic Ocean water.**

Jantunen, L.M.M., Bidleman, T.F., *Archives of environmental contamination and toxicology*, Aug. 1998, 35(2), p.218-228, 58 refs.

Oceanography, Oceanographic surveys, Water chemistry, Surface waters, Water pollution, Hydrocarbons, Degradation, Sampling, Statistical analysis, Environmental tests, Arctic Ocean

53-384

**High-precision array element localization for vertical line arrays in the Arctic Ocean.**

Dosso, S.E., et al., *IEEE journal of oceanic engineering*, Oct. 1998, 23(4), p.365-379, 24 refs.

Oceanography, Underwater acoustics, Sound waves, Wave propagation, Sensors, Radio beacons, Velocity measurement, Analysis (mathematics), Orientation, Arctic Ocean

53-385

**Mitigation of rain and ice particle cross polarization at RF for dual circularly polarized waves.**

Tomiyasu, K., *IEEE transactions on antennas and propagation*, Sep. 1998, 46(9), p.1379-1385, 28 refs.

Telecommunication, Electronic equipment, Radio waves, Anisotropy, Wave propagation, Polarization (waves), Precipitation (meteorology), Ice crystals, Ice dielectrics, Countermeasures, Design

53-386

**Sedimentology, palynostratigraphy, palynofacies and thermal maturity of Upper Permian rocks of Kolguyev Island, Barents Sea, Russia.**

Grigoriev, M., Utting, J., *Bulletin of Canadian petroleum geology*, Mar. 1998, 46(1), p.1-11, With French summary. 32 refs.

Pleistocene, Geological surveys, Subpolar regions, Earth crust, Hydrocarbons, Sedimentation, Paleocology, Palynology, Stratigraphy, Correlation, Barents Sea

53-387

**Illite/smectite diagenesis in the Beaufort-Mackenzie Basin, arctic Canada: relation to hydrocarbon occurrence?**

Ko, J., Hesse, R., *Bulletin of Canadian petroleum geology*, Mar. 1998, 46(1), p.75-88, With French summary. 46 refs.

Marine geology, Subpolar regions, Hydrocarbons, Sedimentation, Exploration, Clays, Diagenesis, Drill core analysis, Lithology, Geothermy, Beaufort Sea, Canada—Northwest Territories—Mackenzie Basin

53-388

**AC and switching impulse performance of an ice-covered metal oxide surge arrester.**

Kannus, K., Lahti, K., Nousiainen, K., *IEEE transactions on power delivery*, Oct. 1998, 13(4), p.1168-1173, 14 refs.

Power line icing, Electrical insulation, Ice accretion, Icicles, Ice solid interface, Ice cover effect, Charge transfer, Electrical resistivity, Thermal stresses, Countermeasures

53-389

**Broad spectral, interdisciplinary investigation of the electromagnetic properties of sea ice.**

Jezeq, K.C., Perovich, D.K., MP 5225, *IEEE transactions on geoscience and remote sensing*, Sep. 1998, 36(5)pt.II, p.1633-1641, 30 refs.

Remote sensing, Sea ice, Geophysical surveys, Ice optics, Surface structure, Backscattering, Electromagnetic properties, Spectra, Models, Simulation, Research projects

This paper highlights the interrelationship of research completed by a team of investigators and presented in the several individual papers comprising this Special Section on the Office of Naval Research, Arlington, VA. Sponsored Sea Ice Electromagnetics Accelerated Research Initiative. The objectives of the initiative were the following: understand the mechanisms and processes that link the morphological and physical properties of sea ice to its electromagnetic (EM) characteristics; develop and verify predictive models for the interaction of visible, infrared, and microwave radiation with sea ice; and develop and verify inverse scattering techniques applicable to problems involving the interaction of EM radiation with sea ice. Along with describing results from experiments and modeling efforts, possible paradigms for using broad spectral data in developing algorithms for analyzing remote-sensing data in terms of ice concentration, age, type, and possibly thickness are briefly discussed.

53-390

**Evolution of electromagnetic signatures of sea ice from initial formation to the establishment of thick first-year ice.**

Grenfell, T.C., Gow, A.J., Perovich, D.K., MP 5226, *IEEE transactions on geoscience and remote sensing*, Sep. 1998, 36(5)pt.II, p.1642-1654, 38 refs.

Sea ice, Remote sensing, Ice optics, Radiometry, Backscattering, Young ice, Ice growth, Ice cover thickness, Electromagnetic properties, Statistical analysis, Spectra, Sensors, Correlation

The objective of the present work is to characterize the temporal evolution of the electromagnetic signatures of sea ice from initial formation through the development of first-year ice on the basis of the temporal variations in the physical properties of the ice. The time series of young sea ice signatures, including microwave emissivity, radar backscatter, and visible and infrared spectral albedo, has been measured at successive stages in the growth and development of sea ice, both under laboratory and field conditions. Mutually consistent theoretical models covering the entire wavelength range of the observations are applied to selected cases and successfully match the observations. Principal component analysis of the data set suggests combinations of the set of frequencies to effectively distinguish among different stages in the temporal evolution of the sea ice.

53-391

**Forward electromagnetic scattering models for sea ice.**

Golden, K.M., et al, *IEEE transactions on geoscience and remote sensing*, Sep. 1998, 36(5)pt.II, p.1655-1674, 100 refs.

Remote sensing, Sea ice, Ice dielectrics, Electromagnetic properties, Wave propagation, Scattering, Snow cover effect, Surface roughness, Ice models, Mathematical models, Theories

53-392

**Inverse electromagnetic scattering models for sea ice.**

Golden, K.M., et al, *IEEE transactions on geoscience and remote sensing*, Sep. 1998, 36(5)pt.II, p.1675-1704, 113 refs.

Remote sensing, Microwaves, Sea ice, Ice cover thickness, Ice microstructure, Ice dielectrics, Electromagnetic properties, Scattering, Brightness, Statistical analysis, Mathematical models, Theories

53-393

**Field observations of the electromagnetic properties of first-year sea ice.**

Perovich, D.K., et al, MP 5227, *IEEE transactions on geoscience and remote sensing*, Sep. 1998, 36(5)pt.II, p.1705-1715, 28 refs.

Remote sensing, Spaceborne photography, Sea ice, Ice optics, Electromagnetic properties, Albedo, Radar echoes, Microwaves, Backscattering, Ice microstructure, Snow cover effect, Simulation

An interdisciplinary field experiment was conducted during Apr. and May of 1994 at Point Barrow, AK, to investigate the relationship between the electromagnetic and physical-biological properties of first-year sea ice. Electromagnetic signatures of bare and snow-covered first-year ice were measured over a broad spectral range, including ultraviolet through near-infrared albedo, microwave emissivity, and radar backscatter. Observations indicated that the scattering of visible light varied significantly with depth in response to changes in the size and orientation of the ice crystals and in the number of brine and air inclusions. Passive microwave emissivities showed a substantial difference between snow-covered and snow-free sites due to the effects of impedance matching at lower frequencies and volume scattering at higher frequencies produced by the snow.

53-394

**Laboratory measurements of sea ice: connections to microwave remote sensing.**

Kwok, R., Gow, A.J., Perovich, D.K., MP 5228, *IEEE transactions on geoscience and remote sensing*, Sep. 1998, 36(5)pt.II, p.1716-1730, 35 refs.

Remote sensing, Sea ice, Young ice, Ice cover thickness, Electromagnetic properties, Spaceborne photography, Radar echoes, Backscattering, Polarization (waves), Simulation, Correlation

The connections between laboratory measurements and remote-sensing observations of sea ice are explored. The focus of this paper is on thin ice, which is more easily simulated in a laboratory environment. Results of C-band scatterometer measurements and their use in the interpretation of remote-sensing data are discussed. The potential of polarimetric radar measurements in the retrieval of thickness of thin ice and the importance of low-frequency passive measurements with respect to the thickness of thin ice are considered.

53-395

**Saline ice thickness retrieval under diurnal thermal cycling conditions.**

Shih, S.E., Ding, K.H., Kong, J.A., Nghiem, S.V., Jordan, A.K., *IEEE transactions on geoscience and remote sensing*, Sep. 1998, 36(5)pt.II, p.1731-1742, 24 refs.

Remote sensing, Sea ice, Salt ice, Ice growth, Ice cover thickness, Heat flux, Electromagnetic properties, Radar echoes, Diurnal variations, Scattering, Mathematical models

53-396

**Modeling light propagation in sea ice.**

Mobley, C.D., Cota, G.F., Grenfell, T.C., Maffione, R.A., Pegau, W.S., Perovich, D.K., MP 5229, *IEEE transactions on geoscience and remote sensing*, Sep. 1998, 36(5)pt.II, p.1743-1749, 21 refs.

Remote sensing, Sea ice, Ice optics, Electromagnetic properties, Light scattering, Diffusion, Radiation absorption, Analysis (mathematics), Simulation, Forecasting

This paper outlines the process by which it is possible to begin with the physical properties of sea ice (such as the size distributions of brine pockets and air bubbles), then predict the optical absorption and scattering properties of the ice, and finally use these inherent

optical properties in radiative transfer models to predict light propagation within the ice. Each step of this entire process is illustrated by application to a comprehensive data set of sea ice physical and optical properties. Agreement is found between measured and modeled beam spread functions, albedos and transmittances.

53-397

**Role of snow on microwave emission and scattering over first-year sea ice.**

Barber, D.G., Perovich, D.K., Gow, A.J., MP 5230, *IEEE transactions on geoscience and remote sensing*, Sep. 1998, 36(5)pt.II, p.1750-1763, 22 refs.

Remote sensing, Sea ice, Young ice, Electromagnetic properties, Microwaves, Scattering, Snow optics, Snow electrical properties, Snow cover effect, Simulation, Thermodynamics, Models

The primary objective of this paper is to investigate the geophysical and thermodynamic effects of snow on sea ice in defining the electromagnetic interaction within the microwave portion of the spectrum. The authors combine observational evidence of both the physical and thermodynamic characteristics of snow with direct measurements of scattering and emission at a variety of frequencies. They explain observational results using various "state-of-the-art" forward scattering and emission models. The thermodynamic effects of snow on microwave scattering and emission are driven by the role that thermal diffusivity and conductivity play in the definition of brine volumes at the ice surface and within the snow volume. Once water in liquid phase appears within the snow cover, both emission and scattering are directly affected by the high complex permittivity of this volume fraction within the snow layer.

53-398

**Electromagnetic and physical properties of sea ice formed in the presence of wave action.**

Onstott, R.G., et al, MP 5231, *IEEE transactions on geoscience and remote sensing*, Sep. 1998, 36(5)pt.II, p.1764-1783, 16 refs.

Remote sensing, Radiometry, Radar echoes, Backscattering, Sea ice, Young ice, Ice formation, Electromagnetic properties, Physical properties, Water waves, Classifications, Ice air interface, Simulation

In this paper, the physical and electromagnetic properties of sea ice, formed under wave-agitated conditions, are studied and compared with results obtained from ice formed under quiescent conditions. A variety of sensors, both active and passive, optical and microwave, were used to perform this characterization. Results showed that emission, backscatter, and albedo all take different signature paths during the transformation from saline water to young sea ice and that the paths depend on sea surface state during ice formation.

53-399

**Model for altimeter returns from penetrable geophysical media.**

Adams, R.J., Brown, G.S., *IEEE transactions on geoscience and remote sensing*, Sep. 1998, 36(5)pt.II, p.1784-1793, 27 refs.

Remote sensing, Geophysical surveys, Ice sheets, Height finding, Radar echoes, Scattering, Surface roughness, Mathematical models, Snow cover effect

53-400

**Improved determination of the sea ice edge with SSM/I data for small-scale analysis.**

Hunewinkel, T., Markus, T., Heygster, G.C., *IEEE transactions on geoscience and remote sensing*, Sep. 1998, 36(5)pt.II, p.1795-1808, 33 refs.

Remote sensing, Sea ice, Ice surveys, Spaceborne photography, Radiometry, Ice edge, Detection, Accuracy, Models, Image processing, Antarctica—Weddell Sea

53-401

**Antarctic meteorological data. Vol.37. Meteorological data at Syowa Station and Dome Fuji Station in 1996.**

Japanese Antarctic Research Expedition, Tokyo, Japan Meteorological Agency, 1997, 223p., For a CD-ROM version see 53-261.

Meteorological data, Snowdrifts, Blowing snow, Snowstorms, Ice needles, Air pollution, Ozone, Solar radiation, Antarctica—Showa Station, Antarctica—Dome Fuji Station

53-402

United Kingdom antarctic research 1991 report to SCAR, No.33. April 1990-September 1991: record of activities; October 1991-September 1992: planned activities.

Royal Society of London. Antarctic Research Committee, London, The Royal Society, 1991, 62p., Bibliography p.43-62.

Research projects, Low temperature research, Antarctica

53-403

Antarctic first aid manual.

New Zealand. Department of Scientific and Industrial Research. Antarctic Division, Christchurch, 1988, 52p., Refs. p.51-52.

Cold exposure, Cold weather survival, Manuals, Antarctica

53-404

Ice core contributions to global change research: past success and future directions.

Mayewski, P.A., et al, Washington, D.C., National Science Foundation. Ice Core Working Group Draft, 1998, 47p., Refs. p.41-47.

Research projects, Ice cores, Global change, Paleoclimatology, Paleoecology, Climatic changes, Atmospheric composition, Human factors, Antarctica

53-405

Deposition of sulfate aerosol and isotopes of beryllium to the antarctic snow surface and implications for ice cores and climate (tracers, global climate).

Harder, S.L., Seattle, University of Washington, 1996, 192p., University Microfilms order No.97-16849, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 57(12), p.7414.

Aerosols, Isotopes, Snow composition, Atmospheric composition, Snow air interface, Antarctica

53-406

On the ecology of larval krill, *Euphausia superba*, during winter: krill-sea ice interactions (Antarctic).

Frazer, T.K., Santa Barbara, University of California, 1995, 189p., University Microfilms order No.9617658, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 57(1), p.68.

Sea ice, Physiological effects, Animals, Plankton, Ecology, Biomass, Algae, Nutrient cycle, Antarctica

53-407

Peripheral and whole-body cold acclimatization in antarctic scuba divers.

Pollock, N.W., Tallahassee, Florida State University, 1996, 221p., University Microfilms order No.97-00221, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 57(8), p.4825.

Low temperature research, Acclimatization, Physiological effects, Cold tolerance, Cold stress, Health, Cold weather survival, Antarctica

53-408

Extinction of ultraviolet-A, visible and near-infrared wavelength light in snow and antarctic sea ice.

Quakenbush, T.K., Fairbanks, University of Alaska, 1994, 115p., University Microfilms order No.9529959, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 56(4), p.2082.

Sea ice, Ice optics, Snow optics, Ultraviolet radiation, Light (visible radiation), Ozone, Atmospheric physics, Algae, Photosynthesis, Antarctica

53-409

Mission analysis support for USCG International Ice Patrol. Final report.

Pritchett, C.W., Armacost, R.L., U.S. Coast Guard Research and Development Center, Nov. 1995, CGR/DC-38/95, 19p., ADA-304 395.

International cooperation, Sea ice, Ice conditions, Research projects, Cost analysis, Icebergs, Ice detection, Ice forecasting, Ice reporting

53-410

Laboratory investigation of sea ice dynamics in a stratified waterbody. Preliminary results.

Waters, J.K., Bruno, M.S., Herrington, T.O., Rankin, K.L., Stevens Institute of Technology. Davidson Laboratory. Technical report, June 1993, SIT-DL-93-9-2695, 98p., ADA-302 231.

Sea ice distribution, Ice conditions, Ice floes, Ice models, Rheology, Ice water interface, Oceanographic surveys, Polar regions

53-411

Possibilities of application of satellite data for monitoring ice condition in the Antarctic region.

Shvyrvkov, N.N., U.S. Joint Publications Research Service. Report, 1989, 6p., N89-28907, In its JPRS Report: Science and Technology. USSR: Space. 16th International Congress of the International Society for Photogrammetry and Remote Sensing. Vol.2, p.3540.

Spacecraft, Imaging, Remote sensing, Sea ice, Ice conditions, Mapping, Antarctica

53-412

Atmospheric ionization by solar particles detected by nitrate measurement in antarctic snow.

Dreschhoff, G., Armstrong, T.P., Cravens, T., Vitt, F., U.S. Air Force. Office of Scientific Research. Technical report, June 30, 1993, AFOSR-TR-93-0556, 121p., ADA-267 583.

Snow composition, Atmospheric composition, Firn, Ice composition, Atmospheric physics, Antarctica

53-413

SSM/I sea ice concentrations using the bootstrap algorithm.

Comiso, J.C., et al, U.S. National Aeronautics and Space Administration. Report, Dec. 1995, NASA-RP-1380, 60p., N96-22573.

Sea ice distribution, Ice conditions, Imaging, Mathematical models, Remote sensing, Polar regions, Atmospheric attenuation, Mapping, Spaceborne photography

53-414

Provenance of erratic boulders on the Hiiumaa island, Estonia, with special reference to the lack of glacial transport of Early Palaeozoic limestone from the Åland Islands, Finland. [Viron Hidenmaan kivien alkuperä—miksi Ahvenanmaan varhaispaleotsoolet kalkkikivet puuttuvat?]

Uutela, A., Terra, 1998, 110(2), p.79-90, In Finnish with English summary, 38 refs.

Glacial geology, Lithology, Sediment transport, Rock properties, Glacial erosion, Striations, Orientation, Statistical analysis, Finland, Estonia

53-415

Pleistocene climatic variations in the western United States.

Heusser, C.J., Pacific Science Congress, 10th, Honolulu, HI, Aug. 21-Sep.6, 1961. Symposium on Pleistocene and Post-Pleistocene climatic variations in the Pacific area. Edited by D.I. Blumenstock, Honolulu, Bishop Museum Press, 1966, p.9-36, Refs. p.31-36. DLC QC884.P58

Pleistocene, Paleoclimatology, Climatic changes, Paleoecology, Glacial geology, Glacial deposits, Lacustrine deposits, Quaternary deposits, Stratigraphy, Correlation, United States

53-416

Quaternary climatic variations in Antarctica as suggested by glacial fluctuations.

Péwé, T.L., Pacific Science Congress, 10th, Honolulu, HI, Aug. 21-Sep.6, 1961. Symposium on Pleistocene and Post-Pleistocene climatic variations in the Pacific area. Edited by D.I. Blumenstock, Honolulu, Bishop Museum Press, 1966, p.57-82, Refs. p.80-82. DLC QC884.P58

Pleistocene, Paleoclimatology, Climatic changes, Glacial geology, Glacier oscillation, Ice edge, Periodic variations, Geochronology, Correlation, Antarctica—McMurdo Sound

53-417

Glaciation on Mauna Kea as evidence of Pleistocene climatic conditions in Hawaii.

Wentworth, C.K., Pacific Science Congress, 10th, Honolulu, HI, Aug. 21-Sep.6, 1961. Symposium on Pleistocene and Post-Pleistocene climatic variations in the Pacific area. Edited by D.I. Blumenstock, Honolulu, Bishop Museum Press, 1966, p.123-129, 7 refs.

DLC QC884.P58

Pleistocene, Paleoclimatology, Glacial geology, Mountain glaciers, Glaciation, Ice age theory, United States—Hawaii—Mauna Kea

53-418

Organic geochemistry and biological marker geochemistry of Schel Point Group (Triassic) and recovered oils from the Sverdrup Basin (arctic islands, Canada).

Brooks, P.W., Embry, A.F., Goodarzi, F., Stewart, R., Bulletin of Canadian petroleum geology, Sep. 1992, 40(3), p.173-187, With French summary. 35 refs.

Hydrocarbons, Reservoirs, Distribution, Subpolar regions, Geochemistry, Paleoecology, Algae, Stratigraphy, Sedimentation, Chemical analysis, Statistical analysis, Canada—Northwest Territories—Sverdrup Basin

53-419

Geology and structural evolution of the Demarcation Subbasin and Herschel High, Beaufort-Mackenzie Basin, arctic Canada.

Dietrich, J.R., Lane, L.S., Bulletin of Canadian petroleum geology, Sep. 1992, 40(3), p.188-197, With French summary. 19 refs.

Pleistocene, Subpolar regions, Earth crust, Tectonics, Hydrocarbons, Reservoirs, Sedimentation, Stratigraphy, Geologic processes, Seismic reflection, Exploration, Beaufort Sea, Canada—Northwest Territories—Mackenzie Basin

53-420

Influence of Proterozoic structures on the development of Laramide structures, northern Interior Plains, Northwest Territories, Canada.

MacLean, B.C., Cook, D.G., Bulletin of Canadian petroleum geology, Sep. 1992, 40(3), p.207-221, With French summary. 37 refs.

Pleistocene, Subpolar regions, Earth crust, Geologic structures, Tectonics, Deformation, Stratigraphy, Seismic reflection, Exploration, Canada—Northwest Territories—Colville Hills

53-421

Helium isotope composition of the early Iceland mantle plume inferred from the Tertiary picrites of West Greenland.

Graham, D.W., Larsen, L.M., Hanan, B.B., Storey, M., Pedersen, A.K., Lupton, J.E., Earth and planetary science letters, Aug. 1998, 160(3-4), p.241-255, 71 refs.

Pleistocene, Geologic structures, Geological surveys, Subpolar regions, Geochemistry, Magma, Mass transfer, Radioactive isotopes, Isotope analysis, Indexes (ratios), Greenland

53-422

Seasonal variations in the origin of lead in snow at Dye 3, Greenland.

Rosman, K.J.R., Chisholm, W., Boutron, C.F., Candelone, J.P., Jaffrezzo, J.L., Davidson, C.I., Earth and planetary science letters, Aug. 1998, 160(3-4), p.383-389, 17 refs.

Climatology, Air pollution, Aerosols, Precipitation (meteorology), Ice sheets, Snow composition, Snow impurities, Isotope analysis, Seasonal variations, Sampling, Statistical analysis, Origin, Greenland—Dye 3

53-423

**Reykjanes Ridge: structure and tectonics of a hot-spot-influenced, slow-spreading ridge, from multi-beam bathymetry, gravity and magnetic investigations.**  
Searle, R.C., et al, *Earth and planetary science letters*, Aug. 1998, 160(3-4), p.463-478, 55 refs.  
Marine geology, Subpolar regions, Earth crust, Tectonics, Geophysical surveys, Geologic processes, Magma, Geomagnetism, Gravity anomalies, Sounding, Fracture zones, Atlantic Ocean—Reykjanes Ridge

53-424

**<sup>40</sup>Ar/<sup>39</sup>Ar geochronology of the West Greenland Tertiary volcanic province.**  
Storey, M., Duncan, R.A., Pedersen, A.K., Larsen, L.M., Larsen, H.C., *Earth and planetary science letters*, Aug. 1998, 160(3-4), p.569-586, 77 refs.  
Pleistocene, Geochronology, Earth crust, Tectonics, Volcanoes, Magma, Geologic processes, Stratigraphy, Radioactive isotopes, Isotope analysis, Radioactive age determination, Greenland

53-425

**Oxygen isotope measurements of mammoth and reindeer skeletal remains: an archive of Late Pleistocene environmental conditions in Eurasian Arctic.**  
Genoni, L., Iacumin, P., Nikolaev, V., Gribchenko, I.U., Longinelli, A., *Earth and planetary science letters*, Aug. 1998, 160(3-4), p.587-592, 22 refs.  
Pleistocene, Paleoclimatology, Sedimentation, Paleoecology, Subpolar regions, Geochronology, Oxygen isotopes, Isotope analysis, Radioactive age determination, Hydrologic cycle, Russia—Siberia

53-426

**Climate change during the last 150 million years: reconstruction from a carbon cycle model.**  
Tajika, E., *Earth and planetary science letters*, Aug. 1998, 160(3-4), p.695-707, 46 refs.  
Pleistocene, Paleoclimatology, Climatic changes, Surface temperature, Earth crust, Geochemical cycles, Atmospheric composition, Carbon dioxide, Tectonics, Carbon isotopes, Models, Simulation

53-427

**Post-breakup basaltic magmatism along the West Greenland Tertiary rifted margin.**  
Bernstein, S., Kelemen, P.B., Tegner, C., Kurz, M.D., Blusztajn, J., Brooks, C.K., *Earth and planetary science letters*, Aug. 1998, 160(3-4), p.845-862, 70 refs.  
Pleistocene, Earth crust, Marine geology, Tectonics, Continental drift, Subpolar regions, Magma, Thin sections, Isotope analysis, Correlation, Greenland

53-428

**Gas hydrate resources of northern Alaska.**  
Collett, T.S., *Bulletin of Canadian petroleum geology*, Sep. 1997, 45(3), p.317-338, With French summary. 33 refs.  
Hydrocarbons, Natural gas, Subpolar regions, Permafrost surveys, Natural resources, Sedimentation, Geologic processes, Frozen ground chemistry, Exploration, United States—Alaska

53-429

**Petrology and diagenetic history of deltaic litharenites, Oligocene Kugmallit Sequence, Beaufort-Mackenzie Basin, arctic Canada.**  
Nentwich, F.W., Yole, R.W., *Bulletin of Canadian petroleum geology*, Sep. 1997, 45(3), p.339-355, With French summary. Refs. p.353-355.  
Geological surveys, Hydrocarbons, Lithology, Stratigraphy, Subpolar regions, Deltas, Diagenesis, Grain size, Drill core analysis, Exploration, Scanning electron microscopy, Beaufort Sea, Canada—Northwest Territories—Mackenzie Basin

53-430

**Last Glacial snowlines in the Tibetan Plateau: an argument against an extensive coalescing ice sheet.**  
Feng, Z.D., *GeoJournal*, 1998, 44(4), p.355-362, 41 refs.  
Pleistocene, Paleoclimatology, Ice sheets, Glacier oscillation, Snow line, Altitude, Precipitation (meteorology), Topographic effects, Models, Simulation, Ice age theory, China—Tibet

53-431

**Fault systems and paleostresses in the Vestfirðir Peninsula. Relationships with the Tertiary paleorifts of Skagi and Snaefells (northwest Iceland).**  
Bergerat, F., Angelier, J., *Geodinamica acta*, Aug. 1998, 11(2-3), p.105-118, With French summary. 34 refs.  
Pleistocene, Earth crust, Subpolar regions, Tectonics, Marine geology, Geologic structures, Magma, Deformation, Orientation, Brittleness, Stress concentration, Iceland

53-432

**Asthenosphere flow model of hotspot-ridge interactions: a comparison of Iceland and Kerguelen.**  
Yale, M.M., Morgan, J.P., *Earth and planetary science letters*, Sep. 1998, 161(1-4), p.45-56, 32 refs.  
Marine geology, Earth crust, Subpolar regions, Tectonics, Geothermy, Viscosity, Topographic features, Migration, Mathematical models, Rheology, Simulation, Iceland, —Kerguelen Ridge

53-433

**Wind-blown origin of the Pliocene red clay formation in the central Loess Plateau, China.**  
Ding, Z.L., Sun, J.M., Liu, T.S., Zhu, R.X., Yang, S.L., Gou, B., *Earth and planetary science letters*, Sep. 1998, 161(1-4), p.135-143, 23 refs.

Pleistocene, Paleoclimatology, Atmospheric circulation, Loess, Eolian soils, Quaternary deposits, Clay soils, Soil formation, Grain size, Remanent magnetism, Stratigraphy, China—Loess Plateau

53-434

**Applications of heat pipes and thermosyphons in cold regions.**  
Cheng, K.C., Zarling, J.P., International Heat Pipe Conference, 7th, Minsk, Byelarus, May 21-25, 1990. Proceedings, Vol.II. Edited by L.L. Vasiliev, New York, Begell House Inc., 1993, p.1-32, 229 refs.  
DLC TJ264.I58 1990 Vol.2

Heat pipes, Pipelines, Ice removal, Snow melting, Foundations, Frozen ground temperature, Temperature control, Soil stabilization, Permafrost preservation, Heat transfer, Cold weather performance, Design

53-435

**Development of an artificial permafrost storage using heat pipes.**  
Fukuda, M., Tsuchiya, F., Ryokai, K., Mochizuki, M., Mashiko, K., International Heat Pipe Conference, 7th, Minsk, Byelarus, May 21-25, 1990. Proceedings, Vol.II. Edited by L.L. Vasiliev, New York, Begell House Inc., 1993, p.305-317, 2 refs.  
DLC TJ264.I58 Vol.2

Frozen ground thermodynamics, Heat pipes, Heat transfer, Soil freezing, Artificial freezing, Permafrost physics, Cold storage, Temperature control, Design, Mechanical tests

53-436

**Use of a conductivity measurement method for assessing freezing injury. 1. Influence of leakage time, segment number, size and shape in a sample on evaluation of the degree of injury.**  
Prášil, I., Zámečník, J., *Environmental and experimental botany*, Aug. 1998, 40(1), p.1-10, 25 refs.  
Plant physiology, Grasses, Freezing points, Damage, Indexes (ratios), Plant tissues, Electrical resistivity, Electrical measurement, Laboratory techniques, Cold weather tests

53-437

**Polyurethane rigid form, a proven thermal insulating material for applications between +130°C and -196°C.**  
Demharter, A., *Cryogenics*, Jan. 1998, 38(1), p.113-117, 3 refs.  
Cryogenic structures, Polymers, Cellular plastics, Refrigeration, Panels, Thermal insulation, Chemical composition, Thermal properties

53-438

**Sedimentology and clast orientation of deposits produced by glacial-lake outburst floods in the Mount Everest region, Nepal.**  
Cenderelli, D.A., Wohl, E.E., Geomorphological hazards in high mountain areas. Edited by J. Kalvoda and C.L. Rosenfeld. *GeoJournal Library*, Vol.46, Dordrecht, Kluwer Academic Publishers, 1998, p.1-26, 45 refs.  
DLC QE599.A2 G46 1998  
Geomorphology, Mountains, Glacial hydrology, Glacial lakes, Lake bursts, Flooding, Water erosion, Sediment transport, Sedimentation, Orientation, Lithology, Particle size distribution, Nepal, China

53-439

**Catastrophic flood flushing of sediment, western Himalaya, Pakistan.**  
Shroder, J.F., Jr., Bishop, M.P., Scheppy, R., Geomorphological hazards in high mountain areas. Edited by J. Kalvoda and C.L. Rosenfeld. *GeoJournal Library*, Vol.46, Dordrecht, Kluwer Academic Publishers, 1998, p.27-48, 41 refs.  
DLC QE599.A2 G46 1998  
Geomorphology, Mountains, Glacial hydrology, Glacial lakes, Lake bursts, Meltwater, Flooding, Water erosion, Landslides, Sediment transport, Pakistan—Himalaya Mountains

53-440

**Glacier-induced hazards as a consequence of glacial mountain landscapes, in particular glacier- and moraine-dammed lake outbursts and Holocene debris production.**  
Kuhle, M., Meiners, S., Iturrizaga, L., Geomorphological hazards in high mountain areas. Edited by J. Kalvoda and C.L. Rosenfeld. *GeoJournal Library*, Vol.46, Dordrecht, Kluwer Academic Publishers, 1998, p.63-96, 37 refs.  
DLC QE599.A2 G46 1998  
Geomorphology, Mountains, Glacier oscillation, Glacial hydrology, Glacial erosion, Moraines, Quaternary deposits, Lake bursts, Mass movements (geology), Landscape development, Safety

53-441

**Late Holocene sturzstroms in Glacier National Park, Montana, U.S.A.**  
Butler, D.R., Malanson, G.P., Wilkerson, F.D., Schmid, G.L., Geomorphological hazards in high mountain areas. Edited by J. Kalvoda and C.L. Rosenfeld. *GeoJournal Library*, Vol.46, Dordrecht, Kluwer Academic Publishers, 1998, p.149-166, 52 refs.  
DLC QE599.A2 G46 1998  
Geomorphology, Mountains, Slope processes, Avalanches, Landslides, Rock streams, Periglacial processes, Quaternary deposits, Age determination, United States—Montana—Glacier National Park

53-442

**Natural hazards in relation to present stratovolcano deglaciation: Popocatepetl and Citlaltepetl, Mexico.**  
Palacios, D., Geomorphological hazards in high mountain areas. Edited by J. Kalvoda and C.L. Rosenfeld. *GeoJournal Library*, Vol.46, Dordrecht, Kluwer Academic Publishers, 1998, p.177-209, 136 refs.  
DLC QE599.A2 G46 1998  
Geomorphology, Mountain glaciers, Glacier oscillation, Volcanoes, Slope processes, Glacier melting, Water erosion, Avalanches, Geothermal thawing, Safety, Mexico—Popocatepetl, Mexico—Citlaltepetl

53-443

**Geomorphologic hazards in a glaciated granitic massif: Sierra de Gredos, Spain.**  
Palacios, D., De Marcos, J., Geomorphological hazards in high mountain areas. Edited by J. Kalvoda and C.L. Rosenfeld. *GeoJournal Library*, Vol.46, Dordrecht, Kluwer Academic Publishers, 1998, p.285-307, 37 refs.  
DLC QE599.A2 G46 1998  
Geomorphology, Mountains, Glacial geology, Moraines, Slope stability, Glacial erosion, Snowmelt, Solifluction, Weathering, Safety, Spain—Sierra de Gredos



53-444

**Proceedings. POAC 95. Volume 4.** International Conference on Port and Ocean Engineering under Arctic Conditions, 13th, Murmansk, Russia, Aug. 15-18, 1995, St. Petersburg, Russia, 1995, 249p., Refs. passim. For individual papers see 53-445 through 53-464. For Vols. 1 and 2 see 49-6227 through 49-6267; for Vol. 3 see 52-6678 through 52-6706.

Ice navigation, Icebreakers, Ice conditions, Sea ice, Ice cover, Ice solid interface, Tanker ships, Marine transportation, Northern Sea Route

53-445

**Technical and economical evaluation of the "Northern Sea Route".**

Schwarz, J., International Conference on Port and Ocean Engineering under Arctic Conditions, 13th, Murmansk, Russia, Aug. 15-18, 1995. Proceedings. POAC 95. Vol. 4, St. Petersburg, Russia, 1995, p. 12-32, 6 refs.

Marine transportation, Ice navigation, Economic analysis, Ice conditions, Sea ice, Icebreakers, Tanker ships, Northern Sea Route

53-446

**Yamal Sea ice engineering and field studies.**

Blanchet, D., DeFranco, S., Cox, G., Mironov, E., Smirnov, V., Tsoi, L., International Conference on Port and Ocean Engineering under Arctic Conditions, 13th, Murmansk, Russia, Aug. 15-18, 1995. Proceedings. POAC 95. Vol. 4, St. Petersburg, Russia, 1995, p. 33-41. Ice conditions, Sea ice, Ice scoring, Ice loads, Drift, Hummocks, Ice edge, Barents Sea, Russia—Kara Sea, Russia—Ob', Gulf

53-447

**Arctic tanker trafficability studies for Yamal.**

Bhat, S., Juurmaa, K., Brovin, A.I., Buzuev, A.I.A., International Conference on Port and Ocean Engineering under Arctic Conditions, 13th, Murmansk, Russia, Aug. 15-18, 1995. Proceedings. POAC 95. Vol. 4, St. Petersburg, Russia, 1995, p. 42-50, 6 refs. Marine transportation, Ice navigation, Economic analysis, Ice conditions, Sea ice distribution, Simulation, Models, Icebreakers, Tanker ships, Fuel transport, Russia—Kara Sea, Russia—Yamal Peninsula

53-448

**Ice loads on multi-legged structures in Cook Inlet.**

Bhat, S.U., Cox, G.F.N., International Conference on Port and Ocean Engineering under Arctic Conditions, 13th, Murmansk, Russia, Aug. 15-18, 1995. Proceedings. POAC 95. Vol. 4, St. Petersburg, Russia, 1995, p. 51-61, 14 refs.

Ice loads, Offshore structures, Ice solid interface, Ice floes, Analysis (mathematics), Strains, Loads (forces), United States—Alaska—Cock Inlet

53-449

**New ice breaking tanker concept for the Arctic (DAT).**

Juurmaa, K., Wilkman, G., Bäckström, M., International Conference on Port and Ocean Engineering under Arctic Conditions, 13th, Murmansk, Russia, Aug. 15-18, 1995. Proceedings. POAC 95. Vol. 4, St. Petersburg, Russia, 1995, p. 62-71. Icebreakers, Tanker ships, Design, Design criteria

53-450

**Ice forces on a downward-breaking conical structure from partially consolidated rubble ice.**

Sodhi, D.S., MP 5232, International Conference on Port and Ocean Engineering under Arctic Conditions, 13th, Murmansk, Russia, Aug. 15-18, 1995. Proceedings. POAC 95. Vol. 4, St. Petersburg, Russia, 1995, p. 72-83, 3 refs.

Ice loads, Ice solid interface, Ice models, Offshore structures, Flexural strength, Tests

Model tests were conducted to determine the forces that are generated during interaction between partially consolidated rubble ice and a downward-breaking conical structure. The model structure broke ice in flexure when the ice contacted the structure at a sloping surface. Other failure modes were observed when the ice contacted vertical surfaces, resulting in high ice forces. The ice forces measured during model tests are presented. These forces compare well with those predicted by theoretical models. No ice jamming was observed during the model tests.

53-451

**Application of results from the research project "A Ship in Compressive Ice" to ship operability.**

Riska, K., Kujala, P., Goldshtein, R.V., Danilenko, V., Osipenko, N.M., International Conference on Port and Ocean Engineering under Arctic Conditions, 13th, Murmansk, Russia, Aug. 15-18, 1995. Proceedings. POAC 95. Vol. 4, St. Petersburg, Russia, 1995, p. 84-99, 8 refs.

Ice navigation, Sea ice, Compressive properties, Ice solid interface, Ice cover strength, Ships, Ice pressure, Mathematical models, Ice models

53-452

**Comparative analysis of the outlines of classification and requirements of various classification societies for the arctic vessels.**

Karavanov, S.B., Glebko, I.U.V., International Conference on Port and Ocean Engineering under Arctic Conditions, 13th, Murmansk, Russia, Aug. 15-18, 1995. Proceedings. POAC 95. Vol. 4, St. Petersburg, Russia, 1995, p. 100-107, 2 refs.

Ships, Icebreakers, Classifications, Design criteria, Design

53-453

**Atmospheric and hydrological processes led to the extreme thermohaline anomaly in the south western Kara Sea in September 1994.**

Kryev, V., Liushvin, P.V., Tuzhilkin, V., International Conference on Port and Ocean Engineering under Arctic Conditions, 13th, Murmansk, Russia, Aug. 15-18, 1995. Proceedings. POAC 95. Vol. 4, St. Petersburg, Russia, 1995, p. 108-116, 9 refs.

Salinity, Sea water, Atmospheric pressure, Water temperature, Ocean currents, Barents Sea, Russia—Kara Sea, Russia—Baydaratskaya Bay

53-454

**New development in modelling technology of first-year ridges.**

Wilkman, G., Nortala-Holkkanen, A., International Conference on Port and Ocean Engineering under Arctic Conditions, 13th, Murmansk, Russia, Aug. 15-18, 1995. Proceedings. POAC 95. Vol. 4, St. Petersburg, Russia, 1995, p. 117-125.

Pressure ridges, Ice models, Shear strength, Tanker ships, Ice solid interface, Simulation

53-455

**Arctic Shipping Services—three years of successful tanker operations on the Northern Sea Route.**

Niini, M., International Conference on Port and Ocean Engineering under Arctic Conditions, 13th, Murmansk, Russia, Aug. 15-18, 1995. Proceedings. POAC 95. Vol. 4, St. Petersburg, Russia, 1995, p. 126-131.

Marine transportation, Ice navigation, Economic analysis, Icebreakers, Tanker ships, Northern Sea Route

53-456

**Kara Sea ice-ocean coupled model.**

Ovsienko, S., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 13th, Murmansk, Russia, Aug. 15-18, 1995. Proceedings. POAC 95. Vol. 4, St. Petersburg, Russia, 1995, p. 144-154, 8 refs.

Ice water interface, Ice models, Sea ice, Mathematical models, Ocean currents, Ice cover thickness, Thermodynamics, Russia—Kara Sea

53-457

**Modelling of interaction between icebreaking crafts and ice in composite model ice.**

Beliakov, V.B., International Conference on Port and Ocean Engineering under Arctic Conditions, 13th, Murmansk, Russia, Aug. 15-18, 1995. Proceedings. POAC 95. Vol. 4, St. Petersburg, Russia, 1995, p. 169-179, 8 refs.

Ice solid interface, Ships, Air cushion vehicles, Ice models, Ice breaking, Mathematical models

53-458

**Exploration of the ice cover in the Pechora Sea as related to shelf development.**

Gritsenko, L.I., Golovin, N.V., Maïdrov, O.N., Khvedynich, S.V., International Conference on Port and Ocean Engineering under Arctic Conditions, 13th, Murmansk, Russia, Aug. 15-18, 1995. Proceedings. POAC 95. Vol. 4, St. Petersburg, Russia, 1995, p. 180-188.

Ice cover, Offshore drilling, Sea ice, Ice floes, Fracturing, Hummocks, Ice surveys, Marine geology, Exploration, Barents Sea

53-459

**Method for calculation of flow action of the screw on bottom in the port water basin in process on mooring tests of ship.**

Amakhin, V.A., International Conference on Port and Ocean Engineering under Arctic Conditions, 13th, Murmansk, Russia, Aug. 15-18, 1995. Proceedings. POAC 95. Vol. 4, St. Petersburg, Russia, 1995, p. 189-193, 5 refs.

Propellers, Ships, Analysis (mathematics), Moorings

53-460

**Usage of ice heat cutting in mines and leads in ice cover.**

Morev, V.A., Savatugin, L.M., Potapenko, V.I.U., International Conference on Port and Ocean Engineering under Arctic Conditions, 13th, Murmansk, Russia, Aug. 15-18, 1995. Proceedings. POAC 95. Vol. 4, St. Petersburg, Russia, 1995, p. 194-203, 4 refs.

Ice cutting, Heating, Heat transfer, Equipment, Design, Artificial melting, Thermal drills

53-461

**Mathematical modelling and navigation safety along the Northern Sea Route.**

Molchanov, V.N., International Conference on Port and Ocean Engineering under Arctic Conditions, 13th, Murmansk, Russia, Aug. 15-18, 1995. Proceedings. POAC 95. Vol. 4, St. Petersburg, Russia, 1995, p. 204-209, 3 refs.

Safety, Marine transportation, Ice navigation, Mathematical models, Northern Sea Route, Russia—Kara Sea, Russia—Ob', Gulf

53-462

**Local and interactive effects of ice failure at ship motion in a compressive ice.**

Goldshtein, R.V., Danilenko, V.I., Osipenko, N.M., Kujala, P., International Conference on Port and Ocean Engineering under Arctic Conditions, 13th, Murmansk, Russia, Aug. 15-18, 1995. Proceedings. POAC 95. Vol. 4, St. Petersburg, Russia, 1995, p. 210-220, 10 refs.

Ice solid interface, Sea ice, Compressive properties, Icebreakers, Mathematical models, Ice cover strength, Fracturing

53-463

**Sea ice destruction under high power microwave radiation.**

Kliuchnik, A.V., Motorin, N.G., Podkopaev, V.D., International Conference on Port and Ocean Engineering under Arctic Conditions, 13th, Murmansk, Russia, Aug. 15-18, 1995. Proceedings. POAC 95. Vol. 4, St. Petersburg, Russia, 1995, p. 221-226, 3 refs.

Sea ice, Microwaves, Ice microstructure, Countermeasures, Ice cover strength, Ice solid interface, Ice breaking

53-464

**Market and technology of icebreakers since 1970.**

Makinen, E., Heideman, T., International Conference on Port and Ocean Engineering under Arctic Conditions, 13th, Murmansk, Russia, Aug. 15-18, 1995. Proceedings. POAC 95. Vol. 4, St. Petersburg, Russia, 1995, p. 227-245.

Icebreakers, Ships, Marine transportation, Design, Design criteria

53-465

**Carbon-13/Carbon-12 ratios in surface water and sea ice organic matter - Variability and contributions to the sediments of the Ross Sea, Antarctica.**

Rogers, J.C., Houston, Rice University, 1995, 95p., University Microfilms order No.ADA13-77051, M.A. thesis. For abstract see Masters abstracts international, 34(3), p.1119.

Carbon isotopes, Suspended sediments, Sea ice, Ice composition, Sea water, Surface waters, Marine biology, Antarctica—Ross Sea

53-466

**Statistics and trends of global atmospheric electricity measurements.**

Cleary, E.N., Houston, Rice University, 1995, 45p., University Microfilms order No.ADA13-76995, M.S. thesis. For abstract see Masters abstracts international, 34(3), p.1189.

Electric fields, Atmospheric electricity, Diurnal variations, Seasonal variations, Global change, Global warming, Antarctica—Amundsen-Scott Station

53-467

**Model/measurement comparisons of ozone-depleting chlorine chemistry in the polar stratosphere.**

Shindell, D.T., Stony Brook, State University of New York, 1995, 187p., University Microfilms order No.ADA96-06366, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 56(11), p.6177.

Ozone, Stratosphere, Atmospheric composition, Models, Air pollution, Polar stratospheric clouds, Antarctica—McMurdo Station

53-468

**Heat balance of West Antarctic ice streams, investigated with a numerical model of coupled ice sheet, ice stream, and ice shelf flow.**

Hulbe, C.L., Chicago, University, 1998, 153p., University Microfilms order No.ADA98-32147, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 59(5), p.2084.

Heat balance, Mathematical models, Ice sheets, Ice shelves, Streams, Flow measurement, Ice melting, Glaciology, Glacier flow, Glacier heat balance, Glacier melting, Antarctica—West Antarctica

53-469

**Case study investigation of meso-synoptic scale effects on the total ozone column.**

Murphey, B.B., Atlanta, Georgia Institute of Technology, 1994, 206p., University Microfilms order No.ADA95-11598, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 55(12), p.5386.

Ozone, Atmospheric composition, Stratosphere, Meteorological factors, Air masses, Polar regions, Atmospheric disturbances

53-470

**Temporal dynamics and regulation of coastal antarctica phytoplankton communities: spring/summer 1991-1994.**

Moline, M.A., Santa Barbara, University of California, 1996, 356p., University Microfilms order No.ADA97-18608, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 58(1), p.90.

Plankton, Biomass, Marine biology, Nutrient cycle, Sea ice distribution, Ice cover effect, Oceanographic surveys, Wind factors, Solar radiation, Photosynthesis, Antarctica

53-471

**Ice core glaciochemical records of Late Holocene climatic variability in West Antarctica.**

Kreutz, K.J., Durham, University of New Hampshire, 1998, 160p., University Microfilms order No.ADA98-31953, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 59(4), p.1545.

Glaciology, Ice cores, Geochemistry, Air masses, Ice composition, Paleoclimatology, Climatic changes, Antarctica—West Antarctica

53-472

**Change and continuity in antarctic environmental protection: politics and policy.**

Perera, M.H., Halifax, Canada, Dalhousie University, 1995, 458p., University Microfilms order No.ADA-05294, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.A, 57(2), p.855.

Environmental protection, Legislation, International cooperation, Environmental impact, Organizations

53-473

**Danward longwave radiation spectrum over the Antarctic Plateau.**

Walden, V.P., Seattle, University of Washington, 1995, 268p., University Microfilms order No.ADA96-16686, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 57(2), p.1149.

Infrared radiation, Spectroscopy, Air masses, Models, Climatology, Air temperature, Polar atmospheres, Radiation balance, Antarctica—Amundsen-Scott Station

53-474

**Wrinkle ridges of Mars: structural analysis and evidence for shallow deformation controlled by ice-rich décollements.**

Mangold, N., Allemand, P., Thomas, P.G., *Planetary and space science*, Apr. 1998, 46(4), p.345-356, 41 refs.

Mars (planet), Extraterrestrial ice, Ground ice, Regolith, Plains, Tectonics, Frozen ground mechanics, Landscape development, Rheology, Models

53-475

**Evolution of ice surfaces within porous near-surface layers on cometary nuclei.**

Markiewicz, W.J., Skorov, I.U.V., Keller, H.U., Kömle, N.I., *Planetary and space science*, Apr. 1998, 46(4), p.357-366, 18 refs.

Extraterrestrial ice, Ice physics, Ice sublimation, Ice surface, Ice erosion, Surface properties, Porosity, Dust, Vapor diffusion, Ice vapor interface, Mathematical models

53-476

**Puzzling detection of the 22 GHz water emission line in Comet Hyakutake at perihelion.**

Cosmovici, C.B., Montebugnoli, S., Orfei, A., Pogrebenko, S., Cortiglioni, S., *Planetary and space science*, Apr. 1998, 46(4), p.467-470, 15 refs.

Remote sensing, Cosmic dust, Extraterrestrial ice, Molecular energy levels, Ice detection, Ice sublimation, Spectroscopy, Spectra

53-477

**Frequency of debris flows on the Sheep Mountain fan, Kluane Lake, Yukon Territory.**

Harris, S.A., McDermid, G., *Zeitschrift für Geomorphologie*, June 1998, 42(2), p.159-175, With German and French summaries. 14 refs.

Geomorphology, Slope processes, Subarctic landscapes, Paleocology, Mass flow, Talus, Rock streams, Gullies, Classifications, Clay minerals, Sediment transport, Stratigraphy, Profiles, Canada—Yukon Territory—Sheep Mountain

53-478

**Proceedings.**

Circumpolar Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996, European Space Agency. Special publication No.391, Noordwijk, European Space Agency, 1996, 203p., Refs. passim. For selected papers see 53-479 through 53-501.

DLC G70.5.P73 C57 1996

Climatology, Subpolar regions, Remote sensing, Spaceborne photography, Synthetic aperture radar, Radiometry, Geophysical surveys, Glacier surveys, Sea ice distribution, Ice surveys, Vegetation patterns, Classifications, Image processing, Statistical analysis

53-479

**Determination and intercomparison of radiation fluxes and net radiation using LANDSAT-TM-data of Liefdefjorden/NW-Spitsbergen.**

Parlow, E., Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Proceedings and European Space Agency. Special publication No.391, Noordwijk, European Space Agency, 1996, p.27-33, 19 refs.

DLC G70.5.P73 C57 1996

Climatology, Remote sensing, LANDSAT, Glacial hydrology, Glacier surfaces, Spaceborne photography, Radiation balance, Mathematical models, Topographic effects, Snow cover effect, Image processing, Norway—Spitsbergen

53-480

**Estimation of the soil heat flux/net radiation ratio over high latitude natural vegetation using spectral vegetation indices.**

Jacobsen, A., Hansen, B.U., Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Proceedings and European Space Agency. Special publication No.391, Noordwijk, European Space Agency, 1996, p.33-38, 12 refs.

DLC G70.5.P73 C57 1996

Microclimatology, Plant ecology, Radiometry, Subpolar regions, Surface energy, Heat flux, Radiation balance, Statistical analysis, Correlation, Indexes (ratios), Greenland

53-481

**Use of coincident DMSP SSM/I and OLS satellite data to detect snow cover.**

Standley, A.P., Barrett, E.C., Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Proceedings and European Space Agency. Special publication No.391, Noordwijk, European Space Agency, 1996, p.39-44, 6 refs.

DLC G70.5.P73 C57 1996

Climatology, Precipitation (meteorology), Spaceborne photography, Radiometry, Cloud cover, Snow cover, Detection, Data processing, Infrared radiation, Image processing, Classifications

53-482

**Glacier mapping and inventory of the Illecillewaet River basin, British Columbia, Canada, using LANDSAT TM and digital elevation data.**

Sidjak, R.W., Wheate, R.D., Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Proceedings and European Space Agency. Special publication No.391, Noordwijk, European Space Agency, 1996, p.47-51, 7 refs.

DLC G70.5.P73 C57 1996

Remote sensing, Glacier surveys, Glacier surfaces, Sensor mapping, LANDSAT, Spaceborne photography, Altitude, Image processing, Correlation, Classifications, Canada—British Columbia—Illecillewaet River

53-483

**Geostatistical approaches to interpolation and classification of remote sensing data from ice surfaces.**

Herzfeld, U.C., Mayer, H., Higginson, C.A., Matassa, M., Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Proceedings and European Space Agency. Special publication No.391, Noordwijk, European Space Agency, 1996, p.59-63, 7 refs.

DLC G70.5.P73 C57 1996

Remote sensing, Glacier surveys, Glacier surfaces, Glacier surges, Sensor mapping, Synthetic aperture radar, Classifications, Data processing, Statistical analysis, United States—Alaska—Bering Glacier



53-484

**Simultaneous observations of glacier near-surface properties by satellite and ground radar instruments.**

Engeset, R., Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Proceedings and European Space Agency. Special publication No.391, Noordwijk, European Space Agency, 1996, p.65-70, 9 refs. DLC G70.5.P73 C57 1996

Remote sensing, Glacier surveys, Surface properties, Glacier mass balance, Glacier oscillation, Synthetic aperture radar, Sensor mapping, Spaceborne photography, Profiles, Correlation, Norway—Svalbard

53-485

**LANDSAT TM-data and ground radiometer measurements for snow and ice type classification in the Vestfold Hills, East Antarctica.**

Bronge, L.B., Bronge, C., Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Proceedings and European Space Agency. Special publication No.391, Noordwijk, European Space Agency, 1996, p.71-80, 10 refs. DLC G70.5.P73 C57 1996

Remote sensing, Glacier surveys, LANDSAT, Colored ice, Snow cover, Glacier surfaces, Radiometry, Snow optics, Sensor mapping, Spaceborne photography, Classifications, Spectra, Antarctica—Vestfold Hills

53-486

**New results from mapping Antarctica at high resolution from radar altimeter data.**

Matassa, M., Higginson, C.A., Mayer, H., Herzfeld, U.C., Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Proceedings and European Space Agency. Special publication No.391, Noordwijk, European Space Agency, 1996, p.81-85, 14 refs. DLC G70.5.P73 C57 1996

Remote sensing, Glacier surveys, Ice sheets, Spacecraft, Geodetic surveys, Topographic maps, Height finding, Sensor mapping, Radar echoes, Antarctica

53-487

**Image analysis by geostatistical and neural-network methods—applications in glaciology.**

Herzfeld, U.C., Zahner, O., Mayer, H., Higginson, C.A., Stauber, M., Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Proceedings and European Space Agency. Special publication No.391, Noordwijk, European Space Agency, 1996, p.87-91, 8 refs. DLC G70.5.P73 C57 1996

Remote sensing, Spaceborne photography, Glacier surveys, Glacier surfaces, Glacier surges, Surface structure, Classifications, Image processing, Statistical analysis, Ice mechanics, United States—Alaska—Bering Glacier

53-488

**Early results of the use of RADARSAT ScanSAR data in the Canadian Ice Service.**

Ramsay, B.R., Weir, L., Wilson, K., Arkett, M., Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Proceedings and European Space Agency. Special publication No.391, Noordwijk, European Space Agency, 1996, p.95-99, 4 refs. DLC G70.5.P73 C57 1996

Remote sensing, Spaceborne photography, Synthetic aperture radar, Sea ice, Ice conditions, Marine transportation, Ice surveys, Ice reporting, Image processing, Data processing, Canada—Labrador

53-489

**Sea ice drift in the East Greenland Current.**

Martin, T., Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Proceedings and European Space Agency. Special publication No.391, Noordwijk, European Space Agency, 1996, p.101-105, 7 refs. DLC G70.5.P73 C57 1996

Oceanographic surveys, Spaceborne photography, Radiometry, Brightness, Ocean currents, Sea ice distribution, Drift, Velocity measurement, Seasonal variations, Greenland

53-490

**Ice edge determination in the Greenland waters using first order texture parameters of the ERS-SAR images.**

Gill, R.S., Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Proceedings and European Space Agency. Special publication No.391, Noordwijk, European Space Agency, 1996, p.107-112, 14 refs. DLC G70.5.P73 C57 1996

Remote sensing, Ice surveys, Spaceborne photography, Synthetic aperture radar, Sensor mapping, Sea ice distribution, Ice conditions, Ice edge, Image processing, Statistical analysis, Classifications, Greenland

53-491

**Sea ice characteristics and backscatter variability in the Bellingshausen Sea, Antarctica.**

Morris, K., Jeffries, M., Li, S.S., Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Proceedings and European Space Agency. Special publication No.391, Noordwijk, European Space Agency, 1996, p.113-117, 7 refs. DLC G70.5.P73 C57 1996

Remote sensing, Ice surveys, Spaceborne photography, Radiometry, Synthetic aperture radar, Sea ice distribution, Ice growth, Surface roughness, Backscattering, Seasonal variations, Snow cover effect, Arctic Ocean, Antarctica—Bellingshausen Sea

53-492

**Airborne line scanner measurements for ERS-1 interpretation of sea ice.**

Bochert, A., Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Proceedings and European Space Agency. Special publication No.391, Noordwijk, European Space Agency, 1996, p.119-125, 11 refs. DLC G70.5.P73 C57 1996

Remote sensing, Sea ice distribution, Ice surveys, Spaceborne photography, Synthetic aperture radar, Classifications, Resolution, Correlation

53-493

**Arctic Ocean melt season characteristics and sea ice melt pond fractions using ERS-1 SAR.**

Jeffries, M.O., Schwartz, K., Li, S., Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Proceedings and European Space Agency. Special publication No.391, Noordwijk, European Space Agency, 1996, p.127-132, 17 refs. DLC G70.5.P73 C57 1996

Remote sensing, Sea ice, Ice surveys, Spaceborne photography, Synthetic aperture radar, Ice melting, Ice surface, Ponds, Seasonal freeze thaw, Backscattering, Image processing, Seasonal variations, Beaufort Sea

53-494

**Air monitoring of ice conditions in the arctic seas.**

Chernook, V.I., Zabavnikov, V.B., Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Proceedings and European Space Agency. Special publication No.391, Noordwijk, European Space Agency, 1996, p.133-137. DLC G70.5.P73 C57 1996

Remote sensing, Imaging, Sea ice distribution, Drift, Ice surveys, Aerial surveys, Ice conditions, Ice reporting, Ice navigation, Arctic Ocean

53-495

**Lithologic mapping by field and satellite multispectral data, Tarn Flat, Antarctica.**

Casacchia, R., Salvatori, R., Mazzarini, F., Salvini, F., Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Proceedings and European Space Agency. Special publication No.391, Noordwijk, European Space Agency, 1996, p.141-146, 7 refs. DLC G70.5.P73 C57 1996

Remote sensing, Glacial geology, Glacial deposits, Spaceborne photography, Sediments, Rock properties, Lithology, Classifications, Image processing, Spectra, Antarctica—Terra Nova Bay

53-496

**Quantitative mapping of active aeolian surfaces in northern Fennoscandia—LANDSAT TM hybrid classification.**

Käyhkö, J., Pye, K., Worsley, P., Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Proceedings and European Space Agency. Special publication No.391, Noordwijk, European Space Agency, 1996, p.147-152, 21 refs. DLC G70.5.P73 C57 1996

Remote sensing, Spaceborne photography, LANDSAT, Subpolar regions, Geophysical surveys, Soil surveys, Eolian soils, Sensor mapping, Image processing, Classifications, Sweden, Finland

53-497

**Use of SAR data to study active volcanoes in Alaska.**

Dean, K.G., Engle, K., Lu, Z., Eichelberger, J., Neal, T., Doukas, M., Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Proceedings and European Space Agency. Special publication No.391, Noordwijk, European Space Agency, 1996, p.153-156, 4 refs. DLC G70.5.P73 C57 1996

Geophysical surveys, Remote sensing, Spaceborne photography, Synthetic aperture radar, Subpolar regions, Landforms, Volcanoes, Explosion effects, Detection, United States—Alaska—Westdahl Volcano

53-498

**Mapping plant communities in a local arctic landscape applying scanned infrared aerial photographs in a geographic information system.**

Nilsen, L., Brossard, T., Joly, D., Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Proceedings and European Space Agency. Special publication No.391, Noordwijk, European Space Agency, 1996, p.159-168, 23 refs. DLC G70.5.P73 C57 1996

Remote sensing, Plant ecology, Geophysical surveys, Vegetation patterns, Subpolar regions, Sensor mapping, Spaceborne photography, Infrared photography, Classifications, Norway—Svalbard

53-499

**Summer environmental mapping applications of a large-scale mosaic of the state of Alaska generated from ERS-1 SAR images.**

Li, S.S., et al., Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Proceedings and European Space Agency. Special publication No.391, Noordwijk, European Space Agency, 1996, p.169-176, 15 refs. DLC G70.5.P73 C57 1996

Remote sensing, Landforms, Surface structure, Topographic features, Subpolar regions, Spaceborne photography, Synthetic aperture radar, Sensor mapping, Image processing, United States—Alaska

53-500

**ERS-1 SAR monitoring of ice growth on shallow lakes to determine water depth and availability in N.W. Alaska.**

Jeffries, M., Morris, K., Liston, G., Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Proceedings and European Space Agency. Special publication No.391, Noordwijk, European Space Agency, 1996, p.177-182, 11 refs. DLC G70.5.P73 C57 1996

Remote sensing, Spaceborne photography, Synthetic aperture radar, Tundra terrain, Lake ice, Ice growth, Icebound lakes, Ice cover thickness, Water level, Mathematical models, Water supply, United States—Alaska

53-501

**Forest biomass estimation in northern Europe using NOAA AVHRR data.**

Häme, T., Salli, A., Andersson, K., Lohi, A., Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Proceedings and European Space Agency. Special publication No.391, Noordwijk, European Space Agency, 1996, p.183-190, 16 refs.

DLC G70.5.P73 C57 1996

Remote sensing, Forest ecosystems, Biomass, Arctic landscapes, Spaceborne photography, Radiometry, Classifications, Sensor mapping, Finland

53-502

**Seasonal snow of arctic Alaska R4D investigations. Final report.**

Benson, C.S., U.S. Department of Energy. Final report, Feb. 1993, DOE/ER60245-T2, 46p., DE93-040082.

Snow accumulation, Snow physics, Wind factors, Snowdrifts, Blowing snow, Snow heat flux, Snow composition, Snow air interface, United States—Alaska—North Slope

53-503

**Structural tailoring of aircraft engine blade subject to ice impact constraints.**

Reddy, E.S., Abumeri, G.H., Murthy, P.L.N., Chamis, C.C., U.S. National Aeronautics and Space Administration. Report, Apr. 1993, NASA-TM-106033, 22p., N93-26999, Presented at the Aiaa/Air Force/Oai Symposium on Multidisciplinary Analysis, 4th, Cleveland, OH, Sep. 21-23, 1992.

Aircraft icing, Ice loads, Aircraft, Design, Materials, Propellers, Impact tests

53-504

**Ice on the Moon: the first results of the Lunar Prospector mission.**

Shevchenko, V.V., Solar system research, July-Aug. 1998, 32(4), p.272-275, Translated from *Astronomicheskii vestnik*. 13 refs.

Extraterrestrial ice, Satellites (natural), Spacecraft, Spectroscopy, Ice detection, Moon, Polar regions, Ground ice, Sedimentation, Impact

53-505

**Estimation of source parameters and Q from acceleration recorded in the Vatnafjöll earthquake in south Iceland.**

Ólafsson, S., Sigbjörnsson, R., Einarsson, P., *Seismological Society of America. Bulletin*, Apr. 1998, 88(2), p.556-563, 35 refs.

Earthquakes, Tectonics, Subpolar regions, Seismic surveys, Seismic velocity, Wave propagation, Spectra, Attenuation, Origin, Statistical analysis, Mathematical models, Iceland

53-506

**Study of low-magnitude seismic events near the Novaya Zemlya nuclear test site.**

Ringdal, F., *Seismological Society of America. Bulletin*, Dec. 1997, 87(6), p.1563-1575, 22 refs.

Seismic surveys, Subpolar regions, Nuclear explosions, Tests, Earthquakes, Detection, Wave propagation, Classifications, Origin, Recording, Russia—Novaya Zemlya

53-507

**Determination of glacial till specific storage in North Dakota.**

Shaver, R.B., *Ground water*, July-Aug. 1998, 36(4), p.552-557, 16 refs.

Ground water, Hydrogeology, Glacial geology, Clay soils, Glacial deposits, Water storage, Saturation, Permeability, Drill core analysis, United States—North Dakota

53-508

**Reductive dissolution and reactive solute transport in a sewage-contaminated glacial outwash aquifer.**

Lee, R.W., Bennett, P.C., *Ground water*, July-Aug. 1998, 36(4), p.583-595, 25 refs.

Hydrogeochemistry, Soil microbiology, Ground water, Sewage disposal, Water pollution, Metals, Solubility, Diffusion, Glacial geology, Glacial deposits, Outwash, Sampling, Environmental tests, United States—Massachusetts

53-509

**Faulting mechanism of anomalous earthquakes near Bárðarbunga Volcano, Iceland.**

Nettles, M., Ekström, G., *Journal of geophysical research*, Aug. 10, 1998, 103(B8), p.17,973-17,983, 41 refs.

Tectonics, Subpolar regions, Seismic surveys, Earthquakes, Volcanoes, Magma, Wave propagation, Detection, Orientation, Iceland—Bárðarbunga Volcano

53-510

**Moisture control over atmospheric CH<sub>4</sub> consumption and CO<sub>2</sub> production in diverse Alaskan soils.**

Gulledge, J., Schimel, J.P., *Soil biology & biochemistry*, Aug. 1998, 30(8-9), p.1127-1132, 22 refs.

Tundra soils, Taiga, Climatic changes, Soil microbiology, Microclimatology, Subarctic landscapes, Soil air interface, Carbon dioxide, Natural gas, Vapor diffusion, Water content, Sampling, United States—Alaska—Brooks Range, United States—Alaska—Bonanza Creek Experimental Forest

53-511

**Early Paleozoic orogenic collapse, tectonic stability, and late Paleozoic continental rifting revealed through thermochronology of K-feldspars, southern Norway.**

Dunlap, W.J., Fossen, H., *Tectonics*, Aug. 1998, 17(4), p.604-620, 67 refs.

Pleistocene, Tectonics, Subpolar regions, Earth crust, Continental drift, Sediments, Radioactive isotopes, Radioactive age determination, Geochronology, Statistical analysis, Norway

53-512

**Tectonically versus climatically driven Cenozoic exhumation of the Eurasian plate margin, Svalbard: fission track analyses.**

Blythe, A.E., Kleinspehn, K.L., *Tectonics*, Aug. 1998, 17(4), p.621-639, Refs. p.637-639.

Pleistocene, Paleoclimatology, Tectonics, Subpolar regions, Earth crust, Stratigraphy, Profiles, Geothermy, Lithology, Radioactive isotopes, Geochronology, Norway—Svalbard

53-513

**Effects of CH<sub>4</sub>-starvation on atmospheric CH<sub>4</sub> oxidizers in taiga and temperate forest soils.**

Gulledge, J., Steudler, P.A., Schimel, J.P., *Soil biology & biochemistry*, Sep. 1998, 30(10-11), p.1463-1467, 24 refs.

Forest soils, Ecosystems, Nutrient cycle, Natural gas, Soil air interface, Soil chemistry, Soil microbiology, Taiga, Geochemical cycles, Sampling, United States—Alaska—Bonanza Creek Experimental Forest

53-514

**Post-nucleation conversion of an air bubble to clathrate air-hydrate crystal in ice.**

Salamatin, A.N., Hondoh, T., Uchida, T., Lipenkov, V.I.A., *Journal of crystal growth*, Sep. 1998, 193(1-2), p.197-218, 35 refs.

Ice physics, Ice sheets, Ice cores, Ice structure, Bubbles, Hydrates, Clathrates, Ice air interface, Vapor diffusion, Phase transformations, Thermodynamics, Mathematical models

53-515

**Discrimination between rain and snow with a polarimetric radar.**

Ryzhkov, A.V., Zrníc, D.S., *Journal of applied meteorology*, Oct. 1998, 37(10)pt.2, p.1228-1240, 18 refs.

Precipitation (meteorology), Snowstorms, Falling snow, Rain, Ice melting, Classifications, Radar echoes, Reflectivity, Polarization (waves), Snow optics, Correlation

53-516

**Thermal and hydrologic dynamics of the active layer at a continuous permafrost site (Taymyr Peninsula, Siberia).**

Boike, J., Roth, K., Overduin, P.P., *Water resources research*, Mar. 1998, 34(3), p.355-363, 38 refs.

Permafrost hydrology, Continuous permafrost, Active layer, Thermal regime, Freeze thaw cycles, Water content, Heat flux, Moisture transfer, Frozen ground thermodynamics, Mathematical models, Russia—Siberia

53-517

**Using neural networks to assess the influence of changing seasonal climates in modifying discharge, dissolved organic carbon, and nitrogen export in eastern Canadian rivers.**

Clair, T.A., Ehrman, J.M., *Water resources research*, Mar. 1998, 34(3), p.447-455, 15 refs.

Climatology, Climatic changes, River basins, River flow, Wetlands, Precipitation (meteorology), Snowmelt, Surface drainage, Forecasting, Geochemical cycles, Mathematical models, Simulation, Canada—Nova Scotia, Canada—Newfoundland, Canada—New Brunswick

53-518

**Relationship between aircraft icing and synoptic-scale weather conditions.**

Bernstein, B.C., Omeron, T.A., McDonough, F., Poltovich, M.K., *Weather and forecasting*, Dec. 1997, 12(4), p.742-762, 37 refs.

Cloud physics, Synoptic meteorology, Aircraft icing, Fronts (meteorology), Atmospheric pressure, Classifications, Ice forecasting, Statistical analysis, Weather observations, Correlation

53-519

**Intercomparison of in-flight icing algorithms. Part I: WISP94 real-time icing prediction and evaluation program.**

Thompson, G., Buintjes, R.T., Brown, B.G., Hage, F., *Weather and forecasting*, Dec. 1997, 12(4), p.878-889, 24 refs.

Aircraft icing, Classifications, Ice forecasting, Weather forecasting, Temperature effects, Mathematical models, Models, Imaging, Simulation, Statistical analysis, Correlation, Accuracy

53-520

**Intercomparison of in-flight icing algorithms. Part II: statistical verification results.**

Brown, B.G., Thompson, G., Buintjes, R.T., Bullock, R., Kane, T., *Weather and forecasting*, Dec. 1997, 12(4), p.890-914, 25 refs.

Aircraft icing, Cloud physics, Ice forecasting, Ice formation, Diurnal variations, Weather forecasting, Mathematical models, Statistical analysis, Accuracy, Correlation

53-521

**Polarized librational spectra of proton-ordered ice XI by molecular dynamics simulations.**

Itoh, H., Kawamura, K., Hondoh, T., Mae, S., *Journal of chemical physics*, Sep. 22, 1998, 109(12), p.4894-4899, 37 refs.

Ice physics, Molecular structure, Molecular energy levels, Ice dielectrics, Polarization (charge separation), Hydrogen bonds, Ice crystal optics, Proton transport, Vibration, Spectra, Computerized simulation

53-522

**Is a periglacial biota responsible for enhanced dielectric response in basal ice from the Greenland Ice Core Project ice core.**

Tison, J.L., Souchez, R., Wolff, E.W., Moore, J.C., Legrand, M.R., De Angelis, M., *Journal of geophysical research*, Aug. 20, 1998, 103(D15), p.18,885-18,894, 34 refs.

Ice sheets, Ice cores, Ice composition, Bottom ice, Paleocology, Geochemical cycles, Bacteria, Degradation, Periglacial processes, Dielectric properties, Electrical measurement, Profiles, Greenland

53-523

**Distributions and recent changes of carbon monoxide in the lower troposphere.**Novelli, P.C., Masarie, K.A., Lang, P.M., *Journal of geophysical research*, Aug. 20, 1998, 103(D15), p.19,015-19,033, 62 refs.

Climatology, Atmospheric composition, Gases, Distribution, Polar atmospheres, Atmospheric boundary layer, Sampling, Statistical analysis, Correlation, Seasonal variations, Canada—Northwest Territories—Alert, United States—Alaska—Barrow, Iceland—Vestmannaeyjar, Antarctica—Palmer Station, Antarctica—South Pole, Antarctica—Showa Station

53-524

**Atmospheric aerosols over Alaska. 1. Spatial and seasonal variability.**Polissar, A.V., Hopke, P.K., Malm, W.C., Sisler, J.F., *Journal of geophysical research*, Aug. 20, 1998, 103(D15), p.19,035-19,044, 41 refs.

Climatology, Atmospheric composition, Polar atmospheres, Air masses, Air pollution, Aerosols, Particles, Carbon black, Sampling, Seasonal variations, Statistical analysis, United States—Alaska—Northwest Alaska Areas National Park, United States—Alaska—Gates of the Arctic National Park, United States—Alaska—Bering Land Bridge National Preserve

53-525

**Atmospheric aerosols over Alaska. 2. Elemental composition and sources.**Polissar, A.V., Hopke, P.K., Paatero, P., Malm, W.C., Sisler, J.F., *Journal of geophysical research*, Aug. 20, 1998, 103(D15), p.19,045-19,057, 29 refs.

Climatology, Polar atmospheres, Air pollution, Atmospheric composition, Aerosols, Carbon black, Particles, Soil chemistry, Seasonal variations, Origin, Sampling, Statistical analysis, United States—Alaska—Northwest Alaska Areas National Park, United States—Alaska—Gates of the Arctic National Park, United States—Alaska—Bering Land Bridge National Park

53-526

**Optical and microphysical parameters of the Mt. Pinatubo aerosol as determined from MIPAS-B mid-IR limb emission spectra.**Echle, G., Von Clarmann, T., Oelhaf, H., *Journal of geophysical research*, Aug. 20, 1998, 103(D15), p.19,193-19,211, 45 refs.

Climatology, Polar atmospheres, Optical properties, Aerosols, Volcanic ash, Sounding, Infrared spectroscopy, Spectra, Scattering, Particle size distribution, Attenuation, Statistical analysis, Sweden—Kiruna

53-527

**Arctic chemical ozone depletion during the 1994-1995 winter deduced from POAM II satellite observations and the REPROBUS three-dimensional model.**Deniel, C., Bevilacqua, R.M., Pommereau, J.P., Lefèvre, F., *Journal of geophysical research*, Aug. 20, 1998, 103(D15), p.19,231-19,244, 43 refs.

Climatology, Polar atmospheres, Stratosphere, Photometry, Atmospheric composition, Ozone, Degradation, Profiles, Seasonal variations, Models

53-528

**Total column and surface densities of atmospheric carbon monoxide in Alaska, 1995.**Iurganov, L.N., Jaffe, D.A., Pullman, E., Novelli, P.C., *Journal of geophysical research*, Aug. 20, 1998, 103(D15), p.19,337-19,345, 34 refs.

Climatology, Atmospheric composition, Subpolar regions, Air pollution, Atmospheric boundary layer, Turbulent diffusion, Gases, Photochemical reactions, Spectroscopy, Sampling, Diurnal variations, United States—Alaska—Barrow

53-529

**Present heat flow and paleo-geothermal regime in the Canadian Arctic margin: analysis of industrial thermal data and coalification gradients.**Majorowicz, J.A., Embry, A.F., *Tectonophysics*, June 15, 1998, 291(3-4), International Workshop on Heat Flow and the Structure of the Lithosphere, 4th, Trest, Southern Bohemia, Czech Republic, June 9-15, 1996. Selected papers. Edited by V. Cermák, p.141-159, 45 refs.

Geothermy, Earth crust, Subpolar regions, Geological maps, Temperature gradients, Quaternary deposits, Permafrost bases, Thermal conductivity, Thermal regime, Boreholes, Coal, Canada—Northwest Territories—Sverdrup Basin

53-530

**Thermal properties of granulite facies rocks in the Precambrian basement of Finland and Estonia.**Jöeleht, A., Kukkonen, I.T., *Tectonophysics*, June 15, 1998, 291(3-4), International Workshop on Heat Flow and the Structure of the Lithosphere, 4th, Trest, Southern Bohemia, Czech Republic, June 9-15, 1996. Selected papers. Edited by V. Cermák, p.195-203, 50 refs.

Geothermy, Earth crust, Subpolar regions, Lithology, Thermal conductivity, Seismic velocity, Rock properties, Thermal properties, Mineralogy, Sampling, Statistical analysis, Finland, Estonia

53-531

**Palaeoclimatic temperature signals—can they be washed out.**Kohl, T., *Tectonophysics*, June 15, 1998, 291(3-4), International Workshop on Heat Flow and the Structure of the Lithosphere, 4th, Trest, Southern Bohemia, Czech Republic, June 9-15, 1996. Selected papers. Edited by V. Cermák, p.225-234, 22 refs.

Pleistocene, Paleoclimatology, Geothermy, Heat flux, Advection, Surface temperature, Well logging, Temperature inversions, Thermal diffusion, Mathematical models, Ice age theory, Accuracy

53-532

**Anomalously low heat flow density in eastern Karelia, Baltic Shield: a possible paleoclimatic signature.**Kukkonen, I.T., Gosnold, W.D., Safanda, J., *Tectonophysics*, June 15, 1998, 291(3-4), International Workshop on Heat Flow and the Structure of the Lithosphere, 4th, Trest, Southern Bohemia, Czech Republic, June 9-15, 1996. Selected papers. Edited by V. Cermák, p.235-249, 49 refs.

Geothermy, Pleistocene, Paleoclimatology, Earth crust, Boreholes, Subpolar regions, Heat flux, Temperature gradients, Profiles, Statistical analysis, Simulation, Russia—Karelia

53-533

**Wind-forced upwelling and internal Kelvin wave generation in Mackenzie Canyon, Beaufort Sea.**Carmack, E.C., Kulikov, E.A., *Journal of geophysical research*, Aug. 15, 1998, 103(C9), p.18,447-18,458, 26 refs.

Oceanography, Subpolar regions, Ocean currents, Upwelling, Hydrography, Wind direction, Wind factors, Bottom topography, Topographic effects, Wave propagation, Spectra, Beaufort Sea

53-534

**Winter convective events and bottom water warming in the Greenland Sea.**Budéus, G., Schneider, W., Krause, G., *Journal of geophysical research*, Aug. 15, 1998, 103(C9), p.18,513-18,527, 38 refs.

Oceanography, Subpolar regions, Ocean currents, Heat flux, Water temperature, Temperature distribution, Convection, Salinity, Hydrography, Profiles, Seasonal variations, Greenland Sea

53-535

**Sulfate and nitrate firn concentrations on the Greenland ice sheet. 1. Large-scale geographical deposition changes.**Fischer, H., Wagenbach, D., Kipfstuhl, J., *Journal of geophysical research*, Sep. 20, 1998, 103(D17), p.21,927-21,934, 38 refs.

Climatology, Ice sheets, Aerosols, Sedimentation, Distribution, Firn, Snow accumulation, Snow impurities, Glacial meteorology, Ice cores, Profiles, Seasonal variations, Mathematical models, Greenland

53-536

**Sulfate and nitrate firn concentrations on the Greenland ice sheet. 2. Temporal anthropogenic deposition changes.**Fischer, H., Wagenbach, D., Kipfstuhl, J., *Journal of geophysical research*, Sep. 20, 1998, 103(D17), p.21,935-21,942, 23 refs.

Climatology, Air pollution, Ice sheets, Ice cores, Firn, Snow accumulation, Hydrocarbons, Aerosols, Sedimentation, Origin, Mathematical models, Greenland

53-537

**Polar stratospheric clouds climatology over Dumont d'Urville between 1989 and 1993 and the influence of volcanic aerosols on their formation.**David, C., Bekki, S., Godin, S., Mégie, G., Chipperfield, M.P., *Journal of geophysical research*, Sep. 20, 1998, 103(D17), p.22,163-22,180, 66 refs.

Climatology, Polar atmospheres, Cloud physics, Polar stratospheric clouds, Aerosols, Volcanic ash, Hydrates, Condensation nuclei, Classifications, Lidar, Backscattering, Profiles, Antarctica—Dumont d'Urville Station

53-538

**Sequestration of HNO<sub>3</sub> in polar stratospheric clouds and chlorine activation as monitored by ground-based Fourier transform infrared solar absorption measurements.**Wegner, A., Stiller, G.P., Von Clarmann, T., Maucher, G., Blumenstock, T., Thomas, P., *Journal of geophysical research*, Sep. 20, 1998, 103(D17), p.22,181-22,200, 57 refs.

Climatology, Polar atmospheres, Atmospheric composition, Subsidence, Cloud physics, Polar stratospheric clouds, Aerosols, Ozone, Infrared spectroscopy, Sounding, Spectra, Sweden—Kiruna

53-539

**Polycyclic aromatic hydrocarbons (PAHs) in Antarctic Martian meteorites, carbonaceous chondrites and polar ice.**Becker, L., Glavin, D.P., Bada, J.L., *SPIE—The International Society for Optical Engineering. Proceedings*, 1997, Vol.3111, Instruments, methods, and missions for the investigation of extraterrestrial microorganisms. Edited by R.B. Hoover, p.36-50, 38 refs.

DLC QR130.I56 1997

Hydrocarbons, Sediments, Ice sheets, Ice cores, Ice composition, Ice sublimation, Meltwater, Impurities, Organic nuclei, Mars (planet), Chemical analysis, Correlation, Antarctica—Allan Hills

53-540

**Simple techniques for detection of Martian microorganisms.**Sims, M.R., Cole, R.E., Grant, W.D., Mills, A.A., Powell, K., Ruffles, R.W., *SPIE—The International Society for Optical Engineering. Proceedings*, 1997, Vol.3111, Instruments, methods, and missions for the investigation of extraterrestrial microorganisms. Edited by R.B. Hoover, p.164-174, 13 refs.

DLC QR130.I56 1997

Exploration, Mars (planet), Regolith, Life (durability), Microbiology, Detection, Permafrost structure, Samplers, Instruments, Design, Explosion effects

53-541

**Europa Ocean Discovery mission.**

Edwards, B.C., et al, *SPIE—The International Society for Optical Engineering. Proceedings*, 1997, Vol.3111, Instruments, methods, and missions for the investigation of extraterrestrial microorganisms. Edited by R.B. Hoover, p.249-261, 32 refs.

DLC QR130.156 1997

Extraterrestrial ice, Satellites (natural), Oceans, Detection, Ice water interface, Subglacial observations, Spacecraft, Remote sensing, Exploration, Design

53-542

**Testing for evolutionary trends of European biota.**

Chela-Flores, J., *SPIE—The International Society for Optical Engineering. Proceedings*, 1997, Vol.3111, Instruments, methods, and missions for the investigation of extraterrestrial microorganisms. Edited by R.B. Hoover, p.262-271, 33 refs.

DLC QR130.156 1997

Life (durability), Microbiology, Algae, Detection, Extraterrestrial ice, Satellites (natural), Exploration, Spacecraft, Design, Origin

53-543

**Permafrost as a microbial habitat: extreme for the Earth, favorable in space.**

Gilichinskii, D.A., *SPIE—The International Society for Optical Engineering. Proceedings*, 1997, Vol.3111, Instruments, methods, and missions for the investigation of extraterrestrial microorganisms. Edited by R.B. Hoover, p.472-480, 34 refs.

DLC QR130.156 1997

Extraterrestrial ice, Satellites (natural), Ground ice, Permafrost physics, Preserving, Microbiology, Ecosystems, Detection, Life (durability), Viability, Models

53-544

**Characteristics of ice-active substances released by sea ice diatoms.**

Raymond, J.A., *SPIE—The International Society for Optical Engineering. Proceedings*, 1997, Vol.3111, Instruments, methods, and missions for the investigation of extraterrestrial microorganisms. Edited by R.B. Hoover, p.482-489, 4 refs.

DLC QR130.156 1997

Microbiology, Sea ice, Ice physics, Chemical composition, Cryobiology, Algae, Adsorption, Ice crystal growth, Ice crystal structure, Extraterrestrial ice, Simulation, Antarctica—McMurdo Sound

53-545

**Searching for ice and ocean biogenic activity on Europa and Earth.**

Horvath, J., et al, *SPIE—The International Society for Optical Engineering. Proceedings*, 1997, Vol.3111, Instruments, methods, and missions for the investigation of extraterrestrial microorganisms. Edited by R.B. Hoover, p.490-500, 16 refs.

DLC QR130.156 1997

Exploration, Microbiology, Cryobiology, Spacecraft, Glacier ice, Extraterrestrial ice, Satellites (natural), Probes, Detection, Simulation

53-546

**Oceanographic conditions east of Iceland.**

Perkins, H., Hopkins, T.S., Malmberg, S.A., Poulain, P.M., Warn-Varnas, A., *Journal of geophysical research*, Sep. 15, 1998, 103(C10), p.21,531-21,542, 30 refs.

Oceanography, Subpolar regions, Ocean currents, Hydrography, Flow measurement, Classifications, Velocity measurement, Boundary layer, Statistical analysis, Iceland—Iceland-Faeroe Ridge

53-547

**On the variability of Baltic Sea deepwater mixing.**

Axell, L.B., *Journal of geophysical research*, Sep. 15, 1998, 103(C10), p.21,667-21,682, 40 refs.

Oceanography, Subpolar regions, Ocean currents, Hydrography, Gravity waves, Turbulent diffusion, Wind factors, Boundary layer, Seasonal variations, Mathematical models, Topographic effects, Baltic Sea

53-548

**Bio-optical properties of the southwestern Ross Sea.**

Arrigo, K.R., Robinson, D.H., Worthen, D.L., Schieber, B., Lizotte, M.P., *Journal of geophysical research*, Sep. 15, 1998, 103(C10), p.21,683-21,695, 30 refs.

Oceanography, Marine biology, Biomass, Plankton, Polynyas, Sea water, Chlorophylls, Particles, Optical properties, Spectroscopy, Reflectivity, Attenuation, Radiation absorption, Antarctica—Ross Sea

53-549

**5-year satellite climatology of winter sea ice leads in the western Arctic.**

Miles, M.W., Barry, R.G., *Journal of geophysical research*, Sep. 15, 1998, 103(C10), p.21,723-21,734, 42 refs.

Climatology, Sea ice distribution, Spaceborne photography, Ice openings, Ice deformation, Surface structure, Orientation, Shear properties, Seasonal variations, Statistical analysis, Arctic Ocean

53-550

**Observations of brine drainage networks and microstructure of first-year sea ice.**

Cole, D.M., Shapiro, L.H., MP 5233, *Journal of geophysical research*, Sep. 15, 1998, 103(C10), p.21,739-21,750, 34 refs.

Sea ice, Ice mechanics, Ice microstructure, Brines, Subsurface drainage, Channels (waterways), Ice water interface, Porosity, Physical properties, Thin sections, Chukchi Sea

Brine drainage networks and the microstructure of first-year sea ice have been examined at two locations near Barrow, northern Alaska. A method for obtaining full-depth sections of ice sheets up to 1.8 m thick is presented and shown to provide information on the spatial distribution and geometry of brine drainage networks on a scale of meters. A number of such sections from the two test sites are presented which reveal a greater variety of main channel and side branch configurations than is typically observed in ice grown in the laboratory. Vertical and horizontal micrographs and thin section photographs were obtained at a test site in the relatively protected Elson Lagoon. The resulting time series of photographic records provide detailed information on the size, shape and spatial distribution of the brine- and gas-filled inclusions and a means to quantify their size and shape changes with time. An example of the changes with time in inclusion sizes and aspect ratios in the vertical and horizontal directions for a depth of 0.2 m, with a given thermal history is also presented.

53-551

**Cyclic loading and creep response of aligned first-year sea ice.**

Cole, D.M., Johnson, R.A., Durell, G.D., MP 5234, *Journal of geophysical research*, Sep. 15, 1998, 103(C10), p.21,751-21,758, 31 refs.

Sea ice, Ice mechanics, Ice strength, Ice cores, Elastic properties, Ice creep, Dynamic loads, Shear modulus, Orientation, Mechanical tests, Ice solid interface, Ice models

Characteristics such as brine and gas porosity and crystallographic features can have a profound impact on the mechanical properties of first-year sea ice. A program of laboratory experiments on field cores of first-year sea ice has been conducted to aid in the development of constitutive ice models. A thorough assessment of the bulk physical properties and microstructural characteristics of the ice has been carried out in conjunction with a detailed set of cyclic loading and creep experiments. Methodology was developed to calculate an orientation factor that determines the average shear stress resolved on the basal planes, given the background normal stress. Examination of the constitutive behavior using laboratory cyclic loading and constant load creep experiments revealed that the elastic, anelastic (time-dependent recoverable), and viscous strains varied systematically with the orientation factor. The observations also indicate significant brine porosity effects on the elastic, anelastic and viscous components of strain. A recently developed constitutive model was expanded to include a frequency- and orientation-dependent viscous straining term, and the model predictions agreed well with the experimental observation.

53-552

**Ductile compressive failure of columnar saline ice under triaxial loading.**

Melton, J.S., Schulson, E.M., *Journal of geophysical research*, Sep. 15, 1998, 103(C10), p.21,759-21,766, 21 refs.

Sea ice, Ice mechanics, Ice strength, Loads (forces), Ice solid interface, Compressive properties, Ice crystal structure, Orientation, Stress strain diagrams, Stress concentration, Indexes (ratios)

53-553

**Nucleation of feather cracks in columnar freshwater ice: experimental observations.**

Gupta, V., Picu, R.C., *Journal of geophysical research*, Sep. 15, 1998, 103(C10), p.21,767-21,774, 25 refs.

River ice, Ice mechanics, Ice microstructure, Crack propagation, Nucleation, Sliding, Loads (forces), Ice deformation, Ice solid interface, Strain tests, Shear stress, Mechanical properties

53-554

**Edge wave observation using remote seismoacoustic sensing of ice events in the Arctic.**

Dudko, I.U.V., Schmidt, H., Von der Heydt, K., Scheer, E.K., *Journal of geophysical research*, Sep. 15, 1998, 103(C10), p.21,775-21,781, 11 refs.

Oceanography, Sea ice, Ice mechanics, Ice acoustics, Ice openings, Ice edge, Elastic waves, Wave propagation, Low frequencies, Underwater acoustics, Seismic surveys, Wave propagation, Mathematical models, Arctic Ocean

53-555

**Inversion of pack ice elastic wave data to obtain ice physical properties.**

Stein, P.J., Euerle, S.E., Parinella, J.C., *Journal of geophysical research*, Sep. 15, 1998, 103(C10), p.21,783-21,793, 23 refs.

Sea ice, Pack ice, Ice mechanics, Mechanical properties, Ice acoustics, Elastic waves, Wave propagation, Low frequencies, Velocity measurement, Statistical analysis, Correlation, Arctic Ocean

53-556

**Fracture of multiyear sea ice.**

Sammonds, P.R., Murrell, S.A.F., Rist, M.A., *Journal of geophysical research*, Sep. 15, 1998, 103(C10), p.21,795-21,815, 65 refs.

Sea ice, Ice mechanics, Mechanical properties, Tensile properties, Cracking (fracturing), Ice deformation, Shear stress, Stress concentration, Nucleation, Thin sections, Stress strain diagrams, Strain tests, Temperature effects

53-557

**Characteristics of pack ice stress in the Alaskan Beaufort Sea.**

Richter-Menge, J.A., Elder, B.C., MP 5235, *Journal of geophysical research*, Sep. 15, 1998, 103(C10), p.21,817-21,829, 36 refs.

Sea ice, Pack ice, Ice mechanics, Stress concentration, Thermal stresses, Tensile properties, Ice temperature, Temperature effects, Mechanical tests, Sensors, Statistical analysis, Correlation, Beaufort Sea

Ice stresses in a multiyear floe were continuously monitored over 6 months in the fall-winter-spring of 1993-94. Stress sensors were installed at sites near the edge and at the center of the floe, which was located in the pack ice of the Alaskan Beaufort Sea. Compressive stresses in the major principal stress component varied significantly among the measurement sites, being of greater magnitude and exhibiting more high-frequency variations at the edge than at the center of the floe. Maximum compressive stresses, measured at a site 400 m from the edge of the floe, ranged from 100 to 300 kPa. Tensile stresses and the minor principal stress component were relatively constant at all measurement sites. A cross-correlation analysis indicates that the minor principal stress is strongly correlated to changes in the ice temperature. This result suggests that the minor principal stress component provides a good first-order approximation of thermally induced stresses. Ice-motion-induced stresses, distinguished by variations in magnitude of the order of hours, also have a significant low-frequency content similar to the thermal stresses. These low-frequency changes occur over a period of days. Seasonal variations in the characteristics of the stress were also evident and are likely to reflect the developing continuity of the pack as the winter season progresses.

53-558

**Motion-induced stresses in pack ice.**

Lewis, J.K., Richter-Menge, J.A., MP 5236, *Journal of geophysical research*, Sep. 15, 1998, 103(C10), p.21,831-21,843, 23 refs.

Sea ice, Pack ice, Ice mechanics, Shear stress, Stress concentration, Tensile properties, Ice deformation, Air ice water interaction, Mathematical models, Simulation, Beaufort Sea

The authors consider motion-induced stresses in pack ice through the analyses of a variety of observations collected during the Sea Ice Mechanics Initiative study conducted in the Beaufort Sea during 1993. Motion-induced components of *in situ* stress from stress gauge data are compared to stresses calculated as residuals based on

a force balance argument using observed wind, current and ice motion data. There are three significant stress events determined by the force balance calculations, but only the one event in the north-south direction has a strong corresponding signal in the stress gauge data. The results suggest that to effectively develop an understanding of the role that point stress measurements can play in developing the understanding of the process of ice deformation, it may be necessary to couple the stress measurements with models of the patterns of motion-induced stresses within a floe.

## 53-559

**Arctic sea ice as a granular plastic.**

Overland, J.E., McNutt, S.L., Salo, S., Groves, J., Li, S.S., *Journal of geophysical research*, Sep. 15, 1998, 103(C10), p.21,845-21,867, 40 refs.

Sea ice distribution, Ice mechanics, Plastic properties, Ice floes, Aggregates, Drift, Advection, Air ice water interaction, Synthetic aperture radar, Drift stations, Correlation, Wind factors, Beaufort Sea

## 53-560

**Thermomechanics of pack ice.**

Lewis, J.K., *Journal of geophysical research*, Sep. 15, 1998, 103(C10), p.21,869-21,882, 38 refs.

Sea ice, Pack ice, Ice mechanics, Thermodynamic properties, Thermal stresses, Tensile properties, Cracking (fracturing), Porosity, Rheology, Mathematical models, Snow cover effect

## 53-561

**Four stages of pressure ridging.**

Hopkins, M.A., MP 5237, *Journal of geophysical research*, Sep. 15, 1998, 103(C10), p.21,883-21,891, 17 refs.

Sea ice, Ice cover strength, Ice cover thickness, Ice mechanics, Pressure ridges, Ice pileup, Classifications, Drift, Ice solid interface, Elastic properties, Computerized simulation

The pressure ridging process is simulated using a two-dimensional particle model. Blocks are broken from an intact sheet of relatively thin lead ice pushed against a thick, multiyear floe at a constant speed. The blocks of ice rubble accumulate to form the ridge sail and keel. During the simulations the energy consumed in ridge growth, including dissipation, is explicitly calculated. On the basis of the results of simulations performed with the model, the ridging process can be divided into four distinct stages. The results of simulations establish the dependence of ridging energetics on the thickness of the ice sheet and the amount of ice pushed into the ridge. The average profiles of the simulated ridges delineate the growth process in the first, second and third stages. Lead ice extents of up to 1300 m are pushed into ridges to determine maximum sail heights, keel drafts and ridging forces.

## 53-562

**Large-scale sea ice drift and deformation: comparison between models and observations in the western Weddell Sea during 1992.**

Geiger, C.A., Hibler, W.D., III, Ackley, S.F., MP 5238, *Journal of geophysical research*, Sep. 15, 1998, 103(C10), p.21,893-21,913, 22 refs.

Oceanography, Ice mechanics, Mechanical properties, Shear properties, Sea ice distribution, Drift, Ice deformation, Velocity measurement, Drift stations, Mathematical models, Statistical analysis, Rheology, Correlation, Antarctica—Weddell Sea

Statistical comparison between numerical sea ice models and an observed large-scale strain array in the western Weddell Sea during 1992 are used to evaluate the performance of three of the more generally utilized sea ice rheology formulations. Results show that sea ice velocity is reproduced with relatively high accuracy in models having high-quality atmospheric forcing fields. Inclusion of both compressive and shear stresses is important in attaining a proper probability distribution of deformation relative to observations. Additional analysis shows that adjustments to specific model parameters improve the model results for either drift or select deformation components, but no best solution could be found, given the models examined here. Results suggest that inclusion of more physically based processes, such as subtidal tidal and inertial oscillations, reconsideration of the boundary layer formulation, and consideration of anisotropy, may be necessary to include in next-generation sea ice models, especially those that are intended for coupling with high-resolution (eddy resolving) ocean models.

## 53-563

**Architecture of an anisotropic elastic-plastic sea ice mechanics constitutive law.**

Coon, M.D., Knoke, G.S., Echert, D.C., Pritchard, R.S., *Journal of geophysical research*, Sep. 15, 1998, 103(C10), p.21,915-21,925, 23 refs.

Sea ice, Pack ice, Ice mechanics, Shear strength, Ice openings, Surface structure, Anisotropy, Orientation, Stress concentration, Plastic flow, Tensile properties, Ice water interface, Anisotropy, Mathematical models

## 53-564

**Chemical, physical and mineralogical analysis of soil and marine sediments from King George Island, South Shetland Archipelago, Antarctica.**

Schuch, L.A., et al, *Santiago de Chile. Instituto Antártico Chileno. Serie científica*, 1997, No.47, p.9-17, With Spanish summary. 11 refs.

Soil analysis, Soil chemistry, Frozen ground physics, Mineralogy, Marine deposits, Sediments, Antarctica—King George Island

## 53-565

**Geomorphology of Coppermine Peninsula, Robert Island, South Shetland Islands, Antarctica. [Geomorfología de la península Coppermine, isla Robert, islas Shetland del Sur, Antártica]**

Serrano, E., López-Martínez, J., *Santiago de Chile. Instituto Antártico Chileno. Serie científica*, 1997, No.47, p.19-29, In Spanish with English summary. 13 refs.

Geomorphology, Mapping, Terrain identification, Glacial deposits, Periglacial processes, Antarctica—Coppermine Peninsula

## 53-566

**Post-eclosional homeothermy development in chicks of two antarctic bird species: *Pygoscelis papua* and *Daption capense* in Ardley Peninsula, King George Island. [Desarrollo posteclosional de la homeotermia en polluelos de dos especies de aves antárticas: *Pygoscelis papua* y *Daption capense* en península Ardley, isla Rey Jorge]**

Soto-Gamboa, M., Nespolo, R.F., *Santiago de Chile. Instituto Antártico Chileno. Serie científica*, 1997, No.47, p.31-37, In Spanish with English summary. 15 refs.

Low temperature research, Animals, Physiological effects, Acclimatization, Antarctica—Ardley Island

## 53-567

**Survey of mesocyclones near the Antarctic Peninsula using digital satellite imagery collected at Palmer Station.**

Carrasco, J.F., Bromwich, D.H., *Santiago de Chile. Instituto Antártico Chileno. Serie científica*, 1997, No.47, p.39-57, With Spanish summary. Refs. p.55-57.

Oceanographic surveys, Atmospheric disturbances, Air ice water interaction, Sea ice, Advection, Image processing, Synoptic meteorology, Antarctica—Palmer Station

## 53-568

**Morphology and systematics of Early Cretaceous flora from President Head, Snow Island, South Shetland Islands, Antarctica. [Morfología y sistemática de la flora del Cretácico Inferior de President Head, Isla Snow, archipiélago de las Shetland del Sur, Antártica]**

Torres, T., Barale, G., Thévenard, F., Philippe, M., Galleguillos, H., *Santiago de Chile. Instituto Antártico Chileno. Serie científica*, 1997, No.47, p.59-86, In Spanish with English summary. Refs. p.83-86.

Paleobotany, Paleocology, Biogeography, Paleoclimatology, Glacial geology, Antarctica—President Head

## 53-569

**Entanglement of antarctic fur seals, *Arctocephalus gazella*, by marine debris at Cape Shirreff and San Telmo Islets, Livingston Island, Antarctica: 1988-1997.**

Hucke-Gaete, R., Torres N., D., Vallejos M., V., *Santiago de Chile. Instituto Antártico Chileno. Serie científica*, 1997, No.47, p.123-135, With Spanish summary. Refs. p. 132-133.

Water pollution, Ships, Waste disposal, Environmental protection, Animals, Antarctica—Livingston Island

## 53-570

**Beach debris survey at Cape Shirreff, Livingston Island, during the antarctic season 1996/97.**

Torres, D., Jorquera, D., Vallejos, V., Hucke-Gaete, R., Zárate, S., *Santiago de Chile. Instituto Antártico Chileno. Serie científica*, 1997, No.47, p.137-147, With Spanish summary. 7 refs.

Beaches, Impurities, Plastics, Water pollution, Ships, Waste disposal, Environmental protection, Animals, Antarctica—Shirreff, Cape

## 53-571

**Survival of two snow patches in the UK until winter 1997/98.**

Watson, A., Pottie, J., Duncan, D., *Weather*, May 1998, 53(5), p.155-158, 3 refs.

Weather observations, Precipitation (meteorology), Snow cover, Snowdrifts, Survival, Snow air interface, Snowmelt, Wind factors, Seasonal variations, United Kingdom—Scotland

## 53-572

**Soils of high-mountain tundras of south-east Altai.**

Goncharova, O.I.U., Vladychenski, A.S., Volkov, A.V., *Moscow University. Soil science bulletin*, 1998, 52(2), p.7-12, Translated from Vestnik Moskovskogo Universiteta. Pochvovedenie. 34 refs.

Mountain soils, Tundra soils, Steppes, Organic soils, Soil aggregates, Profiles, Chemical properties, Sampling, Russia—Siberia

## 53-573

**Proto-basement in Svalbard.**

Harland, W.B., *Polar research*, Dec. 1997, 16(2), p.123-147, Refs. p.143-147.

Pleistocene, Tectonics, Earth crust, Subpolar regions, Stratigraphy, Lithology, Geochemistry, Classifications, Geological surveys, Geological maps, Geochronology, Norway—Svalbard

## 53-574

**On the coexistence of cubic and hexagonal ice between 160 and 240 K.**

Johari, G.P., *Philosophical magazine*, Oct. 1998, 78(4), p.375-383, 29 refs.

Ice physics, Cubic ice, Thermodynamics, Phase transformations, Ice crystal growth, Ice crystal size, Ice solid interface, Ice vapor interface, Mathematical models, Temperature effects, Theories

## 53-575

**Anomalous isostructural transformation in ice VIII.**

Tse, J.S., Klug, D.D., *Physical review letters*, Sep. 21, 1998, 81(12), p.2466-2469, 22 refs.

Ice physics, High pressure ice, Phase transformations, Ice crystal structure, Water structure, Molecular structure, Thermodynamics, Molecular energy levels, Hydrogen bonds, Theories, Ice relaxation

## 53-576

**Multisite disordered structure of ice VII to 20 GPa.**

Nelmes, R.J., Loveday, J.S., Marshall, W.G., Hamel, G., Besson, J.M., Klotz, S., *Physical review letters*, Sep. 20, 1998, 81(13), p.2719-2722, 22 refs.

Ice physics, High pressure ice, Deuterium oxide ice, Ice structure, Molecular structure, Orientation, Hydrogen bonds, Neutron diffraction, Temperature effects

## 53-577

**Climate variations and changes in mass of three glaciers in western North America.**

Hodge, S.M., Traband, D.C., Krimmel, R.M., Heinrichs, T.A., March, R.S., Josberger, E.G., *Journal of climate*, Sep. 1998, 11(9), p.2161-2179, 58 refs.

Climatology, Climatic changes, Indexes (ratios), Glacier surveys, Glacier oscillation, Glacier mass balance, Glacial meteorology, Atmospheric circulation, Statistical analysis, Correlation, Seasonal variations, United States—Alaska—Wolverine Glacier, United States—Alaska—Gulkana Glacier, United States—Washington—South Cascade Glacier

53-578

**Accurate parameterization of the infrared radiative properties of cirrus clouds for climate models.** Fu, Q., Yang, P., Sun, W.B., *Journal of climate*, Sep. 1998, 11(9), p.2223-2237, 39 refs.  
Climatology, Cloud cover, Cloud physics, Radiation balance, Ice crystal optics, Ice crystal size, Infrared radiation, Radiation absorption, Light scattering, Mathematical models

53-579

**River flow response to precipitation and snow budget in California during the 1994/95 winter.** Kim, J.W., Miller, N.L., Guetter, A.K., Georgakakos, K.P., *Journal of climate*, Sep. 1998, 11(9), p.2376-2386, 38 refs.  
Climatology, Precipitation (meteorology), Watersheds, Stream flow, Snow hydrology, Snowmelt, Snow accumulation, Water storage, Runoff forecasting, Mathematical models, Altitude, United States—California—Sierra Nevada

53-580

**Use of a multifactor Southern Oscillation index for the estimation of annual hailstorm frequencies in the Sydney area.** Kuhnel, I., *International journal of climatology*, June 30, 1998, 18(8), p.841-858, 50 refs.  
Climatology, Weather forecasting, Storms, Hail, Classifications, Hailstone structure, Indexes (ratios), Seasonal variations, Statistical analysis, Atmospheric circulation, Safety, Australia—Sydney

53-581

**Evaluation of the efficiency of controlling engineering-geological processes from the results of geocryological prognoses (illustrated by the example of the Baikal-Amur trunk line).** Garagulia, L.S., Ospennikov, E.N., Shatalova, T.I.U., *Moscow University geology bulletin*, 1996, 51(6), p.48-60, Translated from Vestnik Moskovskogo Universiteta. Geologiya. 7 refs.  
Engineering geology, Geocryology, Permafrost hydrology, Subpermafrost ground water, Thermokarst lakes, Drainage, Freeze thaw cycles, Railroads, Subgrades, Embankments, Soil stabilization, Russia

53-582

**Deformation across the rupture zone of the 1964 Alaska earthquake, 1993-1997.** Savage, J.C., Svarc, J.L., Prescott, W.H., Gross, W.K., *Journal of geophysical research*, Sep. 10, 1998, 103(B9), p.21,275-21,283, 18 refs.  
Tectonics, Earthquakes, Fracture zones, Deformation, Stress concentration, Geodetic surveys, Seismic velocity, Models, United States—Alaska—Prince William Sound

53-583

**Antarctica and the international environmental protection. [L'Antarctique et la protection internationale de l'environnement]** Pannatier, S., *Etudes suisses de droit international*, Jan. 1994, Vol.88, 323p., In French. Refs. p.305-323.

DLC KWX705.P36 1994

Environmental protection, Environmental impact, Legislation, International cooperation, Antarctica

53-584

**Antarctica and its mineral resources: the new legal framework. [L'Antarctique et ses ressources minérales: le nouveau cadre juridique]** Bermejo, R., Publications de l'Institut Universitaire de Hautes Études Internationales. Geneve, Paris, France, Presses Universitaires de France, 1990, 205p., In French. Refs. p.186-204.

DLC JX4084.A5B47 1990

Mining, Legislation, Minerals, Natural resources, International cooperation, Antarctica

53-585

**Draft Antarctica Protection Act.** Rinzema, J., *Environmental policy and law*, May 1996, 26(2-3), p.95-103, Refs. p.101-103.

DLC Law Per 1996

Environmental protection, Legislation, International cooperation, Antarctica

53-586

**Reconstructing interannual climate variability from tropical and subtropical ice-core records.** Thompson, L.G., Mosley-Thompson, E., Thompson, P.A., El Niño. Historical and paleoclimatic aspects of the Southern Oscillation. Edited by H.F. Diaz and V. Markgraf, Cambridge, UK, University Press, 1992, p.295-322, Refs. p.320-322.  
DLC GC296.8.E4N56 1992  
Ice cores, Paleoclimatology, Glacial geology, Ocean currents, Climatic changes, Periodic variations, Human factors, Mountain glaciers, Peru, China

53-587

**Comparison of proxy records of El Niño/Southern Oscillation.** Michaelsen, J., Thompson, L.G., El Niño. Historical and paleoclimatic aspects of the Southern Oscillation. Edited by H.F. Diaz and V. Markgraf, Cambridge, UK, University Press, 1992, p.323-348, Refs. p.347-348.  
DLC GC296.8.E4N56 1992  
Isotopes, Ice cores, Paleoclimatology, Glacial geology, Mathematical models, Mountain glaciers, Ocean currents, Peru

53-588

**Protocol on Environmental Protection to the Antarctic Treaty. [La celebración del protocolo al tratado Antártico sobre protección del medio ambiente: Orígenes y negociaciones]** Berméjo García, R., Bou, V., *Anuario de Derecho Internacional*, 1993, Vol.9, p.155-211, In Spanish. 111 refs.  
DLC JX9.A59 1993  
Environmental protection, Legislation, International cooperation, Antarctica

53-589

**Facilitation in subnival vegetation patches.** Kikvidze, Z., Nakhutsrishvili, G., *Journal of vegetation sciences*, Apr. 1998, 9(2), p.261-264, 23 refs.  
Plant ecology, Plants (botany), Ecosystems, Alpine landscapes, Vegetation patterns, Classifications, Statistical analysis, Vegetation factors, Georgia—Caucasus

53-590

**Magmatic intrusions and a hydrothermal origin for fluvial valleys on Mars.** Gulick, V.C., *Journal of geophysical research*, Aug. 25, 1998, 103(E8), p.19,365-19,387, 73 refs.  
Geomorphology, Mars (planet), Valleys, Magma, Extraterrestrial ice, Ground ice, Hydrothermal processes, Permafrost physics, Geothermal thawing, Water erosion, Mathematical models

53-591

**Biogeography of limno-terrestrial Tardigrada, with particular reference to the antarctic fauna.** McInnes, S.J., Pugh, P.J.A., *Journal of biogeography*, Jan. 1998, 25(1), p.31-36, 28 refs.  
Pleistocene, Continental drift, Biogeography, Biomass, Fossils, Distribution, Classifications, Statistical analysis, Antarctica

53-592

**Predicting changes in Fennoscandian vascular-plant species richness as a result of future climatic change.** Sætersdal, M., Birks, H.J.B., Peglar, S.M., *Journal of biogeography*, Jan. 1998, 25(1), p.111-122, Refs. p.119-122.  
Biogeography, Subpolar regions, Plant ecology, Climatology, Greenhouse effect, Forest lines, Vegetation patterns, Classifications, Statistical analysis, Forecasting, Environmental impact, Norway, Sweden, Finland, Denmark

53-593

**Numerical analysis of the mesoscale distribution patterns of vascular plants in the subarctic Kevo Nature Reserve, northern Finland.** Heikkinen, R.K., Birks, H.J.B., Kalliola, R.J., *Journal of biogeography*, Jan. 1998, 25(1), p.123-146, Refs. p.138-140, 145.  
Biogeography, Plant ecology, Vegetation patterns, Subarctic landscapes, Statistical analysis, Classifications, Correlation, Finland—Kevo Nature Reserve

53-594

**Wind forcing of ice cover in the Labrador shelf marginal ice zone.**

Greenan, B.J.W., Prinsenberg, S.J., *Atmosphere-ocean*, June 1998, 36(2), p.71-93, With French summary. 17 refs.

Oceanography, Sea ice distribution, Pack ice, Drift, Ice edge, Air ice water interaction, Wind factors, Velocity measurement, Models, Seasonal variations, Forecasting, Canada—Labrador, Atlantic Ocean

53-595

**SSM/I derived snow water equivalent data: the potential for investigating linkages between snow cover and atmospheric circulation.**

Derksen, C., LeDrew, E., Goodison, B., *Atmosphere-ocean*, June 1998, 36(2), p.95-117, With French summary. 25 refs.

Climatology, Snow surveys, Radiometry, Atmospheric circulation, Snow cover distribution, Snow line, Snow air interface, Snow water equivalent, Snow cover effect, Brightness, Correlation, Statistical analysis

53-596

**Episodic occurrence of hail in central Alberta and the Highveld of South Africa.**

Smith, S.B., Reuter, G.W., Yau, M.K., *Atmosphere-ocean*, June 1998, 36(2), p.169-178, With French summary. 16 refs.

Climatology, Precipitation (meteorology), Storms, Hail, Meteorological data, Seasonal variations, Statistical analysis, South Africa—Highveld, Canada—Alberta

53-597

**Arctic deltas.**

Walker, H.J., *Journal of coastal research*, 1998, 14(3), World Deltas Symposium, New Orleans, LA, Aug. 23-29, 1998. Collected papers. Edited by G.W. Stone and J.C. Donley, p.718-738, 63 refs.

Geomorphology, Littoral zone, Deltas, Arctic landscapes, Permafrost distribution, Permafrost transformation, Permafrost hydrology, Geocryology, Sedimentation, Hydrocarbons, Economic development, Environmental impact, Arctic Ocean, Beaufort Sea, Barents Sea, Canada—Yukon Territory—Yukon River, Russia—Lena River

53-598

**Shoreline displacement and vegetation history on Island Naissaar, Baltic Sea.**

Punning, J.M., Koff, T., Ratas, U., Tann, R., *Journal of coastal research*, 1998, 14(3), p.933-938, 19 refs.

Geomorphology, Marine geology, Shoreline modification, Subpolar regions, Lacustrine deposits, Paleogeology, Palynology, Peat, Isostasy, Geochronology, Baltic Sea

53-599

**Geomorphic aspects of mega-boulders at Mitis Bay, lower St. Lawrence estuary, Québec, Canada.**

Dionne, J.C., Poitras, S., *Journal of coastal research*, 1998, 14(3), p.1054-1064, With French summary. 35 refs.

Geomorphology, Estuaries, Littoral zone, Shoreline modification, Fast ice, Ice scoring, Ice rafting, Marine deposits, Quaternary deposits, Rocks, Lithology, Canada—Quebec—Mitis Bay

53-600

**Astronomical forcing in cosmogenic Be-10 variation from East Antarctica coast?**

Liritzis, I., Grigori, E., *Journal of coastal research*, 1998, 14(3), p.1065-1073, 33 refs.

Paleoclimatology, Insolation, Shores, Ice sheets, Ice cores, Sea level, Gamma irradiation, Radioactive isotopes, Geochronology, Periodic variations, Profiles, Correlation, Antarctica—Vostok Station



53-601

**Overestimation of snow depth and inorganic nitrogen wetfall using NADP data, Niwot Ridge, Colorado.**

Williams, M.W., Bardsley, T., Rikkers, M., *Atmospheric environment*, Nov. 1998, 32(22), p.3827-3833, 18 refs.

Precipitation (meteorology), Snow hydrology, Alpine landscapes, Snow depth, Snow composition, Aerosols, Sedimentation, Chemical analysis, Sampling, Seasonal variations, Accuracy, United States—Colorado—Niwot Ridge

53-602

**On-land detecting a motionally induced electric field: test measurements in northern Finland.**

Palshin, N.A., Kaikkonen, P., Vanyan, L.L., Tiikainen, J., Rukol, V.H., *Journal of geomagnetism and geoelectricity*, 1997, 49(11-12), p.1343-1350, 15 refs.

Geomagnetism, Subpolar regions, Electric fields, Oceanography, Shores, Marine atmospheres, Water level, Ocean currents, Electrical measurement, Detection, Statistical analysis, Finland—Kilpisjärvi

53-603

**Spatial and temporal characteristics of snow cover in western China.**

Spies, T.E., New Brunswick, NJ, Rutgers University, 1991, 97p., University Microfilms order No.13-45088, M.S. thesis. For abstract see Masters abstracts international, 30(2), p.289.

Snow cover structure, Snow depth, Snow cover distribution, Snow air interface, Mountains, China—Qinghai-Xizang Plateau

53-604

**Object-oriented systems for automated SAR image analysis: ice margin kinematics. (Volumes 1 and 2).**

Daida, J.M., Stanford, CA, Stanford University, 1992, 610p., University Microfilms order No.92-17811, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 53(1), p.464.

Sea ice, Image processing, Synthetic aperture radar, Data processing, Ice edge, Surface properties, Ice surveys, Sea ice distribution, Ice detection, Spaceborne photography

53-605

**Climate sensitivity study with energy balance models.**

Huang, J., Urbana-Champaign, University of Illinois, 1991, 141p., University Microfilms order No.92-10843, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 53(1), p.338.

Climatic changes, Paleoclimatology, Models, Seasonal variations, Glaciation, Glacier oscillation, Albedo, Polar regions, Ice air interface

53-606

**Aerosol scavenging by ice in supercooled clouds.**

Song, N.H., University Park, Pennsylvania State University, 1991, 237p., University Microfilms order No.92-14280, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 52(12), p.6455.

Supercooled clouds, Scavenging, Aerosols, Ice crystal growth

53-607

**Isotopic composition of trapped oxygen molecule and nitrogen molecule in ice cores: biogeochemical and stratigraphic implications.**

Sowers, T.A., Kingston, University of Rhode Island, 1991, 288p., University Microfilms order No.92-17544, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 53(1), p.162.

Ice cores, Ice composition, Paleoclimatology, Ice volume, Ice air interface, Gas inclusions, Isotopes, Antarctica—Vostok Station

53-608

**Investigation of the effects of topography on Colorado Front Range winter storms.**

Wesley, D.A., Fort Collins, Colorado State University, 1991, 209p., University Microfilms order No.92-16227, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 53(1), p.339.

Topographic surveys, Topographic effects, Snowstorms, Snowfall, Snow air interface, Simulation, Low temperature research, Air masses, United States—Colorado—Colorado Front Range

53-609

**Simulation of two-dimensional icing, de-icing and anti-icing phenomena.**

Wright, W.B., Toledo, OH, University, 1991, 134p., University Microfilms order No.92-16671, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 53(1), p.410.

Aircraft icing, Ice accretion, Ice removal, Engineering, Simulation, Mathematical models, Heat transfer, Icing

53-610

**Anomalous diffraction theory for arbitrarily oriented finite circular cylinders and comparison with exact 7-matrix results.**

Liu, Y.G., Arnott, W.P., Hallett, J., *Applied optics*, July 20, 1998, 37(21), p.5019-5030, 36 refs.

Cloud physics, Remote sensing, Ice crystal optics, Particles, Ice crystal size, Refractivity, Orientation, Light scattering, Radiation absorption, Attenuation, Mathematical models, Theories

53-611

**Inter-relationships between treeline position, species diversity, land use and climate change in the central Scandes Mountains of Norway.**

Hofgaard, A., *Global ecology and biogeography letters*, Nov. 1997, 6(6), p.419-429, 62 refs.

Biogeography, Alpine landscapes, Plant ecology, Forest ecosystems, Forest canopy, Forest lines, Biomass, Classifications, Climatic changes, Environmental impact, Norway—Scandes Mountains

53-612

**LPM effect for EeV hadronic showers in ice: implications for radio detection of neutrinos.**

Alvarez-Muniz, J., Zas, E., *Physica letters B*, Aug. 27, 1998, 434(3-4), p.396-406, 33 refs.

Ice physics, Gamma irradiation, Detection, Radio waves, Particles, Luminescence, Light (visible radiation), Ice optics, Simulation, Models

53-613

**Raman spectra of low- and high-density amorphous ices.**

Kanno, H., Tomikawa, K., Mishima, O., *Chemical physics letters*, Sep. 4, 1998, 293(5-6), p.412-416, 33 refs.

Ice physics, Amorphous ice, Molecular structure, Density (mass/volume), Ice spectroscopy, Hydrogen bonds, Low frequencies, Spectra, Correlation

53-614

**Environmental controls on soil frost activity in the Western Cape mountains, South Africa.**

Boelhouwers, J.C., *Earth surface processes and landforms*, Mar. 1998, 23(3), p.211-221, 24 refs.

Geocryology, Microclimatology, Mountain soils, Soil freezing, Frost action, Ice needles, Soil texture, Freeze thaw cycles, Soil air interface, Temperature measurement, Seasonal variations, Snow cover effect, South Africa—Western Cape Mountains

53-615

**Bedrock surface roughness and the distribution of subglacially precipitated carbonate deposits: implications for formation at Glacier de Tsanfleuron, Switzerland.**

Hubbard, B., Hubbard, A., *Earth surface processes and landforms*, Mar. 1998, 23(3), p.261-270, 31 refs.

Glacial geology, Subglacial observations, Bedrock, Sedimentation, Distribution, Geochemistry, Surface roughness, Microstructure, Regelation, Profiles, Ice solid interface, Switzerland—Glacier de Tsanfleuron

53-616

**Carbon budget for the Arctic Ocean.**

Anderson, L.G., Olsson, K., Chierici, M., *Global biogeochemical cycles*, Sep. 1998, 12(3), p.455-465, 59 refs.

Oceanography, Subpolar regions, Ocean currents, Flow rate, Mass transfer, Biomass, Nutrient cycle, Carbon dioxide, Geochemical cycles, Organic nuclei, Air water interactions, Models, Arctic Ocean

53-617

**Europa: initial Galileo geological observations.**

Greeley, R., et al, *Icarus*, Sep. 1998, 135(1), p.4-24, Refs. p.22-24.

Extraterrestrial ice, Satellites (natural), Spaceborne photography, Geophysical surveys, Geomorphology, Regolith, Ground ice, Tectonics, Surface structure, Photointerpretation

53-618

**Terrestrial sea ice morphology: considerations for Europa.**

Greeley, R., et al, *Icarus*, Sep. 1998, 135(1), p.25-40, 48 refs.

Extraterrestrial ice, Satellites (natural), Geomorphology, Regolith, Ice mechanics, Pressure ridges, Topographic features, Spaceborne photography, Sea ice, Ice surface, Correlation, Photointerpretation

53-619

**Galileo observations of Europa's opposition effect.**

Helfenstein, P., et al, *Icarus*, Sep. 1998, 135(1), p.41-63, 64 refs.

Extraterrestrial ice, Satellites (natural), Spaceborne photography, Regolith, Ground ice, Pressure ridges, Albedo, Lithology, Photometry, Landscape development

53-620

**Tectonic processes on Europa: tidal stresses, mechanical response, and visible features.**

Greenberg, R., et al, *Icarus*, Sep. 1998, 135(1), p.64-78, 39 refs.

Satellites (natural), Extraterrestrial ice, Regolith, Spaceborne photography, Tectonics, Geomorphology, Pressure ridges, Ice mechanics, Cracking (fracturing), Gravity, Tides, Diurnal variations

53-621

**Europa: disk-resolved ultraviolet measurements using the Galileo ultraviolet spectrometer.**

Hendrix, A.R., Barth, C.A., Hord, C.W., Lane, A.L., *Icarus*, Sep. 1998, 135(1), p.79-94, 36 refs.

Extraterrestrial ice, Satellites (natural), Regolith, Ground ice, Spaceborne photography, Ice spectroscopy, Photometry, Ultraviolet radiation, Albedo

53-622

**Multispectral terrain analysis of Europa from Galileo images.**

Clark, B.E., et al, *Icarus*, Sep. 1998, 135(1), p.95-106, 28 refs.

Extraterrestrial ice, Satellites (natural), Spaceborne photography, Regolith, Ground ice, Surface structure, Photometry, Brightness, Photointerpretation, Terrain identification

53-623

**Evolution of lineaments on Europa: clues from Galileo multispectral imaging observations.**

Geissler, P.E., et al, *Icarus*, Sep. 1998, 135(1), p.107-126, 47 refs.

Extraterrestrial ice, Satellites (natural), Spaceborne photography, Albedo, Regolith, Ground ice, Surface structure, Pressure ridges, Cracking (fracturing), Landscape development, Photointerpretation

53-624

**Large impact features on Europa: results of the Galileo nominal mission.**

Moore, J.M., et al, *Icarus*, Sep. 1998, 135(1), p.127-145, 52 refs.

Extraterrestrial ice, Satellites (natural), Regolith, Ground ice, Spaceborne photography, Geomorphology, Topographic features, Impact, Rheology, Pit and mound topography, Photointerpretation

53-625

**Galileo search for SO<sub>2</sub>-frost condensation on Io's nightside.**Simonelli, D.P., Veverka, J., Senske, D.A., Fanale, F.P., Schubert, G., Melton, M.J.S., *Icarus*, Sep. 1998, 135(1), p.166-174, 18 refs.

Extraterrestrial ice, Satellites (natural), Spaceborne photography, Regolith, Frost, Gases, Atmospheric composition, Condensation, Albedo, Diurnal variations, Photointerpretation

53-626

**Grooved terrain on Ganymede: first results from Galileo high-resolution imaging.**Pappalardo, R.T., et al, *Icarus*, Sep. 1998, 135(1), p.276-302, Refs. p.300-302.

Extraterrestrial ice, Satellites (natural), Spaceborne photography, Regolith, Ground ice, Albedo, Topographic features, Tectonics, Shear stress, Geomorphology, Landscape development

53-627

**Dark terrain on Ganymede: geological mapping and interpretation of Galileo Regio at high resolution.**Prockter, L.M., et al, *Icarus*, Sep. 1998, 135(1), p.317-344, Refs. p.341-344.

Extraterrestrial ice, Satellites (natural), Spaceborne photography, Regolith, Geomorphology, Tectonics, Landscape development, Ground ice, Ice sublimation, Stereophotography, Geological maps

53-628

**Formation of Ganymede grooved terrain by sequential extensional episodes: implications of Galileo observations for regional stratigraphy.**Collins, G.C., Head, J.W., Pappalardo, R.T., *Icarus*, Sep. 1998, 135(1), p.345-359, 41 refs.

Extraterrestrial ice, Satellites (natural), Spaceborne photography, Sensor mapping, Regolith, Geomorphology, Ground ice, Tectonics, Topographic features, Landscape development, Stratigraphy, Theories

53-629

**Expedient cold-weather concreting.**Korhonen, C., MP 5239, *Engineer*, Nov. 1997, Vol.27, p.25-27.

Winter concreting, Concrete strength, Temperature effects, Antifreezes

53-630

**Barriers of repository under the conditions of underground isolation of heat releasing radioactive waste in permafrost.**

Kazakov, A.N., Fedorovich, L.N., Proceedings of the Fifth International Conference on Radioactive Waste Management and Environmental Remediation, ICEM '95. Volume 1: Cross-Cutting Issues and Management of High-Level Waste and Spent Fuel, Berlin, Germany, Sep. 3-7, 1995. Edited by S. Slate, F. Feizollahi, and J. Creer, New York, NY, American Society of Mechanical Engineers, 1995, p.687-689. DLC TD898.14.M35 I57 1995, Vol.1

Environmental protection, Subsurface structures, Permafrost, Frozen rocks, Radioactive wastes, Waste disposal, Underground storage, Russia

53-631

**Geocryological aspects for choice of the site for underground radwaste isolation in permafrost rocks.**

Kazakov, A.N., Petrovich, P.V., Proceedings of the Fifth International Conference on Radioactive Waste Management and Environmental Remediation, ICEM '95. Volume 1: Cross-Cutting Issues and Management of High-Level Waste and Spent Fuel, Berlin, Germany, Sep. 3-7, 1995. Edited by S. Slate, F. Feizollahi, and J. Creer, New York, NY, American Society of Mechanical Engineers, 1995, p.695-697, 2 refs.

DLC TD898.14.M35 I57 1995, Vol.1

Radioactive wastes, Frozen rocks, Geocryology, Permafrost, Waste disposal, Underground storage

53-632

**United States antarctic activities, Part A: Modifications of plans for 1996-97; Part B: Plans for activities for 1997-98.**

U.S. National Science Foundation, Washington, D.C., 1998, 118p. + appendices, Information exchange under Articles III and VII(5) of the Antarctic Treaty.

Research projects, Low temperature research, Expeditions, Ships, Logistics, Radioactive wastes, Organizations, Antarctica

53-633

**United States antarctic activities, Part A: Actual activities—combination of plans and modifications for 1995-96; Part B: Plans for activities for 1996-97.**

U.S. National Science Foundation, Washington, D.C., 1998, 150p. + appendices, Information exchange under Articles III and VII(5) of the Antarctic Treaty.

Research projects, Low temperature research, Expeditions, Ships, Logistics, Radioactive wastes, Organizations, Antarctica

53-634

**United States antarctic activities. Actual activities for 1994-95. (A combination of plans and modifications).**

U.S. National Science Foundation, Washington, D.C., 1998, 81p. + appendices, Information exchange under Articles III and VII(5) of the Antarctic Treaty.

Research projects, Low temperature research, Expeditions, Ships, Logistics, Radioactive wastes, Organizations, Antarctica

53-635

**GOME observations of the NH and SH ozone holes in 1996 and 1997.**Weber, M., Eichmann, K.U., Bramstedt, K., Burrows, J.P., *Earth observation quarterly*, Mar. 1998, No.58, p.3-5, 4 refs.

Climatology, Polar atmospheres, Polar stratospheric clouds, Cloud physics, Ozone, Photochemical reactions, Degradation, Remote sensing, Spacecraft, Spectroscopy, Seasonal variations, Antarctica

53-636

**Pole-to-pole validation of GOME level-2 products with ground-based networks.**Lambert, J.C., et al, *Earth observation quarterly*, Mar. 1998, No.58, p.6-8, 6 refs.

Climatology, Global change, Air pollution, Spectroscopy, Photometry, Polar atmospheres, Aerosols, Degradation, Ozone, Correlation, Norway, Antarctica

53-637

**Height-resolved ozone information from GOME data.**Hoogen, R., et al, *Earth observation quarterly*, Mar. 1998, No.58, p.9-10, 3 refs.

Climatology, Air pollution, Remote sensing, Spectroscopy, Polar stratospheric clouds, Polar atmospheres, Ozone, Degradation, Altitude

53-638

**Measurements of halogen oxides by GOME.**Richter, A., Eisinger, M., Wittrock, F., Burrows, J.P., *Earth observation quarterly*, Mar. 1998, No.58, p.19-20.

Climatology, Polar atmospheres, Stratosphere, Aerosols, Spectroscopy, Ozone, Profiles, Antarctica

53-639

**Mapping of polar tropospheric BrO by GOME.**Wagner, T., Platt, U., *Earth observation quarterly*, Mar. 1998, No.58, p.21-24, 10 refs.

Climatology, Polar atmospheres, Air pollution, Atmospheric boundary layer, Spectroscopy, Sensor mapping, Spacecraft, Ozone, Decomposition, Aerosols, Antarctica, Norway—Spitsbergen

53-640

**Antarctic O<sub>3</sub> depletion and its correlation with solar flare index.**Midya, S.K., Ganda, S.C., Sahu, S.N., *Earth, moon, and planets*, 1997-1998, Vol.76, p.5-9, 7 refs.

Climatology, Polar atmospheres, Atmospheric composition, Degradation, Ozone, Solar radiation, Solar activity, Environmental impact, Photochemical reactions, Indexes (ratios), Correlation, Periodic variations, Theories, Antarctica—McMurdo Station, Antarctica—Halley Station

53-641

**Thermal destruction of solids near the Sun.**Shestakova, L.I., Tambovtseva, L.V., *Earth, moon, and planets*, 1997-1998, Vol.76, p.19-45, 36 refs.

Satellites (natural), Extraterrestrial ice, Hydrocarbons, Ice mechanics, Rock mechanics, Solar radiation, Infrared radiation, Cracking (fracturing), Thermal stresses, Thermal diffusion, Mathematical models

53-642

**Detrital zircon constraints on the tectonic evolution of the Gravina belt, southeastern Alaska.**Kapp, P.A., Gehrels, G.E., *Canadian journal of earth sciences*, Mar. 1998, 35(3), p.253-268, With French summary. Refs. p.266-268.

Pleistocene, Earth crust, Tectonics, Geochemistry, Lithology, Isotope analysis, Spectroscopy, Geochronology, Models, Sampling, United States—Alaska—Berners Bay

53-643

**Detrital zircon geochronology and regional correlation of metasedimentary rocks in the Coast Mountains, southeastern Alaska.**Gehrels, G.E., Kapp, P.A., *Canadian journal of earth sciences*, Mar. 1998, 35(3), p.269-279, With French summary. 53 refs.

Pleistocene, Earth crust, Subpolar regions, Tectonics, Sedimentation, Quaternary deposits, Lithology, Correlation, Geochronology, Isotope analysis, Sampling, Models, United States—Alaska—Coast Mountains

53-644

**Paleoproterozoic stromatolites, Hurwitz Group, Quartzite Lake area, Northwest Territories, Canada.**Hofmann, H.J., Davidson, A., *Canadian journal of earth sciences*, Mar. 1998, 35(3), p.280-289, With French summary. 31 refs.

Pleistocene, Paleogeology, Microbiology, Earth crust, Sedimentation, Lithology, Stratigraphy, Carbon isotopes, Isotope analysis, Geochronology, Thin sections, Correlation, Canada—Northwest Territories—Quartzite Lake

53-645

**Stromatolites of the late Archean Back River stratonolcano, Slave structural province, Northwest Territories, Canada.**Lambert, M.B., *Canadian journal of earth sciences*, Mar. 1998, 35(3), p.290-301, With French summary. 22 refs.

Pleistocene, Earth crust, Paleogeology, Microbiology, Geological surveys, Classifications, Sedimentation, Volcanic ash, Lithology, Stratigraphy, Distribution, Canada—Northwest Territories—Back River

53-646

**Soil moisture and soil water solutes during freeze-back at Lake Levinson-Lessing, Taymyr Peninsula, Siberia.**

Overduin, P.P., Toronto, York University, 1998, 113p., University Microfilms order No.AADMQ-27369, MS. thesis. For abstract see Masters abstracts international, 36(5), 1998, p.1294.

Permafrost hydrology, Frozen ground mechanics, Soil chemistry, Solubility, Active layer, Soil freezing, Water content, Microclimatology, Profiles, Russia—Siberia



53-647

**Fundamentals, accuracy and input parameters of frost heave prediction models.**

Schellekens, F.J., Ottawa, Carleton University, 1997, 304p., University Microfilms order No.AADNQ-26887, Ph.D. thesis. For abstract see Dissertation abstracts international, Vol.59B(4), 1998, p.1562.

Geocryology, Frozen ground mechanics, Permafrost thermal properties, Frost action, Frost heave, Models, Computerized simulation, Frost forecasting

53-648

**Structural evolution of the Norwegian-Greenland Sea: results from detailed analysis of SEAMARC II side-scan sonar data.**

Doss, H.S., New York, City University of New York, 1997, 218p., University Microfilms order No.AAD97-20086, Ph.D. thesis. For abstract see Dissertation abstracts international, Vol.58B(1), 1997, p.109.

Pleistocene, Marine geology, Tectonics, Subpolar regions, Geological surveys, Ocean bottom, Fracture zones, Magma, Geomorphology, Acoustic measurement, Underwater acoustics, Models, Greenland Sea, Norwegian Sea

53-649

**Observational and modeling study of snow and its relation to the Indian summer monsoon.**

Bamzai, A.S., Fairfax, VA, George Mason University, 1997, 179p., University Microfilms order No.AAD97-20936, Ph.D. thesis. For abstract see Dissertation abstracts international, Vol.58B(1), 1997, p.242.

Climatology, Precipitation (meteorology), Snow accumulation, Snow depth, Atmospheric circulation, Seasonal variations, Snow cover effect, Models, India

53-650

**Longitudinal impact loading on electrical transmission line towers: a scale model study.**

Kempner, L., Jr., Portland, OR, State University, 1997, 203p., University Microfilms order No.AAD97-21350, Ph.D. thesis. For abstract see Dissertation abstracts international, Vol.58B(1), 1997, p.319.

Power line icing, Towers, Transmission lines, Mechanical properties, Ice accretion, Ice loads, Dynamic loads, Oscillations, Ice solid interface, Wind factors, Bearing strength, Design criteria, Models

53-651

**Modelling Laurentide ice stream thermomechanics.**

Marshall, S., Vancouver, University of British Columbia, 1996, 340p., University Microfilms order No.AADNN-14792, Ph.D. thesis. For abstract see Dissertation abstracts international, Vol.58B(1), 1997, p.110. For another version see 52-2036.

Pleistocene, Ice sheets, Glacier flow, Ice mechanics, Ice solid interface, Topographic effects, Turbulent flow, Mass balance, Mathematical models, Canada—Quebec—Hudson Strait

53-652

**Isotopic and chemical snowpath separation of streamflow during snowmelt and hydrogeologic controls of surface-water chemistry in six alpine-subalpine basins, Rocky Mountain National Park, Colorado.**

Sueker, J.K., Boulder, University of Colorado, 1996, 202p., University Microfilms order No.AAD97-17645, Ph.D. thesis. For abstract see Dissertation abstracts international, Vol.58B(1), 1997, p.102.

Watersheds, Alpine landscapes, Surface drainage, Aerosols, Hydrography, Solubility, Hydrogeology, Stream flow, Snow hydrology, Snowmelt, United States—Colorado—Rocky Mountain National Park

53-653

**Late Paleozoic environments: carbon and oxygen isotope records and elemental concentrations of brachiopod shells.**

Mii, H.S., College Station, Texas A&M University, 1996, 192p., University Microfilms order No.AAD97-18413, Ph.D. thesis. For abstract see Dissertation abstracts international, Vol.58B(1), 1997, p.107.

Paleoclimatology, Pleistocene, Paleocology, Marine deposits, Oxygen isotopes, Isotope analysis, Geochemical cycles, Stratigraphy, Russia, Norway—Spitsbergen

53-654

**Rheology of developed and undeveloped wheat flour dough.**

Campos, D.T., East Lansing, Michigan State University, 1996, 173p., University Microfilms order No.AAD97-18810, Ph.D. thesis. For abstract see Dissertation abstracts international, Vol.58B(1), 1996, p.8.

Rheology, Hydrates, Ice mechanics, Porous materials, Ice crystals, Ice solid interface, Shear properties, Viscoelasticity, Mechanical tests, Dynamic loads

53-655

**Asynchronously coupled continental ice sheet/energy balance/climate model.**

Steen, R.S., Houston, Rice University, 1996, 83p., University Microfilms order No.AAD13-82747, MS. thesis. For abstract see Masters abstracts international, 35(3), 1996, p.828.

Paleoclimatology, Pleistocene, Land ice, Radiation balance, Ice sheets, Glacier oscillation, Periodic variations, Ice air interface, Computerized simulation, Correlation

53-656

**Preliminary investigation of WSR-88D data for winter hydrometeorological events in upstate New York.**

Houck, R.E., Stony Brook, State University of New York, 1996, 173p., University Microfilms order No.AAD13-82769, MS. thesis. For abstract see Masters abstracts international, 35(3), 1996, p.777. For another version see 50-3109.

Precipitation (meteorology), Snowstorms, Remote sensing, Radar echoes, Snow water equivalent, Lake effects, Statistical analysis, Image processing, Classifications, United States—New York

53-657

**On the estimation of ice crystal mass.**

Cai, Q.M., Reno, University of Nevada, 1996, 89p., University Microfilms order No.AA13-82819, MS. thesis. For abstract see Masters abstracts international, 35(3), 1996, p.828.

Climatology, Weather modification, Precipitation (meteorology), Cloud seeding, Cloud physics, Ice crystal growth, Snow crystal structure, Heterogeneous nucleation, Forecasting

53-658

**Laboratory study on the phase transition for polar stratospheric cloud particles.**

Teets, E.H., Jr., Reno, University of Nevada, 1996, 91p., University Microfilms order No.AAD13-82820, MS. thesis. For abstract see Masters abstracts international, 35(3), 1996, p.828.

Climatology, Cloud physics, Polar stratospheric clouds, Aerosols, Phase transformations, Ice water interface, Ice crystal growth, Heterogeneous nucleation, Supercooling, Simulation

53-659

**Assessing the use of diatom assemblages as paleoenvironmental proxies in the Slave and Bear geological provinces, Northwest Territories, Canada.**

Ruland, K.M., Kingston, Ontario, Queen's University at Kingston, 1996, 158p., University Microfilms order No.AADMM-15195, MS. thesis. For abstract see Masters abstracts international, 35(3), 1996, p.756.

Paleoclimatology, Paleocology, Limnology, Lacustrine deposits, Hydrogeochemistry, Bacteria, Distribution, Classifications, Sampling, Statistical analysis, Canada—Northwest Territories

53-660

**Freeze/thaw conditioning of water treatment residuals.**

Parker, P.J., Potsdam, NY, Clarkson University, 1999, 214p., University Microfilms order No.AAD98-35632, Ph.D. thesis. For abstract see Dissertation abstracts international, Vol.59B(5), 1998, p.2365.

Water treatment, Waste treatment, Sludges, Freeze thaw cycles, Ice water interface, Particles, Freezing rate, Water content, Models, Cost analysis

53-661

**Nitrogenous nutrition of phytoplankton from the northeastern subarctic Pacific Ocean.**

Varela, D.E., Vancouver, University of British Columbia, 1998, 198p., University Microfilms order No.AADNQ-27264, Ph.D. thesis. For abstract see Dissertation abstracts international, Vol.59B(5), 1998, p.2064.

Marine biology, Plankton, Ecosystems, Water chemistry, Biomass, Nutrient cycle, Sampling, Pacific Ocean

53-662

**Mechanisms controlling long-term changes in periphytic diatom community structure.**

Olson, O.G., Bethlehem, PA, Lehigh University, 1998, 112p., University Microfilms order No.AAD98-33171, Ph.D. thesis. For abstract see Dissertation abstracts international, Vol.59B(5), 1998, p.1981.

Ecosystems, Glacial hydrology, Glacial lakes, Microbiology, Biomass, Hydrogeochemistry, Nutrient cycle, Light effects, Simulation, United States—Alaska—Glacier Bay National Park

53-663

**Tree ring and glacial records of Holocene climate change, northern Gulf of Alaska region.**

Barclay, D.J., Albany, State University of New York, 1998, 232p., University Microfilms order No.AAD98-33580, Ph.D. thesis. For abstract see Dissertation abstracts international, Vol.59B(5), 1998, p.2078.

Paleoclimatology, Glacial geology, Glacier oscillation, Calving, Moraines, Paleocology, Age determination, Geochronology, United States—Alaska—Alaska, Gulf

53-664

**Ice accretion on swept wings at glaze ice conditions.**

Vargas, M., Cleveland, Case Western Reserve University, 1998, 372p., University Microfilms order No.AAD98-33923, Ph.D. thesis. For abstract see Dissertation abstracts international, Vol.59B(5), 1998, p.2300.

Aircraft icing, Ice accretion, Glaze, Surface roughness, Ice solid interface, Turbulent flow, Mechanical tests, Simulation

53-665

**Sedimentology and paleogeography of Glacial Lake Champagne, southern Yukon Territory.**

Barnes, S.D., Ottawa, Carleton University, 1997, 109p., University Microfilms order No.AADMQ-26901, MS. thesis. For abstract see Masters abstracts international, 36(5), 1998, p.1314.

Pleistocene, Geomorphology, Ice sheets, Lacustrine deposits, Glacial geology, Glacial lakes, Meltwater, Sedimentation, Stratigraphy, Geochronology, Canada—Yukon Territory—Champagne, Lake

53-666

**Prediction of rainfall and snowmelt-produced runoff: linking a hydrologic model with remote sensing and GIS.**

Levick, L.R., Tucson, University of Arizona, 1998, 213p., University Microfilms order No.AAD13-89289, MS. thesis. For abstract see Masters abstracts international, 36(5), 1998, p.1313.

Watersheds, Runoff forecasting, Remote sensing, Snow hydrology, Snowmelt, Rain, Stream flow, Geophysical surveys, Water erosion, Mathematical models, Statistical analysis, Seasonal variations

53-667

**Controls on CH<sub>4</sub> emissions from boreal and arctic wetlands.**

Moosavi, S.C., Durham, University of New Hampshire, 1998, 252p., University Microfilms order No.AAD98-31960, Ph.D. thesis. For abstract see Dissertation abstracts international, Vol.59B(4), 1998, p.1543.

Climatology, Atmospheric composition, Hydrogeochemistry, Wetlands, Arctic landscapes, Soil air interface, Water table, Vapor transfer, Natural gas, Sampling

53-668

**Termination of the last ice age in the mid-latitudes of South America.**

Moreno, P.I., Farmington, University of Maine, 1998, 187p., University Microfilms order No.AAD98-32046, Ph.D. thesis. For abstract see Dissertation abstracts international, Vol.59B(4), 1998, p.1561.

Pleistocene, Paleoclimatology, Climatic changes, Paleocology, Glacial geology, Glacier oscillation, Palynology, Stratigraphy, Statistical analysis, Chile

53-669

**One-dimensional mixed-layer ocean model for use in three-dimensional climate simulations.**

Stephens, M.Y., Providence, RI, Brown University, 1998, 196p., University Microfilms order No.AAD98-30538, Ph.D. thesis. For abstract see Dissertation abstracts international, Vol.59B(4), 1998, p.1689.

Climatology, Global change, Marine atmospheres, Convection, Heat flux, Surface temperature, Air ice water interaction, Ice growth, Ice cover effect, Simulation, Mathematical models

53-670

**Seismic-stratigraphic analysis of shelf-margin delta/slope fan and basin floor fan on high-latitude and middle-latitude margins.**

Bart, P.J., Houston, Rice University, 1998, 184p., University Microfilms order No.AAD98-30101, Ph.D. thesis. For abstract see Dissertation abstracts international, Vol.59B(4), 1998, p.1548.

Paleoclimatology, Marine geology, Marine deposits, Ice shelves, Geomorphology, Glacial hydrology, Deltas, Sea level, Sedimentation, Stratigraphy, Seismic surveys, Antarctica—Weddell Sea

53-671

**Fine-grained sediment and radionuclide adsorption in the Ob Gulf, Yenisey River, and Kara Sea, Russia.**

Colmer, M.R., College Station, Texas A&M University, 1998, 225p., University Microfilms order No.AAD98-30889, Ph.D. thesis. For abstract see Dissertation abstracts international, Vol.59B(4), 1998, p.1549.

Radioactive wastes, Leaching, Adsorption, Sea water, Estuaries, Sediments, Air pollution, Water pollution, Environmental impact, Environmental tests, Russia—Kara Sea, Russia—Yenisey River

53-672

**Paleoclimatic study of the midwestern United States from the stable isotope records in lake sediments.**

Lovan, N.A., Kalamazoo, Western Michigan University, 1998, 263p., University Microfilms order No.AAD98-28811, Ph.D. thesis. For abstract see Dissertation abstracts international, Vol.59B(4), 1998, p.1546.

Paleoclimatology, Climatic changes, Lacustrine deposits, Carbon isotopes, Isotope analysis, Radioactive age determination, Statistical analysis, United States—Ohio—Ladd Lake, United States—Wisconsin—Winnebago, Lake

53-673

**Icelandic peatlands: effects of draining on trace gas release.**

Oskarsson, H., Athens, University of Georgia, 1998, 139p., University Microfilms order No.AAD98-28395, Ph.D. thesis. For abstract see Dissertation abstracts international, Vol.59B(4), 1998, p.1464. Soil chemistry, Subpolar regions, Soil air interface, Peat, Hydrogeochemistry, Soil water, Water table, Drainage, Decomposition, Natural gas, Vapor transfer, Environmental impact, Iceland

53-674

**Development and preservation of tabular massive ground ice in permafrost regions.**

Moorman, B.J., Ottawa, Carleton University, 1998, 308p., University Microfilms order No.AAD98-26882, Ph.D. thesis. For abstract see Dissertation abstracts international, Vol.59B(4), 1998, p.1558. Geocryology, Geophysical surveys, Permafrost preservation, Permafrost physics, Ground ice, Glacial geology, Frozen ground mechanics, Physical properties, Radar echoes, Ice dating, Canada—Northwest Territories—Bylot Island

53-675

**Military geology in war and peace.**

Underwood, J.R., Jr., ed, Guth, P.L., ed, Reviews in Engineering Geology, Vol.13, Geological Society of America, 1998, 245p., Refs. passim. For selected papers see 53-676 through 53-680. Geological surveys, Engineering geology, Site surveys, Military operation, Military engineering, Military research, Aircraft landing areas, History

53-676

**Military Geology Branch of the U.S. Geological Survey from 1945 to 1972.**

Terman, M.J., Reviews in Engineering Geology, Vol.13, Military geology in war and peace. Edited by J.R. Underwood, Jr., and P.L. Guth, Boulder, CO, Geological Society of America, 1998, p.75-81, 17 refs.

Geological surveys, Mapping, Engineering geology, Military operation, Military research, Research projects, Organizations, History, Cost analysis

53-677

**Remote sensing, terrain analysis, and military operations.**

Rinker, J.N., Reviews in Engineering Geology, Vol.13, Military geology in war and peace. Edited by J.R. Underwood, Jr., and P.L. Guth, Boulder, CO, Geological Society of America, 1998, p.145-150, 7 refs. Includes mention of Project Sanguine, 1969, in which the U.S. Army Cold Regions Research and Engineering Laboratory provided photointerpretation to the U.S. Navy, of a proposed site in northern Wisconsin and Michigan for a submarine communications link antenna.

Aerial surveys, Site surveys, Terrain identification, Photointerpretation, Military operation

53-678

**Location of sites for airstrips in North Greenland.**

Krinsley, D.B., Reviews in Engineering Geology, Vol.13, Military geology in war and peace. Edited by J.R. Underwood, Jr., and P.L. Guth, Boulder, CO, Geological Society of America, 1998, p.189-204, 15 refs.

Aircraft landing areas, Site surveys, Permafrost depth, Frozen ground strength, Soil trafficability, Greenland

53-679

**Selected military geology programs in the Arctic, 1950-1970.**

DeGoes, L., Neal, J.T., Reviews in Engineering Geology, Vol.13, Military geology in war and peace. Edited by J.R. Underwood, Jr., and P.L. Guth, Boulder, CO, Geological Society of America, 1998, p.205-210, 11 refs. Includes mention of studies on aircraft landing sites by the U.S. Army Cold Regions Research and Engineering Laboratory in the late 1950's and early 1960's.

Aircraft landing areas, Ice runways, Site surveys, Geological surveys, Engineering geology, Military engineering, Military research, Research projects, History

53-680

**Hydrogeological assessments of United Nations bases in Bosnia Hercegovina.**

Nathanail, C.P., Reviews in Engineering Geology, Vol.13, Military geology in war and peace. Edited by J.R. Underwood, Jr., and P.L. Guth, Boulder, CO, Geological Society of America, 1998, p.211-215, 4 refs.

Hydrogeology, Geological surveys, Site surveys, Engineering geology, Military engineering, Military operation, Wells, Ground water, Water supply, Bosnia

53-681

**Modelling of glacier melt and discharge.**

Hock, R.M., Zurich, Eidgenossische Technische Hochschule, 1998, n.p., Ph.D. thesis. For abstracts see Dissertation abstracts international, Vol.59C(3), 1998, p.599.

Glacial hydrology, Glacier melting, Meltwater, Glacier surfaces, Heat balance, Degree days, Seasonal variations, Models, Sweden

53-682

**Effects of enhanced ultraviolet-B radiation on subarctic ecosystems.**

Gehrke, C., Lund, Sweden, University, 1998, 110p., Ph.D. thesis. For abstract see Dissertation abstracts international, Vol.59C(3), 1998, p.565.

Climatology, Plant ecology, Subarctic landscapes, Ecosystems, Biomass, Ozone, Solar radiation, Ultraviolet radiation, Damage, Simulation, Environmental tests

53-683

**Energy balance over an alpine snowcover: point measurements and areal distribution.**

Pluss, C.G., Zurich, Eidgenossische Technische Hochschule, 1996, 117p., Ph.D. thesis. For abstract see Dissertation abstracts international, Vol.58C(2), 1996, p.666.

Climatology, Climatic changes, Alpine landscapes, Surface energy, Heat balance, Snow cover distribution, Snow air interface, Meteorological factors, Topographic effects, Models, Switzerland—Alps

53-684

**Rock glacier dynamics: with reference to the glacier ice core model of formation.**

Palmer, C.F., Belfast, Queen's University of Belfast, 1996, 312p., Ph.D. thesis. For abstract see Dissertation abstracts international, Vol.58C(2), 1996, p.528.

Glacial geology, Rock glaciers, Structural analysis, Flow measurement, Permafrost physics, Ice cores, Ice composition, Sediment transport, Sounding, Iceland

53-685

**Arctic and oroarctic vegetation patterns in northern Europe as a consequence of topography, climate, bedrock conditions and grazing.**

Virtanen, R.J., Oulu, University, 1996, 165p., Ph.D. thesis. For abstract see Dissertation abstracts international, Vol.58C(2), 1996, p.465.

Plant ecology, Ecosystems, Subpolar regions, Vegetation patterns, Classifications, Climatic factors, Topographic effects, Bedrock, Animals, Damage, Norway—Spitsbergen, Finland

53-686

**Paleoclimate and palaeoceanography of the Skagerrak-Kattegat since the Late Weichselian based on diatom records.**

Jiang, H., Lund, Sweden, University, 1996, 23p., Ph.D. thesis. For abstract see Dissertation abstracts international, Vol.58C(2), 1996, p.521.

Paleoclimatology, Oceanography, Subpolar regions, Marine deposits, Paleocology, Hydrography, Ocean currents, Drill core analysis, Correlation, Baltic Sea

- 53-687**  
Photosynthetic responses to frost and excessive light in field-grown Scots pine and Norway Spruce.  
Lundmark, T., Uppsala, Sveriges Lantbruksuniversitet, 1996, 44p., Ph.D. thesis. For abstract see Dissertation abstracts international, Vol.58C(2), 1996, p.437.  
Arctic landscapes, Forestry, Trees (plants), Frost action, Freezing points, Photosynthesis, Light effects, Damage, Temperature effects, Cold weather survival, Revegetation, Sweden
- 53-688**  
Timeless valleys of the antarctic desert.  
Parfit, M., *National geographic*, Oct. 1998, No.4, p.120-135.  
Deserts, Valleys, Ecosystems, Microbiology, Life (durability), Arctic landscapes, Exploration, Geological surveys, Antarctica—Taylor Valley, Antarctica—Wright Valley, Antarctica—Victoria Valley
- 53-689**  
Citronen Fjord massive sulphide deposit, Peary Land, North Greenland: discovery, stratigraphy, mineralization and structural setting.  
Van der Stijl, F.W., Mosher, G.Z., *Geology of Greenland Survey Bulletin*, 1998, No.179, 40p., 56 refs.  
Geological surveys, Subpolar regions, Natural resources, Minerals, Metals, Tectonics, Sediments, Exploration, Stratigraphy, Geological maps, Greenland
- 53-690**  
*Peridinium euryceps* sp. nov. (Peridinales, Dinophyceae), a cryophilic dinoflagellate from Lake Erken, Sweden.  
Rengefors, K., Meyer, B., *Phycologia*, July 1998, 37(4), p.284-291, 39 refs.  
Limnology, Ecosystems, Plant ecology, Plankton, Classifications, Ice bottom surface, Structural analysis, Scanning electron microscopy, Cold weather survival, Sweden—Erken, Lake
- 53-691**  
Morphology of *Chrysochromulina leadbeateri* (Prymnesiophyceae) from northern Norway.  
Eikrem, W., Thronsdon, J., *Phycologia*, July 1998, 37(4), p.292-299, 16 refs.  
Marine biology, Ecology, Subpolar regions, Algae, Sampling, Classifications, Scanning electron microscopy, Structural analysis, Norway—Vestfjorden
- 53-692**  
Mesospheric wind observations derived from Super Dual Auroral Radar Network (SuperDARN) HF radar meteor echoes at Halley, Antarctica: preliminary results.  
Jenkins, B., Jarvis, M.J., Forbes, D.M., *Radio science*, July-Aug. 1998, 33(4), p.957-965, 16 refs.  
Climatology, Polar atmospheres, Atmospheric circulation, Wind direction, Gravity waves, Radar echoes, Ions, Backscattering, Diurnal variations, Spectra, Antarctica—Halley Station
- 53-693**  
Fluctuation in the number of needle sets and needle shed in *Pinus sylvestris*.  
Jalkanen, R., *Scandinavian journal of forest research*, 1998, 13(3), p.284-291, 41 refs.  
Plant physiology, Subpolar regions, Forest canopy, Forest lines, Growth, Decomposition, Plant tissues, Seasonal variations, Sampling, Statistical analysis, Revegetation, Finland—Rovaniemi
- 53-694**  
Revealing past needle density in *Pinus* spp.  
Jalkanen, R., Aalto, T., Kurkela, T., *Scandinavian journal of forest research*, 1998, 13(3), p.292-296, 10 refs.  
Plant physiology, Subpolar regions, Forest lines, Trees (plants), Plant tissues, Growth, Age determination, Statistical analysis, Seasonal variations, Finland—Pakanajoki
- 53-695**  
Effect of ambient SO<sub>2</sub> levels on S fraction in *Pinus sylvestris* foliage growing in the subarctic.  
Manninen, S., Huttunen, S., Perämäki, P., *Scandinavian journal of forest research*, 1998, 13(3), p.306-316, 59 refs.  
Plant physiology, Air pollution, Aerosols, Trees (plants), Subarctic landscapes, Plant tissues, Chemical composition, Damage, Chemical analysis, Environmental impact, Seasonal variations, Statistical analysis, Russia—Kola Peninsula
- 53-696**  
Modelling probability of snow and wind damage using tree, stand, and site characteristics from *Pinus sylvestris* sample plots.  
Fridman, J., Valinger, E., *Scandinavian journal of forest research*, 1998, 13(3), p.348-356, 31 refs.  
Plant ecology, Forest ecosystems, Trees (plants), Cold weather survival, Subarctic landscapes, Snow loads, Wind factors, Damage, Classifications, Models, Statistical analysis, Forecasting, Sweden
- 53-697**  
Impact of southern ocean sea ice on a global ocean model.  
Stössel, A., Kim, S.J., Drijfhout, S.S., *Journal of physical oceanography*, Oct. 1998, 28(10), p.1999-2018, 68 refs.  
Oceanography, Climatology, Sea ice, Ocean currents, Heat balance, Convection, Ice growth, Air ice water interaction, Ice cover effect, Ice models, Mathematical models, Thermodynamics
- 53-698**  
Cirriform rotor cloud observed on a Canadian arctic ice cap.  
Ozawa, H., Goto-Azuma, K., Iwanami, K., Koerner, R.M., *Monthly weather review*, June 1998, 126(6), p.1741-1745, 10 refs.  
Cloud cover, Polar atmospheres, Atmospheric physics, Air flow, Temperature inversions, Wind velocity, Photography, Sounding, Profiles, Canada—Northwest Territories—Baffin Island
- 53-699**  
Landsat interpretation of glaciotectionic terrain and lineaments in northern and southwestern Poland.  
Aber, J.S., Ruzczyńska-Szenajch, H., Krzyszkowski, D., *Quaestiones Geographicae*, Oct. 1995, No.4 (Special issue), p.1-11, Refs. p.10-11.  
DLC G1.Q3 No.4 1995 Special Issue  
Glacial geology, Paleoclimatology, Tectonics, LANDSAT, Image processing, Mountains, Glaciation, Poland
- 53-700**  
Malacofauna of the Holocene calcareous sediments in Grabowo near Koszalin (Pomerania, North Poland).  
Alexandrowicz, S.W., *Quaestiones Geographicae*, Oct. 1995, No.4 (Special issue), p.13-20, 23 refs.  
DLC G1.Q3 No.4 1995 Special Issue  
Glacial geology, Paleoclimatology, Glacial deposits, Fossils, Poland
- 53-701**  
Disappearance of the Warta river bifurcation in the southern section of the Poznań gap during the late Vistulian.  
Antczak-Górka, B., *Quaestiones Geographicae*, Oct. 1995, No.4 (Special issue), p.21-25, 18 refs.  
DLC G1.Q3 No.4 1995 Special Issue  
Glacial geology, River flow, Climatic changes, Drainage, Poland
- 53-702**  
Climate induced environmental changes during the Vistulian Lateglacial at Zabinko, Poland.  
Bohncke, S., Kasse, C., Vandenberghe, J., *Quaestiones Geographicae*, Oct. 1995, No.4 (Special issue), p.43-64, Refs. p.64.  
DLC G1.Q3 No.4 1995 Special Issue  
Glacial geology, Paleoclimatology, Lacustrine deposits, Climatic factors, Environmental impact, Poland
- 53-703**  
Evolution of the north-eastern part of the Great Hungarian Plain in the past 50,000 years.  
Borsy, Z., *Quaestiones Geographicae*, Oct. 1995, No.4 (Special issue), p.65-71, 8 refs.  
DLC G1.Q3 No.4 1995 Special Issue  
Glacial geology, Paleoclimatology, Alluvium, Tectonics, River flow, Landscape types, Hungary
- 53-704**  
Petrographical composition of the tills and glaciotectionic structure in the clay pit at Wbszakowice.  
Böse, M., *Quaestiones Geographicae*, Oct. 1995, No.4 (Special issue), p.73-78, 13 refs.  
DLC G1.Q3 No.4 1995 Special Issue  
Glacial geology, Paleoclimatology, Geomorphology, Geochronology, Ice edge, Glacial till, Tectonics, Clay soils, Poland
- 53-705**  
Directional elements in the Vistulian lodgement till in the central Great Poland Lowland.  
Górska, M., Kaczmarek, L., *Quaestiones Geographicae*, Oct. 1995, No.4 (Special issue), p.101-116, Refs. p.114-116.  
DLC G1.Q3 No.4 1995 Special Issue  
Glacial geology, Glacial deposits, Glacial till, Glacier surges, Glacier flow, Poland
- 53-706**  
Some remarks on hydrographical changes in the Sudety Mountains.  
Jahn, A., *Quaestiones Geographicae*, Oct. 1995, No.4 (Special issue), p.121-124, 10 refs.  
DLC G1.Q3 No.4 1995 Special Issue  
Glacial geology, Hydrography, Geomorphology, Tectonics, Landforms, Drainage, Glaciation, Mountain glaciers, Rivers, Poland
- 53-707**  
Loess geochemistry and mineralogy in eastern Middle Belgium. [Géochimie et minéralogie du loess de Moyenne Belgique orientale]  
Juvigné, E., Moors, C., *Quaestiones Geographicae*, Oct. 1995, No.4 (Special issue), p.125-132, In French with English summary. 26 refs.  
DLC G1.Q3 No.4 1995 Special Issue  
Glacial geology, Loess, Soil tests, Geochemistry, Mineralogy, Belgium
- 53-708**  
Contemporary glaciation of the Petuniabukta area against the background of Late-Vistulian and Holocene deglaciation (Western Olav V Land, Spitsbergen).  
Karczewski, A., *Quaestiones Geographicae*, Oct. 1995, No.4 (Special issue), p.133-138, 6 refs.  
DLC G1.Q3 No.4 1995 Special Issue  
Glacial geology, Paleoclimatology, Climatic changes, Glaciation, Glacier alimentation, Mountains, Geomorphology, Norway—Spitsbergen
- 53-709**  
Quantitative sedimentation model of Vistulian ice-sheet: a theoretical approach based on field observations.  
Kasprzak, L., *Quaestiones Geographicae*, Oct. 1995, No.4 (Special issue), p.139-145, Refs. p.144-145.  
DLC G1.Q3 No.4 1995 Special Issue  
Glacial geology, Glacial deposits, Sedimentation, Landforms, Ice sheets, Ice melting, Ice models, Velocity measurement, Poland
- 53-710**  
Role of drainage basin orography in the river channel pattern transformation during Late Vistulian, Subcarpathian Oświęcim Basin, Poland.  
Klimek, K., *Quaestiones Geographicae*, Oct. 1995, No.4 (Special issue), p.147-153, 20 refs.  
DLC G1.Q3 No.4 1995 Special Issue  
Glacial geology, Channels (waterways), Drainage, Topographic effects, Climatic changes, Poland

53-711

**Progress in cold-climate aeolian research.**  
Koster, E.A., *Quaestiones Geographicae*, Oct. 1995, No.4 (Special issue), p.155-163, Refs. p.162-163.  
DLC G1.Q3 No.4 1995 Special Issue  
Glacial geology, Paleoclimatology, Climatic changes, Eolian soils, Low temperature research, Sands, Sediments, Glacial deposits, Snow, Geochronology

53-712

**Hydraulic geometry of a supraglacial stream, Ragnarbreen, Spitsbergen.**  
Kostrzewski, A., Zwoliński, Z., *Quaestiones Geographicae*, Oct. 1995, No.4 (Special issue), p.165-176, 31 refs.  
DLC G1.Q3 No.4 1995 Special Issue  
Glacial geology, Mountains, Suprapermafrost ground water, Streams, Hydraulics, Climatic changes, Meteorological factors, Channels (waterways), Models, Glacier surveys, Glacial hydrology, Norway—Spitsbergen

53-713

**Rapid mass wasting over the last 500 years in the High Tatra Mountains.**  
Kotarba, A., *Quaestiones Geographicae*, Oct. 1995, No.4 (Special issue), p.177-183, 22 refs.  
DLC G1.Q3 No.4 1995 Special Issue  
Glacial geology, Paleoclimatology, Climatic changes, Sediments, Geomorphology, Geochronology, Mountains, Slope processes, Poland—High Tatra Mountains

53-714

**Catena of podzolic soils on the northern slope of Västerskutan in the Massif of Åreskutan, Jämtland.**  
Kowalkowski, A., *Quaestiones Geographicae*, Oct. 1995, No.4 (Special issue), p.185-193, 32 refs.  
DLC G1.Q3 No.4 1995 Special Issue  
Glacial geology, Paleoclimatology, Climatic changes, Slope processes, Mountain soils, Chernozem, Tundra soils, Podsol, Taiga, Soil analysis, Sweden

53-715

**Ice dynamics during the deglaciation of SW Skåne, South Sweden.**  
Lagerlund, E., *Quaestiones Geographicae*, Oct. 1995, No.4 (Special issue), p.195-200, 19 refs.  
DLC G1.Q3 No.4 1995 Special Issue  
Glacial geology, Paleoclimatology, Climatic changes, Ice models, Glacier melting, Stream flow, Sediments, Glacial deposits, Stratigraphy, Lithology, Sweden

53-716

**Extension and thickness of Pleistocene permafrost in Normandy. [Le problème de l'extension et de la profondeur du pergélisol Pléistocène en Normandie (France du Nord-Ouest)]**  
Lautridou, J.P., Coutard, J.P., *Quaestiones Geographicae*, Oct. 1995, No.4 (Special issue), p.201-203, In French with English summary. 12 refs.  
DLC G1.Q3 No.4 1995 Special Issue  
Glacial geology, Paleoclimatology, Climatic changes, Permafrost depth, Permafrost thickness, Glaciation, Models, France

53-717

**Genetic classification of deposits of the glaciofluvial flows.**  
Lavrushin, I.U.A., *Quaestiones Geographicae*, Oct. 1995, No.4 (Special issue), p.205-208, 5 refs.  
DLC G1.Q3 No.4 1995 Special Issue  
Glacial geology, Glacial deposits, Glacial hydrology, Glacier flow, Climatic changes, Soil classification

53-718

**Weathering of heavy minerals in podzol soil profiles on aeolian sands in Central Poland.**  
Manikowska, B., *Quaestiones Geographicae*, Oct. 1995, No.4 (Special issue), p.209-213, 14 refs.  
DLC G1.Q3 No.4 1995 Special Issue  
Glacial geology, Podsol, Weathering, Minerals, Eolian soils, Soil analysis, Sediments, Poland

53-719

**Evolution of a marginal form and of kames in the region of Bielsk Podlaski. Sedimentological analysis of deposits.**  
Mycielska-Dowgiałb, E., Pękalska, A., Woronko, B., *Quaestiones Geographicae*, Oct. 1995, No.4 (Special issue), p.215-224, 17 refs.  
DLC G1.Q3 No.4 1995 Special Issue  
Glacial geology, Paleoclimatology, Geomorphology, Sediment transport, Glacial deposits, Glacier melting, Eolian soils, Poland

53-720

**Diagnostic features of subglacial channels of glacial and glacio-glaciofluvial origin, exemplified by channels of the Chełmno-Dobrzyń and the eastern Gniezno Lakelands.**  
Niewiarowski, W., *Quaestiones Geographicae*, Oct. 1995, No.4 (Special issue), p.225-231, Refs. p.230-231.  
DLC G1.Q3 No.4 1995 Special Issue  
Glacial geology, Geomorphology, Glacial erosion, Landforms, Subglacial drainage, Channels (waterways), Glacial deposits, Climatic changes, Subglacial observations, Poland

53-721

**Age of dunes in Poland—selected problems.**  
Nowaczyk, B., *Quaestiones Geographicae*, Oct. 1995, No.4 (Special issue), p.233-239, Refs. p.238-239.  
DLC G1.Q3 No.4 1995 Special Issue  
Glacial geology, Paleoclimatology, Climatic changes, Landforms, Eolian soils, Geochronology, Human factors, Poland

53-722

**Two types of periglacial slopes of Upper Belgium. [Deux types de versants périglaciaires de Haute Belgique]**  
Pissart, A., *Quaestiones Geographicae*, Oct. 1995, No.4 (Special issue), p.241-245, In French with English summary. 7 refs.  
DLC G1.Q3 No.4 1995 Special Issue  
Glacial geology, Glacial deposits, Periglacial processes, Slope processes, Glaciers, Climatic changes, Belgium

53-723

**Estonia—a land of big boulders and rafts.**  
Raukas, A., *Quaestiones Geographicae*, Oct. 1995, No.4 (Special issue), p.247-253, 23 refs.  
DLC G1.Q3 No.4 1995 Special Issue  
Glacial geology, Topographic surveys, Moraines, Rocks, Bedrock, Environmental protection, Glacial deposits, Glaciation, Estonia

53-724

**Taxonomy of glacials and disharmony of glaciation.**  
Stankowski, W., *Quaestiones Geographicae*, Oct. 1995, No.4 (Special issue), p.255-258, 26 refs.  
DLC G1.Q3 No.4 1995 Special Issue  
Glacial geology, Paleoclimatology, Climatic changes, Glaciation, Ice age theory, Glacier oscillation

53-725

**Pattern of the Holocene climatic variations in Central Europe based on various geological records.**  
Starkel, L., *Quaestiones Geographicae*, Oct. 1995, No.4 (Special issue), p.259-264, Refs. p.263-264.  
DLC G1.Q3 No.4 1995 Special Issue  
Glacial geology, Paleoclimatology, Climatic changes, Mountain glaciers, Glacier surges, Pleistocene, Climatic factors, Hydrogeology, Glacial hydrology, Europe

53-726

**Arctic paleo-river discharge (APARD); a new research programme of the Arctic Ocean Science Board (AOSB).**  
Stein, R., ed, *Berichte zur Polarforschung*, 1998, No.279, 128p., Refs. passim.  
Meetings, Sediments, River flow, Runoff, Suspended sediments, Sediment transport, Salinity, Ocean currents, Hydrologic cycle, Paleoclimatology, Global change, Arctic Ocean, Russia—Kolyma River, Russia—Indigirka River, Russia—Lena River, Russia—Kotuy River, Russia—Yenisey River, Russia—Ob' River, Russia—Pechora River, Russia—Dvina River, MacKenzie River

53-727

**Three-dimensional natural convective flow about a melting horizontal ice cylinder.**  
Oosthuizen, P.H., Xu, Z., Proceedings of the ASME Heat Transfer Division, Volume 3. International Mechanical Engineering Congress and Exposition, November 16-21, 1997, Dallas, TX. Edited by M.E. Ulucakli, et al., New York, NY, American Society of Mechanical Engineers, 1997, p.277-282, 13 refs.  
DLC TJ260.P76424 1997 Vol.3  
Water flow, Convection, Ice melting, Ice water interface

53-728

**Analysis of daily <sup>210</sup>Pb air concentrations in Finland, 1967-1996.**  
Paatero, J., Hatakka, J., Mattsson, R., Viisanen, Y., *Radiation protection dosimetry*, 1998, 77(3), p.191-198, 22 refs.  
Climatology, Subpolar regions, Atmospheric composition, Radioactivity, Radioactive isotopes, Aerosols, Seasonal variations, Statistical analysis, Sampling, Environmental tests, Finland

53-729

**Simultaneous thermoluminescence and optically stimulated luminescence dating of Late Pleistocene sediments from Lake Baikal.**  
Rogalev, B., Chernov, V., Korjonen, K., Jungner, H., *Radiation measurements*, July-Aug. 1998, 29(3-4), International Symposium on the Luminescent Detectors and Transformers of Ionizing Radiation, 3rd, Ustron, Poland, Oct. 6-10, 1997. Selected papers, p.441-444, 7 refs.  
Pleistocene, Lacustrine deposits, Sedimentation, Drill core analysis, Luminescence, Lithology, Age determination, Correlation, Geochronology, Accuracy, Russia—Baykal, Lake

53-730

**Radioactive contamination of the Baltic Sea in the region of the Leningrad nuclear power plant in 1971-1996.**  
Gedeonov, L.I., et al, *Radiochemistry*, July-Aug. 1998, 40(4), p.385-390, Translated from Radiokhimiia. 12 refs.  
Oceanography, Nuclear power, Subpolar regions, Water pollution, Water transport, Radioactivity, Radioactive isotopes, Sampling, Environmental tests, Seasonal variations, Baltic Sea

53-731

**Steady-state creep of an ice cover lying on a frozen soil under the action of a lumped force.**  
Aleksandrov, V.M., Shmatkova, A.A., *Mechanics of solids*, 1998, 33(1), p.38-42, Translated from Izvestiia AN. Mekhanika tverdogo tela. 5 refs.  
Frozen ground mechanics, Ice cover, Ice solid interface, Ice creep, Ice deformation, Mathematical models

53-732

**On the antarctic origin of low ozone events at the South American continent during the springs of 1993 and 1994.**  
Pérez, A., Jaque, F., *Atmospheric environment*, Nov. 1998, 32(21), p.3665-3668, 12 refs.  
Climatology, Air pollution, Polar atmospheres, Stratosphere, Air masses, Ozone, Atmospheric circulation, Air flow, Spectroscopy, Seasonal variations, Antarctica, Argentina

53-733

**Causes of seasonal and daily variations in aerosol sea-salt concentrations at a coastal antarctic station.**

Hall, J.S., Wolff, E.W., *Atmospheric environment*, Nov. 1998, 32(21), p.3669-3677, 38 refs.

Climatology, Polar atmospheres, Atmospheric composition, Marine atmospheres, Aerosols, Salinity, Brines, Ice air interface, Wind direction, Seasonal variations, Sampling, Antarctica—Halley Station

53-734

**Reliability of moss (*Hylocomium splendens* and *Pleurozium schreberi*) as a bioindicator of atmospheric chemistry in the Barents region: interspecies and field duplicate variability.**

Halleraker, J.H., et al, *Science of the total environment*, July 30, 1998, 218(2-3), p.123-139, 31 refs. Climatology, Subpolar regions, Air pollution, Metals, Environmental tests, Plant ecology, Geochemistry, Ecosystems, Mosses, Chemical composition, Sampling, Correlation, Russia

53-735

**Concentration and fractionation of heavy metals in roadside soils receiving de-icing salts.**

Norrström, A.C., Jacks, G., *Science of the total environment*, July 30, 1998, 218(2-3), p.161-174, 48 refs. Soil pollution, Water pollution, Road icing, Hydrogeochemistry, Salting, Metals, Colloids, Runoff, Leaching, Environmental impact, Environmental tests, Sampling, Sweden

53-736

**<sup>14</sup>C dating of Late Pleistocene-Holocene events on Kunashir Island, Kuril Islands.**

Bazarova, V.B., Razzhigaeva, N.G., Grebennikova, T.A., Ganzei, L.A., Mokhova, L.M., Korotkiĭ, A.M., *Radiocarbon*, 1998, 40(2), International Radiocarbon Conference, 16th, Tucson, AZ, June 16-20, 1997. Proceedings, Pt.2. Applications. Edited by W.G. Mook et al, p.775-780, 8 refs.

Pleistocene, Paleoclimatology, Paleoecology, Vegetation patterns, Sediments, Quaternary deposits, Sampling, Radioactive age determination, Statistical analysis, Russia—Kuril Islands

53-737

**Minimal extension phases of Unteraarglacier (Swiss Alps) during the Holocene based on <sup>14</sup>C analysis of wood.**

Hornes, A., Schlüchter, C., Stocker, T.F., *Radiocarbon*, 1998, 40(2), International Radiocarbon Conference, 16th, Tucson, AZ, June 16-20, 1997. Proceedings, Pt.2. Applications. Edited by W.G. Mook et al, p.809-817, 38 refs.

Paleoclimatology, Climatic changes, Alpine glaciation, Glacier oscillation, Quaternary deposits, Paleoecology, Glacial deposits, Outwash, Radioactive age determination, Geochronology, Switzerland—Alps

53-738

**<sup>14</sup>C ages of tephra layers from the Holocene deposits of Kunashir Island (Russian far east).**

Razzhigaeva, N.G., et al, *Radiocarbon*, 1998, 40(2), International Radiocarbon Conference, 16th, Tucson, AZ, June 16-20, 1997. Proceedings, Pt.2. Applications. Edited by W.G. Mook et al, p.841-847, 21 refs.

Quaternary deposits, Paleoecology, Palynology, Volcanic ash, Carbon isotopes, Radioactive age determination, Stratigraphy, Correlation, Russia—Kunashir Island

53-739

**<sup>14</sup>C dating of terrestrial moss in Tern Lake deposits, Antarctica.**

Shen, C.D., et al, *Radiocarbon*, 1998, 40(2), International Radiocarbon Conference, 16th, Tucson, AZ, June 16-20, 1997. Proceedings, Pt.2. Applications. Edited by W.G. Mook et al, p.849-854, 11 refs.

Paleoecology, Arctic landscapes, Mosses, Lacustrine deposits, Carbon isotopes, Drill core analysis, Sedimentation, Radioactive age determination, Antarctica—King George Island

53-740

**<sup>14</sup>C AMS dating of Icelandic lake sediments.**

Sveinbjörnsdóttir, Á.E., Heinemeier, J., Kristensen, P., Rud, N., Geirsdóttir, A., Hardardóttir, J., *Radiocarbon*, 1998, 40(2), International Radiocarbon Conference, 16th, Tucson, AZ, June 16-20, 1997. Proceedings, Pt.2. Applications. Edited by W.G. Mook et al, p.865-872, 13 refs.

Quaternary deposits, Lacustrine deposits, Subpolar regions, Sedimentation, Organic soils, Carbon isotopes, Radioactive age determination, Sampling, Iceland

53-741

**<sup>14</sup>C and <sup>18</sup>O in Siberian syngenetic ice-wedge complexes.**

Vasil'chuk, I.U.K., Vasil'chuk, A.C., *Radiocarbon*, 1998, 40(2), International Radiocarbon Conference, 16th, Tucson, AZ, June 16-20, 1997. Proceedings, Pt.2. Applications. Edited by W.G. Mook et al, p.883-893, 21 refs.

Geocryology, Sediments, Ice dating, Permafrost dating, Ice wedges, Carbon isotopes, Oxygen isotopes, Ice dating, Profiles, Correlation, Russia—Siberia

53-742

**<sup>14</sup>C age of palsas in northern Eurasia.**

Vasil'chuk, I.U.K., Vasil'chuk, A.C., *Radiocarbon*, 1998, 40(2), International Radiocarbon Conference, 16th, Tucson, AZ, June 16-20, 1997. Proceedings, Pt.2. Applications. Edited by W.G. Mook et al, p.895-904, 27 refs.

Geocryology, Frost mounds, Geomorphology, Peat, Permafrost hydrology, Permafrost dating, Quaternary deposits, Carbon isotopes, Radioactive age determination, Freeze thaw cycles, Norway, Russia—Siberia, Canada—Northwest Territories—Cornwallis Island

53-743

**Reappraisal of Chinese Loess Plateau stratigraphy sequences over the last 30,000 years: precursors of an important Holocene monsoon climatic event.**

Zhou, W.J., An, Z.S., Jull, A.J.T., Donahue, D.J., Head, M.J., *Radiocarbon*, 1998, 40(2), International Radiocarbon Conference, 16th, Tucson, AZ, June 16-20, 1997. Proceedings, Pt.2. Applications. Edited by W.G. Mook et al, p.905-913, 21 refs.

Pleistocene, Paleoclimatology, Precipitation (meteorology), Quaternary deposits, Loess, Eolian soils, Radioactive age determination, Stratigraphy, Profiles, Correlation, China—Loess Plateau

53-744

**<sup>14</sup>C studies of natural ice.**

Wilson, A.T., *Radiocarbon*, 1998, 40(2), International Radiocarbon Conference, 16th, Tucson, AZ, June 16-20, 1997. Proceedings, Pt.2. Applications. Edited by W.G. Mook et al, p.953-962, 22 refs.

Ice physics, Ground ice, Ice dating, Ice cores, Ice sublimation, Paleoclimatology, Carbon dioxide, Carbon isotopes, Indexes (ratios), Radioactive age determination, Laboratory techniques

53-745

**Seasonal variation of phytoplankton community structure and nitrogen uptake regime in the Indian Sector of the Southern Ocean.**

Mengesha, S., Dehairs, F., Fiala, M., Elskens, M., Goeyens, L., *Polar biology*, Oct. 1998, 20(4), p.259-272, Refs. p.271-272.

Cryobiology, Sea ice, Ecology, Algae, Plant physiology, Sea water, Chemical analysis, Nutrient cycle

53-746

**Accumulation of organic and inorganic solutes in the subantarctic cruciferous species *Pringlea antiscorbutica* in response to saline and cold stresses.**

Hennion, F., Bouchereau, A., *Polar biology*, Oct. 1998, 20(4), p.281-291, Refs. p.290-291.

Plant physiology, Low temperature research, Plant ecology, Acclimatization, Cold tolerance, Kerguelen Islands, Crozet Islands

53-747

**Dielectric single cell spectra in snow algae.**

Müller, T., Schnelle, T., Fuhr, G., *Polar biology*, Nov. 1998, 20(5), p.303-310, 21 refs.

Cryobiology, Dielectric properties, Algae, Snow, Ecology, Plant physiology, Norway—Svalbard

53-748

**Diet and foraging effort of Adélie penguins in relation to pack-ice conditions in the southern Ross Sea.**

Ainley, D.G., Wilson, P.R., Barton, K.J., Ballard, G., Nur, N., Karl, B., *Polar biology*, Nov. 1998, 20(5), p.311-319, Refs. p.318-319.

Cryobiology, Polar regions, Marine biology, Fast ice, Ice cover effect, Antarctica—Ross Sea

53-749

**Snow algae of the Windmill Islands, continental Antarctica. 3. *Chloromonas polyptera* (Volvocales, Chlorophyta).**

Ling, H.U., Seppelt, R.D., *Polar biology*, Nov. 1998, 20(5), p.320-324, 15 refs.

Cryobiology, Polar regions, Ecology, Algae, Snow, Antarctica—Windmill Islands

53-750

**Longitudinal variation of zooplankton delta <sup>13</sup>C through the Northwest Passage: inference for incorporation of sea-ice POM into pelagic food-webs.**

France, R., Loret, J., Mathews, R., Springer, J., *Polar biology*, Nov. 1998, 20(5), p.335-341, Refs. p.339-341.

Cryobiology, Plankton, Ecology, Marine biology, Sea ice, Nutrient cycle, Northwest passage

53-751

**Australian and Canadian initiatives in polar marine environmental protection: a comparative review.**

Rothwell, D.R., *Polar record*, Oct. 1998, 34(191), p.305-316, Refs. p.315-316.

Environmental protection, Ocean environments, Polar regions, Legislation, International cooperation, Australia, Canada

53-752

**Are vegetation indices useful in the Arctic.**

Rees, W.G., Golubeva, E.I., Williams, M., *Polar record*, Oct. 1998, 34(191), p.333-336, 15 refs.

Permafrost indicators, Vegetation patterns, Vegetation factors, Low temperature research, Image processing, LANDSAT, Biomass, Statistical analysis, Tundra vegetation

53-753

**Structural adaptations of the cold-active citrate synthase from an antarctic bacterium.**

Russell, R.J.M., Gerike, U., Danson, M.J., Hough, D.W., Taylor, G.L., *Structure*, Mar. 15, 1998, 6(3), p.351-361, 49 refs.

Bacteria, Acclimatization, Low temperature research, Physiological effects, Chemical analysis, Antarctica

53-754

**Summary report and proceedings.**

International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995, Krauss, T.W., ed, Carroll, T.R., ed, IGPO publication series, No.15, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, 294p. + append., Refs. passim. For selected papers see 53-755 through 53-787.

Snow hydrology, Snowfall, Snow cover distribution, Snowmelt, Seepage, Runoff forecasting, Hydrologic cycle, Water balance, Heat balance, Heat flux, Frozen ground thermodynamics, Atmospheric circulation, Global warming

53-755

**Meeting summary: International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology.**

Carroll, T.R., Krauss, T.W., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.3-15.

Glacial hydrology, Snow hydrology, Hydrologic cycle, Water balance, Climatic changes, Global warming, Meetings, Research projects, International cooperation, Data processing

53-756

**Suspended sediment and discharge regimes, Slims River, Yukon.**

Sawada, M.C., Johnson, P.G., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.19-23, 11 refs.

Snow hydrology, Snowmelt, Glacial hydrology, Meltwater, Alluvium, River flow, Suspended sediments, Sediment transport, Runoff forecasting, Canada—Yukon Territory—Kluane Lake

53-757

**Melting, drainage patterns and frozen lakes on the land mass at Jutulgryta in Dronning Maud Land, Antarctica.**

Winther, J.G., Sand, K., Bøggild, C.E., Elvehøy, H., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.24-26, 8 refs.

Frozen lakes, Lake ice, Ice melting, Subglacial drainage, Meltwater, Antarctica—Queen Maud Land

53-758

**Subglacial water flow conditions inferred from velocity-discharge relationships in glacial runoff.**

Nienow, P.W., Sharp, M., Willis, I.C., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.36-39, 3 refs.

Glacial hydrology, Subglacial drainage, Meltwater, Water flow, Switzerland

53-759

**Application of snow and evaporation models for predicting water fluxes at the arctic treeline in northwestern Canada.**

Marsh, P., Pomeroy, J., Quinton, W.L., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.47-50, 11 refs.

Snow hydrology, Snowmelt, Permafrost hydrology, Tundra climate, Forest lines, Evaporation, Water balance, Canada—Northwest Territories—Mackenzie Delta

53-760

**Subsurface runoff from tundra hillslopes in the continuous permafrost zone.**

Quinton, W.L., Marsh, P., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.51-55, 4 refs.

Tundra soils, Tundra terrain, Hummocks, Snowmelt, Seepage, Permafrost hydrology, Subpermafrost ground water, Subsurface drainage, Runoff, Canada—Northwest Territories—Mackenzie Delta

53-761

**Application of an arctic blowing snow model.**

Pomeroy, J.W., Marsh, P., Gray, D.M., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.56-60, 10 refs.

Blowing snow, Snowfall, Snowdrifts, Snow hydrology, Snow erosion, Wind erosion, Snow evaporation, Snowmelt, Snow water equivalent, Tundra terrain, Tundra climate, Runoff forecasting

53-762

**Snow interception at two sites of different altitude in Switzerland.**

Bründl, M., Schneebeli, M., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.61-65, 7 refs.

Forest canopy, Interception, Snow cover distribution, Snow hydrology, Snow evaporation, Snow water equivalent, Climatic changes, Switzerland

53-763

**Snowpack sublimation.**

Avery, C.C., Delinger, W.G., Dexter, L.R., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.73-75, 4 refs.

Snow air interface, Snow evaporation, Wind factors, Snow survey tools, Moisture meters, Water balance

53-764

**Modeling the effect of frozen ground on snowmelt/rainfall-runoff processes.**

Koren, V.I., Duan, Q.Y., Schaake, J.C., Jr., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.78-82, 7 refs.

Snow hydrology, Snowmelt, Seepage, Frozen ground thermodynamics, Frost penetration, Water balance, Runoff forecasting

53-765

**Preferential water flow in a frozen soil—a two-domain model approach.**

Stähli, M., Jansson, P.E., Lundin, L.C., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.83-86, 3 refs.

Snow hydrology, Snowmelt, Seepage, Frozen ground thermodynamics, Soil water migration

53-766

**Estimation of the changes in the available soil water storage over the winter.**

Shumova, N.A., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.88-92, 2 refs.

Snowmelt, Seepage, Soil water, Water storage, Water retention, Water balance, Runoff forecasting, Steppes

53-767

**Pathways of snowmelt water at the soil surface and in the soil.**

Stadler, D., Wunderli, H., Leuenberger, J., Flüeler, H., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.95-98, 6 refs.

Snow hydrology, Snowmelt, Seepage, Frost penetration, Frozen ground thermodynamics, Runoff forecasting

53-768

**On the role of aircraft in the study of regional evapotranspiration and energy exchange over northern ecosystems.**

Schuepp, P.H., Kaharabata, S., Abareshi, B., Pelletier, R., MacPherson, J.I., Desjardins, R.L., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.105-109, 11 refs.

Aerial surveys, Soil air interface, Evapotranspiration, Heat flux, Water balance

53-769

**Simulating the radiative energy balance associated with snow and frozen soils.**

Flerchinger, G.N., Baker, J.M., Spaans, E.J.A., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.110-113, 8 refs.

Snow air interface, Snow heat flux, Soil air interface, Frozen ground thermodynamics, Heat balance, Computerized simulation



- 53-770**  
**Estimation of lake evaporation by oxygen-18.**  
 Saxena, R.K., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.114-118, 5 refs.  
 Lake water, Water chemistry, Oxygen isotopes, Isotope analysis, Evaporation, Water balance
- 53-771**  
**Comments on the use of isotopic tracers in GCIP-LSA-NC and MAGS.**  
 Edwards, T.W.D., Gibson, J.J., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.120-123, 19 refs.  
 Precipitation (meteorology), Water chemistry, Isotope analysis, Water balance, Hydrologic cycle, Computerized simulation
- 53-772**  
**Radiosonde-based estimates of the boundary-layer budgets of sensible and latent heat above boreal forest.**  
 Barr, A.G., Betts, A.K., MacPherson, J.I., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.126-129, 4 refs.  
 Taiga, Forest canopy, Atmospheric boundary layer, Sounding, Heat flux, Heat balance
- 53-773**  
**Analysis and simulation of a winter storm in Idaho.**  
 Dawson, P., Johnson, G., Wang, D.H., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.131-135.  
 Snowstorms, Snowfall, Snow cover distribution, Snow hydrology, Weather forecasting, Long range forecasting, Computerized simulation, United States—Idaho
- 53-774**  
**Observations and modeling of precipitation systems in the Black Hills of South Dakota.**  
 Orville, H.D., Farley, R.D., Hjelmfelt, M.R., Rife, D.L., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.136-140, 15 refs.  
 Precipitation (meteorology), Snowfall, Snowstorms, Weather forecasting, Long range forecasting, Flood forecasting, Computerized simulation, United States—South Dakota—Black Hills
- 53-775**  
**Improved satellite estimates of cloud cover, radiative fluxes and areal extent of snow cover for use in hydrometeorology studies.**  
 Simpson, J.J., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.152-155, 9 refs.  
 Snow cover distribution, Snow cover effect, Cloud cover, Terrain identification, Heat flux, Radiometry, Spaceborne photography, Data processing, Image processing
- 53-776**  
**Mapping snow water equivalent and snow cover in North America.**  
 Carroll, T.R., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.173-176.  
 Snow surveys, Snow cover distribution, Snow water equivalent, Mapping, Spaceborne photography, Data processing
- 53-777**  
**New cryospheric data sets from the former Soviet Union.**  
 Bedford, D.P., Barry, R.G., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.179-182, 4 refs.  
 Snow surveys, Snow depth, Snow cover distribution, Glacier surveys, Data processing, Russia
- 53-778**  
**Framework for orographic precipitation analysis.**  
 Schaake, J.C., Peck, E.L., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.183-187.  
 Precipitation (meteorology), Snowfall, Snowstorms, Weather forecasting, Computerized simulation, Statistical analysis
- 53-779**  
**Water and energy fluxes during the snowmelt period at an arctic treeline site.**  
 Marsh, P., Pomeroy, J., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.197-201, 9 refs.  
 Snow hydrology, Snow heat flux, Snowmelt, Tundra climate, Forest lines, Heat balance, Runoff forecasting, Canada—Northwest Territories—Mackenzie Delta
- 53-780**  
**Snow cover simulation in the COLA atmospheric general circulation model: effects of model resolution and a comparison with observations.**  
 Kinter, J.L., III, International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.204-207, 5 refs.  
 Snow air interface, Snow cover distribution, Snow hydrology, Water balance, Hydrologic cycle, Runoff forecasting, Computerized simulation
- 53-781**  
**Cloud and snow cover effects on the surface-atmosphere interactions.**  
 Groisman, P.I.A., Zhai, P.M., Genikhovich, E.L., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.209-212, 17 refs.  
 Snow air interface, Snow cover effect, Snow heat flux, Cloud cover, Turbulent exchange, Heat balance, Computerized simulation
- 53-782**  
**Some aspects of the hydroclimatology of north-flowing high latitude rivers.**  
 Lawford, R.G., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.217-224, 4 refs.  
 Air water interactions, River flow, Sea water, Atmospheric circulation, Hydrologic cycle
- 53-783**  
**Snowmelt runoff modelling adaptations for work on large basins in cold regions.**  
 Rango, A., Brubaker, K., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.232-235, 5 refs.  
 Snow hydrology, Snowmelt, River basins, Runoff forecasting, Computerized simulation
- 53-784**  
**Spatially distributed hydrologic model for arctic regions.**  
 Hinzman, L.D., Kane, D.L., Zhang, Z.Y., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.236-239, 6 refs.  
 Snow hydrology, Permafrost hydrology, Watersheds, Water balance, Computerized simulation
- 53-785**  
**Hydrological aspects of the major activities plan for GCIP.**  
 Hall, A.J., Schaake, J.C., Jr., Coughlan, M.J., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.240-243, 2 refs.  
 Research projects, Atmospheric circulation, Hydrologic cycle, Water balance, Global warming, Computerized simulation



53-786

**Overview of GCIP activities.**

Leese, J.A., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.258-263, 5 refs.  
 Research projects, Global warming, Atmospheric circulation, Hydrologic cycle, Water balance, Heat balance, Data processing, Computerized simulation

53-787

**Discussion paper on GCIP studies in the LSA-NC.**

Lawford, R.G., International Global Energy and Water Cycle Experiment (GEWEX) Workshop on Cold-Season/Region Hydrometeorology, Banff, Alberta, May 22-26, 1995. Summary report and proceedings. IGPO publication series, No.15. Edited by T.W. Krauss and T.R. Carroll, Ottawa, Environment Canada, International GEWEX Project Office (IGPO), 1995, p.264-291, 21 refs.  
 Research projects, Global warming, Atmospheric circulation, Snowfall, Snow hydrology, Hydrologic cycle, Water balance, Heat balance, Data processing, Computerized simulation

53-788

**Daily temperature and precipitation data for 223 USSR stations.**

Razuvaev, V.N., Apasova, E.G., Martuganov, P.A., Vose, R.S., Steurer, P.M., Oak Ridge, TN, Oak Ridge National Laboratory, Carbon Dioxide Information Analysis Center, 1993, 47p. + appends., DE94-012496, With Russian summary and title page. 16 refs.

Weather stations, Meteorological data, Air temperature, Precipitation (meteorology), Air pollution, Russia

53-789

**Analysis of the tensile fracture of sea ice.**

Mulmule, S.V., Potsdam, NY, Clarkson University, 1998, 104p., University Microfilms order No.98-19837, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 58(12), p.6714.  
 Sea ice, Fracture zones, Models, Ice cracks, Cracking (fracturing), Ice cover strength, Ice elasticity, Ice breaking

53-790

**Sensitivity of stationary wave amplitude to Laurentide ice sheet topography and the interpretation of the Heinrich event climate record.**

Jackson, C.S., Chicago, University, 1997, 160p., University Microfilms order No.98-23012, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 59(1), p.136.

Ice sheets, Topographic surveys, Ice surface, Ice air interface, Climatic factors, Atmospheric circulation, Ice volume, Glacier oscillation, Models, Paleoclimatology, Global warming

53-791

**3-dimensional structure and flow field of a temperate ice mass: surface and borehole deformation studies on Worthington Glacier, Alaska.**

Harper, J.T., Laramie, University of Wyoming, 1997, 137p., University Microfilms order No.98-21464, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 59(1), p.131.

Glacier surfaces, Ice deformation, Boreholes, Flow measurement, Velocity measurement, Crevasses, Strain tests, Structural analysis, Glacier flow, Glacier friction, United States—Alaska—Worthington Glacier

53-792

**Turboprop aircraft performance response to various environmental conditions.**

Ashenden, R.A., Laramie, University of Wyoming, 1997, 186p., University Microfilms order No.98-21457, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 59(1), p.262.

Aircraft, Cold weather performance, Aircraft icing, Precipitation (meteorology), Supercooled clouds, Environmental tests, Cold weather tests, Engineering

53-793

**Seismic investigations of Rutford Ice Stream, West Antarctica.**

Smith, A.M., Open University (United Kingdom), 1997, n.p., University Microfilms order No.: (Not available), Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.C, 59(2), p.355.  
 Seismic surveys, Glaciology, Glacier flow, Streams, Ice water interface, Glacier beds, Basal sliding, Antarctica—Rutford Ice Stream

53-794

**Heat and water transfer in the frozen soil environment.**

Stahli, M., Uppsala (Sweden), Sveriges Lantbrukshögskolan, 1997, 35p., Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.C 59(2), p.320.  
 Frozen ground thermodynamics, Heat transfer, Moisture transfer, Soil water migration, Hydraulics, Heat flux, Snow surface temperature, Snowmelt, Soil freezing, Soil temperature, Models

53-795

**Landscape development of the Transantarctic Mountains, Shackleton Glacier area, Antarctica: An integration of structural geology, geomorphology, and apatite fission-track thermochronology.**

Miller, S.R., Tucson, University of Arizona, 1997, 287p., University Microfilms order No.13-87971, M.S. thesis. For abstract see Masters abstracts international, 36(3), p.771.

Landscape development, Models, Glacial geology, Tectonics, Geomorphology, Structural analysis, Landscape types, Antarctica—Transantarctic Mountains, Antarctica—Shackleton Glacier

53-796

**Comparison of theory with laboratory and field observations of wave propagation in grease ice.**

Newyear, K.D., Seattle, University of Washington, 1997, 136p., University Microfilms order No.98-19281, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 58(12), p.6461.

Wave propagation, Sea ice, Rheology, Viscosity, Ice models, Experimentation, Viscous flow, Ice edge, Oceanographic surveys, Ice water interface, Ice cover effect, Ocean waves

53-797

**Silicon-isotope composition of diatoms as an indicator of past oceanic change.**

De La Rocha, C.L., Brzezinski, M.A., DeNiro, M.J., Shemesh, A., *Nature*, Oct. 15, 1998, 395(6703), p.680-683, 32 refs.

Isotopes, Water chemistry, Sediments, Marine biology, Ice edge, Marine deposits, Bottom sediment, Nutrient cycle, Paleoclimatology, Antarctica—Ross Sea, South Atlantic Ocean

53-798

**Hydrological characteristics of the drainage system beneath a surging glacier.**

Björnsson, H., *Nature*, Oct. 22, 1998, 395(6704), p.771-774, 21 refs.  
 Glacial hydrology, Glacier surges, Subglacial drainage, Iceland

53-799

**Climate and groundwater recharge during the last glaciation in an ice-covered region.**

Beyerle, U., et al, *Science*, Oct. 23, 1998, 282(5389), p.731-734, Refs. p.733-734.

Ground water, Climatic changes, Oxygen isotopes, Mountain glaciers, Paleoclimatology, Switzerland

53-800

**Inflight icing: the handling event.**

Green, S., *Air line pilot*, Apr. 1998, 67(4), p.10-15.  
 Aircraft icing, Stability, Ice accretion, Safety

53-801

**Ice that burns: can methane hydrates fuel the 21st century.**

Monastersky, R., *Science news*, Nov. 14, 1998, 154(20), p.312-314.

Subsea permafrost, Fuels, Hydrates, Natural gas, Canada—Northwest Territories—Mackenzie Delta, Mexico, Gulf, Japan

53-802

**How to pick anti-icing products. *Better roads*, June 1998, 68(6), p.18-19.**

Ice prevention, Ice removal, Chemical ice prevention, Road maintenance

53-803

**Indiana, Washington test anti-icer. *Better roads*, June 1998, 68(6), p.20.**

Tests, Chemical ice prevention, Road maintenance

53-804

**Snow and ice control strategies. *Better roads*, June 1998, 68(6), p.21.**

Snow removal, Ice removal, Equipment, Snow removal equipment, Road maintenance, United States—Oregon, United States—Washington

53-805

**Kola—the arctic nuclear power plant. *Nuclear engineering international*, July 1998, 43(528), p.28.**

Nuclear power, Construction, Specifications, Design, Safety, Subpolar regions, Russia—Kola Peninsula

53-806

**Kola Project Management Unit. *Nuclear engineering international*, July 1998, 43(528), p.29-30.**

Nuclear power, Subpolar regions, Safety, Organizations, Russia—Kola Peninsula

53-807

**Impact of solar cosmic rays on nitrates in the Greenland ice.**

Gladysheva, O.G., Dreschhoff, G.A.M., *Bulletin of the Russian Academy of Sciences. Physics*, 1997, 61(6), International Conference on Cosmic Rays, Moscow, Russia, June 24-26, 1996. Proceedings, p.833-836, Translated from Rossiiskaia akademiia nauk. Izvestiia. Seriiia fizicheskaiia. 10 refs.

Ice physics, Ice sheets, Ice composition, Gamma irradiation, Geochemistry, Ice cores, Ionization, Ion density (concentration), Proton transport, Solar activity, Correlation, Greenland

53-808

**Unraveling the 10 micron "silicate" feature of protostars: the detection of frozen interstellar ammonia.**

Lacy, J.H., Faraji, H., Sandford, S.A., Allamandola, L.J., *Astrophysical journal letters*, July 1, 1998, 501(1)pt.2, p.L105-L109, 40 refs.

Extraterrestrial ice, Cosmic dust, Minerals, Infrared spectroscopy, Frozen liquids, Ice detection, Molecular structure, Hydrogen bonds, Spectra

53-809

**Proceedings.**

International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996, Smith, W.L., ed, Starnes, K., ed, Hampton, VA, A. DEEPAK Publishing, 1997, 1067p., Refs. passim. For selected papers see 53-810 through 53-860.

DLC QC912.3.I57 1996

Climatology, Cloud cover, Remote sensing, Polar atmospheres, Atmospheric composition, Optical properties, Aerosols, Radiation balance, Radiance, Cloud physics, Ice crystal optics, Ice crystal structure, Light scattering, Simulation

53-810

**Radiation in the Arctic: why worry?**

Starnes, K., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Starnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.3-6, 19 refs.  
 DLC QC912.3.I57 1996

DLC QC912.3.I57 1996

Climatology, Polar atmospheres, Marine atmospheres, Radiation balance, Cloud physics, Optical properties, Ice crystal optics, Remote sensing, Models, Research projects

53-811

**Radiation in the Antarctic.**

Yamanouchi, T., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.7-10, 22 refs.

DLC QC912.3.I57 1996

Climatology, Polar atmospheres, Atmospheric boundary layer, Radiation balance, Cloud physics, Remote sensing, Albedo, Ice cover effect, Antarctica

53-812

**Model study of the effect of particulates on the albedo of sea ice.**

Light, B., Eicken, H., Maykut, G.A., Grenfell, T.C., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.11-14, 14 refs.

DLC QC912.3.I57 1996

Sea ice, Ice floes, Optical properties, Ice composition, Sediments, Albedo, Radiation absorption, Particle size distribution, Radiometry, Models, Arctic Ocean

53-813

**Simulation of radiation and clouds with a regional climate model of the Arctic.**

Rinke, A., Dethloff, K., Radionov, V.F., Christensen, J.H., Botzet, M., Machenhauer, B., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.15-18, 12 refs.

DLC QC912.3.I57 1996

Climatology, Polar atmospheres, Radiation balance, Cloud cover, Surface temperature, Albedo, Models, Simulation, Arctic Ocean

53-814

**Measurements of the spectral optical depth of aerosols with moon and star light during polar night 1994/5 and 1995/6 in Ny-Alesund, Spitzbergen.**

Herber, A., et al, International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.19-22, 11 refs.

DLC QC912.3.I57 1996

Climatology, Polar atmospheres, Atmospheric composition, Aerosols, Haze, Optical properties, Photometry, Seasonal variations, Norway—Spitsbergen

53-815

**Cirrus clouds at Thule, Greenland, during summer: lidar observations and influence on the planetary radiative budget.**

Benedetti, A., Di Sarra, A., Fiocco, G., Fuà, D., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.23-26, 12 refs.

DLC QC912.3.I57 1996

Climatology, Polar atmospheres, Cloud cover, Cloud physics, Ice crystal optics, Detection, Radiation balance, Lidar, Backscattering, Greenland—Thule

53-816

**Science issues and deployment schedule for the North Slope of Alaska and adjacent Arctic Ocean (NSA/AO) atmospheric radiation measurement (ARM) site.**

Stamnes, K., Alkezweeny, A., Zak, B.D., Church, H.W., Widener, K., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.27-28.

DLC QC912.3.I57 1996

Climatology, Polar atmospheres, Marine atmospheres, Optical properties, Radiation balance, Research projects, Environmental tests, Arctic Ocean, United States—Alaska—North Slope

53-817

**Arctic surface radiation variability and trend climatology from in situ data.**

Box, J.E., Heinrichs, J.F., Key, J., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.29-32, 6 refs.

DLC QC912.3.I57 1996

Climatology, Polar atmospheres, Atmospheric boundary layer, Radiation balance, Turbidity, Optical properties, Statistical analysis, Seasonal variations, Snow depth

53-818

**Cloud optical depth in the Arctic as estimated from surface radiation and satellite data.**

Key, J., Friedl, M., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.33-36, 5 refs.

DLC QC912.3.I57 1996

Climatology, Polar atmospheres, Cloud cover, Optical properties, Ice crystal optics, Radiation balance, Radiance, Upwelling, Radiometry, Arctic Ocean

53-819

**Modelling and measurements of snow reflectance from visible to near infrared.**

Leroux, C., Lenoble, J., Deuzé, J.L., Goloub, P., Sergeant, C., Fily, M., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.37-40, 5 refs.

DLC QC912.3.I57 1996

Climatology, Snow cover effect, Snow optics, Grain size, Ice crystal optics, Reflectivity, Polarization (waves), Alpine landscapes, Models, France—Alps

53-820

**Effect of solar zenith angle on snow anisotropic reflectance.**

Steffen, K., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.41-44, 4 refs.

DLC QC912.3.I57 1996

Climatology, Polar atmospheres, Radiation balance, Solar radiation, Ice sheets, Snow optics, Snow cover, Albedo, Reflectivity, Anisotropy, Radiometry, Greenland

53-821

**Effects of the different types of the atmospheres on the surface and planetary albedos of snow.**

Aoki, T., Aoki, T., Fukabori, M., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.46-49, 12 refs.

DLC QC912.3.I57 1996

Climatology, Atmospheric composition, Optical properties, Snow optics, Albedo, Snow cover effect, Scattering, Radiation absorption, Spectra

53-822

**Evaluation of clear-sky downward longwave irradiance as observed in antarctic atmosphere.**

Miskolczi, F., Konig-Langlo, G., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.50-53, 2 refs.

DLC QC912.3.I57 1996

Climatology, Polar atmospheres, Radiation balance, Water vapor, Radiance, Sounding, Radiometry, Statistical analysis, Antarctica

53-823

**Spectral downward longwave climatology for clear and cloudy skies over South Pole.**

Walden, V.P., Warren, S.G., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.54-57, 12 refs.

DLC QC912.3.I57 1996

Climatology, Polar atmospheres, Cloud cover, Classifications, Radiation balance, Radiance, Seasonal variations, Spectroscopy, Antarctica—South Pole

53-824

**Monitoring the temperature inversion at 11 and 6.7µm.**

Ackerman, S.A., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.58-61, 3 refs.

DLC QC912.3.I57 1996

Climatology, Polar atmospheres, Air temperature, Cloud cover, Temperature inversions, Radiance, Radiometry, Brightness, Antarctica

53-825

**Radiation and surface fluxes measurements at Terra Nova Bay (Antarctica).**

Levizzani, V., Georgiadis, T., Tomasi, C., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.62-65, 19 refs.

DLC QC912.3.I57 1996

Climatology, Polar atmospheres, Cloud cover, Radiation balance, Surface energy, Radiometry, Antarctica—Terra Nova Bay

53-826

**Effect of surface topography on the radiation environment of Palmer Station, Antarctica.**

Ricchiuzzi, P., Gautier, C., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.66-69, 3 refs.

DLC QC912.3.I57 1996

Climatology, Polar atmospheres, Radiation balance, Atmospheric boundary layer, Radiance, Albedo, Topographic effects, Snow cover effect, Simulation, Antarctica—Palmer Station

53-827

**Characterization of arctic haze by infrared emission: a feasibility study.**

Rowe, P., Neshyba, S., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.70-72, 8 refs.

DLC QC912.3.I57 1996

Climatology, Polar atmospheres, Infrared radiation, Optical properties, Haze, Aerosols, Infrared spectroscopy, Attenuation, Models

53-828

**Determination of a radiatively equivalent micro-physic for cirrus clouds during EUCREX'94—sensitivity of radiative fluxes to the microphysic.** Chepfer, H., et al, International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.86-89, 10 refs.  
DLC QC912.3.I57 1996  
Climatology, Cloud physics, Ice crystal optics, Light scattering, Sounding, Aerial surveys, Models, France

53-829

**Remote sounding of multilayer cirrus cloud systems using AVHRR data collected during FIRE-II-IFO.** Ou, S.C., Liou, K.N., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.93-96, 7 refs.  
Climatology, Cloud physics, Ice crystal optics, Ice crystal size, Radiometry, Sounding, Replicas, Probes, United States—Kansas—Coffeyville

53-830

**Aircraft multi-spectral radiance measurements of cirrus during EUCREX'93, and their application to the retrieval of the clouds' microphysical and radiative properties.** Hignett, P., Francis, P.N., Macke, A., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.101-104, 3 refs.  
DLC QC912.3.I57 1996  
Climatology, Cloud physics, Ice crystal optics, Ice crystal structure, Scattering, Reflectivity, Radiance, Aerial surveys

53-831

**Comparison between cloud bidirectional reflectances observed by POLDER and simulations based on the cloud microphysics used in the ISCCP scheme.** Descloitres, J., Buriez, J.C., Parol, F., Fouquart, Y., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.105-108, 18 refs.  
DLC QC912.3.I57 1996  
Climatology, Cloud physics, Spaceborne photography, Ice crystal optics, Reflectivity, Scattering, Anisotropy, Simulation, Correlation

53-832

**Effect of cirrus microstructure and vertical structure on their radiative properties.** Khvorostianov, V.I., Sassen, K., Khvorostianov, D.V., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.113-116, 9 refs.  
DLC QC912.3.I57 1996  
Climatology, Cloud physics, Ice crystal optics, Ice crystal structure, Microstructure, Profiles, Water content, Analysis (mathematics), Thermodynamic properties

53-833

**Absorption of solar radiation by clouds and aerosols in the visible wavelength region at five latitude zones.** Kondrat'ev, K.I.A., Mel'nikova, I.N., Birenko, V.I., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.128-131, 12 refs.  
DLC QC912.3.I57 1996  
Climatology, Cloud physics, Polar atmospheres, Optical properties, Radiation absorption, Albedo, Scattering, Spectra, Aerial surveys, Chukchi Sea

53-834

**New treatment of cirrus cloud radiative properties.** Mitchell, D.L., Macke, A., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.163-166, 11 refs.  
DLC QC912.3.I57 1996  
Climatology, Cloud physics, Infrared radiation, Scattering, Ice crystal optics, Ice crystal size, Particle size distribution, Analysis (mathematics)

53-835

**Radiative properties of contrails: measurements and simulations.** Barnett, J.M., Sassen, K., Khvorostianov, V.I., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.171-174, 3 refs.  
DLC QC912.3.I57 1996  
Climatology, Air pollution, Cloud physics, Radiation balance, Aerosols, Ice crystal optics, Ice crystal size, Condensation trails, Optical properties, Lidar, Simulation

53-836

**Ice crystal plumes on top of convective storms.** Levizzani, V., Setvák, M., Rabin, R.M., Doswell, D.A., III, Wang, P.K., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.175-178, 25 refs.  
DLC QC912.3.I57 1996  
Climatology, Precipitation (meteorology), Storms, Cloud physics, Ice crystal optics, Ice detection, Reflectivity, Radiometry

53-837

**Influence of inclusions on light scattering by large hexagonal and spherical ice crystals.** Macke, A., Mishchenko, M.I., Cairns, B., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.226-229, 16 refs.  
DLC QC912.3.I57 1996  
Climatology, Cloud physics, Ice physics, Light scattering, Ice crystal optics, Ice crystal structure, Bubbles, Aerosols, Impurities

53-838

**Interactions of radiation, microphysics, and turbulence in a two-dimensional cirrus cloud model.** Gu, Y., Liou, K.N., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.239-241, 9 refs.  
DLC QC912.3.I57 1996  
Climatology, Cloud physics, Radiation balance, Turbulence, Phase transformations, Ice crystal optics, Mathematical models

53-839

**Radiative transfer in clouds with arbitrary internal inhomogeneities.** Schulz, J., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.246-249, 4 refs.  
DLC QC912.3.I57 1996  
Climatology, Radiation balance, Attenuation, Condensation trails, Cloud physics, Ice crystal optics, Ice crystal growth, Aerosols, Models

53-840

**Sonde system for simultaneous measurements of radiative fluxes and cirrus microphysics in the Japanese Cloud-climate Study (JACCS) Program.** Asano, S., et al, International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.349-352, 8 refs.  
DLC QC912.3.I57 1996  
Climatology, Cloud physics, Lidar, Sounding, Water content, Ice crystal optics, Ice crystal structure, Imaging, Japan

53-841

**Comparisons of spectral radiance measurements from South Pole with radiative transfer calculations.** Walden, V.P., Warren, S.G., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.359-362, 3 refs.  
DLC QC912.3.I57 1996  
Climatology, Polar atmospheres, Profiles, Radiation balance, Radiance, Spectra, Models, Antarctica—South Pole

53-842

**Microphysical and radiative properties of arctic cirrus clouds obtained during the BASE 94 field experiment.** Intrieri, J.M., Goldstein, J.A., Curry, J.A., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.375-378, 12 refs.  
DLC QC912.3.I57 1996  
Climatology, Polar atmospheres, Cloud physics, Cloud height indicators, Radiation balance, Water content, Particle size distribution, Probes, Temperature effects, Aerial surveys

53-843

**Use of surface and aircraft data to assess the effects of cloud inhomogeneity on cirrus cloud radiative properties.** Stackhouse, P.W., Jr., Stephens, G.L., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.379-383, 10 refs.  
DLC QC912.3.I57 1996  
Climatology, Cloud physics, Radiance, Optical properties, Aerial surveys, Radar echoes, Albedo, Particle size distribution, Ice crystal optics, Ice crystal structure

53-844

**Retrieval of cirrus radiative properties by airborne lidar during EUCREX '94.** Valentin, R., et al, International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.429-432, 6 refs.  
DLC QC912.3.I57 1996  
Climatology, Cloud physics, Ice crystal optics, Lidar, Backscattering, Attenuation, France—Brittany

53-845

**Airborne measurements of arctic cirrus near the island Svalbard.** Raschke, E., Koch, W., Albers, F., Maixner, U., Masuda, T., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.433-436, 8 refs.  
DLC QC912.3.I57 1996  
Climatology, Polar atmospheres, Cloud physics, Radiance, Sounding, Particle size distribution, Spectra, Norway—Svalbard

53-846

**Arctic radiation measurements in column atmosphere-surface system.**  
King, M.D., Tsay, S.C., Hobbs, P.V., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.437-440, 11 refs.  
DLC QC912.3.I57 1996  
Climatology, Polar atmospheres, Cloud physics, Radiation balance, Optical properties, Sounding, Radiometry, Aerial surveys, United States—Alaska—North Slope, United States—Alaska—Prudhoe Bay

53-847

**Near-global analysis of cloud microphysical properties.**  
Minnis, P., Heck, P.W., Mayor, S., Young, D.F., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.445-448, 7 refs.  
DLC QC912.3.I57 1996  
Climatology, Cloud physics, Ice crystal optics, Ice crystal size, Cloud droplets, Radiometry, Models

53-848

**Crystal size, shape and IWP retrieval using along track scanning radiometer observations of tropical anvil cirrus at 0.87 and 1.6  $\mu\text{m}$ .**  
Baran, A.J., Watts, P.D., Foot, J.S., Mitchell, D.L., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.476-479, 9 refs.  
DLC QC912.3.I57 1996  
Climatology, Cloud cover, Cloud physics, Ice crystal optics, Radiation balance, Radiation absorption, Radiometry, Ice crystal structure, Ice crystal size

53-849

**Interpreting High Resolution Infrared Sounder (HIRS) observations of cirrus using the 8 and 11  $\mu\text{m}$  channels: Mie or ADT.**  
Baran, A.J., Mitchell, D.L., Foot, J.S., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.510-513, 6 refs.  
DLC QC912.3.I57 1996  
Climatology, Cloud physics, Spacecraft, Sounding, Radiometry, Ice crystal optics, Ice crystal size, Brightness, Forecasting, Statistical analysis, Accuracy

53-850

**Satellite-derived surface temperatures in the McMurdo Dry Valleys, Antarctica.**  
Dana, G.L., Wetzel, M.A., Wharton, R.A., Jr., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.530-533, 3 refs.  
DLC QC912.3.I57 1996  
Geophysical surveys, Arctic landscapes, Deserts, Radiometry, Brightness, Soil temperature, Surface temperature, Diurnal variations, Seasonal variations, Antarctica—McMurdo Dry Valleys

53-851

**Estimation of cloud droplet size, optical depth and phase from the along Track Scanning Radiometer.**  
Watts, P.D., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.578-581, 6 refs.  
DLC QC912.3.I57 1996  
Climatology, Cloud physics, Radiometry, Infrared spectroscopy, Cloud droplets, Ice crystal optics, Ice crystal size, Cloud height indicators, Image processing

53-852

**Comparisons of cloud heights derived from satellite, aircraft, surface lidar and LITE data.**  
Smith, W.L., Jr., et al, International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.603-606, 3 refs.  
DLC QC912.3.I57 1996  
Climatology, Remote sensing, Cloud physics, Cloud height indicators, Ice crystal optics, Ice crystal size, Brightness, Radiometry, Lidar, Correlation

53-853

**Ground-based remote sensing of cloud base heights at South Pole using "CO<sub>2</sub>-slicing".**  
Mahesh, A., Walden, V.P., Warren, S.G., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.643-646, 2 refs.  
DLC QC912.3.I57 1996  
Climatology, Polar atmospheres, Cloud physics, Cloud height indicators, Carbon dioxide, Radiance, Spectroscopy, Sounding, Profiles, Antarctica—South Pole

53-854

**Infrared spectral absorption of nearly invisible cirrus clouds.**  
Smith, W., et al, International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.655-658, 3 refs.  
DLC QC912.3.I57 1996  
Climatology, Cloud physics, Upwelling, Air pollution, Ice crystal optics, Ice crystal size, Radiation absorption, Condensation trails, Aerial surveys, Infrared photography, Ice detection

53-855

**On the potential to derive optical and microphysical parameters of stratospheric aerosols from high resolution mid-IR limb emission spectra.**  
Echle, G., Von Clarmann, T., Oelhaf, H., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.659-662, 11 refs.  
DLC QC912.3.I57 1996  
Climatology, Polar atmospheres, Stratosphere, Optical properties, Atmospheric composition, Aerosols, Volcanic ash, Infrared spectroscopy, Attenuation, Sweden—Kiruna

53-856

**Ground-based microwave remote sensing of arctic atmospheric parameters.**  
Kadyrov, E.N., Koldaev, A.V., Troitskiĭ, A.V., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.675-678, 6 refs.  
DLC QC912.3.I57 1996  
Climatology, Polar atmospheres, Atmospheric composition, Radiometry, Cloud physics, Water content, Brightness, Profiles, Russia—Yakutia

53-857

**Seasonal variations of carbon monoxide at high latitudes measured on the ground by total column spectroscopic and in-situ techniques.**  
Iŭrganov, L.N., Jaffe, D.A., Pullman, E., Novelli, P.C., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.695-698, 10 refs.  
DLC QC912.3.I57 1996  
Climatology, Polar atmospheres, Atmospheric composition, Aerosols, Infrared spectroscopy, Turbulent diffusion, Seasonal variations, United States—Alaska—Poker Flat

53-858

**Scattering of light by large spherical, spheroidal, and circular cylindrical scatterers: geometrical optics approximation versus T-matrix method.**  
Macke, A., Mishchenko, M.I., Carlson, B.E., Muinonen, K., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.822-825, 11 refs.  
DLC QC912.3.I57 1996  
Climatology, Cloud physics, Aerosols, Ice crystal optics, Light scattering, Ice crystal size, Ice crystal structure, Albedo, Models

53-859

**Could clouds partly mitigate the biological effects of ozone depletion in the Antarctic.**  
Gautier, C., Ricchiuzzi, P., Yang, S.R., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.974-977, 8 refs.  
DLC QC912.3.I57 1996  
Climatology, Air pollution, Cloud cover, Degradation, Ozone, Ultraviolet radiation, Radiance, Environmental impact, Environmental protection, Ecosystems, Marine biology, Spectroscopy, Theories, Antarctica—Palmer Station

53-860

**Laboratory FTIR measurements of ice crystal and water droplet clouds: particle size spectrum inversion.**  
Arnott, W.P., Schmitt, C., Liu, Y.G., Hallett, J., International Radiation Symposium, Fairbanks, AK, Aug. 19-24, 1996. Proceedings. IRS '96: current problems in atmospheric radiation. Edited by W.L. Smith and K. Stamnes, Hampton, VA, A. DEEPAK Publishing, 1997, p.1008-1010, 16 refs.  
DLC QC912.3.I57 1996  
Climatology, Cloud physics, Ice crystal optics, Cloud droplets, Attenuation, Particle size distribution, Infrared spectroscopy, Simulation

53-861

**That first antarctic winter.**  
Crawford, J., Christchurch, N.Z., South Latitude Research Limited, 1998, 270p., 13 refs.  
Expeditions, Polar regions, Cold weather survival, Low temperature research, Exploration, History, Equipment, Logistics, Antarctica

53-862

**Advances in molecular and cell biology. Thermobiology. Vol.19.**  
Bittar, E.E., ed, Willis, J.S., ed, Greenwich, CT, JAI Press Inc., 1997, 293p., Refs. passim. For selected papers see 53-863 through 53-866.  
DLC QH573.A26 V.19 1997  
Cold exposure, Cold tolerance, Acclimatization, Animals, Physiological effects, Low temperature research

53-863

**Adaptation for freezing survival in ectothermic vertebrates.**  
Storey, K.B., Storey, J.M., Advances in molecular and cell biology. Thermobiology. Vol.19. Edited by E.E. Bittar and J.S. Willis, Greenwich, CT, JAI Press Inc., 1997, p.1-32, Refs. p.27-32.  
DLC QH573.A26 V.19 1997  
Cold exposure, Cold tolerance, Acclimatization, Animals, Physiological effects, Low temperature research

53-864

**Responses of marine fishes to freezing temperatures: a new look at colligative mechanisms.**  
Raymond, J.A., Advances in molecular and cell biology. Thermobiology. Vol.19. Edited by E.E. Bittar and J.S. Willis, Greenwich, CT, JAI Press Inc., 1997, p.33-55, Refs. p.50-55.  
DLC QH573.A26 V.19 1997  
Marine biology, Antifreezes, Cold exposure, Cold tolerance, Acclimatization, Animals, Physiological effects, Low temperature research

53-865

**Cold adaptation of microtubule assembly in arctic fishes.**

Detrich, H.W., III, *Advances in molecular and cell biology. Thermobiology. Vol.19.* Edited by E.E. Bittar and J.S. Willis, Greenwich, CT, JAI Press Inc., 1997, p.103-142, Refs. p.138-142.

DLC QH573.A26 V.19 1997

Marine biology, Cold exposure, Cold tolerance, Acclimatization, Animals, Physiological effects, Low temperature research

53-866

**Survival of mammalian cells exposed to pure hypothermia in culture.**

Kruuv, J., *Advances in molecular and cell biology. Thermobiology. Vol.19.* Edited by E.E. Bittar and J.S. Willis, Greenwich, CT, JAI Press Inc., 1997, p.143-192, Refs. p.184-192.

DLC QH573.A26 V.19 1997

Experimentation, Cold exposure, Cold tolerance, Acclimatization, Animals, Physiological effects, Low temperature research

53-867

**Surficial geology, permafrost and related engineering problems, Yellowknife, N.W.T.**

Aspler, L.B., *Mineral Industry Report 1976, Northwest Territories EGS 1978-11.* Edited by: C. Lord, P.J. Laporte, W.A. Gibbins, E.J. Hurdle, J.B. Seaton, and W.A. Padgham, Ottawa, Indian and Northern Affairs, Canada, 1979, p.119-135, Refs. p.132-135.

DLC HD9506.C23N675 1976

Permafrost distribution, Permafrost thickness, Glacial geology, Erosion, Peat, Gravel, Sands, Canada—Northwest Territories—Yellowknife

53-868

**Methods for repairing frost damage on gravel roads.**

Pöyhönen, A., *International Conference on Low-Volume Roads, 6th, Minneapolis, MN, June 25-29, 1995, Vol.2,* Washington, D.C., National Academy Press, 1995, p.149-154, 1 ref.

DLC TE228.5.I58 1995 Vol.2

Roads, Frost heave, Damage, Drainage, Stabilization, Wastes, Gravel, Road maintenance, Finland

53-869

**Design, construction, maintenance, and performance of Qinghai-Tibet Plateau Highway.**

Li, N.Y., Haas, R., *International Conference on Low-Volume Roads, 6th, Minneapolis, MN, June 25-29, 1995, Vol.2,* Washington, D.C., National Academy Press, 1995, p.163-174, 7 refs.

DLC TE228.5.I58 1995 Vol.2

Road maintenance, Design, Cold weather construction, Permafrost, Thawing, Permafrost beneath roads, China—Qinghai-Xizang Plateau

53-870

**Prolonging haul over frozen roads.**

Barcomb, J., *International Conference on Low-Volume Roads, 6th, Minneapolis, MN, June 25-29, 1995, Vol.2,* Washington, D.C., National Academy Press, 1995, p.207-210, 1 ref.

DLC TE228.5.I58 1995 Vol.2

Road maintenance, Frozen ground, United States—Montana

53-871

**Bituminous pavement design and construction for low-volume roads in cold climates.**

Forsberg, A., *International Conference on Low-Volume Roads, 6th, Minneapolis, MN, June 25-29, 1995, Vol.2,* Washington, D.C., National Academy Press, 1995, p.275-283, 5 refs.

DLC TE228.5.I58 1995 Vol.2

Roads, Pavements, Bitumens, Cold weather construction, Road maintenance, United States—Minnesota

53-872

**Thunderstorms and hail on 7 June 1996: an early season 'Spanish plume' event.**

Webb, J.D.C., Pike, W.S., *Weather*, Aug. 1998, 53(8), p.234-241, 15 refs.

Synoptic meteorology, Thunderstorms, Turbulent boundary layer, Precipitation (meteorology), Hail, Damage, Weather observations, Sounding, United Kingdom

53-873

**New halo in northern Finland.**

Moilanen, J., *Weather*, Aug. 1998, 53(8), p.241-244, 9 refs.

Cloud cover, Cloud physics, Solar radiation, Ice crystal optics, Ice crystal structure, Optical phenomena, Light transmission, Computerized simulation, Finland

53-874

**Condensed-phase products in heterogeneous reactions: N<sub>2</sub>O<sub>5</sub>, ClONO<sub>2</sub>, and HNO<sub>3</sub> reacting on ice films at 185 K.**

Zondlo, M.A., Barone, S.B., Tolbert, M.A., *Journal of physical chemistry A*, July 16, 1998, 102(29), p.5735-5748, 87 refs.

Climatology, Cloud physics, Polar stratospheric clouds, Phase transformations, Heterogeneous nucleation, Aerosols, Coatings, Water films, Adsorption, Ice vapor interface, Supercooling, Infrared spectroscopy, Simulation

53-875

**Purely mechanical solvation dynamics in supercooled liquids: the S<sub>0</sub>←1 (0-0) transition of naphthalene.**

Wendt, H., Richert, R., *Journal of physical chemistry A*, July 16, 1998, 102(29), p.5775-5781, 33 refs.

Hydrocarbons, Solutions, Dielectric properties, Supercooling, Polarization (charge separation), Molecular energy levels, Low temperature tests, Probes, Luminescence

53-876

**Raman spectra of phenylacetylene in acetonitrile and methylcyclohexane at low temperatures. 2. Structural order and vibrational relaxation in frozen matrices at 77 K.**

Abramczyk, H., Waliszewska, G., Kołodziejcki, M., *Journal of physical chemistry A*, Oct. 1, 1998, 102(40), p.7765-7771, 28 refs.

Frozen liquids, Solutions, Crystals, Hydrocarbons, Low temperature tests, Spectroscopy, Vibration, Molecular structure, Spectra, Statistical analysis

53-877

**Snow breezes in the boreal forest.**

Taylor, C.M., Harding, R.J., Pielke, R.A., Sr., Vidale, P.L., Walko, R.L., Pomeroy, J.W., *Journal of geophysical research*, Sep. 27, 1998, 103(D18), p.23,087-23,101, 34 refs.

Climatology, Surface temperature, Forest ecosystems, Frozen lakes, Atmospheric boundary layer, Air flow, Turbulent flow, Wind direction, Snow air interface, Snow cover effect, Surface roughness, Mathematical models, Diurnal variations, Canada—Saskatchewan—Namekus Lake

53-878

**Winter warming over Dome Fuji, East Antarctica and semiannual oscillation in the atmospheric circulation.**

Enomoto, H., et al., *Journal of geophysical research*, Sep. 27, 1998, 103(D18), p.23,103-23,111, 29 refs.

Climatology, Polar atmospheres, Air temperature, Surface temperature, Temperature variations, Snow air interface, Atmospheric circulation, Atmospheric pressure, Air masses, Seasonal variations, Temperature measurement, Antarctica—East Antarctica

53-879

**Cirrus layer microphysical properties derived from surface-based millimeter radar and infrared interferometer data.**

Mace, G.G., Ackerman, T.P., Minnis, P., Young, D.F., *Journal of geophysical research*, Sep. 27, 1998, 103(D18), p.23,207-23,216, 36 refs.

Climatology, Cloud cover, Cloud physics, Ice crystal optics, Ice crystal size, Particle size distribution, Radiance, Radar echoes, Infrared spectroscopy, Reflectivity, Spectra, Mathematical models

53-880

**Radiative effect of cirrus clouds in Meteosat Second Generation Spinning Enhanced Visible and Infrared Imager channels.**

Wiegner, M., Seifert, P., Schlüssel, P., *Journal of geophysical research*, Sep. 27, 1998, 103(D18), p.23,217-23,230, 24 refs.

Climatology, Cloud cover, Cloud physics, Radiance, Light scattering, Ice crystal optics, Ice crystal size, Ice detection, Particle size distribution, Radiometry, Infrared spectroscopy, Spectra, Mathematical models

53-881

**Airborne retrieval of cirrus cloud optical and microphysical properties using Airborne Remote Earth Sensing System 5.1-5.3 and 3.7-μm channel data.**

Ou, S.C., et al., *Journal of geophysical research*, Sep. 27, 1998, 103(D18), p.23,231-23,242, 21 refs.

Climatology, Cloud cover, Cloud physics, Optical properties, Radiance, Ice detection, Ice crystal optics, Ice crystal size, Particle size distribution, Infrared spectroscopy, Spectra, Statistical analysis, Simulation, United States—Massachusetts—Boston

53-882

**Modeling study of the formation of cloud condensation nuclei in the jet regime of aircraft plumes.**

Gleitsmann, G., Zellner, R., *Journal of geophysical research*, Aug. 27, 1998, 103(D16), p.19,543-19,555, 43 refs.

Climatology, Cloud physics, Condensation trails, Aerosols, Condensation nuclei, Heterogeneous nucleation, Ice crystal growth, Adsorption, Ice vapor interface, Hydrates, Freezing points, Temperature effects

53-883

**Comparison of antarctic stratospheric radiative heating rates calculated from high-resolution interferometer sounder and U.K. Meteorological Office data.**

Hicke, J., Tuck, A., Smith, W., *Journal of geophysical research*, Aug. 27, 1998, 103(D16), p.19,691-19,707, 38 refs.

Climatology, Polar atmospheres, Air temperature, Stratosphere, Radiation balance, Radiant heating, Models, Sounding, Correlation, Antarctica

53-884

**Ground measurements of the polarized bidirectional reflectance of snow in the near-infrared spectral domain: comparisons with model results.**

Leroux, C., Deuzé, J.L., Goloub, P., Sergent, C., Fily, M., *Journal of geophysical research*, Aug. 27, 1998, 103(D16), p.19,721-19,731, 47 refs.

Snow surveys, Alpine landscapes, Reflectivity, Wave propagation, Snow optics, Snow cover structure, Grain size, Snow crystal structure, Photometry, Polarization (waves), Models, France—Alps

53-885

**Hydroclimatology of Illinois: a comparison of monthly evaporation estimates based on atmospheric water balance and soil water balance.**

Yeh, P.J.F., Irizarry, M., Eltahir, E.A.B., *Journal of geophysical research*, Aug. 27, 1998, 103(D16), p.19,823-19,837, 67 refs.

Hydrologic cycle, Precipitation (meteorology), Snow hydrology, Soil water, Soil air interface, Evaporation, Snow depth, Wind factors, Statistical analysis, Mathematical models, Seasonal variations, Forecasting, United States—Illinois

53-886

**Sintering in a dry snow cover.**Colbeck, S.C., MP 5240, *Journal of applied physics*, Oct. 15, 1998, 84(8), p.4585-4589, 10 refs.

Snow physics, Snow strength, Snow cover structure, Snow crystal growth, Snow crystal structure, Microstructure, Sintering, Diffusion, Physical properties, Analysis (mathematics), Theories

The basic shape of bonds in snow is dictated by the geometrical requirements of grain-boundary grooves and is not a simple concave neck as has long been assumed. In fact, all of the earlier work on the theory of sintering in snow was based on an incorrect assumption about the geometry. A theory of the growth of bonds in snow is given here based on observations of their actual shape which is dominated by grain-boundary grooves. The theory describes the growth of the bond by the removal of water molecules from the grain boundary by diffusion due to the stress gradient. Three-dimensional grains are described and the dihedral angle is allowed to increase with time.

53-887

**Response of the Ha! Ha! River to the flood of July 1996 in the Saguenay region of Quebec: large-scale avulsion in a glaciated valley.**Lapointe, M.F., Secretan, Y., Driscoll, S.N., Bergeron, N., Leclerc, M., *Water resources bulletin*, Sep. 1998, 34(9), p.2383-2392, 40 refs.

Geomorphology, River basins, Floodplains, Flooding, Sedimentation, Water erosion, Glacial geology, Glacial deposits, Landscape development, Runoff, Flow measurement, Canada—Quebec—Ha! Ha! River

53-888

**Biomagnification and bioaccumulation of mercury in an arctic marine food web: insights from stable nitrogen isotope analysis.**Atwell, L., Hobson, K.A., Welch, H.E., *Canadian journal of fisheries and aquatic sciences*, May 1998, 55(5), p.1114-1121, With French summary, 47 refs.

Water pollution, Subpolar regions, Ecosystems, Marine biology, Biomass, Sampling, Metals, Isotope analysis, Environmental impact, Environmental tests, Canada—Northwest Territories—Lancaster Sound

53-889

**Numerical simulations of sea and land breezes at high latitudes.**Grønås, S., Sandvik, A.D., *Tellus*, Aug. 1998, 50A(4), p.468-489, 50 refs.

Climatology, Polar atmospheres, Atmospheric boundary layer, Atmospheric circulation, Marine atmospheres, Wind direction, Ice air interface, Snow cover effect, Ice cover effect, Topographic effects, Seasonal variations, Mathematical models, Norway—Spitsbergen

53-890

**Structure and biodiversity of megabenthos in the Weddell and Lazarev Seas (Antarctica): ecological role of physical parameters and biological interactions.**Gutt, J., Starmans, A., *Polar biology*, Oct. 1998, 20(4), p.229-247, Refs. p.245-247.

Marine biology, Ecosystems, Ocean bottom, Biomass, Sampling, Classifications, Statistical analysis, Photography, Antarctica—Weddell Sea

53-891

**Freeze resistance of Pacific northwest strawberry flowers.**Hummel, R.L., Moore, P.P., *American Society for Horticultural Science Journal*, Mar. 1997, 122(2), p.179-182, 20 refs.

Plant physiology, Cold tolerance, Frost resistance, Plant tissues, Chemical composition, Ice nuclei, Ice crystal growth, Damage, Supercooling, Freezing points, Cold weather tests

53-892

**Investigation of joint spalling on concrete runway.** Rollings, R.S., Burkes, J.P., Hammons, M.I., Wong, G.S., Rollings, M.P., *Journal of performance of constructed facilities*, Feb. 1998, 12(1), p.12-19, 4 refs. Concrete pavements, Concrete durability, Runways, Concrete freezing, Joints (junctions), Concrete aggregates, Damage, Freeze thaw cycles, Crack propagation, Mechanical properties, Drill core analysis

53-893

**Role of cold-responsive genes in plant freezing tolerance.**Thomashow, M.F., *Plant physiology*, Sep. 1998, 118(1), p.1-7, 31 refs.

Plant physiology, Plant tissues, Cryobiology, Antifreezes, Acclimatization, Frost resistance, Cold tolerance, Chemical composition, Chemical analysis, Molecular structure, Modification

53-894

**Equilibrium structural model of liquid water: evidence from heat capacity, spectra, density and other properties.**Dougherty, R.C., Howard, L.N., *Journal of chemical physics*, Nov. 1, 1998, 109(17), p.7379-7393, 64 refs.

Water structure, Molecular structure, Hydrogen bonds, Heat capacity, Thermodynamic properties, Density (mass/volume), Supercooling, Temperature effects, Models, Statistical analysis

53-895

**Effect of the structure of ice on the aggregation state of co-adsorbed formic acid.**Trakhtenberg, S., Naaman, R., *Thin solid films*, Aug. 31, 1998, Vol.327-328, International Conference on Organized Molecular Films, 8th, Pacific Grove, CA, Aug. 24-29, 1997. Proceedings, p.499-502, 11 refs.

Ice physics, Amorphous ice, Ice vapor interface, Adsorption, Aggregates, Ice structure, Molecular structure, Organic nuclei, Phase transformations, Infrared spectroscopy, Spectra, Temperature effects

53-896

**Identification of the ice-binding surface on a type III antifreeze protein with a "flatness function" algorithm.**Yang, D.S.C., et al, *Biophysical journal*, May 1998, 74(5), p.2142-2151, Refs. p.2150-2151.

Antifreezes, Ice crystal growth, Adsorption, Ice water interface, Ice crystal adhesion, Ice crystal structure, Mathematical models, Surface properties

53-897

**Flashover performance of ice-covered insulators. [Contournement électrique des isolateurs recouverts de glace]**Farzaneh, M., Kiernicki, J., *Canadian journal of electrical and computer engineering*, July 1997, 22(3), p.95-109, In French with English summary, 82 refs.

Electrical insulation, Ice cover effect, Cold weather performance, Low temperature research, Simulation, Experimentation, Power line icing, Electric corona

53-898

**Survival and recovery of 'Meyer' zoysiagrass rhizomes after extracellular freezing.**Warmund, M.R., Fuller, R., Dunn, J.H., *American Society for Horticultural Science Journal*, Sep. 1998, 123(5), p.821-825, 21 refs.

Plant physiology, Grasses, Plant tissues, Roots, Microstructure, Growth, Cold tolerance, Ice formation, Interstitial ice, Cold weather tests, Temperature effects, Freeze thaw tests, Scanning electron microscopy

53-899

**Simulation of the water and carbon monoxide production rates of comet Hale-Bopp using a quasi 3-D nucleus model.**Enzian, A., Cabot, H., Klingler, J., *Planetary and space science*, Aug. 1998, 46(8), p.851-858, 29 refs.

Extraterrestrial ice, Satellites (natural), Ice physics, Amorphous ice, Aggregates, Porous materials, Ice sublimation, Vapor diffusion, Mathematical models, Thermal analysis

53-900

**Simulation of gas flow in a cometary Knudsen layer.**Skorov, I.U.V., Rickman, H., *Planetary and space science*, Aug. 1998, 46(8), p.975-996, 24 refs.

Extraterrestrial ice, Satellites (natural), Ice physics, Ice composition, Porous materials, Dust, Vapor diffusion, Ice sublimation, Simulation, Mathematical models

53-901

**Geothermal modeling of soil or mine tailings with concurrent freezing and deposition.**Nixon, J.F., Holl, N., *Canadian geotechnical journal*, Apr. 1998, 35(2), p.234-250, With French summary, 12 refs.

Soil mechanics, Tailings, Embankments, Sedimentation, Ground thawing, Geothermal thawing, Frozen ground mechanics, Layers, Freeze thaw cycles, Unfrozen water content, Snow cover effect, Mathematical models, Forecasting, Canada—Saskatchewan—Key Lake

53-902

**Concentrations of trace elements in recent and preindustrial sediments from Norwegian and Russian arctic lakes.**Rognerud, S., Skotvold, T., Fjeld, E., Norton, S.A., Hobæk, A., *Canadian journal of fisheries and aquatic sciences*, June 1998, 55(6), p.1512-1523, With French summary, 57 refs.

Lacustrine deposits, Limnology, Arctic landscapes, Air pollution, Aerosols, Metals, Grain size, Lithology, Scavenging, Drill core analysis, Statistical analysis, Russia—Siberia, Norway—Svalbard

53-903

**Changes of mean sea level and ice condition in Gdynia as indicators of climate changes in the Gulf of Gdańsk.**

Sztobryn, M., Kańs, M., Staskiewicz, A., NATO Advanced Research Workshop on Sensitivity of North Sea, Baltic Sea and Black Sea to Anthropogenic and Climatic Changes, Varna, Bulgaria, Nov. 14-18, 1995. Proceedings. ASI, Series 2. Environment. Vol.27. Edited by E. Özsoy and A. Mikaelyan, Dordrecht, Kluwer Academic Publishers, 1997, p.1-9, 10 refs.

DLC GC681.S43 1997

Oceanography, Hydrology, Climatic changes, Sea level, Storms, Water transport, Sea ice, Ice conditions, Seasonal variations, Statistical analysis, Poland—Gdańsk, Gulf

53-904

**Convection in the Baltic Sea—a numerical process study.**

Backhaus, J.O., Wehde, H., NATO Advanced Research Workshop on Sensitivity of North Sea, Baltic Sea and Black Sea to Anthropogenic and Climatic Changes, Varna, Bulgaria, Nov. 14-18, 1995. Proceedings. ASI, Series 2. Environment. Vol.27. Edited by E. Özsoy and A. Mikaelyan, Dordrecht, Kluwer Academic Publishers, 1997, p.295-309, 41 refs.

DLC GC681.S43 1997

Oceanography, Subpolar regions, Water temperature, Convection, Ventilation, Stratification, Turbulent diffusion, Models, Profiles, Thermodynamics, Baltic Sea

53-905

**Ice/ocean model for North and Baltic Sea.**

Schrum, C., NATO Advanced Research Workshop on Sensitivity of North Sea, Baltic Sea and Black Sea to Anthropogenic and Climatic Changes, Varna, Bulgaria, Nov. 14-18, 1995. Proceedings. ASI, Series 2. Environment. Vol.27. Edited by E. Özsoy and A. Mikaelyan, Dordrecht, Kluwer Academic Publishers, 1997, p.311-325, 32 refs.

DLC GC681.S43 1997

Oceanography, Climatology, Subpolar regions, Ocean currents, Surface temperature, Sea ice distribution, Ice growth, Salinity, Water temperature, Stratification, Seasonal variations, Computerized simulation, North Sea, Baltic Sea



53-906

**Quantification of transports to Skagerrak.**  
Skogen, M.D., Eriksrød, G., Svendsen, E., NATO Advanced Research Workshop on Sensitivity of North Sea, Baltic Sea and Black Sea to Anthropogenic and Climatic Changes, Varna, Bulgaria, Nov. 14-18, 1995. Proceedings. ASI, Series 2. Environment. Vol.27. Edited by E. Özsoy and A. Mikaelyan, Dordrecht, Kluwer Academic Publishers, 1997, p.327-339, 35 refs.  
DLC GC681.S43 1997  
Oceanography, Subpolar regions, Ocean currents, Hydrography, Water transport, Wind factors, Biomass, Sediment transport, Hydrodynamics, Models, North Sea

53-907

**Proceedings. Cold regions impact on civil works.**  
International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998, Newcomb, D.E., ed, Reston, VA, American Society of Civil Engineers (ASCE), 1998, 766p., Refs. passim. For individual papers see 53-908 through 53-977.  
DLC TA713.I55 1998  
Cold weather construction, Road maintenance, Pavements, Subgrade soils, Soil freezing, Frost penetration, Frost action, Frost resistance, Frost protection, Soil stabilization, Geotextiles, Winter concreting

53-908

**Blue Earth County Superpave Level I Project CSAH 8 from TH 22 to TR 167.**  
Forsberg, A., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.1-11.  
DLC TA713.I55 1998  
Pavements, Paving, Bitumens, Aggregates, Road maintenance, Cold weather construction, Cold weather tests, Cost analysis, United States—Minnesota

53-909

**Stearns County Superpave Project CSAH 75.**  
Weiszhaar, D.J., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.12-19, 1 ref.  
DLC TA713.I55 1998  
Pavements, Paving, Bitumens, Road maintenance, Cold weather construction, Cold weather tests, Cost analysis, United States—Minnesota

53-910

**Thermal contraction of an asphalt concrete mixture.**  
Zeng, H.Y., Vinson, T.S., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.20-33, 19 refs.  
DLC TA713.I55 1998  
Bituminous concretes, Concrete pavements, Thermal stresses, Cold stress, Frost action, Cracking (fracturing), Cold weather tests, Low temperature tests, Thermal analysis, Structural analysis

53-911

**Pavement thermal impact on discontinuous permafrost.**  
Nidowicz, B., Shur, I.U.L., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.34-45, 18 refs.  
DLC TA713.I55 1998  
Permafrost beneath roads, Discontinuous permafrost, Active layer, Permafrost thermal properties, Permafrost heat transfer, Permafrost preservation, Frost penetration, Thaw depth, Road maintenance

53-912

**Improving prediction of frost penetration.**  
Cole, S.W., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.46-56, 4 refs.  
DLC TA713.I55 1998  
Soil freezing, Frozen ground thermodynamics, Freezing front, Frost penetration, Geothermy, Soil temperature, Freezing indexes, Frost forecasting, Mathematical models

53-913

**Case study: shallow insulated foundation failure due to frost action.**  
Woodworth, J.R., Lyytinen, K.A., Krzewinski, T.G., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.57-69, 2 refs.  
DLC TA713.I55 1998  
Houses, Foundations, Frost penetration, Frost protection, Thermal insulation, Frost action, Settlement (structural), Cold weather construction, United States—Minnesota—Duluth

53-914

**Russian construction complex in transition to market economy.**  
Shishkin, A.A., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.70-75.  
DLC TA713.I55 1998  
Houses, Residential buildings, Cold weather construction, Regional planning, Economic development, Cost analysis, Russia—Karelia

53-915

**Description and a thermal study of an exterior insulation and finish system used in China.**  
Yi, C., Xu, P., Sui, C.F., Pang, Z.Y., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.76-85, 4 refs.  
DLC TA713.I55 1998  
Residential buildings, Walls, Thermal insulation, Heating, Weatherproofing, Cold weather construction, China

53-916

**Considerations for deactivating Army buildings in Alaska.**  
Flanders, S.N., MP 5241, International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.86-95, 2 refs.  
DLC TA713.I55 1998  
Military facilities, Buildings, Utilities, Cold weather construction, Weatherproofing, Thermal analysis, Cost analysis, United States—Alaska

Three buildings on Army bases in Alaska (a barracks and a theater at Fort Richardson, near Anchorage, and a single-family housing unit at Fort Greely, near Delta Junction and 90 miles southeast of Fairbanks) were deactivated to study strategies to allow them to be unheated and subsequently reactivated with minimum expense. The study demonstrated that draining plumbing systems, recharging them with propylene glycol, and rehydrating them effectively minimized damage. Damage to interior finish was minimal after 2.3 years. Life-cycle energy cost calculations indicated that deactivating a single-family dwelling would save between \$3,800 and \$7,300 per year, depending on location, and that deactivating a barracks would save between \$17,300 and \$33,400 per year, depending on location, versus keeping them heated. The product of the study was an easy-to-follow *Handbook for Activation and Deactivation of Buildings*.

53-917

**Wastewater lagoons for cold regions.**  
McAnaney, D.W., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.96-106, 5 refs.  
DLC TA713.I55 1998  
Sewage disposal, Waste treatment, Water treatment, Cold weather operation, Sanitary engineering, Ponds, Aeration, Bacteria, Microbiology, Sludges

53-918

**Wastewater treatment plant odor control using a biofiltration system in Duluth, Minnesota.**  
Boyette, R.A., Bergstedt, L., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.107-118, 3 refs.  
DLC TA713.I55 1998  
Sewage disposal, Waste treatment, Water treatment, Cold weather operation, Sanitary engineering, Microbiology, Air flow, Filters, Cost analysis, United States—Minnesota—Duluth

53-919

**Treatment by freeze-thaw of membrane concentrates.**  
Facey, R.M., Smith, D.W., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.119-130, 3 refs.  
DLC TA713.I55 1998  
Water pollution, Water treatment, Waste treatment, Waste disposal, Sanitary engineering, Frozen liquids, Artificial freezing, Artificial thawing

53-920

**Variable slip friction measurement techniques for snow and ice operations.**  
Fleege, E.J., Wambold, J.C., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.131-142, 3 refs.  
DLC TA713.I55 1998  
Road icing, Rubber ice friction, Rubber snow friction, Skid resistance, Monitors, Salting, Road maintenance

53-921

**Snow deformation beneath a vertically loaded plate formation of pressure bulb with limited lateral displacement.**  
Shoop, S.A., Alger, R.G., MP 5242, International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.143-150, 5 refs.  
DLC TA713.I55 1998  
Snow strength, Snow hardness, Snow compression, Snow density, Snow deformation, Snow vehicles, Trafficability, Bearing tests

The development of models to predict mobility over snow-covered terrains relies on a thorough understanding of the reaction of a snow mass to a vehicle load. Field experiments analyzing snow deformation under vehicles presented questions regarding the extent of lateral deformation beneath a track or wheel and the cause of lateral deformation. Thus, experiments to examine the deformation of snow under a vertically loaded plate were performed in the laboratory. The experiments show that there is often very little lateral movement of the snow even though the vertical deformation extends beyond the boundaries of the plate, giving the appearance of lateral deformation. The existence of any lateral deformation is limited and is dependent on the snow density, aging, and possibly the load rate. Lateral expansion did not occur in snow with densities less than 0.25 g/cc. Also, dependent upon the degree of particle disturbance, aging of as little as 2 hours can cause what appears to be lateral displacement, but is more likely the particles acting as a bonded mass instead of as individuals.



53-922

**Ice expansion.**

Koscik, K., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.151-155.

DLC TA713.I55 1998

Lake ice, Ice push, Ice erosion, Shore erosion, Ice control, United States—Wisconsin

53-923

**Superpave™ runway in the "Icebox of the Nation".**

Wegman, D., Solsaa, A., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.156-161, 6 refs.

DLC TA713.I55 1998

Runways, Pavements, Bitumens, Polymers, Frost protection, Cold weather construction, United States—Minnesota—International Falls

53-924

**Thermal stress restrained specimen test user survey.**

Vinson, T.S., Hicks, R.G., Whiting, B., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.162-175, 12 refs.

DLC TA713.I55 1998

Bituminous concretes, Concrete pavements, Thermal stresses, Cold stress, Cracking (fracturing), Frost resistance, Cold weather tests, Low temperature tests, Road maintenance

53-925

**Constructability of polymer-modified asphalts in Alaska.**

Aleshire, L., Mann, M., Zubeck, H., Raad, L., Ryer, J., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.176-187, 14 refs.

DLC TA713.I55 1998

Pavements, Bitumens, Polymers, Frost resistance, Cold weather tests, Road maintenance, United States—Alaska

53-926

**Improved spring load restriction guidelines using mechanistic analysis.**

Van Deusen, D., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.188-199, 17 refs.

DLC TA713.I55 1998

Pavements, Ground thawing, Thaw depth, Thaw weakening, Frost forecasting, Weather forecasting, Highway planning, Road maintenance, United States—Minnesota

53-927

**Predicting strength of subgrades during spring thaw with seismic methods.**

Mactutis, J., Nazarian, S., Picornell, M., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.200-211, 4 refs.

DLC TA713.I55 1998

Pavements, Subgrade soils, Ground thawing, Thaw depth, Thaw weakening, Soil strength, Soil trafficability, Freeze thaw tests, Road maintenance

53-928

**Ground water remediation/frozen soil reactor gates.**

Andersland, O.B., Criddle, C.S., Wallace, R.B., Wiggert, D.C., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.212-223, 13 refs.

DLC TA713.I55 1998

Oil spills, Soil pollution, Ground water, Water pollution, Artificial freezing, Soil freezing, Soil stabilization, Land reclamation, Water treatment

53-929

**Thermally enhanced bioventing at a cold regions UST site: a case study.**

Filler, D.M., Carlson, R.F., Zarling, J.P., Arambarri, J.W., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.224-235, 9 refs.

DLC TA713.I55 1998

Oil storage, Storage tanks, Underground storage, Oil spills, Soil pollution, Permafrost control, Frozen ground thermodynamics, Thermal insulation, Heating, Aeration, Soil microbiology, Land reclamation, United States—Alaska—Fairbanks

53-930

**Cyanide degradation in a pilot scale SBBR.**

Pilon, T.A., White, D.M., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.236-242, 9 refs.

DLC TA713.I55 1998

Gold, Tailings, Leaching, Soil pollution, Water pollution, Water treatment, Waste disposal, Microbiology, Land reclamation

53-931

**Management of winter diffuse pollution from urban areas: effect of drainage and deicing operations.**

Smith, D.W., Facey, R.M., Novotny, V., Kuemmel, D.A., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.243-257, 6 refs.

DLC TA713.I55 1998

Salting, Chemical ice prevention, Snow removal, Snowmelt, Salting, Chemical ice prevention, Water pollution, Soil pollution, Drains, Sanitary engineering, Municipal engineering, Environmental protection

53-932

**Low-temperature repair of the ice condenser floor slab at the Sequoyah Nuclear Power Plant.**

Korhonen, C.J., Hughes, J., Best, F., Mass, G., MP 5243, International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.258-270, 7 refs.

DLC TA713.I55 1998

Nuclear power, Cooling systems, Floors, Lightweight concretes, Concrete slabs, Concrete freezing, Concrete curing, Concrete placing, Winter concreting, Concrete admixtures, Antifreezes, Water cement ratio, Frost resistance, Frost protection, United States—Tennessee—Chattanooga

A lightweight portland cement concrete was pumped more than 100 m horizontally and 10 m vertically and placed, finished, and cured at below-freezing temperatures with minimal thermal protection. A low-temperature accelerator, two plasticizers, and a low w/c (water/cementitious) ratio produced the desired results.

53-933

**Intake canal modifications improve power plant efficiency.**

Toso, J., Larson, J., Gehlhar, J., Hathaway, C., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.271-281, 4 refs.

DLC TA713.I55 1998

Electric power, Water intakes, Channels (waterways), Water flow, Flow control, Water temperature, Temperature control, Cooling systems

53-934

**Natural dewatering of alum sludge in freezing beds.**

Martel, C.J., MP 5244, International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.282-291, 9 refs.

DLC TA713.I55 1998

Sludges, Water treatment, Waste treatment, Sewage disposal, Freeze drying, Artificial freezing, Artificial thawing, Ponds, Sanitary engineering

After several years of research, the U.S. Army Cold Regions Research and Engineering Laboratory (CRREL) has developed a new unit operation for dewatering sludge called a sludge freezing bed. It differs from other natural freezing operations in that it maximizes the amount of sludge that can be frozen. The freezing bed is a particularly attractive alternative for dewatering alum sludge, because no conditioning chemicals are required and the remaining granular material can be left to accumulate in the bed for several years. Equations are presented that can be used to size the freezing bed according to local climatic conditions.

53-935

**Mechanical implications of using insulation layers in pavements.**

Doré, G., Konrad, J.M., Roy, M., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.292-303, 6 refs.

DLC TA713.I55 1998

Pavements, Frost resistance, Frost protection, Thermal insulation, Freeze thaw tests, Strain tests, Road maintenance

53-936

**Modelling of road surface temperatures in winter.**

Kilpeläinen, M., Ravaska, O., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.304-315, 7 refs.

DLC TA713.I55 1998

Road icing, Pavements, Surface temperature, Air temperature, Frost penetration, Frost forecasting, Weather forecasting, Road maintenance, Computerized simulation

53-937

**Spreading measurements and longitudinal cracking: Sheep Creek-Goldstream Road, Fairbanks, Alaska.**

Scher, R.L., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.316-327, 8 refs.

DLC TA713.I55 1998

Pavements, Cracking (fracturing), Permafrost beneath roads, Frost action, Road maintenance, United States—Alaska—Fairbanks

53-938

**Geotextile-reinforced pavement over spreading embankments: Goldstream Road, Alaska (performance 1994-1998).**

Scher, R.L., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.328-338, 9 refs.  
DLC TA713.I55 1998

Pavements, Cracking (fracturing), Embankments, Permafrost beneath roads, Frost action, Frost protection, Geotextiles, Soil stabilization, Road maintenance, United States—Alaska—Fairbanks

53-939

**Interface friction of a soil-fabric-aggregate system.**

Bearden, J., Labuz, J., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.339-350, 9 refs.  
DLC TA713.I55 1998

Roadbeds, Gravel, Aggregates, Geotextiles, Subgrade soils, Soil stabilization, Subgrade maintenance, Road maintenance

53-940

**Hydraulic behaviour of geosynthetics in freezing conditions.**

Larrivée, S., Lafleur, J., Savard, Y., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.351-361, 9 refs.  
DLC TA713.I55 1998

Pavements, Geotextiles, Drains, Subsurface drainage, Frost protection, Road maintenance

53-941

**Detecting ice jam events.**

Zufelt, J.E., MP 5245, International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.362-372, 10 refs.  
DLC TA713.I55 1998

River ice, Ice jams, Ice detection, Ice forecasting, Ice control, Warning systems

Ice jams result in over \$125 million in damages annually across the northern United States. In many communities, ice jams are a recurrent threat, prompting mitigation measures to minimize their impact. Some ice jam control measures are designed to operate successfully with little or no human intervention or control, such as an ice control structure designed to retain ice upstream of a community. Other forms of ice control may require operational measures: a crane or backhoe placed at a bridge and only utilized when ice becomes jammed in the opening during an ice run. Identification of when and where ice jams occur is key to the successful design, construction, and operation of ice jam mitigation schemes. This paper presents a compilation of methods used to infer or detect when and where an ice jam has occurred or is impending.

53-942

**Modeling ice-covered rivers using HEC-RAS.**

Daly, S.F., Brunner, G.W., Piper, S., Jensen, M., Tuthill, A.M., MP 5246, International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.373-383, 14 refs.  
DLC TA713.I55 1998

River ice, Ice jams, Ice cover thickness, Ice conditions, Ice loads, Ice water interface, River flow, Ice forecasting, Mathematical models, Computerized simulation

The ability to model ice-covered channels has been added to the Hydrologic Engineering Center's River Analysis System (HEC-RAS). The ice cover thickness and hydraulic roughness can be entered by the user, or the ice cover can be modeled as a wide-river ice jam, in which case the jam thickness is estimated by HEC-RAS. For the wide-river jam, the user enters the material properties of the ice jam and its extent. Information describing the ice cover and ice properties can be entered for each individual cross section using an ice information editor or can be entered for a number of cross sec-

tions using a table. Results can be viewed in tabular or graphical form. Graphical output includes cross section plots, profile plots, and perspective plots displaying the ice cover extent and thickness. In addition, profile plots of other ice information, such as thickness and volume, can be readily displayed.

53-943

**Case history: design of river crossings for the Trans-Alaska Fiber Optic Cable.**

Thomas, H.P., Selbig, J.W., Hall, R.L., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.384-396, 5 refs.  
DLC TA713.I55 1998

Cables (ropes), Transmission lines, Data transmission, Underground pipelines, Pipe laying, River crossings, Water erosion, Flood control, United States—Alaska

53-944

**City of Duluth long term street improvement program-history: current practice and future considerations.**

Prusak, D.J., Krzewinski, T.G., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.397-407, 7 refs.  
DLC TA713.I55 1998

Urban planning, Highway planning, Road maintenance, Streets, Pavements, Subgrade soils, Frost penetration, Frost action, Frost protection, Cold weather construction, Cost analysis, United States—Minnesota—Duluth

53-945

**Blue Earth County Finn Road/Oil Gravel Project CSAH 24 from Th 30 to CSAH 25.**

Forsberg, A., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.408-419.  
DLC TA713.I55 1998

Pavements, Bitumens, Aggregates, Gravel, Road maintenance, Subgrade maintenance, Cost analysis, United States—Minnesota

53-946

**Instrumentation of reinforcement, separation and drainage geosynthetic test sections used in the reconstruction of a highway in Maine.**

Hayden, S.A., Christopher, B.R., Humphrey, D.N., Fetton, C., Dunn, P.A., Jr., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.420-433, 7 refs.  
DLC TA713.I55 1998

Pavements, Subgrade soils, Frost action, Geotextiles, Drainage, Soil stabilization, Frost protection, Road maintenance, Subgrade maintenance, United States—Maine

53-947

**Reducing frost heave with capillary barriers: interim results.**

Henry, K.S., Holtz, R.D., Ellis, E., MP 5247, International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.434-436.  
DLC TA713.I55 1998

Subgrade soils, Soil freezing, Frost heave, Frost protection, Soil water migration, Capillarity, Geotextiles, Soil stabilization, Vapor barriers, Waterproofing, Subgrade maintenance, Road maintenance

Capillary barriers are placed between the water table and the freezing front in soils to potentially reduce/prevent frost heave above the barrier by restricting water flow to the freezing front. Research about the use of geosynthetic capillary barriers in pavements so that fine-grained soils might be allowed in the structural section is now being conducted. Geotextiles and geocomposites were placed in frost-sus-

ceptible soil that was frozen at conditions representative of those in the field. Results indicate that geotextiles as received from the manufacturer were effective capillary barriers, but they were markedly less effective after they are moistened and have soil fines in them. Moistened geocomposites containing soil fines were more effective capillary barriers than moistened geotextiles for the soil and conditions tested.

53-948

**Experiments on frost heaving force of ground anchor.**

Nishikawa, J., Kaneta, H., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.437-446, 4 refs.  
DLC TA713.I55 1998

Soil freezing, Frost heave, Anchors, Frost protection, Soil stabilization, Slope protection, Frozen ground compression, Soil pressure

53-949

**Tilttable windtunnel for investigating icing of planar surfaces.**

Streitz, J., Ettema, R., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.447-456, 2 refs.  
DLC TA713.I55 1998

Road icing, Aircraft icing, Ice accretion, Glaze, Naleds, Ice loads, Wind tunnels, Environmental tests

53-950

**Ice-cover thickening at river-reservoir confluences: a case study.**

White, K.D., Acone, S.E., MP 5248, International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.457-466, 17 refs.  
DLC TA713.I55 1998

River ice, Ice breakup, Frazil ice, Ice growth, Ice jams, Ice forecasting, Reservoirs, Flood forecasting, Mathematical models, Computerized simulation, United States—Maine—Fort Fairfield

Breakup ice jams commonly form at locations where the river slope changes from steep to mild, such as river-reservoir confluence areas. Several mechanisms favor the formation of ice jams at these locations, including hydraulic (e.g., changes in discharge and stage may result in breakup of the ice cover on the river but not on the reservoir). In some cases, frazil ice deposition results in thicker ice at the confluence than in the river upstream, thus providing increased resistance to the breakup and transport of ice through the confluence area. The Aroostook River at Fort Fairfield, ME, provides an example of this situation. Breakup ice jams that form at the confluence of the river and the pool formed by Tinker Dam have caused severe flooding in Fort Fairfield. The present analysis addresses two possible causes of ice thickening at the confluence: shoving during initial ice-cover formation and frazil deposition after initial ice-cover formation. The location and thickness of frazil ice deposits has traditionally been predicted using a critical velocity criterion. However, in a number of locations, including the Aroostook River, field data indicate that this criterion is inadequate. Recently developed frazil transport theory shows promise as a more accurate predictor of frazil deposition.

53-951

**Case study: an in-water winter boat storage program.**

Wortley, C.A., Wolf, C., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.467-478, 5 refs.  
DLC TA713.I55 1998

Ports, Docks, Lake ice, Ice conditions, Ice control, Cold weather operation, Cost analysis, United States—Ohio—Erie, Lake

53-952

**Performance of fiber reinforced concrete with respect to frost resistance: a case study.**

Xu, P., Yi, C., Fan, C.M., Joshi, R.C., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.479-488, 7 refs.

DLC TA713.I55 1998

Concrete pavements, Reinforced concretes, Concrete durability, Concrete strength, Frost resistance, Freeze thaw tests, Cold weather tests, Road maintenance, China

53-953

**Prevention of materials-related distress in concrete pavements in cold regions.**

Van Dam, T., Aldrich, E., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.489-500, 14 refs.

DLC TA713.I55 1998

Concrete pavements, Concrete aggregates, Concrete admixtures, Concrete durability, Frost action, Frost resistance, Frost protection, Road maintenance

53-954

**Winter tenting of highway pavements.**

Kestler, M.A., Krat, A.S., Roberts, G., MP 5249, International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.501-512, 6 refs.

DLC TA713.I55 1998

Pavements, Subgrade soils, Frost resistance, Frost action, Frost heave, Salting, Cracking (fracturing), Cold weather tests, Road maintenance

It is estimated that pavements subjected to seasonal freezing have approximately 50% of the maintenance free life of pavements in non-frost areas. Non-uniform frost heaving during the winter and early spring and loss of pavement strength during thawing result in a variety of pavement distresses including cracking and rutting. In contrast to these distresses, which over the years have received considerable attention in the literature, tenting has received very little attention. Tenting consisted of localized heaving in the immediate vicinity of transverse cracks. It typically produces a highly irregular riding surface, particularly toward the end of the winter season, and can lead to rapid premature deterioration of the pavement surface. There have been unofficial estimates of as much as 10 cm of rise over a horizontal distance of approximately 3.3 m. In contrast to most frost-related distresses, tenting is not unique to low volume roads; it occurs just as frequently on highways that have been designed for high volumes of traffic and for withstanding freezing and thaw weakening. Furthermore, it is frequently exhibited by pavements that are in otherwise good condition. The distribution of salinity (from road salt) within the base course is suspected to be a primary contributor toward tenting. This paper discusses results from field and lab testing and theorizes about the causes and mechanics of tenting.

53-955

**Evaluation of wood chip fill on MN TH 53.**

Schrader, C., Lukanen, E., Schmidt, E., Cochran, G., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.513-523, 8 refs.

DLC TA713.I55 1998

Peat, Swamps, Embankments, Earth fills, Wood, Soil stabilization, Slope protection, Road maintenance, United States—Minnesota

53-956

**Deformability parameters of shredded tire lightweight fills.**

Heimdahl, T.C., Drescher, A., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.524-535, 9 refs.

DLC TA713.I55 1998

Embankments, Earth fills, Rubber, Soil stabilization, Road maintenance

53-957

**Effect of deforestation on the stability of slopes.**

Eigenbrod, K.D., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.536-547, 7 refs.

DLC TA713.I55 1998

Slope stability, Glacial deposits, Lacustrine deposits, Soil erosion, Vegetation factors, Landslides, Canada—Ontario—Nipigon

53-958

**Cold formed steel arches for Antarctica.**

Thulin, F.A., Jr., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.548-557, 4 refs.

DLC TA713.I55 1998

Buildings, Roofs, Steel structures, Snow loads, Wind pressure, Design criteria, Cold weather construction, Antarctica—Amundsen-Scott Station

53-959

**Air-formed concrete shells for cold regions.**

Quimby, T.B., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.558-567, 8 refs.

DLC TA713.I55 1998

Buildings, Roofs, Concrete structures, Concrete placing, Winter concreting, Cold weather construction

53-960

**End run scheduling to beat cold weather costs.**

Vasonis, G.A., Litman, J., Walker, H.C., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.568-575.

DLC TA713.I55 1998

Buildings, Concrete structures, Concrete placing, Winter concreting, Cold weather construction, Cost analysis, United States—Minnesota—Duluth

53-961

**Subgrade and base—some considerations in seasonally cold regions.**

Cochran, G.R., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.576-587, 42 refs.

DLC TA713.I55 1998

Pavements, Subgrade soils, Frost resistance, Frost penetration, Frost action, Thaw weakening, Frost protection, Subgrade preparation, Subgrade maintenance, Road maintenance

53-962

**Relating climate factors to pavement subsurface conditions.**

Ovik, J., Birgisson, B., Newcomb, D.E., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.588-599, 8 refs.

DLC TA713.I55 1998

Pavements, Subgrade soils, Soil freezing, Frost penetration, Thaw depth, Freezing indexes, Frost forecasting, Weather forecasting, Road maintenance, United States—Minnesota

53-963

**Temperature distribution characteristics at three LTPP seasonal monitoring sites in cold regions.**

Zhou, H.P., Rada, G., Elkins, G., Lopez, A., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.600-611, 4 refs.

DLC TA713.I55 1998

Pavements, Bituminous concretes, Concrete pavements, Subgrade soils, Soil temperature, Frost penetration, Thaw depth, Frost resistance, Road maintenance, United States—Minnesota, Canada—Manitoba

53-964

**Freeze-thaw effects on a 10% sand-bentonite mixture.**

Quiroz, J.D., Zimmie, T.F., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.612-623, 12 refs.

DLC TA713.I55 1998

Waste disposal, Earth fills, Sands, Clay soils, Frost resistance, Frost protection, Freeze thaw tests, Soil water migration, Seepage, Permeability, Waterproofing

53-965

**Comparative frost heave test results in Japan.**

Ono, T., Fukuda, M., Mitachi, T., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.624-635, 5 refs.

DLC TA713.I55 1998

Soil freezing, Frost heave, Frozen ground strength, Frost resistance, Soil tests, Japan

53-966

**Experimentally determined freeze-thaw effects on the hydraulic conductivity of geosynthetic clay liners.**

Olsta, J.T., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.636-639, 6 refs.

DLC TA713.I55 1998

Waste disposal, Earth fills, Clay soils, Geotextiles, Waterproofing, Permeability, Seepage, Frost resistance, Frost protection, Freeze thaw tests

53-967

**Bridge deck waterproofing membrane evaluation.**

Johnson, E., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.640-650, 2 refs.

DLC TA713.I55 1998

Bridges, Bituminous concretes, Concrete pavements, Geotextiles, Waterproofing, United States—Alaska

53-968

**Creating durable parking structures for the harsh Minnesota winters.**

Litman, J., Vasonis, G.A., Smith, A., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.651-660.

DLC TA713.I55 1998

Buildings, Concrete structures, Concrete durability, Concrete placing, Winter concreting, Cold weather construction, United States—Minnesota—Duluth

53-969

**Computer tool for predicting the cooling of asphalt pavements.**

Voller, V.R., Newcomb, D.E., Chadbourn, B., De Sombre, R., Timun, D., Luoma, J.A., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.661-671, 8 refs.

DLC TA713.I55 1998

Bituminous concretes, Concrete pavements, Concrete placing, Winter concreting, Cold weather construction, Cooling rate, Computer programs, Road maintenance

53-970

**Engineering cold regions maintenance equipment for the 21st century.**

Smithson, L.D., Smith, D.E., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.672-683, 3 refs.

DLC TA713.I55 1998

Motor vehicles, Snow removal equipment, Cold weather operation, Cost analysis, Road maintenance

53-971

**Design and operation of Single-Point Urban Interchanges in cold weather regions.**

Morrison, R.D., Williams, T.W., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.684-695, 6 refs.

DLC TA713.I55 1998

Urban planning, Highway planning, Cold weather operation, Safety, Snow removal, Road maintenance

53-972

**Snowmobile trail planning and design.**

Fields, K., Sproule, W.J., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.696-705, 6 refs.

DLC TA713.I55 1998

Snow vehicles, Snow roads, Safety, Environmental protection

53-973

**Autoclaved water permeability test.**

Li, Z.J., Chau, C.K., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.706-709, 3 refs.

DLC TA713.I55 1998

Concrete durability, Permeability, Moisture detection, Moisture meters, Waterproofing

53-974

**Arctic grout performance evaluations.**

Miltenberger, M.A., Gulyas, R.J., Sprouts, S., Coverdale, R.T., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.710-720, 3 refs.

DLC TA713.I55 1998

Concrete piles, Grouting, Permafrost beneath structures, Permafrost control, Frozen ground strength, Frozen ground compression, Frost protection, Pile load tests, Cold weather construction, Canada—Northwest Territories—Yellowknife

53-975

**How to make concrete that will be immune to the effects of freezing and thawing.**

Mather, B., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.721-730, 34 refs.

DLC TA713.I55 1998

Concrete freezing, Concrete strength, Concrete durability, Concrete aggregates, Concrete curing, Air entrainment, Winter concreting, Frost resistance, Frost protection, Cold weather construction

53-976

**Software to establish seasonal load limits for flexible pavements.**

Bosscher, P.J., Jong, D.T., Benson, C.H., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.731-747, 14 refs.

DLC TA713.I55 1998

Pavements, Subgrade soils, Soil freezing, Frost penetration, Thaw depth, Frost forecasting, Trafficability, Highway planning, Road maintenance, Computer programs

53-977

**Reconstruction of St. Louis CSAH 48-LaVaque Road near Duluth, Minnesota.**

Ulring, J.D., Lyytinen, K.A., Krzewinski, T.G., International Conference on Cold Regions Engineering, 9th, Duluth, MN, Sep. 27-30, 1998. Proceedings. Cold regions impact on civil works. Edited by D.E. Newcomb, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.748-760.

DLC TA713.I55 1998

Pavements, Frost action, Roadbeds, Embankments, Earth fills, Swamps, Geotextiles, Frost protection, Waterproofing, Soil stabilization, Road maintenance, United States—Minnesota—Duluth

53-978

**Does clast size influence fabric strength?**

Kjaer, K.H., Krüger, J., *Journal of sedimentary research A*, Sep. 1998, 68(5), p.746-749, 29 refs. Frozen rock strength, Subglacial observations, Glacial deposits, Glacial till, Denmark, Iceland

53-979

**Modern nearshore cold-temperate calcareous sediments in the Troms District, northern Norway.**

Freiwald, A., *Journal of sedimentary research A*, Sep. 1998, 68(5), p.763-776, Refs. p.775-776. Coastal topographic features, Sediments, Sediment transport, Ecology, Algae, Acclimatization, Solar radiation, Oceanography, Hydrography, Air temperature, Marine deposits, Climatic factors, Gravel, Sands, Norway

53-980

**Comparing sea-ice sediment load with Beaufort Sea shelf deposits: is entrainment selective.**

Reimnitz, E., McCormick, M., Bischof, J., Darby, D.A., *Journal of sedimentary research A*, Sep. 1998, 68(5), p.777-787, Refs. p.786.

Marine deposits, Sediment transport, Sea ice, Ice rafting, Ice composition, Ice, Impurities, Chemical analysis, Minerals, Lithology, Sands

53-981

**Origin of the fabric of laminated fine-grained glaciolacustrine deposits.**

O'Brien, N.R., Pietraszek-Mattner, S., *Journal of sedimentary research A*, Sep. 1998, 68(5), p.832-840, Refs. p.839-840.

Glacial deposits, Lacustrine deposits, Pleistocene, Clays, Experimentation, Laminar flow, Fossils, Microstructure, Structural analysis, United States—New York

53-982

**Frolikha Fan: a large Pleistocene glaciolacustrine outwash fan in northern Lake Baikal, Siberia.**

Back, S., De Batist, M., Kirillov, P., Strecker, M.R., Vanhauwaert, P., *Journal of sedimentary research A*, Sep. 1998, 68(5), p.841-849, Refs. p.848-849. Glacial deposits, Lacustrine deposits, Glaciation, Pleistocene, Bottom topography, Glacial lakes, Seismic surveys, Moraines, Glacier surges, Glacial geology, Geomorphology, Outwash, Russia—Baykal, Lake

53-983

**Partitioning of eolian and hemipelagic sediment in eastern equatorial Pacific core TR 163-31B and the Late Quaternary paleoclimate of the northern Andes.**

Boven, K.L., Rea, D.K., *Journal of sedimentary research A*, Sep. 1998, 68(5), p.850-855, Refs. p.854-855.

Paleoclimatology, Quaternary deposits, Eolian soils, Models, Sediments, Drill core analysis, Radioactive age determination, Grain size, Minerals, Marine deposits, Pacific Ocean, Andes

53-984

**Field monitoring of the ice load of an icebreaker propeller blade using fibre optic strain gauges.**

Morin, A., Caron, S., Van Neste, R., Edgcombe, M.H., *SPIE—The International Society for Optical Engineering. Proceedings*, 1996, Vol.2718, Smart structures and materials 1996: Smart sensing, processing, and instrumentation. Edited by K.A. Murphy and D.R. Huston, p.427-438, 1 ref.

DLC TA418.9.S62S52983 1996

Ice loads, Icebreakers, Strain measuring instruments, Propellers, Experimentation, Strain tests, Optical properties

53-985

**Coastal erosion along a rapidly emerging shore: Manitounek Sound, Canada. [Érosion littorale le long d'une côte en émergence rapide: détroit de Manitounek, Canada]**

Ruz, M.H., Beaulieu, N., *Annales de géographie*, Mar. 1998, No.600, p.160-178, In French with English summary. 34 refs.

Climatology, Geomorphology, Subarctic landscapes, Shore erosion, Shoreline modification, Permafrost transformation, Tectonics, Isostasy, Littoral zone, Freeze thaw cycles, Canada—Quebec—Hudson Bay

53-986

**Sensitivity of the LLN climate model to the astronomical and CO<sub>2</sub> forcings over the last 200 ky.**

Berger, A., Loutre, M.F., Gallée, H., *Climatic dynamics*, Aug. 1998, 14(9), p.615-629, 52 refs.

Paleoclimatology, Ice age theory, Ice sheets, Glacier oscillation, Ice volume, Climatic changes, Atmospheric composition, Carbon dioxide, Insolation, Simulation

53-987

**Effect of orientation on broadband acoustic scattering of antarctic krill *Euphausia superba*: implications for inverting zooplankton spectral acoustic signatures for angle of orientation.**

Traykovski, L.V.M., O'Driscoll, R.L., McGehee, D.E., *Acoustical Society of America. Journal*, Oct. 1998, 104(4), p.2121-2135, 50 refs.

Marine biology, Plankton, Biomass, Underwater acoustics, Sound waves, Detection, Orientation, Backscattering, Imaging, Simulation, Spectra

53-988

**Patterns and mechanisms of transpiration in a large subalpine Norway spruce (*Picea abies* (L.) Karst.).**

Herzog, K.M., Thum, R., Kronfuß, G., Heldstab, H.J., Häslar, R., *Ecological research*, Aug. 1998, 13(2), p.105-116, 45 refs.

Plant ecology, Trees (plants), Forest canopy, Alpine landscapes, Water balance, Interception, Transpiration, Plant tissues, Fluid flow, Flow measurement, Diurnal variations, Switzerland—Alps

53-989

**Physiological tolerance of *Camellia rusticana* leaves to heavy snowfall environments: the effects of prolonged snow cover on evergreen leaves.**

Kume, A., Tanaka, C., Matsumoto, S., Ino, Y., *Ecological research*, Aug. 1998, 13(2), p.117-124, 14 refs.

Plant physiology, Plant ecology, Trees (plants), Plant tissues, Photosynthesis, Chlorophylls, Snow cover effect, Simulation, Cold tolerance, Cold weather tests, Japan

53-990

**Laboratory target strength measurements of free-swimming antarctic krill (*Euphausia superba*).**

Pauly, T., Penrose, J.D., *Acoustical Society of America. Journal*, June 1998, 103(6), p.3268-3280, 35 refs.

Marine biology, Biomass, Physical properties, Ecology, Plankton, Underwater acoustics, Sound waves, Backscattering, Indexes (ratios), Detection, Simulation

53-991

**100 years of sediment accumulation history of organic halogens and heavy metals in recipient and nonrecipient lakes of pulping industry in Finland.**

Kähkönen, M.A., Suominen, K.P., Manninen, P.K.G., Salkinoja-Salonen, M.S., *Environmental science & technology*, June 15, 1998, 32(12), p.1741-1746, 29 refs.

Limnology, Subpolar regions, Lacustrine deposits, Water pollution, Sedimentation, Hydrocarbons, Hydrogeochemistry, Waste treatment, Water treatment, Environmental impact, Finland

53-992

**Occurrence, sedimentation, and spatial variations of organochlorine contaminants in settling particulate matter and sediments in the northern part of the Baltic Sea.**

Strandberg, B., et al, *Environmental science & technology*, June 15, 1998, 32(12), p.1754-1759, 36 refs. Oceanography, Subpolar regions, Hydrocarbons, Particles, Bottom sediment, Water pollution, Sedimentation, Environmental tests, Sampling, Profiles, Statistical analysis, Baltic Sea

53-993

**Regional patterns in organochlorine contamination of saxifrage from Ellesmere Island in the High Arctic (77-81°N).**

France, R.L., Muir, D.G.C., Segstro, M.D., *Environmental science & technology*, July 1997, 31(7), p.1879-1882, 32 refs.

Air pollution, Subpolar regions, Aerosols, Organic nuclei, Plant ecology, Trees (plants), Plant tissues, Distribution, Environmental tests, Chemical analysis, Correlation, Origin, Canada—Northwest Territories—Ellesmere Island

53-994

**Enhancement and inhibition of microbial activity in hydrocarbon-contaminated arctic soils: implications for nutrient-amended bioremediation.**

Braddock, J.F., Ruth, M.L., Catterall, P.H., Walworth, J.L., McCarthy, K.A., *Environmental science & technology*, July 1997, 31(7), p.2078-2084, 30 refs.

Soil tests, Subpolar regions, Soil microbiology, Hydrocarbons, Oil spills, Soil pollution, Biomass, Nutrient cycle, Soil conservation, Environmental tests, Simulation, United States—Alaska—Barrow

53-995

**Spatial distribution of hexachlorocyclohexane isomers in the Bering and Chukchi Sea shelf ecosystem.**

Rice, C.P., Shigaev, V.V., *Environmental science & technology*, July 1997, 31(7), p.2092-2097, 22 refs. Oceanography, Subpolar regions, Ecosystems, Water pollution, Hydrocarbons, Ocean currents, Distribution, Environmental tests, Sampling, Chemical analysis, Statistical analysis, Bering Sea, Chukchi Sea

53-996

**Effects of fires on carbon cycling in North American boreal peatlands.**

Zoltai, S.C., Morrissey, L.A., Livingston, G.P., De Groot, W.J., *Environmental reviews*, 1998, 6(1), p.13-24, With French summary. 86 refs.

Plant ecology, Ecosystems, Subarctic landscapes, Forest fires, Carbon dioxide, Geochemical cycles, Peat, Biomass, Wetlands, Water table, Permafrost hydrology, Permafrost transformation, Degradation, Environmental impact, Canada

53-997

**Winterfat (*Eurotia lanata* (Pursh) Mog.) seedbed ecology: low temperature exotherms and cold hardiness in hydrated seeds as influenced by imbibition temperature.**

Bai, Y.G., Booth, D.T., Romo, J.T., *Annals of botany*, May 1998, 81(5), p.595-602, 31 refs.

Plant ecology, Plant tissues, Snowmelt, Saturation, Cooling rate, Cold tolerance, Frost resistance, Low temperature tests, Temperature effects, Cold weather survival, Viability, Scanning electron microscopy, Thermal analysis

53-998

**Variability of characteristics of snow conditions in Carpathian part of CSFR within the period from 1920/21-1984/85. [Variabilita charakteristik snehových pomeru v Karpatské části CSFR v období 1920/21-1984/85]**

Samaj, F., Brázdil, R., Dobrovolný, P., Faško, P., Košťálová, J., Valovič, S., *Bratislava. Hydrometeorologický Ústav. Collection of papers*, 1991, Vol.34, 175p., In Slovak, with Russian and English summaries, list of tables, table of contents and preface. 139 refs.

DLC GB651.B7a Vol.34 1991

Snow accumulation, Snow cover distribution, Snow depth, Snowfall, Snow air interface, Seasonal variations, Climatic factors, Meteorological data, Weather stations, Statistical analysis, Slovakia

53-999

**Active oxygen scavengers during cold acclimation of Scots pine seedlings in relation to freezing tolerance.**

Tao, D.L., Öquist, G., Wingsle, G., *Cryobiology*, Aug. 1998, 37(1), p.38-45, 41 refs.

Cryobiology, Plant physiology, Trees (plants), Plant tissues, Oxygen, Scavenging, Cold tolerance, Acclimatization, Frost resistance, Cold weather tests

53-1000

**Phospholipid analysis and fractional reconstitution of the ice nucleation protein activity purified from *Escherichia coli* overexpressing the *inaZ* gene of *Pseudomonas syringae*.**

Palaiomylitou, M.A., et al, *Cryobiology*, Aug. 1998, 37(1), p.67-76, 28 refs.

Cryobiology, Microbiology, Algae, Ice nuclei, Polymers, Heterogeneous nucleation, Chemical composition, Chemical analysis

53-1001

**Effect of cold shock on protein synthesis and on cryotolerance of cells frozen for long periods in *Lactococcus lactis*.**

Kim, W.S., Khunajakr, N., Dunn, N.W., *Cryobiology*, Aug. 1998, 37(1), p.86-91, 30 refs.

Cryobiology, Microbiology, Bacteria, Cold storage, Cold stress, Freezing, Viability, Cold tolerance, Survival, Low temperature tests, Chemical analysis

53-1002

**Interactions of proline, serine, and leucine with isolated spinach thylakoids: solute loading during freezing is not related to membrane fluidity.**

Popova, A.V., Schmitt, J.M., Hinch, D.K., *Cryobiology*, Aug. 1998, 37(1), p.92-99, 24 refs.

Cryobiology, Plant tissues, Chemical composition, Solubility, Permeability, Chlorophylls, Freeze thaw cycles, Protection, Probes

53-1003

**Arctic Ocean-Nordic seas thermohaline system.**

Meincke, J., Rudels, B., Friedrich, H.J., *ICES journal of marine science*, June 1997, 54(3), ICES Annual Science Conference, Aalborg, Denmark, Sep. 23, 1995. Mini-symposium on arctic oceanographic processes. Selected papers. Edited by J.M. Bowers et al, p.283-299, 69 refs.

Oceanography, Subpolar regions, Ocean currents, Hydrography, Salinity, Brines, Convection, Turbulent diffusion, Stratification, Water transport, Profiles, Arctic Ocean, Norwegian Sea, Greenland Sea, Russia—Kara Sea

53-1004

**Timing of deep convection in the Greenland and Iceland Seas.**

Malmberg, S.A., Jónsson, S., *ICES journal of marine science*, June 1997, 54(3), ICES Annual Science Conference, Aalborg, Denmark, Sep. 23, 1995. Mini-symposium on arctic oceanographic processes. Selected papers. Edited by J.M. Bowers et al, p.300-309, 38 refs.

Oceanography, Subpolar regions, Ocean currents, Convection, Salinity, Hydrography, Seasonal variations, Wind factors, Air water interactions, Greenland Sea, Iceland Sea

53-1005

**Water fluxes through the Barents Sea.**

Loeng, H., Ozhigin, V., Ådlandsvik, B., *ICES journal of marine science*, June 1997, 54(3), ICES Annual Science Conference, Aalborg, Denmark, Sep. 23, 1995. Mini-symposium on arctic oceanographic processes. Selected papers. Edited by J.M. Bowers et al, p.310-317, 22 refs.

Oceanography, Subpolar regions, Ocean currents, Water balance, Water transport, Air water interactions, Seasonal variations, Barents Sea

53-1006

**Organochlorine contaminants in fish and polycyclic aromatic hydrocarbons in sediments from the Barents Sea.**

Stange, K., Klungsoyr, J., *ICES journal of marine science*, June 1997, 54(3), ICES Annual Science Conference, Aalborg, Denmark, Sep. 23, 1995. Mini-symposium on arctic oceanographic processes. Selected papers. Edited by J.M. Bowers et al, p.318-332, 38 refs.

Oceanography, Subpolar regions, Water pollution, Bottom sediment, Biomass, Ecosystems, Hydrocarbons, Environmental tests, Drill core analysis, Sampling, Statistical analysis, Barents Sea

53-1007

**Distribution and sedimentation of radionuclides in the Barents Sea.**

Føyn, L., Sværen, I., *ICES journal of marine science*, June 1997, 54(3), ICES Annual Science Conference, Aalborg, Denmark, Sep. 23, 1995. Mini-symposium on arctic oceanographic processes. Selected papers. Edited by J.M. Bowers et al, p.333-340, 18 refs.

Oceanography, Subpolar regions, Water pollution, Bottom sediment, Radioactivity, Sedimentation, Distribution, Biomass, Radioactive isotopes, Drill core analysis, Environmental tests, Barents Sea

53-1008

**Biomass and productivity distributions and their variability in the Barents Sea.**

Sakshaug, E., *ICES journal of marine science*, June 1997, 54(3), ICES Annual Science Conference, Aalborg, Denmark, Sep. 23, 1995. Mini-symposium on arctic oceanographic processes. Selected papers. Edited by J.M. Bowers et al, p.341-350, 51 refs.

Oceanography, Subpolar regions, Marine biology, Oceanographic surveys, Ice edge, Biomass, Chlorophylls, Ecosystems, Distribution, Ice cover effect, Nutrient cycle, Seasonal variations, Barents Sea

53-1009

**Water mass transformation in the Barents Sea—application of the Hamburg Shelf Ocean Model (HamsOM).**

Harms, I.H., *ICES journal of marine science*, June 1997, 54(3), ICES Annual Science Conference, Aalborg, Denmark, Sep. 23, 1995. Mini-symposium on arctic oceanographic processes. Selected papers. Edited by J.M. Bewers et al, p.351-365, 30 refs. Oceanography, Subpolar regions, Ocean currents, Convection, Stratification, Polynyas, Air ice water interaction, Heat flux, Ice growth, Ice cover effect, Hydrography, Models, Barents Sea

53-1010

**Formation and export of water masses produced in arctic shelf polynyas—process studies of oceanic convection.**

Backhaus, J.O., Fohrmann, H., Kämpf, J., Rubino, A., *ICES journal of marine science*, June 1997, 54(3), ICES Annual Science Conference, Aalborg, Denmark, Sep. 23, 1995. Mini-symposium on arctic oceanographic processes. Selected papers. Edited by J.M. Bewers et al, p.366-382, 51 refs. Oceanography, Subpolar regions, Ocean currents, Convection, Polynyas, Heat flux, Sea ice distribution, Ice cover thickness, Air ice water interaction, Models, Hydrodynamics, Simulation, Arctic Ocean

53-1011

**Polar stratospheric clouds: a high latitude warming mechanism in an ancient greenhouse world.** Sloan, L.C., Pollard, D., *Geophysical research letters*, Sep. 15, 1998, 25(18), p.3517-3520, 28 refs. Paleoclimatology, Ice age theory, Surface temperature, Cloud cover, Cloud physics, Polar stratospheric clouds, Greenhouse effect, Global warming, Natural gas, Radiation absorption, Models

53-1012

**GCM sensitivity test using increased rotation rate, reduced solar forcing and orography to examine low latitude glaciation in the Neoproterozoic.**

Jenkins, G.S., Frakes, L.A., *Geophysical research letters*, Sep. 15, 1998, 25(18), p.3525-3528, 26 refs. Pleistocene, Paleoclimatology, Surface temperature, Glaciation, Insolation, Atmospheric composition, Radiation absorption, Models, Ice age theory

53-1013

**Correction to "Warming of the Arctic Ocean by a strengthened Atlantic inflow: model results".**

Zhang, J.L., Rothrock, D.A., Steele, M., *Geophysical research letters*, Sep. 15, 1998, 25(18), p.3541, For pertinent paper see 52-5501. Climatology, Oceanography, Ocean currents, Water temperature, Heat transfer, Models, Arctic Ocean

53-1014

**Impact of mountain glaciations on tors, block-felds and cryoplanation features. Nunataks or non-scoured zones as refugia?**

Rapp, A., International Association of Geomorphologists. Publication No.6. Geomorphology sans frontières. International Geomorphology Conference, 3rd, Hamilton, Canada, Aug. 1993. Selected papers. Edited by S.B. McCann and D.C. Ford, Chichester, John Wiley & Sons Ltd, 1996, p.137-152, 42 refs. DLC GB400.2.G448 1996

Geomorphology, Alpine landscapes, Glacial geology, Geocryology, Bedrock, Ice scoring, Ice solid interface, Vegetation patterns, Permafrost transformation, Aftiplanation, Nunataks, Sweden

53-1015

**Karst in a cold climate: effects of glaciation and permafrost conditions upon the karst landform systems of Canada.**

Ford, D.C., International Association of Geomorphologists. Publication No.6. Geomorphology sans frontières. International Geomorphology Conference, 3rd, Hamilton, Canada, Aug. 1993. Selected papers. Edited by S.B. McCann and D.C. Ford, Chichester, John Wiley & Sons Ltd, 1996, p.153-179, 38 refs. DLC GB400.2.G448 1996

Geomorphology, Landforms, Karst, Glacial geology, Glaciation, Permafrost hydrology, Glacial erosion, Ice solid interface, Landforms, Models, Canada

53-1016

**Meltwater model for Laurentide subglacial landscapes.**

Shaw, J., International Association of Geomorphologists. Publication No.6. Geomorphology sans frontières. International Geomorphology Conference, 3rd, Hamilton, Canada, Aug. 1993. Selected papers. Edited by S.B. McCann and D.C. Ford, Chichester, John Wiley & Sons Ltd, 1996, p.181-236, Refs. p.232-236.

DLC GB400.2.G448 1996

Pleistocene, Geomorphology, Landforms, Landscape development, Glacial hydrology, Bedrock, Ice sheets, Glacial lakes, Lake bursts, Subglacial drainage, Meltwater, Water erosion, Models, Canada

53-1017

**Spaceborne remote sensing for snow hydrology applications.**

Rango, A., *Hydrological sciences journal*, Aug. 1996, 41(4), p.477-494, With French summary. 48 refs.

DLC GB651.16

Spaceborne photography, Snow surveys, Snow cover distribution, Snow hydrology, Grain size, Wet snow, Albedo, Sensor mapping, Snow water equivalent

53-1018

**Phase II Remedial investigation for Cold Regions Research and Engineering Laboratory (CRREL), Hanover, New Hampshire.**

Arthur D. Little, Inc., Cambridge, MA, Lamb, R.N., ed, Rice, J.E., ed, MP 5250, 1994, 3 vols. (Var. p.), Vol.1: ADA-281 933, Vol.2: ADA-281 934, Vol.3: ADA-281 935, Vol.1: main report. Vols. 2 and 3: appendixes. Refs. Vol.1, p.8/1-8/5.

Ground water, Petroleum products, Hydrocarbons, Waste disposal, Water pollution, Oil spills, Soil pollution, Soil tests, Soil chemistry, Land reclamation, Health, United States—New Hampshire

53-1019

**Modified polyester-based snow-accumulation preventive coatings.**

Watanabe, T., *Japan Patent Office. Patent*, Mar. 31, 1998, n.p., No.9882147.

Buildings, Roofs, Snow removal, Ice prevention, Protective coatings, Polymers

53-1020

**Method for measuring water content in snow without contact by IR light radiation.**

Tachizaki, S., Fukushi, A., Kamidokoro, M., Nakano, Y., *Japan Patent Office. Patent*, Jan. 23, 1998, n.p., No.9819771.

Power line icing, Snow loads, Snow water content, Moisture meters, Moisture detection, Snow optics, Infrared equipment

53-1021

**Process for prevention of frost and ice deposition on cooling pipes, heat exchangers, and automobile apparatus and frost-preventive coatings thereof.**

Tanaka, H., *Japan Patent Office. Patent*, Apr. 24, 1998, n.p., No.98103817.

Motor vehicles, Cooling systems, Frost protection, Ice prevention, Protective coatings

53-1022

**Predictions of propeller loads due to ice contact.**

Veitch, B., *International shipbuilding progress*, 1997, 44(439), 221-239, 23 refs.

Sea ice, Loads (forces), Ships, Propellers, Models, Ice loads, Metal ice friction, Ice navigation, Ice cutting

53-1023

**Forecast: a neural system for diagnosis and control of highway surfaces.**

Luchetta, A., Manetti, S., Francini, F., *IEEE intelligent systems & their applications*, May/June 1998, 13(3), p.20-26, 2 refs.

Roads, Safety, Low temperature research, Ice formation, Road icing, Ice forecasting, Frost forecasting, Weather forecasting, Road maintenance, Italy

53-1024

**Remote sensing and GIS studies in northeast Greenland. [Fernerkundungs- und GIS-Studien in Nordostgrönland]**

Jung-Rothenhäuser, F., *Berichte zur Polarforschung*, 1998, No.280, 161p., In German with English summary. Refs. p.121-128.

Ice sheets, Glaciers, Ablation, Computer applications, Glacier surveys, Glacier oscillation, Glacier mass balance, Greenland

53-1025

**Low temperature crystal structure of dichlorine oxide. [Tieftemperatur-Kristallstruktur von Dichlormonoxid, Cl<sub>2</sub>O]**

Minkwitz, R., Bröchler, R., Borrmann, H., *Zeitschrift für Kristallographie*, 1998, 213(4), p.237-239, In German with English summary. 18 refs.

Low temperature tests, Chemical properties, Structural analysis, Crystals

53-1026

**Landform and lineament mapping using radar remote sensing.**

Vencatasawmy, C.P., Clark, C.D., Martin, R.J., Landform monitoring, modelling and analysis, edited by S.N. Lane, K.S. Richards and J.H. Chandler, Chichester, UK, John Wiley & Sons, Ltd., 1998, p.165-195, Refs. p.189-192.

DLC GB400.42.M3 L36 1998

Landforms, Geomorphology, Mapping, Airborne radar, Synthetic aperture radar, Image processing, Glacier surfaces, Mathematical models, Imaging, Remote sensing, Photointerpretation, Topographic surveys, Terrain identification

53-1027

**Image analysis of aerial photography to quantify the effect of gold placer mining on channel morphology, interior Alaska.**

Gilvear, D.J., Waters, T.M., Milner, A.M., Landform monitoring, modelling and analysis, edited by S.N. Lane, K.S. Richards and J.H. Chandler, Chichester, UK, John Wiley & Sons, Ltd., 1998, p.195-216, 20 refs.

DLC GB400.42.M3 L36 1998

Aerial surveys, Placer mining, Gold, Geomorphology, Landforms, Mapping, Image processing, Channels (waterways), Flooding, Spaceborne photography, Soil erosion, Water erosion, United States—Alaska

53-1028

**Mass balance and flow variations of Haut Glacier d'Arolla, Switzerland, calculated using digital terrain modelling techniques.**

Willis, I.C., Arnold, N.S., Sharp, M.J., Bonvin, J.M., Hubbard, B.P., Landform monitoring, modelling and analysis, edited by S.N. Lane, K.S. Richards and J.H. Chandler, Chichester, UK, John Wiley & Sons, Ltd., 1998, p.343-361, Refs. p.360-361.

DLC GB400.42.M3 L36 1998

Glacier mass balance, Glacier flow, Glacier oscillation, Glacier surfaces, Image processing, Mapping, Ablation, Velocity measurement, Computerized simulation, Switzerland—Haut Glacier d'Arolla

53-1029

**Transient snowline on glaciers: topographic controls and implications for melt prediction.**

Turpin, O.C., Ferguson, R.I., Clark, C.D., Landform monitoring, modelling and analysis, edited by S.N. Lane, K.S. Richards and J.H. Chandler, Chichester, UK, John Wiley & Sons, Ltd., 1998, p.363-383, Refs. p.381-383.

DLC GB400.42.M3 L36 1998

Mountain glaciers, Alpine landscapes, Glacier melting, Meltwater, Snow line, Ice models, LANDSAT, Image processing, Runoff forecasting, Topographic surveys, Analysis (mathematics), Switzerland



## 53-1030

Use of terrain analysis in the evaluation of snow cover over an alpine glacier.

Copland, L., Landform monitoring, modelling and analysis, edited by S.N. Lane, K.S. Richards and J.H. Chandler, Chichester, UK, John Wiley & Sons, Ltd., 1998, p.385-404, Refs. p.403-404.

DLC GB400.42.M3 L36 1998

Mountain glaciers, Alpine landscapes, Terrain identification, Snow cover, Computerized simulation, Snow water equivalent, Snow surveys, Snow depth, Geomorphology, Glacier surfaces, Topographic surveys, Switzerland—Haut Glacier d'Arolla

## 53-1031

Heating, ventilating, and air-conditioning considerations for maintaining acceptable indoor air quality at South Pole Station.

Light, E., Bailey, J.R., Mahar, H., IAQ 96, Baltimore, MD, Oct.6-8, 1996: Paths to better building environments, edited by K.Y. Teichman. Proceedings, Atlanta, GA, American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., 1996, p.195-200, 13 refs.

DLC TH6O14.I27 1996

Cold weather construction, Design criteria, Heating, Ventilation, Air conditioning, Indoor climates, Air pollution, Impurities, Warning systems, Antarctica—Amundsen-Scott Station

## 53-1032

Polar and cold regions.

Mills, W., Speak, P., London, UK, Mansell Publishing Limited, 1997, 330p., Bibliography p.99-235.

DLC G593.M54 1997

Low temperature research, Research projects, Organizations, Bibliographies, Manuals, Data processing, Data transmission

## 53-1033

Experimental comparison of FOSART and FLVQ in a remotely sensed image classification task.

Blonda, P., Baraldi, A., Bafunno, G., Satalino, G., Ria, G., SPIE—The International Society for Optical Engineering. Proceedings, 1997, Vol.3165, Applications of soft computing. Edited by B. Bosacchi, J.C. Bezdek and D.B.Fogel, p.113-122, 13 refs.

DLC QA76.9.S63A67 1997

Remote sensing, Image processing, Computer applications, Data processing, Performance, Antarctica

## 53-1034

Wisconsinan refugia and the glacial history of eastern Baffin Island, arctic Canada: coupled evidence from cosmogenic isotopes and lake sediments.

Steig, E.J., Wolfe, A.P., Miller, G.H., *Geology*, Sep. 1998, 26(9), p.835-838, 35 refs.

Pleistocene, Glacial geology, Glaciation, Moraines, Lacustrine deposits, Drill core analysis, Geochronology, Radioactive age determination, Correlation, Canada—Northwest Territories—Baffin Island

## 53-1035

IUE's detection of tenuous SO<sub>2</sub> frost on Ganymede and its rapid time variability.

Domingue, D.L., Lane, A.L., Beyer, R.A., *Geophysical research letters*, Aug. 15, 1998, 25(16), p.3117-3120, 26 refs.

Extraterrestrial ice, Satellites (natural), Surface properties, Ice detection, Frost, Radiation absorption, Ultraviolet radiation, Photometry, Spectra

## 53-1036

Multiwavelength lidar aerosol measurements made at Eureka (80°N,86°W) during early 1995.

Donovan, D.P., et al, *Geophysical research letters*, Aug. 15, 1998, 25(16), p.3139-3142, 12 refs.

Climatology, Polar atmospheres, Stratosphere, Atmospheric composition, Aerosols, Particle size distribution, Lidar, Backscattering, Statistical analysis, Seasonal variations, Canada—Northwest Territories—Eureka

## 53-1037

Toward the theory of homogeneous nucleation and its parameterization for cloud models.

Khvorostianov, V., Sassen, K., *Geophysical research letters*, Aug. 15, 1998, 25(16), p.3155-3158, 12 refs. Climatology, Cloud physics, Haze, Ice crystal growth, Homogeneous nucleation, Ice water interface, Interfacial tension, Nucleation rate, Mathematical models, Theories

## 53-1038

Dynamics of the Siple Coast ice streams, West Antarctica: results from a thermomechanical ice sheet model.

Payne, A.J., *Geophysical research letters*, Aug. 15, 1998, 25(16), p.3173-3176, 21 refs.

Glacier oscillation, Ice sheets, Glacier flow, Grounded ice, Ice mechanics, Ice temperature, Ice solid interface, Ice models, Thermodynamics, Simulation, Antarctica—Siple Coast

## 53-1039

Accuracy of satellite radar altimeter data over the Greenland ice sheet determined from airborne laser data.

Bamber, J.L., Ekholm, S., Krabill, W., *Geophysical research letters*, Aug. 15, 1998, 25(16), p.3177-3180, 5 refs.

Remote sensing, Glacier surveys, Ice sheets, Height finding, Geodetic surveys, Lasers, Radio echo soundings, Spacecraft, Accuracy, Correlation, Topographic effects, Greenland

## 53-1040

Effects of removing concentric positioning on postglacial vertical displacement in the presence of lateral variation in lithospheric thickness.

Ni, Z.H., Wu, P., *Geophysical research letters*, Aug. 15, 1998, 25(16), p.3209-3212, 18 refs.

Pleistocene, Isostasy, Orientation, Geologic structures, Thickness, Sea level, Ice loads, Rheology, Models

## 53-1041

Evidence of honeycomb weathering on Mars.

Rodriguez-Navarro, C., *Geophysical research letters*, Sep. 1, 1998, 25(17), p.3249-3252, 30 refs.

Mars (planet), Regolith, Geocryology, Rock properties, Frozen rock temperature, Frost shattering, Weathering, Geochemistry, Photointerpretation, Models

## 53-1042

Europa's surface composition and sputter-produced ionosphere.

Johnson, R.E., Killen, R.M., Waite, J.H., Jr., Lewis, W.S., *Geophysical research letters*, Sep. 1, 1998, 25(17), p.3257-3260, 44 refs.

Satellites (natural), Atmospheric physics, Magnetic properties, Extraterrestrial ice, Regolith, Ice physics, Decomposition, Ionization, Spectroscopy

## 53-1043

Investigations of the possible relationship between PMSE and tides using a VHF MST radar.

Barabash, V., Chilson, P., Kirkwood, S., Réchou, A., Stebel, K., *Geophysical research letters*, Sep. 1, 1998, 25(17), p.3297-3300, 22 refs.

Polar atmospheres, Gravity waves, Radar echoes, Atmospheric circulation, Wind velocity, Shear flow, Turbulent flow, Diurnal variations, Sweden—Esrang

## 53-1044

Forty year record of mercury in central Greenland snow.

Boutron, C.F., Vandal, G.M., Fitzgerald, W.F., Ferrari, C.P., *Geophysical research letters*, Sep. 1, 1998, 25(17), p.3315-3318, 23 refs.

Climatology, Polar atmospheres, Air pollution, Aerosols, Metals, Sedimentation, Ice sheets, Age determination, Snow composition, Chemical analysis, Sampling, Seasonal variations, Environmental tests, Greenland

## 53-1045

Ground based millimeter-wave observations of arctic ozone depletion during winter and spring of 1996/97.

Sinnhuber, B.M., Langer, J., Klein, U., Raffalski, U., Künzi, K., Schrems, O., *Geophysical research letters*, Sep. 1, 1998, 25(17), p.3327-3330, 20 refs.

Climatology, Polar atmospheres, Stratosphere, Atmospheric composition, Degradation, Photochemical reactions, Aerosols, Ozone, Turbulent diffusion, Radiometry, Seasonal variations, Norway—Spitsbergen

## 53-1046

Ground based millimeter-wave observations of arctic chlorine activation during winter and spring 1996/97.

Raffalski, U., et al, *Geophysical research letters*, Sep. 1, 1998, 25(17), p.3331-3334, 15 refs.

Climatology, Polar atmospheres, Ozone, Stratosphere, Degradation, Turbulent diffusion, Photochemical reactions, Models, Radiometry, Profiles, Diurnal variations, Norway—Spitsbergen

## 53-1047

Quasi-biennial modulation of the southern hemisphere stratospheric polar vortex.

Baldwin, M.P., Dunkerton, T.J., *Geophysical research letters*, Sep. 1, 1998, 25(17), p.3343-3346, 21 refs.

Climatology, Polar atmospheres, Stratosphere, Atmospheric circulation, Atmospheric pressure, Oscillations, Wind direction, Climatic factors, Statistical analysis

## 53-1048

Sea ice transport: a highly variable link between Arctic and North Atlantic.

Hilmer, M., Harder, M., Lemke, P., *Geophysical research letters*, Sep. 1, 1998, 25(17), p.3359-3362, 11 refs.

Oceanography, Sea ice distribution, Freezing rate, Drift, Ice volume, Atmospheric pressure, Air ice water interaction, Seasonal variations, Thermodynamics, Simulation, Arctic Ocean, Atlantic Ocean

## 53-1049

Ice age storm trajectories inferred from radar stratigraphy at Taylor Dome, Antarctica.

Morse, D.L., Waddington, E.D., Steig, E.J., *Geophysical research letters*, Sep. 1, 1998, 25(17), p.3383-3386, 24 refs.

Pleistocene, Paleoclimatology, Storms, Wind direction, Synoptic meteorology, Ice sheets, Ice cover effect, Ice cores, Ice accretion, Stratigraphy, Radar echoes, Antarctica—Taylor Dome

## 53-1050

Initial results from a distributed, physically based model of glacial hydrology.

Arnold, N., Richards, K., Willis, I., Sharp, M., *Hydrological processes*, Feb. 1998, 12(2), p.191-219, 31 refs.

Glacial hydrology, Glacier mass balance, Glacier melting, Thawing rate, Subglacial drainage, Heat balance, Surface energy, Surface drainage, Hydrography, Boreholes, Mathematical models, Switzerland—Valais

## 53-1051

Stream flow characterization and feature detection using a discrete wavelet transform.

Smith, L.C., Turcotte, D.L., Isacks, B.L., *Hydrological processes*, Feb. 1998, 12(2), p.233-249, 45 refs.

River basins, Stream flow, Hydrography, Glacial hydrology, Snow hydrology, Snowmelt, Spectra, Oscillations, Statistical analysis, Mathematical models, Seasonal variations, Canada—British Columbia—Forrest Kerr Creek, United States—Maine—Ammonoosuc River



53-1052

Uniform versus an aggregated water balance of a semi-arid watershed.

Fierchinger, G.N., Cooley, K.R., Hanson, C.L., Seyfried, M.S., *Hydrological processes*, Feb. 1998, 12(2), p.331-342, 35 refs.

Watersheds, Hydrography, Water balance, Precipitation (meteorology), Evapotranspiration, Snow hydrology, Snow accumulation, Snowmelt, Vegetation factors, Forecasting, Seasonal variations, United States—Idaho—Upper Sheep Creek

53-1053

Evaluation of image-type glide slope performance in the presence of snow cover.

Marcum, F., *IEEE transactions on aerospace and electronics systems*, Jan. 1998, 34(1), p.71-82, 26 refs.

Aircraft, Aircraft landing areas, Navigation, Orientation, Antennas, Wave propagation, Reflectivity, Snow optics, Snow depth, Dielectric properties, Imaging, Monitors, Snow cover effect, Analysis (mathematics)

53-1054

Heat media and heat-medium circulation systems.

Imanari, M., Yanatori, M., Hiramatsu, M., Kasuga, T., *Japan Patent Office. Patent*, July 29, 1997, n.p., No.97194817.

Snow melting, Artificial melting, Electric heating, Heat transfer

53-1055

Manufacture of calcium magnesium acetate agents from dolomite for melting snow.

Sagami, K., *Japan Patent Office. Patent*, Oct. 15, 1996, n.p., No.96269438.

Chemical ice prevention, Artificial melting, Snow removal, Liming

53-1056

Polyester acrylate urethane compositions for freezing control materials and freezing control structure and pavement prepared from the compositions.

Tsujii, S., Mita, T., Ikeda, M., Yasumura, T., Fukakusa, K., *Japan Patent Office. Patent*, Oct. 15, 1996, n.p., No.96269432.

Road icing, Pavements, Chemical ice prevention, Protective coatings, Frost protection, Road maintenance

53-1057

Manufacture of solid calcium chloride ice- and snow-melting agents for roads.

Ueda, Y., et al., *Japan Patent Office. Patent*, Sep. 17, 1996, n.p., No.96239647.

Road icing, Chemical ice prevention, Salting, Artificial melting, Ice removal, Snow removal, Road maintenance

53-1058

Sheets with prevention of ice and snow adhesion.

Myoshi, T., Nakanishi, T., *Japan Patent Office. Patent*, June 13, 1995, n.p., No.95148879.

Ice adhesion, Ice prevention, Protective coatings, Plastics

53-1059

Deicing agent containing thickeners.

Pech, V., *World Intellectual Property Organization. Patent Cooperation Treaty. Patent*, Mar. 12, 1998, n.p., No.9810032.

Chemical ice prevention, Ice removal

53-1060

Ice- and snow-melting compositions containing salt, calcium magnesium acetate, and sodium silicate and their manufacture.

Simper, J.L., *World Intellectual Property Organization. Patent Cooperation Treaty. Patent*, Dec. 10, 1992, n.p., No.9221732, For a patent with the same author, number, and date but with a different title, see 49-3566.

Chemical ice prevention, Salting, Artificial melting, Snow removal, Ice removal, Road maintenance

53-1061

Method and apparatus for forming ice particles from water, and use of the ice particles.

Reichel, D., Iff, P., Stobrawe, H., *Germany Patent Office. Patent*, Apr. 30, 1998, n.p., No.19731052. Liquefied gases, Spray freezing, Artificial ice, Ice (construction material), Cellular concretes, Air entrainment

53-1062

Process for melting snow and/or ice on pavements and roads with an alkali metal carboxylate.

Posellmann, K., Stankowiak, A., Kapfinger, J., *Germany Patent Office. Patent*, Jan. 5, 1994, n.p., No.4221661, For a patent with the same authors, number, and date but with a different title, see 49-261.

Road icing, Chemical ice prevention, Artificial melting, Ice removal, Snow removal, Road maintenance

53-1063

Method for determination of the composition of a liquid on the surface of a structure.

Larue, F., *France Patent Office. Patent*, Mar. 6, 1998, n.p., No.2752939.

Aircraft icing, Ice acoustics, Ice detection, Acoustic measurement, Ultrasonic tests

53-1064

Snow-removing ice-thawing agents.

Liu, X.G., Zhang, Z.G., Yu, X.Z., *China Patent Office. Patent*, June 26, 1996, n.p., No.1125247.

Chemical ice prevention, Salting, Snow removal, Ice removal

53-1065

Subsea piping method and plant.

Christensen, J.S., Cotton, J.L., Stinessen, K.O., *United Kingdom Patent Office. Patent*, Oct. 28, 1992, n.p., No.2255102.

Underground pipelines, Ocean bottom, Pipe laying, Pipeline freezing, Frost protection, Ice prevention

53-1066

De-icing and anti-freezing composition.

Kraljevic, G., *Canada Patent Office. Patent*, Feb. 23, 1996, n.p., No.2130649.

Chemical ice prevention, Antifreezes, Ice removal

53-1067

Fresh-water plankton in a pond at Cape Adare. [Nankyoku no ike 100 nen zen to onaji puranku-tan ga ikite ita]

Fukushima, H., *Polar news*, Feb. 1997, No.64, p.15-19, In Japanese.

Ponds, Lake water, Ecosystems, Plankton, Algae, Microbiology, Plant ecology, Antarctica—Adare, Cape

53-1068

Deep ice coring at Dome Fuji Station. [Domu Fuji kyoten ni okeru hyosho shinso kussaku] Fujii, Y., *Polar news*, Aug. 1997, No.65, p.8-12, In Japanese.

Ice cores, Ice coring drills, Drilling, Coring, Antarctica—Dome Fuji Station

53-1069

Enactment of the antarctic environment protection laws of Japan. [Nankyoku kankyo hogoho seitei ni tsuite]

Hoshino, K., Ono, T., *Polar news*, Aug. 1997, No.65, p.60-64, In Japanese.

Environmental protection, Legislation, International cooperation, Japan, Antarctica

53-1070

Recent studies on ozone hole and CFCs. [Ozon horu to furon no saikin no kenkyu]

Watanuki, K., *Polar news*, Mar. 1998, No.66, p.5-9, In Japanese. 5 refs.

Polar atmospheres, Atmospheric composition, Air pollution, Ozone

53-1071

Neural network algorithm for sea ice edge classification.

Park, J.D., Alhumaidi, S., Jones, W.L., Ferguson, S., *SPIE—The International Society for Optical Engineering. Proceedings*, 1997, Vol.3077, Applications and science of artificial neural network, III. Edited by S.K. Rogers, p.561-570, 11 refs.

DLC QA76.87.A656 1997

Sea ice, Ice edge, Mathematical models, Computerized simulation, Oceanographic surveys, Meteorological data, Mapping, Airborne radar, Antarctica

53-1072

Hot spots in cold adaptation: localized increases in conformational flexibility in lactate dehydrogenase A<sub>4</sub> orthologs of antarctic notothenioid fishes.

Fields, P.A., Somero, G.N., *National Academy of Sciences of the United States of America. Proceedings*, Sep. 15, 1998, 95(19), p.11476-11481, 43 refs.

Acclimatization, Marine biology, Physiological effects, Low temperature research, Temperature measurement, Antarctica

53-1073

Correlations of stratospheric abundances of CH<sub>4</sub> and N<sub>2</sub>O derived from ATMOS measurements.

Michelsen, H.A., Manney, G.L., Gunson, M.R., Rinsland, C.P., Zander, R., *Geophysical research letters*, Aug. 1, 1998, 25(15), p.2777-2780, 23 refs.

Climatology, Atmospheric composition, Stratosphere, Polar atmospheres, Aerosols, Photochemical reactions, Turbulent diffusion, Indexes (ratios), Statistical analysis, Spectroscopy, Correlation

53-1074

Ultrafine aerosols particles in aircraft plumes: in situ observations.

Schröder, F.P., et al., *Geophysical research letters*, Aug. 1, 1998, 25(15), p.2789-2792, 20 refs.

Climatology, Condensation trails, Aerosols, Air pollution, Particle size distribution, Condensation nuclei, Scavenging, Heterogeneous nucleation, Ice formation, Chemical properties, Sampling

53-1075

Lidar observations of gravity wave activity and arctic stratospheric vortex core warming.

Duck, T.J., Whiteway, J.A., Carswell, A.L., *Geophysical research letters*, Aug. 1, 1998, 25(15), p.2813-2816, 23 refs.

Climatology, Polar atmospheres, Stratosphere, Air masses, Air temperature, Temperature variations, Wind velocity, Gravity waves, Lidar, Seasonal variations, Canada—Northwest Territories—Eureka

53-1076

Noctilucent clouds and wave dynamics: observations at Sondrestrom, Greenland.

Gerrard, A.J., Kane, T.J., Thayer, J.P., *Geophysical research letters*, Aug. 1, 1998, 25(15), p.2817-2820, 21 refs.

Climatology, Polar atmospheres, Stratosphere, Gravity waves, Cloud cover, Cloud physics, Lidar, Backscattering, Greenland

53-1077

Acid ions at triple junction of antarctic ice observed by Raman scattering.

Fukazawa, H., Sugiyama, K., Mae, S., Narita, H., Hondoh, T., *Geophysical research letters*, Aug. 1, 1998, 25(15), p.2845-2848, 14 refs.

Climatology, Ice sheets, Ice cores, Ice composition, Impurities, Aerosols, Solutions, Electrical resistivity, Ice crystal structure, Ice spectroscopy, Spectra, Ions, Antarctica—Nansen Ice Sheet

53-1078

Low-velocity lamella in D<sup>4</sup>.

Thomas, C., Weber, M., Agnon, A., Hofstetter, A., *Geophysical research letters*, Aug. 1, 1998, 25(15), p.2885-2888, 20 refs.

Seismology, Tectonics, Subpolar regions, Earth crust, Structural analysis, Seismic reflection, Wave propagation, Velocity measurement, Statistical analysis, Models, Russia—Siberia

53-1079

**Overtone spectra and hydrogen potential of H<sub>2</sub>O at high pressure.**Larsen, C.F., Williams, Q., *Physical review B*, Oct. 1, 1998, 58(13), p.8306-8312, 47 refs.

Ice physics, High pressure ice, Deuterium oxide ice, Vibration, Phase transformations, Molecular structure, Molecular energy levels, Hydrogen bonds, Ice spectroscopy, Radiation absorption, Infrared spectroscopy, Spectra, Models

53-1080

**Eutectic freeze crystallization: application to process streams and waste water purification.**Van der Ham, F., Witkamp, G.J., De Graauw, J., Van Rosmalen, G.M., *Chemical engineering and processing*, Mar. 1998, 37(2), p.207-213, 4 refs.

Water treatment, Waste treatment, Cooling systems, Refrigeration, Heat recovery, Solutions, Ice water interface, Freezing points, Desalting, Ice crystal growth, Design

53-1081

**Simplified numerical model for melting of ice with natural convection.**Kahraman, R., Zughbi, H.D., Al-Nassar, Y.N., Hastaoğlu, M.A., Sobh, N., *International communications in heat and mass transfer*, Apr. 1998, 25(3), p.359-368, 19 refs.

Ice physics, Ice melting, Phase transformations, Ice solid interface, Liquid phases, Heat transfer coefficient, Convection, Ice heat flux, Ice temperature, Profiles, Mathematical models

53-1082

**Ice-induced non-linear vibration of an offshore platform.**Jin, D.P., Hu, H.Y., *Journal of sound and vibration*, July 16, 1998, 214(3), p.431-442, 14 refs.

Offshore structures, Pile structures, Ice solid interface, Deformation, Vibration, Ice loads, Dynamic loads, Velocity measurement, Resonance, Mathematical models, Classifications

53-1083

**Thermal stresses in a freezing sphere and its application to cryobiology.**Rabin, Y., Steif, P.S., *Journal of applied mechanics*, June 1998, 65(2), p.328-333, 23 refs.

Cryobiology, Ice physics, Preserving, Damage, Simulation, Spheres, Solidification, Ice water interface, Thermal expansion, Thermal stresses, Phase transformations, Mathematical models

53-1084

**Application of an artificial neural network to improve short-term road ice forecasts.**Shao, J., *Expert systems with applications*, May 1998, 14(4), p.471-482, 17 refs.

Road icing, Ice forecasting, Surface temperature, Weather stations, Data processing, Simulation, Mathematical models, Statistical analysis, Accuracy

53-1085

**Network structure and chain mobility of freeze-dried polyvinyl chloride/dioxane gels.**Hong, P.D., Chen, J.H., *Polymer*, Nov. 1998, 39(23), p.5809-5817, 37 refs.

Polymers, Freeze drying, Aggregates, Scanning electron microscopy, Nuclear magnetic resonance, Low temperature tests, Elastic properties, Spectra

53-1086

**Short-term thermal performance of a built-in solar storage for frost prevention in a greenhouse.**Kürklü, A., *International journal of energy research*, Feb. 1998, 22(2), p.169-174, 11 refs.

Heat recovery, Buildings, Agriculture, Solar radiation, Radiation absorption, Greenhouse effect, Frost, Ice prevention, Air temperature, Temperature control

53-1087

**Arctic and Antarctic sea ice data 1972-1994.**

National Ice Center, Fleet Numerical Meteorology and Oceanography Detachment, National Climatic Data Center, Washington, D.C., July 1996, n.p., CD-ROM; Version 1.0; contains ASCII data files of weekly ice data.

Sea ice, Sea ice distribution, Ice cover thickness, Data processing, Computer programs

53-1088

**Preliminary results from paleomagnetic records on lake sediments from South America.**Gogorza, C.S.G., et al, *Studia geophysica et geodetica*, 1998, Vol.42, p.12-29, 16 refs.

Core samplers, Pleistocene, Glacial geology, Lacustrine deposits, Radioactive age determination, Magnetic properties, Paleoecology, Models, Remanent magnetism, Argentina

53-1089

**Paleosecular variation recorded on lake sediments from south Argentina.**Sinito, A.M., Nuñez, H.G., *Journal of geomagnetism and geoelectricity*, 1997, Vol.49, p.473-483, 22 refs.

Glacial geology, Lacustrine deposits, Core samplers, Magnetic anomalies, Sedimentation, Radioactive age determination, Geomagnetism, Remanent magnetism, Argentina

53-1090

**Obstruction detector using ultrasonic sensors for upgrading the safety of a level crossing.**Sato, K., Arai, H., Shimizu, T., Takada, M., *Institution of Electrical Engineers. IEE conference publication*, 1998, No.453, International Conference on Developments in Mass Transit Systems, London, UK, Apr. 20-23, 1998, p.190-195.

DLC TF855.158 1998

Ultrasonic tests, Sensors, Safety, Accidents, Railroads, Snow cover effect, Snow survey tools

53-1091

**Digital elevation data, Landsat TM and magnetic data for visualization of geomorphological and geological features.**

Wester, K., Lundén, B., International Symposium on Remote Sensing and GIS for Site Characterization—Applications and Standards, San Francisco, CA, Jan. 27-28, 1994. Edited by V.H. Singhroy, D.D. Nebert and A.I. Johnson. Technical publication, Philadelphia, American Society for Testing and Materials, 1996, p.29-37, STP 1279, 12 refs.

DLC TA705.R393 1996

Image processing, Geomorphology, Geology, Altitude, LANDSAT, Magnetic surveys, Site surveys, Topographic surveys, Scandinavia

53-1092

**Data transfer, necessary interfaces, and applications in a modular snow hydrology modeling system.**

Rango, A., Baumgartner, M.F., International Symposium on Remote Sensing and GIS for Site Characterization—Applications and Standards, San Francisco, CA, Jan. 27-28, 1994. Edited by V.H. Singhroy, D.D. Nebert and A.I. Johnson. Technical publication, Philadelphia, American Society for Testing and Materials, 1996, p.38-42, STP 1279, 13 refs.

DLC TA705.R393 1996

Image processing, Data transmission, Alpine landscapes, Snow cover, Snowmelt, Runoff forecasting, Snow water content, Simulation, Climatic factors, Remote sensing, Snow hydrology

53-1093

**Raman-DIAL measurements in the upper troposphere and stratosphere: the effect of high-altitude ice clouds on ozone.**

Reichardt, J., Weitkamp, C., OSA Technical Digest Series. Vol.5. Optical remote sensing of the atmosphere, Washington, D.C., Optical Society of America, 1997, p.208-211, 12 refs.

DLC QC871.064 1997

Climatology, Stratosphere, Cloud physics, Remote sensing, Ozone, Ice detection, Ice crystal optics, Lidar, Scattering, Polarization (waves), Radiance

53-1094

**Unreasonable effectiveness of mimicking measured infrared extinction by hexagonal ice crystals with Mie ice spheres.**

Arnott, W.P., Liu, Y., Schmitt, C., Hallett, J., OSA Technical Digest Series. Vol.5. Optical remote sensing of the atmosphere, Washington, D.C., Optical Society of America, 1997, p.216-218, 4 refs.

DLC QC871.064 1997

Climatology, Cloud physics, Remote sensing, Radiometry, Radiance, Ice crystal optics, Attenuation, Simulation, Accuracy

53-1095

**Active oil shows at the Franz Josef Land Archipelago and their most probable nature.**Klubov, B.A., Bezrukov, V.M., Garib'ian, E.V., Taninnskaia, N.V., *Lithology and mineral resources*, July-Aug. 1998, 33(4), p.387-390, Translated from *Litologiya i poleznye iskopaemy*. 3 refs.

Geological surveys, Subpolar regions, Earth crust, Tectonics, Fracture zones, Hydrocarbons, Migration, Natural resources, Mineralogy, Geothermy, Russia—Franz Josef Land

53-1096

**ISO-SWS observations of weak bands of trace components of ices towards the young stellar object W 33A.**Schutte, W.A., Greenberg, J.M., Van Dishoeck, E.F., Tielens, A.G.G.M., Boogert, A.C.A., Whittet, D.C.B., *Astrophysics and space science*, 1997/1998, 255(1-2), International Conference on ISO's View on Stellar Evolution, Noordwijkerhout, The Netherlands, 1-4 July, 1997. Proceedings, p.61-66, 19 refs.

Cosmic dust, Extraterrestrial ice, Ice detection, Ice composition, Spectroscopy, Radiation absorption, Hydrocarbons, Spectra, Simulation, Correlation

53-1097

**Absorption features of ices toward NGC7538 IRS1.**Strazzulla, G., Nisini, B., Leto, G., Palumbo, M.E., Saraceno, P., *Astrophysics and space science*, 1997/1998, 255(1-2), International Conference on ISO's View on Stellar Evolution, Noordwijkerhout, The Netherlands, 1-4 July, 1997. Proceedings, p.67-68, 6 refs.

Cosmic dust, Extraterrestrial ice, Spectroscopy, Ice detection, Radiation absorption, Ice composition, Carbon dioxide, Chemical composition, Spectra

53-1098

**Life on ice.**Knight, J., *New scientist*, May 2, 1998, 158(2132), p.24-28.

Cryobiology, Ice physics, Phase transformations, Antifreezes, Life (durability), Biomass, Preserving, Viability, Theories

53-1099

**Chrome-splines in gabbro-wehrlite intrusions of the Pechenga area, Kola Peninsula, Russia: emphasis on alteration features.**Abzalov, M.Z., *Lithos*, July 1998, 43(3), p.109-134, 52 refs.

Earth crust, Subpolar regions, Mineralogy, Magma, Sedimentation, Geologic processes, Geochemistry, Sampling, Statistical analysis, Chemical analysis, Russia—Kola Peninsula

53-1100

**Empirical heat transfer and frost thickness correlations during frost deposition on a cylinder in cross-flow in the transient regime.**Sengupta, S., Sherif, S.A., Wong, K.V., *International journal of energy research*, June 10, 1998, 22(7), p.615-624, 21 refs.

Pipes (tubes), Frost, Ice accretion, Ice cover thickness, Ice air interface, Mass transfer, Heat transfer coefficient, Air flow, Wind tunnels, Analysis (mathematics), Statistical analysis, Correlation

53-1101

Modelling of sea ice melt-water ponds for the high arctic using an airborne line scan camera, and applied to the Satellite Special Sensor Microwave/Imager (SSM/I).

El Naggar, S., Garrity, C., Ramseier, R.O., *International journal of remote sensing*, Aug. 1998, 19(12), p.2373-2394, 25 refs.

Sea ice, Ice floes, Aerial surveys, Spaceborne photography, Sensor mapping, Ice surface, Meltwater, Ponds, Distribution, Radiometry, Brightness, Snow optics, Sensor mapping, Arctic Ocean

53-1102

Mid-tropospheric circulation and surface melt on the Greenland ice sheet. Part I: atmospheric teleconnections.

Mote, T.L., *International journal of climatology*, Feb. 1998, 18(2), p.111-129, 28 refs.

Climatology, Atmospheric circulation, Ice air interface, Ice sheets, Glacier melting, Topographic surveys, Radiometry, Statistical analysis, Seasonal variations, Correlation, Greenland

53-1103

Mid-tropospheric circulation and surface melt on the Greenland ice sheet. Part II: synoptic climatology.

Mote, T.L., *International journal of climatology*, Feb. 1998, 18(2), p.131-145, 25 refs.

Climatology, Atmospheric circulation, Atmospheric pressure, Wind direction, Ice sheets, Glacier melting, Glacier surfaces, Topographic effects, Ice air interface, Statistical analysis, Classifications, Greenland

53-1104

Aviation Impact Variable (AIV) Editor evaluation report.

Benner, W., Carty, T., Fox, S., Sims, D., Peio, K., *U.S. Federal Aviation Administration. Technical Center, Atlantic City International Airport, NJ. Technical note*, Sep. 1997, DOT/FAA/CT-TN97/17, 30p. + appends., ADA-340 427, 4 refs.

Image processing, Weather stations, Weather forecasting, Aircraft icing, Meteorological data, Data processing, Ice forecasting, Computer programs

53-1105

Wind tunnel measured effects on a twin-engine short-haul transport caused by simulated ice accretions: data report.

Reehorst, A., Potapczuk, M., Ratvasky, T., Laffin, B.G., *U.S. National Aeronautics and Space Administration. Technical memorandum*, May 1997, NASA-TM-107419, 100p., N1997-23376, 17 refs.

Aircraft icing, Ice accretion, Ice loads, Ice air interface, Air flow, Wind tunnels, Computerized simulation

53-1106

Estimating the thickness of sea ice snow cover in the Weddell Sea from passive microwave brightness temperatures.

Arrigo, K.R., Van Dijken, G.L., Comiso, J.C., *U.S. National Aeronautics and Space Administration. Technical memorandum*, Dec. 1996, NASA-TM-104640, 20p., N1997-15273, 5 refs.

Ice surveys, Sea ice, Snow ice interface, Snow depth, Snow surface temperature, Ice temperature, Brightness, Radiometry, Temperature measurement, Spaceborne photography, Mathematical models, Antarctica—Weddell Sea

53-1107

Global change study of the cryosphere of Antarctica.

Swithinbank, C.W., *U.S. Army European Research Office, London, England. Final technical report*, Apr. 1995, No.5, 7p. + figs., ADA-293 529, 13 refs.

Glacier surveys, Ice sheets, Ice shelves, Glacier oscillation, Glacier flow, Glacier tongues, Topographic surveys, Mapping, Spaceborne photography, Global warming, Antarctica

53-1108

Growth of three species of *Bibio* (Diptera, Bibionidae) larvae under alpine conditions in Norway.

Skartveit, J., Solhøy, T., *Pedobiologia*, July 1997, 41(4), p.263-278, 26 refs.

Soil tests, Meadow soils, Alpine landscapes, Mountain soils, Biomass, Growth, Ecology, Ecosystems, Sampling, Statistical analysis, Norway

53-1109

Performance of concrete at Treat Island, U.S.A.: CANMET investigations.

Malhotra, V.M., Bremner, T.W., International Conference on Performance of Concrete in Marine Environment, 3rd, St. Andrews by-the-Sea, New Brunswick, Canada, Aug. 4-9, 1996. Proceedings. ACI Special publication. Edited by V.M. Malhotra, Farmington Hills, American Concrete Institute, 1996, p.1-52, SP-163, 18 refs.

DLC TA440.C6243 1996

Concrete structures, Concrete durability, Marine atmospheres, Concrete aggregates, Air entrainment, Water cement ratio, Cold weather performance, Freeze thaw tests, Frost resistance, Standards, United States—Maine—Treat Island

53-1110

Chloride ion penetration and frost resistance of high-alumina cement (HAC) and HAC/ground granulated blast furnace slag concrete in marine environments.

Osborne, G.J., Singh, B., International Conference on Performance of Concrete in Marine Environment, 3rd, St. Andrews by-the-Sea, New Brunswick, Canada, Aug. 4-9, 1996. Proceedings. ACI Special publication. Edited by V.M. Malhotra, Farmington Hills, American Concrete Institute, 1996, p.295-316, SP-163, 28 refs.

DLC TA440.C6243 1996

Concrete aggregates, Concrete durability, Marine atmospheres, Frost resistance, Freeze thaw cycles, Damage, Ion diffusion, Chemical composition, Cold weather tests, Cold weather performance

53-1111

Influence of accelerating admixtures on the durability of dry-mix shotcrete used for repairs in a marine environment.

Pigeon, M., Lamontagne, A., Talbot, C., International Conference on Performance of Concrete in Marine Environment, 3rd, St. Andrews by-the-Sea, New Brunswick, Canada, Aug. 4-9, 1996. Proceedings. ACI Special publication. Edited by V.M. Malhotra, Farmington Hills, American Concrete Institute, 1996, p.409-422, SP-163, 14 refs.

DLC TA440.C6243 1996

Concrete admixtures, Concrete structures, Concrete durability, Compressive properties, Marine atmospheres, Freeze thaw tests, Frost resistance, Salting, Degradation, Porosity, Mechanical tests

53-1112

Durability of cementitious mixtures used for sealing voids in rubble-mound breakwaters and jetties.

Hales, L.Z., Wilson, D.E., International Conference on Performance of Concrete in Marine Environment, 3rd, St. Andrews by-the-Sea, New Brunswick, Canada, Aug. 4-9, 1996. Proceedings. ACI Special publication. Edited by V.M. Malhotra, Farmington Hills, American Concrete Institute, 1996, p.423-445, SP-163, 8 refs.

DLC TA440.C6243 1996

Offshore structures, Ports, Walls, Cement admixtures, Grouting, Sealing, Concrete structures, Concrete durability, Frost resistance, Freeze thaw cycles, Degradation, Acoustic measurement, Mechanical tests

53-1113

Sedimentology and evolution of subarctic tidal flats along a rapidly emerging coast, eastern Hudson Bay, Canada.

Ruz, M.H., Allard, M., Michaud, Y., Héquette, A., *Journal of coastal research*, 1998, 14(4), p.1242-1254, 52 refs.

Geomorphology, Littoral zone, Shore erosion, Subarctic landscapes, Landscape development, Shoreline modification, Sedimentation, Fast ice, Isostasy, Topographic surveys, Profiles, Canada—Quebec—Hudson Bay

53-1114

Comparing callus growth with discoloration and electrical conductivity as measures of stem injury after freezing woody plants.

Pellett, N.W., Heleba, D.A., *American Society for Horticultural Science. Journal*, Sep. 1998, 123(5), p.826-831, 18 refs.

Plant physiology, Trees (plants), Plant tissues, Cold tolerance, Cold stress, Acclimatization, Freezing, Damage, Degradation, Growth, Electrical measurement, Temperature effects, Viability

53-1115

Three-dimensional natural convective flow about a melting horizontal ice cylinder.

Oosthuizen, P.H., Xu, Z., International Mechanical Engineering Congress and Exposition, Dallas, TX, Nov. 16-27, 1997. Proceedings of the ASME Heat Transfer Division, Vol.3, New York, American Society of Mechanical Engineers, 1997, p.277-282, 13 refs.

DLC TJ260.P76424 1997 Vol 3

Ice physics, Ice melting, Ice water interface, Topographic features, Heat transfer, Laminar flow, Convection, Buoyancy, Mechanical tests

53-1116

Natural convection heat transfer to ice spheres melting in air.

Janna, W.S., Jakubowski, G.S., International Mechanical Engineering Congress and Exposition, Dallas, TX, Nov. 16-27, 1997. Proceedings of the ASME Heat Transfer Division, Vol.1, New York, American Society of Mechanical Engineers, 1997, p.149-157, HTD-Vol.351, 36 refs.

DLC TJ260.P76424 1997 Vol 1

Ice physics, Ice melting, Ice air interface, Heat transfer, Mass transfer, Spheres, Convection, Strain tests, Simulation, Statistical analysis, Analysis (mathematics)

53-1117

Lessons from energy balance models.

North, G.R., Proceedings of the NATO Advanced Study Institute on Physically-Based Modelling and Simulation of Climate and Climatic Change, (Part 2), Erice, Italy, 11-23 May, 1986, edited by M.E. Schlesinger, Dordrecht, The Netherlands, Kluwer Academic Publishers, 1988, p.627-651, Includes discussion. 27 Refs.

DLC QC980.N37 1986

Ice, Albedo, Radiation, Models, Air ice water interaction, Heat balance, Paleoclimatology, Continental drift, Ice age theory, Global change

53-1118

Quantitative analysis of feedbacks in climate model simulations of CO<sub>2</sub>-induced warming.

Schlesinger, M.E., Proceedings of the NATO Advanced Study Institute on Physically-Based Modelling and Simulation of Climate and Climatic Change, (Part 2), Erice, Italy, 11-23 May, 1986, edited by M.E. Schlesinger, Dordrecht, The Netherlands, Kluwer Academic Publishers, 1988, p.653-735, Includes discussion. Refs. p.727-731.

DLC QC980.N37 1986

Air temperature, Models, Climate, Carbon dioxide, Atmospheric circulation, Atmospheric composition, Heat balance, Global warming, Mathematical models

53-1119

**Modelling the slow climatic attractor.**

Saltzman, B., Proceedings of the NATO Advanced Study Institute on Physically-Based Modelling and Simulation of Climate and Climatic Change, (Part 2), Erice, Italy, 11-23 May, 1986, edited by M.E. Schlesinger, Dordrecht, The Netherlands, Kluwer Academic Publishers, 1988, p.737-754, Includes discussion. Refs. p.744-746.

DLC QC980.N37 1986

Climate, Models, Ice sheets, Variations, Atmospheric circulation, Paleoclimatology, Ice age theory, Global change, Mathematical models

53-1120

**Design and use of zonally-averaged climate models.**

MacCracken, M.C., Ghan, S.J., Proceedings of the NATO Advanced Study Institute on Physically-Based Modelling and Simulation of Climate and Climatic Change, (Part 2), Erice, Italy, 11-23 May, 1986, edited by M.E. Schlesinger, Dordrecht, The Netherlands, Kluwer Academic Publishers, 1988, p.755-809, Includes discussion. Refs. p.797-803.

DLC QC980.N37 1986

Climate, Models, Atmospheric circulation, Structural analysis, Global change, Mathematical models, Statistical analysis

53-1121

**Climate observations and diagnostics.**

Oort, A.H., Proceedings of the NATO Advanced Study Institute on Physically-Based Modelling and Simulation of Climate and Climatic Change, (Part 2), Erice, Italy, 11-23 May, 1986, edited by M.E. Schlesinger, Dordrecht, The Netherlands, Kluwer Academic Publishers, 1988, p.813-840, Includes discussion. Refs. p.835-838.

DLC QC980.N37 1986

Climate, Atmospheric circulation, Air flow, Global change, Statistical analysis

53-1122

**Validation of general circulation climate models.**

Wigley, T.M.L., Santer, B.D., Proceedings of the NATO Advanced Study Institute on Physically-Based Modelling and Simulation of Climate and Climatic Change, (Part 2), Erice, Italy, 11-23 May, 1986, edited by M.E. Schlesinger, Dordrecht, The Netherlands, Kluwer Academic Publishers, 1988, p.841-879, Includes discussion. Refs. p.867-872.

DLC QC980.N37 1986

Climate, Models, Atmospheric circulation, Global warming, Statistical analysis

53-1123

**Paleoclimate modelling.**

Crowley, T.J., Proceedings of the NATO Advanced Study Institute on Physically-Based Modelling and Simulation of Climate and Climatic Change, (Part 2), Erice, Italy, 11-23 May, 1986, edited by M.E. Schlesinger, Dordrecht, The Netherlands, Kluwer Academic Publishers, 1988, p.883-949, Includes discussion. Refs. p.929-940.

DLC QC980.N37 1986

Paleoclimatology, Models, Carbon dioxide, Vegetation patterns, Ice age theory, Global change

53-1124

**Ocean circulation in warm and cold climates.**

Bryan, K., Manabe, S., Proceedings of the NATO Advanced Study Institute on Physically-Based Modelling and Simulation of Climate and Climatic Change, (Part 2), Erice, Italy, 11-23 May, 1986, edited by M.E. Schlesinger, Dordrecht, The Netherlands, Kluwer Academic Publishers, 1988, p.951-966, Includes discussion. 11 refs.

DLC QC980.N37 1986

Ocean environments, Ocean currents, Carbon dioxide, Climatic factors, Air water interactions, Marine atmospheres, Atmospheric circulation, Paleoclimatology, Global change

53-1125

**Simulation of climate change due to increased atmospheric CO<sub>2</sub>.**

Mitchell, J.F.B., Proceedings of the NATO Advanced Study Institute on Physically-Based Modelling and Simulation of Climate and Climatic Change, (Part 2), Erice, Italy, 11-23 May, 1986, edited by M.E. Schlesinger, Dordrecht, The Netherlands, Kluwer Academic Publishers, 1988, p.1009-1051, Includes discussion. Refs. p.1043-1047.

DLC QC980.N37 1986

Carbon dioxide, Solar radiation, Climatic changes, Sea ice, Surface temperature, Atmospheric composition, Atmospheric circulation, Global warming

53-1126

**Electron transfer reactions in cryophilic algae.**

Kanazawa, A., Crofts, A.R., Kramer, D.M., Photosynthesis: from light to biosphere, Vol.1. Xth International Photosynthesis Congress, Montpellier, France, 20-25 Aug. 1995. Proceedings. Edited by P. Mathis, Dordrecht, The Netherlands, Kluwer Academic Publishers, 1995, p.731-734, 13 refs.

DLC QK882.I56 1995 Vol.1

Algae, Plants (botany), Snow cover, Photochemical reactions, Plant ecology, Plant physiology, Acclimatization, Cryobiology, Photosynthesis

53-1127

**Environmental restructuring at the Pleistocene/Holocene boundary in the East Siberian Arctic and its role in mammalian extinction and establishment of modern ecosystems (Communication 2).** [Prirodnaia perestroika v Vostochno-Sibirskoi' Arkktike na rubezhe pleistotsena i golotsena i ee rol' v vymirani' mlekopitaiushchikh i stanovlenii sovremennykh ekosistem (Soobshchenie 2)]

Sher, A.V., *Kriosfera zemli*, Apr.-June 1997, 1(2), p.3-11, In Russian with English title and summary. 23 refs. For part 1 see 52-1003.

Pleistocene, Paleoecology, Global change, Climatic changes, Ecosystems, Taiga, Tundra, Arctic Ocean, Russia—Laptev Sea, Russia—Siberia

53-1128

**Use of the reliability theory in solving engineering geological problems. [Prilozhenie teorii nadezhnosti k zadacham inzhenernoi' geokologii]**

Khrustalev, L.N., *Kriosfera zemli*, Apr.-June 1997, 1(2), p.12-17, In Russian with English title and summary. 1 ref.

Geocryology, Engineering geology, Global change, Climatic changes, Damage, Forecasting, Cost analysis, Mathematical models, Environmental impact, Cold weather construction

53-1129

**Snow cover changes and their role in climate (Communication 2).** [Izmeneniia snezhnogo pokrova i ikh klimaticheskai' rol' (Soobshchenie 2)]

Krenke, A.N., Kitaev, L.M., Turkov, D.V., Kadomtseva, T.G., Aizina, E.M., *Kriosfera zemli*, Apr.-June 1997, 1(2), p.18-22, In Russian with English title and summary. 11 refs. For part 1 see 52-1005.

Snow air interface, Snow melting, Air temperature, Snow heat flux, Heat balance, Atmospheric circulation, Global change

53-1130

**Cryolithogenic method for estimating paleotemperature conditions during formation of ice complex and subaerial periglacial sediments. [Kriolitogennyi' metod otsenki paleotemperaturnykh uslovii' formirovaniia ledovogo kompleksa i subaerial'nykh periglatsial'nykh otlozhenii]**

Konishchev, V.N., *Kriosfera zemli*, Apr.-June 1997, 1(2), p.23-28, In Russian with English title and summary. 13 refs.

Paleoclimatology, Geocryology, Periglacial processes, Taiga, Permafrost weathering, Minerals, Freeze thaw cycles, Frozen ground temperature, Glacial deposits, Russia—Yakutia

53-1131

**Hydrochemical method for estimation of paleotemperature of rocks on the Arctic coast. [Gidrokhimicheskii' metod otsenki paleotemperaturnykh porod na arkticheskoi' poberezh'e]**

Fotiev, S.M., *Kriosfera zemli*, Apr.-June 1997, 1(2), p.29-35, In Russian with English title and summary. 9 refs.

Paleoclimatology, Frozen rock temperature, Brines, Unfrozen water content, Salinity, Chemical composition, Sea water, Geothermy, Geothermometry

53-1132

**Evolution of the Arctic shelf during Late Cenozoic and cryogenic-glaciogenic processes. [Evoliutsiia arkticheskogo shel'fa v pozdnem kainozoe i kriogenno-gliatsigennyie protsessy v ego predelakh]**

Danilov, I.D., *Kriosfera zemli*, Apr.-June 1997, 1(2), p.36-41, In Russian with English title and summary. 22 refs.

Geocryology, Glaciation, Models, Paleoclimatology, Pleistocene, Bottom sediment, Marine geology

53-1133

**Reconstruction of paleogeographic conditions on the Laptev Sea shelf for Late Pleistocene-Holocene glacioeustatic cycle. [Rekonstruktsiia paleogeograficheskikh uslovii' shel'fa moria Laptevykh dlia pozdnepleistotsen-golotsenovogo gliatsioevstaticheskogo tsikla]**

Romanovskii, N.N., Gavrilov, A.V., Kholodov, A.L., Hubberten, H.W., Kassens, H., *Kriosfera zemli*, Apr.-June 1997, 1(2), p.42-49, In Russian with English title and summary. 30 refs.

Geocryology, Computerized simulation, Models, Paleoclimatology, Pleistocene, Permafrost origin, Marine deposits, Marine geology, Sea level, Russia—Laptev Sea

53-1134

**Cryolithological peculiarities of the active layer on slopes in relation to cryogenic landslides. [Kriolitologicheskie osobennosti sezonnotalogo sloia na sklonakh v sviazi s protsessom kriogenno opolzaniiia]**

Leibman, M.O., *Kriosfera zemli*, Apr.-June 1997, 1(2), p.50-55, In Russian with English title and summary. 20 refs.

Active layer, Thawing rate, Slope processes, Geocryology, Cryogenic structures, Landslides, Thaw depth

53-1135

**Role of fluvial processes in the evolution of the ice complex soils. [Rol' fluvial'nykh protsessov v razviti' porod ledovogo kompleksa]**

Gravis, G.F., *Kriosfera zemli*, Apr.-June 1997, 1(2), p.56-59, In Russian with English title and summary. 17 refs.

Alluvium, Eolian soils, Theories, Geocryology, Plains, Terraces, Russia—Yakutia

53-1136

**Life in cryosphere: the current view. [Zhizn' v kriosfere: vzgliad na problemu]**

Vorob'eva, E.A., Gilichinskii, D.A., Soina, V.S., *Kriosfera zemli*, Apr.-June 1997, 1(2), p.60-66, In Russian with English title and summary. 25 refs.

Soil microbiology, Bacteria, Low temperature research, Cryobiology, Permafrost, Sediments

53-1137

**Yeasts in Late Pliocene-Early Pleistocene Siberian permafrost. [Drozhzhi v vechnomerzlykh otlozheniakh Sibiri pozdnepliototsenovogo-rannepleistotsenovogo vozrasta]**

Dmitriev, V.V., Gilichinskii, D.A., Faizutdinova, R.N., Ostroumova, N.V., Golub'ev, V.I., Duda, V.I., *Kriosfera zemli*, Apr.-June 1997, 1(2), p.67-70, In Russian with English title and summary. 11 refs.

Fungi, Soil microbiology, Permafrost, Pleistocene, Plant physiology, Isotherms, Russia—Siberia

53-1138

**Blue-green and green algae from arctic permafrost. [Sinezelenye i zelenye vodorosli iz vechno-merzlykh osadochnykh porod Arktiki]**  
Vishnivetskaia, T.A., Erokhina, L.G., Gilichinskiĭ, D.A., Vorob'eva, E.A., *Kriosfera zemli*, Apr.-June 1997, 1(2), p.71-76, In Russian with English title and summary. 14 refs.  
Algae, Soil microbiology, Permafrost, Bacteria, Chlorophylls, Photosynthesis, Cryobiology, Sediments, Russia—Kolyma

53-1139

**Variations of the west antarctic ice streams associated with sea-level and climatic changes during the Late Pleistocene.**  
Verbitskiĭ, M.I.A., Saltzman, B., *Antarctic journal of the United States*, 1996, 31(2), p.49-51, 3 refs.  
Pleistocene, Ice sheets, Glacier oscillation, Stream flow, Ice melting, Temperature measurement, Melting points, Ice models, Climatic changes, Glacier flow, Sea level, Antarctica—Siple Coast

53-1140

**Ice-core glaciochemical reconnaissance in inland West Antarctica.**  
Kreutz, K.J., Mayewski, P.A., Twickler, M.S., Whitlow, S.I., *Antarctic journal of the United States*, 1996, 31(2), p.51-52, 6 refs.  
Ice cores, Glaciology, Ice composition, Radioactive age determination, Snow composition, Pits (excavations), Paleoclimatology, Antarctica—West Antarctica

53-1141

**Preliminary velocity field in the onset region of ice stream D, West Antarctica.**  
Bindschadler, R.A., Chen, X., Vornberger, P.L., *Antarctic journal of the United States*, 1996, 31(2), p.53-54, 4 refs.  
Paleoclimatology, Glacier melting, Glacier flow, Stream flow, Velocity measurement, Antarctica—West Antarctica

53-1142

**Internal stratigraphy from ground-based radar studies at Siple Dome summit.**  
Jacobel, R.W., Fisher, A.J., Sundell, N.M., *Antarctic journal of the United States*, 1996, 31(2), p.55-56, 7 refs.  
Topographic surveys, Glacier surfaces, Glacier flow, Radar echoes, Bottom topography, Paleoclimatology, Antarctica—West Antarctica

53-1143

**Annual dust cycles measured in a short ice core from Siple Dome, West Antarctica.**  
Ram, M., Stolz, M.R., *Antarctic journal of the United States*, 1996, 31(2), p.57, 3 refs.  
Ice cores, Dust, Meltwater, Antarctica—West Antarctica

53-1144

**Recent migration of Siple Dome divide determined from 1994 radio-echo sounding measurements.**  
Nereson, N.A., Raymond, C.F., *Antarctic journal of the United States*, 1996, 31(2), p.58-59, 7 refs.  
Radio echo soundings, Rheology, Basal sliding, Glacier flow, Ice models, Flow measurement, Antarctica—West Antarctica

53-1145

**Analysis of ground-based geophysical fieldwork in West Antarctica.**  
Bentley, C.R., Clarke, T.S., Liu, C., Lord, N.E., Shabtaie, S., *Antarctic journal of the United States*, 1996, 31(2), p.60-61, 11 refs.  
Geophysical surveys, Earth crust, Seismic surveys, Glacier surfaces, Glacier flow, Crevasse detection, Bottom topography, Anisotropy, Ice electrical properties, Antarctica—West Antarctica

53-1146

**Airborne radar sounding over west antarctic ice streams.**  
Bentley, C.R., Liu, C., Lord, N.E., *Antarctic journal of the United States*, 1996, 31(2), p.62-64, 5 refs.  
Spaceborne photography, Radar echoes, Glacier flow, Stream flow, Ice cover thickness, Seismic reflection, Basal sliding, Mapping, Glacier thickness, Antarctica—West Antarctica

53-1147

**Monitoring of basal seismicity rates of ice stream C, West Antarctica: preliminary results of the Antarctic Microearthquake Project, 1994-1995 and 1995-1996.**  
Anandakrishnan, S., *Antarctic journal of the United States*, 1996, 31(2), p.64-65, 5 refs.  
Glacier flow, Flow rate, Seismic surveys, Stream flow, Meltwater, Stresses, Icequakes, Antarctica—West Antarctica

53-1148

**Surface exposure dating of glacial landscapes and deposits in the Transantarctic Mountains using *in situ* induced cosmogenic helium-3 and neon-21.**  
Bruno, L.A., Baur, H., Signer, P., Wieler, R., Schlüchter, C., *Antarctic journal of the United States*, 1996, 31(2), p.66, 1 refs.  
Radioactive age determination, Glacial deposits, Moraines, Glacier surfaces, Glacial geology, Geochronology, Antarctica—Transantarctic Mountains

53-1149

**Basal processes at subfreezing temperatures: Meserve Glacier revisited.**  
Conway, H., Cuffey, K., Gades, A.M., Hallet, B., Raymond, C.F., Sletten, R., *Antarctic journal of the United States*, 1996, 31(2), p.67-68, 15 refs.  
Basal sliding, Glaciers, Rheology, Low temperature research, Subglacial observations, Strain tests, Glacier thickness, Glacial erosion, Glacier beds, Antarctica—Meserve Glacier

53-1150

**Glacial/interglacial variations in the flux of atmospherically transported diatoms in Taylor Dome ice core.**  
Kellogg, D.E., Kellogg, T.B., *Antarctic journal of the United States*, 1996, 31(2), p.68-70, 8 refs.  
Ice cores, Glacial deposits, Algae, Wind factors, Paleoclimatology, Atmospheric circulation, Radioactive age determination, Snow stratigraphy, Meltwater, Antarctica—Taylor Dome

53-1151

**Acquisition of borehole temperature measurements from Taylor Dome and the dry valleys for paleoclimate reconstruction.**  
Clow, G.D., Waddington, E.D., *Antarctic journal of the United States*, 1996, 31(2), p.71-72, 7 refs.  
Boreholes, Temperature measurement, Paleoclimatology, Strains, Climatic changes, Antarctica—McMurdo Dry Valleys

53-1152

**Relation of ice face melting structures to oceanic characters using remote operated vehicle observations, Mackay Glacier Tongue, Granite Harbor.**  
Liu, J.Y., Powell, R.D., *Antarctic journal of the United States*, 1996, 31(2), p.72-74, 4 refs.  
Glacier melting, Ice shelves, Glacier mass balance, Ice water interface, Ocean currents, Water temperature, Oceanographic surveys, Amphibious vehicles, Glacier tongues, Antarctica—Mackay Glacier Tongue

53-1153

**On the Mertz and Ninnis Glaciers, eastern Antarctica.**  
Wendler, G., Ahlén, K., Lingle, C., *Antarctic journal of the United States*, 1996, 31(2), p.75-76, 4 refs.  
Glacier surfaces, Spaceborne photography, Topographic surveys, Image processing, Glacier oscillation, Antarctica—Mertz Glacier Tongue, Antarctica—Ninnis Glacier Tongue

53-1154

**Dark line on the McMurdo Ice Shelf.**  
Whillans, I.M., Hamilton, G.S., *Antarctic journal of the United States*, 1996, 31(2), p.76-77, 4 refs.  
Ice shelves, Ice surface, Topographic surveys, Spaceborne photography, Glaciers, Photointerpretation, Seismic surveys, Crevasse, Strains, Antarctica—McMurdo Ice Shelf

53-1155

**Deglacial chronology of the western Ross Sea.**  
Hall, B.L., Denton, G.H., *Antarctic journal of the United States*, 1996, 31(2), p.78-80, 12 refs.  
Glaciation, Glacier oscillation, Radioactive age determination, Sea level, Paleoclimatology, Ice water interface, Ice sheets, Meltwater, Glacial geology, Fossils, Sea ice distribution, Antarctica—Ross Sea

53-1156

**Subglacial sediment transport and ice-stream behavior.**  
Alley, R.B., Anandakrishnan, S., Cuffey, K.M., *Antarctic journal of the United States*, 1996, 31(2), p.81-82, 15 refs.  
Basal sliding, Sediment transport, Subglacial observations, Glacier melting, Bottom sediment, Meltwater, Stream flow, Bedrock, Glacier flow, Antarctica—West Antarctica

53-1157

**Coring for microbial record of antarctic climate.**  
Wilson, G.S., et al, *Antarctic journal of the United States*, 1996, 31(2), p.83-86, 19 refs.  
Core samplers, Paleoclimatology, Microbiology, Permafrost samplers, Glacial geology, Fossils, Glacial deposits, Ice cores, Antarctica—McMurdo Dry Valleys

53-1158

**Global positioning system measurements of ice-sheet mass balance using the "coffe-can" method.**  
Hamilton, G.S., Whillans, I.M., *Antarctic journal of the United States*, 1996, 31(2), p.86-88, 4 refs.  
Seismic surveys, Ice sheets, Glacier mass balance, Topographic surveys, Velocity measurement, Mapping, Antarctica—South Pole

53-1159

**Initial results from marine sediment cores from the east-central Ross Sea.**  
Licht, K.J., Duran, D., *Antarctic journal of the United States*, 1996, 31(2), p.89-91, 6 refs.  
Marine deposits, Sediments, Core samplers, Glacial geology, Ice sheets, Sea ice distribution, Radioactive age determination, Paleoclimatology, Glacier oscillation, Antarctica—Ross Sea

53-1160

**Hydrothermal and hydrographic surveys of the Bransfield Strait: Results from cruise NBP95-07.**  
Klinkhammer, G.P., Chin, C.S., Wilson, C., Lawver, L.A., *Antarctic journal of the United States*, 1996, 31(2), p.92-94, 4 refs.  
Oceanographic surveys, Water temperature, Hydrothermal processes, Water chemistry, Hydrography, Data processing, Antarctica—Bransfield Strait

53-1161

**Analysis of laminates antarctic marine sediments.**  
Leventer, A., Stevens, L., *Antarctic journal of the United States*, 1996, 31(2), p.94-96, 5 refs.  
Marine deposits, Lacustrine deposits, Chemical analysis, Core samplers, Paleoclimatology, Paleobotany, Antarctica

53-1162

**Porewater chemistry of Ross Sea diamictos: a till or not a till?**  
Rayne, T.W., Domack, E.W., *Antarctic journal of the United States*, 1996, 31(2), p.97-98, 6 refs.  
Oceanographic surveys, Water chemistry, Marine deposits, Chemical analysis, Glacial geology, Simulation, Glacial till, Antarctica—Ross Sea

## 53-1163

**Bulk salinity characteristics of first-year sea ice in the Pacific sector of the southern ocean.**

Maksym, T., Jeffries, M.O., *Antarctic journal of the United States*, 1996, 31(2), p.99-101, 3 refs.

Sea ice, Ice salinity, Ice cores, Core samplers, South Pacific Ocean

## 53-1164

**Bottom water distribution.**

Gordon, A.L., *Antarctic journal of the United States*, 1996, 31(2), p.101-102, 5 refs.

Oceanographic surveys, Sea water, Salinity, Ocean bottom, Water chemistry, Water temperature, Antarctica—Weddell Sea

## 53-1165

**Profiling the South Pacific antarctic continental shelf.**

Giulivi, C., Jacobs, S., *Antarctic journal of the United States*, 1996, 31(2), p.103-104, 7 refs.

Oceanographic surveys, Water temperature, Ocean bottom, Water structure, Salinity, Turbidity, Thermal analysis, Ocean currents, South Pacific Ocean

## 53-1166

**Light-saturated primary production in antarctic coast waters.**

Moline, M.A., Prézelin, B.B., Claustre, H., *Antarctic journal of the United States*, 1996, 31(2), p.105-107, 6 refs.

Marine biology, Biomass, Seasonal variations, Oceanographic surveys, Photosynthesis, Light transmission, Sea water, Solar radiation, Cloud cover, Antarctica

## 53-1167

**Radium-226/barium ratios for dating biogenic carbonates in the southern oceans: preliminary evidence from coastal mollusk shells.**

Berkman, P.A., Ku, T.L., *Antarctic journal of the United States*, 1996, 31(2), p.107-108, 10 refs.

Radioactive age determination, Marine biology, Fossils, Paleoclimatology, Water chemistry, Sea water, Geochemistry

## 53-1168

**Population dynamics of two collembolan species in an arctic tundra.**

Birkemoe, T., Sømme, L., *Pedobiologia*, Apr. 1998, 42(2), p.131-145, 30 refs.

Soil microbiology, Tundra soils, Subarctic landscapes, Ecosystems, Biomass, Growth, Seasonal variations, Soil temperature, Temperature effects, Sampling, Statistical analysis, Norway—Svalbard

## 53-1169

**Analysis of surface winds in the Shelikof Strait, Alaska, using moored buoy observations.**

Bond, N.A., Stabeno, P.J., *Weather and forecasting*, Sep. 1998, 13(3)pt.1, p.547-559, 19 refs.

Climatology, Marine atmospheres, Turbulent boundary layer, Subpolar regions, Fluid dynamics, Wind direction, Wind velocity, Atmospheric pressure, Sounding, Topographic effects, Models, Seasonal variations, United States—Alaska—Shelikof Strait

## 53-1170

**Quantitative approach to evaluating the effects of snow cover on cold air mass temperatures across the U.S. Great Plains.**

Ellis, A.W., Leathers, D.J., *Weather and forecasting*, Sep. 1998, 13(3)pt.2, p.688-701, 23 refs.

Climatology, Air masses, Plains, Air temperature, Surface temperature, Heat balance, Snow cover distribution, Snow air interface, Snow cover effect, Statistical analysis, Mathematical models, Weather forecasting, United States—Great Plains

## 53-1171

**Observations of widespread lake-effect cloudiness: influences of lake surface temperature and upwind conditions.**

Kristovich, D.A.R., Laird, N.F., *Weather and forecasting*, Sep. 1998, 13(3)pt.2, p.811-821, 21 refs.

Climatology, Synoptic meteorology, Atmospheric boundary layer, Lake effects, Cloud cover, Surface temperature, Moisture transfer, Heat flux, Static stability, Air water interactions, Snowstorms, Weather forecasting, Statistical analysis, United States—Michigan—Michigan, Lake

## 53-1172

**Comments on "A climatology of significant winter-type weather events in the contiguous United States, 1982-94".**

Gartner, W.D., Hoke, J.E., Junker, N.W., Wolf, L.E., *Weather and forecasting*, Sep. 1998, 13(3)pt.2, p.884-885, 4 refs. For pertinent paper see 51-5482.

Climatology, Precipitation (meteorology), Weather forecasting, Snowstorms, Accuracy, United States

## 53-1173

**Virtual floe ice drift forecast model intercomparison.**

Grumbine, R.W., *Weather and forecasting*, Sep. 1998, 13(3)pt.2, p.886-890, 10 refs.

Sea ice distribution, Ice floes, Drift, Ice forecasting, Ice models, Mathematical models, Correlation, Accuracy, Performance

## 53-1174

**Transient freezing regulates expression of extensin-type genes in winter oilseed rape.**

Kozbial, P.Z., Jerzmanowski, A., Shirsat, A.H., Kacperska, A., *Physiologia plantarum*, June 1998, 103(2), p.264-270, 32 refs.

Plant physiology, Cold tolerance, Frost resistance, Acclimatization, Plant tissues, Chemical composition, Chemical analysis, Temperature effects, Freeze thaw tests, Electrical measurement

## 53-1175

**Effect of freezing rate and programmed freezing on rheological parameters and tissue structure of potato (Cv. Monalisa).**

Alvarez, M.D., Canet, W., Tortosa, M.E., *Zeitschrift für Lebensmittel-Untersuchung und -Forschung A*, 1997, 204(5), p.356-364, 17 refs.

Rheology, Frozen liquids, Porous materials, Ice crystal growth, Microstructure, Freeze thaw cycles, Freeze thaw tests, Freezing rate, Mechanical properties, Analysis (mathematics), Scanning electron microscopy

## 53-1176

**Contrasting effects of high-pressure-assisted freezing and conventional air-freezing on eggplant tissue microstructure.**

Otero, L., Solas, M.T., Sanz, P.D., De Elvira, C., Carrasco, J.A., *Zeitschrift für Lebensmittel-Untersuchung und -Forschung A*, 1998, 206(5), p.338-342, 14 refs.

Porous materials, Frozen liquids, Freezing, Ice air interface, Microstructure, Damage, Freezing rate, Freeze thaw tests, High pressure tests, Scanning electron microscopy

## 53-1177

**Water flow through temperate glaciers.**

Fountain, A.G., Walder, J.S., *Reviews of geophysics*, Aug. 1998, 36(3), p.299-328, Refs. p.324-328.

Glacial hydrology, Alpine glaciation, Ice dams, Glacier ablation, Water flow, Ice water interface, Porosity, Subglacial drainage, Water storage, Bedrock, Models, Runoff forecasting

## 53-1178

**Plant functional types and ecosystem change in arctic tundras.**

Shaver, G.R., Giblin, A.E., Nadelhoffer, K.J., Rastetter, E.B., Plant functional types. Edited by T.M. Smith et al. International Geosphere-Biosphere Programme Book Series. No.1, Cambridge, University Press, 1997, p.153-173, Refs. p.170-173.

DLC QK905.P565 1997

Plant ecology, Arctic landscapes, Ecosystems, Tundra vegetation, Tundra soils, Decomposition, Biomass, Vegetation patterns, Dynamic properties, Classifications, Vegetation factors

## 53-1179

**Freezing damage and protection of photosystem II particles by sucrose and trehalose.**

Apostolova, E., Busheva, M., Tenchov, B., International Congress on Photosynthesis, 9th, Nagoya, Japan, Aug. 30-Sep. 4, 1992. Proceedings, Vol.4. Research in photosynthesis. Edited by N. Murata, Dordrecht, Kluwer Academic Publishers, 1992, p.165-168, 11 refs.

DLC QK882.I55 1992

Plant physiology, Photosynthesis, Frost resistance, Plant tissues, Freezing rate, Photochemical reactions, Damage, Protection, Chlorophylls, Chemical analysis, Spectroscopy

## 53-1180

**Field photosynthesis study in arctic plants: implications for climate changes.**

Gerasimenko, T.V., Kaipianen, E.L., International Congress on Photosynthesis, 9th, Nagoya, Japan, Aug. 30-Sep. 4, 1992. Proceedings, Vol.4. Research in photosynthesis. Edited by N. Murata, Dordrecht, Kluwer Academic Publishers, 1992, p.823-826, 9 refs.

DLC QK882.I55 1992

Plant physiology, Tundra vegetation, Subpolar regions, Ecosystems, Photosynthesis, Climatic changes, Climatic factors, Acclimatization

## 53-1181

**Biostratigraphy of the Vendian-Cambrian Sukharikha River section, northwestern Siberian Platform.**

Rowland, S.M., Luchina, V.A., Korovnikov, I.V., Sipin, D.P., Tarletskov, A.I., Fedoseev, A.V., *Canadian journal of earth sciences*, Apr. 1998, 35(4), p.339-352, With French summary. 37 refs.

Pleistocene, Paleocology, Earth crust, Subpolar regions, Rivers, Sedimentation, Stratigraphy, Isotope analysis, Classifications, Geochronology, Russia—Siberia

## 53-1182

**Falling amplitude of carbon isotopic oscillations through the Lower to Middle Cambrian: northern Siberian data.**

Brasier, J.D., Sukhov, S.S., *Canadian journal of earth sciences*, Apr. 1998, 35(4), p.353-373, With French summary. 66 refs.

Pleistocene, Subpolar regions, Earth crust, Paleocology, Rock properties, Carbon isotopes, Isotope analysis, Stratigraphy, Geochronology, Correlation, Russia—Siberia

## 53-1183

**Geomorphic and sedimentary signatures of early Holocene deglaciation in high arctic fiords, Ellesmere Island, Canada: implications for deglacial ice dynamics and thermal regime.**

Cofaigh, C.Ó., *Canadian journal of earth sciences*, Apr. 1998, 35(4), p.437-452, With French summary. 62 refs.

Pleistocene, Subpolar regions, Glacial geology, Geomorphology, Glacier oscillation, Glacial deposits, Radioactive age determination, Geochronology, Thermal regime, Canada—Northwest Territories—Ellesmere Island



53-1184

**Iceberg in the sky.**Pinder, E., *Weatherwise*, Nov.-Dec. 1998, 51(6), p.16-23.

Weather stations, Mountains, Wind (meteorology), Turbulent boundary layer, Meteorological instruments, Ice accretion, Glaze, Cold weather operation, Ice control, United States—New Hampshire—Washington, Mount

53-1185

**Long-term changes of macrozoobenthos in the Eastern Gotland Basin and the Gulf of Finland (Baltic Sea) in relation to the hydrographical regime.**Laine, A.O., Sandler, H., Andersin, A.B., Stigzelius, J., *Journal of sea research*, Dec. 1997, 38(1-2), p.135-159, 57 refs.

Oceanography, Subpolar regions, Marine biology, Ocean bottom, Ecosystems, Biomass, Geochemistry, Salinity, Stratification, Oxygen, Turbulent diffusion, Hydrography, Baltic Sea

53-1186

**Characterisation of fine particles by flow cytometry in estuarine and coastal arctic waters.**Moreira-Turca, P.F., Martin, J.M., *Journal of sea research*, June 1998, 39(3-4), p.217-226, 47 refs.

Oceanography, Subpolar regions, Estuaries, Runoff, Deltas, Marine biology, Biomass, Sedimentation, Particles, Organic nuclei, Hydrography, Flow measurement, Russia—Laptev Sea, Russia—Lena River

53-1187

**Anisotropic strength behaviour of a fissured over-consolidated clay in relation to Saalian glacial directions.**Schokking, F., *Engineering geology*, Feb. 26, 1998, 49(1), p.31-51, 31 refs.

Pleistocene, Glacial geology, Glacier flow, Orientation, Quaternary deposits, Clay soils, Soil strength, Deformation, Anisotropy, Mechanical tests, Boreholes, Netherlands

53-1188

**Chilling and freezing.**

Vézina, L.P., Ferullo, J.M., Laliberté, G., Laberge, S., Willemot, C., Plant ecophysiology. Edited by M.N.V. Prasad, New York, John Wiley &amp; Sons, Inc., 1997, p.61-100, Refs. p.95-100. DLC QK905.P55 1997

Plant physiology, Plant ecology, Alpine landscapes, Arctic landscapes, Forest ecosystems, Biogeography, Cryobiology, Frost resistance, Acclimatization, Cold tolerance, Temperature effects, Cold weather survival

53-1189

**Numerical simulation of remote acoustic sensing of ocean temperature in the Fram Strait environment.**Naugolnykh, K.A., Johannessen, O.M., Esipov, I.B., Ovchinnikov, O.B., Tuzhilkin, I.U.I., Zosimov, V.V., *Acoustical Society of America. Journal*, Aug. 1998, 104(2)pt.1, p.738-746, 31 refs.

Oceanography, Underwater acoustics, Subpolar regions, Water temperature, Temperature variations, Temperature effects, Sound waves, Wave propagation, Velocity measurement, Statistical analysis, Data processing, Computerized simulation, Arctic Ocean, Fram Strait

53-1190

**Glacier meltwater runoff in China and its nourishment to river.**Yang, Z.N., *Chinese geographical science*, 1995, 5(1), p.66-76, 11 refs.

Mountain glaciers, Glacier melting, Glacier ablation, Meltwater, Runoff, Glacial rivers, China

53-1191

**Snow hazard regionalization in China.**Hu, R.J., Ma, H., Wei, W.S., *Chinese geographical science*, 1992, 2(3), p.197-204, 4 refs.

Snow surveys, Snow cover distribution, Safety, Cold weather operation, Regional planning, China

53-1192

**Little Ice Age of the northwest region, China.**Wang, Z.T., *Chinese geographical science*, 1992, 2(3), p.215-225, 18 refs.

Glaciation, Pleistocene, Glacier oscillation, Ice age theory, Climatic changes, Meltwater, China

53-1193

**Model simulating the processes in responses of glacier and runoff to climatic change—a case study of Glacier No.1 in the Urumqi River, China.**Ye, B.S., Chen, K.G., *Chinese geographical science*, 1997, 7(3), p.243-250, 9 refs.

Climatic changes, Glacier melting, Ice models, Run-off forecasting, Glacier oscillation, Air temperature, China

53-1194

**Studies on stable isotope, paleovegetation and evolution of the East Asia monsoon on the Loess Plateau.**Pang, J.L., *Chinese journal of arid land research*, 1998, 11(1), p.17-26.

Paleoclimatology, Global change, Precipitation (meteorology), Sedimentation, Paleocology, Loess, Carbon isotopes, Stratigraphy, Remanent magnetism, Soil tests, China—Loess Plateau

53-1195

**Analysis of ice formation upon freezing the hardening mineral binders.**Sopov, V.P., Usheroov-Marshak, A.V., *Colloid journal*, Jan.-Feb. 1998, 60(1), p.68-72, Translated from *Kolloidnyi zhurnal*. 11 refs.

Concrete strength, Porous materials, Cement admixtures, Ice physics, Freeze thaw tests, Freezing rate, Ice formation, Phase transformations, Temperature measurement, Concrete hardening, Scanning electron microscopy

53-1196

**Reproductive patterns in the antarctic brachiopod *Liothyrella uva*.**Meidlinger, K., Tyler, P.A., Peck, L.S., *Marine biology*, Aug. 1998, 132(1), p.153-162, 45 refs.

Marine biology, Ecology, Ocean bottom, Biomass, Growth, Seasonal variations, Sampling, Statistical analysis, Antarctica—Signy Island

53-1197

**Continuous lake-sediment records of glaciation in the Sierra Nevada between 52,600 and 12,500 <sup>14</sup>C yr B.P.**Benson, L.V., et al, *Quaternary research*, Sep. 1998, 50(2), p.113-127, 48 refs.

Pleistocene, Lacustrine deposits, Clays, Alpine glaciation, Glacial geology, Glacier oscillation, Remanent magnetism, Statistical analysis, Geochronology, United States—California—Sierra Nevada

53-1198

**Evidence at Lomax, Illinois, for Mid-Wisconsin (~40,000 yr B.P.) position of the Des Moines Lobe and for diversion of the Mississippi River by the Lake Michigan Lobe (20,350 yr B.P.).**Curry, B.B., *Quaternary research*, Sep. 1998, 50(2), p.128-138, 58 refs.

Pleistocene, Paleoclimatology, Paleocology, Clay minerals, Quaternary deposits, Geomorphology, Glacial geology, Glacial lakes, Estuaries, Glacial hydrology, Sedimentation, Stratigraphy, Radioactive age determination, United States—Illinois—Lomax

53-1199

**Deposits and soils of the past 130,000 years at the desert-loess transition in northern China.**Sun, J.M., Ding, Z.L., *Quaternary research*, Sep. 1998, 50(2), p.148-156, 40 refs.

Pleistocene, Paleoclimatology, Climatic changes, Precipitation (meteorology), Sedimentation, Loess, Eolian soils, Quaternary deposits, Stratigraphy, Remanent magnetism, Geochronology, Correlation, China—Loess Plateau

53-1200

**Correlated millennial-scale changes in surface hydrography and terrigenous sediment yield inferred from last-glacial marine deposits off northeastern Brazil.**Arz, H.W., Pätzold, J., Wefer, G., *Quaternary research*, Sep. 1998, 50(2), p.157-166, 57 refs.

Pleistocene, Paleoclimatology, Glacier oscillation, Surface temperature, Paleocology, Marine deposits, Sedimentation, Hydrography, Stratigraphy, Drill core analysis, Ice cores, Isotope analysis, Correlation, Atlantic Ocean, Brazil

53-1201

**Initial Pb of the Amitsoq gneiss revisited: implication for the timing of early Archaean crustal evolution in West Greenland.**Kamber, B.S., Moorbath, S., *Chemical geology*, Aug. 24, 1998, 150(1-2), p.19-41, 59 refs.

Pleistocene, Earth crust, Subpolar regions, Magma, Rock properties, Geologic processes, Geochemistry, Isotope analysis, Indexes (ratios), Geochronology, Statistical analysis, Greenland

53-1202

**Tertiary mineralization and magmatism, East Greenland: lead isotope evidence for remobilization of continental crust.**Jensen, S.M., *Chemical geology*, Aug. 24, 1998, 150(1-2), p.119-144, Refs. p.141-144.

Pleistocene, Subpolar regions, Earth crust, Geologic processes, Magma, Hydrothermal processes, Mineralogy, Rock properties, Isotope analysis, Mass transfer, Classifications, Greenland

53-1203

**Annual and seasonal variations of amino acid and hexosamine fluxes in the deep Bering Sea and the deep central subarctic Pacific.**Hashimoto, S., Maita, Y., Yanada, M., Takahashi, K., *Deep-sea research I*, July 1998, 45(7), p.1029-1051, 51 refs.

Marine biology, Subpolar regions, Geochemical cycles, Water chemistry, Particles, Turbulent diffusion, Organic nuclei, Biomass, Plankton, Seasonal variations, Sampling, Statistical analysis, Bering Sea, Pacific Ocean

53-1204

**Silica cycle in surface sediments of the South Atlantic.**Schlüter, M., Rutgers van der Loeff, M.M., Holby, O., Kuhn, G., *Deep-sea research I*, July 1998, 45(7), p.1085-1109, Refs. p.1107-1109.

Oceanography, Sedimentation, Distribution, Biomass, Turbulent diffusion, Subpolar regions, Geochemical cycles, Particles, Drill core analysis, Statistical analysis, South Atlantic Ocean, Antarctica—Scotia Sea, Antarctica—Weddell Sea

53-1205

**<sup>129</sup>I in archived seawater samples.**Edmonds, H.N., Smith, J.N., Livingston, H.D., Kilius, L.R., Edmond, J.M., *Deep-sea research I*, July 1998, 45(7), p.1111-1125, 38 refs.

Oceanography, Subpolar regions, Fallout, Ocean currents, Sea water, Radioactive isotopes, Distribution, Isotope analysis, Sampling, Oceanographic surveys, Statistical analysis, Arctic Ocean, Atlantic Ocean

53-1206

**Close coupling between seasonal biological production and dynamics of dissolved inorganic carbon in the Indian Ocean sector and the western Pacific Ocean sector of the antarctic ocean.**Ishii, M., Inoue, H.Y., Matsueda, H., Tanoue, E., *Deep-sea research I*, July 1998, 45(7), p.1187-1209, 56 refs.

Oceanography, Subpolar regions, Water chemistry, Ice edge, Meltwater, Ice cover effect, Biomass, Sedimentation, Organic nuclei, Geochemical cycles, Distribution, Sampling, Hydrography, Antarctica—Weddell Sea, Indian Ocean



53-1207

**Periglacial of Mt. Llullaillaco (Chile/Argentina). [Das Periglazial des Llullaillaco (Chile/Argentinien)]**

Schröder, H., Makki, M., *Petermanns Geographische Mitteilungen*, 1998, 142(2), p.67-84. In German with English and Russian summaries. 42 refs.

Geomorphology, Periglacial processes, Geocryology, Mountain soils, Landforms, Altiplanation, Landscape development, Classifications, Geophysical surveys, Chile—Llullaillaco, Mount, Argentina—Llullaillaco, Mount

53-1208

**Stratigraphy, composition and landform-shaping effects of aeolian cover sands in the Weichselian moraine landscape of Brandenburg, north-eastern Germany. [Stratigraphie, Stoffbestand und Reliefwirksamkeit der Flugsande im brandenburgischen Jungmoränenland]**

Bussemer, S., Gärtner, P., Schlaak, N., *Petermanns Geographische Mitteilungen*, 1998, 142(2), p.115-125. In German with English and Russian summaries. 28 refs.

Pleistocene, Geomorphology, Glacial geology, Moraines, Eolian soils, Periglacial processes, Sands, Landscape development, Stratigraphy, Profiles, Luminescence, Geochronology, Radioactive age determination, Germany—Brandenburg

53-1209

**Comparison of the CCM3 model climate using diagnosed and predicted condensate parameterizations.**

Rasch, P.J., Kristjánsson, J.E., *Journal of climate*, July 1998, 11(7), p.1587-1614, 48 refs.

Climatology, Polar atmospheres, Cloud physics, Heat flux, Precipitation (meteorology), Water vapor, Condensation, Ice formation, Ice water interface, Ice volume, Forecasting, Mathematical models, Simulation

53-1210

**Antarctic Circumpolar Wave in a coupled ocean-atmosphere GCM.**

Christoph, M., Barnett, T.P., Roeckner, E., *Journal of climate*, July 1998, 11(7), p.1659-1672, 13 refs.

Climatology, Polar atmospheres, Marine atmospheres, Atmospheric circulation, Gravity waves, Surface temperature, Attenuation, Heat flux, Advection, Air ice water interaction, Mathematical models, Simulation, Antarctica

53-1211

**Convergence and disposal of energy and moisture on the antarctic polar cap from ECMWF reanalyses and forecasts.**

Genthon, C., Krinner, G., *Journal of climate*, July 1998, 11(7), p.1703-1716, 21 refs.

Climatology, Polar atmospheres, Fluid dynamics, Heat balance, Moisture transfer, Atmospheric circulation, Glacier mass balance, Ice air interface, Surface energy, Mathematical models, Simulation, Thermodynamics, Antarctica

53-1212

**Effective radius in ice clouds.**

Wyser, K., *Journal of climate*, July 1998, 11(7), p.1793-1802, 25 refs.

Climatology, Cloud physics, Optical properties, Ice physics, Ice crystal optics, Ice crystal structure, Ice crystal size, Water content, Indexes (ratios), Particle size distribution, Spectra, Analysis (mathematics)

53-1213

**Dynamically consistent analysis of circulation and transports in the southwestern Weddell Sea.**

Iaremchuk, M.I., Nechaev, D.A., Schroter, J., Fahrbach, E., *Annales geophysicae*, Aug. 1998, 16(8), p.1024-1038, 27 refs.

Oceanographic surveys, Ocean currents, Hydrography, Models, Water temperature, Velocity measurement, Water transport, Antarctica—Weddell Sea

53-1214

**German antarctic research report to SCAR No.13, 1991. 1. Past activities (October 1990-March 1991). 2. Planned activities (April 1991-March 1992).**

German National Committee on Antarctic Research, Bremerhaven, 1991, 123p., Refs. p.82-103.

Research projects, Low temperature research, Polar regions, Antarctica

53-1215

**New micromorphological knowledge of the last Pleistocene glacial cycle in the loess profile at Praha-Sedlec. [Nové mikromorfologické poznatky posledního pleistocenního glaciálního cyklu správného profilu Praha-Sedlec]**

Hradilová, J., *Journal of the Czech Geological Society*, 1994, 39(4), p.319-329. With Czech summary. Refs. p.326.

Pleistocene, Glaciation, Glacial geology, Loess, Eolian soils, Glacial deposits, Paleoclimatology

53-1216

**Scavenging of  $^{231}\text{Pa}$  and  $^{230}\text{Th}$  in the South Atlantic: Implications for the use of the  $^{231}\text{Pa}/^{230}\text{Th}$  ratio as a paleoproductivity proxy. [Entfernung der natürlichen Radionuklide Protactinium-231 und Thorium-230 aus der Wassersäule des Südatlantiks - Auswirkungen für die Verwendung des  $^{231}\text{Pa}/^{230}\text{Th}$ -Verhältnisses als Anzeiger für Paläoproduktivität]**

Walter, H.J., *Berichte zur Polarforschung*, 1998, No.282, 82p., With German summary. Refs. p.75-82. Geochemistry, Scavenging, Microbiology, Sediments, Biomass, Isotopic labeling, South Atlantic Ocean

53-1217

**25,000-year tropical climate history from Bolivian ice cores.**

Thompson, L.G., et al, *Science*, Dec. 4, 1998, 282(5395), p.1858-1864, Refs. p.1863-1864.

Ice cores, Age determination, Paleoclimatology, Bolivia

53-1218

**Geospace environmental monitoring at Zhongshan Station, Antarctica.**

Liu, R.Y., Lü, D.R., *Tokyo. National Institute of Polar Research. Memoirs. Special issue*, July 1998, No.52, International Symposium on Environmental Research in the Antarctic, Tokyo, Dec. 3-4, 1996. Proceedings. Edited by M. Fukuchi, p.13-27, 11 refs.

Air masses, Ozone, Atmospheric composition, Atmospheric physics, Measuring instruments, Geomagnetism, Environmental protection, Aerosols, Polar atmospheres, Antarctica—Zhongshan Station

53-1219

**Review of radar and satellite beacon observations of atmospheric gravity waves at Syowa Station.**

Ogawa, T., *Tokyo. National Institute of Polar Research. Memoirs. Special issue*, July 1998, No.52, International Symposium on Environmental Research in the Antarctic, Tokyo, Dec. 3-4, 1996. Proceedings. Edited by M. Fukuchi, p.28-43, Refs. p.42-43.

Atmospheric physics, Gravity waves, Radar, Atmospheric composition, Atmospheric circulation, Geomagnetism, Polar atmospheres, Antarctica—Showa Station

53-1220

**Thermosphere at South Pole.**

Smith, R.W., Hernandez, G., *Tokyo. National Institute of Polar Research. Memoirs. Special issue*, July 1998, No.52, International Symposium on Environmental Research in the Antarctic, Tokyo, Dec. 3-4, 1996. Proceedings. Edited by M. Fukuchi, p.44-54, 17 refs.

Geophysical surveys, Solar radiation, Ultraviolet radiation, Thermal analysis, Atmospheric physics, Atmospheric composition, Atmospheric disturbances, Magnetic surveys, Atmospheric electricity, Polar atmospheres, Antarctica—South Pole

53-1221

**Ozone variation in the southern polar stratosphere.**

Gernandt, H., Herber, A., Von der Gathen, P., Kaneto, S., *Tokyo. National Institute of Polar Research. Memoirs. Special issue*, July 1998, No.52, International Symposium on Environmental Research in the Antarctic, Tokyo, Dec. 3-4, 1996. Proceedings. Edited by M. Fukuchi, p.68-88, Refs. p.86-88.

Polar atmospheres, Stratosphere, Ozone, Periodic variations, Seasonal variations, Aerosols, Air pollution, Antarctica

53-1222

**Irregular ozone depletion events in the antarctic troposphere recorded at Neumayer Station in 1992 and 1993.**

Wessel, S., et al, *Tokyo. National Institute of Polar Research. Memoirs. Special issue*, July 1998, No.52, International Symposium on Environmental Research in the Antarctic, Tokyo, Dec. 3-4, 1996. Proceedings. Edited by M. Fukuchi, p.89-101, Refs. p.100-101.

Ozone, Polar atmospheres, Atmospheric composition, Seasonal variations, Air masses, Antarctica—Neumayer Station

53-1223

**Polar UV measurements—ozone depletion and biological significance.**

Booth, C.R., Tusson, J.R., *Tokyo. National Institute of Polar Research. Memoirs. Special issue*, July 1998, No.52, International Symposium on Environmental Research in the Antarctic, Tokyo, Dec. 3-4, 1996. Proceedings. Edited by M. Fukuchi, p.111-121, Refs. p.120-121.

Ozone, Atmospheric composition, Air pollution, Ultraviolet radiation, Measuring instruments, Environmental impact, Physiological effects, Polar atmospheres

53-1224

**Surface UV radiation environment over the Antarctic: role of surface and cloud processes.**

Gautier, C., Ricchiazzi, P., Yang, S.R., *Tokyo. National Institute of Polar Research. Memoirs. Special issue*, July 1998, No.52, International Symposium on Environmental Research in the Antarctic, Tokyo, Dec. 3-4, 1996. Proceedings. Edited by M. Fukuchi, p.122-134, 17 refs.

Ultraviolet radiation, Polar stratospheric clouds, Environmental impact, Physiological effects, Surface properties, Ozone, Atmospheric composition, Clouds (meteorology), Low temperature research, Data processing, Snow surface, Reflection, Antarctica

53-1225

**Spring peaks of major and trace elements in snow at Asuka Station, East Antarctica.**

Ikegawa, M., et al, *Tokyo. National Institute of Polar Research. Memoirs. Special issue*, July 1998, No.52, International Symposium on Environmental Research in the Antarctic, Tokyo, Dec. 3-4, 1996. Proceedings. Edited by M. Fukuchi, p.135-148, Refs. p.146-148.

Snow composition, Seasonal variations, Chemical analysis, Brines, Snow impurities, Aerosols, Antarctica—Asuka Station

53-1226

**Classification of polar satellite data using minimum distance method.**

Muramoto, K., Kubo, M., Saito, H., Yamanouchi, T., *Tokyo. National Institute of Polar Research. Memoirs. Special issue*, July 1998, No.52, International Symposium on Environmental Research in the Antarctic, Tokyo, Dec. 3-4, 1996. Proceedings. Edited by M. Fukuchi, p.149-157, 11 refs.

Classifications, Image processing, Spaceborne photography, Clouds (meteorology), Sea ice, Snow surface, Ice surface, Radiation, Models, Polar regions, Antarctica

53-1227

Atmospheric carbon dioxide and methane concentrations in the past and synchronisation of ice core records from both Hemispheres based on methane results.

Stauffer, B., Tokyo. *National Institute of Polar Research. Memoirs. Special issue*, July 1998, No.52, International Symposium on Environmental Research in the Antarctic, Tokyo, Dec. 3-4, 1996. Proceedings. Edited by M. Fukuchi, p.158-171, Refs. p.169-171.

Atmospheric composition, Air pollution, Bubbles, Polar regions, Variations, Carbon dioxide, Ice cores, Climatic changes, Paleoclimatology, Glacial meteorology, Antarctica

53-1228

Antarctic marine ecosystems research; where to here?

El-Sayed, S.Z., Tokyo. *National Institute of Polar Research. Memoirs. Special issue*, July 1998, No.52, International Symposium on Environmental Research in the Antarctic, Tokyo, Dec. 3-4, 1996. Proceedings. Edited by M. Fukuchi, p.172-185, Refs. p.184-185.

Oceanographic surveys, Ecology, Marine biology, Ecosystems, Research projects, Climatic changes, Pollution, Ozone, Environmental impact, Antarctica

53-1229

Temporal changes in marine environments in the Antarctic Peninsula area during the 1994/95 austral summer.

Kim, S.A., et al, Tokyo. *National Institute of Polar Research. Memoirs. Special issue*, July 1998, No.52, International Symposium on Environmental Research in the Antarctic, Tokyo, Dec. 3-4, 1996. Proceedings. Edited by M. Fukuchi, p.186-208, 18 refs.

Oceanographic surveys, Marine biology, Biomass, Ecosystems, Sea water, Water temperature, Salinity, Nutrient cycle, Plankton, Ecology, Seasonal variations, Antarctica

53-1230

Long-term observation of zooplankton biomass in the Indian Ocean sector of the southern ocean.

Takahashi, K., Tanimura, A., Fukuchi, M., Tokyo. *National Institute of Polar Research. Memoirs. Special issue*, July 1998, No.52, International Symposium on Environmental Research in the Antarctic, Tokyo, Dec. 3-4, 1996. Proceedings. Edited by M. Fukuchi, p.209-219, Refs. p.218-219.

Marine biology, Oceanographic surveys, Plankton, Biomass, Periodic variations, Air ice water interaction, Antarctica, Indian Ocean

53-1231

Antarctic fish *Trematomus bernacchii* as biomonitor of environmental contaminants at Terra Nova Bay Station (Ross Sea).

Bargagli, R., Corsolini, S., Fossi, M.C., Sanchez-Hernandez, J.C., Focardi, S., Tokyo. *National Institute of Polar Research. Memoirs. Special issue*, July 1998, No.52, International Symposium on Environmental Research in the Antarctic, Tokyo, Dec. 3-4, 1996. Proceedings. Edited by M. Fukuchi, p.220-229, Refs. p.228-229.

Oceanographic surveys, Water pollution, Marine biology, Animals, Physiological effects, Impurities, Human factors, Antarctica—Terra Nova Bay

53-1232

Environmental geochemical and biological features of antarctic oases.

Matsumoto, G.I., Tokyo. *National Institute of Polar Research. Memoirs. Special issue*, July 1998, No.52, International Symposium on Environmental Research in the Antarctic, Tokyo, Dec. 3-4, 1996. Proceedings. Edited by M. Fukuchi, p.230-250, Refs. p.247-250.

Limnology, Geochemistry, Cryobiology, Ecology, Human factors, Global warming, Microbiology, Water chemistry, Plant physiology, Plants (botany), Lake ice, Environmental impact, Antarctica

53-1233

Release of methane from permafrost as a result of local warming and other disturbances.

Rivkin, F.M., *Polar geography*, Apr.-June 1998, 22(2), p.105-118, Translated from *Akademiia nauk. Izvestiia. Seriya geograficheskaja*. 13 refs. Climatology, Greenhouse effect, Global warming, Natural gas, Mining, Frozen ground chemistry, Permafrost transformation, Ground thawing, Active layer, Thaw depth, Vapor transfer, Environmental impact, Russia—Yamal Peninsula

53-1234

Regions of adverse environmental impact in the Russian Arctic and subarctic.

Evseev, A.V., Krasovskaia, T.M., *Polar geography*, Apr.-June 1998, 22(2), p.136-142, Translated from *Geografiia prirodnye resursy*. 4 refs.

Air pollution, Soil pollution, Snow impurities, Subpolar regions, Ecosystems, Metals, Aerosols, Environmental impact, Detection, Standards, Forecasting, Russia

53-1235

Preliminary study on the Holocene environment changes in Xinjiang—geologic records and sequence.

Zhong, W., Wang, J.M., *Chinese geographical science*, 1996, 6(2), p.166-176, 23 refs. Pleistocene, Paleoclimatology, Palynology, Climatic changes, Sedimentation, Lacustrine deposits, Glacial deposits, Stratigraphy, Profiles, Statistical analysis, China—Xinjiang

53-1236

Reconstruction of paleovegetation and palaeoclimate of Holocene Hypsithermal in the Hemudu region.

Zhou, Z.K., Xia, Y.J., Liu, W.L., Wu, W.T., *Chinese geographical science*, 1995, 5(3), p.232-241, 17 refs. Paleocology, Paleoclimatology, Quaternary deposits, Palynology, Classifications, Vegetation patterns, Sampling, Correlation, China—Zhejiang

53-1237

Thermophysical properties of aqueous solutions near the equilibrium freezing temperature.

Sawada, I., Yamada, M., Fukusako, S., Kawanami, T., *International journal of thermophysics*, May 1998, 19(3), Symposium on Thermophysical Properties, 13th, Boulder, CO, June 22-27, 1997. Proceedings, p.749-759, 11 refs.

Solutions, Brines, Supercooling, Liquid cooling, Thermodynamic properties, Freezing points, Thermal conductivity, Viscosity, Temperature effects, Temperature measurement

53-1238

Species-specific phytoplankton sedimentation in relation to primary production along an inshore-offshore gradient in the Baltic Sea.

Tallberg, P., Heiskanen, A.S., *Journal of plankton research*, Nov. 1998, 20(11), p.2053-2070, 64 refs. Marine biology, Subpolar regions, Shores, Ecosystems, Biomass, Plankton, Aggregates, Sedimentation, Mass transfer, Chlorophylls, Sampling, Seasonal variations, Baltic Sea

53-1239

Vertical distribution of virus-like particles (VLP) and viruses infecting *Micromonas pusilla* during late summer in the south-eastern Skagerrak, North Atlantic.

Sahlsten, E., Karlson, B., *Journal of plankton research*, Nov. 1998, 20(11), p.2207-2212, 17 refs. Marine biology, Subpolar regions, Microbiology, Algae, Biomass, Decomposition, Distribution, Physiological effects, Sampling, Environmental tests, Atlantic Ocean

53-1240

Morphometric analysis of Alaskan members of the genus *Potentilla* sect. *Niveae* (Rosaceae).

Eriksen, B., *Nordic journal of botany*, 1997, 17(6), p.621-630, 20 refs.

Plants (botany), Subpolar regions, Plant tissues, Structural analysis, Physical properties, Classifications, Sampling, Statistical analysis, Russia—Chukotskiy Peninsula, United States—Alaska

53-1241

Engineering cold-tolerant crops—throwing the master switch.

Sarhan, F., Danyluk, J., *Trends in plant science*, Aug. 1998, 3(8), p.289-290, 8 refs.

Plant physiology, Agriculture, Cold tolerance, Acclimatization, Chemical composition, Chemical analysis, Modification, Experimentation

53-1242

Thermodynamic study of liquid transportation in freezing porous media.

Miyata, Y., *JSME international journal B*, Aug. 1998, 41(3), p.601-609, 20 refs.

Frozen ground mechanics, Frozen ground thermodynamics, Mass transfer, Ice lenses, Porous materials, Saturation, Thermal expansion, Frost heave, Soil water migration, Ice water interface, Mathematical models, Theories

53-1243

Allozyme differentiation between lowland and alpine populations of *Pseudorchis albida* s.lat. (Orchidaceae) in Sweden.

Reinhammar, L.G., Hedrén, M., *Nordic journal of botany*, 1998, 18(1), p.7-14, 68 refs.

Plant physiology, Grasses, Migration, Origin, Alpine landscapes, Plant tissues, Chemical composition, Chemical analysis, Classifications, Statistical analysis, Sweden

53-1244

Status of *Carex bergrothii* (Cyperaceae) on Gotland, SE Sweden.

Hedrén, M., *Nordic journal of botany*, 1998, 18(1), p.41-49, 13 refs.

Plants (botany), Subpolar regions, Plant physiology, Plant tissues, Chemical composition, Chemical analysis, Structural analysis, Sampling, Statistical analysis, Classifications, Sweden—Gotland

53-1245

Comparative ecology of *Polystichum aculeatum*, *Pbraunii* and *Plonchitis* in Hordaland, western Norway.

Mütter, H., Birks, H.J.B., Odland, A., *Nordic journal of botany*, 1998, 18(3), p.267-288, 51 refs.

Plants (botany), Plant ecology, Subarctic landscapes, Classifications, Vegetation patterns, Sampling, Statistical analysis, Snow cover effect, Climatic factors, Norway—Hordaland

53-1246

Size and reproduction of *Thelypteris limbosperma* and *Athyrium distentifolium* along environmental gradients in western Norway.

Odland, A., *Nordic journal of botany*, 1998, 18(3), p.311-321, 33 refs.

Plant ecology, Subarctic landscapes, Ecosystems, Distribution, Biomass, Growth, Snow cover effect, Sampling, Seasonal variations, Statistical analysis, Norway

53-1247

Long-term changes in the marine macroalgae of Lågsjär, Åland Sea (N Baltic).

Rönnerberg, O., Mathiesen, L., *Nordic journal of botany*, 1998, 18(3), p.379-384, 32 refs.

Marine biology, Ocean bottom, Algae, Ecosystems, Plant ecology, Subpolar regions, Biomass, Distribution, Sampling, Classifications, Baltic Sea

53-1248

Monitoring winter freezing in a silt soil in southern Manitoba, Canada using surface DC resistivity soundings.

Ferguson, I.J., Desrosiers, G.A.J., *Journal of environmental & engineering geophysics*, June 1998, 3(2), p.49-61, 13 refs.

Soil freezing, Soil structure, Frozen ground mechanics, Frozen ground temperature, Layers, Thickness, Seismic refraction, Electrical resistivity, Temperature measurement, Sounding, Canada—Manitoba

53-1249

Surface properties of ice studied by atomic force microscopy.

Döppenschmidt, A., Kappl, M., Butt, H.J., *Journal of physical chemistry B*, Oct. 1, 1998, 102(40), p.7813-7819, 63 refs.

Ice physics, Ice surface, Topographic features, Ice friction, Ice adhesion, Surface properties, Films, Thickness, Ice solid interface, Mechanical tests, Sliding, Velocity measurement

53-1250

Luminescence study on the inner-sphere hydration number of lanthanide(III) ions in concentrated aqueous salt solutions in fluid and frozen states.

Kimura, T., Kato, Y., *Journal of alloys and compounds*, Aug. 21, 1998, Vol.278, p.92-97, 31 refs. Cryogenics, Frozen liquids, Luminescence, Molecular structure, Solutions, Salt water, Ice spectroscopy, Hydrates, Ion diffusion, Ion density (concentration), Temperature effects

53-1251

CP/MAS <sup>13</sup>C NMR analyses of the chain conformation and hydrogen bonding for frozen poly(vinyl alcohol) solutions.

Masuda, K., Horii, F., *Macromolecules*, Aug. 25, 1998, 31(17), p.5810-5817, 21 refs. Polymers, Hydrocarbons, Frozen liquids, Molecular structure, Hydrogen bonds, Nuclear magnetic resonance, Statistical analysis

53-1252

Detection of the "44 μm" band of water ice in absorption in combined ISO SWS-LWS spectra.

Dartois, E., et al, *Astronomy and astrophysics*, Oct. 1998, 338(1), p.L21-L24, 29 refs. Extraterrestrial ice, Cosmic dust, Ice detection, Remote sensing, Infrared spectroscopy, Ice crystal optics, Amorphous ice, Spectra, Models, Radiation absorption

53-1253

Si-H bonds produced by ion implantation in silicon and frozen silanes.

Strazzulla, G., Baratta, G.A., Compagnini, G., Palumbo, M.E., Satorre, M.A., *Astronomy and astrophysics*, Oct. 1998, 338(1), p.292-294, 11 refs. Extraterrestrial ice, Ice composition, Ice physics, Ionization, Ice detection, Ice sublimation, Frozen liquids, Ice spectroscopy, Spectra, Simulation, Cosmic dust

53-1254

Mass balance, meteorological, ice motion, surface altitude, and runoff data at Gulkana Glacier, Alaska, 1993 balance year.

March, R.S., Trabant, D.C., *U.S. Geological Survey. Water-resources investigation report*, 1997, No.96-4299, 30p., 33 refs. DLC GB701.W375 No 96-4299

Glaciology, Glacier surveys, Glacial hydrology, Glacial meteorology, Glacier mass balance, Glacier flow, Snow accumulation, Runoff, Seasonal variations, Sampling, United States—Alaska—Gulkana Glacier

53-1255

Machine vision for ice layer thickness measurements.

Hermanto, I., Gagnon, R.E., Hearn, P., Canadian Conference on Electrical and Computer Engineering, St. John's, Newfoundland, Canada, May 25-28, 1997. Proceedings, Vol.2. Edited by P. Thorburn and J. Quaioco, Piscataway, Institute of Electrical and Electronics Engineers, 1997, p.819-822, 4 refs. DLC TK7801.C36 1997

Aircraft icing, Ice accretion, Ice detection, Ice solid interface, Ice cover thickness, Sensors, Image processing, Photographic techniques, Lasers, Ice optics, Refractivity, Indexes (ratios), Transparency

53-1256

Midwinter start to antarctic ozone depletion: evidence from observations and models.

Roscoe, H.K., Jones, A.E., Lee, A.M., *Science*, Oct. 3, 1997, 278(5335), p.93-96, 32 refs. Ozone, Measurement, Models, Atmospheric composition, Polar atmospheres, Antarctica—Faraday Station

53-1257

New data on the biogeographical unique status of Novaya Zemlya. [Novye dannye o biogeograficheskoi unikal'nosti Novoi Zemli]

Kaliakin, V.N., *Rossiiskaia akademiia nauk. Doklady*, July 1995, 343(1), p.139-141, In Russian. 8 refs. Biogeography, Tundra vegetation, Ecology, Russia—Novaya Zemlya

53-1258

Earth's crust structure of the Barents Sea and northern West Siberia using seismic data. [Stroenie zemnoi kory Barentseva moria i severa Zapadnoi Sibiri po seismicheskim dannym]

Sokolov, B.A., Piip, V.B., Efimova, E.A., *Rossiiskaia akademiia nauk. Doklady*, Aug. 1995, 343(5), p.687-691, In Russian. 9 refs.

Earth crust, Marine geology, Bottom topography, Seismic surveys, Seismic reflection, Profiles, Barents Sea, Russia—Siberia

53-1259

First results of pollen analyses of the deposits of the glacial lakes of Chukotka. [Pervye rezul'taty palinologicheskogo analiza osadkov lednikovyykh ozer Chukotki]

Lozhkin, A.V., Anderson, P.M., Brubaker, L.B., Prokhorova, T.P., *Rossiiskaia akademiia nauk. Doklady*, June 1995, 342(4), p.540-542, In Russian. 6 refs.

Lacustrine deposits, Glacial lakes, Palynology, Polen, Paleobotany, Tundra vegetation, Russia—Chukotskiy Peninsula

53-1260

Greenland Summit Ice Cores CD-ROM.

University of Colorado at Boulder. National Snow and Ice Data Center, World Data Center-A for Paleoclimatology, Boulder, CO, NSIDC; WDC-A for Paleoclimatology, 1997, n.p., CD-ROM.

Ice cores, Ions, Isotope analysis, Paleoclimatology, Drill core analysis, Ice composition, Greenland—Summit

53-1261

Dynamics of cryolithosphere in the area of continent-shelf interaction during the last 25000 years (on the example of the East-Siberian Sea).

[Dinamika kriolitofery v zone vzaimodel'stvia shel'f-kontinent v poslednie 25,000 let (na primere Vostochno-Sibirskogo moria)]

Danilov, I.D., Komarov, I.A., Vlasenko, A.IU., *Kriosfera zemli*, July-Sep. 1997, 1(3), p.3-8, In Russian with English title and summary. 20 refs.

Paleoclimatology, Pleistocene, Water temperature, Surface temperature, Geocryology, Shores, Frozen rock temperature, Marine geology, Subsea permafrost, Ocean bottom, Russia—East Siberian Sea

53-1262

Off-shore permafrost distribution on the Laptev Sea shelf. [Rasprostraneniye submarinnoi merzloty na shel'fe moria Laptevskikh]

Romanovskii, N.N., et al, *Kriosfera zemli*, July-Sep. 1997, 1(3), p.9-18, In Russian with English title and summary. 21 refs.

Continuous permafrost, Permafrost origin, Paleoclimatology, Pleistocene, Computerized simulation, Permafrost distribution, Permafrost forecasting, Geocryology, Shores, Isotherms, Permafrost depth, Marine geology, Subsea permafrost, Ocean bottom, Russia—Laptev Sea

53-1263

Simplest physical models of cryogenic phenomena. [Prosteishie fizicheskie modeli kriogennykh yavlenii]

Gorelik, I.A.B., Kolunin, V.S., Reshetnikov, A.K., *Kriosfera zemli*, July-Sep. 1997, 1(3), p.19-29, In Russian with English title and summary. 24 refs.

Geocryology, Mathematical models, Ice growth, Porous materials, Ice formation, Moisture transfer, Unfrozen water content, Soil freezing, Mass transfer

53-1264

Freezing kinetics, thermal strains and heaving of frozen soils. [Kinetika fazovykh perekhodov, temperaturnye deformatsii i puchenie merzlykh gruntov]

Grechishchev, S.E., *Kriosfera zemli*, July-Sep. 1997, 1(3), p.30-34, In Russian with English title and summary. 3 refs.

Soil freezing, Frost heave, Ice formation, Deformation, Anisotropy, Temperature effects, Pressure

53-1265

Ice melting in non-cohesive frozen soils, caused by local pressure. [Plavlenie l'da v nesvlyaznykh merzlykh gruntakh, obuslovennoe lokal'nymi davleniyami]

Ukhov, S.B., Vlasov, A.N., Lysin, L.D., Merzliakov, V.P., Savatorova, V.L., *Kriosfera zemli*, July-Sep. 1997, 1(3), p.35-38, In Russian with English title and summary. 10 refs.

Noncohesive soils, Frozen ground, Ice melting, Phase transformations, Microstructure, Sands, Minerals, Pressure, Ground thawing

53-1266

Peculiarities of water vapor migration on the frozen ground-snow interface. [Osobennosti migratsii vodianogo para na granitse merzlyi grunt-snezhnyi pokrov]

Golubev, V.N., Seliverstov, I.U.G., Sokratov, S.A., *Kriosfera zemli*, July-Sep. 1997, 1(3), p.39-43, In Russian with English title and summary. 6 refs.

Snow cover, Frozen ground, Water vapor, Vapor transfer, Mass transfer, Temperature gradients, Isotherms

53-1267

Theory of nuclear magnetic relaxation in unfrozen water films. [Teoriia iadernoi magnitnoi relaksatsii v plenkakh nezamerzshoi vody]

Anikin, G.V., Plotnikov, S.N., *Kriosfera zemli*, July-Sep. 1997, 1(3), p.44-46, In Russian with English title and summary. 4 refs.

Mathematical models, Unfrozen water content, Nuclear magnetic resonance, Water films, Relaxation (mechanics)

53-1268

Seismic-geological classifications of soils in cryolithozone. [Seizmogeologicheskie klassifikatsii gruntov kriolitozony]

Voronkov, O.K., Motorin, G.A., Mikhaïlovskii, G.V., Kuntsevich, S.P., *Kriosfera zemli*, July-Sep. 1997, 1(3), p.47-54, In Russian with English title and summary. 15 refs.

Geocryology, Frozen ground, Soil classification, Elastic waves, Saline soils, Seismic surveys

53-1269

Study of relationship between dynamic load and strength properties of soft frozen ground. [Issledovanie vlianiia dinamicheskoi nagruzki na prochnostnye svoystva plastichnomerzlykh gruntov]

Kutergin, V.N., Kal'bergenov, R.G., Aksenov, V.I., *Kriosfera zemli*, July-Sep. 1997, 1(3), p.55-60, In Russian with English title and summary. 7 refs.

Frozen ground strength, Dynamic loads, Stress strain diagrams, Loams, Static loads, Russia—Yamal Peninsula

53-1270

Features of saline frozen soil deformability. [Kharakternye cherty deformiruemosti merzlykh zasolenykh gruntov]

Zykov, I.U.D., Chervinskaiia, O.P., Frolov, A.D., *Kriosfera zemli*, July-Sep. 1997, 1(3), p.61-65, In Russian with English title and summary. 6 refs.

Saline soils, Frozen ground mechanics, Frozen ground strength, Elastic properties, Sands, Cryogenic soils, Cryogenic structures, Porosity

53-1271

Features of the structure of elastic oscillation field in non-lithified frozen ground. [Osobennosti struktury polia uprugikh kolebaniy v nelitfitsirovannykh mnogoletnemeryzlykh porodakh]

Skvortsov, A.G., *Kriosfera zemli*, July-Sep. 1997, 1(3), p.66-72, In Russian with English title and summary. 8 refs.

Geocryology, Permafrost, Classifications, Elastic properties, Seismic surveys, Wave propagation

53-1272

Assessment techniques in the analysis of the structure and dynamics of cryolithosphere. [Otsenochnye metody analiza stroeniia i dinamiki kriolitotony]

Konovalev, A.A., *Kriosfera zemli*, July-Sep. 1997, 1(3), p.73-78, In Russian with English title and summary. 7 refs.

Freeze thaw cycles, Phase transformations, Analysis (mathematics), Thermal regime, Paleoclimatology, Frozen ground temperature, Soil water, Soil water migration, Forecasting, Temperature variations, Russia—Siberia

53-1273

Isotopic composition of ground ices at the Labaz Lake region (Taymyr). [Izotopnyi sostav podzemnykh l'dov raiona oz. Labaz (Taimyr)]

Chizhov, A.B., Dereviagin, A.I.U., Simonov, E.F., Hubberten, H.W., Siegert, C., *Kriosfera zemli*, July-Sep. 1997, 1(3), p.79-84, In Russian with English title and summary. 11 refs.

Paleoclimatology, Ground ice, Isotope analysis, Ice formation, Origin, Quaternary deposits, Lacustrine deposits, Russia—Labaz, Lake, Russia—Taymyr Peninsula

53-1274

Recent gas hydrate research at the Geological Survey of Canada. [Sovremennye issledovaniia gazogidratov, provodimyie Geologicheskoi sluzhboi Kanady]

Kurfurst, P.J., *Kriosfera zemli*, July-Sep. 1997, 1(3), p.85-87, In Russian with English title and summary. 2 refs.

Hydrates, Permafrost, Geochemistry, Seismic reflection, Research projects, Climatic changes, Safety, Drilling

53-1275

Microflora of the deep glacier horizons of Central Antarctica.

Abyzov, S.S., Mitskevich, I.N., Poglazova, M.N., *Microbiology*, July-Aug. 1998, 67(4), p.451-458, Translated from *Microbiologiya* 67(4), 1998, p.547-555. 21 refs.

Microbiology, Cryobiology, Glacier ice, Microanalysis, Ice cores, Core samplers, Bacteria, Paleoclimatology, Paleoecology, Glaciology, Antarctica—Vostok Station

53-1276

Species composition of microscopic fungi in urban snow cover.

Kul'ko, A.B., Marfenina, O.E., *Microbiology*, July-Aug. 1998, 67(4), p.470-472, Translated from *Microbiologiya* 67(4), 1998, p.569-572. 14 refs.

Microbiology, Cryobiology, Fungi, Snow impurities, Snow cover, Environmental impact, Air pollution, Russia—Moscow

53-1277

Argentine Antarctic Expedition, 1995-1996, on board the icebreaker Irizar. [Proyecto Océantar Buque. Datos preliminares de CTD, XBT y química de la Campaña Antártica de Verano 1995/96. 4ta. etapa a bordo del rompehielos Irizar]

Tosonotto, G.V., Gallo, J.F., Cantoni, L.A., *Buenos Aires. Instituto Antártico Argentino. Contribución*, 1997, No.462, 185p., In Spanish. 3 refs.

Research projects, Oceanographic surveys, Water temperature, Salinity, Chemical analysis, Biomass, Charts, Maps, Antarctica—South Shetland Islands

53-1278

Soil maps and charts of Potter Peninsula. [Península Potter (Isla 25 de Mayo) Antártida Argentina. Mapa detallado de suelos, escala 1:10.000]

Godagnone, R.E., *Buenos Aires. Instituto Antártico Argentino. Contribución*, 1997, No.448, 45p., In Spanish. 9 refs.

Soil analysis, Soil classification, Soil composition, Soil mapping, Meteorological data, Permafrost, Maps, Charts, Polar regions, Antarctica—Potter Peninsula

53-1279

Proceedings.

International Seminar on the Use and Applications of ERS in Latin America, Viña del Mar, Chile, Nov. 25-29, 1996, Guyenne, T.D., ed, *European Space Agency*, Feb. 1997, ESA SP-405, 300p., In English and Spanish. Refs. passim. For selected papers see 53-1280 through 53-1285.

DLC G70.39.U84 1997

Meetings, Remote sensing, Spaceborne photography, Airborne radar, Synthetic aperture radar, Imaging, Image processing, LANDSAT, Ecosystems, Glaciology

53-1280

Segmentation of textures in ERS-1/SAR images applied to evaluate land degradation of rangelands.

Del Valle, H.F., Frulla, L.A., Gagliardini, D.A., Alvarez, J., *European Space Agency*, Feb. 1997, ESA SP-405, International Seminar on the Use and Applications of ERS in Latin America, Viña del Mar, Chile, Nov. 25-29, 1996. Proceedings. Edited by T.D. Guyenne, p.177-184, 17 refs.

DLC G70.39.U84 1997

Image processing, Airborne radar, Synthetic aperture radar, Mapping, Soil erosion, Deserts, Remote sensing, Data processing, Ecology, Landscape types, Classifications, Topographic surveys, Argentina—Patagonia

53-1281

Using ERS-1 data to evaluate the C band potential for mapping environmental variables. [Utilización de datos ERS-1 para evaluar la potencialidad de la banda C, en los estudios del medio ambiente, sector andino y extra-andino de la Patagonia, Argentina]

González, F.C., Serafini, M.C., Antes, M.E., Cuello, A.R., *European Space Agency*, Feb. 1997, ESA SP-405, International Seminar on the Use and Applications of ERS in Latin America, Viña del Mar, Chile, Nov. 25-29, 1996. Proceedings. Edited by T.D. Guyenne, p.185-194, In Spanish with English summary. 16 refs.

DLC G70.39.U84 1997

Airborne radar, Synthetic aperture radar, Data processing, Ecosystems, Mapping, Topographic surveys, Image processing, Landscape types, Mountains, Argentina—Patagonia

53-1282

Applications of ERS-1/SAR images for monitoring land cover changes in a burnt area of rangelands (central Patagonia, Argentina).

Del Valle, H.F., Gagliardini, D.A., Milovich, J., Defossé, G.E., Dentoni, M.C., *European Space Agency*, Feb. 1997, ESA SP-405, International Seminar on the Use and Applications of ERS in Latin America, Viña del Mar, Chile, Nov. 25-29, 1996. Proceedings. Edited by T.D. Guyenne, p.195-200, 13 refs.

DLC G70.39.U84 1997

Topographic surveys, Airborne radar, Synthetic aperture radar, Image processing, Forest fires, Data processing, Landscape types, Ecosystems, Argentina—Patagonia

53-1283

Study of King George ice cap, South Shetland Islands, Antarctica using radio-echo sounding and SPOT, ERS-1 SAR satellite images.

Macheret, I.U.I.A., Moskalevskii, M.I.U., Simoes, J.C., Ladouch, L., *European Space Agency*, Feb. 1997, ESA SP-405, International Seminar on the Use and Applications of ERS in Latin America, Viña del Mar, Chile, Nov. 25-29, 1996. Proceedings. Edited by T.D. Guyenne, p.249-256, 15 refs.

DLC G70.39.U84 1997

Ice surveys, Ice cover thickness, Radio echo soundings, Airborne radar, Image processing, Glacier melting, Climatic changes, Mathematical models, Glacier surveys, Glacier thickness, Antarctica—King George Island

53-1284

Detection of floating ice in Antarctica. [Detección de hielos flotantes en la Antártida]

Salgado, H., Picasso, M., *European Space Agency*, Feb. 1997, ESA SP-405, International Seminar on the Use and Applications of ERS in Latin America, Viña del Mar, Chile, Nov. 25-29, 1996. Proceedings. Edited by T.D. Guyenne, p.257-261, In Spanish with English summary. 5 refs.

DLC G70.39.U84 1997

Ice navigation, Sea ice distribution, Floating ice, Airborne radar, Synthetic aperture radar, Image processing, Photointerpretation, Air water interactions, Climatic changes, Meteorological data, Data processing, Safety, Ice detection, Ice reporting, Antarctica

53-1285

Monitoring of subglacial volcanic eruption and glacial flood in southern Iceland using ERS-1/2 SAR data.

Müschen, B., Böhm, C., Roth, A., Schwäbisch, M., Holz, A., *European Space Agency*, Feb. 1997, ESA SP-405, International Seminar on the Use and Applications of ERS in Latin America, Viña del Mar, Chile, Nov. 25-29, 1996. Proceedings. Edited by T.D. Guyenne, p.263-271, 6 refs.

DLC G70.39.U84 1997

Airborne radar, Synthetic aperture radar, Image processing, Volcanoes, Icequakes, Subglacial observations, Safety, Flood forecasting, Warning systems, Iceland

53-1286

Performance of the SPIRIT III cryogenic system.

Schick, S., Bell, G., *SPIE—The International Society for Optical Engineering. Proceedings*, 1997, Vol.3122, Infrared spaceborne remote sensing V, Edited by M. Strojnik and B.F. Andresen, p.69-77, 4 refs.

DLC G70.39.I53 1997

Infrared equipment, Performance, Cryogenics, Spacecraft, Infrared reconnaissance, Cooling systems, Thermostats, Temperature control

53-1287

Scattering matrix of nonspherical ice particles determined by the geometrical optics approximation method.

Masuda, K., Takashima, T., *SPIE—The International Society for Optical Engineering. Proceedings*, 1997, Vol.3122, Infrared spaceborne remote sensing V, Edited by M. Strojnik and B.F. Andresen, p.104-115, 20 refs.

DLC G70.39.I53 1997

Remote sensing, Ice crystal optics, Clouds (meteorology), Scattering

53-1288

Ultraviolet radiation at sites on the antarctic coast.

Frederick, J.E., Qu, Z., Booth, C.R., *Photochemistry and photobiology*, Aug. 1998, 68(2), p.183-190, 13 refs.

Ultraviolet radiation, Ozone, Periodic variations, Photosynthesis, Plant physiology, Light effects, Cloud cover, Meteorological data, Antarctica—Palmer Station, Antarctica—McMurdo Station

53-1289

Late Quaternary geomorphic development of mountain river basins based landform classification: the Kitakami region, northeast Japan. Oguchi, T., *Tokyo University Department of Geography Bulletin*, Dec. 1994, No.26, p.15-32, Refs. p.30-32.

Glacial geology, Pleistocene, Landforms, Classifications, Geomorphology, River basins, Geochronology, Periglacial processes, Slope processes, Japan

53-1290

Observation of large-scale features with ERS SAR browse images.

Laur, H., Dokken, S.T., *Earth observation quarterly*, Aug. 1997, No.55, p.1-5, 4 refs.

Airborne radar, Synthetic aperture radar, Image processing, Imaging, Oceanographic surveys, Sea ice distribution, Spaceborne photography

53-1291

Monitoring of polar ozone depletion using ERS-2 GOME.

Bittner, M., Dech, S.W., Meisner, R.E., *Earth observation quarterly*, Aug. 1997, No.55, p.6-10, 16 refs.

Remote sensing, Airborne radar, Image processing, Ozone, Meteorological data, Data processing, Environmental impact, Imaging, Diurnal variations, Polar atmospheres, Periodic variations, Time factor, Antarctica

53-1292

Environmental affinity of the guanaco (*Lama guanicoe* Müller, Camelidae) in two selected areas of Central Patagonia supported by ERS-1 SAR data. Del Valle, H.F., De Lamo, D.A., Gagliardini, D.A., *Earth observation quarterly*, Aug. 1997, No.55, p.14-19, 12 refs.

Airborne radar, Synthetic aperture radar, Image processing, Soil erosion, Environmental impact, Animals, Grazing, Environmental protection, Landscape types, Spaceborne photography, Argentina—Patagonia

53-1293

OMI, the Ozone Monitoring Instrument for Metop satellites.

Readings, C.J., PETERS, A., Levelt, P., Kelder, H., *Earth observation quarterly*, Dec. 1996, No.54, p.8-14.

Research projects, Ozone, Monitors, Measuring instruments, Meteorological instruments, Polar regions, Atmospheric composition, Meteorological data, Climatic changes, Spaceborne photography

53-1294

Monitoring of a volcanic eruption in Iceland by ERS-1/2 SAR.

Müschen, B., Böhm, C., Roth, A., Schwäbisch, M., *Earth observation quarterly*, Dec. 1996, No.54, p.21-27, 4 refs.

Airborne radar, Synthetic aperture radar, Image processing, Volcanoes, Icequakes, Subglacial observations, Safety, Flood forecasting, Warning systems, Iceland

53-1295

Remanent ferromagnetism and the interior structure of Ganymede.

Crary, F.J., Bagenal, F., *Journal of geophysical research*, Oct. 25, 1998, 103(E11), p.25,757-25,773, 46 refs.

Satellites (natural), Extraterrestrial ice, Geologic structures, Geomagnetism, Remanent magnetism, Mineralogy, Geocryology, Ice solid interface, Ice density, Layers, Mathematical models

53-1296

Modeling the effect of sastrugi on snow reflectance.

Leroux, C., Fily, M., *Journal of geophysical research*, Oct. 25, 1998, 103(E11), p.25,779-25,788, 31 refs.

Climatology, Albedo, Snow optics, Sastrugi, Reflectivity, Ice sheets, Surface roughness, Anisotropy, Orientation, Photometry, Snow cover effect, Mathematical models, Antarctica—South Pole

53-1297

Effect of surface roughness on bidirectional reflectance of antarctic snow.

Warren, S.G., Brandt, R.E., Hinton, P.O., *Journal of geophysical research*, Oct. 25, 1998, 103(E11), p.25,789-25,807, 53 refs.

Remote sensing, Snow cover structure, Snow optics, Sunlight, Albedo, Sastrugi, Surface roughness, Reflectivity, Anisotropy, Orientation, Radiometry, Snow cover effect, Antarctica—Amundsen-Scott Station

53-1298

Temperature-dependent near-infrared absorption spectrum of hexagonal H<sub>2</sub>O ice.

Grundy, W.M., Schmitt, B., *Journal of geophysical research*, Oct. 25, 1998, 103(E11), p.25,809-25,822, 39 refs.

Ice physics, Satellites (natural), Regolith, Extraterrestrial ice, Ice crystal optics, Ice spectroscopy, Radiation absorption, Spectra, Simulation, Temperature effects, Statistical analysis

53-1299

Classification of surface types using SIR-C/X-SAR, Mount Everest area, Tibet.

Albright, T.P., Painter, T.H., Roberts, D.A., Shi, J.C., Dozier, J., Fielding, E., *Journal of geophysical research*, Oct. 25, 1998, 103(E11), p.25,823-25,837, 22 refs.

Snow surveys, Glacier surveys, Sensor mapping, Alpine landscapes, Classifications, Synthetic aperture radar, Spaceborne photography, Snow cover structure, Slope orientation, Image processing, China—Himalaya Mountains

53-1300

Carbon dioxide crystals: an examination of their size, shape, and scattering properties at 37 GHz and comparisons with water ice (snow) measurements.

Foster, J.L., Chang, A.T.C., Hall, D.K., Wergin, W.P., Erbe, E.F., Barton, J., *Journal of geophysical research*, Oct. 25, 1998, 103(E11), p.25,839-25,850, 44 refs.

Snow optics, Ice crystal optics, Snow crystal structure, Carbon dioxide, Light scattering, Attenuation, Refractivity, Scanning electron microscopy, Radiometry, Extraterrestrial ice, Mars (planet), Standards, Simulation

53-1301

Mapping the Martian polar ice caps: applications of terrestrial optical remote sensing methods.

Nolin, A.W., *Journal of geophysical research*, Oct. 25, 1998, 103(E11), p.25,851-25,864, 74 refs.

Mars (planet), Extraterrestrial ice, Polar regions, Snow optics, Albedo, Snow cover, Sensor mapping, LANDSAT, Spectroscopy, Image processing, Grain size, Spectra, Correlation

53-1302

Laboratory studies of the optical properties and stability of oxygen on Ganymede.

Baragiola, R.A., Bahr, D.A., *Journal of geophysical research*, Oct. 25, 1998, 103(E11), p.25,865-25,872, 71 refs.

Satellites (natural), Regolith, Extraterrestrial ice, Ice optics, Reflectivity, Oxygen, Water films, Vapor diffusion, Ice spectroscopy, Temperature effects, Simulation

53-1303

Periodic and quasiperiodic EFL/VLF emissions observed by an array of antarctic stations.

Smith, A.J., Engebretson, M.J., Klatt, E.M., Inan, U.S., Arnoldy, R.L., Fukunishi, H., *Journal of geophysical research*, Oct. 1, 1998, 103(A10), p.23,611-23,622, 30 refs.

Atmospheric electricity, Polar atmospheres, Geomagnetism, Radio waves, Low frequencies, Wave propagation, Oscillations, Spectra, Weather stations, Magnetometers, Antarctica—Halley Station, Antarctica—South Pole

53-1304

Cloudy sky optical paths as derived from differential optical absorption spectroscopy observations.

Wagner, T., et al, *Journal of geophysical research*, Oct. 20, 1998, 103(D19), p.25,307-25,321, 60 refs.

Climatology, Atmospheric composition, Polar atmospheres, Radiation absorption, Optical properties, Aerosols, Ozone, Cloud cover, Spectroscopy, Spaceborne photography, Photometry, Sweden—Kiruna

53-1305

Stratospheric aerosol surface area and volume inferred from HALOE, CLAES, and ILAS measurements.

Hervig, M.E., Desler, T., *Journal of geophysical research*, Oct. 20, 1998, 103(D19), p.25,345-25,352, 22 refs.

Climatology, Cloud physics, Polar stratospheric clouds, Aerosols, Light scattering, Radiation absorption, Attenuation, Particle size distribution, Spectroscopy, Statistical analysis, Antarctica—McMurdo Station

53-1306

Impact of spatial averaging on calculated polar ozone loss. 1. Model experiments.

Searle, K.R., Chipperfield, M.P., Bekki, S., Pyle, J.A., *Journal of geophysical research*, Oct. 20, 1998, 103(D19), p.25,397-25,408, 18 refs.

Climatology, Air pollution, Polar atmospheres, Cloud physics, Polar stratospheric clouds, Chemical composition, Degradation, Turbulent diffusion, Aerosols, Distribution, Ozone, Models, Resolution

53-1307

Impact of spatial averaging on calculated polar ozone loss. 2. Theoretical analysis.

Searle, K.R., Chipperfield, M.P., Bekki, S., Pyle, J.A., *Journal of geophysical research*, Oct. 20, 1998, 103(D19), p.25,409-25,416, 8 refs.

Climatology, Air pollution, Polar atmospheres, Chemical composition, Aerosols, Ozone, Turbulent diffusion, Periodic variations, Degradation, Models, Statistical analysis, Theories

53-1308

Impact of stratospheric dynamics and chemistry on northern hemisphere midlatitude ozone loss.

Grewe, V., Dameris, M., Sausen, R., Steil, B., *Journal of geophysical research*, Oct. 20, 1998, 103(D19), p.25,417-25,433, Refs. p.431-433.

Climatology, Polar atmospheres, Polar stratospheric clouds, Synoptic meteorology, Heterogeneous nucleation, Aerosols, Ozone, Degradation, Air masses, Turbulent diffusion, Distribution, Models

53-1309

Isoprene emissions from boreal wetlands in Scandinavia.

Janson, R., De Serves, C., *Journal of geophysical research*, Oct. 20, 1998, 103(D19), p.25,513-25,517, 15 refs.

Climatology, Wetlands, Peat, Microclimatology, Subarctic landscapes, Soil air interface, Hydrocarbons, Vapor transfer, Organic nuclei, Sampling, Diurnal variations, Finland, Sweden

53-1310

Radiocarbon dating of pollen zones in lacustrine deposits of the Kolyma-Okhotsk interfluvium. [Radiouglerodnoe datirovanie pyl'tsevykh zon v ozernykh osadkakh Kolymo-Okhotskogo mezhdurech'ia]

Lozhkin, A.V., Anderson, P.M., Belaia, B.V., *Rossiiskaia akademiia nauk. Doklady*, July 1995, 343(3), p.396-399, In Russian. 5 refs.

Radioactive age determination, Pollen, Palynology, Lacustrine deposits, Paleobotany, Paleoclimatology, Tundra vegetation, Okhotsk Sea, Russia—Kolyma River

53-1311

**Adaptive change of tomato cells ultrastructure under low temperature effect.** [Adaptivnye izmeneniia ul'trastrukturny kletok tomata pod deistviem nizkoj temperatury]

Trunova, T.I., Astakhova, N.V., *Rossiiskaia akademiia nauk. Doklady*, July 1995, 343(3), p.427-430, In Russian. 9 refs.

Plant physiology, Plant tissues, Cold tolerance, Acclimatization, Temperature effects, Frost resistance

53-1312

**Origin of gas accumulation in the north of West Siberia with references to  $\delta^{13}\text{C}$  and  $\delta\text{D}$  data of methane.** [Genezis gazov na severe Zapadnoi Sibiri po dannym  $\delta^{13}\text{C}$  i  $\delta\text{D}$  metana]

Galimov, E.M., *Rossiiskaia akademiia nauk. Doklady*, May 1995, 342(3), p.371-374, In Russian. 14 refs.

Natural gas, Origin, Atmospheric composition, Isotope analysis, Russia—Siberia

53-1313

**Space distribution of light weakening index in Kara Sea water.** [Prostranstvennoe raspredelenie pokazatelya oslableniia sveta v vodakh Karskogo moria]

Matiushenko, V.A., Misiuchenko, I.L., Popov, I.K., *Rossiiskaia akademiia nauk. Doklady*, May 1995, 342(3), p.403-406, In Russian. 3 refs.

Attenuation, Light transmission, Sea water, Spectra, Optical properties, Russia—Kara Sea

53-1314

**Lattice Boltzmann model for particle transport and deposition.**

Masselot, A., Chopard, B., *Europhysics letters*, May 1, 1998, 42(3), p.259-264, 18 refs.

Wind erosion, Particles, Snow, Sands, Models

53-1315

**Overhead electrical transmission line galloping: a full multi-span 3-DOF model, some applications and design recommendations.**

Wang, J., Lilien, J.L., *IEEE transactions on power delivery*, July 1998, 13(3), p.909-916, 25 refs.

Power line icing, Models, Ice accretion, Wind direction, Wind velocity

53-1316

**Evaluation of  $\text{SO}_2$  emission from the 1982 eruption of El Chichon by glaciological and satellite methods.**

Kohno, M., Kusakabe, M., Fujii, Y., *Antarctic record*, July 1998, 42(2), p.121-130, With Japanese summary. Refs. p.128-130.

Volcanoes, Air pollution, Atmospheric composition, Snow impurities, Snow composition, Glaciology, Ozone, Volcanic ash, Antarctica—Queen Maud Land

53-1317

**Radiocarbon dates of fossil shells from raised beach sediments along the Söya Coast, East Antarctica—A report on a geomorphological survey during JARE-35 (1993-94).**

Hirakawa, K., Sawagaki, T., *Antarctic record*, July 1998, 42(2), p.151-167, In Japanese with English summary. 6 refs.

Radioactive age determination, Fossils, Sediments, Glacial geology, Geochronology, Geomorphology, Height finding, Marine deposits, Antarctica—East Antarctica

53-1318

**Preliminary report on rock glaciers at the foot of Mt. Riiser-Larsen in Enderby Land, East Antarctica.**

Saigusa, S., Miura, H., Maemoku, H., Hirakawa, K., *Antarctic record*, July 1998, 42(2), p.168-178, With Japanese summary. 21 refs.

Rock glaciers, Slope processes, Moraines, Talus, Circques, Snow, Mountain glaciers, Rheology, Antarctica—Riiser-Larsen, Mount

53-1319

**Field seismic observations by portable broadband seismometers in the Lützw-Holm Bay region, East Antarctica.**

Negishi, H., Kanao, M., *Antarctic record*, July 1998, 42(2), p.179-189, With Japanese summary. 6 refs.

Seismic surveys, Earth crust, Tectonics, Earthquakes, Recording instruments, Antarctica—Lützw-Holm Bay

53-1320

**Great earthquake in the Antarctic Plate on 25 March 1998.**

Tono, Y., Kaminuma, K., *Antarctic record*, July 1998, 42(2), p.190-195, In Japanese with English summary. 4 refs.

Earthquakes, Tectonics, Sea ice distribution, Seismic surveys, Recording, Antarctica

53-1321

**Logistics activities at McMurdo, Amundsen-Scott South Pole stations and Scott Base.**

Ishizawa, K., *Antarctic record*, July 1998, 42(2), p.196-225, In Japanese with English summary. 6 refs.

Logistics, Cold weather operation, Low temperature research, Stations, Research projects, Transportation, Cold weather survival, Cold weather construction, Waste disposal, Antarctica

53-1322

**Glaciological data collected by the 37th Japanese Antarctic Research Expedition during 1996-1997.**

Fujita, S., Kawasa, K., Fujii, Y., *Japanese Antarctic Research Expedition. JARE data reports*, Sep. 1998, No.234, 46p., Refs. passim.

Meteorological data, Weather observations, Snow accumulation, Snow density, Snow temperature, Snow hardness, Traverses, Antarctica

53-1323

**Antarctic HF radar observations of irregularities associated with polar patches and auroral blobs: a case study.**

Ogawa, T., Nishitani, N., Pinnock, M., Sato, N., Yamagishi, H., Yukimatu, A.S., *Journal of geophysical research*, Nov. 1, 1998, 103(A11), p.26,547-26,558, 37 refs.

Atmospheric electricity, Geomagnetism, Polar atmospheres, Structural analysis, Convection, Migration, Radio echo soundings, Antarctica—Halley Station, Antarctica—Showa Station

53-1324

**Origin and significance of calcareous concretions within glacial outwash in the Tempo Valley, north-central Ireland.**

Knight, J., *Boreas*, June 1998, 27(2), p.81-87, 29 refs.

Pleistocene, Glacial geology, Glacial deposits, Outwash, Sedimentation, Soil cement, Ground water, Hydrogeochemistry, Discontinuous permafrost, Thermal regime, Sampling, United Kingdom—Ireland

53-1325

**Late Glacial stable isotope record, radiocarbon stratigraphy, pollen and mollusc analyses from the Geiseltal area, central Germany.**

Böttger, T., Hiller, A., Junge, F.W., Litt, T., Mania, D., Scheele, N., *Boreas*, June 1998, 27(2), p.88-100, 51 refs.

Pleistocene, Paleoclimatology, Palynology, Sedimentation, Lacustrine deposits, Profiles, Stratigraphy, Hydrologic cycle, Oxygen isotopes, Isotope analysis, Radioactive age determination, Germany—Geiseltal

53-1326

**Salinity and redox alternations in the northwestern Baltic proper during the late Holocene.**

Sohlenius, G., Westman, P., *Boreas*, June 1998, 27(2), p.101-114, 72 refs.

Marine geology, Quaternary deposits, Marine deposits, Lacustrine deposits, Paleoclimatology, Biomass, Surface waters, Salinity, Geochemical cycles, Drill core analysis, Stratigraphy, Baltic Sea

53-1327

**Long-term arctic peatland dynamics, vegetation and climate history of the Pur-Taz region, western Siberia.**

Peteet, D., Andreev, A., Bardeen, W., Mistretta, F., *Boreas*, June 1998, 27(2), p.115-126, 77 refs.

Paleoecology, Paleoclimatology, Arctic landscapes, Geomorphology, Landscape development, Forest lines, Peat, Discontinuous permafrost, Stratigraphy, Radioactive age determination, Russia—Siberia

53-1328

**European sand belt in eastern Europe—and comparison of Late Glacial dune orientation with GCM simulation results.**

Zeeberg, J., *Boreas*, June 1998, 27(2), p.127-139, 57 refs.

Pleistocene, Geomorphology, Paleoclimatology, Wind direction, Eolian soils, Sands, Orientation, Cryoturbation, Sediment transport, Simulation, Stratigraphy, Ukraine, Lithuania, Estonia, Russia—Novgorod

53-1329

**Turbidity currents generated at river mouths during exceptional discharges to the world oceans.**

Mulder, T., Syvitski, J.P.M., *Journal of geology*, May 1995, 103(3), p.285-299, 51 refs.

Oceanography, Sea water, Density (mass/volume), River flow, Subarctic landscapes, Flooding, Suspended sediments, Deltas, Sediment transport, Meltwater, Turbidity, Classifications, Statistical analysis

53-1330

**$^{40}\text{Ar}/^{39}\text{Ar}$  dating of detrital grains constrains the provenance and stratigraphy of the Gravina belt, southeastern Alaska.**

Cohen, H.A., Hall, C.M., Lundberg, N., *Journal of geology*, May 1995, 103(3), p.327-337, 38 refs.

Pleistocene, Earth crust, Tectonics, Sedimentation, Magma, Subarctic landscapes, Stratigraphy, Probes, Isotope analysis, Geochronology, United States—Alaska—Admiralty Island

53-1331

**Numerical simulation of ground-water flow through glacial deposits and crystalline bedrock in the Mirror Lake area, Grafton County, New Hampshire.**

Tiedeman, C.R., Goode, D.J., Hsieh, P.A., *U.S. Geological Survey. Professional paper*, 1997, No.1572, 50p., 47 refs.

DLC GB1197.7.T54 1997

Geological surveys, Glacial geology, Hydrogeology, Subsurface drainage, Glacial deposits, Bedrock, Ground water, Water flow, Water table, Hydraulics, Models, Computerized simulation, United States—New Hampshire—Mirror Lake

53-1332

**Fracturing of ice under compression creep as revealed by multifractal analysis.**

Weiss, J., Gay, M., *Journal of geophysical research*, Oct. 10, 1998, 103(B10), p.24,005-24,016, 34 refs.

Ice mechanics, Ice microstructure, Ice deformation, Loading, Ice solid interface, Cracking (fracturing), Crack propagation, Nucleation, Ice creep, Rock properties, Fractals, Mechanical tests

53-1333

**Rift propagation, detachment faulting, and associated magmatism in Bransfield Strait, Antarctic Peninsula.**

Barker, D.H.N., Austin, J.A., Jr., *Journal of geophysical research*, Oct. 10, 1998, 103(B10), p.24,017-24,043, 62 refs.

Tectonics, Earth crust, Marine geology, Geologic processes, Magma, Migration, Fracture zones, Seismic surveys, Seismic reflection, Antarctica—Bransfield Strait



## 53-1334

**Slow oceanic teleconnections linking the Antarctic Circumpolar Wave with the tropical El Niño-Southern Oscillation.**

Peterson, R.G., White, W.B., *Journal of geophysical research*, Oct. 15, 1998, 103(C11), p.24,573-24,583, 51 refs.

Climatology, Global change, Surface temperature, Polar atmospheres, Marine meteorology, Air water interactions, Atmospheric circulation, Convection, Wave propagation, Seasonal variations, Statistical analysis, Antarctica, Pacific Ocean

## 53-1335

**Ice thickness variability, isostatic balance and potential for snow ice formation on ice floes in the south polar Pacific Ocean.**

Adolphs, U., *Journal of geophysical research*, Oct. 15, 1998, 103(C11), p.24,675-24,691, 47 refs.

Oceanographic surveys, Sea ice, Ice floes, Ice cover thickness, Snow accumulation, Snow ice interface, Snow loads, Slush, Flooding, Ice formation, Classifications, Indexes (ratios), Isostasy, Antarctica—Ross Sea, Antarctica—Weddell Sea

## 53-1336

**Observations of melt ponds on arctic sea ice.**

Fetterer, F., Untersteiner, N., *Journal of geophysical research*, Oct. 15, 1998, 103(C11), p.24,821-24,835, 61 refs.

Oceanography, Radiometry, Sea ice, Pack ice, Ice surface, Meltwater, Ponds, Distribution, Albedo, Heat balance, Seasonal variations, Arctic Ocean

## 53-1337

**Winter snow cover variability on East Antarctic sea ice.**

Massom, R.A., Lytle, V.I., Worby, A.P., Allison, I., *Journal of geophysical research*, Oct. 15, 1998, 103(C11), p.24,837-24,855, Refs. p.24,853-24,855.

Oceanographic surveys, Sea ice, Ice cover thickness, Snow depth, Snow cover distribution, Snow cover structure, Snow ice interface, Metamorphism (snow), Snow stratigraphy, Snow thermal properties, Seasonal variations, Antarctica—Ross Sea, Antarctica—Bellingshausen Sea

## 53-1338

**On the representation of the southern ocean water masses in an ocean climate model.**

Kim, S.J., Stössel, A., *Journal of geophysical research*, Oct. 15, 1998, 103(C11), p.24,891-24,906, 60 refs.

Climatology, Oceanography, Marine atmospheres, Polar atmospheres, Ocean currents, Water temperature, Salinity, Sea ice, Air ice water interaction, Ice growth, Wind factors, Profiles, Models, Antarctica—Ross Sea, Antarctica—Weddell Sea

## 53-1339

**Contraction of the 300 mbar north circumpolar vortex during 1963-1997 and its movement into the eastern hemisphere.**

Angell, J.K., *Journal of geophysical research*, Oct. 27, 1998, 103(D20), p.25,887-25,893, 18 refs.

Climatology, Polar atmospheres, Structural analysis, Atmospheric circulation, Atmospheric pressure, Migration, Radio echo soundings, Seasonal variations, Statistical analysis

## 53-1340

**Climate variability in a nonlinear atmosphere-like dynamical system.**

Dethloff, K., et al, *Journal of geophysical research*, Oct. 27, 1998, 103(D20), p.25,957-25,966, 34 refs.

Paleoclimatology, Climatic changes, Atmospheric physics, Atmospheric pressure, Dynamic properties, Periodic variations, Statistical analysis, Mathematical models, Spectra, Thermal analysis

## 53-1341

**Evaluation of recent precipitation studies for Greenland ice sheet.**

Bromwich, D.H., Cullather, R.I., Chen, Q.S., Csathó, B.M., *Journal of geophysical research*, Oct. 27, 1998, 103(D20), p.26,007-26,024, 54 refs.

Climatology, Ice sheets, Polar atmospheres, Glacial meteorology, Synoptic meteorology, Moisture transfer, Snow air interface, Precipitation (meteorology), Snow accumulation, Seasonal variations, Meteorological data, Statistical analysis, Accuracy, Greenland

## 53-1342

**South Pole electric field responses to overhead ionospheric convection.**

Tinsley, B.A., Liu, W.P., Rohrbaugh, R.P., Kirkland, M.W., *Journal of geophysical research*, Oct. 27, 1998, 103(D20), p.26,137-26,146, 20 refs.

Atmospheric physics, Atmospheric electricity, Polar atmospheres, Electric fields, Convection, Geomagnetism, Storms, Diurnal variations, Statistical analysis, Correlation, Antarctica—South Pole

## 53-1343

**Glacial-interglacial changes induced by pulse modulation of the incoming solar radiation.**

Liu, H.S., *Journal of geophysical research*, Oct. 27, 1998, 103(D20), p.26,147-26,164, 62 refs.

Paleoclimatology, Climatic changes, Insolation, Oscillations, Resonance, Spectra, Radiation balance, Theories, Mathematical models

## 53-1344

**Numerical modelling of flow over dunes in ice-covered channels.**

Tan, C.A., ASME International Congress and Exposition, Dallas, TX, Nov. 16-21, 1997. Proceedings of the ASME Fluids Engineering Division. Vol.244, New York, American Society of Mechanical Engineers, 1997, p.291-296, 18 refs.

DLC TA357.P74883 1997

River flow, Turbulent flow, River ice, Channels (waterways), Sediment transport, Surface roughness, Topographic effects, Velocity measurement, Subglacial observations, Ice cover effect, Hydrodynamics, Mathematical models

## 53-1345

**Phase equilibria of H<sub>2</sub>SO<sub>4</sub>, HNO<sub>3</sub>, and HCl hydrates and the composition of polar stratospheric clouds.**

Wooldridge, P.J., Zhang, R., Molina, M.J., *U.S. National Aeronautics and Space Administration. Contractor report*, Jan. 20, 1995, NASA-CR-205112, 8p., N1998-25529, For another version see 49-2504.

Polar stratospheric clouds, Atmospheric composition, Polar atmospheres, Hydrates, Meteorological data, Vapor pressure, Calorimeters

## 53-1346

**Debris/Ice/TPS assessment and integrated photographic analysis of Shuttle Mission STS-89.**

Katnik, G.N., *U.S. National Aeronautics and Space Administration. Technical memorandum*, Mar. 1998, NASA-TM-1998-207684, 110p., N1998-27610.

Damage, Spacecraft, Photographic reconnaissance, Infrared equipment, Thermal properties, Computer programs, Aircraft icing, Protection, Ice detection

## 53-1347

**Snow and ice applications of AVHRR in polar regions: Report of a Workshop.**

Steffen, K., Bindshadler, R., Casassa, G., Comiso, J., Eppler, D., *U.S. National Aeronautics and Space Administration. Technical memorandum*, 1993, NASA-TM-113076, Symposium on Remote Sensing of Snow and Ice, 3rd, Boulder, CO, May 17-22, 1992. Proceedings, 16p., N1998-27706, For another version see 48-1293.

Polar regions, Remote sensing, Glaciology, Radiometry, Snow surface, Ice surface, Temperature measurement, Climate, Heat balance, Sea ice, Meteorological data, Data processing, Data transmission

## 53-1348

**Effects of the critical ice accretion on airfoil and wing performance.**

Selig, M.S., Bragg, M.B., Saeed, F., *U.S. National Aeronautics and Space Administration. Contractor report*, Mar. 3, 1998, NASA-CR-96-207501, 25p., N1998-38243.

Ice accretion, Aircraft icing, Design criteria, Aircraft, Low temperature research, Cold weather performance, Ice loads

## 53-1349

**DC-8 scanning lidar characterization of aircraft contrails and cirrus clouds.**

Utne, E.E., Nielsen, N.B., Oseberg, T.E., *U.S. National Aeronautics and Space Administration. Contractor report*, Mar. 4, 1998, NASA-CR-1998-207544, 70p., N1998-37601.

Lidar, Backscattering, Aircraft, Condensation trails, Clouds (meteorology), Meteorological instruments, Height finding, Ice crystals, Radar photography, Photo-interpretation

## 53-1350

**Enhancement and suppression of ice formation around isothermally cooled cylinders in convective water flow.**

Hirata, T., Nishida, K., Ishikawa, M., *Heat transfer—Japanese research*, 1997, 26(7), p.419-434, Translated from JSME. Transactions. Vol.63 B. 9 refs.

Cooling systems, Heat transfer, Thermal conductivity, Pipes (tubes), Water flow, Ice solid interface, Ice formation, Ice volume, Ice control, Convection, Analysis (mathematics), Simulation, Ice forecasting

## 53-1351

**Solidification characteristics of a droplet on a horizontal cooled wall.**

Kawanami, T., Yamada, M., Fukusako, S., Kawai, H., *Heat transfer—Japanese research*, 1997, 26(7), p.469-483, Translated from KSME-JSME Thermal Engineering Conference, 3rd, Pt.I, Oct. 1996. Proceedings. 4 refs.

Drops (liquids), Water temperature, Freezing, Ice cover thickness, Solidification, Ice water interface, Density (mass/volume), Convection, Interfacial tension, Isotherms, Imaging, Temperature effects

## 53-1352

**Hydrodynamics and nutrient distribution in bottom sediments of the Archipelago Sea, southwestern Finland.**

Müller, A., *Boreal environment research*, Nov. 11, 1997, 2(3), p.229-237, 28 refs.

Oceanography, Subpolar regions, Sedimentation, Bottom sediment, Suspended sediments, Hydrodynamics, Geochemical cycles, Nutrient cycle, Water chemistry, Hydrography, Sampling, Indexes (ratios), Baltic Sea

## 53-1353

**Seasonal sedimentation of organic matter and contaminants in the Gulf of Finland.**

Kankaapää, H., Korhonen, M., Heiskanen, A.S., Suortti, A.M., *Boreal environment research*, Nov. 11, 1997, 2(3), p.257-274, 42 refs.

Oceanography, Subpolar regions, Sedimentation, Water pollution, Hydrocarbons, Particles, Biomass, Seasonal variations, Sampling, Chemical analysis, Environmental tests, Environmental protection, Finland, Gulf

## 53-1354

**Modelling the effect of climate change on nutrient loading, temperature regime and algal biomass in the Gulf of Finland.**

Inkala, A., Bilaltdin, A., Podsetchine, V., *Boreal environment research*, Nov. 11, 1997, 2(3), p.287-301, 30 refs.

Climatology, Global warming, Oceanography, Subpolar regions, Surface waters, River basins, Water temperature, Biomass, Sedimentation, Nutrient cycle, Runoff forecasting, Models, Temperature effects, Finland, Gulf

53-1355

Statistical modelling of phosphate variations in the Baltic proper.

Pers, C., Danielsson, Å., Rahm, L., *Boreal environment research*, Nov. 11, 1997, 2(3), p.303-315, 14 refs.

Oceanography, Subpolar regions, Water pollution, Organic nuclei, Surface waters, Water chemistry, Mathematical models, Periodic variations, Statistical analysis, Baltic Sea

53-1356

Modelling resuspension in the Bothnian Bay, northern Baltic.

Juntura, E., Koponen, J., Alasaarela, E., *Boreal environment research*, Oct. 30, 1996, 1(1), p.27-35, 18 refs.

Oceanography, Subpolar regions, Sedimentation, Bottom sediment, Suspended sediments, Advection, Water erosion, Wind factors, Water waves, Mathematical models, Sampling, Correlation, Bothnia, Bay

53-1357

Oligocene and Pliocene interglacial events in the Antarctic Peninsula dated using strontium isotope stratigraphy.

Dingle, R.V., McArthur, J.M., Vroon, P., *Journal of the Geological Society, London*, 1997, Vol.154, p.257-264, 50 refs.

Stratigraphy, Isotopes, Age determination, Marine deposits, Paleoclimatology, Isotope analysis, Soil dating, Geochronology, Antarctica—Antarctic Peninsula, Antarctica—King George Island, Antarctica—Cockburn Island

53-1358

Products and processes in Pliocene-Recent, subaqueous to emergent volcanism in the Antarctic Peninsula: examples of englacial Surtseyan volcano construction.

Smellie, J.L., Hole, M.J., *Bulletin of volcanology*, 1997, Vol.58, p.628-646, 75 refs.

Volcanoes, Age determination, Stratigraphy, Glacial geology, Glacier beds, Magma, Soil dating, Geochronology, Tectonics, Antarctica—Antarctic Peninsula, Antarctica—Beethoven Peninsula, Antarctica—Seal Nunataks

53-1359

Planning of river projects and regulation in snow removal operations—introduction to snow removal channeling operations in the upper reaches of the Ishikari River. [Shoryusetsu jigyo ni okeru kasen keikaku oyobi kanri unei keikaku—Ishikari-gawa joryu iki ni okeru shoryusetsu-yo suidonyu jigyo no shokai]

Mizobuchi, Y., Itou, Y., Maeda, S., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1995(Pub. Feb. 96), 39(1), p.21-26, In Japanese.

Snow removal, Snow disposal, Snow melting, River flow, Flow control, Channels (waterways), Japan—Hokkaido

53-1360

Designing snow melting equipment using hot springs water. [Onsensui o riyu shita shoyusetsu shisetsu keikaku ni tsuite]

Kamio, K., Miura, T., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1995(Pub. Feb. 96), 39(1), p.27-32, In Japanese. 3 refs.

Snow melting, Artificial melting, Snow removal, Hot springs, Water pipes, Heat pipes, Road maintenance, Japan—Hokkaido

53-1361

Method for detecting frost heave susceptible roadbeds. [Tojosei roban no hanteiho]

Isoda, T., Suzuki, T., Takahashi, T., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1995(Pub. Feb. 96), 39(1), p.105-110, In Japanese. 3 refs.

Roadbeds, Subgrade soils, Soil freezing, Frost action, Frost heave, Frost resistance, Frost forecasting, Frozen ground strength, Road maintenance, Japan—Hokkaido

53-1362

Studies on scaling deterioration using large samples. [Ogata kyoshitai o mochi ita sukeringu rekka ni kansuru kenkyu]

Abe, K., Sakai, K., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1995(Pub. Feb. 96), 39(1), p.111-116, In Japanese. 3 refs.

Concrete structures, Concrete durability, Corrosion, Frost action, Frost resistance, Ocean environments

53-1363

Basic characteristics of recycled concrete aggregates used as road aggregates in snowy cold regions. [Sekisetsu kanreichi ni okeru konkurito saisei kotsuzai no doru-yo kotsuzai toshite no kihon seijō]

Abe, R., Ogasawara, A., Yoshino, M., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1995(Pub. Feb. 96), 39(1), p.117-120, In Japanese. 5 refs.

Concrete aggregates, Roadbeds, Frost protection, Frost resistance, Freeze thaw tests, Subgrade maintenance, Trafficability, Road maintenance

53-1364

How facilities should be to accommodate the elderly and disabled in the north (part 2). [Hokkoku ni okeru koreisha,shintai shogaisha no riyu o koryo shita shisetsu no arikata ni tsuite (sono 2)]

Yamaga, T., Nakayama, M., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1995(Pub. Feb. 96), 39(1), p.201-204, In Japanese.

Houses, Residential buildings, Cold weather construction, Human factors engineering, Health, Regional planning, Japan

53-1365

Studies on snowplows—studies on improving snow removal efficiency at designated sites. [Josetsu kikai ni kansuru chosa—tokutei kasho josetsu no koritsuka ni kansuru chosa]

Hokkaido Development Bureau, *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1995(Pub. Feb. 96), 39(1), p.221-240, In Japanese.

Motor vehicles, Tires, Snow removal equipment, Road maintenance

53-1366

Tests on the development of shear pinless devices for snowplows. [Sunopurau shapinresu sochi no kaihatsu ni kansuru chosa shiken]

Okii, T., Usami, H., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1995(Pub. Feb. 96), 39(1), p.243-248, In Japanese.

Motor vehicles, Snow removal equipment, Road maintenance

53-1367

Tests on surface components of snow removal drains—development of machinery to clear away blockages. [Ryusetsuko no menteki seibi ni kansuru chosa shiken—heisoku kaijo kikai no kaihatsu]

Ueno, H., Satou, S., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1995(Pub. Feb. 96), 39(1), p.249-254, In Japanese.

Snow removal, Snow removal equipment, Drains, Water pipes, Channels (waterways), Road maintenance

53-1368

Tests on detecting cavities beneath the pavement. [Romen-ka kudo tansa ni kansuru chosa shiken]

Endoh, Y., Ishizuka, Y., Tanizaki, T., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1995(Pub. Feb. 96), 39(1), p.255-260, In Japanese.

Pavements, Thaw weakening, Subsurface investigations, Road maintenance

53-1369

Snow countermeasures in the Soya region—snow shelter at Esan on National Highway 238 (part one). [Soya chiho no bosetsu taisaku—ippan kokudo 238-go Esan-hen pakingu sheruta ni tsuite (dai ichi ho)]

Takeda, Y., Keage, K., Kondou, K., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1995(Pub. Feb. 96), 39(2), p.57-60, In Japanese. 2 refs.

Blowing snow, Snowdrifts, Snowsheds, Safety, Highway planning, Road maintenance, Japan—Hokkaido

53-1370

Development of intelligent delineator systems. [Interijento derinieta shisutemu no kaihatsu ni tsuite]

Fukuzawa, Y., Kajiya, Y., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1995(Pub. Feb. 96), 39(2), p.61-68, In Japanese. 2 refs.

Blowing snow, Visibility, Safety, Warning systems, Road maintenance, Japan—Hokkaido

53-1371

Evaluation of winter road surfaces based on the new road surface classification. [Shin romen bunrui ni motozuku toki romen no hyoka ni tsuite]

Matsuzawa, M., Kajiya, Y., Takagi, H., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1995(Pub. Feb. 96), 39(2), p.69-76, In Japanese. 2 refs.

Road icing, Skid resistance, Snow removal, Weather forecasting, Safety, Highway planning, Road maintenance, Japan—Hokkaido

53-1372

Sliding coefficients on an icy road. [Ippan doru no seppyu romen ni okeru suberi masatsu keisu ni tsuite]

Mima, H., Takagi, H., Tsutae, A., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1995(Pub. Feb. 96), 39(2), p.77-84, In Japanese. 1 ref.

Road icing, Tires, Rubber ice friction, Rubber snow friction, Skid resistance, Safety, Road maintenance, Japan—Hokkaido

53-1373

Analysis of winter skid accidents in Hokkaido with the popularization of studless tires. [Sutadoretu-ka ni okeru Hokkaido no toki surippu jiko no bunseki]

Nagai, T., Takagi, H., Onuma, H., *Hokkaido kaihat-sukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1995(Pub. Feb. 96), 39(2), p.85-92, In Japanese. 2 refs.

Road icing, Tires, Rubber ice friction, Rubber snow friction, Skid resistance, Accidents, Safety, Highway planning, Road maintenance, Japan—Hokkaido

53-1374

Pedestrian slip and fall accidents on icy roads subject to extreme slipperiness—report from fire department responses. [Hijo-ni suberi yasui toketsu romen ni okeru hokosha no tento jiko ni tsuite—shobokyoku ni okeru kyukyu katsudo kara no hokoku]

Nihonyanagi, M., Kawaguchi, M., *Hokkaido kaihat-sukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1995(Pub. Feb. 96), 39(2), p.93-98, In Japanese. 3 refs.

Road icing, Skid resistance, Accidents, Human factors engineering, Health, Safety, Road maintenance, Japan—Hokkaido

53-1375

Test pavements as countermeasures for icy roads—results for 1994. [Toketsu romen taisaku shiken hoso—Heisel 6 nendo chosa kekka]

Katayama, K., Ito, H., *Hokkaido kaihat-sukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1995(Pub. Feb. 96), 39(2), p.99-106, In Japanese.

Road icing, Pavements, Rubber snow friction, Rubber ice friction, Skid resistance, Safety, Urban planning, Road maintenance, Japan—Hokkaido

53-1376

Road icing countermeasures in the Hokkaido Development Bureau. [Hokkaido Kaihat-sukyoku ni okeru toketsu romen taisaku ni tsuite]

Kawamura, K., Takagi, H., Onuma, H., *Hokkaido kaihat-sukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1995(Pub. Feb. 96), 39(2), p.107-112, In Japanese. 2 refs.

Road icing, Chemical ice prevention, Salting, Sanding, Snow removal, Road maintenance, Japan—Hokkaido

53-1377

Winter road countermeasures using the spreading of anti-icing chemicals. [Toketsu boshizai shimidashi koho ni yoru toki romen taisaku]

Kanou, H., Iwakura, M., Mimura, K., *Hokkaido kaihat-sukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1995(Pub. Feb. 96), 39(2), p.113-118, In Japanese. 1 ref.

Road icing, Chemical ice prevention, Salting, Road maintenance, Japan—Hokkaido

53-1378

Construction design and maintenance of the Shungaku Bridge deck. [Shungakkyo jobu kasetsu koji no shiko kekaku to kanri ni tsuite]

Yano, S., Ono, T., Nakajima, S., *Hokkaido kaihat-sukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1995(Pub. Feb. 96), 39(2), p.275-282, In Japanese. 4 refs.

Bridges, Cold weather construction, Snow loads, Snow removal, Road maintenance, Japan—Hokkaido

53-1379

Development of a snowmelt and flood forecasting system—results of re-analysis of the Toyohira River drainage basin. [Yusetsu kozui yosoku shisutemu no kaihatu ni tsuite—Toyohira-gawa ryuiki de no saigen kaiseki kekka ni tsuite]

Tanise, A., Takei, M., Suzuki, T., *Hokkaido kaihat-sukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1995(Pub. Feb. 96), 39(3), p.57-62, In Japanese. 3 refs.

River basins, Snow hydrology, Snowmelt, Runoff forecasting, Flood forecasting, Mathematical models, Japan—Hokkaido

53-1380

Study on improving the accuracy of winter flow observations. [Tokai kansoku ryuryo no seido kōjo ni kansuru ikkosatsu]

Yamashita, S., *Hokkaido kaihat-sukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1995(Pub. Feb. 96), 39(3), p.63-68, In Japanese. 5 refs.

River ice, Ice water interface, Ice cover effect, River flow, Flow rate, Flow measurement, Mathematical models, Statistical analysis, Japan—Hokkaido

53-1381

Development of equipment and methods to test the durability of rock materials. [Ganseki zairyo no taikyusel shikenki to shikhenho no kaihatu]

Onodera, Y., Hideshima, Y., Ota, H., *Hokkaido kaihat-sukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1995(Pub. Feb. 96), 39(3), p.205-210, In Japanese. 6 refs.

Earth dams, Rock fills, Concrete durability, Frost resistance, Freeze thaw tests, Japan—Hokkaido

53-1382

Meeting the challenge of size and diversity.

Boissoneault, M., *Avalanche review*, Autumn 1998, 17(1), p.1,4-5.

Avalanches, Avalanche tracks, Avalanche forecasting, Avalanche triggering, Accidents, Safety, Road maintenance, Highway planning, Canada—British Columbia

53-1383

Recycled powder and other types of near-surface faceting.

Birkeland, K.W., *Avalanche review*, Autumn 1998, 17(1), p.6-7, 12 refs.

Snow crystal structure, Snow recrystallization, Metamorphism (snow), Snow surface, Snow cover stability, Avalanche forecasting

53-1384

Artificial melting of snow and ice at the water intakes of the Misaki Drainage Facility. [Misaki haisui kijo shusuiho no seppyo yukai taisaku]

Yoshizawa, J., Takeda, S., Karino, S., *Hokkaido kaihat-sukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1995(Pub. Feb. 96), 39(4), p.75-80, In Japanese.

Drains, Drainage, Water intakes, Artificial melting, Snow removal, Ice prevention, Ice removal, Japan—Hokkaido

53-1385

Operation of an ice control breakwater at the Saroma Lagoon fishing port—ice boom method. [Saroma-ko gyoko bohatei (bohyo) no shiko ni tsuite—ice boom koho]

Oda, K., Toyama, T., Kaizu, H., *Hokkaido kaihat-sukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1995(Pub. Feb. 96), 39(4), p.261-266, In Japanese. 2 refs.

Ports, Ice control, Ice booms, Japan—Hokkaido

53-1386

Snow metamorphisms. [Les métamorphoses de la neige]

Sergent, C., *Neige et avalanches*, Sep. 1998, No.83, p.1-10,32, In French with English summary. Metamorphism (snow), Snow cover structure, Snow stratigraphy, Snow crystal structure, Snow water content, Snow cover stability, Avalanche forecasting

53-1387

Free remarks on avalanches. [Libres propos sur les avalanches]

Zuanon, J.P., *Neige et avalanches*, Sep. 1998, No.83, p.11-13,32, In French with English summary. Avalanches, Avalanche forecasting, Accidents, Safety, France

53-1388

Snow coverage and climate variations. [Enneigement et variations du climat]

Martin, E., *Neige et avalanches*, Sep. 1998, No.83, p.14-17,32, In French with English summary.

Snow cover distribution, Snowfall, Snow line, Global warming, France—Alps

53-1389

Legal responsibility on ski runs: the legal markers are unclear. [Responsabilités sur les pistes de ski: un ballage législatif incertain]

Grognet, A., *Neige et avalanches*, Sep. 1998, No.83, p.18-19,32, In French with English summary. Avalanches, Accidents, Safety, Legislation, France

53-1390

Study of the behaviour of a snow layer deposited on the pavement. [Étude du comportement de la neige sur une chaussée]

Borel, S., *Neige et avalanches*, Sep. 1998, No.83, p.20-23,32, In French with English summary.

Snowfall, Weather forecasting, Safety, Road maintenance

53-1391

Avalanche triggering techniques used for road protection in the USA. [La protection des routes contre les avalanches aux USA]

Meffre, J.F., *Neige et avalanches*, Sep. 1998, No.83, p.24-27,32, In French with English summary.

Avalanche triggering, Blasting, Safety, Road maintenance, Cost analysis, United States—California, United States—Nevada

53-1392

Ice thrust in reservoirs.

Carter, D., Sodhi, D.S., Stander, E., Caron, O., Quach, T., MP 5251, *Journal of cold regions engineering*, Dec. 1998, 12(4), p.169-183, 24 refs.

Reservoirs, Ice mechanics, Ice solid interface, Dams, Ice floes, Ice push, Static loads, Stress concentration, Cracking (fracturing), Compressive properties, Mechanical tests, Mathematical models

A three-year program was undertaken to measure the magnitude of static ice forces in four reservoirs located in central and northern Quebec. These static forces may be generated by a temperature change or may arise from such other mechanisms as water level variations, wind, and current drag force. Field observations have revealed two important facts: ice covers have circumferential cracks caused either by water level variations or thermal contraction; and the static ice forces are, in some instances, sufficient to trigger an instability of the broken ice covers by buckling. Noting that an ice cover cannot transmit a force to a structure larger than its own resistance, an upper bound for static forces was derived by determining the in-plane compression force at which a fragmented ice cover collapses. Empirical formulas are presented for three typical structure shapes: retaining walls, sluice gates, and piers. These formulas correlate well with the field data collected from the four dam sites, and suggest that the maximum ice thrust may simply be defined as a function of ice thickness and contact geometry.

53-1393

Longitudinal dispersion in ice-covered rivers.

Beltaos, S., *Journal of cold regions engineering*, Dec. 1998, 12(4), p.184-201, 27 refs. For another version see 49-2371.

River flow, River ice, Advection, Shear flow, Dispersions, Water pollution, Turbulent diffusion, Ice cover effect, Mathematical models, Mechanical tests

53-1394

**Structural ice control alternatives for middle Mississippi River.**

Tuthill, A.M., Mamone, A.C., MP 5252, *Journal of cold regions engineering*, Dec. 1998, 12(4), p.202-220, 15 refs.

River flow, River ice, Ice water interface, Ice jams, Frazil ice, Ice conditions, Profiles, Ice control, Ice booms, Hydraulic structures, Computerized simulation, United States—Missouri—Mississippi River

The middle Mississippi River, which extends from the mouth of the Missouri River near St. Louis to the confluence with the Ohio River at Cairo, IL, is a critical navigation route throughout the year. During cold periods, the ice accumulations and ice jams that form on this reach can delay or suspend winter navigation, incurring great costs to industry as well as cities and towns whose economies depend on river commerce. Much of this ice originates in the Missouri River. With the onset of warmer air temperatures, the rapid release of these ice accumulations can result in substantial damage to river structures such as dikes, revetments, and levees. This study analyzed historical data and used numerical hydraulic models to assess the possibility of structural solutions to these ice problems. The study identified reach locations where structural ice control might be possible. A simple computer model then simulated the upstream progression of ice covers on the middle Mississippi to assess the feasibility of various ice control alternatives. An ice retention structure located on the Missouri River near its mouth was found to be the most favorable of the structural ice control options considered.

53-1395

**Mountain climate and periglacial phenomena in the Faeroe Islands.**

Humlum, O., Christiansen, H.H., *Permafrost and periglacial processes*, July-Aug. 1998, 9(3), p.189-211, With French summary. 76 refs.

Geomorphology, Mountain soils, Climatic factors, Periglacial processes, Altitude, Air temperature, Degree days, Nivation, Frozen ground mechanics, Patterned ground, Permafrost indicators, Terminology, Denmark—Faeroe Islands

53-1396

**Influence of mineral earth hummocks on subsurface drainage in the continuous permafrost zone.**

Quinton, W.L., Marsh, P., *Permafrost and periglacial processes*, July-Aug. 1998, 9(3), p.213-228, With French summary. 27 refs.

Permafrost hydrology, Continuous permafrost, Tundra soils, Water table, Slope processes, Runoff, Geomorphology, Patterned ground, Hummocks, Permeability, Channels (waterways), Subsurface drainage, Canada—Northwest Territories—Siksik Creek

53-1397

**Impact of climatic factors on the active layer and permafrost at Barrow, Alaska.**

Zhang, T., Stamnes, K., *Permafrost and periglacial processes*, July-Aug. 1998, 9(3), p.229-246, With French summary. 26 refs.

Permafrost physics, Active layer, Permafrost thermal properties, Climatic factors, Soil temperature, Surface temperature, Soil water, Snow cover effect, Snow depth, Depth hoar, Thaw depth, Mathematical models, United States—Alaska—Barrow

53-1398

**Late Cenozoic permafrost history of the Russian Arctic.**

Rozenbaum, G.E., Shpolianskaia, N.A., *Permafrost and periglacial processes*, July-Aug. 1998, 9(3), p.247-273, With French summary. 63 refs.

Permafrost origin, Permafrost distribution, Arctic landscapes, Pleistocene, Paleoclimatology, Geocryology, Classifications, Mapping, History, Russia

53-1399

**Radiocarbon dating and postglacial evolution, upper Valtellina and Livignese area (Sondrio, central Italian Alps).**

Calderoni, G., Guglielmin, M., Tellini, C., *Permafrost and periglacial processes*, July-Aug. 1998, 9(3), p.275-284, With French summary. 23 refs.

Geomorphology, Paleoclimatology, Quaternary deposits, Alpine landscapes, Permafrost indicators, Periglacial processes, Rock glaciers, Carbon isotopes, Radioactive age determination, Geochronology, Italy—Alps

53-1400

**Occurrence of extrazonal periglacial landforms in the lowlands of western Japan and Korea.**

Oguchi, T., Tanaka, Y., *Permafrost and periglacial processes*, July-Aug. 1998, 9(3), p.285-294, With French summary. 52 refs.

Geomorphology, Landforms, Landscape development, Paleocology, Vegetation patterns, Periglacial processes, Freeze thaw cycles, Snow cover effect, Distribution, Temperature effects, Japan, Korea

53-1401

**States implement anti-icing strategies.**

Nassif, S., *Roads & bridge*, Dec. 1997, 35(12), p.16. Road icing, Winter maintenance, Road maintenance, Ice control, Chemical ice prevention, Education

53-1402

**Razing the winter wonderland.**

Banasiak, D., *Roads & bridge*, Dec. 1997, 35(12), p.24-27.

Snow removal equipment, Road maintenance, Winter maintenance, Classifications, Design

53-1403

**Ag by-product joins fight on snow.**

Banasiak, D., *Roads & bridge*, Dec. 1997, 35(12), p.28-29.

Road icing, Ice control, Winter maintenance, Snow melting, Chemical ice prevention, Solutions, Polymers, Viscosity, Environmental protection

53-1404

**Turning pro on anti-icing. *Roads & bridge*, Dec. 1997, 35(12), p.30-31.**

Road icing, Winter maintenance, Road maintenance, Chemical ice prevention, Ice control, Snow melting, Salting, Classifications

53-1405

**Incorporation of western components with Russian drilling operations, case history of Ardallin field operations, Timan Pechora Basin.**

Brady, S., Reyna, E., *SPE drill & completion*, Mar. 1997, 12(1), p.49-54, 2 refs.

Petroleum industry, Subpolar regions, Oil wells, Drilling, Equipment, Modification, Subpolar regions, Logistics, International cooperation, Russia—Timan Pechora Basin

53-1406

**Thermal and moisture protection manual: for architects, engineers, and contractors.**

Beall, C., New York, McGraw-Hill, 1999, 503p., Refs. p.497-500.

DLC TH9031.B294 1999  
Buildings, Indoor climates, Microclimatology, Walls, Heat flux, Moisture, Damage, Freeze thaw cycles, Protection, Construction materials, Thermal insulation, Design criteria, Manuals, Standards, Thermal analysis, Waterproofing

53-1407

**Conditional symmetric instability: methods of operational diagnosis and case study of 23-24 February 1994, eastern Washington/Oregon snow-storm.**

DeVoor, G.A., *U.S. National Oceanic and Atmospheric Administration. National Weather Service. Western Region. NOAA technical memorandum*, May 1998, NWS WR-254, 16p. + figs., PB98-144660, 20 refs.

Meteorological data, Weather forecasting, Snowstorms, Snowfall, Precipitation (meteorology), Atmospheric circulation, United States—Washington, United States—Oregon

53-1408

**Cold temperature effects on stress laminated bridge decks. Final report.**

Seavey, R.T., Erikson, R.W., *Minnesota Department of Transportation. Local Road Research Board. Report*, Dec. 1997, MN/RC-1998/03, 33p., PB98-144686, 6 refs.

Bridges, Cold weather operation, Wooden structures, Cold stress, Cold weather performance, Thermal properties, Moisture detection, Experimentation, Cold weather tests

53-1409

**Freeze-thaw durability of high-strength concrete. Final report.**

Kriesel, R.C., French, C.E., Snyder, M.B., *Minnesota Department of Transportation. Office of Research Administration. St. Paul, MN. Report*, Jan. 1998, No.1998-10, 195p., PB98-166614, 49 refs. Appendixes A through H are listed in the table of contents but do not appear on the fiche.

Cold weather performance, Concrete durability, Concrete strength, Bridges, Flexural strength, Shear strength, Concrete aggregates, Freeze thaw tests, Mechanical tests, Concrete freezing, Frost resistance

53-1410

**Meridional ocean heat transport across the Arctic Circumpolar Current.**

Li, H.H., College Station, Texas A&M University, 1996, 98p., University Microfilms order No.AAD97-O1676, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 57(8), p.4950.

Oceanographic surveys, Meteorological data, Ocean currents, Models, Heat transfer, Air water interactions, Water temperature

53-1411

**Power spectral analysis of the ionospheric ULF micropulsation data obtained from the 1980-81 Siple and the 1985-86 South Pole Balloon campaigns.**

Lee, K.Y., Houston, University, 1996, 236p., University Microfilms order No.AAD97-O0694, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 57(8), p.5111.

Geoelectricity, Geomagnetism, Atmospheric physics, Research projects, Magnetometers, Spectroscopy, Magnetic surveys, Electric fields, Fluid mechanics, Antarctica—South Pole

53-1412

**Altimeter waveform model for combined surface and volume scattering.**

Newkirk, M.H., Blacksburg, Virginia Polytechnic Institute and State University, 1994, 126p., University Microfilms order No.AADAA-19524795, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 56(3), p.1617.

Height finding, Radar, Measuring instruments, Scattering, Recording instruments, Electronic equipment, Ice sheets, Ice shelves, Models, Glacier surfaces, Glacier thickness, Greenland

53-1413

**Dynamics of mesoscale cyclogenesis adjacent to the Pacific coast of Antarctica.**

Carrasco-Cerda, J.F., Columbus, Ohio State University, 1994, 312p., University Microfilms order No.AADAA-19516965, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 56(1), p.293.

Meteorological data, Atmospheric disturbances, Marine meteorology, Image processing, Spaceborne photography, Atmospheric pressure, Weather stations, Synoptic meteorology, Mathematical models, Wind (meteorology), Antarctica—West Antarctica

53-1414

**Antifreeze glycoproteins of two unrelated polar fishes: gene structure, organization and evolution.**

Chen, L.B., Urbana-Champaign, University of Illinois, 1997, 187p., University Microfilms order No.AAD97-17261, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 57(12), p.7301.

Acclimatization, Animals, Physiological effects, Marine biology, Molecular structure, Cold stress, Cold tolerance, Paleocology, Antifreezes, Antarctica

53-1415

**Corderite gneisses and high temperature metamorphism in the Fosdick Mountains, West Antarctica, with implications for breakup processes in the Pacific sector of the Mesozoic Gondwana margin.**

Smith, C.H., Santa Barbara, University of California, 1995, 312p., University Microfilms order No.96-66623, Ph.D. thesis.

Tectonics, Frozen rocks, Glacial geology, Earth crust, Geocryology, Thermal analysis, Models, Antarctica—Fosdick Mountains

53-1416

**Crystal structures and hydrogen bonding of carbohydrates: D-threitol, lactulose dihydrate, raffinose pentahydrate, alpha/beta panose, stachyose tetrahydrate, nystose trihydrate; hydrogen bonding in tri- and tetrasaccharides; crystallization of ice in the presence of antifreeze polypeptides.**

Huang, D.B., Pittsburgh, University, 1991, 263p., University Microfilms order No.AAD91-29164, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 52(5), p.2540.

Ice crystal growth, Hydrogen bonds, Ice crystal structure, Antifreezes, Molecular structure, Chemical composition

53-1417

**Microwave remote sensing techniques for vapor, liquid and ice parameters.**

Li, L., Seattle, University of Washington, 1996, 137p., University Microfilms order No.AADAA-19609711, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 56(12), p.6954. Remote sensing, Models, Atmospheric composition, Radiation measuring instruments, Water vapor, Temperature inversions, Ice physics, Liquids, Cloud physics

53-1418

**Determination of the climate change in the Russian Arctic using a synoptic climatological approach.**

Ye, H.H., Newark, University of Delaware, 1996, 149p., University Microfilms order No.AADAA-19610499, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 56(12), p.6644. Climatic changes, Atmospheric circulation, Polar atmospheres, Synoptic meteorology, Air masses, Air temperature, Meteorological data, Russia

53-1419

**Formation of eskers based on their morphology, stratigraphy, and lithological composition, Labrador, Canada.**

Bolduc, A.M., Bethlehem, PA, Lehigh University, 1992, 365p., University Microfilms order No.AAD92-26053, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 53(5), p.2215.

Glacial deposits, Geomorphology, Stratigraphy, Lithology, Subglacial drainage, Glacial geology, Sedimentation, Subglacial observations, Tunnels, Canada—Labrador

53-1420

**Pressure drop and heat transfer in turbulent ice-water slurries in horizontal pipes.**

Knodel, B.D., Chicago, University of Illinois, 1995, 209p., University Microfilms order No.AADAA-19612498, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 56(12), p.7012. Experimentation, Water pressure, Heat transfer, Water pipes, Ice water interface, Turbulent flow, Pipe flow

53-1421

**Structured water mobile below the freezing point in aqueous solutions of a triple-helical polysaccharide schizophyllan.**

Miura, N., Yagihara, S., Mashimo, S., Gu, H., Teramoto, A., *Nihon Gakushuin. Proceedings of the Japan Academy. Series B*, Jan. 1998, 74(1), p.1-5, 34 refs.

Solutions, Frozen liquids, Polymers, Molecular structure, Phase transformations, Water structure, Freezing points, Hygroscopic water, Unfrozen water content, Dielectric properties, Electrical measurement

53-1422

**Time-delayed response of the solar total irradiance variation to long-term solar magnetic cycle amplitude modulation as inferred by sunspot relative number and isotope data of <sup>10</sup>Be in the Greenland ice core and land air temperature variation of the Earth.**

Yoshimura, H., *Nihon Gakushuin. Proceedings of the Japan Academy. Series B*, Dec. 1996, 72(10), p.197-201, 18 refs.

Climatology, Surface temperature, Global warming, Solar radiation, Radiance, Solar activity, Periodic variations, Electromagnetic properties, Age determination, Ice sheets, Ice cores, Isotope analysis, Correlation, Greenland

53-1423

**Mid-Wisconsinan eolian deposits of the Kittigazuit Formation, Tuktoyaktuk Coastlands, Northwest Territories, Canada.**

Dallimore, S.R., Wolfe, S.A., Matthews, J.V., Jr., Vincent, J.S., *Canadian journal of earth sciences*, Nov. 1997, 34(11), p.1421-1441, With French summary. 42 refs.

Pleistocene, Subpolar regions, Sedimentation, Paleogeology, Eolian soils, Permafrost indicators, Periglacial processes, Sands, Lithology, Radioactive age determination, Geochronology, Canada—Northwest Territories—Tuktoyaktuk Coastlands

53-1424

**Holocene eolian activity in the Minot dune field, North Dakota.**

Muhs, D.R., et al, *Canadian journal of earth sciences*, Nov. 1997, 34(11), p.1442-1459, With French summary. 74 refs.

Pleistocene, Plains, Geomorphology, Quaternary deposits, Eolian soils, Sedimentation, Wind factors, Sands, Evapotranspiration, Stratigraphy, Geochemistry, Origin, United States—North Dakota

53-1425

**Meteorological controls on wind erosion during foehn wind events in the eastern Southern Alps, New Zealand.**

McGowan, H.A., *Canadian journal of earth sciences*, Nov. 1997, 34(11), p.1477-1485, With French summary. 43 refs.

Alpine landscapes, Soil erosion, Soil air interface, Storms, Wind erosion, Sediment transport, Eolian soils, Freeze thaw cycles, Ice needles, Meteorological data, New Zealand—Southern Alps

53-1426

**Late Wisconsinan deglacial history of the east-central Taseko Lakes area, British Columbia.**

Huntley, D.H., Broster, B.E., *Canadian journal of earth sciences*, Nov. 1997, 34(11), p.1510-1520, With French summary. 40 refs.

Pleistocene, Glacial geology, Glacial hydrology, Ice sheets, Ice deterioration, Geomorphology, Sedimentation, Moraines, Glacial lakes, Subglacial drainage, Glacier oscillation, Geological surveys, Canada—British Columbia—Taseko Lakes

53-1427

**Influence of Kola Peninsula, continental European and marine sources on the number concentrations and scattering coefficients of the atmospheric aerosol in Finnish Lapland.**

Virkkula, A., Hillamo, R.E., Kerminen, V.M., Stohl, A., *Boreal environment research*, Jan. 14, 1998, 2(4), p.317-336, 45 refs.

Climatology, Air pollution, Origin, Polar atmospheres, Air masses, Wind direction, Aerosols, Condensation nuclei, Sampling, Backscattering, Classifications, Finland—Lapland, Russia—Kola Peninsula

53-1428

**Nutrient intrusions at the entrance to the Gulf of Finland.**

Laanemets, J., Kononen, K., Pavelson, J., *Boreal environment research*, Jan. 14, 1998, 2(4), p.337-344, 17 refs.

Oceanography, Water chemistry, Hydrography, Nutrient cycle, Subpolar regions, Marine biology, Biomass, Microbiology, Profiles, Density (mass/volume), Sampling, Finland, Gulf, Baltic Sea

53-1429

**Metal concentrations in sediments in acidifying lakes in Finnish Lapland.**

Dauvalter, V., *Boreal environment research*, Jan. 14, 1998, 2(4), p.369-379, 50 refs.

Limnology, Subpolar regions, Lake water, Water pollution, Metals, Bottom sediment, Sampling, Hydrogeochemistry, Environmental tests, Finland—Lapland

53-1430

**Size and number concentration of liquid PSCs: balloon-borne measurements at Ny-Ålesund, Norway in winter of 1994/95.**

Hayashi, B., et al, *Meteorological Society of Japan. Journal*, Aug. 1998, 76(4), p.549-560, With Japanese summary. 39 refs.

Climatology, Polar atmospheres, Air temperature, Cloud physics, Aerosols, Polar stratospheric clouds, Sounding, Lidar, Ice crystal size, Particle size distribution, Heterogeneous nucleation, Profiles, Norway—Ny-Ålesund

53-1431

**Sublimation of snowpacks in subalpine conifer forests.**

Schmidt, R.A., Troendle, C.A., Meiman, J.R., *Canadian journal of forest research*, Apr. 1998, 28(4), p.501-513, With French summary. 58 refs.

Forest canopy, Snow hydrology, Snow cover structure, Snow evaporation, Slope orientation, Sublimation, Vapor transfer, Snow air interface, Spheres, Simulation, Forecasting, Indexes (ratios), United States—Colorado—Fraser Experimental Forest

53-1432

**Development of freezing tolerance in roots and shoots of Scots pine seedlings at nonfreezing temperatures.**

Ryyppö, A., Repo, T., Vapaavuori, E., *Canadian journal of forest research*, Apr. 1998, 28(4), p.557-565, With French summary. 46 refs.

Plant physiology, Trees (plants), Plant tissues, Roots, Damage, Frost resistance, Cold tolerance, Acclimatization, Temperature effects, Simulation, Cold weather survival, Finland

53-1433

**Early seedling establishment of *Picea abies* in small forest gaps on the Swiss Alps.**

Brang, P., *Canadian journal of forest research*, Apr. 1998, 28(4), p.626-639, With French summary. 58 refs.

Forest ecosystems, Trees (plants), Alpine landscapes, Vegetation patterns, Growth, Survival, Revegetation, Rain, Soil water, Slope orientation, Light effects, Topographic effects, Simulation, Switzerland—Alps

53-1434

**Tectonic evolution of Bransfield Strait, West Antarctica.**

Barker, D.H.N., Austin, University of Texas, 1997, 273p., University Microfilms order No.AAD98-22539, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 59(1), p.129.

Tectonics, Marine geology, Structural analysis, Ocean bottom, Bottom topography, Glacial geology, Geophysical surveys, Antarctica—Bransfield Strait

53-1435

**Late Wisconsinan glaciation of east-central Taseko Lakes, British Columbia.**

Huntley, D.H., New Brunswick, University of New Brunswick, 1997, 197p., University Microfilms order No.AADNQ-23864, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 58(12), p.6448.

Limnology, Glacial geology, Glaciation, Lacustrine deposits, Landforms, Glacial erosion, Glacier oscillation, Sedimentation, Canada—British Columbia

53-1436

**Constitutive modelling of time-dependent stress-strain behaviour of soils.**

Yin, J.H., Winnipeg, University of Manitoba, 1990, 338p., University Microfilms order No.AADNN-63260, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 53(1), p.457.

Models, Soil strength, Stresses, Strains, Elastic properties, Frozen ground, Soil tests, Frozen ground strength, Frozen ground compression, Soil creep

53-1437

**Engineering properties of high performance concrete containing large volume of Class C fly ash.**

Makrides-Saravanos, E., Saskatoon, University of Saskatchewan, 1996, 220p., University Microfilms order No.AADNQ-23904, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 58(12), p.6713.

Concrete aggregates, Cold weather performance, Mechanical tests, Cost analysis, Concrete strength, Concrete admixtures, Prestressed concretes, Concrete structures, Concrete durability, Freeze thaw tests, Frost resistance, Winter concreting, Canada

53-1438

**Late-Glacial and Holocene variations in fire frequency in the Central Plateau and Yellowstone-Lamar provinces of Yellowstone National Park.**

Millsbaugh, S.H., Eugene, University of Oregon, 1997, 262p., University Microfilms order No.AAD98-18732, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 58(12), p.6460.

Glacial geology, Climatic changes, Paleoclimatology, Forest fires, Vegetation, Seasonal variations, Climatic factors, United States—Wyoming—Yellowstone National Park

53-1439

**Theoretical studies of adsorption on surfaces: silane on the silicon (100)-(2X1) surface and hypochlorous acid on the ice Ih surface.**

Robinson Brown, A.A., Newark, University of Delaware, 1998, 132p., University Microfilms order No.AAD98-19166, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 58(12), p.6602.

Adsorption, Surface properties, Ice surface, Chemical analysis, Ozone, Atmospheric composition, Molecular structure, Ice water interface, Molecular energy levels, Cloud physics

53-1440

**Climatic effects and requirements of arctic clouds.**

Beesley, J.A., Seattle, University of Washington, 1997, 109p., University Microfilms order No.AAD98-19205, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 58(12), p.6626.

Cloud cover, Climatic factors, Polar atmospheres, Meteorological data, Seasonal variations, Air ice water interaction, Atmospheric circulation, Air temperature, Clouds (meteorology), Sea ice, Mathematical models, Marine atmospheres, Arctic Ocean

53-1441

**Surface water dynamics and biogeochemical fluxes of Loch Vale Watershed, Colorado.**

Baron, J.S., Fort Collins, Colorado State University, 1991, 133p., University Microfilms order No.AAD92-16171, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 53(1), p.52.

Limnology, Lakes, Surface waters, Geochemistry, Cryobiology, Hydrography, Air ice water interaction, Meteorological factors, Climatic factors, Seasonal variations, Hydrogeochemistry, Geochemical cycles, Nutrient cycle, Colorado—Loch Vale Watershed

53-1442

**Three-phase runoff model for small prairie rivers.**

Byrne, J.M., Edmonton, University of Alberta, 1990, 315p., University Microfilms order No.AADNN-64799, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 53(1), p.175.

Rivers, Runoff, Models, Hydrology, Watersheds, Fluid dynamics, Thixotropy, Frozen ground, Snowmelt, Drainage, Canada—Alberta

53-1443

**Methane emission from peatlands in northern Minnesota.**

Dise, N.B., Minneapolis, University of Minnesota, 1991, 150p., University Microfilms order No.AAD92-05434, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 52(12), p.6191.

Peat, Geochemistry, Forest ecosystems, Variations, Water table, Temperature measurement, Wetlands, Seasonal variations, Soil microbiology, Soil air interface, Atmospheric composition, Nutrient cycle, Geochemical cycles, United States—Minnesota

53-1444

**Finite element modeling of open channel flow.**

Hicks, F.E., Edmonton, University of Alberta, 1990, 495p., University Microfilms order No.AADNN-64989, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec.B, 53(1), p.446.

Flood forecasting, Bank protection (waterways), Dams, Ice jams, Mathematical models, Performance

53-1445

**Analysis of SAR data of the polar oceans: recent advances.**

Tsatsoulis, C., ed, Kwok, R., ed, Berlin, Springer-Verlag, 1998, 290p., Refs. passim. For individual papers see 53-1446 through 53-1457.

DLC GB2595.A63 1998

Ice surveys, Sea ice distribution, Ice conditions, Ice detection, Drift, Radar tracking, Synthetic aperture radar, Spaceborne photography, Image processing, Data processing

53-1446

**Recent advances in the analysis of SAR data of the polar oceans.**

Tsatsoulis, C., Kwok, R., Analysis of SAR data of the polar oceans: recent advances. Edited by C. Tsatsoulis and R. Kwok, Berlin, Springer-Verlag, 1998, p.3-8, 2 refs.

DLC GB2595.A63 1998

Ice surveys, Sea ice distribution, Ice conditions, Synthetic aperture radar, Spaceborne photography, Image processing, Data processing

53-1447

**Identifying ice floes and computing ice floe distributions in SAR images.**

Soh, L.K., Tsatsoulis, C., Holt, B., Analysis of SAR data of the polar oceans: recent advances. Edited by C. Tsatsoulis and R. Kwok, Berlin, Springer-Verlag, 1998, p.9-34, 49 refs.

DLC GB2595.A63 1998

Ice surveys, Sea ice distribution, Ice conditions, Ice floes, Ice detection, Ice reporting, Ice routing, Synthetic aperture radar, Spaceborne photography, Image processing, Statistical analysis

53-1448

**Role of SAR in surface energy flux measurements over sea ice.**

Barber, D.G., Thomas, A., Papakyriakou, T.N., Analysis of SAR data of the polar oceans: recent advances. Edited by C. Tsatsoulis and R. Kwok, Berlin, Springer-Verlag, 1998, p.35-67, 34 refs.

DLC GB2595.A63 1998

Ice surveys, Sea ice distribution, Ice conditions, Ice dielectrics, Ice heat flux, Snow ice interface, Air ice water interaction, Heat balance, Backscattering, Synthetic aperture radar, Spaceborne photography, Image processing, Statistical analysis

53-1449

**Extraction of intermediate scale sea ice deformation parameters from SAR ice motion products.**

Li, S.S., Cheng, Z., Weeks, W.F., Analysis of SAR data of the polar oceans: recent advances. Edited by C. Tsatsoulis and R. Kwok, Berlin, Springer-Verlag, 1998, p.69-90, 28 refs.

DLC GB2595.A63 1998

Ice surveys, Sea ice distribution, Ice conditions, Ice floes, Drift, Ice friction, Ice deformation, Ice openings, Pressure ridges, Synthetic aperture radar, Spaceborne photography, Image processing, Statistical analysis

53-1450

**Fusion of satellite SAR with passive microwave data for sea ice remote sensing.**

Beaven, S.G., Gogineni, S.P., Analysis of SAR data of the polar oceans: recent advances. Edited by C. Tsatsoulis and R. Kwok, Berlin, Springer-Verlag, 1998, p.91-109, 34 refs.

DLC GB2595.A63 1998

Ice surveys, Sea ice distribution, Ice conditions, Ice detection, Synthetic aperture radar, Radiometry, Spaceborne photography, Image processing, Data processing

53-1451

**Wavelet analysis of SAR images in the marginal ice zone.**

Liu, A.K., Peng, C.Y., Analysis of SAR data of the polar oceans: recent advances. Edited by C. Tsatsoulis and R. Kwok, Berlin, Springer-Verlag, 1998, p.111-128, 21 refs.

DLC GB2595.A63 1998

Ice surveys, Sea ice distribution, Ice edge, Ice floes, Drift, Ocean waves, Ice water interface, Polynyas, Radar tracking, Synthetic aperture radar, Spaceborne photography, Image processing, Chukchi Sea, Bering Sea

53-1452

**Mapping the progression of melt onset and freeze-up on Arctic sea ice using SAR and scatterometry.**

Winebrenner, D.P., Long, D.G., Holt, B., Analysis of SAR data of the polar oceans: recent advances. Edited by C. Tsatsoulis and R. Kwok, Berlin, Springer-Verlag, 1998, p.129-144, 25 refs.

DLC GB2595.A63 1998

Ice surveys, Sea ice distribution, Ice conditions, Ice detection, Ice melting, Freezeup, Backscattering, Synthetic aperture radar, Spaceborne photography, Image processing

53-1453

**Satellite microwave radar observations of antarctic sea ice.**

Drinkwater, M.R., Analysis of SAR data of the polar oceans: recent advances. Edited by C. Tsatsoulis and R. Kwok, Berlin, Springer-Verlag, 1998, p.145-187, 49 refs.

DLC GB2595.A63 1998

Ice surveys, Sea ice distribution, Ice conditions, Ice detection, Drift, Radar tracking, Radiometry, Backscattering, Synthetic aperture radar, Spaceborne photography, Image processing, Antarctica—Weddell Sea

53-1454

**Alaska SAR Facility: the US science center for sea ice SAR data.**

Carsey, F., Harding, R., Wales, C., Analysis of SAR data of the polar oceans: recent advances. Edited by C. Tsatsoulis and R. Kwok, Berlin, Springer-Verlag, 1998, p.189-200, 12 refs.

DLC GB2595.A63 1998

Ice surveys, Sea ice distribution, Ice conditions, Mapping, Research projects, Stations, Synthetic aperture radar, Spaceborne photography, Image processing, Data processing, Data transmission, United States—Alaska—Fairbanks, Antarctica—McMurdo Station



53-1455

**Polar SAR data for operational sea ice mapping.** Bertoia, C., Falkingham, J., Fetterer, F., Analysis of SAR data of the polar oceans: recent advances. Edited by C. Tsatsoulis and R. Kwok, Berlin, Springer-Verlag, 1998, p.201-234, 52 refs. DLC GB2595.A63 1998

Ice surveys, Sea ice distribution, Ice conditions, Ice detection, Ice reporting, Ice routing, Ice navigation, Radar tracking, Synthetic aperture radar, Spaceborne photography, Image processing, Data transmission

53-1456

**RADARSAT Geophysical Processor System.** Kwok, R., Analysis of SAR data of the polar oceans: recent advances. Edited by C. Tsatsoulis and R. Kwok, Berlin, Springer-Verlag, 1998, p.235-257, 23 refs. DLC GB2595.A63 1998

Ice surveys, Sea ice distribution, Ice conditions, Ice detection, Drift, Radar tracking, Synthetic aperture radar, Spaceborne photography, Image processing, Data processing, Computer applications

53-1457

**Towards operational monitoring of arctic sea ice by SAR.**

Sephton, A.J., Partington, K.C., Analysis of SAR data of the polar oceans: recent advances. Edited by C. Tsatsoulis and R. Kwok, Berlin, Springer-Verlag, 1998, p.259-279, 27 refs. DLC GB2595.A63 1998

Ice surveys, Sea ice distribution, Ice conditions, Icebergs, Ice detection, Ice reporting, Drift, Radar tracking, Synthetic aperture radar, Spaceborne photography, Image processing, Data transmission

53-1458

**Melting heat transfer characteristics of a horizontal ice cylinder immersed in an immiscible liquid.** Yamada, M., Fukusako, S., Ogawa, T., Sayed, M.E.B., *Heat transfer—Japanese research*, 1998, 27(5), p.336-352, Translated from Japanese Society of Mechanical Engineers. Transactions, 1997. 5 refs.

Ice physics, Ice melting, Slush, Heat transfer coefficient, Phase transformations, Liquid solid interfaces, Films, Interfacial tension, Hydrocarbons, Mechanical tests, Analysis (mathematics), Temperature effects

53-1459

**Microscopic study of the solidification of aqueous solutions using laser interferometry.**

Nakabeppu, O., Iwana, K., Ishiguro, H., Hijikata, K., *Heat transfer—Japanese research*, 1998, 27(5), p.353-364, Translated from Japanese Society of Mechanical Engineers. Transactions, 1997. 11 refs. Solutions, Ice physics, Ice crystal optics, Ice crystal structure, Ice microstructure, Ice crystal growth, Solidification, Mass transfer, Fractals, Lasers

53-1460

**Event stratigraphy for the Last Termination in the North Atlantic region based on the Greenland ice-core record: a proposal by the INTIMATE group.** Björck, S., et al, *Journal of Quaternary science*, July-Aug. 1998, 13(4), p.283-292, 69 refs.

Pleistocene, Quaternary deposits, Glacier oscillation, Ice sheets, Ice cores, Oxygen isotopes, Isotope analysis, Stratigraphy, Geochronology, Classifications, Terminology, Standards, Greenland

53-1461

**Rock glaciers on the Faeroe Islands, the North Atlantic.**

Humlum, O., *Journal of Quaternary science*, July-Aug. 1998, 13(4), p.293-307, Refs. p.305-307. Pleistocene, Paleoclimatology, Climatic changes, Geomorphology, Periglacial processes, Rock glaciers, Permafrost indicators, Snow cover effect, Rock mechanics, Talus, Lithology, Theories, Denmark—Faeroe Islands

53-1462

**Devensian organic interstadial deposits and ice sheet extent in Buchan, Scotland.**

Whittington, G., et al, *Journal of Quaternary science*, July-Aug. 1998, 13(4), p.309-324, 51 refs. Pleistocene, Paleoclimatology, Climatic changes, Paleoeology, Glaciation, Geomorphology, Tundra vegetation, Glacial deposits, Peat, Radioactive age determination, Ice age theory, United Kingdom—Scotland

53-1463

**Numerical simulation of permafrost growth and decay.**

Delisle, G., *Journal of Quaternary science*, July-Aug. 1998, 13(4), p.325-333, 35 refs. Pleistocene, Paleoclimatology, Permafrost physics, Permafrost thermal properties, Permafrost origin, Permafrost thickness, Degradation, Active layer, Thermal conductivity, Quaternary deposits, Mathematical models, Germany, Netherlands

53-1464

**Method to determine warm and cool steppe biomes from pollen data; application to the Mediterranean and Kazakhstan regions.**

Tarasov, P.E., et al, *Journal of Quaternary science*, July-Aug. 1998, 13(4), p.335-344, 40 refs. Pleistocene, Paleoclimatology, Biogeography, Steppes, Paleoeology, Palynology, Quaternary deposits, Vegetation patterns, Ecosystems, Spectra, Classifications, Greece, Kazakhstan

53-1465

**Impact of climate change on the bulk and clay geochemistry of fluvial residual channel infillings: the Late Weichselian and Early Holocene River Meuse sediments (The Netherlands).**

Tebbens, L.A., Veldkamp, A., Kroonenberg, S.B., *Journal of Quaternary science*, July-Aug. 1998, 13(4), p.345-356, 60 refs. Pleistocene, Paleoclimatology, Climatic changes, Quaternary deposits, River basins, Sedimentation, Bottom sediment, Clay minerals, Diagenesis, Geochemistry, Geochronology, Netherlands—Meuse River

53-1466

**Ice diapirs on Europa: implications for liquid water.**

Rathbun, J.A., Musser, G.S., Jr., Squyres, S.W., *Geophysical research letters*, Nov. 15, 1998, 25(22), p.4157-4160, 15 refs.

Satellites (natural), Extraterrestrial ice, Regolith, Ground ice, Buoyancy, Ice solid interface, Water, Detection, Topographic features, Photointerpretation

53-1467

**Note on record-high temperatures at the northern polar stratopause in winter 1997/8.**

Von Zahn, U., Fiedler, J., Naujokat, B., Langematz, U., Krüger, K., *Geophysical research letters*, Nov. 15, 1998, 25(22), p.4169-4172, 14 refs.

Climatology, Climatic changes, Air temperature, Polar atmospheres, Stratosphere, Sounding, Lidar, Thermal analysis, Temperature variations, Profiles, Norway

53-1468

**Atmospheric mixing and the CO<sub>2</sub> seasonal cycle.** Taylor, J.A., *Geophysical research letters*, Nov. 15, 1998, 25(22), p.4173-4176, 11 refs.

Climatology, Atmospheric composition, Subpolar regions, Atmospheric boundary layer, Carbon dioxide, Advection, Turbulent diffusion, Mathematical models, Seasonal variations, United States—Alaska—Barrow

53-1469

**Significant changes between the ISCCP C and D cloud climatologies.**

Doutriaux-Boucher, M., Sèze, G., *Geophysical research letters*, Nov. 15, 1998, 25(22), p.4193-4196, 15 refs.

Climatology, Cloud cover, Cloud physics, Optical properties, Radiometry, Seasonal variations, Classifications, Ice detection, Forecasting

53-1470

**Deep water formation and poleward ocean heat transport in the warm climate extreme of the Cretaceous (80 Ma).**

Brady, E.C., DeConto, R.M., Thompson, S.L., *Geophysical research letters*, Nov. 15, 1998, 25(22), p.4205-4208, 23 refs. Pleistocene, Paleoclimatology, Climatic changes, Ocean currents, Convection, Surface temperature, Water temperature, Cooling, Heat transfer, Temperature gradients, Models

53-1471

**Hydrological and transport load characteristics of small alpine watersheds, central Brooks Range, Alaska.**

Munich, T.A., Bloomington, Indiana University, Oct. 1989, 88p, No.98-06718, M.S. thesis. 63 refs. Hydrology, Watersheds, Water pressure, Precipitation (meteorology), Rivers, Sediment transport, Streams, Surface waters, Suspended sediments, United States—Alaska

53-1472

**Late Wisconsin Cuba Moraine; its age and implications for ice sheet behavior.**

Dubois, M.P., Cincinnati, University, Apr. 1996, n.p., No.98-06767, M.S. thesis. Moraines, Glacial geology, Glacial deposits, Ice sheets, Geochronology, Pleistocene

53-1474

**Quantification of the effect of plants on weathering: studies in Iceland.**

Moulton, K.L., Berner, R.A., *Geology*, Oct. 1998, 26(10), p.895-898, 43 refs. Pleistocene, Paleoclimatology, Atmospheric composition, Carbon dioxide, Geologic processes, Vegetation factors, Weathering, Hydrogeochemistry, Subpolar regions, Geochemical cycles, Ion density (concentration), Sampling, Iceland

53-1475

**High-resolution records of soil humification and paleoclimate change from variations in speleothem luminescence excitation and emission wavelengths.**

Baker, A., Genty, D., Smart, P.L., *Geology*, Oct. 1998, 26(10), p.903-906, 22 refs. Paleoclimatology, Climatic changes, Precipitation (meteorology), Soil tests, Peat, Organic soils, Soil formation, Luminescence, Correlation, United Kingdom

53-1476

**Modeling and characterization of fracture patterns in the Vatnajökull glacier.**

Malthe-Sørensen, A., Walmann, T., Jamtveit, B., Feder, J., Jøssang, T., *Geology*, Oct. 1998, 26(10), p.931-934, 28 refs. Glaciology, Glacier surfaces, Ice mechanics, Ice deformation, Ice cracks, Crack propagation, Cracking (fracturing), Fractals, Simulation, Geologic processes, Iceland—Vatnajökull

53-1477

**Eight centuries of periodic volcanism at the center of the Iceland hotspot revealed by glacier tephrostratigraphy.**

Larsen, G., Gudmundsson, M.T., Björnsson, H., *Geology*, Oct. 1998, 26(10), p.943-946, 29 refs. Earth crust, Tectonics, Volcanoes, Subpolar regions, Stratigraphy, Volcanic ash, Glacier ice, Ice cores, Drill core analysis, Periodic variations, Correlation, Iceland

53-1478

**Modeling the dynamics of soil water storage and total evaporation in the steppe and forest-steppe zones with allowance for the area heterogeneity.** Gusev, E.M., Busarova, O.E., Nasonova, O.N., *Water resources*, Sep.-Oct. 1998, 25(5), p.471-481, Translated from Vodnye resursy. 30 refs.

Hydrologic cycle, Soil physics, Steppes, Soil water, Water storage, Precipitation (meteorology), Snow-melt, Seepage, Topographic effects, Statistical analysis, Mathematical models, Russia

53-1479

**Modeling of hydrological processes and mass transport in the watershed-water body system.**

Kondrat'ev, S.A., Golosov, S.D., Kreiman, K.D., Ignat'eva, N.V., *Water resources*, Sep.-Oct. 1998, 25(5), p.523-532, Translated from Vodnye resursy. 28 refs.

Watersheds, Reservoirs, Icebound lakes, Runoff forecasting, Mass transfer, Biomass, Ice cover effect, Snowmelt, Bottom sediment, Heat flux, Thermal regime, Mathematical models, Russia—Karelian Isthmus

53-1480

**Modelling the effects of climate change, acidic deposition and forest harvesting on the biogeochemistry of a boreal forested catchment in Finland.**

Forsius, M., et al, *Boreal environment research*, June 17, 1997, 2(2), p.129-143, 51 refs.

Hydrogeochemistry, Watersheds, Soil chemistry, Subpolar regions, Forestry, Forest land, Climatic changes, Leaching, Sedimentation, Runoff forecasting, Sampling, Finland

53-1481

**Climate change and river runoff in Scandinavia, approaches and challenges.**

Gottschalk, L., Krasovskaia, I., *Boreal environment research*, June 17, 1997, 2(2), p.145-162, Refs. p.160-162.

Climatology, Subpolar regions, Climatic changes, Runoff forecasting, River basins, River flow, Hydrography, Statistical analysis, Accuracy, Temperature effects, Sweden, Norway, Finland

53-1482

**Variability of climatic and ice conditions in the Bohai Sea, China.**

Zhang, Z.H., Wu, H.D., Wang, Y.L., *Boreal environment research*, June 17, 1997, 2(2), p.163-169, 9 refs.

Climatology, Climatic changes, Marine atmospheres, Sea ice distribution, Ice conditions, Classifications, Ice cover thickness, Air temperature, Seasonal variations, Sampling, China—Bohai Sea

53-1483

**Origin of the hypertrophic state of a shallow boreal shield lake.**

Itkonen, A., Olander, H., *Boreal environment research*, June 17, 1997, 2(2), p.183-198, 72 refs.

Hydrogeochemistry, Limnology, Subpolar regions, Lacustrine deposits, Water pollution, Water chemistry, Profiles, Metals, Mass transfer, Sedimentation, Drill core analysis, Environmental tests, Finland—Köyliönjärvi, Lake

53-1484

**Photodegradation of aquatic humic substances: an important factor for the Baltic carbon cycle?**

Pettersson, C., Rahm, L., Allard, B., Borén, H., *Boreal environment research*, June 17, 1997, 2(2), p.209-215, 35 refs.

Limnology, Oceanography, Subpolar regions, Hydrogeochemistry, Geochemical cycles, Carbon dioxide, Organic nuclei, Degradation, Photochemical reactions, Ultraviolet radiation, Simulation, Sweden

53-1485

**Freezing heat transfer along a horizontal cooled plate with a separated region.**

Yamada, M., Fukusako, S., Kawanami, T., Kurita, M., Oh, C., *Heat transfer—Japanese research*, 1998, 27(1), p.43-56, Translated from KSME-JSME Thermal Engineering Conference, 3rd, 1996, Proceedings, Pt.1. 10 refs.

Ice physics, Phase transformations, Heat transfer coefficient, Ice formation, Ice cover thickness, Turbulent flow, Laminar flow, Hydrodynamics, Ice water interface, Simulation

53-1486

**Study on the critical conditions of ice formation for a continuous ice making system in a cooling pipe.**

Inaba, H., Lee, D.W., Horibe, A., *Heat transfer—Japanese research*, 1998, 27(1), p.74-83, Translated from KSME-JSME Thermal Engineering Conference, 3rd, 1996, Proceedings, Pt.1. 6 refs.

Cooling systems, Ice makers, Ice water interface, Ice formation, Pipes (tubes), Solutions, Pipe flow, Laminar flow, Turbulent flow, Supercooling, Simulation

53-1487

**Variations of potential global solar radiation on the Earth's surface.**

Morozova, I.V., Miasnikov, G.N., *Russian meteorology and hydrology*, 1997, No.10, p.28-36, Translated from Meteorologiya i gidrologiya. 22 refs.

Climatology, Solar radiation, Atmospheric boundary layer, Polar atmospheres, Seasonal variations, Diurnal variations, Statistical analysis

53-1488

**Analog-statistical model for forecasting edge position and ice concentration, age, and forms in the far eastern seas.**

Plotnikov, V.V., *Russian meteorology and hydrology*, 1997, No.10, p.45-51, Translated from Meteorologiya i gidrologiya. 24 refs.

Sea ice distribution, Ice surveys, Ice edge, Ice formation, Ice conditions, Ice forecasting, Statistical analysis, Mathematical models, Bering Sea, Okhotsk Sea

53-1489

**Gulf of Alaska as a possible source of intermediate water formation and ventilation in the north-east Pacific Ocean.**

Vanin, N.S., *Russian meteorology and hydrology*, 1997, No.10, p.59-64, Translated from Meteorologiya i gidrologiya. 11 refs.

Oceanography, Subpolar regions, Ocean currents, Water structure, Ventilation, Salinity, Turbulent diffusion, Air water interactions, United States—Alaska—Alaska, Gulf

53-1490

**Physical basis of sea ice control by radiation-convective screens.**

Gavrilov, V.P., Lebedev, G.A., Sukhorukov, K.K., *Russian meteorology and hydrology*, 1997, No.10, p.72-81, Translated from Meteorologiya i gidrologiya. 17 refs.

Oceanography, Sea ice, Ice control, Thermal stresses, Thermal regime, Ice heat flux, Ice air interface, Turbulent exchange, Covering, Coatings, Mathematical models, Simulation

53-1491

**Highway snowstorm countermeasure manual: snowbreak forest book.**

Hokkaido Development Bureau, Sapporo, Japan, Washington, D.C., U.S. Federal Highway Administration, 1996, 99p., PB97-141337, Translation of Bosetsurin hen, published in 1990 by the Hokkaido Development Engineering Center Co., Ltd., Sapporo, Japan.

Snowdrifts, Snowstorms, Snow retention, Snow hedges, Protective vegetation, Forest strips, Highway planning, Road maintenance, Japan—Hokkaido

53-1492

**Explanatory text of geological map of Sinnan Rocks, Antarctica.**

Hiroi, Y., Shiraishi, K., Yoshida, Y., Antarctic Geological Map Series, Sheet 14, Sinnan Rocks, Tokyo, National Institute of Polar Research, 1983, 7p. + 4 plates, Geological map of the region, scale 1-25,000 is included. 5 refs.

Frozen rocks, Lithology, Geological maps, Antarctica—Shinnan Rocks, Antarctica—Shinnan Glacier, Antarctica—Prince Olav Coast

53-1493

**Explanatory text of geological map of Niban Rock, Antarctica.**

Kizaki, K., Hiroi, Y., Kanisawa, S., Antarctic Geological Map Series, Sheet 17, Niban Rock, Tokyo, National Institute of Polar Research, 1983, 5p. + 4 plates, Geological map of the region, scale 1-25,000, is included.

Frozen rocks, Lithology, Geological maps, Antarctica—Queen Maud Land, Antarctica—Niban Rock

53-1494

**Cold gas traps for ice particle formation.**

Bauerecker, S., Neidhart, B., *Science*, Dec. 18, 1998, 282(5397), p.2211-2212, 21 refs.

Ice formation, Water, Aerosols, Temperature gradients, Ultrasonic tests

53-1495

**Percolation phase transition in sea ice.**

Golden, K.M., Ackley, S.F., Lytle, V.I., *Science*, Dec. 18, 1998, 282(5397), p.2238-2241, 30 refs.

Sea ice, Ice structure, Sea water, Slush, Phase transformations, Antarctica—East Antarctica, Antarctica—Weddell Sea

Sea ice exhibits a marked transition in its fluid transport properties at a critical brine volume fraction  $p_c$  of about 5%, or temperature  $T_c$  of about  $-5^\circ\text{C}$  for salinity of 5 parts per thousand. For temperatures warmer than  $T_c$ , brine carrying heat and nutrients can move through the ice, whereas for colder temperatures the ice is impermeable. This transition plays a key role in the geophysics, biology and remote sensing of sea ice. Percolation theory can be used to understand this critical behavior of transport in sea ice. The similarity of sea ice microstructure to compressed powders is used to theoretically predict  $p_c$  of about 5%.

53-1496

**Evidence for extreme climatic warmth from Late Cretaceous Arctic vertebrates.**

Tarduno, J.A., Brinkman, D.B., Renne, P.R., Cottrell, R.D., Scher, H., Castillo, P., *Science*, Dec. 18, 1998, 282(5397), p.2241-2244, 38 refs.

Climatic changes, Air temperature, Polar atmospheres, Animals, Canada—Northwest Territories—Axel Heiberg Island

53-1497

**Cathodic protection of ice shields on the Northumberland Strait Confederation Bridge.**

Munro, J.I., Henderson, C.E., Segall, S., *Materials performance*, Oct. 1998, 37(10), p.27-32, Article based on CORROSION 98, paper no. 362, presented in San Diego, CA. 5 refs.

Sea ice, Ice control, Corrosion, Weatherproofing, Waterproofing, Bridges, Canada—Northumberland Strait

53-1498

**Lead pollution in the antarctic region.**

Olech, M., Kwiatek, W.M., Dutkiewicz, E.M., *X-ray spectrometry*, July-Aug. 1998, 27(4), p.232-235, 11 refs.

Lichens, Air pollution, Soil pollution, Environments, Antarctica—South Shetland Islands, Antarctica—Livingston Island, Antarctica—King George Island

53-1501

**Composition of Centaur 5145 Pholus.**

Cruikshank, D.P., et al, *Icarus*, Oct. 1998, 135(2), p.389-407, Refs. p.404-407.

Extraterrestrial ice, Cosmic dust, Ice detection, Ice composition, Geochemistry, Hydrocarbons, Infrared spectroscopy, Photometry, Light scattering, Spectra, Photochemical reactions, Models

53-1502

**Infrared study of ion-irradiated water-ice mixtures with hydrocarbons relevant to comets.**

Moore, M.H., Hudson, R.L., *Icarus*, Oct. 1998, 135(2), p.518-527, 39 refs.

Extraterrestrial ice, Ice physics, Ice composition, Solutions, Ice detection, Infrared spectroscopy, Spectra, Photochemical reactions, Geochemistry, Hydrocarbons, Simulation

53-1503

**Distribution and evolution of water ice in the solar nebula: implications for solar system body formation.**

Cyr, K.E., Sears, W.D., Lunine, J.I., *Icarus*, Oct. 1998, 135(2), p.537-548, 38 refs.

Extraterrestrial ice, Cosmic dust, Ice physics, Water vapor, Vapor diffusion, Turbulent diffusion, Ice sublimation, Particle size distribution, Condensation, Models

53-1504

**Crown fire emission of CO<sub>2</sub>, CO, H<sub>2</sub>, CH<sub>4</sub>, and TNMHC from a dense jack pine boreal forest fire.**

Cofer, W.R., III, Winstead, E.L., Stocks, B.J., Goldammer, J.G., Cahoon, D.R., *Geophysical research letters*, Nov. 1, 1998, 25(21), p.3919-3922, 17 refs.

Climatology, Atmospheric boundary layer, Subarctic landscapes, Forest fires, Biomass, Forest canopy, Vapor diffusion, Aerosols, Sampling, Chemical analysis, Environmental impact, Canada—Northwest Territories

53-1505

**Bromine activation in the troposphere by the dark reaction of O<sub>3</sub> with seawater ice.**

Oum, K.W., Lakin, M.J., Finlayson-Pitts, B.J., *Geophysical research letters*, Nov. 1, 1998, 25(21), p.3923-3926, 38 refs.

Climatology, Sea ice, Atmospheric boundary layer, Atmospheric composition, Photochemical reactions, Ozone, Salt ice, Sea water freezing, Ice vapor interface, Vapor diffusion, Ice composition, Aerosols, Ice cover effect, Simulation

53-1506

**Observations of OH, HO<sub>2</sub>, H<sub>2</sub>O, and O<sub>3</sub> in the upper stratosphere: implications for HO<sub>x</sub> photochemistry.**

Jucks, K.W., et al, *Geophysical research letters*, Nov. 1, 1998, 25(21), p.3935-3938, 11 refs.

Climatology, Subpolar regions, Atmospheric composition, Stratosphere, Aerosols, Turbulent diffusion, Ozone, Photochemical reactions, Infrared spectroscopy, Sampling, Models, United States—Alaska—Fairbanks

53-1507

**FTIR studies on lifetime prolongation of stratospheric ice particles due to NAT coating.**

Biermann, U.M., Crowley, J.N., Huthwelker, T., Moortgat, G.K., Crutzen, P.J., Peter, T., *Geophysical research letters*, Nov. 1, 1998, 25(21), p.3939-3942, 16 refs.

Climatology, Polar atmospheres, Stratosphere, Ice crystals, Ice formation, Hydrates, Coatings, Vapor pressure, Ice vapor interface, Simulation, Thermodynamics, Infrared spectroscopy

53-1508

**Present-day uplift patterns over Greenland from a coupled ice-sheet/visco-elastic bedrock model.**

Le Meur, E., Huybrechts, P., *Geophysical research letters*, Nov. 1, 1998, 25(21), p.3951-3954, 13 refs.

Pleistocene, Glacial geology, Ice sheets, Ice volume, Glacier oscillation, Bedrock, Viscoelasticity, Ice solid interface, Isostasy, Models, Greenland

53-1509

**"Implicit ice" in the global theory of glacial isostatic adjustment.**

Peltier, W.R., *Geophysical research letters*, Nov. 1, 1998, 25(21), p.3955-3958, 16 refs.

Ice age theory, Glacial geology, Isostasy, Sea level, Glacier melting, Ice sheets, Topographic features, Ice cover thickness, Ice cover effect, Mathematical models

53-1510

**Persistent cold climatic episodes around Greenland and Baffin Island: links to decadal-scale sea surface temperature anomalies.**

Rogers, J.C., Wang, C.C., McHugh, M.J., *Geophysical research letters*, Nov. 1, 1998, 25(21), p.3971-3974, 15 refs.

Climatology, Polar atmospheres, Climatic changes, Marine atmospheres, Air temperature, Surface temperature, Cooling, Atmospheric circulation, Wind factors, Periodic variations, Radiometry, Greenland, Canada—Northwest Territories—Baffin Island

53-1511

**Estimates of turbulent energy dissipation rates from determinations of characteristic vertical wavenumber by EISCAT.**

Hall, C.M., Hoppe, U.P., *Geophysical research letters*, Nov. 1, 1998, 25(21), p.4075-4078, 18 refs.

Atmospheric physics, Gravity waves, Polar atmospheres, Turbulent diffusion, Sounding, Velocity measurement, Radar echoes, Profiles, Spectra, Models, Norway—Tromsø

53-1512

**Diurnal occurrence of thin metallic ion layers in the high-latitude ionosphere.**

Bedey, D.F., Watkins, B.J., *Geophysical research letters*, Oct. 15, 1998, 25(20), p.3767-3770, 15 refs.

Atmospheric electricity, Electric fields, Polar atmospheres, Ions, Metals, Layers, Sounding, Radar echoes, Diurnal variations, Greenland—Sondrestrom

53-1513

**Stratospheric BrO profiles measured at different latitudes and seasons: atmospheric observations.**

Harder, H., et al, *Geophysical research letters*, Oct. 15, 1998, 25(20), p.3843-3846, 17 refs.

Climatology, Polar atmospheres, Atmospheric composition, Stratosphere, Aerosols, Photochemical reactions, Turbulent diffusion, Sounding, Spectroscopy, Profiles, Sweden—Kiruna

53-1514

**Estimating aggregation between suspended sediments and frazil ice.**

Smedsrud, L.H., *Geophysical research letters*, Oct. 15, 1998, 25(20), p.3875-3878, 13 refs.

Oceanography, Sea ice, Ice composition, Suspended sediments, Particles, Turbulent exchange, Frazil ice, Scavenging, Ice water interface, Mathematical models, Simulation

53-1515

**Intensification of glaciation in the mid-Pliocene and the Earth's obliquity variation.**

Tsutsumi, T., Nakada, M., *Geophysical research letters*, Oct. 15, 1998, 25(20), p.3879-3882, 24 refs.

Pleistocene, Paleoclimatology, Glaciation, Insolation, Marine deposits, Drill core analysis, Isotope analysis, Tectonics, Viscosity, Ice age theory

53-1516

**Surface roughness on the Greenland ice sheet from airborne laser altimetry.**

Van der Veen, C.J., Krabill, W.B., Csatho, B.M., Bolzan, J.F., *Geophysical research letters*, Oct. 15, 1998, 25(20), p.3887-3890, 18 refs.

Glaciology, Ice sheets, Snow surface, Aerial surveys, Lasers, Microrelief, Height finding, Topographic features, Surface roughness, Sastrugi, Drill core analysis, Statistical analysis, Greenland

53-1517

**Regional shear-wave velocity model in the central Vøring Basin, N. Norway, using three-component Ocean Bottom Seismographs.**

Digranes, P., et al, *Tectonophysics*, Aug. 15, 1998, 293(3-4), p.157-174, 34 refs.

Tectonics, Earth crust, Marine geology, Ocean bottom, Subpolar regions, Seismic surveys, Seismic velocity, Profiles, Wave propagation, Anisotropy, Lithology, Models, Norway—Vøring Basin

53-1518

**Crustal structure of the northern part of the Vøring Basin, mid-Norway margin, from wide-angle seismic and gravity data.**

Mjelde, R., et al, *Tectonophysics*, Aug. 15, 1998, 293(3-4), p.175-205, 48 refs.

Tectonics, Subpolar regions, Marine geology, Earth crust, Structural analysis, Ocean bottom, Sedimentation, Magma, Gravity, Seismic surveys, Seismic velocity, Profiles, Models, Norway—Vøring Basin

53-1519

**Holocene history of the northern range limits of some trees and shrubs in Russia.**

Kremenetskiĭ, K.V., Sulerzhitskiĭ, L.D., Hantemirov, R., *Arctic and alpine research*, Nov. 1998, 30(4), p.317-333, 62 refs.

Pleistocene, Forest ecosystems, Forest lines, Tundra vegetation, Subpolar regions, Vegetation patterns, Wood, Fossils, Classifications, Radioactive age determination, Statistical analysis, Russia—Siberia

53-1520

**538-year record of climate and treeline dynamics from the lower Lena River region of northern Siberia, Russia.**

MacDonald, G.M., Case, R.A., Szeicz, J.M., *Arctic and alpine research*, Nov. 1998, 30(4), p.334-339, 33 refs.

Climatology, Climatic changes, Air temperature, Forest ecosystems, Forest lines, Arctic landscapes, Plant tissues, Age determination, Geochronology, Correlation, Russia—Siberia

53-1521

**Succession processes of alpine vegetation in response to glacial fluctuations of Tyndall Glacier, Mt. Kenya, Kenya.**

Mizuno, K., *Arctic and alpine research*, Nov. 1998, 30(4), p.340-348, 48 refs.

Glacier oscillation, Mountain glaciers, Glacial geology, Alpine glaciation, Plant ecology, Ecosystems, Vegetation patterns, Revegetation, Moraines, Temperature effects, Sampling, Kenya—Kenya, Mount

53-1522

**Soil relative dating of moraine and outwash-terrace sequences in the northern part of the upper Arkansas Valley, central Colorado, U.S.A.**

Nelson, A.R., Shroba, R.R., *Arctic and alpine research*, Nov. 1998, 30(4), p.349-361, 60 refs.

Pleistocene, Glacial geology, Alpine landscapes, Geomorphology, Glacier oscillation, Soil dating, Soil profiles, Stratigraphy, Terraces, Moraines, Outwash, Statistical analysis, Terrain identification, United States—Colorado—Arkansas River

53-1523

**Near-surface thermal profiles in alpine bedrock: implications for the frost weathering of rock.**

Anderson, R.S., *Arctic and alpine research*, Nov. 1998, 30(4), p.362-372, 33 refs.

Geocryology, Alpine landscapes, Rock mechanics, Bedrock, Surface temperature, Frozen rock temperature, Profiles, Thermal diffusion, Periglacial processes, Frost weathering, Cracking (fracturing), Radiation balance, Snow cover effect, Mathematical models, United States—Wyoming—Laramie Range

53-1524

**Carbon dioxide fluxes in moist and dry arctic tundra during the snow-free season: responses to increases in summer temperature and winter snow accumulation.**

Jones, M.H., Fahnestock, J.T., Walker, D.A., Walker, M.D., Welker, J.M., *Arctic and alpine research*, Nov. 1998, 30(4), p.373-380, 34 refs.

Climatology, Climatic changes, Tundra terrain, Tundra vegetation, Ecosystems, Geochemical cycles, Carbon dioxide, Vapor diffusion, Snow accumulation, Air temperature, Snow cover effect, Temperature effects, Simulation, United States—Alaska—Toolik Lake

53-1525

**Transient enhancement of carbon uptake in an alpine grassland ecosystem under elevated CO<sub>2</sub>.**  
Diemer, M., Körner, C., *Arctic and alpine research*, Nov. 1998, 30(4), p.381-387, 38 refs.

Climatology, Climatic changes, Tundra vegetation, Alpine landscapes, Grasses, Ecosystems, Plant physiology, Nutrient cycle, Modification, Carbon dioxide, Vapor transfer, Growth, Simulation, Switzerland—Alps

53-1526

**Growth response of *Sphagnum capillifolium* to nighttime temperature and nutrient level: mechanisms and implications for global change.**

Gerdol, R., Bonora, A., Marchesini, R., Gualandri, R., Pancaldi, S., *Arctic and alpine research*, Nov. 1998, 30(4), p.388-395, 50 refs.

Plant ecology, Mosses, Growth, Photosynthesis, Climatic changes, Global warming, Air temperature, Nutrient cycle, Sampling, Scanning electron microscopy, Simulation, Temperature effects

53-1527

**Genetic variation in four species of *Pedicularis* (Scrophulariaceae) within a limited area in West Greenland.**

Philipp, M., *Arctic and alpine research*, Nov. 1998, 30(4), p.396-399, 39 refs.

Plants (botany), Plant ecology, Plant tissues, Pollen, Chemical composition, Chemical analysis, Classifications, Statistical analysis, Greenland

53-1528

**Pioneer aeolian community development on pyroclastic flows after the eruption of Mount St. Helens, Washington, U.S.A.**

Sugg, P.M., Edwards, J.S., *Arctic and alpine research*, Nov. 1998, 30(4), p.400-407, 41 refs.

Ecosystems, Volcanoes, Magma, Mountain soils, Biomass, Fallout, Growth, Distribution, Seasonal variations, Diurnal variations, Sampling, Classifications, Statistical analysis, United States—Washington—St. Helens, Mount

53-1529

**Seedling establishment of subalpine stone pine (*Pinus pumila*) by nutcracker (*Nucifraga*) seed dispersal on Mt. Yumori, northern Japan.**

Kajimoto, T., Onodera, H., Ikeda, S., Daimaru, H., Seki, T., *Arctic and alpine research*, Nov. 1998, 30(4), p.408-417, 43 refs.

Plant ecology, Alpine landscapes, Trees (plants), Ecosystems, Biomass, Forest lines, Revegetation, Soil water, Growth, Seasonal variations, Japan—Yumori, Mount

53-1530

**Geologo-geochemical criteria of predicting gas and oil potential in Lower Jurassic alluvial-lacustrine deposits of West Siberian basin. [Geologiko-khimiicheskie kriterii prognoza neftegazonosti nizhneiuskikh alluvial'no-ozernykh otlozhenii Zapadno-Sibirskogo basseina]**

Kontorovich, A.E., et al, *Rossiiskaia akademiia nauk. Doklady*, Feb. 1998, 358(6), p.799-802, In Russian. 12 refs.

Natural resources, Natural gas, Crude oil, Forecasting, Paleoclimatology, Geochemistry, Alluvium, Lacustrine deposits, Russia—Siberia

53-1531

**Water level fluctuations of large European lakes and climate change. [Kolebaniia urovnia krupnykh ozer Evropy i izmenchivost' klimata]**

Filatov, N.N., *Rossiiskaia akademiia nauk. Doklady*, Mar. 1998, 359(2), p.255-257, In Russian. 10 refs.

Climatic changes, Global change, Water level, Lake water, Air temperature, Temperature variations, Russia—Ladoga, Lake, Russia—Karelia, Russia—Onega Lake

53-1532

**Particle fluxes in the Saint Anna Trough and the eastern Barents Sea. [Potoki osadochnogo veshchestva v zhelobe Sviatof Anny i v vostochnof chasti Barentseva Moria]**

Shevchenko, V.P., et al, *Rossiiskaia akademiia nauk. Doklady*, Mar. 1998, 359(3), p.401-404, In Russian. 9 refs.

Suspended sediments, Sea water, Marine biology, Plankton, Sea ice, Bottom sediment, Salinity, Ice cover, Barents Sea, Russia—Kara Sea

53-1533

**Glacial debris-flows mitigation in Kazakhstan: assessment, prediction and control.**

Popov, N., International Conference on Debris-flow Hazards Mitigation: Mechanics, Prediction, and Assessment, 1st, San Francisco, CA, Aug. 7-9, 1997. Proceedings. Edited by C.L. Chen, New York, American Society of Civil Engineers, 1997, p.113-122, 4 refs.

DLC QE599.A1 D43 1997

Mass flow, Glacial hydrology, Glacial lakes, Classifications, Lake bursts, Hydrography, Countermeasures, Flood control, Safety, Forecasting, Kazakhstan

53-1534

**Slush lahar hazards on the flank of Mt. Fuji—a history and perspective on climatic change.**

Anma, S., Fukue, M., Yamashita, K., International Conference on Debris-flow Hazards Mitigation: Mechanics, Prediction, and Assessment, 1st, San Francisco, CA, Aug. 7-9, 1997. Proceedings. Edited by C.L. Chen, New York, American Society of Civil Engineers, 1997, p.299-308, 7 refs.

DLC QE599.A1 D45 1997

Snow hydrology, Climatic changes, Mountain soils, Mass flow, Geomorphology, Slush, Slope processes, Seepage, Freeze thaw cycles, Profiles, History, Japan—Fuji, Mount

53-1535

**Spatial and temporal distribution of debris-flow occurrence on slopes in the eastern Alps.**

Becht, M., Rieger, D., International Conference on Debris-flow Hazards Mitigation: Mechanics, Prediction, and Assessment, 1st, San Francisco, CA, Aug. 7-9, 1997. Proceedings. Edited by C.L. Chen, New York, American Society of Civil Engineers, 1997, p.516-529, 20 refs.

DLC QE599.A1 D45 1997

Geophysical surveys, Mass flow, Alpine landscapes, Talus, Mountain soils, Slope processes, Bedrock, Permeability, Precipitation (meteorology), Austria—Alps

53-1536

**Automated snow avalanche hazard reduction.**

Decker, R., Jensen, N., Rice, R., International Conference on Debris-flow Hazards Mitigation: Mechanics, Prediction, and Assessment, 1st, San Francisco, CA, Aug. 7-9, 1997. Proceedings. Edited by C.L. Chen, New York, American Society of Civil Engineers, 1997, p.530-539, 8 refs.

DLC QE599.A1 D45 1997

Avalanche protection, Avalanche forecasting, Avalanche tracks, Safety, Roads, Snow depth, Warning systems, Sensors, Design

53-1537

**Potential changes of mudflow phenomena due to global warming.**

Sidorova, T.L., International Conference on Debris-flow Hazards Mitigation: Mechanics, Prediction, and Assessment, 1st, San Francisco, CA, Aug. 7-9, 1997. Proceedings. Edited by C.L. Chen, New York, American Society of Civil Engineers, 1997, p.540-549, 7 refs.

DLC QE599.A1 D45 1997

Global warming, Precipitation (meteorology), Mass flow, Mudflows, Classifications, Snow hydrology, Snow melting, Forecasting, Distribution, Russia, Canada

53-1538

**Numerical study on sublimation-condensation phenomena during microwave freeze drying.**

Wang, Z.H., Shi, M.H., *Chemical engineering science*, Sep. 1998, 53(18), p.3189-3197, 18 refs.

Freeze drying, Vacuum freezing, Phase transformations, Porous materials, Sublimation, Condensation, Vapor transfer, Mass transfer, Heat transfer, Microwaves, Mathematical models, Thermodynamics

53-1539

**Southwestern Barents Sea margin: late Mesozoic sedimentary basins and crustal extension.**

Brevik, A.J., Faleide, J.I., Gudlaugsson, S.T., *Tectonophysics*, July 30, 1998, 293(1-2), p.21-44, 41 refs.

Pleistocene, Marine geology, Tectonics, Subpolar regions, Earth crust, Thickness, Sedimentation, Subsidence, Gravity anomalies, Seismic reflection, Profiles, Barents Sea

53-1540

**Integrated geophysical analysis supporting the impact origin of the Mjølner structure, Barents Sea.**

Tsikalas, F., Gudlaugsson, S.T., Eldholm, O., Faleide, J.I., *Tectonophysics*, Apr. 30, 1998, 289(4), p.257-280, 58 refs.

Marine geology, Subpolar regions, Geophysical surveys, Ocean bottom, Bottom topography, Impact, Gravity anomalies, Magnetic anomalies, Seismic velocity, Geomagnetism, Theories, Origin, Barents Sea

53-1541

**Application of light hydrocarbons (C<sub>4</sub>-C<sub>13</sub>) to oil source rock correlations: a study of the light hydrocarbon compositions of source rocks and test fluids from offshore Mid-Norway.**

Odden, W., Patience, R.L., Van Graas, G.W., *Organic geochemistry*, 1998, 28(12), p.823-847, 52 refs.

Marine geology, Hydrocarbons, Origin, Sediments, Subpolar regions, Reservoirs, Lithology, Isotope analysis, Geochemistry, Stratigraphy, Statistical analysis, Sampling, Norway

53-1542

**Observations and numerical simulations of the origin and development of very large snowflakes.**

Lawson, R.P., Stewart, R.E., Angus, L.J., *Journal of the atmospheric sciences*, Nov. 1, 1998, 55(21), p.3209-3229, 64 refs.

Precipitation (meteorology), Storms, Falling snow, Snowflakes, Dendritic ice, Snow crystal growth, Snow air interface, Convection, Aggregates, Probes, Profiles, Simulation

53-1543

**Numerical study of aircraft wake induced ice cloud formation.**

Gierens, K.M., Ström, J., *Journal of the atmospheric sciences*, Nov. 1, 1998, 55(21), p.3253-3263, 28 refs.

Climatology, Cloud physics, Condensation trails, Aerosols, Haze, Freezing rate, Ice crystal growth, Homogeneous nucleation, Water content, Upwelling, Ice vapor interface, Mathematical models

53-1544

**Parameterizations of reflectance and effective emittance for satellite remote sensing of cloud properties.**

Minnis, P., Garber, D.P., Young, D.F., Arduini, R.F., Takano, Y., *Journal of the atmospheric sciences*, Nov. 15, 1998, 55(22), p.3313-3339, 33 refs.

Climatology, Cloud physics, Cloud droplets, Spaceborne photography, Infrared radiation, Optical properties, Reflectivity, Radiance, Particle size distribution, Ice crystal optics, Ice detection, Ice temperature, Simulation

53-1545

**New version of hydrometeor videonde for cirrus cloud observations.**

Orikasa, N., Murakami, M., *Meteorological Society of Japan. Journal*, Dec. 1997, 75(6), p.1033-1039, With Japanese summary, 8 refs.

Precipitation (meteorology), Cloud physics, Ice detection, Ice crystal size, Ice crystal structure, Particle size distribution, Sounding, Photography, Ice detection, Design, Performance, Meteorological instruments

53-1546

**Study on a wind field when a cold air flow that causes snowfall around Sapporo.**

Nakayama, K., Hasegawa, K., Fujita, M., *Journal of hydroscience and hydraulic engineering*, May 1998, 16(1), p.9-25, 15 refs.

Climatology, Cloud physics, Precipitation (meteorology), Snowfall, Surface temperature, Temperature variations, Convection, Wind velocity, Unsteady flow, Radio echo soundings, Profiles, Forecasting, Analysis (mathematics), Japan—Sapporo

53-1547

**Control of road surface temperature and thermal energy storage using a bore-hole heat exchange system.**

Ohki, M., Watanabe, H., Fukuhara, T., Moriyama, K., *Journal of hydroscience and hydraulic engineering*, May 1998, 16(1), p.41-48, 4 refs.

Road icing, Winter maintenance, Heat pumps, Snow removal, Ice control, Snow melting, Heat transfer, Surface temperature, Temperature control, Bore-holes, Pipe flow, Geothermal thawing, Performance

53-1548

**Baltica-Laurentia connection: Sveconorwegian (Grenvillian) metamorphism, cooling, and unroofing in the Bamble Sector, Norway.**

Cosca, M.A., Mezger, K., Essene, E.J., *Journal of geology*, Sep. 1998, 106(5), p.539-552, 73 refs.

Pleistocene, Tectonics, Earth crust, Subpolar regions, Geological surveys, Mineralogy, Radioactive age determination, Lithology, Sampling, Geochronology, Thermal analysis, Norway

53-1549

**Tectonic significance of the Fen Province, S. Norway: constraints from geochronology and paleomagnetism.**

Meert, J.G., Torsvik, T.H., Eide, E.A., Dahlgren, S., *Journal of geology*, Sep. 1998, 106(5), p.553-564, 45 refs.

Pleistocene, Tectonics, Subpolar regions, Earth crust, Continental drift, Magma, Geomagnetism, Orientation, Rock properties, Radioactive isotopes, Radioactive age determination, Geochronology, Theories, Norway—Fen Province

53-1550

**616 Ma Old Egersund Basaltic dike swarm, SW Norway, and Late Neoproterozoic opening of the Iapetus ocean.**

Bingen, B., Demaiffe, D., Van Breemen, O., *Journal of geology*, Sep. 1998, 106(5), p.565-574, 48 refs.

Pleistocene, Subpolar regions, Tectonics, Earth crust, Continental drift, Magma, Geologic processes, Classifications, Geochemistry, Radioactive isotopes, Radioactive age determination, Geochronology, Norway

53-1551

**Anomalously low temperature orthopyroxene, spinel, and sapphirine occurrences in metasediments from the Bamble amphibolite-to-granulite facies transition zone (south Norway): possible evidence for localized action of saline fluids.**

Nijland, T.G., Louret, J.L.R., Visser, D., *Journal of geology*, Sep. 1998, 106(5), p.575-590, 62 refs.

Pleistocene, Tectonics, Subpolar regions, Earth crust, Geologic processes, Fluid dynamics, Hydrothermal processes, Ice melting, Brines, Rock properties, Mineralogy, Chemical analysis, Norway

53-1552

**Effects of evaporator frosting on the performance of an air-to-air heat pump.**

Martinez-Frias, J., Aceves, S.M., ASME International Mechanical Engineering Congress and Exposition, Dallas, TX, Nov. 16-21, 1997. ASME Advanced Energy Systems Division, Proceedings. Edited by M.L. Ramalingam et al and AES Vol.37, New York, American Society of Mechanical Engineers, 1997, p.357-363, 24 refs.

DLC TJ163.7.P762 1997

Heat pumps, Performance, Plates, Ice sublimation, Air flow, Frost, Ice formation, Ice solid interface, Ice cover thickness, Heat transfer coefficient, Mathematical models, Frost forecasting

53-1553

**Feasibility study on using cooling capacitance from ice storage system to save energy costs of operating chiller AC system.**

Li, S.S., ASME International Mechanical Engineering Congress and Exposition, Dallas, TX, Nov. 16-21, 1997. ASME Advanced Energy Systems Division, Proceedings. Edited by M.L. Ramalingam et al and AES Vol.37, New York, American Society of Mechanical Engineers, 1997, p.365-370, 5 refs.

DLC TJ163.7.P762 1997

Air conditioning, Cooling systems, Electric power, Heat recovery, Ice makers, Performance, Cost analysis, Thermal analysis, Temperature control, Analysis (mathematics)

53-1554

**Principal climatic cycles of Holocene. [O glavnykh klimaticheskikh ritmakh golotsena]**

Klimenko, V.V., *Rossiiskaia akademiia nauk. Doklady*, Nov. 1997, 357(3), p.399-402, In Russian. 15 refs.

Pleistocene, Paleoclimatology, Climatic changes, Global change, Ice cover effect, Air temperature, Spectra, Temperature variations

53-1555

**Perennial global changes of the marine biota in the Arctic (in the Kara and White Seas). [Mnogoletnie kolebania elementov morskoi bioty v priark-ticheskikh regionakh (na primere Belogo i Karskogo more&i)]**

Vozzhinskaiia, V.B., Vinogradov, G.M., Kuzin, V.S., Kryzhov, V.N., *Rossiiskaia akademiia nauk. Doklady*, Nov. 1997, 357(3), p.403-405, In Russian. 11 refs.

Subpolar regions, Marine biology, Ecology, Biomass, Plankton, Air temperature, Temperature variations, Climatic changes, Russia—Kara Sea, Russia—White Sea

53-1556

**Nivation forms and processes in unconsolidated sediments, NE Greenland.**

Christiansen, H.H., *Earth surface processes and landforms*, Aug. 1998, 23(8), p.751-760, 21 refs.

Geomorphology, Subpolar regions, Active layer, Periglacial processes, Landforms, Nivation, Ablation, Soil erosion, Sediment transport, Solifluction, Models, Greenland

53-1557

**Power law or power law?**

Pattyn, F., Van Huele, W., *Earth surface processes and landforms*, Aug. 1998, 23(8), p.761-767, 12 refs.

Geomorphology, Glacial geology, Glacial erosion, Valleys, Profiles, Physical properties, Statistical analysis, Simulation, Analysis (mathematics)

53-1558

**Bottom buoyancy layer in an ice-covered lake.**

Malm, J., *Water resources research*, Nov. 1998, 34(11), p.2981-2993, 33 refs.

Limnology, Subpolar regions, Icebound lakes, Bottom sediment, Water temperature, Stratification, Boundary layer, Advection, Salinity, Buoyancy, Thermal diffusion, Mathematical models, Ice cover effect, Russia—Karelia

53-1559

**Importance of biogeochemical processes in modeling stream chemistry in two watersheds in the Sierra Nevada, California.**

Meixner, T., Brown, A., Bales, R.C., *Water resources research*, Nov. 1998, 34(11), p.3121-3133, 40 refs.

Watersheds, Alpine landscapes, Limnology, Stream flow, Runoff, Snow hydrology, Snowmelt, Bedrock, Weathering, Hydrogeochemistry, Ion density (concentration), Sampling, Models, Geochemical cycles, United States—California—Sierra Nevada

53-1560

**Wind-driven, coastal-trapped waves off the island of Gotland, Baltic Sea.**

Pizarro, O., Shaffer, G., *Journal of physical oceanography*, Nov. 1998, 28(11), p.2117-2129, 24 refs.

Oceanography, Subpolar regions, Ocean currents, Ocean waves, Oscillations, Turbulent exchange, Air water interactions, Wind factors, Hydrography, Topographic effects, Wave propagation, Models, Profiles, Baltic Sea

53-1561

**New sea spray generation function for wind speeds up to 32 m s<sup>-1</sup>.**

Andreas, E.L., MP 5254, *Journal of physical oceanography*, Nov. 1998, 28(11), p.2175-2184, 62 refs.

Oceanography, Sea spray, Aerosols, Bubbles, Drops (liquids), Turbulent boundary layer, Wind velocity, Air water interactions, Heat flux, Moisture transfer, Latent heat, Mathematical models

The sea spray generation function quantifies the rate at which spray droplets of a given size are produced at the sea surface. As such, it is important in studies of the marine aerosol and its optical properties and in understanding the role that sea spray plays in transferring heat and moisture across the air-sea interface. The emphasis here is on this latter topic, where uncertainty over the spray generation function, especially in high winds, is a major obstacle. This paper surveys the spray generation functions available in the literature and, on theoretical grounds, focuses on one by M.H. Smith et al. that has some desirable properties but does not cover a wide enough droplet size range to be immediately useful for quantifying spray heat transfer. With reasonable modifications and extrapolations, however, the paper casts the Smith function into a new form that can be used to predict the production of sea spray droplets with radii from 2 to 500  $\mu\text{m}$  for 10 m winds from 0 to 32.5 m/s. The paper closes with sample calculations of the sensible and latent heat fluxes carried by spray that are based on this new spray generation function.

53-1562

**Cloud detection over the arctic region using airborne imaging spectrometer data during the daytime.**

Gao, B.C., Han, W., Tsay, S.C., Larsen, N.F., *Journal of applied meteorology*, Nov. 1998, 37(11), p.1421-1429, 24 refs.

Remote sensing, Spaceborne photography, Spectroscopy, Radiance, Polar atmospheres, Cloud cover, Detection, Water vapor, Radiation absorption, Snow cover effect, Ice cover effect, Spectra, Resolution, United States—Alaska

53-1563

**Dual-wavelength radar method to measure snowfall rate.**

Matrosov, S.Y., *Journal of applied meteorology*, Nov. 1998, 37(11), p.1510-1521, 19 refs.

Precipitation (meteorology), Snowfall, Snowflakes, Snow crystals, Spectra, Indexes (ratios), Sounding, Radar echoes, Reflectivity, Backscattering, Statistical analysis, Forecasting, Meteorological instruments

53-1564

**Comparison of seasonal changes in phytoplankton in different zones of the Antarctic.**

Rat'kova, T.N., *Russian journal of aquatic ecology*, Dec. 1997, 6(1-2), p.13-23, Translated from Zhurnal vodnoi ekologii. With Russian summary. 65 refs.

Marine biology, Biomass, Plankton, Ecosystems, Nutrient cycle, Photosynthesis, Chlorophylls, Light effects, Ice cover effect, Sampling, Profiles, Seasonal variations, Antarctica—Admiralty Bay

53-1565

Seasonal changes of nearshore antarctic phytoplankton and abiotic factors in the Admiralty Bay, King George Island, South Shetland Islands.

Zernova, V.V., Domanov, M.M., *Russian journal of aquatic ecology*, Dec. 1997, 6(1-2), p.25-34, Translated from Zhurnal vodnoi ekologii. With Russian summary. 47 refs.

Marine biology, Biomass, Plankton, Ice edge, Classifications, Water chemistry, Organic nuclei, Chlorophylls, Sampling, Seasonal variations, Statistical analysis, Antarctica—Admiralty Bay

53-1566

Response of zooplankton communities to acidification in lakes of northern Russia.

Lazareva, V.I., *Russian journal of ecology*, July 1995, 4(1), p.41-54, Translated from Zhurnal vodnoi ekologii. With Russian summary. 26 refs.

Limnology, Subpolar regions, Microbiology, Water chemistry, Chemical properties, Biomass, Plankton, Ecosystems, Classifications, Statistical analysis, Sampling, Russia—Karelia

53-1567

Integration of remote sensed and in-situ data in an analysis of the air pollution effects of terrestrial ecosystems in the border areas between Norway and Russia.

Tømmervik, H., Johansen, M.E., Pedersen, J.P., Guneriusen, T., *Environmental monitoring and assessment*, Jan. 1998, 49(1), p.51-85, Refs. p.82-85.

Climatology, Subpolar regions, Atmospheric boundary layer, Air pollution, Aerosols, Forest ecosystems, Landscape types, Lichens, Environmental tests, Remote sensing, Geophysical surveys, Sampling, Correlation, Russia, Norway

53-1568

Flexural properties of steel fiber-reinforced concretes at low temperature.

Pigeon, M., Cantin, R., *Cement & concrete composites*, Oct. 1998, 20(5), p.365-375, 8 refs.

Concrete strength, Reinforced concretes, Composite materials, Concrete aggregates, Mechanical properties, Ice formation, Capillary ice, Low temperature tests, Mechanical tests, Flexural strength, Tensile properties, Temperature effects

53-1569

Impact resistance of fiber reinforced concrete at subnormal temperatures.

Banthia, N., Yan, C., Sakai, K., *Cement & concrete composites*, Oct. 1998, 20(5), p.393-404, 19 refs.

Concrete strength, Reinforced concretes, Composite materials, Mortars, Impact tests, Dynamic loads, Flexural strength, Low temperature tests, Temperature effects

53-1570

Adrift on the ice pack, researchers explore changes in the arctic environment.

Levi, B.G., *Physics today*, Nov. 1998, 51(11), p.17-19, 10 refs.

Climatology, Polar atmospheres, Atmospheric composition, Climatic changes, Atmospheric circulation, Drift stations, Ice cover thickness, Research projects, Environmental tests, Arctic Ocean

53-1571

Relationship between soft bottom macrofauna and polycyclic aromatic hydrocarbons (PAH) from smelter discharge in Norwegian fjords and coastal waters.

Oug, E., Næs, K., Rygg, B., *Marine ecology progress series*, Nov. 12, 1998, Vol.173, p.39-52, 37 refs.

Oceanography, Subpolar regions, Water pollution, Ocean bottom, Biomass, Ecosystems, Hydrocarbons, Metals, Waste disposal, Bottom sediment, Sampling, Statistical analysis, Environmental impact, Norway

53-1572

Phytoplankton carbon isotope fractionation during a diatom spring bloom in a Norwegian fjord.

Kukert, H., Riebesell, U., *Marine ecology progress series*, Nov. 12, 1998, Vol.173, p.127-137, 60 refs.

Marine biology, Subpolar regions, Biomass, Photosynthesis, Plankton, Ecology, Carbon isotopes, Carbon dioxide, Suspended sediments, Chlorophylls, Advection, Sampling, Statistical analysis, Norway

53-1573

Changes in lipid composition of the antarctic krill *Euphausia superba* in the Indian sector of the antarctic ocean: influence of geographic location, sexual maturity stage and distribution among organs.

Mayzaud, P., Albessard, E., Cuzin-Roudy, J., *Marine ecology progress series*, Nov. 12, 1998, Vol.173, p.149-162, 68 refs.

Marine biology, Ecology, Plankton, Biomass, Nutrient cycle, Growth, Chemical composition, Seasonal variations, Distribution, Sampling, Statistical analysis, Indian Ocean

53-1574

Benthic mineralization and exchange in arctic sediments (Svalbard, Norway).

Glud, R.N., Holby, O., Hoffmann, F., Canfield, D.E., *Marine ecology progress series*, Nov. 12, 1998, Vol.173, p.237-251, 66 refs.

Marine biology, Marine geology, Ocean bottom, Biomass, Ecosystems, Bottom sediment, Sedimentation, Minerals, Diagenesis, Geochemical cycles, Drill core analysis, Profiles, Norway—Svalbard

53-1575

Coupling of a high-resolution atmospheric model and an ocean model for the Baltic Sea.

Gustafsson, N., Nyberg, L., Omstedt, A., *Monthly weather review*, Nov. 1998, 126(11), p.2822-2846, 19 refs.

Climatology, Weather forecasting, Marine meteorology, Atmospheric boundary layer, Synoptic meteorology, Subpolar regions, Surface temperature, Heat flux, Sea ice distribution, Ice edge, Simulation, Air ice water interaction, Baltic Sea

53-1576

March 1987 cyclone (blizzard) over the eastern Mediterranean and Balkan region associated with blocking.

Tayan, M., Karaca, M., Dalfes, H.N., *Monthly weather review*, Nov. 1998, 126(11), p.3036-3047, 29 refs.

Climatology, Snowstorms, Snow accumulation, Turbulent boundary layer, Air temperature, Synoptic meteorology, Fronts (meteorology), Atmospheric circulation, Models, Weather forecasting, Turkey, Mediterranean Sea

53-1577

Natural zones in the north of Russia at the Holocene climatic optimum. [Prirodnye zony severa Rossii vo vremia klimaticheskogo optimuma golotsena]

Serebriannyi, L.R., Khropov, A.G., *Rossiiskaia akademiia nauk. Doklady*, Dec. 1997, 357(6), p.826-827, In Russian. 15 refs.

Terrain identification, Landscape types, Paleoclimatology, Tundra terrain, Taiga, Russia

53-1578

Pollen proxy data from the Nordic countries.

Berglund, B.E., European Science Foundation. Workshop on European Palaeoclimate and Man, 1st, Arles sur Rhône, France, Dec. 14-16, 1989. Evaluation of climate proxy data in relation to the European Holocene. Edited by B. Frenzel, A. Pons and B. Gläzer and Akademie der Wissenschaften und der Literatur. Paläoklimaforschung. Vol.6, Stuttgart, Gustav Fischer Verlag, 1991, p.30-36, With French summary. 6 refs.

DLC QC884.E94 1991

Paleoecology, Palynology, Quaternary deposits, Pollen, Distribution, Subpolar regions, Sampling, Statistical analysis, Mapping, Norway, Denmark, Finland, Sweden

53-1579

Opportunities for dendroclimatological research in Fennoscandia.

Eronen, M., Huttunen, P., Zetterberg, P., European Science Foundation. Workshop on European Palaeoclimate and Man, 1st, Arles sur Rhône, France, Dec. 14-16, 1989. Evaluation of climate proxy data in relation to the European Holocene. Edited by B. Frenzel, A. Pons and B. Gläzer and Akademie der Wissenschaften und der Literatur. Paläoklimaforschung. Vol.6, Stuttgart, Gustav Fischer Verlag, 1991, p.81-92, With German summary. 26 refs.

DLC QC884.E94 1991

Paleoclimatology, Climatic changes, Paleocology, Trees (plants), Forest lines, Subpolar regions, Carbon isotopes, Radioactive age determination, Geochronology, Research projects, Statistical analysis, Finland, Sweden

53-1580

Tree-rings in Switzerland and other mountain regions: Late Glacial through Holocene.

Kaiser, K.F., European Science Foundation. Workshop on European Palaeoclimate and Man, 1st, Arles sur Rhône, France, Dec. 14-16, 1989. Evaluation of climate proxy data in relation to the European Holocene. Edited by B. Frenzel, A. Pons and B. Gläzer and Akademie der Wissenschaften und der Literatur. Paläoklimaforschung. Vol.6, Stuttgart, Gustav Fischer Verlag, 1991, p.119-132, With German summary. 17 refs.

DLC QC884.E94 1991

Paleoclimatology, Climatic changes, Subpolar regions, Paleocology, Trees (plants), Plant tissues, Geochronology, Vegetation patterns, Radioactive age determination, Models, Switzerland

53-1581

Glacier ice and Holocene climate.

Stauffer, B., European Science Foundation. Workshop on European Palaeoclimate and Man, 1st, Arles sur Rhône, France, Dec. 14-16, 1989. Evaluation of climate proxy data in relation to the European Holocene. Edited by B. Frenzel, A. Pons and B. Gläzer and Akademie der Wissenschaften und der Literatur. Paläoklimaforschung. Vol.6, Stuttgart, Gustav Fischer Verlag, 1991, p.191-204, With German summary. 19 refs.

DLC QC884.E94 1991

Paleoclimatology, Climatic changes, Alpine glaciation, Glacier oscillation, Sintering, Ice cores, Ice dating, Snow composition, Geochronology, Stratigraphy, Greenland, Antarctica

53-1582

Wet deposition of current-use pesticides in the Sierra Nevada mountain range, California, USA. McConnell, L.L., LeNoir, J.S., Datta, S., Seiber, J.N., *Environmental toxicology and chemistry*, Oct. 1998, 17(10), p.1908-1916, 47 refs.

Air pollution, Mountains, Precipitation (meteorology), Snow composition, Snow impurities, Atmospheric circulation, Sampling, Ions, Environmental tests, Environmental impact, Spectroscopy, United States—California—Sierra Nevada

53-1583

Soil seed banks from coastal subarctic ecosystems of Bird Cove, Hudson Bay.

Staniforth, R.J., Griller, N., Lajzerowicz, C., *Écoscience*, 1998, 5(2), p.241-249, With French summary. 60 refs.

Plant ecology, Subarctic landscapes, Ecosystems, Beaches, Littoral zone, Landscape types, Soil temperature, Vegetation patterns, Classifications, Growth, Revegetation, Sampling, Canada—Manitoba—Hudson Bay

53-1584

Growth of foxtail pine seedlings at treeline in the southeastern Sierra Nevada, California, U.S.A.

Lloyd, A., *Écoscience*, 1998, 5(2), p.250-257, With French summary. 46 refs.

Plant ecology, Forest ecosystems, Alpine landscapes, Forest lines, Vegetation patterns, Altitude, Growth, Nutrient cycle, Climatic factors, Sampling, Chemical analysis, United States—California—Sierra Nevada



- 53-1585**  
Plant interactions in alpine tundra: 13 years of experimental removal of dominant species. Aksenova, A.A., Onipchenko, V.G., Blinikov, M.S., *Ecoscience*, 1998, 5(2), p.258-270. With French summary. 48 refs.  
Plant ecology, Ecosystems, Plants (botany), Alpine tundra, Tundra vegetation, Lichens, Modification, Revegetation, Experimentation, Russia—Caucasus
- 53-1586**  
Long-term destruction of subarctic wetland vegetation by lesser snow geese. Kotanen, P.M., Jefferies, R.L., *Ecoscience*, 1997, 4(2), p.179-182. With French summary. 17 refs.  
Ecosystems, Subarctic landscapes, Wetlands, Biomass, Ecology, Vegetation patterns, Degradation, Environmental impact, Environmental protection, Sampling, Revegetation, Grazing, Canada—Manitoba
- 53-1587**  
Effects of shading, nutrient application and warming on leaf growth and shoot densities of dwarf shrubs in two arctic-alpine plant communities. Graglia, E., Jonasson, S., Michelsen, A., Schmidt, I.K., *Ecoscience*, 1997, 4(2), p.191-198. With French summary. 33 refs.  
Plant ecology, Climatology, Global warming, Plants (botany), Forest lines, Arctic landscapes, Alpine landscapes, Growth, Biomass, Nutrient cycle, Light effects, Temperature effects, Simulation, Sweden—Abisko
- 53-1588**  
Demography of fine roots in response to nutrient applications in a Norway spruce stand in southwestern Sweden. Majdi, H., Kangas, P., *Ecoscience*, 1997, 4(2), p.199-205. With French summary. 25 refs.  
Plant ecology, Forest ecosystems, Trees (plants), Roots, Subarctic landscapes, Nutrient cycle, Modification, Biomass, Growth, Survival, Statistical analysis, Sweden
- 53-1589**  
Earth's field NMR in Antarctica: a pulsed gradient spin echo NMR study of restricted diffusion in sea ice. Callaghan, P.T., Eccles, C.D., Haskell, T.G., Langhorne, P.J., Seymour, J.D., *Journal of magnetic resonance*, July 1998, 133(1), p.148-154, 11 refs.  
Sea ice, Nuclear magnetic resonance, Brines, Measuring instruments, Ice spectroscopy, Ice composition, Ice structure, Antarctica—McMurdo Sound
- 53-1590**  
Settlement rate of lead shot in tundra wetlands. Flint, P.L., *Journal of wildlife management*, July 1998, 62(3), p.1099-1102, 14 refs.  
Ecosystems, Ecology, Biomass, Wetlands, Tundra soils, Soil mechanics, Sedimentation, Impurities, Soil pollution, Environmental impact, Sampling, Statistical analysis, United States—Alaska—Yukon-Kuskokwim Delta
- 53-1591**  
Geology and copper sulphide mineralization of the Salmagorskii ring igneous complex, Kola Peninsula, NW Russia. Korobeinikov, A.N., Mitrofanov, F.P., Gehör, S., Laajoki, K., Pavlov, V.P., Mamontov, V.P., *Journal of petrology*, Nov.-Dec. 1998, 39(11-12), p.2033-2041, 23 refs.  
Earth crust, Subpolar regions, Geologic structures, Minerals, Magma, Fluid dynamics, Geochemistry, Rock properties, Chemical composition, Russia—Kola Peninsula
- 53-1592**  
Ice-front propagation monitoring in tissue by the use of visible-light spectroscopy. Otten, D.M., Rubinsky, B., Cheong, W.F., Benaron, D.A., *Applied optics*, Sep. 1, 1998, 37(25), p.6006-6010, 18 refs.  
Cryobiology, Ice physics, Preserving, Ice formation, Ice optics, Ice solid interface, Freezing front, Detection, Ice spectroscopy, Magnetic resonance, Imaging, Structural analysis
- 53-1593**  
Aspects of the genesis and geomorphology of pingos: perennial permafrost mounds. Gurney, S.D., *Progress in physical geography*, Nov. 1998, 22(3), p.307-324, 67 refs.  
Geomorphology, Geocryology, Landforms, Pingos, Hydraulics, Classifications, Continuous permafrost, Permafrost hydrology, Canada—Northwest Territories—Mackenzie Delta, Greenland
- 53-1594**  
Periglacial research in Africa: past, present and future. Grab, S., *Progress in physical geography*, Nov. 1998, 22(3), p.375-384, 48 refs.  
Geomorphology, Geocryology, Geophysical surveys, Periglacial processes, Landforms, Distribution, Research projects, Statistical analysis, Africa
- 53-1595**  
Glaciers. Knight, P.G., *Progress in physical geography*, Nov. 1998, 22(3), p.407-411, 22 refs.  
Glaciology, Geomorphology, Glacier surveys, Extraterrestrial ice, Research projects, Organizations, International cooperation, Statistical analysis
- 53-1596**  
Nutrient exchange in an antarctic macrolichen during summer snowfall-snow melt events. Crittenden, P.D., *New phytologist*, Aug. 1998, 139(4), p.697-707, 74 refs.  
Plant ecology, Lichens, Ecosystems, Growth, Scavenging, Nutrient cycle, Snowmelt, Meltwater, Snow composition, Chlorophylls, Sampling, Simulation, Antarctica—Casey Station
- 53-1597**  
Atmospheric circulation patterns and spatial climatic variations in Beringia. Mock, C.J., Bartlein, P.J., Anderson, P.M., *International journal of climatology*, Aug. 1998, 18(10), p.1085-1104, 44 refs.  
Climatology, Climatic changes, Synoptic meteorology, Polar atmospheres, Precipitation (meteorology), Surface temperature, Atmospheric circulation, Classifications, Seasonal variations, Statistical analysis, Russia—Siberia, United States—Alaska
- 53-1598**  
Effects of winter weather conditions on soil freezing in southern Michigan. Isard, S.A., Schaetzl, R.J., *Physical geography*, Jan.-Feb. 1998, 19(1), p.71-94, Refs. p.90-94.  
Climatology, Geocryology, Soil freezing, Distribution, Soil temperature, Freeze thaw cycles, Snow accumulation, Snow cover effect, Lake effects, Frost forecasting, Seasonal variations, Mathematical models, United States—Michigan
- 53-1599**  
Improving the efficiency of road maintenance—forming an information network for road maintenance. [Iji kanri no koritsuka ni tsuite—doro iji gyomu no joho nettowaku-ka] Kodama, H., Anmi, N., Ichijo, H., *Hokkaido kaihat-sukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996(Pub. Feb.97), 40(1), p.61-68, In Japanese.  
Highway planning, Road maintenance, Safety, Snow removal, Data processing, Data transmission, Japan—Hokkaido
- 53-1600**  
Tree planting on road cuts. [Mokuhon o mochi ita doro homen ryokka ni tsuite] Ishizuka, T., Okada, H., Takeuchi, M., *Hokkaido kaihat-sukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996(Pub. Feb.97), 40(1), p.103-110, In Japanese. 4 refs.  
Protective vegetation, Trees (plants), Snow hedges, Snow retention, Slope protection, Soil stabilization, Road maintenance, Japan—Hokkaido
- 53-1601**  
Snow melting tank in north central Sapporo—meeting the needs for comfortable towns in the north undaunted by snow. [Sapporo-shi ni okeru toshinhoku yusetsuso no seibi ni tsuite—yuki ni tsuyoi hokkoku no kaiteki na machi zukuri o motomete] Yuki, O., Taberi, A., *Hokkaido kaihat-sukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996(Pub. Feb.97), 40(1), p.157-162, In Japanese.  
Snow melting, Artificial melting, Snow disposal, Storage tanks, Underground facilities, Heat recovery, Municipal engineering, Urban planning, Japan—Hokkaido
- 53-1602**  
Using recycled concrete aggregates as a roadbed material and frost heave resistant layer. [Konkurito salsei kotsuzai o riyō shita robanzal, tojo yokuselso e no tekiyo ni tsuite] Abe, R., Takahashi, M., Ebiko, Y., *Hokkaido kaihat-sukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996(Pub. Feb.97), 40(1), p.169-174, In Japanese. 4 refs.  
Roadbeds, Subgrade soils, Frost heave, Concrete aggregates, Soil stabilization, Frost resistance, Frost protection, Subgrade preparation, Road maintenance, Japan—Hokkaido
- 53-1603**  
Studies on snowplows—studies on improving snow removal efficiency at designated sites. [Josetsu kikai ni kansuru chosa—tokutel kasho josetsu no koritsuka ni kansuru chosa] Hokkaido Development Bureau, *Hokkaido kaihat-sukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996(Pub. Feb. 97), 40(1), p.255-274, In Japanese.  
Motor vehicles, Tires, Snow removal equipment, Road maintenance
- 53-1604**  
Performance tests on the next generation (2D-2D-4D-4D) snowplow truck—interim report. [Jisedai josetsu torakku (2D-2D-4D-4D) selno shiken—chukan hokoku] Saitoh, T., Watanabe, T., *Hokkaido kaihat-sukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996(Pub. Feb.97), 40(1), p.277-284, In Japanese.  
Snow removal equipment, Motor vehicles, Specifications, Design criteria, Cold weather tests, Road maintenance
- 53-1605**  
Development of a shear pinless device for a compact snowplow—interim report. [Kogata josetsusha shapinresu sochi no kaihatu ni tsuite—chukan hokoku] Tanimoto, N., Usami, H., *Hokkaido kaihat-sukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996(Pub. Feb.97), 40(1), p.285-290, In Japanese.  
Snow removal equipment, Motor vehicles, Road maintenance
- 53-1606**  
Ultrahard bit cutting edge. [Choko bitto katingu edji ni tsuite] Yamaguchi, H., Makino, M., *Hokkaido kaihat-sukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996(Pub. Feb.97), 40(1), p.291-298, In Japanese.  
Snow removal equipment, Motor vehicles, Road maintenance

53-1607

Development of simple deicer spreaders. [Toketsu boshizai kani sanpu sochi kaihatu ni tsuite] Einaga, T., Kudoh, S., *Hokkaido kaihatu kyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996(Pub. Feb.97), 40(1), p.299-304, In Japanese.

Road icing, Chemical ice prevention, Salting, Motor vehicles, Snow removal equipment, Road maintenance

53-1608

Development of a road snow removal information system. [Doro josetsu joho shisutemu no kaihatu ni tsuite]

Aoshima, N., Sawada, T., Kinoshita, S., *Hokkaido kaihatu kyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996(Pub. Feb.97), 40(1), p.305-312, In Japanese.

Road icing, Weather forecasting, Warning systems, Safety, Snow removal, Data transmission, Road maintenance, Japan—Hokkaido

53-1609

Kokufu snowbreak forest outside of Nakagawa on National Highway 40—report on completion of the Kokufu snowbreak forest project. [Ippan kokudo 40-go Nakagawa-machi Kokufu bosetsurin—Kokufu bosetsurin no koji kanzen hokoku]

Hashimoto, M., Ueda, K., Harada, K., *Hokkaido kaihatu kyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996(Pub. Feb.97), 40(2), p.45-52, In Japanese. 4 refs.

Blowing snow, Snowdrifts, Snow retention, Snow hedges, Protective vegetation, Forest strips, Road maintenance, Japan—Hokkaido

53-1610

Current results and future problems of the Asahikawa municipal snow removal drains. [Asahikawa-shi ryusetsuko no seibi koka to kongo no kadai ni tsuite]

Takada, R., Suzuki, Y., Shimada, T., *Hokkaido kaihatu kyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996(Pub. Feb.97), 40(2), p.53-60, In Japanese. 2 refs.

Snow removal, Drains, Water pipes, Channels (waterways), Municipal engineering, Road maintenance, Japan—Hokkaido

53-1611

Study on the surface characteristics of winter traffic congestion in Sapporo based on aerial photographs. [Koku shashin ni motozuku Sapporo shinai ni okeru toki kotsu konzatsu no menteki tokusei ni kansuru kosatsu]

Shimojo, A., Takagi, H., Azuta, Y., *Hokkaido kaihatu kyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996(Pub. Feb.97), 40(2), p.75-80, In Japanese.

Aerial surveys, Urban planning, Safety, Cold weather operation, Road maintenance, Japan—Hokkaido

53-1612

Reduction (of replacement depth) as a frost heave countermeasure in the raised ground part—suggestions from on-site frost heave tests. [Moritsuchi-bu ni okeru toki talsaku (chikan fukasa) no teigen ni tsuite—genba tojo shiken kara no teigen]

Tanaka, Y., Takeda, Y., *Hokkaido kaihatu kyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996(Pub. Feb.97), 40(2), p.103-108, In Japanese. 6 refs.

Subgrade soils, Soil freezing, Frost penetration, Frost heave, Frost protection, Ground water, Water table, Drainage, Soil stabilization, Road maintenance

53-1613

Report on avalanche countermeasures in the Bihoro Pass—procedures in handling explosives. [Bihoro-toge no nadare taisaku hokoku—kayaku o shiyo shita shori sagyo ni tsuite]

Hirose, A., Matsuura, T., Tokairin, K., *Hokkaido kaihatu kyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996(Pub. Feb.97), 40(2), p.121-126, In Japanese.

Avalanche triggering, Explosives, Blasting, Safety, Road maintenance, Japan—Hokkaido

53-1614

Comparing the conditions of all the road surfaces over two winters based on a new road surface classification. [Shin romen bunrui ni motozuku 2 toki no zen-doromen jokyo no hikaku]

Kaneko, M., Kajiya, Y., Matsuzawa, M., *Hokkaido kaihatu kyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996(Pub. Feb.97), 40(2), p.127-132, In Japanese. 3 refs.

Road icing, Snowfall, Snow removal, Skid resistance, Safety, Highway planning, Road maintenance, Japan—Hokkaido

53-1615

Analysis of the current level of road maintenance on the main highways. [Kansen doro ni okeru toki doro kanri suljun no genjo bunseki ni tsuite]

Mima, H., Takagi, H., Kawamura, K., *Hokkaido kaihatu kyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996(Pub. Feb.97), 40(2), p.133-140, In Japanese. 4 refs.

Road icing, Snow removal, Skid resistance, Safety, Highway planning, Road maintenance, Japan—Hokkaido

53-1616

Road maintenance in winter around Sapporo—report on using examples from road icing forecasts for snow removal. [Sapporo-ken ni okeru tokikan no doro kanri shuho ni tsuite—josetsu, romen toketsu yosoku joho o katsuyo shita jirei hokoku]

Nemori, K., Kajiya, Y., Matsuzawa, M., *Hokkaido kaihatu kyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996(Pub. Feb.97), 40(2), p.141-146, In Japanese. 1 ref.

Road icing, Weather forecasting, Frost forecasting, Snow removal, Road maintenance, Japan—Hokkaido

53-1617

Study on road icing detection by near infrared optical absorption images. [Kin-sekigai ko-kyushu gazo o mochi ita romen toketsu kenchi ni kansuru kenkyu]

Nami, M., Nagao, S., *Hokkaido kaihatu kyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996(Pub. Feb.97), 40(2), p.147-152, In Japanese. 4 refs.

Road icing, Ice detection, Ice optics, Infrared photography, Road maintenance

53-1618

Study on the results of deicer spreading on icy roads. [Seppyo romen ni okeru toketsu boshizai-sanpu koka ni kansuru kenkyu]

Oikawa, S., Takagi, H., Kawamura, K., *Hokkaido kaihatu kyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996(Pub. Feb.97), 40(2), p.153-160, In Japanese. 4 refs.

Road icing, Chemical ice prevention, Salting, Sanding, Skid resistance, Road maintenance, Japan—Hokkaido

53-1619

Evaluating the applicability of frost resistant pavements—interim report on uniform test pavements. [Toketsu yokusei hoso no kyooyosei hyoka ni tsuite—toitsu shiken hoso ni okeru chukan hokoku]

Shitamichi, J., Takahashi, M., Oguri, M., *Hokkaido kaihatu kyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996(Pub. Feb.97), 40(2), p.161-166, In Japanese. 3 refs.

Road icing, Pavements, Frost resistance, Frost protection, Cold weather tests, Road maintenance, Japan—Hokkaido

53-1620

Impact of ITS on highway traffic and regional society in Hokkaido—state of the art of research and development from a questionnaire survey to knowledgeable persons. [ITS ga Hokkaido no doro kotsu, chiiki shakai ni ataeru inpakuto ni tsuite—kenkyu kaihatu no genjo to yushikisha anketo chosa no kekka kara]

Kajiya, Y., Fukuzawa, Y., Kumazawa, Y., *Hokkaido kaihatu kyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996(Pub. Feb.97), 40(2), p.167-174, In Japanese. 5 refs.

Highway planning, Road maintenance, Weather forecasting, Warning systems, Safety, Cold weather operation, Data transmission, Computer applications, Japan—Hokkaido

53-1621

Using the Internet to provide road information—experimental transmission of images of mountain passes. [Intanetto o katsuyo shita doro joho teikyo ni tsuite—toge gazo no denso jikken]

Kumazawa, Y., Kajiya, Y., Chiba, T., *Hokkaido kaihatu kyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996(Pub. Feb.97), 40(2), p.175-184, In Japanese. 1 ref.

Highway planning, Road maintenance, Weather forecasting, Warning systems, Safety, Cold weather operation, Data transmission, Computer applications, Japan—Hokkaido

53-1622

Problems in designing earthquake resistant bridges in cold regions based on records of strong earthquakes. [Kyoshin kiroku ni motozuku kanrei chiiki ni okeru menshinkyo sekkei no kadai ni tsuite]

Kobayashi, M., Ohta, K., Tanimoto, T., *Hokkaido kaihatu kyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996(Pub. Feb.97), 40(2), p.189-194, In Japanese.

Earthquakes, Bridges, Piers, Foundations, Supports, Rubber, Damping, Low temperature tests, Cold weather performance, Frost resistance, Structural analysis, Japan—Hokkaido

53-1623

Construction design and construction report of the Shungaku Bridge deck. [Shungakkyo jobu kasetsu koji no shiko keikaku to koji hokoku ni tsuite]

Nakajima, S., Ono, T., Yano, S., *Hokkaido kaihatu kyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996(Pub. Feb.97), 40(2), p.229-236, In Japanese. 4 refs.

Bridges, Concrete structures, Cold weather construction, Snow loads, Snow removal, Road maintenance, Japan—Hokkaido

- 53-1624**  
Llandoverly secui collectinae and rotasphaeridae (radiolaria) from the Cape Phillips formation, Cornwallis Island, arctic Canada.  
MacDonald, E.W., *Journal of paleontology*, July 1998, 72(4), p.585-604, 32 refs.  
Pleistocene, Paleocology, Geological surveys, Subpolar regions, Lithology, Fossils, Classifications, Sampling, Structural analysis, Scanning electron microscopy, Canada—Northwest Territories—Cornwallis Island
- 53-1625**  
Systematics of the acanthoparyphinae (Trilobita), with species from the Silurian of arctic Canada.  
Adrain, J.M., *Journal of paleontology*, July 1998, 72(4), p.698-718, 58 refs.  
Pleistocene, Paleocology, Fossils, Subpolar regions, Lithology, Stratigraphy, Classifications, Structural analysis, Sampling, Biogeography, Statistical analysis, Canada—Northwest Territories—Phillips, Cape
- 53-1626**  
Physical and chemical limnology of northern boreal lakes, Wood Buffalo National Park, northern Alberta and the Northwest Territories, Canada.  
Moser, K.A., Smol, J.P., Lean, D.R.S., MacDonald, G.M., *Hydrobiologia*, 1998, Vol.377, p.25-43, 67 refs.  
Limnology, Subarctic landscapes, Lake water, Vegetation patterns, Classifications, Hydrogeochemistry, Muskeg, Sampling, Ion density (concentration), Statistical analysis, Canada—Northwest Territories—Wood Buffalo National Park, Canada—Alberta
- 53-1627**  
Hybrid modeling in meteorological applications: anatomy of a \$200 million freeze.  
Reiter, E.R., Teixeira, L., Shen, R.J., Martsolf, J.D., Spyke, P.D., Townsend, C., *Meteorology and atmospheric physics*, 1998, 67(1-4), p.239-248, 7 refs.  
Agriculture, Weather forecasting, Frost forecasting, Humidity, Surface temperature, Freezing points, Damage, Models, Computerized simulation, Accuracy, United States—Florida
- 53-1628**  
In search of polar warming.  
Radok, U., Brown, T., *Meteorology and atmospheric physics*, 1998, 67(1-4), p.249-252, 6 refs.  
Climatology, Climatic changes, Polar atmospheres, Greenhouse effect, Global warming, Detection, Wind velocity, Temperature variations, Statistical analysis, Indexes (ratios), Forecasting
- 53-1629**  
Horizontal meridional thermospheric winds over King George Island, Antarctica, during the June 1991 geomagnetic storm.  
Arriagada, M.A., Foppiano, A.J., Buonsanto, M.J., *Journal of atmospheric and solar-terrestrial physics*, July 1998, 60(10), p.1007-1012, 35 refs.  
Geomagnetism, Atmospheric physics, Electric fields, Particles, Thermal expansion, Storms, Polar atmospheres, Wind direction, Sounding, Diurnal variations, Models, Antarctica—King George Island
- 53-1630**  
Possible role of disturbance in shaping the northern distribution of *Pinus resinosa*.  
Flannigan, M.D., Bergeron, Y., *Journal of vegetation science*, Aug. 1998, 9(4), p.477-482, 46 refs.  
Phenology, Forest ecosystems, Plant ecology, Forest lines, Vegetation patterns, Distribution, Forest fires, Climatic factors, Damage, Environmental impact, Simulation, Theories, Canada—Quebec
- 53-1631**  
Biomass and chemical composition of common forest plants in response to fire in western Norway.  
Skre, O., Wielgolaski, F.E., Moe, B., *Journal of vegetation science*, Aug. 1998, 9(4), p.501-510, 42 refs.  
Plant ecology, Forest ecosystems, Subarctic landscapes, Forest fires, Biomass, Plant tissues, Chemical composition, Organic soils, Damage, Revegetation, Sampling, Statistical analysis, Environmental impact, Norway
- 53-1632**  
Seedling establishment in relation to microhabitat variation in a windthrow gap in a boreal *Pinus sylvestris* forest.  
Kuuluvainen, T., Juntunen, P., *Journal of vegetation science*, Aug. 1998, 9(4), p.551-562, 51 refs.  
Plant ecology, Forest ecosystems, Subarctic landscapes, Forest canopy, Litter, Decomposition, Revegetation, Growth, Vegetation patterns, Topographic effects, Sampling, Finland
- 53-1633**  
Structure of a pristine *Picea abies* forest in north-eastern Europe.  
Kuuluvainen, T., Syrjänen, K., Kalliola, R., *Journal of vegetation science*, Aug. 1998, 9(4), p.563-574, 57 refs.  
Plant ecology, Forest ecosystems, Arctic landscapes, Taiga, Forest canopy, Revegetation, Litter, Decomposition, Vegetation patterns, Biomass, Classifications, Statistical analysis, Sampling, Russia—Pechora River
- 53-1634**  
Successional trends 219 years after fire in an old *Pinus sylvestris* stand in northern Sweden.  
Engelmark, O., Hofgaard, A., Arnborg, T., *Journal of vegetation science*, Aug. 1998, 9(4), p.583-592, 57 refs.  
Plant ecology, Forest ecosystems, Arctic landscapes, Revegetation, Vegetation patterns, Forest fires, Damage, Sampling, Age determination, Sweden
- 53-1635**  
Historical Soviet daily snow depth, volume 1: 1881-1985.  
National Snow and Ice Data Center. Cooperative Institute for Research in Environmental Sciences, Boulder, National Snow and Ice Data Center, 1994, n.p., CD-ROM. Contains ASCII text data files and a PostScript file of a map of 284 World Meteorological Organization stations.  
Snow depth, Snow surveys, Data processing, CIS
- 53-1636**  
Estimation of methane emission under global warming. [K ostenke emissii metana pri global'nom poteplenii]  
Velichko, A.A., Borisova, O.K., Zelikson, E.M., Kremenetskii, K.V., Nechaev, V.P., *Rossiiskaia akademiia nauk. Doklady*, Sep. 1997, 356(3), p.387-389, In Russian. 15 refs.  
Global warming, Natural gas, Tundra, Forest tundra, Swamps, Paleoclimatology, Climatic factors, Precipitation (meteorology), Pleistocene
- 53-1637**  
Permafrost evolution during Pleistocene-Holocene history of Urengoy field of West Siberia. [Kriofitazona v pleistotsen-golotsenovoi istorii Urengoi'skogo raiona Zapadnoi Sibiri]  
Galushkin, I.U.I., Lopatin, N.V., *Rossiiskaia akademiia nauk. Doklady*, Sep. 1997, 356(3), p.393-397, In Russian. 15 refs.  
Permafrost origin, Pleistocene, Paleoclimatology, Computerized simulation, Models, Russia—Siberia
- 53-1638**  
Advection of unusual warm Atlantic water into the Arctic Basin. [Postuplenie neobychno teplykh atlanticheskikh vod v Arkticheskii bassein]  
Aleksiev, G.V., Bujatov, L.V., Zakharov, V.F., Ivanov, V.V., *Rossiiskaia akademiia nauk. Doklady*, Sep. 1997, 356(3), p.401-403, In Russian. 12 refs.  
Oceanography, Sea water, Water temperature, Ocean currents, Temperature variations, Arctic Ocean
- 53-1639**  
Antarctic ozone hole.  
Shanklin, J., Cambridge, UK, British Antarctic Survey, 1998, 10p.  
Manuals, Ozone, Meteorological data, Climatic factors, Seasonal variations, Atmospheric composition, Atmospheric circulation, Meteorological instruments, Air pollution, Environmental protection, Polar atmospheres, Antarctica
- 53-1640**  
Snow on Spanish cordilleras. ERHIN Program 1994/1995. [La nieve en las cordilleras españolas. Programa ERHIN 1994/1995]  
Spain. Ministerio de Medio Ambiente. Dirección General de Obras Hidráulicas y Calidad de las Aguas, Madrid, Spain, Ministerio de Medio Ambiente, 1998, 231p., In Spanish.  
Mountain glaciers, Research projects, Snow accumulation, Snow cover distribution, Snow density, Snow depth, Measurement, Measuring instruments, Meteorological data, Data processing, Low temperature research, Meteorological charts, Snow surveys, Glacier surveys, Glacier mass balance, Spain
- 53-1641**  
Relationship between the population of short-necked clams and the physical environment of the fishing grounds of short-necked clams in cold regions. [Kanreichi ni okeru asari no setsoku no kankel]  
Akutsu, T., Yano, K., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996(Pub. Feb.97), 40(4), p.175-180, In Japanese. 7 refs.  
Marine biology, Animals, Ecology, Cold tolerance, Cold weather survival, Acclimatization, Japan—Hokkaido
- 53-1642**  
Windbreaks in Oinaoshi fishing port—Improving operations in cold region environments. [Oinaoshi gyoko bofu taisaku shisetsu ni tsuite—kanreichi no sagyo kankyo no kojo]  
Sekiguchi, K., Nakauchi, I., Yoshihara, Y., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996(Pub. Feb.97), 40(4), p.205-210, In Japanese. 5 refs.  
Ports, Offshore structures, Windbreaks, Wind direction, Wind velocity, Wind chill, Cold weather construction, Cold weather operation, Japan—Hokkaido
- 53-1643**  
Study on durability of asphalt mats for cold sea regions. [Kanrei kaliki-yo asufaruto matto no talkyusei ni kansuru chosa kenkyu]  
Sakamoto, Y., Akeda, S., Kimura, K., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996(Pub. Feb.97), 40(4), p.235-240, In Japanese. 4 refs.  
Offshore structures, Caissons, Composite materials, Protective coatings, Bitumens, Cold weather construction, Cold weather tests, Japan—Hokkaido
- 53-1644**  
Sea ice observation tower at Monbetsu harbor: construction of the Shinsui breakwater. [Monbetsu-ko ni okeru tenboto: Shinsui bohatel no kensetsu ni tsuite]  
Satou, G., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996(Pub. Feb.97), 40(4), p.287-294, In Japanese.  
Ports, Offshore structures, Towers, Concrete structures, Cold weather construction, Ice control, Okhotsk Sea, Japan—Hokkaido
- 53-1645**  
Study on floating structures in cold seas. [Kanrei kaliki ni okeru futai kozobutsu ni kansuru kenkyu]  
Hayakawa, T., Sasajima, T., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996(Pub. Feb.97), 40(4), p.337-342, In Japanese. 3 refs.  
Floating structures, Docks, Moorings, Ice loads, Ice control

53-1646

**Fish overwintering environment in the Shiribetsu River.** [Shiribetsu-gawa ni okeru gyo-zoku no etto kankyo ni suite]

Hata, H., Ando, M., Funaki, H., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996 (Pub. Feb. 97), 40(3), p.37-42, In Japanese.

Animals, Ecology, Cold tolerance, Cold weather survival, Acclimatization, Phenology, Japan—Hokkaido

53-1647

**Problem of ice plates and their countermeasures in reservoirs.** [Chosuichi no hyoban mondai to sono taisaku]

Matsuoka, S., Hideshima, Y., Onodera, Y., *Hokkaido kaihatsukyoku gijutsu kenkyu happyokai happyo gaiyoshu (Hokkaido Development Bureau Technical Research Meeting. Presentation summaries)*, 1996 (Pub. Feb. 97), 40(3), p.283-290, In Japanese. 4 refs.

Reservoirs, Dams, Lake ice, Ice push, Ice pressure, Ice loads, Snow loads, Snow cover effect, Ice control, Japan—Hokkaido

53-1648

**Slow motion of a granular layer on an inclined plane.**

Berezin, I.U.A., Spodareva, L.A., *Journal of applied mechanics and technical physics*, Mar.-Apr 1998 (Pub. Sep. 98), 39(2), p.261-264, Translated from Prikladnaia mekhanika i tekhnicheskaya fizika. 5 refs.

Fluid dynamics, Avalanche mechanics, Avalanche modeling, Shear flow, Mathematical models, Slope processes

53-1649

**Net phytoplankton in Kongsfjorden, Svalbard, July 1988, with general remarks on species composition of arctic phytoplankton.**

Hasle, G.R., Heimdal, B.R., *Polar research*, June 1998, 17(1), p.31-52, 69 refs.

Marine biology, Subpolar regions, Oceanographic surveys, Plankton, Distribution, Ecosystems, Microstructure, Biomass, Ice cover effect, Sampling, Classifications, Scanning electron microscopy, Norway—Svalbard

53-1650

**Respiration of the belowground parts of vascular plants: its contribution to total soil respiration on a successional glacier foreland in Ny-Ålesund, Svalbard.**

Nakatsubo, T., Bekku, Y., Kume, A., Koizumi, H., *Polar research*, June 1998, 17(1), p.53-59, 19 refs.

Plant physiology, Soil physics, Moraines, Patterned ground, Soil tests, Subpolar regions, Roots, Biomass, Vapor transfer, Geochemical cycles, Sampling, Vegetation factors, Norway—Svalbard

53-1651

**Origin of well-rounded gravels in glacial deposits from Brøggerhalvøya, northwest Spitsbergen: potential problems caused by sediment reworking in the glacial environment.**

Huddart, D., Bennett, M.R., Hambrey, M.J., Glasser, N.F., Crawford, K., *Polar research*, June 1998, 17(1), p.61-69, 24 refs.

Pleistocene, Glacial geology, Glacial deposits, Sediment transport, Ice push, Outwash, Ice solid interface, Gravel, Surface properties, Rock properties, Lithology, Sampling, Origin, Norway—Spitsbergen

53-1652

**Pb-Pb single-zircon ages of granitoid boulders from the Vendian tillite of Wahlenbergfjorden, Nordaustlandet, Svalbard.**

Larionov, A.N., Tebenkov, A.M., Gee, D.G., *Polar research*, June 1998, 17(1), p.71-80, 24 refs.

Pleistocene, Glacial geology, Glacial deposits, Geologic processes, Rocks, Rock properties, Origin, Isotope analysis, Sampling, Radioactive age determination, Lithology, Norway—Svalbard

53-1653

**Foraminiferal stratigraphy of raised marine deposits, representing isotope stage 5, Prins Karls Forland, western Svalbard.**

Bergsten, H., Andersson, T., Ingólfsson, Ó., *Polar research*, June 1998, 17(1), p.81-91, 32 refs.

Pleistocene, Paleocology, Classifications, Glacial geology, Marine deposits, Glacial deposits, Beaches, Advection, Stratigraphy, Sampling, Luminescence, Radioactive age determination, Correlation, Norway—Svalbard

53-1654

**Ice-marginal characteristics of Fridtjovbreen (Svalbard) during its recent surge.**

Glasser, N.F., Huddart, D., Bennett, M.R., *Polar research*, June 1998, 17(1), p.93-100, 32 refs.

Geomorphology, Landforms, Glacier surges, Glacier oscillation, Glacial geology, Moraines, Ice edge, Ice solid interface, Ice deformation, Ice override, Ice push, Ice mechanics, Norway—Svalbard

53-1655

**Gygrekjelda, a new warm spring in Bockfjorden, Svalbard.**

Salvigsen, O., Høgvard, K., *Polar research*, June 1998, 17(1), p.107-109, 7 refs.

Ground water, Springs (water), Stream flow, Arctic landscapes, Water temperature, Sediments, Exploration, Norway—Svalbard

53-1656

**Gamma emitters in the Barents Sea area.**

Matishov, D.G., Szczypa, J., *Il polo*, Mar. 1996, Vol.1, p.11-26, 7 refs. For another version see 50-2191.

Oceanography, Water pollution, Radioactivity, Radioactive isotopes, Nuclear explosions, Fallout, Bottom sediment, Lichens, Mud, Environmental tests, Gamma irradiation, Soil analysis, Spectroscopy, Barents Sea

53-1657

**IRAS studies of NO<sub>2</sub>, N<sub>2</sub>O<sub>3</sub> and N<sub>2</sub>O<sub>4</sub> adsorbed on Au(111) surfaces and reactions with coadsorbed H<sub>2</sub>O.**

Wang, J., Koel, B.E., *Journal of physical chemistry A*, Oct. 29, 1998, 102(44), p.8573-8579, 30 refs.

Ice physics, Molecular structure, Amorphous ice, Ice spectroscopy, Infrared spectroscopy, Ice vapor interface, Oxygen, Monomolecular films, Modification, Spectra, Chemical analysis

53-1658

**Wideband interferometric sensing and imaging polarimetry, and its relevance to wide-area military surveillance and environmental monitoring of the terrestrial and planetary covers.**

Boerner, W.M., Verdi, J.S., *SPIE—The International Society for Optical Engineering. Proceedings*, 1996, Vol.2845, Radar processing, technology, and applications. Edited by W.J. Miceli, p.98-107, 50 refs. DLC TK6573.R329 1996

Remote sensing, Image processing, Military research, Radar, Topographic surveys, Ecology, Planetary environments, Scattering, Surface properties, Electronic equipment, Electromagnetic properties, Imaging, Data processing, Optical properties

53-1659

**Algae, lichens and fungi in La Gorce Mountains, Antarctica.**

Broady, P.A., Weinstein, R.N., *Antarctic Science*, Dec. 1998, 10(4), p.376-385, Refs. p.384-385.

Algae, Lichens, Fungi, Bacteria, Ponds, Ecosystems, Ice cover effect, Moraines, Soil analysis, Antarctica—La Gorce Mountains

53-1660

**Hydrocarbon degradation by Antarctic coastal bacteria.**

Cavanagh, J.E., Nichols, P.D., Franzmann, P.D., McMeehin, T.A., *Antarctic Science*, Dec. 1998, 10(4), p.386-397, Refs. p.397.

Bacteria, Hydrocarbons, Water pollution, Oil spills, Beaches, Chemical properties, Soil analysis, Microbiology, Antarctica—Vestfold Hills

53-1661

**Kelp-plucking: coastal erosion facilitated by bull-kelp *Durvillaea antarctica* at subantarctic Macquarie Island.**

Smith, J.M.B., Bayliss-Smith, T.P., *Antarctic Science*, Dec. 1998, 10(4), p.431-438, Refs. p.437-438.

Shore erosion, Bedrock, Marine deposits, Plants (botany), Tides, Algae, Vegetation factors, Macquarie Island

53-1662

**Origin of salts in water bodies of the McMurdo Dry Valleys.**

Takamatsu, N., Kato, N., Matsumoto, G.I., Torii, T., *Antarctic Science*, Dec. 1998, 10(4), p.439-448, Refs. p.448.

Salt lakes, Ponds, Deserts, Lake water, Salt water, Salinity, Origin, Ice water interface, Antarctica—McMurdo Dry Valleys

53-1663

**Evidence for shallowing and uplift from bathymetric records of Deception Island, Antarctica.**

Cooper, A.P.R., Smellie, J.L., Maylin, J., *Antarctic Science*, Dec. 1998, 10(4), p.455-461, Refs. p.460-461.

Volcanoes, Marine geology, Sounding, Deformation, Tectonics, Sedimentation, Low temperature research, Safety, Geological surveys, Magma, Antarctica—Deception Island

53-1664

**Stratigraphy and geochronology of Adelaide Island.**

Griffiths, C.J., Oglethorpe, R.D.J., *Antarctic Science*, Dec. 1998, 10(4), p.462-475, Refs. p.474-475.

Geological surveys, Glacial geology, Stratigraphy, Geochronology, Sedimentation, Volcanoes, Tectonics, Antarctica—West Antarctica

53-1665

**Minettes from Schirmacher Oasis, East Antarctica—indicators of an enriched mantle source.**

Hoch, M., Tobschall, H.J., *Antarctic Science*, Dec. 1998, 10(4), p.476-486, Refs. p.485-486.

Geological surveys, Geochemistry, Bedrock, Rock properties, Magma, Earth crust, Sediments, Antarctica—Schirmacher Ponds

53-1666

**Katabatic winds, hydraulic jumps and wind flow over the Vestfold Hills, East Antarctica.**

Targett, P.S., *Antarctic Science*, Dec. 1998, 10(4), p.502-506, 12 refs.

Wind (meteorology), Wind velocity, Wind direction, Atmospheric disturbances, Meteorological factors, Antarctica—Vestfold Hills

53-1667

**Geomorphological and geological survey, and SPOT remote sensing of the current activity of Nevado Sabancaya stratovolcano (South Peru): assessment for hazard-zone mapping.**

Salas, G., Thouret, J.C., Gourgaud A., A., Rodriguez, A., Uribe, M., Guillaude, R., *Sociedad Geológica del Perú. Boletín*, Nov. 1995, Vol.84, p.1-12, 23 refs.

Volcanoes, Environmental impact, Volcanic ash, Mapping, Geomorphology, Geological surveys, Models, Remote sensing, Safety, Mountain glaciers, Mudflows, Flood forecasting, Avalanche forecasting, Peru—Nevado Sabancaya

53-1668

**Evidence of marine algae, vertebrates, and invertebrates in the erosion terrace deposits and Quaternary fluvio-glacial deposits at the Peruvian Machu Picchu Station in Antarctica.** [Evidencias de algas marinas, vertebrados e invertebrados en los depósitos de las terrazas de abrasión y depósitos fluvio-glaciares cuaternarios de la Base Peruana "Machhu Picchu" en la Antártida]

Villavicencio R., E., *Sociedad Geológica del Perú. Boletín*, Nov. 1995, Vol.84, p.29-36, In Spanish. 8 refs.

Glacial deposits, Marine deposits, Paleocology, Paleobotany, Fossils, Algae, Classifications, Quaternary deposits, Antarctica—Admiralty Bay

53-1669

**Airborne short-wave radar gauging of under-ground water level, snow layer depth and ice covering thickness.**

Garnakerian, A.A., Garmatiuk, D.S., Lobach, V.T., Lobach, I.A.V., *SPIE—The International Society for Optical Engineering. Proceedings*, 1997, Vol.3066, Radar sensor technology II. Edited by R. Trebits and J.L. Kurtz, p.205-210, 5 refs.  
DLC TK6573.R333 1997

Airborne radar, Water level, Ground water, Water table, Snow depth, Ice cover thickness, Remote sensing, Backscattering

53-1670

**Proton ordering in antarctic ice observed by Raman and neutron scattering.**

Fukazawa, H., Mae, S., Ikeda, S., Watanabe, O., *Chemical physics letters*, Sep. 25, 1998, Vol.294, p.554-558, 19 refs.

Ice sheets, Ice temperature, Ice composition, Spectra, Neutron scattering, Drilling, Protons, Antarctica—Dome Fuji Station, Antarctica—Vostok Station

53-1671

**Accumulation of persistent organochlorine compounds in mountains of western Canada.**

Blais, J.M., Schindler, D.W., Muir, D.C.G., Kimpe, L.E., Donald, D.B., Rosenberg, B., *Nature*, Oct. 8, 1998, 395(6702), p.585-588, 22 refs.

Snow cover, Snow impurities, Chemical composition, Organic nuclei, Canada—Rocky Mountains

53-1672

**Foraging responses of antarctic fur seals to changes in the marine environment.**

McCafferty, D.J., Boyd, I.L., Walker, T.R., Taylor, R.I., *Marine ecology progress series*, May 28, 1998, Vol.166, p.285-299, 45 refs.

Marine biology, Ocean environments, Ecology, Seasonal variations, South Georgia, Bird Island

53-1673

**Ice scour disturbance to benthic communities in the Canadian High Arctic.**

Conlan, K.E., Lenihan, H.S., Kvitik, R.G., Oliver, J.S., *Marine ecology progress series*, May 28, 1998, Vol.166, p.1-16, Refs. p.14-16.

Ice scouring, Basal sliding, Ocean bottom, Biomass, Marine biology, Canada—Northwest Territories—Barrow Strait, Canada—Northwest Territories—Cornwallis Island

53-1674

**On thin ice.**

Walker, G., *New scientist*, Sep. 26, 1998, 159(2153), p.33-37.

Sea ice, Models, Heat balance, Experimentation, Cloud cover, Albedo, Arctic Ocean

53-1675

**Psychrotolerant bacteria isolated from arctic soil that degrade polychlorinated biphenyls at low temperatures.**

Master, E.R., Mohn, W.W., *Applied and environmental microbiology*, Dec. 1998, 64(12), p.4823-4829, 29 refs.

Soil microbiology, Bacteria, Arctic landscapes, Soil pollution, Hydrocarbons, Chemical properties, Degradation, Environmental tests, Environmental protection, Temperature effects, Sampling, Soil analysis, Canada—Northwest Territories—Cambridge Bay, Canada—Northwest Territories—Iqaluit, Canada—Labrador—Saglek

53-1676

**Resonance nature of catastrophic storm surges in the Laptev Sea.**

Ashik, I.M., *Russian meteorology and hydrology*, 1997, No.12, p.51-57, Translated from *Meteorologia i gidrologia*. 14 refs.

Oceanography, Synoptic meteorology, Subpolar regions, Marine meteorology, Atmospheric pressure, Turbulent boundary layer, Air ice water interaction, Storms, Sea level, Oscillations, Resonance, Russia—Laptev Sea

53-1677

**Cool thermal discharge obtained with air flowing over melting ice.**

Ho, C.D., Yeh, H.M., Wang, W.P., *Energy*, Apr. 1998, 23(4), p.279-288, 18 refs.

Air conditioning, Cooling systems, Air temperature, Ice (water storage), Ice melting, Ice cover thickness, Air flow, Convection, Ice air interface, Heat transfer, Thermal conductivity, Forecasting, Mathematical models

53-1678

**Quantum mechanical treatment for the diffusion process of a hydrogen atom on the amorphous water ice surface.**

Takahashi, J., Nagaoka, M., Masuda, K., *International journal of quantum chemistry*, Oct. 15, 1998, 70(2), International Congress of Quantum Chemistry, 9th. Selected papers, Pt.II, p.379-385, 10 refs.

Ice physics, Cosmic dust, Extraterrestrial ice, Simulation, Amorphous ice, Molecular structure, Ice vapor interface, Hydrogen, Thermal diffusion, Molecular energy levels, Mathematical models, Theories

53-1679

**Deformation history of a Mesozoic forearc basin sequence on Alexander Island, Antarctic Peninsula.**

Doubleday, P.A., Storey, B.C., *Journal of South American earth sciences*, Jan. 1998, 11(1), p.1-21, With Spanish summary. 44 refs.

Pleistocene, Tectonics, Geological surveys, Geological maps, Stratigraphy, Subsidence, Earth crust, Deformation, Geochronology, Antarctica—Alexander Island

53-1680

**Metallothioneins in arctic bivalves.**

Amiard-Triquet, C., Rainglet, F., Larroux, C., Regoli, F., Hummel, H., *Ecotoxicology and environmental safety* B, Sep. 1998, 41(1), European Conference on Ecotoxicology and Environmental Safety, 4th, Metz, France, Aug. 25-28, 1996. Selected papers, p.96-102, 19 refs.

Oceanography, Water pollution, Marine biology, Biomass, Ecosystems, Bottom sediment, Metals, Absorption, Sampling, Environmental tests, Chemical analysis, Arctic Ocean

53-1681

**Use of an antitransplant to minimize winter injury on nonflooded cranberry bogs.**

Sandler, H.A., *HortScience*, July 1998, 33(4), p.644-646, 20 refs.

Plant physiology, Cryobiology, Wetlands, Biomass, Cold weather survival, Plant tissues, Damage, Desiccation, Transpiration, Protective coatings, Sampling

53-1682

**Freezing tolerance and growth characteristics of USDA intergeneric citrus hybrids US 119 and selection 17-11.**

Tignor, M.E., Davies, F.S., Sherman, W.B., *HortScience*, July 1998, 33(4), p.744-748, 19 refs.

Plant physiology, Cryobiology, Agriculture, Trees (plants), Plant tissues, Cold tolerance, Frost resistance, Growth, Chemical composition, Modification, Scintillation

53-1683

**Composition and accumulation conditions of sediments at the White Sea shelf in the Late Pleistocene and Holocene.**

Voskresenskaia, T.N., Sobolev, V.M., *Lithology and mineral resources*, May-June 1998, 33(3), p.210-213, Translated from *Litologiya i poleznye iskopaemye*. 14 refs.

Pleistocene, Marine geology, Subpolar regions, Sedimentation, Bottom sediment, Periglacial processes, Boreholes, Drill core analysis, Lithology, Mineralogy, Grain size, Russia—White Sea

53-1684

**Periodicity of some ancient short-term lithogenetic events.**

Admakin, L.A., *Lithology and mineral resources*, May-June 1998, 33(3), p.214-225, Translated from *Litologiya i poleznye iskopaemye*. 54 refs.

Pleistocene, Paleoclimatology, Lithology, Geologic processes, Sedimentation, Diagenesis, Coal, Volcanic ash, Periodic variations, Geochronology, Statistical analysis, Theories

53-1685

**Isotopic indications of epigenetic alterations in Pre-Vendian sedimentary rocks of the Balkit uplift, the Siberian Platform.**

Vinogradov, V.I., et al, *Lithology and mineral resources*, May-June 1998, 33(3), p.235-245, Translated from *Litologiya i poleznye iskopaemye*. 28 refs.

Lithology, Tectonics, Geologic processes, Subpolar regions, Sedimentation, Epigenesis, Clays, Hydrocarbons, Stratigraphy, Isotope analysis, Boreholes, Geochronology, Russia—Siberia

53-1686

**Quaternary volcanic ashes of the East European Platform.**

Tsekhovskii, I.U.G., Murav'ev, V.I., Babushkin, D.A., *Lithology and mineral resources*, May-June 1998, 33(3), p.257-270, Translated from *Litologiya i poleznye iskopaemye*. 49 refs.

Pleistocene, Lithology, Geological surveys, Sedimentation, Quaternary deposits, Volcanic ash, Loess, Chemical composition, Age determination, Origin, Theories, Russia

53-1687

**Effect of traps on salt redistribution in the Lower Cambrian of the western Siberian Platform.**

Mel'nikov, N.V., Khomenko, A.V., Kuznetsova, E.N., Zhidkova, L.V., *Russian geology and geophysics*, 1997, 38(8), p.1378-1384, Translated from *Geologiya i geofizika*. 22 refs.

Pleistocene, Quaternary deposits, Subpolar regions, Earth crust, Sedimentation, Thickness, Magma, Leaching, Geochemistry, Boreholes, Stratigraphy, Russia—Siberia

53-1688

**Upper Vendian-Lower Cambrian biostratigraphy of the Sukharikha River section (Siberian Platform).**

Luchinina, V.A., Korovnikov, I.V., Sipin, D.P., Fedoseev, A.V., *Russian geology and geophysics*, 1997, 38(8), p.1385-1397, Translated from *Geologiya i geofizika*. 16 refs.

Pleistocene, Quaternary deposits, Geological surveys, Earth crust, Sedimentation, Stratigraphy, Subpolar regions, Paleocology, Sampling, Correlation, Russia—Siberia

53-1689

**Data for stratigraphy and paleobiogeography of the Devonian in West Siberia (according to brachiopods Stropheodontacea).**

Gratsianova, R.T., IAzikov, A.IU., *Russian geology and geophysics*, 1997, 38(8), p.1398-1408, Translated from *Geologiya i geofizika*. 22 refs.

Pleistocene, Subpolar regions, Quaternary deposits, Paleocology, Paleobotany, Stratigraphy, Sampling, Classifications, Terminology, Russia—Siberia

53-1690

**On the possible gas-hydrate nature of loess-ground sagging.**

Kononov, A.A., *Russian geology and geophysics*, 1997, 38(8), p.1409-1413, Translated from *Geologiya i geofizika*. 18 refs.

Geocryology, Pleistocene, Permafrost physics, Frozen ground chemistry, Frozen ground mechanics, Natural gas, Hydrates, Detection, Loess, Degradation, Subsidence, Russia

53-1691

Diverse organic-walled fossils, including "possible dinoflagellates," from the early Neoproterozoic of arctic Canada.

Butterfield, N.J., Rainbird, R.H., *Geology*, Nov. 1998, 26(11), p.963-966, 23 refs.

Pleistocene, Paleocology, Bacteria, Fossils, Earth crust, Lithology, Thin sections, Classifications, Canada—Northwest Territories—Victoria Island

53-1692

Search for evidence of impact at the Permian-Triassic boundary in Antarctica and Australia.

Retallack, G.J., Seyedolali, A., Krull, E.S., Holser, W.T., Ambers, C.P., Kyte, F.T., *Geology*, Nov. 1998, 26(11), p.979-982, 38 refs.

Pleistocene, Earth crust, Sediment transport, Explosion effects, Impact, Geomorphology, Paleobotany, Survival, Detection, Ice age theory, Australia, Antarctica

53-1693

Proxy of monsoon seasonality in carbon isotopes from paleosols of the southern Chinese Loess Plateau.

Wang, H., Follmer, L.R., *Geology*, Nov. 1998, 26(11), p.987-990, 21 refs.

Paleoclimatology, Climatic changes, Precipitation (meteorology), Loess, Paleocology, Biomass, Organic soils, Carbon isotopes, Isotope analysis, Seasonal variations, Correlation, China—Loess Plateau

53-1694

Abrupt deep-sea warming at the end of the Cretaceous.

Li, L.Q., Keller, G., *Geology*, Nov. 1998, 26(11), p.995-998, 21 refs.

Pleistocene, Paleoclimatology, Climatic changes, Surface temperature, Global warming, Marine deposits, Drill core analysis, Stratigraphy, Isotope analysis, Atlantic Ocean

53-1695

Cold reversal on Kodiak Island, Alaska, correlated with the European Younger Dryas by using variations of atmospheric <sup>14</sup>C content.

Hajdas, I., Bonani, G., Bodén, P., Peteet, D.M., Mann, D.H., *Geology*, Nov. 1998, 26(11), p.1047-1050, 26 refs.

Pleistocene, Paleoclimatology, Climatic changes, Lacustrine deposits, Paleocology, Carbon isotopes, Isotope analysis, Radioactive age determination, Geochronology, Correlation, United States—Alaska—Kodiak Island, Sweden

53-1696

Dynamic types of alluvial gold placers in northeastern Russia.

Gol'dfarb, I.U.I., *Lithology and mineral resources*, Sep.-Oct. 1998, 33(5), p.418-431, Translated from *Litologiya i poleznye iskopaemye*. 43 refs.

Mineralogy, Gold, Subpolar regions, Alluvium, Valleys, Geologic processes, Erosion, Sediment transport, Sampling, Classifications, Lithology, Russia

53-1697

Features of <sup>137</sup>Cs accumulation by different bottom sediments in coastal waters of the Barents and Kara Seas.

Matishov, G.G., Matishov, D.G., Namiatov, A.A., Kukina, N.A., Mitiaev, M.V., *Lithology and mineral resources*, Sep.-Oct. 1998, 33(5), p.482-485, Translated from *Litologiya i poleznye iskopaemye*. 5 refs.

Marine geology, Oceanography, Subpolar regions, Bottom sediment, Radioactive wastes, Absorption, Radioactive isotopes, Environmental tests, Lithology, Russia—Kara Sea, Barents Sea

53-1698

Influence of ice sheets and weathering crusts on placer formation in the Baltic Shield.

Evzerov, V.I.A., *Lithology and mineral resources*, Sep.-Oct. 1998, 33(5), p.486-490, Translated from *Litologiya i poleznye iskopaemye*. 21 refs.

Pleistocene, Subpolar regions, Earth crust, Glacial geology, Glacial deposits, Sedimentation, Quaternary deposits, Weathering, Mineralogy, Gold, Theories, Russia—Kola Peninsula

53-1699

Spatial structure of populations of pseudoviviparous alpine bluegrass in the Yamal Peninsula (*Poa alpigena* subsp. *colpodea* (Th. Fries) Jurtz. & Petrovsky, Poaceae).

Sarapul'tsev, I.E., Semerikov, V.L., *Russian journal of ecology*, Nov.-Dec. 1998, 29(6), p.380-383, Translated from *Ekologiya*. 12 refs.

Tundra vegetation, Subpolar regions, Plant ecology, Plant physiology, Grasses, Plant tissues, Chemical composition, Classifications, Vegetation patterns, Sampling, Russia—Yamal Peninsula

53-1700

Ecotoxicological approach to setting standards for anthropogenic load on northern water bodies.

Moiseenko, T.I., *Russian journal of ecology*, Nov.-Dec. 1998, 29(6), p.406-415, Translated from *Ekologiya*. 31 refs.

Ecology, Surface waters, Water pollution, Radioactivity, Waste disposal, Sampling, Standards, Indexes (ratios), Environmental tests, Environmental protection, Russia—Kola Peninsula

53-1701

Relationships between flow hydraulics, sediment supply, bedload transport and channel stability in the proglacial Virkisa River, Iceland.

Nicholas, A.P., Sambrook Smith, G.H., *Geografiska annaler*, 1998, 80A(2), p.111-122, 32 refs.

Geomorphology, Subarctic landscapes, River flow, Sediment transport, Hydraulics, Channels (waterways), Stability, Water erosion, Sampling, Iceland—Virkisa River

53-1702

Nature and dynamics of an active block stream, Kunlun Pass, Qinghai Province, People's Republic of China.

Harris, S.A., Cheng, G., Zhao, X., Ding, Y.Q., *Geografiska annaler*, 1998, 80A(2), p.123-133, 24 refs.

Geomorphology, Landforms, Mountain soils, Rock streams, Rock properties, Sliding, Solifluction, Slope processes, Meltwater, Permafrost origin, Sediment transport, Profiles, China—Qinghai Province

53-1703

Cryoplanation terrace orientation in Alaska.

Nelson, F.E., *Geografiska annaler*, 1998, 80A(2), p.135-151, 76 refs.

Geomorphology, Landforms, Periglacial processes, Terraces, Altiplanning, Cirques, Orientation, Statistical analysis, Correlation, United States—Alaska

53-1704

Microstructures of low and middle-level clouds over the Beaufort Sea.

Hobbs, P.V., Rangno, A.L., *Royal Meteorological Society. Quarterly journal B*, July 1998, 124(550), p.2035-2071, 52 refs.

Climatology, Aerial surveys, Polar atmospheres, Cloud cover, Classifications, Cloud physics, Microstructure, Ice crystal size, Ice water interface, Water content, Probes, Spectroscopy, Profiles, Beaufort Sea

53-1705

Maximum density effect on laminar water pipe flow solidification.

Tsai, C.W., Yang, S.J., Hwang, G.J., *International journal of heat and mass transfer*, Dec. 1998, 41(24), p.4251-4257, 8 refs.

Water pipes, Water flow, Laminar flow, Water temperature, Density (mass/volume), Convection, Heat transfer, Ice cover thickness, Solidification, Ice water interface, Freezing points, Analysis (mathematics)

53-1706

Simulated climate change effects on year-round water temperatures in temperate zone lakes.

Stefan, H.G., Fang, X., Hondzo, M., *Climatic change*, Dec. 1998, 40(3-4), p.547-576, 53 refs.

Climatology, Climatic changes, Limnology, Water temperature, Thermal regime, Lake ice, Freezeup, Stratification, Ice water interface, Ice cover effect, Mathematical models, Forecasting, United States—Minnesota

53-1707

Natural fluctuations of firn densification and their effect on the geodetic determination of ice sheet mass balance.

Arthern, R.J., Wingham, D.J., *Climatic change*, Dec. 1998, 40(3-4), p.605-624, 34 refs.

Climatology, Climatic changes, Glacier mass balance, Ice sheets, Ice cover thickness, Firn, Snow accumulation, Snow compaction, Snow density, Ice cores, Geodesy, Mathematical models, Greenland, Antarctica—Byrd Station

53-1708

Theoretical modeling of seismic noise propagation in firn at the South Pole, Antarctica.

Albert, D.G., MP 5255, *Geophysical research letters*, Dec. 1, 1998, 25(23), p.4257-4260, 21 refs.

Seismology, Geophysical surveys, Snow physics, Firn, Boreholes, Sensors, Seismic refraction, Wave propagation, Attenuation, Noise (sound), Models, Theories, Countermeasures, Antarctica—Amundsen-Scott Station

The problem of interfering noise (produced by ground vehicles) on teleseismic arrivals recorded by Global Seismic Network sensors at Amundsen-Scott Station is addressed. Using the wavenumber integration method, theoretically calculated seismograms show that installing the GSN sensors in a borehole 200 to 300 m deep, 10 km away from the station, will significantly reduce the vehicle-generated noise and improve signal quality. Because the intrinsic attenuation of seismic waves propagating in the polar firn is low, most of the predicted noise reduction results from wavefront spreading, Rayleigh wave amplitude decay with depth, and from placing the sensors below the refractive waveguide that traps much of the seismic energy in the near surface layers.

53-1709

Mantle viscosity inferences from joint inversions of Pleistocene deglaciation-induced changes in geopotential with a new SLR analysis and polar wander.

Vermeers, L.L.A., et al, *Geophysical research letters*, Dec. 1, 1998, 25(23), p.4261-4264, 21 refs.

Pleistocene, Glacial geology, Glacier oscillation, Geologic structures, Viscosity, Isostasy, Continental drift, Profiles, Simulation, Spectra, Ice age theory, Antarctica, Greenland

53-1710

Estimates of ice thickness in Conamara Chaos region of Europa.

Williams, K.K., Greeley, R., *Geophysical research letters*, Dec. 1, 1998, 25(23), p.4273-4276, 24 refs.

Satellites (natural), Extraterrestrial ice, Ice mechanics, Spaceborne photography, Infrared photography, Regolith, Topographic features, Ground ice, Ice cover thickness, Buoyancy, Flexural strength, Elastic properties

53-1711

Conamara Chaos region, Europa: reconstruction of mobile polygonal ice blocks.

Spaun, N.A., Head, J.W., Collins, G.C., Prockter, L.M., Pappalardo, R.T., *Geophysical research letters*, Dec. 1, 1998, 25(23), p.4277-4280, 6 refs.

Satellites (natural), Extraterrestrial ice, Spaceborne photography, Infrared spectroscopy, Regolith, Geologic processes, Ice mechanics, Ground ice, Polygonal topography, Orientation, Temperature effects

53-1712

Ozone loss rates in the arctic stratosphere in the winter 1991/92: model calculations compared with Match results.

Becker, G., Müller, R., McKenna, D.S., Rex, M., Carslaw, K.S., *Geophysical research letters*, Dec. 1, 1998, 25(23), p.4325-4328, 26 refs.

Climatology, Climatic changes, Polar atmospheres, Stratosphere, Ozone, Photochemical reactions, Degradation, Models, Sounding, Seasonal variations, Accuracy, Correlation



53-1713

**Evidence of heterogeneous bromine chemistry on cold stratospheric sulphate aerosols.**

Erle, F., Grendel, A., Perner, D., Platt, U., Pfeilsticker, K., *Geophysical research letters*, Dec. 1, 1998, 25(23), p.4329-4332, 26 refs.

Climatology, Climatic changes, Cloud physics, Polar atmospheres, Polar stratospheric clouds, Aerosols, Heterogeneous nucleation, Photochemical reactions, Spectroscopy, Models, Temperature effects, Sweden—Kiruna

53-1714

**Numerical study of the contrail-to-cirrus transition.**

Gierens, K., Jensen, E., *Geophysical research letters*, Dec. 1, 1998, 25(23), p.4341-4344, 17 refs.

Climatology, Cloud physics, Condensation trails, Aerosols, Dispersions, Phase transformations, Heterogeneous nucleation, Ice crystal growth, Ice crystal size, Spectra, Ice vapor interface, Mathematical models, Temperature effects

53-1715

**25-year record of 10 kHz sferics noise in Antarctica: Implications for tropical lightning levels.**

Watkins, N.W., Clilverd, M.A., Smith, A.J., Yearby, K.H., *Geophysical research letters*, Dec. 1, 1998, 25(23), p.4353-4356, 15 refs.

Climatology, Global warming, Polar atmospheres, Air temperature, Thunderstorms, Lightning, Solar activity, Radio waves, Low frequencies, Statistical analysis, Periodic variations, Temperature effects, Antarctica

53-1716

**Arctic sea ice extent and melt onset from NSCAT observations.**

Yueh, S.H., Kwok, R., *Geophysical research letters*, Dec. 1, 1998, 25(23), p.4369-4372, 6 refs.

Oceanography, Spaceborne photography, Synthetic aperture radar, Backscattering, Ice surveys, Sea ice distribution, Ice melting, Ice edge, Surface temperature, Snow air interface, Temperature effects, Arctic Ocean

53-1717

**Aeromagnetic evidence for a volcanic caldera(?) complex beneath the divide of the West Antarctic ice sheet.**

Behrendt, J.C., Finn, C.A., Blankenship, D., Bell, R.E., *Geophysical research letters*, Dec. 1, 1998, 25(23), p.4385-4388, 16 refs.

Glacial geology, Ice sheets, Subglacial observations, Magnetic surveys, Radio echo soundings, Geomagnetism, Magnetic anomalies, Magma, Tectonics, Bedrock, Profiles, Antarctica—West Antarctica

53-1718

**Comment on "Diffusion of HNO<sub>3</sub> in ice".**

Dominé, F., Thibert, E., Sommerfeld, R.A., Knight, C.A., Laird, S.K., *Geophysical research letters*, Dec. 1, 1998, 25(23), p.4389-4392, Includes reply. 13 refs. For pertinent paper see 52-5196.

Ice physics, Doped ice, Ice vapor interface, Aerosols, Vapor diffusion, Experimentation, Sampling, Impurities, Laboratory techniques, Accuracy

53-1719

**Sea level and peaks, cold and darkness—the miles and extremes of highway avalanche control in Alaska. *Avalanche review*, Dec. 1998, 17(2), p.1,4,5.**

Avalanches, Accidents, Safety, Road maintenance, Highway planning, United States—Alaska

53-1720

**Experience with microphotography of buried surface hoar.**

Geldsetzer, T., Jamieson, B., Johnston, C., *Avalanche review*, Dec. 1998, 17(2), p.6-8, 6 refs.

Snow crystal structure, Hoarfrost, Depth hoar, Snow cover structure, Snow strength, Ice crystal replicas, Photographic techniques

53-1721

**Companion rescue and avalanche transceivers: the U.S. experience.**

Atkins, D., *Avalanche review*, Dec. 1998, 17(2), p.9-10, 5 refs.

Avalanches, Accidents, Rescue operations, Rescue equipment, Radio beacons, United States

53-1722

**Fuse news north of 49.**

Boissoneault, M., *Avalanche review*, Dec. 1998, 17(2), p.11.

Avalanche triggering, Blasting, Explosives, Cost analysis, Canada

53-1723

**Analytical and experimental investigation of thermal stratification in lakes and ponds.**

Dake, J.M.K., Harleman, D.R.F., *Massachusetts Institute of Technology. Hydrodynamics Laboratory. Report*, Sep. 1966, No.99, 271p., Refs. p.253-262.

Lakes, Ponds, Reservoirs, Limnology, Lake water, Water temperature, Temperature distribution, Temperature gradients, Heat transfer, Heat flux, Heat balance, Thermal analysis, Mathematical models

53-1724

**Principles of glacier mechanics.**

Hooke, R.L., Upper Saddle River, NJ, Prentice Hall, 1998, 248p., Refs. p.236-243.

DLC GB2403.2.H66 1998

Glacier flow, Glacier friction, Glacier ice, Ice creep, Glacier beds, Glacial hydrology, Subglacial drainage, Glacier mass balance, Glacier oscillation, Glacial geology, Mathematical models

53-1725

**Arctic research of the United States, Vol.12, Spring/Summer 1998.**

U.S. Interagency Arctic Research Policy Committee, Myers, C.E., ed, Haugh, J., ed, Cate, D.W., ed, Valiere, D.R., ed, MP 5256, Arlington, VA, U.S. National Science Foundation, Office of Polar Programs, 1998, 152p.

Organizations, Research projects, Regional planning, Cost analysis

53-1726

**Late glacial and early Holocene palaeoenvironmental changes in Geneva Bay (Lake Geneva, Switzerland).**

Moscariello, A., Schneider, A.M., Filippi, M.L., *Palaeogeography, palaeoclimatology, palaeoecology*, July 1998, 140(1-4), Limno-Geological Congress, 1st, Copenhagen, Denmark, Aug. 21-25, 1995. Proceedings. Edited by N. Noe-Nygaard, p.51-73, Refs. p.70-73.

Paleoclimatology, Climatic changes, Limnology, Paleocology, Alpine landscapes, Lacustrine deposits, Quaternary deposits, Sedimentation, Shore erosion, Geochronology, Stratigraphy, Drill core analysis, Switzerland—Geneva, Lake

53-1727

**Severe drought in the early Holocene (10,000-6800 BP) interpreted from lake sediment cores, southwestern Alberta, Canada.**

Beierle, B., Smith, D.G., *Palaeogeography, palaeoclimatology, palaeoecology*, July 1998, 140(1-4), Limno-Geological Congress, 1st, Copenhagen, Denmark, Aug. 21-25, 1995. Proceedings. Edited by N. Noe-Nygaard, p.75-83, 13 refs.

Paleoclimatology, Climatic changes, Evaporation, Limnology, Paleocology, Glacier oscillation, Quaternary deposits, Lacustrine deposits, Drill core analysis, Stratigraphy, Geochronology, Canada—Alberta—Cartwright Lake

53-1728

**Contribution to the lithostratigraphy and history of Lake Ladoga.**

Subetto, D.A., Davydova, N.N., Rybalko, A.E., *Palaeogeography, palaeoclimatology, palaeoecology*, July 1998, 140(1-4), Limno-Geological Congress, 1st, Copenhagen, Denmark, Aug. 21-25, 1995. Proceedings. Edited by N. Noe-Nygaard, p.113-119, 15 refs.

Pleistocene, Limnology, Lacustrine deposits, Paleoclimatology, Quaternary deposits, Water level, Sedimentation, Drill core analysis, Stratigraphy, Lithology, Geochronology, Russia—Ladoga, Lake

53-1729

**Late Triassic lake system in East Greenland: facies, depositional cycles and palaeoclimate.**

Clemmensen, L.B., Kent, D.V., Jenkins, F.A., Jr., *Palaeogeography, palaeoclimatology, palaeoecology*, July 1998, 140(1-4), Limno-Geological Congress, 1st, Copenhagen, Denmark, Aug. 21-25, 1995. Proceedings. Edited by N. Noe-Nygaard, p.135-159, 41 refs.

Pleistocene, Paleoclimatology, Climatic changes, Desiccation, Limnology, Subpolar regions, Lacustrine deposits, Sedimentation, Water level, Solar radiation, Stratigraphy, Greenland

53-1730

**Syn-volcanic Naajaat lake, Paleocene of West Greenland.**

Pedersen, G.K., Larsen, L.M., Pedersen, A.K., Hjortkjær, B.F., *Palaeogeography, palaeoclimatology, palaeoecology*, July 1998, 140(1-4), Limno-Geological Congress, 1st, Copenhagen, Denmark, Aug. 21-25, 1995. Proceedings. Edited by N. Noe-Nygaard, p.271-287, 30 refs.

Pleistocene, Geomorphology, Subpolar regions, Limnology, Quaternary deposits, Lacustrine deposits, Magma, Subsidence, Fluid dynamics, Water level, Stratigraphy, Lithology, Greenland

53-1731

**Evidence for Late Glacial and Holocene environmental changes from subfossil assemblages in sediments of Lake Neuchâtel, Switzerland.**

Schwab, A., Hadorn, P., Thew, N., Straub, F., *Palaeogeography, palaeoclimatology, palaeoecology*, July 1998, 140(1-4), Limno-Geological Congress, 1st, Copenhagen, Denmark, Aug. 21-25, 1995. Proceedings. Edited by N. Noe-Nygaard, p.307-323, 68 refs.

Pleistocene, Paleoclimatology, Climatic changes, Insolation, Limnology, Alpine landscapes, Watersheds, Sedimentation, Glacier oscillation, Lacustrine deposits, Paleocology, Classifications, Stratigraphy, Switzerland—Neuchâtel, Lake

53-1732

**Comparative sequence stratigraphy of low-latitude versus high-latitude lacustrine rift basins: seismic data examples from the East African and Balkan rifts.**

Scholz, C.A., Moore, T.C., Jr., Hutchinson, D.R., Golmshtok, A.I.A., Klitgord, K.D., Kurochkin, A.G., *Palaeogeography, palaeoclimatology, palaeoecology*, July 1998, 140(1-4), Limno-Geological Congress, 1st, Copenhagen, Denmark, Aug. 21-25, 1995. Proceedings. Edited by N. Noe-Nygaard, p.401-420, 62 refs.

Geomorphology, Limnology, Water level, Subpolar regions, Tectonics, Lacustrine deposits, Sedimentation, Deltas, Seismic reflection, Profiles, Stratigraphy, Africa—Tanganyika, Lake, Russia—Baykal, Lake

53-1733

**Natural environmental changes indicated by Late Glacial and Holocene sediments from Lake Constance, Germany.**

Wessels, M., *Palaeogeography, palaeoclimatology, palaeoecology*, July 1998, 140(1-4), Limno-Geological Congress, 1st, Copenhagen, Denmark, Aug. 21-25, 1995. Proceedings. Edited by N. Noe-Nygaard, p.421-432, 37 refs.

Pleistocene, Paleoclimatology, Climatic changes, Glacier oscillation, Limnology, Lacustrine deposits, Sedimentation, Loess, Insolation, Radioactive age determination, Geochronology, Germany—Constance, Lake

53-1734

**Vibracoring: a new method for coring deep lakes.**

Smith, D.G., *Palaeogeography, palaeoclimatology, palaeoecology*, July 1998, 140(1-4), Limno-Geological Congress, 1st, Copenhagen, Denmark, Aug. 21-25, 1995. Proceedings. Edited by N. Noe-Nygaard, p.433-440, 14 refs.

Limnology, Lacustrine deposits, Quaternary deposits, Coring, Core samplers, Lake ice, Subglacial observations, Ice drills, Design, Performance

53-1735

**Living benthic foraminifers from the central Arctic Ocean: faunal composition, standing stock and diversity.**

Wollenburg, J.E., Mackensen, A., *Marine micropaleontology*, Sep. 1998, 34(3-4), p.153-185, Refs. p.182-185.

Marine biology, Biogeography, Ocean bottom, Biomass, Ecology, Classifications, Ice cover effect, Drill core analysis, Statistical analysis, Arctic Ocean

53-1736

**Planktic foraminiferal transfer function for the southern South Atlantic Ocean.**

Niebler, H.S., Gersonde, R., *Marine micropaleontology*, Sep. 1998, 34(3-4), p.213-234, Refs. p.231-234.

Oceanography, Marine biology, Biomass, Plankton, Classifications, Biogeography, Bottom sediment, Drill core analysis, Water temperature, Statistical analysis, South Atlantic Ocean

53-1737

**Magnetic stratigraphy and sedimentology of Holocene glacial marine deposits in the Palmer Deep, Bellingshausen Sea, Antarctica: implications for climatic change?**

Kirby, M.E., Domack, E.W., McClennen, C.E., *Marine geology*, Dec. 1998, 152(4), p.247-259, 27 refs.

Pleistocene, Paleoclimatology, Climatic changes, Marine geology, Glacial geology, Paleocology, Sediment transport, Remanent magnetism, Drill core analysis, Stratigraphy, Geochronology, Antarctica—Antarctic Peninsula

53-1738

**Distribution and dispersal pattern of suspended particulate matter in Maxwell Bay and its tributary, Marian Cove, in the South Shetland Islands, West Antarctica.**

Yoon, H.I., Park, B.K., Domack, E.W., Kim, Y., *Marine geology*, Dec. 1998, 152(4), p.261-275, 25 refs.

Marine geology, Glacial hydrology, Ice shelves, Ocean currents, Suspended sediments, Distribution, Glacier melting, Meltwater, Turbidity, Sampling, Profiles, Antarctica—Maxwell Bay

53-1739

**Stage of denudation and Cenozoic evolution of the relief in the northeastern part of the Anabar antecline (Siberian Platform).**

Novikov, I.S., *Russian geology and geophysics*, 1997, 38(9), p.1501-1510, Translated from *Geologiya i geofizika*. 16 refs.

Pleistocene, Subpolar regions, Plains, Watersheds, Surface drainage, Geomorphology, Quaternary deposits, Surface drainage, Profiles, Gold, Russia—Siberia

53-1740

**Ebe-Khaya dike belt of trachyolerites in the north of the Siberian Platform.**

Tomshin, M.D., Okrugin, A.V., Savvinov, V.T., Shakhot'ko, L.I., *Russian geology and geophysics*, 1997, 38(9), p.1511-1520, Translated from *Geologiya i geofizika*. 14 refs.

Pleistocene, Geological surveys, Earth crust, Subpolar regions, Magma, Chemical composition, Geologic processes, Distribution, Fracture zones, Geochemistry, Lithology, Russia—Siberia

53-1741

**Kinematics of the Earth's surface in West Siberia from the results obtained by instrumental techniques.**

Kolmogorov, V.G., *Russian geology and geophysics*, 1997, 38(9), p.1575-1585, Translated from *Geologiya i geofizika*. 16 refs.

Tectonics, Subpolar regions, Earth crust, Geological maps, Deformation, Velocity measurement, Geodesy, Russia—Siberia

53-1742

**Flow of antarctic bottom water to the southwest Indian Ocean estimated using CFCs.**

Haine, T.W.N., Watson, A.J., Liddicoat, M.I., Dickson, R.R., *Journal of geophysical research*, Nov. 15, 1998, 103(C12), p.27,637-27,653, Refs. p.27,651-27,653.

Oceanography, Oceanographic surveys, Subpolar regions, Ocean currents, Hydrography, Ventilation, Water transport, Mathematical models, Antarctica—Weddell Sea, Indian Ocean

53-1743

**Air-sea interaction over a thermal marine front in the Denmark Strait.**

Vihma, T., Uotila, J., Launiainen, J., *Journal of geophysical research*, Nov. 15, 1998, 103(C12), p.27,665-27,678, 44 refs.

Climatology, Marine atmospheres, Fronts (meteorology), Subpolar regions, Air water interactions, Boundary layer, Surface temperature, Turbulent diffusion, Thermal diffusion, Heat flux, Sounding, Wind factors, Denmark Strait

53-1744

**Is the Arctic Ocean warming?**

Grottefendt, K., Logemann, K., Quadfasel, D., Ronski, S., *Journal of geophysical research*, Nov. 15, 1998, 103(C12), p.27,679-27,687, 44 refs.

Climatology, Polar atmospheres, Air temperature, Climatic changes, Global warming, Hydrography, Ocean currents, Advection, Water temperature, Statistical analysis, Seasonal variations, Theories, Arctic Ocean

53-1745

**3-D coupled ice-ocean model applied to Hudson Bay, Canada: the seasonal cycle and time-dependent climate response to atmospheric forcing and runoff.**

Saucier, F.J., Dionne, J., *Journal of geophysical research*, Nov. 15, 1998, 103(C12), p.27,689-27,705, 62 refs.

Climatology, Sea ice distribution, Air ice water interaction, Runoff, Heat flux, Surface temperature, Ice cover thickness, Ice cover effect, Snow cover effect, Seasonal variations, Ice models, Mathematical models, Thermodynamics, Canada—Hudson Bay

53-1746

**Anthropogenic carbon dioxide in the Arctic Ocean: inventory and sinks.**

Anderson, L.G., Olsson, K., Jones, E.P., Chierici, M., Fransson, A., *Journal of geophysical research*, Nov. 15, 1998, 103(C12), p.27,707-27,716, 27 refs.

Oceanography, Ocean currents, Ventilation, Water chemistry, Carbon dioxide, Distribution, Solubility, Vapor transfer, Air water interactions, Ice cover effect, Environmental tests, Sampling, Mathematical models, Arctic Ocean

53-1747

**Variability in Bering Sea ice cover as affected by a regime shift in the North Pacific in the period 1947-1996.**

Niebauer, H.J., *Journal of geophysical research*, Nov. 15, 1998, 103(C12), p.27,717-27,737, 32 refs.

Climatology, Climatic changes, Marine atmospheres, Sea ice distribution, Atmospheric circulation, Atmospheric pressure, Air ice water interaction, Seasonal variations, Statistical analysis, Pacific Ocean, Bering Sea

53-1748

**Effect of included particulates on the spectral albedo of sea ice.**

Light, B., Eicken, H., Maykut, G.A., Grenfell, T.C., *Journal of geophysical research*, Nov. 15, 1998, 103(C12), p.27,739-27,752, 64 refs.

Oceanography, Sea ice, Ice optics, Albedo, Ice composition, Sediments, Particles, Haze, Light scattering, Radiation absorption, Radiometry, Mathematical models, Arctic Ocean

53-1749

**Observation of perennial arctic sea ice melt and freeze-up using passive microwave data.**

Smith, D.M., *Journal of geophysical research*, Nov. 15, 1998, 103(C12), p.27,753-27,769, 40 refs.

Oceanography, Ice surveys, Sea ice distribution, Ice optics, Radiometry, Surface temperature, Ice air interface, Seasonal freeze thaw, Ice melting, Freeze-up, Detection, Brightness, Models, Arctic Ocean

53-1750

**Production of ice and dense shelf water in the Okhotsk Sea polynyas.**

Martin, S., Drucker, R., Yamashita, K., *Journal of geophysical research*, Nov. 15, 1998, 103(C12), p.27,771-27,782, 22 refs.

Oceanography, Sea ice distribution, Ice formation, Air ice water interaction, Polynyas, Heat flux, Brines, Density (mass/volume), Radiometry, Mathematical models, Wind factors, Okhotsk Sea

53-1751

**Spreading of juvenile freshwater in the Baltic proper.**

Eilola, K., Stigebrandt, A., *Journal of geophysical research*, Nov. 15, 1998, 103(C12), p.27,795-27,807, 22 refs.

Oceanography, Subpolar regions, Ocean currents, Dispersions, Estuaries, Runoff, Diffusion, Stratification, Hydrography, Seasonal variations, Air water interactions, Baltic Sea

53-1752

**Late Neoproterozoic periglacial aeolian sand sheet, Stuart Shelf, South Australia.**

Williams, G.E., *Australian journal of earth sciences*, Oct. 1998, 45(5), p.733-741, 43 refs.

Periglacial processes, Geologic structures, Cryogenic structures, Wind factors, Eolian soils, Stratigraphy, Paleoclimatology, Australia

53-1753

**Evaluation of the wind chill factor: its development and applicability.**

Blustein, M., *Journal of biomechanical engineering*, Apr. 1998, 120(2), p.255-258, 12 refs.

Wind chill, Air temperature, Wind velocity, Cold exposure, Physiological effects

53-1754

**Thermal expansion measurements of frozen biological tissues at cryogenic temperatures.**

Rabin, Y., Taylor, M.J., Wolmark, N., *Journal of biomechanical engineering*, Apr. 1998, 120(2), p.259-266, 33 refs.

Cryogenics, Cryobiology, Thermal expansion, Thermal stresses, Physiological effects

53-1755

**Phanerozoic stratigraphy of Northwind Ridge, magnetic anomalies in the Canada basin, and the geometry and timing of rifting in the Amerasia basin, Arctic Ocean.**

Grantz, A., Clark, D.L., Phillips, R.L., Srivastava, S.P., *Geological Society of America. Bulletin*, June 1998, 110(6), p.801-820, Refs. p.818-820.

Oceanographic surveys, Subsurface structures, Marine geology, Geological surveys, Tectonics, Stratigraphy, Continental drift, Arctic Ocean, Beaufort Sea

53-1756

**Effects of solids content and curing time on freeze/thaw conditioning of water treatment residuals.**

Parker, P.J., Collins, A.G., Dempsey, J.P., American Water Works Association Annual Conference, Water Research, Vol.C, June 15-19, 1997. Proceedings, Atlanta, GA, 1997, p.413-420, 6 refs.

DLC TD201.A592a Vol.C, 1997

Water treatment, Freeze thaw tests, Sludges, Artificial freezing, Freeze drying, Artificial thawing

53-1757

**Relationship between ectoenzymatic activity and availability of organic substrates (Ross Sea, Antarctica): an experimental approach.**

Misic, C., Povero, P., Fabiano, M., *Polar biology*, Dec. 1998, 20(6), p.367-376, Refs. p.374-376.

Substrates, Water chemistry, Experimentation, Sea water, Microbiology, Marine biology, Plankton, Suspended sediments, Nutrient cycle, Antarctica—Ross Sea

53-1758

**Infiltration phyto- and protozooplankton assemblages in the annual sea ice of Disko Island, West Greenland, spring 1996.**

Buck, K.R., Nielsen, T.G., Hansen, B.W., Gastrup-Hansen, D., Thomas, H.A., *Polar biology*, Dec. 1998, 20(6), p.377-381, 15 refs.

Marine biology, Plankton, Biomass, Sea water, Sea ice, Algae, Snow ice interface, Greenland—Disko Island

53-1759

**Acclimation of brown algal photosynthesis to ultraviolet radiation in Arctic coastal waters (Spitsbergen, Norway).**

Bischof, K., Hanelt, D., Tüg, H., Karsten, U., Brouwer, P.E.M., Wiencke, C., *Polar biology*, Dec. 1998, 20(6), p.388-395, Refs. p.395.

Algae, Acclimatization, Photosynthesis, Ultraviolet radiation, Sea water, Marine biology, Plant physiology, Norway—Spitsbergen

53-1760

**Seasonal variation in the biochemical composition of particulate material collected by sediment traps at Signy Island, Antarctica.**

Cripps, G.C., Clarke, A., *Polar biology*, Dec. 1998, 20(6), p.414-423, Refs. p.422-423.

Seasonal variations, Marine biology, Sediments, Suspended sediments, Chemical analysis, Sea water, Water chemistry, Algae, Plankton, Antarctica—Signy Island

53-1761

**Development in juvenile Weddell seals: diving, physiology, nutritional status, and survivorship.**

Burns, J.M., Castellini, M.A., Hastings, K.K., Zeniteno-Savin, T., *Antarctic journal of the United States*, 1996, 31(2), p.109-110, 7 refs.

Marine biology, Animals, Cold stress, Physiological effects, Cold weather survival, Acclimatization, Cold tolerance, Antarctica

53-1762

**Temperature compensation of enzymatic activities in brain of antarctic fishes: evidence for metabolic cold adaptation.**

Kawall, H.G., Somero, G.N., *Antarctic journal of the United States*, 1996, 31(2), p.115-117, 8 refs.

Cold tolerance, Marine biology, Animals, Low temperature research, Cold weather survival, Physiological effects, Cold stress, Acclimatization, Antarctica

53-1763

**Changes during development in activities of the sodium/potassium-ATPase enzyme in the antarctic sea urchin *Sterechinus neumayeri*.**

Leong, P.K.K., Manahan, D.T., *Antarctic journal of the United States*, 1996, 31(2), p.121-122, 5 refs.

Marine biology, Animals, Cold stress, Physiological effects, Acclimatization, Low temperature research, Cold weather survival, Cold tolerance, Antarctica

53-1764

**Food web structure and sinking particulate material in the Ross Sea polynya: December 1995 and January 1996.**

Gowing, M.M., Garrison, D.L., Kunze, H., Lessard, E.J., *Antarctic journal of the United States*, 1996, 31(2), p.125-127, 10 refs.

Marine biology, Biomass, Ecosystems, Nutrient cycle, Suspended sediments, Antarctica—Ross Sea

53-1765

**Dimethylsulfide concentrations in the southern Ross Sea during austral summer 1995-1996.**

DiTullio, G.R., *Antarctic journal of the United States*, 1996, 31(2), p.127-128, 11 refs.

Sea water, Chemical analysis, Nutrient cycle, Air water interactions, Oceanographic surveys, Antarctica—Ross Sea

53-1766

**Dissolved iron and manganese in surface waters of the Ross Sea, austral summer 1995-1996.**

Sedwick, P., DiTullio, G., Mackey, D., *Antarctic journal of the United States*, 1996, 31(2), p.128-130, 8 refs.

Sea water, Chemical analysis, Oceanographic surveys, Marine biology, Algae, Biomass, Antarctica—Ross Sea

53-1767

**U.S. Antarctic Marine Living Resources (AMLR) program: 1995-1996 field season activities.**

Martin, J.E., Hewitt, R.P., Holt, R.S., *Antarctic journal of the United States*, 1996, 31(2), p.131-133.

Research projects, Environmental impact, Oceanographic surveys, Sea water, Ecology, Marine biology, Antarctica—West Antarctica

53-1768

**AMLR program: distribution of volume backscattering strength near Elephant Island in the 1996 austral summer.**

Hewitt, R.P., Demer, D.A., *Antarctic journal of the United States*, 1996, 31(2), p.134-136, 2 refs.

Oceanographic surveys, Marine biology, Biomass, Environmental impact, Backscattering, Antarctica—Elephant Island

53-1769

**AMLR program: primary production and distribution of chlorophyll-*a* around Elephant Island, Antarctica, January to March 1996.**

Villafañe, V.E., Helbling, E.W., Holm-Hansen, O., Hernando, M.P., *Antarctic journal of the United States*, 1996, 31(2), p.137-140, 10 refs.

Oceanographic surveys, Biomass, Sea water, Chemical analysis, Photosynthesis, Marine biology, Chlorophylls, Antarctica—Elephant Island

53-1770

**AMLR program: inorganic nutrient concentrations around Elephant Island, Antarctica, January March 1996.**

Silva S., N., Calvete, T.C., Holm-Hansen, O., Villafañe, V.E., Helbling, E.W., *Antarctic journal of the United States*, 1996, 31(2), p.141-145, 12 refs.

Oceanographic surveys, Nutrient cycle, Sea water, Chemical analysis, Marine biology, Biomass, Antarctica—Elephant Island

53-1771

**AMLR program: the 7-year hitch—a meander in the circulation—near Elephant Island.**

Amos, A.F., Wickham, A.R., Rowe, C.C., *Antarctic journal of the United States*, 1996, 31(2), p.153-154, 9 refs.

Oceanographic surveys, Ocean currents, Surface waters, Water transport, Antarctica—Elephant Island

53-1772

**Palmer Long-Term Ecological Research (LTER): annual January cruise for 1996 (PD96-J).**

Vernet, M., Baker, K.S., *Antarctic journal of the United States*, 1996, 31(2), p.157-159, 3 refs.

Oceanographic surveys, Weather stations, Marine biology, Biomass, Ecology, Antarctica—West Antarctica

53-1773

**Palmer LTER: annual season October 1995 through March 1996.**

Baker, K.S., et al, *Antarctic journal of the United States*, 1996, 31(2), p.160-162, 5 refs.

Oceanographic surveys, Sea water, Chemical analysis, Meteorological data, Seasonal variations, Weather stations, Marine biology, Ecology, Antarctica—Palmer Station

53-1774

**Palmer LTER: Palmer Station air temperature 1974 to 1996.**

Baker, K.S., *Antarctic journal of the United States*, 1996, 31(2), p.162-164, 8 refs.

Air temperature, Meteorological charts, Ecology, Weather observations, Temperature variations, Antarctica—Palmer Station

53-1775

**Palmer LTER: annual seasonal sampling on station.**

Smith, R.C., *Antarctic journal of the United States*, 1996, 31(2), p.164-166, 3 refs.

Oceanographic surveys, Marine biology, Ecology, Seasonal variations, Hydrography, Nutrient cycle, Biomass, Sea water, Chemical analysis, Antarctica—Palmer Station

53-1776

**Palmer LTER: small boat design for water column sampling.**

Smith, R.C., Quetin, L.B., Jones, J.L., Menzies, D.W., Newberger, T.A., *Antarctic journal of the United States*, 1996, 31(2), p.167-169, 2 refs.

Oceanographic surveys, Oceanographic ships, Design, Sampling, Sea water, Measuring instruments, Recording instruments, Electronic equipment, Antarctica—Palmer Station

53-1777

**Palmer LTER: open-water profiling ultraviolet radiometer albedo measurements.**

Patterson, K.W., Handley, P.L., Smith, R.C., *Antarctic journal of the United States*, 1996, 31(2), p.170-171, 8 refs.

Oceanographic surveys, Ultraviolet radiation, Radiation measuring instruments, Radiometry, Sea water, Albedo, Brightness, Reflectivity, Antarctica—West Antarctica

53-1778

**Palmer LTER: seasonal comparison of spatially averaged estimates of krill abundance.**

Lascara, C.M., *Antarctic journal of the United States*, 1996, 31(2), p.172-174, 10 refs.

Oceanographic surveys, Marine biology, Underwater acoustics, Biomass, Seasonal variations, Antarctica—West Antarctica

53-1779

**Palmer LTER: interannual variability in near surface hydrography.**

Hofmann, E.E., Lascara, C.M., Klinck, J.M., Smith, D.A., *Antarctic journal of the United States*, 1996, 31(2), p.174-176, 4 refs.

Oceanographic surveys, Hydrography, Surface waters, Ocean currents, Periodic variations, Water temperature, Salinity, Antarctica—West Antarctica

53-1780

**Palmer LTER: temporal variability in the location of the Antarctic Circumpolar Current along the west Antarctic Peninsula continental shelf.**

Klinck, J.M., *Antarctic journal of the United States*, 1996, 31(2), p.176-178, 7 refs.

Oceanographic surveys, Ocean currents, Hydrography, Water temperature, Seasonal variations, Water flow, Antarctica—Antarctic Peninsula

53-1781

**Palmer LTER: comparison of meteorological observations from R/V Nathaniel B. Palmer to those at Palmer Station.**

Klinck, J.M., Smith, D.A., *Antarctic journal of the United States*, 1996, 31(2), p.179-181, 2 refs.

Weather observations, Weather stations, Meteorological data, Marine meteorology, Shores, Coastal topographic features, Antarctica—Palmer Station

53-1782

**Palmer LTER: temporal variability in primary production in Arthur Harbor during the 1995-1996 growth season.**

Vernet, M., Kozłowski, W., Rosenfield, J., Greaves, A., *Antarctic journal of the United States*, 1996, 31(2), p.181-182, 6 refs.

Oceanographic surveys, Marine biology, Ice cover effect, Plant physiology, Biomass, Seasonal variations, Antarctica—Arthur Harbor

53-1783

**Palmer LTER: paleohistory of the Palmer LTER region: Palmer Deep sedimentary record.**

LoPiccolo, M., Domack, E., *Antarctic journal of the United States*, 1996, 31(2), p.183-185, 4 refs.

Glacial deposits, Marine deposits, Sediments, Paleoclimatology, Geochemistry, Magnetic properties, Radioactive age determination, Bottom sediment, Drill core analysis, Antarctica—West Antarctica

53-1784

**McMurdo Dry Valleys Long-Term Ecological Research (LTER): an overview of 1995-1996 research activities.**

Jennings-Mays, S.E., Wharton, R.A., Jr., *Antarctic journal of the United States*, 1996, 31(2), p.187-188.

Research projects, Low temperature research, Ecology, Deserts, Ecosystems, Meteorological data, Glacier surfaces, Ablation, Slope processes, Antarctica—McMurdo Dry Valleys

53-1785

**McMurdo Dry Valleys LTER: the role of terminus cliff melt in streamflow, Taylor Valley, Antarctica.**

Lewis, K.J., Fountain, A.G., Langevin, P., *Antarctic journal of the United States*, 1996, 31(2), p.189-190, 3 refs.

Glacier melting, Stream flow, Ablation, Glacier surfaces, Meteorological data, Solar radiation, Antarctica—Taylor Valley

53-1786

**McMurdo Dry Valleys LTER: solar radiation on glaciers in Taylor Valley, Antarctica.**

Dana, G.L., Wharton, R.A., Jr., Fountain, A.G., *Antarctic journal of the United States*, 1996, 31(2), p.191-193, 5 refs.

Ice air interface, Glacier melting, Glacier surfaces, Solar radiation, Meteorological data, Albedo, Antarctica—Taylor Valley

53-1787

**McMurdo Dry Valleys LTER: spatial variation of glacier mass balance in Taylor Valley, Antarctica.**

Fountain, A.G., Lewis, K.J., Dana, G.L., *Antarctic journal of the United States*, 1996, 31(2), p.194-195, 10 refs.

Glacier mass balance, Glacier ablation, Glacier surfaces, Snow accumulation, Seasonal variations, Ice air interface, Climatic factors, Antarctica—Taylor Valley

53-1788

**McMurdo Dry Valleys LTER: stream discharge as a function of ambient temperature and incoming shortwave radiation in Taylor Valley, Antarctica.**

Moorhead, D.L., McKnight, D.M., *Antarctic journal of the United States*, 1996, 31(2), p.196-197, 9 refs.

Stream flow, Flow rate, Ice air interface, Meteorological factors, Air temperature, Solar radiation, Glacier melting, Antarctica—Taylor Valley

53-1789

**McMurdo Dry Valleys LTER: geophysical determination of bathymetry and morphology of Taylor Valley lakes.**

Doran, P.T., Wharton, R.A., Jr., Schmok, J.P., *Antarctic journal of the United States*, 1996, 31(2), p.198-200, 4 refs.

Limnology, Geophysical surveys, Geomorphology, Sounding, Geochemistry, Topographic surveys, Mapping, Antarctica—Bonney, Lake, Antarctica—Hoare, Lake, Antarctica—Fryxell, Lake

53-1790

**McMurdo Dry Valleys LTER: characterization of protozoan communities in lakes Hoare and Fryxell using artificial substrates.**

Kepner, R.L., Jr., Wharton, R.A., Jr., *Antarctic journal of the United States*, 1996, 31(2), p.201-202, 9 refs.

Limnology, Substrates, Ecosystems, Ecology, Algae, Geochemistry, Lake water, Antarctica—Hoare, Lake, Antarctica—Fryxell, Lake

53-1791

**McMurdo Dry Valleys LTER: genetic diversity of soil nematodes in the McMurdo Dry Valleys of Antarctica.**

Courtright, E.M., Freckman, D.W., Virginia, R.A., Thomas, W.K., *Antarctic journal of the United States*, 1996, 31(2), p.203-204, 8 refs.

Soil surveys, Desert soils, Low temperature research, Ecosystems, Animals, Acclimatization, Antarctica—McMurdo Dry Valleys

53-1792

**McMurdo Dry Valleys LTER: density-driven mixing in Lake Hoare?**

Lyons, W.B., Welch, K.A., Tyler, S.W., Sharma, P., *Antarctic journal of the United States*, 1996, 31(2), p.205, 6 refs.

Limnology, Geochemistry, Ice cover effect, Water chemistry, Water structure, Salinity, Water level, Ablation, Antarctica—Hoare, Lake

53-1793

**McMurdo Dry Valleys LTER: phosphorus deficiency and alkaline phosphatase activity in lakes of Taylor Valley, Antarctica.**

Dore, J.E., Priscu, J.C., *Antarctic journal of the United States*, 1996, 31(2), p.206-208, 7 refs.

Limnology, Ice cover effect, Plant physiology, Photosynthesis, Nutrient cycle, Water chemistry, Antarctica—Bonney, Lake, Antarctica—Hoare, Lake

53-1794

**Growth dynamics of *Phaeocystis antarctica*-dominated plankton assemblages from the Ross Sea.**

Smith, W.O., Jr., Carlson, C.A., Ducklow, H.W., Hansell, D.A., *Marine ecology progress series*, July 9, 1998, Vol.168, p.229-244, 52 refs.

Marine biology, Microbiology, Biomass, Plankton, Sea water, Water chemistry, Nutrient cycle, Organic nuclei, Solubility, Ecology, Growth, Sampling, Simulation, Antarctica—Ross Sea

53-1795

**Clustering and aggregations of minke whales in the antarctic feeding grounds.**

Kasamatsu, F., Ensor, P., Joyce, G.G., *Marine ecology progress series*, July 9, 1998, Vol.168, p.1-11, 28 refs.

Marine biology, Biomass, Ecology, Distribution, Oceanographic surveys, Aggregates, Statistical analysis, Antarctica—Weddell Sea

53-1796

**Erodibility and critical shear of a previously frozen soil.**

Van Klaveren, R.W., McCool, D.K., *American Society of Agricultural Engineers. Transactions*, 1998, 41(5), p.1315-1321, 18 refs.

Agriculture, Soil erosion, Water erosion, Soil conservation, Ground thawing, Frozen ground mechanics, Freeze thaw cycles, Interfacial tension, Shear stress, Shear properties, Mechanical tests

53-1797

**Vast training space lures diverse forces to Alaska.** Fulghum, D.A., *Aviation week & space technology*, Sep. 21, 1998, p.54-55, 57.

Military facilities, Aircraft, Airports, Warning systems, Military research, Subpolar regions, Education, Military operation, International cooperation, United States—Alaska

53-1798

**International Pavement Subgrade Performance Study.**

Macdonald, R., *Nordic road and transport research*, 1998, No.2, p.9-10, 3 refs.

Research projects, Road maintenance, Pavement bases, Subgrade soils, Deformation, Dynamic loads, Mechanical tests, Strain measuring instruments

53-1799

**Experimental test of limits to tree establishment in arctic tundra.**

Hobbie, S.E., Chapin, F.S., III, *Journal of ecology*, 1998, Vol.86, p.449-461, 48 refs.

Forest ecosystems, Forest tundra, Tundra climate, Greenhouse effect, Global warming, Forest lines, Tundra vegetation, Growth, Nutrient cycle, Ion exchange, Revegetation, Simulation, United States—Alaska—Toolik, Lake

53-1800

**Electrical charge may prevent ice build up.** *Chemical engineering progress*, May 1998, 94(5), p.12.

Aircraft icing, Ice prevention, Ice solid interface, Ice adhesion, Electric charge, Polarization (charge separation), Electrical resistivity, Ice electrical properties, Theories

53-1801

**Ground-penetrating radar reflection profiling of groundwater and bedrock in an area of discontinuous permafrost.**

Arcone, S.A., Lawson, D.E., Delaney, A.J., Strasser, J.C., Strasser, J.D., *MP 5257, Geophysics*, Sep.-Oct. 1998, 63(5), p.1573-1584, 37 refs.

Geophysical surveys, Discontinuous permafrost, Subpermafrost ground water, Radar echoes, Attenuation, Sediments, Alluvium, Bedrock, Unfrozen water content, Profiles, Interfaces, Dielectric properties, Well logging, Snow cover effect, United States—Alaska—Fort Wainwright

Ground-penetrating radar was used to profile the depth to permafrost, to groundwater beneath permafrost, and to bedrock within permafrost in alluvial sediments of interior Alaska. Well log data were used to aid the interpretations and to calculate dielectric permittivities for frozen and unfrozen materials. Interfaces between unfrozen and frozen sediments above permafrost were best resolved with wavelet bandwidths centered at and above 100 MHz. The resolution also required consideration of antenna configuration, season, and surface conditions. Depths to subpermafrost groundwater were profiled where it was in continuous contact with the bottom of the permafrost, except near transitions to unfrozen zones, where the contact appeared to dip steeply. The complexity of the responses to intrapermafrost bedrock, detected at a maximum depth of 47 m, appears to distinguish these events from those of subpermafrost saturated sediments. The relative dielectric permittivity ranged between 4.4 and 8.3 for the permafrost, and between 12 and 45 for partially to fully saturated, unfrozen silts and sands. Scattering losses are evident from intrapermafrost diffractions and from the improved penetration achieved by lowering the midband radar frequency from 100 to 50 MHz.

53-1802

**Sampling trace-level organic solutes with polymeric tubing: Part I. static studies.**

Parker, L.V., Ranney, T.A., *MP 5258, Ground water monitoring review*, 1997, Fall, p.115-124, 23 refs.

Ground water, Water pollution, Hydrocarbons, Solutions, Pipes (tubes), Polymers, Sampling, Accuracy, Tensile properties, Absorption, Leaching, Correlation Twenty polymeric tubings were filled with a test solution containing eight organic solutes. The test solutions were monitored for losses, indicating that sorption had occurred, and for signs that leaching of organic constituents had occurred. The tubings tested included seven flexible products and eight fluoropolymers. Among the rigid tubings tested, three fluoropolymers (fluorinated ethylene propylene [FEP], FEP-lined polyethylene, polyvinylidene fluoride) were the least sorptive tubings. However, even these tubings readily sorbed some of the analytes. Among the flexible tubings tested, a fluoropolymer tubing and a tubing made of a copolymer of vinylidene fluoride and hexafluoropropylene were the least sorptive. Several of the tubings tested leached constituents into the test solution. The polyurethane, polyamide, flexible polyvinyl chloride (PVC), polyester-lined PVC, and silicone-modified thermoplastic elastomer tub-

ings were found to leach the most constituents. The authors were unable to detect any constituents leaching from the polyethylene tubings, the rigid fluoropolymer tubings, and one of the plasticized polypropylene tubings.

### 53-1803

#### Sampling trace-level organic solutes with polymeric tubing: Part 2. dynamic studies.

Parker, L.V., Ranney, T.A., MP 5259, *Ground water monitoring review*, 1998, Winter, p.148-155, 12 refs.

Ground water, Water pollution, Hydrocarbons, Polymers, Pumps, Pipes (tubes), Solutions, Flow rate, Liquid solid interfaces, Absorption, Leaching, Tensile properties, Sampling, Classifications

This is the second part of a study conducted to determine whether polymeric sampling tubing can affect organic analyte concentrations during a sampling event. The authors looked for sorption and desorption of trichloroethylene (TCE) and leaching of organic constituents in water pumped through five types of polymeric tubing. The materials tested were a rigid fluoropolymer, a flexible fluoropolymer, low-density polyethylene (LDPE), and two plasticized polypropylene tubings. The effects of tubing length and flow rate were examined. The least sorptive tubings, both initially and at equilibrium, were the fluoropolymers. In some instances the LDPE tubing had little effect on TCE concentrations. This was when a slow flow rate was used to sample relatively shallow wells (50 feet or less) or when a faster flow rate (1 L/min) was used to sample wells that are less than 500 feet. Further testing is recommended using more sorptive analytes. High performance liquid chromatography did not detect any constituents leaching from any of the tubings used in these studies, even when a slow flow rate was used. However, desorption of sorbed analytes is a concern for all the tubings tested, including the rigid fluoropolymer.

### 53-1804

#### Comparison of fiberglass and other polymeric well casings: Part II. sorption and leaching of trace-level organics.

Ranney, T.A., Parker, L.V., MP 5260, *Ground water monitoring review*, 1998, Spring, p.107-112, 16 refs.

Ground water, Sampling, Water pollution, Hydrocarbons, Well casings, Polymers, Hydrocarbons, Leaching, Absorption, Degradation, Chemical composition, Classifications

This paper contains the results of a laboratory study that was designed to compare sorption of low concentrations of 11 organic solutes by six polymeric materials (acrylonitrile butadiene styrene [ABS], fluorinated ethylene propylene [FEP], fiberglass-reinforced epoxy [FRE] and fiberglass-reinforced plastic [FRP], polyvinyl chloride [PVC], and polytetrafluoroethylene [PTFE]). During this six-week study, ABS sorbed analytes much more rapidly and to a greater extent than did the other materials, and PVC and FRE sorbed analytes more slowly and to a lesser extent than the other materials tested. As the study progressed, an increasing number of spurious peaks were found in the high performance liquid chromatography chromatograms of some samples, indicating that leaching of some constituents had occurred. By the end of the study, there were 11 additional peaks in the ABS samples, five in the FRP samples, and one in the FRE samples. Analysis by purge and trap gas chromatography/mass spectrometry of those samples and of well water samples that were exposed to the casings for 500 hours revealed the identity of some of the leached constituents: acrylonitrile and styrene (components of ABS), chloroform and ethylbenzene (an intermediate in the production of styrene) from the ABS pipe, and toluene, 1,1,1-trichloroethane, and ethylbenzene from the FRP casing.

### 53-1805

#### Comparison of fiberglass and other polymeric well casings: Part III. sorption and leaching of trace-level metals.

Ranney, T.A., Parker, L.V., MP 5261, *Ground water monitoring review*, 1998, Summer, p.127-133, 21 refs.

Ground water, Water pollution, Well casings, Polymers, Cellular plastics, Chemical composition, Leaching, Absorption, Metals, Classifications, Performance

This series of experiments was initiated to determine the overall suitability of three alternative polymeric well casing materials (fluorinated ethylene propylene [FEP], fiberglass-reinforced epoxy [FRE], and fiberglass-reinforced plastic [FRP]) for use in ground water monitoring wells and to compare these materials with polyvinyl chloride (PVC) and polytetrafluoroethylene (PTFE) well casings. This paper focuses on sorption and leaching of metals. Generally, the fiberglass materials leached more metal contaminants than PVC, FEP, and PTFE. However, with one exception (Pb leaching from FRP), leached concentrations were below maximum allowable limits set by the U.S. Environmental Protection Agency for drinking water. With respect to sorption, none of the polymers sorbed the anions tested, but all of them sorbed one or more of the cations tested. FEP and PTFE were much less sorptive than the other materials.

### 53-1806

#### Electric vehicle traction and rolling resistance in winter.

Shoop, S.A., MP 5262, *Tire science and technology*, Apr.-June 1998, 26(2), p.64-83, 17 refs.

Vehicles, Tires, Traction, Sliding, Ice solid interface, Snow surface temperature, Cold weather performance, Cold weather tests, Dynamometers, Classifications

Low rolling resistance tires help optimize the economy of electric vehicle (EV) operation. Five types of EV tires were evaluated under cold weather conditions and compared with traditional winter tires in terms of traction and rolling resistance. Other contributions to vehicle resistance (brake drag, wheel bearing resistance, driveline resistance, and air drag) were also measured and used to estimate changes in total vehicle resistance and associated changes in range with temperature. At low speeds, tire rolling resistance is the primary contribution to increased vehicle resistance at cold temperatures, with snow tires having both higher resistance and a stronger dependence on temperature than low rolling resistance tires. Lowering tire pressure increases both resistance and temperature dependence for most tires but also improves traction and therefore may serve as a temporary safety measure in winter conditions.

### 53-1807

#### Fast, physically based point snowmelt model for use in distributed applications.

Albert, M., Krajewski, G., MP 5263, *Hydrological processes*, 1998, Vol.12, p.1809-1824, 20 refs.

Snow hydrology, Snow physics, Snowmelt, Rain, Ice water interface, Surface energy, Water flow, Mathematical models, Computerized simulation, Theories, Runoff forecasting

A new mathematical solution to the problem of water flow through snow is presented and its implementation in a snowmelt model, SNAP, is discussed. An analytical solution for vertical water flow through homogeneous snow is developed and formulae that allow the solution to accommodate time-varying surface input from rain or snowmelt are derived. This facilitates use of the technique in a computer snowmelt model. Because the new technique requires no matrix computation, it is sufficiently computationally efficient to be a candidate for use in watershed-scale, distributed forecasting systems. Because it is a physically-based model that takes into account the effect of the snow itself on the timing and magnitude of outflow, the model allows more accurate prediction of the magnitude and timing of snowmelt than in currently employed operational models. Results of the new model agree well with previous theoretical solutions and with field measurements of melt and rain-on-snow events in a seasonal snow pack.

### 53-1808

#### Condensation and frosting in energy wheels.

Simonson, C.J., Besant, R.W., Wilson, G.W., National Heat Transfer Conference, 32nd, Baltimore, MD, Aug. 8-12, 1997. Proceedings, Vol. 1: Current developments in numerical simulation of heat and mass transfer, New York, American Society of Mechanical Engineers, 1997, p.161-169, HTD-Vol.339, 17 refs.

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Heat transfer, Moisture transfer, Thermodynamics, Mathematical models, Condensation, Icing, Ventilation, Air conditioning, Dehumidification, Defrosting, Ice prevention

### 53-1809

#### Dredging as remediation for white phosphorus contamination at Eagle River Flats, Alaska.

Walsh, M.R., Collins, C.M., CR 98-05, *U.S. Army Cold Regions Research and Engineering Laboratory Report*, Aug. 1998, 32p., ADA-354 017, 20 refs.

Dredging, Sediments, Attenuation, Land reclamation, Military operation, Military facilities, Swamps, Explosives, Estuaries, Grain size, Water pollution, Soil pollution, United States—Alaska—Fort Richardson, United States—Alaska—Eagle River Flats

The Eagle River Flats impact area is a Ft. Richardson Superfund site. It is a salt marsh that is contaminated with white phosphorus, and remediation of sediments in permanently ponded areas may require dredging. A remotely piloted dredging system was designed, constructed, and deployed at the Flats as part of the overall site remediation feasibility study. Experience gained over two years of engineering study and contract operation indicates that, although feasible and effective, this alternative is slow, difficult and very expensive.

### 53-1810

#### Determination of nitroaromatic, nitramine, and nitrate ester explosives in water using SPE and GC-ECD: comparison with HPLC.

Walsh, M.E., Ranney, T.A., CR 98-02, *U.S. Army Cold Regions Research and Engineering Laboratory Report*, June 1998, 28p., ADA-353 441, 32 refs.

Explosives, Water pollution, Water chemistry, Chemical analysis

An analytical method for the determination of nitroaromatic, nitramine, and nitrate ester explosives and co-contaminants in water was developed based on SPE (solid-phase extraction) and GC-ECD (gas chromatograph-electron capture detector). Water samples are pre-concentrated using either cartridge or membrane SPE followed by elution with acetonitrile. The acetonitrile extract is compatible with both liquid and gas chromatography, allowing direct comparison of concentration estimates obtained by different methods of determination. Quantitative GC analyses were obtained by using deactivated direct-injection-port liners, short wide-bore capillary columns, and high linear carrier gas velocities. Recoveries from spiked samples were 90% or greater for each of the nitroaromatics and nitrate esters, and greater than 70% for nitramines and amino-nitrotoluenes. Estimates of analyte concentrations in well-water extracts from military sites in the United States and Canada analyzed by GC-ECD and the standard HPLC (high performance liquid chromatography) method showed good agreement for the analytes most frequently detected (HMX [octahydro-1,3,5,7-tetrahydro-1,3,5,7-tetrazocine], RDX [hexahydro-1,3,5-trinitro-1,3,5-triazine], TNT [2,4,6-trinitrotoluene], and TNB [1,3,5-trinitrobenzene]). The GC method provides lower method detection limits for most analytes than HPLC, but accurate calibration is more difficult. The ultraviolet detector used for the HPLC analysis has much greater linear range than the ECD used for GC analysis. The GC instrumentation requires more care than the LC: the injection port liner must be changed frequently to maintain accurate determination of the nitramines. Because the sample preparation technique yields extracts that are compatible with both GC and HPLC analysis, confirmation of analyte presence can be obtained based on different physical properties.

### 53-1811

#### Structural analysis of DEW line station DYE-2, Greenland: 1983-1988.

Walsh, M.R., Ueda, H.T., CR 98-03, *U.S. Army Cold Regions Research and Engineering Laboratory Report*, June 1998, 23p., ADA-355 518, 17 refs.

Structural analysis, Footings, Stresses, Settlement (structural), Structural changes, Loads (forces), Snow cover stability, Stations, Site surveys, Greenland—Dye 2

DYE-2, a Distant Early Warning station, is located on the Greenland ice cap approximately along the Arctic Circle, 470 km from the west coast. The viscous nature of the material on which the structure is grounded made periodic monitoring and maintenance of the supporting structure necessary. This report analyzes the stresses developed within the structure from the last major maintenance operation, a 64 m sideways move in 1982 to a new foundation, to the final set of stress measurements taken at the abandoned site in 1988. Conclusions drawn from these measurements and the subsequent analysis were that the building system was continuing to tilt in one direction because of differential footing settlement caused by changing footing conditions, and high structural stresses would make it unsafe for reoccupation after Dec. 1988 unless emergency maintenance was performed. The U.S. Air Force officially abandoned the site in Aug. 1988 as a result of this analysis.

### 53-1812

#### Geological and geophysical investigations of the hydrogeology of Fort Wainwright, Alaska. Part II: North-central cantonment area.

Lawson, D.E., et al, CR 98-06, *U.S. Army Cold Regions Research and Engineering Laboratory Report*, Aug. 1998, 66p., ADA-355 283, 23 refs. For part 1 see 51-512.

Hydrogeology, Ground water, Discontinuous permafrost, Seepage, Radio echo soundings, Permafrost distribution, United States—Alaska—Fort Wainwright, United States—Alaska—Chena River Ongoing investigations of the permafrost and ground water conditions in the north-central area of the Fort Wainwright, AK, cantonment, north of the Chena River, show the hydrogeology of the site to be extremely complex. Permafrost, being impermeable and discontinuous, controls the distribution and dimensions of ground water aquifers to a great degree. Aquifers are above, below, and adjacent to permafrost, and in some locations are within unfrozen zones surrounded by it. This complexity makes it difficult to predict the direction and velocity of ground water flow, as well as its seasonal and annual variability. Data have been obtained from ground-penetrating radar surveys, borehole logs, and ground water instruments. They have then been combined with interpretations of aerial photographs and ground observations to delineate the permafrost and aquifer distribution. They have also been used to develop conceptual hydrogeological models of the area. This information is necessary to remediate ground water contamination, while furthering the basic understanding of aquifer distribution and ground water flow in discontinuous permafrost terrain.

53-1813

**Investigations of plastic composite materials for highway safety structures.**

Dutta, P.K., CR 98-07, *U.S. Army Cold Regions Research and Engineering Laboratory. Report*, Aug. 1998, 73p., ADA-353 418, Refs. p.58-61.

Composite materials, Polymers, Safety, Cold weather performance, Structures, Construction materials, Compressive properties, Stress strain diagrams, Tensile properties, Creep, Highway planning, Road maintenance

This report presents a basic overview and assessment of different concepts and technologies of using polymer composites in structures generally used for highway safety. The structural systems included a highway barrier guardrail with its posts and blockouts, sign posts, concrete reinforcing rebars, breakaway couplers, and crushable plastic cushions to protect errant drivers from roadside sign and utility posts, and small trees. The composites included fiber reinforced plastics (FRP) in laminated and bar forms, and commercially available recycled and reconstituted structural plastic composites. Commercially available FRP composites, recycled plastic composites, and several conceptual designs and prototype components were assessed and tested. The results showed many potential advantages of using composites in almost all the structures considered, but one-to-one replacement of conventional materials was not always found attractive. For deriving maximum benefits from fiber composites, the basic performance of the given structures should be reassessed and then composites should be designed at the materials level using innovative fiber architecture and appropriate manufacturing technologies that can meet those performance requirements.

53-1814

**Remediation of wastewater by land treatment: consideration of soil temperatures in winter.**

Peck, L., CR 98-08, *U.S. Army Cold Regions Research and Engineering Laboratory. Report*, Aug. 1998, 18p., ADA-353 412, 23 refs.

Soil microbiology, Cryobiology, Frozen ground chemistry, Soil chemistry, Frozen ground temperature, Temperature measurement, Porosity, Soil water, Frost penetration, Heat transfer, Waste treatment, Water treatment, Cold weather operation, Land reclamation

The impact of the winter environment on land treatment of wastewater has been investigated in terms of predicted winter-long soil temperature histories and depths of frost penetration that were obtained from numerical modeling of heat transfer and phase change in sandy soil. Severity of the winter, soil porosity, and soil moisture content are varied to determine the depth-dependent changes in soil temperature that result. The impact of wintertime soil temperatures on nitrification and denitrification is presented in terms of thickness and persistence of a soil layer cold enough to severely inhibit microbial activity. The model WASTEN is used to predict concentrations of ammonium and nitrate in soil at the end of a remediation cycle. Rates of nitrification and denitrification are varied to be consistent with decreasing microbial activity as soil cools. Depending on soil temperature and thickness of the cold soil layer, peak concentrations of ammonium and nitrate remaining in the soil can be as much as 40-100% greater than under warm soil conditions.

53-1815

**Soil-vapor versus discrete soil sample measurements for VOCs in the near-surface vadose zone: feasibility study.**

Hewitt, A.D., SR 98-07, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, June 1998, 9p., ADA-351 051, 24 refs.

Soil pollution, Soil analysis, Soil tests, Soil chemistry, Measuring instruments, Design

Soil vapor samples were taken from 1 m beneath the ground surface at 16 different locations. Measured trichloroethene (TCE) in these samples was compared to that obtained for a collocated sample of the soil matrix. The linear slope (0.806) and strong correlation ( $r^2=0.950$ ) obtained for this comparison of soil vapor (mg TCE/L) to soil mass (mg TCE/kg) concentrations are in good agreement with recent theoretical and empirical models for this volatile organic compound (VOC) in a low organic carbon soil matrix. This strong relationship suggests that active soil-vapor measurements could be used as an alternative to collecting and analyzing discrete soil samples for establishing both the presence and concentration of VOCs during site characterization and monitoring. The techniques and instruments described here are robust, simple to use, and designed to enhance the reliability of soil-gas surveys to characterize vadose zone VOC contamination.

53-1816

**Site characterization for explosives contamination at a military firing range impact area.**

Jenkins, T.F., et al, SR 98-09, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Aug. 1998, 40p., ADA-353 433, 19 refs.

Explosives, Environmental impact, Soil pollution, Soil analysis, Site surveys, Military operation

A study was conducted at the inland firing ranges at Fort Ord to determine the current levels of explosives residues and to recommend appropriate future site characterization techniques. A set of 280 soil samples was collected on the basis of the locations of current and former targets, and included an area away from specific targets and a background area, not affected by local detonations. HMX was the explosives residue present at the highest concentration. Much lower concentrations of RDX, TNT, and two isomers of aminodinitrotoluene were also detected. Explosives residues were largely confined to surface soils near tank targets. A major problem for site characterization was found to be the large spatial heterogeneity present. Composite samples very effectively provided representative samples for 5x5 m size grids. A colorimetric on-site method gave reliable results for HMX, relative to SW846 Method 8330. No currently available on-site method for RDX was found to be adequate in the presence of much higher concentrations of HMX.

53-1817

**ICETHK user's manual: version 1.**

Tuthill, A.M., Wuebben, J.L., Gagnon, J.J., SR 98-11, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Sep. 1998, 26p., ADA-355 159, 11 refs.

Ice models, Computer programs, Computerized simulation, Ice jams, Ice cover thickness, River ice, United States—Vermont—Winooski River

This report describes the ICETHK computer model that is used in conjunction with the HEC-2 backwater model to simulate equilibrium ice jam profiles. The ICETHK model fulfills an important need in studies that require the calculation of ice-jam-affected stage. This report presents the theory and limitations of ICETHK and serves as a user's manual, and concludes with a discussion of river ice modeling using ICETHK.

53-1818

**Ground freezing effects on soil erosion of Army training lands. Part 2: overwinter changes to tracked-vehicle ruts, Yakima Training Center, Washington.**

Halvorson, J.J., McCool, D.K., King, L.G., Gatto, L.W., SR 98-08, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, July 1998, 46p., ADA-354 121, 30 refs. For pt.1 see 52-2227.

Soil erosion, Soil freezing, Military operation, Tracked vehicles, Environmental impact, Freeze thaw cycles, Soil compaction

Two areas were monitored at the Yakima Training Center in central Washington to measure changes in M1A2 Abrams tank-rut surface geometry, and in- and out-of-rut saturated hydraulic conductivity ( $K_s$ ), soil penetration resistance (SPR), and bulk density over the 1995-96 winter. Profile meter data show that rut cross-sectional profiles smoothed significantly and that turning ruts did so more than straight ruts. Rut edges were zones of erosion and sidewall bases were zones of deposition.  $K_s$  values were similar in and out of ruts formed on soil with 0-5% water by volume, but were lower in ruts formed on soil with about 15% water. Mean SPR was similar in and out of ruts from 0- to 5-cm depth, increased to 2 MPa outside ruts and 4 MPa inside ruts at 10- to 15-cm depth, and decreased by 10-38% outside ruts and by 39-48% inside ruts at the 30-cm depth. Soil bulk density was similar in and out of ruts from 0- to 2.5-cm depth, and below 2.5 cm it was generally higher in ruts formed on moist soil, with highest values between 10- and 20-cm depth. Conversely, density in ruts formed on dry soil was similar to out-of-rut density at all depths. This information is important for determining impacts of tank ruts on water infiltration and soil erosion, and for modifying the Revised Universal Soil Loss Equation and the Water Erosion Prediction Project models to more accurately predict soil losses on Army training lands.

53-1819

**Design of the crest of earth-and-rock dams in the northern construction-climatic zone.**

Pekhtin, V.A., Serov, A.A., Susloparov, V.A., *Hydro-technical construction*, Sep. 1998(Pub. Mar.98), 32(3), p.151-156, Translated from *Gidrotekhnicheskoe stroitel'stvo*. 2 refs.

Earth dams, Permafrost beneath structures, Frost heave, Settlement (structural), Construction, Frost protection, Soil temperature, Thermal regime, Design criteria, Building codes

53-1820

**Contribution to the problem of so-called anti-heave heads of crests of dams being constructed in the far north.**

Myznikov, I.U.N., *Hydrotechnical construction*, Sep. 1998(Pub. Mar.98), 32(3), p.157-162, Translated from *Gidrotekhnicheskoe stroitel'stvo*. 2 refs.

Earth dams, Embankments, Cryogenic soils, Construction, Seasonal freeze thaw, Frost heave, Frost protection, Design criteria, Building codes, Russia—Far North

53-1821

**Orbital forcing and Eocene continental temperatures.**

Sloan, L.C., Morrill, C., *Palaogeography, palaeoclimatology, palaeoecology*, Nov. 15, 1998, 144(1-2), p.21-35, 37 refs.

Pleistocene, Paleoclimatology, Climatic changes, Air temperature, Temperature variations, Solar radiation, Insolation, Seasonal variations, Models

53-1822

**Solar cycles recorded in carboniferous glaci-marine rhythmites (western Argentina): relationships between climate and sedimentary environment.**

Milana, J.P., Lopez, S., *Palaogeography, palaeoclimatology, palaeoecology*, Nov. 15, 1998, 144(1-2), p.37-63, Refs. p.60-63.

Pleistocene, Paleoclimatology, Climatic changes, Glacial geology, Sedimentation, Glacial deposits, Marine deposits, Ice rafting, Solar radiation, Periodic variations, Stratigraphy, Geochronology, Argentina

53-1823

**Thermoluminescence chronology of sand profiles in the Mu Us Desert, China.**

Sun, J.M., Yin, G.M., Ding, Z.L., Liu, T.S., Chen, J., *Palaogeography, palaeoclimatology, palaeoecology*, Nov. 15, 1998, 144(1-2), p.225-233, 43 refs.

Pleistocene, Paleoclimatology, Climatic changes, Sands, Loess, Eolian soils, Luminescence, Soil dating, Geochronology, Stratigraphy, Profiles, China—Mu Us Desert

53-1824

**Radiocarbon age constraints on rates of advance and retreat of the Puget Lobe of the Cordilleran ice sheet during the last glaciation.**

Porter, S.C., Swanson, T.W., *Quaternary research*, Nov. 1998, 50(3), p.205-213, 31 refs.

Pleistocene, Quaternary deposits, Lacustrine deposits, Paleoclimatology, Ice sheets, Glacier oscillation, Ice edge, Calving, Glacial deposits, Radioactive age determination, Geochronology, United States—Washington—Puget Lowland

53-1825

**Clay minerals in soils as evidence of Holocene climatic change, central Indo-Gangetic plains, north-central India.**

Srivastava, P., Parkash, B., Pal, D.K., *Quaternary research*, Nov. 1998, 50(3), p.230-239, 46 refs.

Paleoclimatology, Climatic changes, Quaternary deposits, Soil formation, Plains, Clay minerals, Soil tests, Luminescence, Scanning electron microscopy, Radioactive age determination, Geochronology, India

53-1826

**Do stable isotope data from calcrete record Late Pleistocene monsoonal climate variation in the Thar Desert of India.**

Andrews, J.E., et al, *Quaternary research*, Nov. 1998, 50(3), p.240-251, 56 refs.

Pleistocene, Paleoclimatology, Climatic changes, Precipitation (meteorology), Desert soils, Soil analysis, Luminescence, Isotope analysis, Geochronology, India

53-1827

**Isotopic fingerprints of paleoclimates during the last 30,000 years in deep confined groundwaters of southern India.**

Sukhija, B.S., Reddy, D.V., Nagabhushanam, P., *Quaternary research*, Nov. 1998, 50(3), p.252-260, 41 refs.

Pleistocene, Paleoclimatology, Climatic changes, Ground water, Radioactive isotopes, Isotope analysis, Geochemistry, Statistical analysis, Geochronology, India



53-1828

**SAR interferometry over Baltic Sea ice.**

Dammert, P.B.G., Leppäranta, M., Askne, J., *International journal of remote sensing*, Nov. 10, 1998, 19(16), p.3019-3037, 27 refs.

Sea ice distribution, Ice mechanics, Spaceborne photography, Synthetic aperture radar, Backscattering, Fast ice, Ice deformation, Surface roughness, Rheology, Image processing, Baltic Sea, Bothnia, Bay

53-1829

**Photoinduced crystallization of amorphous ice films on graphite.**

Chakarov, D., Kasemo, B., *Physical review letters*, Dec. 7, 1998, 81(23), p.5181-5184, 29 refs.

Ice physics, Amorphous ice, Ice electrical properties, Defects, Molecular structure, Water films, Ice formation, Ice vapor interface, Ultraviolet radiation, Ice spectroscopy, Phase transformations, Light effects

53-1830

**Comparison of results of impact tests on laboratory and natural freshwater ice with hydrodynamic model predictions.**

Likhomanov, V.A., Stepanov, I.V., Frederking, R.M.W., Timco, G.W., *International Offshore and Polar Engineering Conference*, 8th, Montreal, Canada, May 24-29, 1998. Proceedings. Vol.2, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1998, p.452-459, 5 refs.

Ice navigation, Metal ice friction, Ice solid interface, Ice cover strength, Ice loads, Ice pressure, Ice deformation, Ice breaking, Impact tests, Environmental tests, Mathematical models

53-1831

**Canadian Ice Regime System database.**

Timco, G.W., Morin, I., *International Offshore and Polar Engineering Conference*, 8th, Montreal, Canada, May 24-29, 1998. Proceedings. Vol.2, Golden, CO, International Society of Offshore and Polar Engineers (ISOPE), 1998, p.586-591, 8 refs. For another version see 51-4969.

Sea ice distribution, Ice conditions, Ice navigation, Ice forecasting, Ice reporting, Safety, Data processing, Data transmission, Canada

53-1832

**System and method for detecting accretion of frazil ice on underwater gratings.**

Yankielun, N.E., Gagnon, J.J., MP 5264, *U.S. Patent Office. Patent*, Nov. 24, 1998, 6 col., USP-5,841,289, 12 refs.

Water intakes, Frazil ice, Ice accretion, Ice detection, Monitors, Telemetering equipment

A system for detecting accretion of frazil ice on underwater gratings comprises a pair of parallel electrically conductive bars mounted side-by-side, for disposition beneath a water surface and spaced from but proximate an underwater intake grating. The system further includes a coaxial transmission line connected at a first end to the pair of bars for extension from the bars upwardly above the water surface, and a time domain reflectometer disposed above the water surface for generating electromagnetic pulses and having a second end of the transmission line fixed thereto. The transmission line facilitates propagation of the pulses to the bars for further travel to distal ends of the bars, and back to the reflectometer. The reflectometer is adapted to compute pulse round trip travel time in the bars and to compute changes in the round trip travel time, from which can be determined absence, presence, and build-up of frazil ice on the bars, providing an indication of same on the grating. The invention further contemplates a method for detecting accretion of frazil ice on underwater gratings, utilizing the above-described system.

53-1833

**Capacitor for water leak detection in roofing structures.**

Yankielun, N.E., Flanders, S.N., MP 5265, *U.S. Patent Office. Patent*, Sep. 8, 1998, 4 col., USP-5,804,721, 12 refs.

Roofs, Leakage, Moisture detection, Moisture meters, Electrical measurement

A pair of metal plates having a space therebetween are surrounded by a flexible enclosure which is waterproof and which is filled with a dry gas. A pair of electrical conductors connected to the plates extend through and are water-tight sealed to the enclosure. A water-deformable element which expands in the presence of moisture is disposed around the enclosure, and a rigid housing having holes therethrough is disposed around the water-deformable element so that moisture passing through the holes into the water-deformable

element causes it to expand to move the enclosure and at least one plate so as to reduce the space between the plates to change the capacitance of the capacitor.

53-1834

**Doppler velocimeter for monitoring groundwater flow.**

Yankielun, N.E., MP 5266, *U.S. Patent Office. Patent*, Aug. 18, 1998, 6 col., USP-5,796,679, 4 refs. Ground water, Water flow, Flow measurement, Acoustic measurement, Borehole instruments, Sub-surface investigations

Groundwater velocity and direction of flow are determined by insertion into a borehole below the water table of a sound source and a plurality of sound sensors. A periodic sound signal is emitted by the sound source, which is submerged in ground water at the bottom of the borehole. The sound signals are sensed by the sound sensors, which are also submerged in the water in the vicinity of the sound source. Owing to the Doppler effect, there is a shift in the frequency of the sound signals observed by the different sound sensors. The differences in frequency are determined by pulse counters and used to compute the components of groundwater velocity along north-south and east-west axes. The velocity of groundwater flow and its direction are determined by vector addition of the groundwater velocity components. These computational processes are carried out by an appropriately programmed microprocessor.

53-1835

**Water/sediment interface monitoring system using frequency-modulated continuous wave.**

Yankielun, N.E., Zabilansky, L.J., MP 5267, *U.S. Patent Office. Patent*, Aug. 4, 1998, 6 col., USP-5,790,471, 12 refs.

Bridges, Piers, River flow, Suspended sediments, Alluvium, Water erosion, Monitors, Telemetering equipment

The water/sediment interface in a body of water near bridge piers and similar structures exposed to scour, is sensed and transformed by a frequency-modulated continuous wave method into an audio frequency signal that is related to the water/sediment interface elevation, which is transmitted by radio signal to a remote monitoring station. Radio signals received at the monitoring station are transmitted to a computer, which is programmed to compute the water/sediment interface elevation and to store such computed results for later use. A remote monitoring station may be equipped to monitor several water/sediment interface sensors.

53-1836

**Time domain reflectometry system for real-time bridge scour detection and monitoring.**

Yankielun, N.E., Zabilansky, L.J., MP 5268, *U.S. Patent Office. Patent*, July 21, 1998, 6 col., USP-5,784,338, 12 refs.

Bridges, Piers, River flow, Water erosion, Ice scouring, Ice erosion, Monitors, Telemetering equipment, Warning systems

An apparatus for detecting and monitoring scouring around a structural member uses time-domain reflectometry to measure the level of sediment around the submerged portion of a structural member such as a bridge pier, dock, utility crossing, or similar structure. The apparatus includes an electrical pulse generator which transmits a series of electrical pulses, a sensor which is connected with the pulse generator, and a signal analyzer which receives and interprets the portion of the electrical pulses reflected back to the source from an interface, such as water/air or water/gravel, to calculate the position of the interface along the sensor. Knowledge of the position of the interfaces before and after a scouring event and of the dielectric constants of the surrounding media allows the user to detect and monitor the level of erosion caused by scouring.

53-1837

**Validation of liquid-cloud water forecasts from the Smith-Feddes method derived from soundings and LAPS analyses.**

McGinley, J.A., Albers, S.C., *International Conference on Aviation Weather Systems*, 4th, Paris, France, June 24-28, 1991, Boston, American Meteorological Society, 1991, p.228-233, 7 refs. Aircraft icing, Ice forecasting, Cloud physics, Clouds (meteorology), Water content, Weather forecasting

53-1838

**Liquid water profiling using remote sensor observations.**

Stankov, B.B., Schroeder, J.A., Westwater, E.R., Rasmussen, R.M., *International Conference on Aviation Weather Systems*, 4th, Paris, France, June 24-28, 1991, Boston, American Meteorological Society, 1991, p.239-246, 21 refs.

Aircraft icing, Ice forecasting, Cloud physics, Clouds (meteorology), Water content, Moisture detection, Air temperature, Cloud height indicators, Radio echo soundings, Radiometry, Weather forecasting

53-1839

**Maximum hail concentration that can be met by an aircraft in stormy precipitations.**

Husson, D., Mezeix, J.F., *International Conference on Aviation Weather Systems*, 4th, Paris, France, June 24-28, 1991, Boston, American Meteorological Society, 1991, p.253-256, 9 refs.

Aircraft icing, Thunderstorms, Hail, Hailstones, Weather forecasting, Safety

53-1840

**Experiments forecasting maximum hailstone size from forecast soundings using an interactive program.**

Moore, J.T., Pino, J.P., Rinderknecht, D.M., *International Conference on Aviation Weather Systems*, 4th, Paris, France, June 24-28, 1991, Boston, American Meteorological Society, 1991, p.268-269, 5 refs.

Hailstones, Particle size distribution, Sounding, Weather forecasting, Computerized simulation

53-1841

**Waterfowl mortality in Eagle River Flats, Alaska: the role of munitions compounds and human health risk assessment.**

Bird, S.T., et al, MP 5269, *Caribbean HAZTECH International Conference and Exhibition*, San Juan, Puerto Rico, Nov. 13-15, 1991, [1991], p.1A/1-1A/15, 15 refs.

Military facilities, Explosives, Water pollution, Soil pollution, Physiological effects, Health, Estuaries, Wetlands, Bottom sediment, United States—Alaska—Fort Richardson, United States—Alaska—Eagle River Flats

53-1842

**Report: Arctic Bathymetry Workshop, St. Petersburg, Russia, September 18-19, 1997.**

Macnab, R., Grikurov, G.E., *Canada. Geological Survey. Open file*, Sep. 1997, No.3569, 3p. + appends., 3 refs.

Research projects, Meetings, Oceanographic surveys, Ocean bottom, Bottom topography, Sounding, Data processing, Mapping

53-1843

**Electrical conductivity, freezing temperature, and salinity relationships for seawater and sodium chloride solutions for the salinity range from 0 to over 200 ppt.**

Baker, G.C., *Alaska. University. Geophysical Institute. Report*, Sep. 1987, UAG R-310, 87p., 17 refs.

Sea water, Salt water, Water temperature, Salinity, Electrical resistivity, Sea water freezing, Freezing points, Mathematical models

53-1844

**Effects of increased salt usage on the chloride concentration in South Dakota Department of Transportation bridges and roads.**

Marks, K.E., Pierre, *South Dakota Department of Transportation*, May 1990, 9p.

Salting, Bridges, Corrosion, Road maintenance, Highway planning, United States—South Dakota

53-1845

*Chip seal winter maintenance costs. Alberta Transportation and Utilities. Research and Development Branch. Technical memorandum*, 1993, No.93-04, 4p. + figs.

Pavements, Bitumens, Sealing, Protective coatings, Waterproofing, Cold weather operation, Winter maintenance, Road maintenance, Canada—Alberta

53-1846

*New Brunswick river ice manual*. Fredericton, New Brunswick Department of the Environment, Aug. 1989, 18p., 31 refs. With 18p. French version separately pagd.

River ice, Ice conditions, Freezeup, Ice breakup, Ice conditions, Ice jams, Ice forecasting, Ice control, Flood forecasting, Canada—New Brunswick

53-1847

**Use of polymer modification for emulsion chip seals under inclement conditions.**

Holleran, G., Conference on Asphalt Pavements for Southern Africa, Manzini, Swaziland, June 5-9, 1989. Proceedings, Manzini, Swaziland, Executive Committee CAPSA, 1989, p. VI/13-VI/20, 11 refs. Pavements, Bitumens, Polymers, Surfactants, Protective coatings, Sealing, Waterproofing, Cold weather performance, Road maintenance, Australia

53-1848

**Ice coring operation and a preliminary observation of ice core taken at the Chongce Ice Cap, west Kunlun Mountains, China.**

Zhang, W.C., Han, J.K., Nakawo, M., Japan-China International Symposium on the Study of the Mechanism of Desertification, Tsukuba, Japan, Mar. 2-4, 1993. Proceedings, Tokyo, Japan, Science and Technology Agency, Research and Development Bureau, 1994, p.36-43, 6 refs.

Mountain glaciers, Ice coring drills, Ice cores, Ice dating, Glacier ice, Firn stratification, Dust, Paleoclimatology, China—Kunlun Mountains

53-1849

**Contribution of chronic exposure of facial, head, and neck regions to cold acclimation.**

Biren, G.B., Philadelphia, PA, Temple University, 1998, 154p., University Microfilms order No.9826143, Ph.D. thesis. Refs. p.113-121.

Cold exposure, Physiological effects, Acclimatization

53-1850

**Estimating the response of the sea ice-ocean-atmosphere system to paleoclimatic orbital variations using numerical models.**

Vavrus, S.J., Madison, University of Wisconsin, 1997, 210p., University Microfilms order No.9803435, Ph.D. thesis. Refs. passim.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Air ice water interaction, Ice cover effect, Ice heat flux, Global change, Paleoclimatology, Ice age theory, Ice models, Mathematical models, Computerized simulation

53-1851

**Study of ice microphysical and dynamical processes in a deep cyclonic Front Range winter storm.**

Johnson, D.E., Madison, University of Wisconsin, 1997, 265p., University Microfilms order No.9737011, Ph.D. thesis. Refs. p.253-265.

Snowstorms, Atmospheric disturbances, Fronts (meteorology), Supercooled clouds, Cloud physics, Ice nuclei, Freezing nuclei, Ice crystal growth, Ice crystal structure, Snow pellets, Computerized simulation, Mathematical models, United States—Colorado—Front Range

53-1852

**Palsa formation: mathematical modelling and field information.**

An, W.D., Québec, Université Laval, 1997, 202p. + append., National Library of Canada, Ottawa, Canadian theses NQ-26040, Ph.D. thesis. Refs. p.134-150.

Frost mounds, Peat, Periglacial processes, Soil freezing, Frost heave, Ice lenses, Frozen ground thermodynamics, Permafrost origin, Permafrost hydrology, Permafrost thermal properties, Permafrost heat balance, Paleoclimatology, Climatic factors, Mathematical models, Computer programs, Canada—Québec—Kangisalujujaq

53-1853

**Evaluation and improvement of frost durability of clay bricks.**

Koroth, S.R., Montreal, Concordia University, 1997, 223p., National Library of Canada, Ottawa, Canadian theses NQ-25926, Ph.D. thesis. Refs. p.197-201.

Bricks, Clays, Buildings, Frost action, Frost resistance, Frost protection, Cold weather construction, Cold weather tests, Freeze thaw tests, Canada

53-1854

**Ice forces on a multifaceted conical structure.**

Wang, Z.G., St. John's, Memorial University of Newfoundland, 1997, 263p., National Library of Canada, Ottawa, Canadian theses NQ-25779, Ph.D. thesis. Refs. p.229-235.

Offshore structures, Pressure ridges, Ice solid interface, Ice loads, Ice pressure, Ice friction, Ice over-ride, Ice pileup, Ice cracks, Ice breaking, Environmental tests, Computerized simulation, Mathematical models

53-1855

**Centrifuge modelling of ice scour in sand.**

Hynes, F.G., St. John's, Memorial University of Newfoundland, 1996, 179p., National Library of Canada, Ottawa, Canadian theses MQ-25852, M.Eng. thesis. Refs. p.122-128.

Icebergs, Pressure ridges, Ice bottom surface, Ocean bottom, Underground pipelines, Ice scoring, Ice erosion, Ice loads, Ice friction, Environmental tests, Penetration tests

53-1856

**Strategy for monitoring glaciers.**

Fountain, A.G., Krimmel, R.M., Trabant, D.C., U.S. Geological Survey. Circular, 1997, No.1132, 19p., 76 refs.

Glacier surveys, Glacier oscillation, Glacier mass balance, Glacial hydrology, Data processing, United States

53-1857

**SAR remote sensing algorithms for automated extraction of sea ice ridges and leads.**

Vesecky, J.F., Daida, J.M., Ann Arbor, University of Michigan, Atmospheric, Oceanic, and Space Science Department, 1997, 8p. + appends, ADA-330 060, Refs. passim. Supported by U.S. Office of Naval Research Grant N00014-92-J-6005.

Ice surveys, Sea ice distribution, Ice conditions, Ice openings, Ice surface, Pressure ridges, Ice detection, Ice reporting, Synthetic aperture radar, Spaceborne photography, Image processing

53-1858

**Antarctic Treaty exchange of information in accordance with Articles III(1) & VII(5) and Recommendation VIII(6). Belgian antarctic activities planned for 1998-1999.**

Belgium. Prime Minister's Services. Federal Office for Scientific, Technical and Cultural Affairs (OSTC), Brussels, 1998, 10p.

Research projects, Ecosystems, Global change, Ocean currents, Sea ice, Ice cover, Marine deposits, Ecology, Paleoecology, Oceanographic surveys, Marine biology, Nutrient cycle, Plant physiology, Antarctica

53-1859

**Interpretation of airborne radar imagery in a mountainous area for snow-cover study. [Interprétation en nivologie de l'imagerie radar aéroportée en zone de montagne (Les Arcs, Alpes françaises)]**

Fily, M., Dedieu, J.P., Société Française de Photogrammétrie et de Télédétection. Bulletin, Jan. 1993, No.129, p.4-8, In French with English summary. 9 refs.

DLC TR693.S6a 1993

Spaceborne photography, Imaging, Image processing, Radiometry, Snow cover distribution, Snow air interface, Snow cover structure, France—Alps

53-1860

**Enhanced snow-cover classification in satellite images using GIS data.**

Pennati, G.P., Bonasoro, M., Menajovsky, S., Rossi, G.C., Société Française de Photogrammétrie et de Télédétection. Bulletin, Jan. 1993, No.129, p.18-23, With French summary. 9 refs.

DLC TR693.S6a 1993

Spaceborne photography, Imaging, Remote sensing, Snow cover, Classifications, LANDSAT, Hydrology, Models, Snow hydrology, Snow morphology, Snow cover distribution, Runoff forecasting, Italy—Alps

53-1861

**Integrated GIS for the study of alpine glaciers.**

Rampini, A., Société Française de Photogrammétrie et de Télédétection. Bulletin, Jan. 1993, No.129, p.24-28, With French summary. 16 refs.

DLC TR693.S6a 1993

Spaceborne photography, Image processing, Remote sensing, Mountain glaciers, Glaciology, Data processing, Imaging, Glacier surveys, Glacier mass balance, Glacial hydrology, Italy—Alps

53-1862

**Photogrammetry for the evaluation of hazards resulting from snow cover. [Utilisation de la photogrammétrie pour l'évaluation des dangers présentés par une couverture neigeuse]**

Kölbl, O., Castelle, T., Société Française de Photogrammétrie et de Télédétection. Bulletin, Jan. 1993, No.129, p.35-46, In French with English summary. 4 refs.

DLC TR693.S6a 1993

Photogrammetric surveys, Aerial surveys, Snow cover structure, Safety, Photogrammetry, Photographic techniques, Measurement, Photographic equipment, Imaging, Photointerpretation, Snow cover stability, Avalanche forecasting

53-1863

**TISS: a system for multispectral rendering of mountainous landscape.**

Brivio, P.A., Société Française de Photogrammétrie et de Télédétection. Bulletin, Jan. 1993, No.129, p.47-54, With French summary. Refs. p.53-54.

DLC TR693.S6a 1993

Spaceborne photography, Image processing, Imaging, Alpine landscapes, Fractals, Simulation, Topographic surveys, Terrain identification, Italy—Alps

53-1864

**Relationship between recent planktic foraminifera and water mass properties in the western Ross Sea (Antarctica).**

Asioli, A., Langone, L., Comitato glaciologico italiano. Bollettino. Ser.3: Geografia fisica e dinamica quaternaria, 1997, 20(2), Convegno Nazionale di Glaciologia Antartica, Padua, Italy, June 11-12, 1996. Selected papers, p.193-198, With Italian summary. 24 refs.

Marine biology, Ecosystems, Biomass, Plankton, Chlorophylls, Classifications, Structural analysis, Water chemistry, Hydrography, Sampling, Antarctica—Ross Sea

53-1865

**Possible sources and origins of lead in present-day east antarctic snow.**

Barbante, C., et al, Comitato glaciologico italiano. Bollettino. Ser.3: Geografia fisica e dinamica quaternaria, 1997, 20(2), Convegno Nazionale di Glaciologia Antartica, Padua, Italy, June 11-12, 1996. Selected papers, p.199-202, With Italian summary. 19 refs.

Climatology, Polar atmospheres, Air pollution, Snow impurities, Aerosols, Sedimentation, Hydrocarbons, Fuel additives, Origin, Sampling, Environmental tests, Seasonal variations, Antarctica—Victoria Land

53-1866

**Review of antarctic geomorphological mapping.**

Baroni, C., Bruschi, G., López-Martínez, J., Comitato glaciologico italiano. Bollettino. Ser.3: Geografia fisica e dinamica quaternaria, 1997, 20(2), Convegno Nazionale di Glaciologia Antartica, Padua, Italy, June 11-12, 1996. Selected papers, p.203-218, With Italian summary. Refs. p.214-218.

Geomorphology, Geophysical surveys, Glacier surveys, Ice surveys, Geological maps, Mapping, Classifications, Accuracy, Correlation, Antarctica

53-1867

Geomorphological sketch map of the Mount Dickason area (Victoria Land, Antarctica) mapped by aerial photographs.

Biasini, A., Osso, P., Salvatore, M.C., *Comitato glaciologico italiano. Bollettino. Ser.3: Geografia fisica e dinamica quaternaria*, 1997, 20(2), Convegno Nazionale di Glaciologia Antartica, Padua, Italy, June 11-12, 1996. Selected papers, p.219-223, With Italian summary. 19 refs.

Geomorphology, Mountains, Glacier surveys, Geological surveys, Mapping, Photogeology, Antarctica—Dickason, Mount

53-1868

Analysis of extreme temperature in Terra Nova Bay, Antarctica.

Brancucci, G., Silvestro, M., *Comitato glaciologico italiano. Bollettino. Ser.3: Geografia fisica e dinamica quaternaria*, 1997, 20(2), Convegno Nazionale di Glaciologia Antartica, Padua, Italy, June 11-12, 1996. Selected papers, p.225-232, With Italian summary. 7 refs.

Climatology, Polar atmospheres, Air temperature, Temperature variations, Seasonal variations, Meteorological data, Statistical analysis, Mathematical models, Antarctica—Terra Nova Bay

53-1869

Some observations on snowpack features in northern Victoria Land, Antarctica.

Cagnati, A., *Comitato glaciologico italiano. Bollettino. Ser.3: Geografia fisica e dinamica quaternaria*, 1997, 20(2), Convegno Nazionale di Glaciologia Antartica, Padua, Italy, June 11-12, 1996. Selected papers, p.233-239, With Italian summary. 7 refs.

Snow surveys, Snow physics, Snow cover structure, Snow cover stability, Snow density, Grain size, Profiles, Sampling, Antarctica—Victoria Land

53-1870

Chemical profiles from snow pits and shallow firn cores and snow accumulation on Campbell Glacier (northern Victoria Land, Antarctica).

Caprioli, R., Gragnani, R., Guglielmin, M., Smiraglia, C., Proposito, M., Torcini, S., *Comitato glaciologico italiano. Bollettino. Ser.3: Geografia fisica e dinamica quaternaria*, 1997, 20(2), Convegno Nazionale di Glaciologia Antartica, Padua, Italy, June 11-12, 1996. Selected papers, p.241-247, With Italian summary. 34 refs.

Glacier surveys, Snow surveys, Snow composition, Snow accumulation, Firn, Chemical composition, Profiles, Sampling, Ion density (concentration), Drill core analysis, Seasonal variations, Antarctica—Campbell Glacier

53-1871

First results of sedimentological and geotechnical determinations on Joides basin cores in relation to the Pleistocene grounding line.

Corradi, N., Ferrari, M., Ivaldi, R., *Comitato glaciologico italiano. Bollettino. Ser.3: Geografia fisica e dinamica quaternaria*, 1997, 20(2), Convegno Nazionale di Glaciologia Antartica, Padua, Italy, June 11-12, 1996. Selected papers, p.249-255, With Italian summary. 29 refs.

Pleistocene, Geological surveys, Marine geology, Glacial geology, Ice sheets, Sedimentation, Grounded ice, Ice edge, Drill core analysis, Profiles, Antarctica—Ross Sea

53-1872

Isotopic composition of snow samples from northern Victoria Land (Antarctica) and correlations with geographical factors.

Dini, M., Longinelli, A., Orombelli, G., Smiraglia, C., *Comitato glaciologico italiano. Bollettino. Ser.3: Geografia fisica e dinamica quaternaria*, 1997, 20(2), Convegno Nazionale di Glaciologia Antartica, Padua, Italy, June 11-12, 1996. Selected papers, p.257-261, With Italian summary. 15 refs.

Snow surveys, Snow composition, Oxygen isotopes, Altitude, Drift, Topographic effects, Sampling, Isotope analysis, Correlation, Antarctica—Victoria Land

53-1873

Thermal conductivity measurement (TCM) of ice cores: devices and procedures.

Festa, C., Rossi, A., *Comitato glaciologico italiano. Bollettino. Ser.3: Geografia fisica e dinamica quaternaria*, 1997, 20(2), Convegno Nazionale di Glaciologia Antartica, Padua, Italy, June 11-12, 1996. Selected papers, p.263-267, With Italian summary. 12 refs.

Glaciology, Glacier ice, Ice cores, Drill core analysis, Thermal conductivity, Probes, Temperature measurement, Models, Antarctica

53-1874

Ion chromatographic method for monitoring sulphate in ice-cores.

Gragnani, R., Torcini, S., *Comitato glaciologico italiano. Bollettino. Ser.3: Geografia fisica e dinamica quaternaria*, 1997, 20(2), Convegno Nazionale di Glaciologia Antartica, Padua, Italy, June 11-12, 1996. Selected papers, p.269-270, With Italian summary. 5 refs.

Glaciology, Glacier ice, Ice cores, Chemical composition, Snow impurities, Aerosols, Volcanic ash, Ions, Chemical analysis, Measuring instruments, Antarctica—Campbell Glacier

53-1875

GPS-assisted photogrammetry for mapping production in Antarctica.

Marsella, M., Vittuari, L., *Comitato glaciologico italiano. Bollettino. Ser.3: Geografia fisica e dinamica quaternaria*, 1997, 20(2), Convegno Nazionale di Glaciologia Antartica, Padua, Italy, June 11-12, 1996. Selected papers, p.271-277, With Italian summary. 12 refs.

Glacier surveys, Photogrammetric surveys, Aerial surveys, Sensor mapping, Data processing, Image processing, Antarctica—Victoria Land

53-1876

Climatic stages control on grain-size clusters in core ANTA91-8 (Ross Sea).

Quaia, T., Brambati, A., *Comitato glaciologico italiano. Bollettino. Ser.3: Geografia fisica e dinamica quaternaria*, 1997, 20(2), Convegno Nazionale di Glaciologia Antartica, Padua, Italy, June 11-12, 1996. Selected papers, p.279-282, With Italian summary. 17 refs.

Pleistocene, Paleoclimatology, Climatic changes, Glacial geology, Marine geology, Sedimentation, Glacial deposits, Grain size, Lithology, Drill core analysis, Antarctica—Ross Sea

53-1877

Geomorphological sketch map of the Evans Cove area (Victoria Land, Antarctica).

Salvatore, M.C., Bondesan, A., Meneghel, M., Baroni, C., Orombelli, G., *Comitato glaciologico italiano. Bollettino. Ser.3: Geografia fisica e dinamica quaternaria*, 1997, 20(2), Convegno Nazionale di Glaciologia Antartica, Padua, Italy, June 11-12, 1996. Selected papers, p.283-290, With Italian summary. 48 refs.

Geomorphology, Landforms, Mapping, Geological surveys, Glacier surveys, Spaceborne photography, Geodetic surveys, Correlation, Classifications, Antarctica—Victoria Land

53-1878

Changes in the number and area of Italian alpine glaciers between 1958 and 1989.

Ajassa, R., et al, *Comitato glaciologico italiano. Bollettino. Ser.3: Geografia fisica e dinamica quaternaria*, 1997, 20(2), p.293-297, With Italian summary. 6 refs.

Glacier surveys, Aerial surveys, Mountain glaciers, Alpine glaciation, Glacier oscillation, Ice volume, Seasonal variations, Slope orientation, Statistical analysis, Italy—Alps

53-1879

Glaciers (vedrette) of the Dolomitic Group of Brenta (Alps): one hundred and thirty years of trips and observations. [I ghiacciai (vedrette) delle Dolomiti di Brenta: centotrent'anni de frequentazione e di osservazioni]

Bombarda, R., Parisi, B., *Comitato glaciologico italiano. Bollettino. Ser.3: Geografia fisica e dinamica quaternaria*, 1997, 20(2), p.299-304, In Italian with English summary. 66 refs.

Glacier surveys, Mountain glaciers, Alpine glaciation, Glacier mass balance, Glacier oscillation, Climatic factors, Seasonal variations, Italy—Alps

53-1880

Calderone Glacier (Gran Sasso d'Italia). Determination of ice thickness and bedrock morphology by means of radio-echo sounding.

Fiucci, A., Gigante, B., Rossi, C., Smiraglia, C., Veggetti, O., *Comitato glaciologico italiano. Bollettino. Ser.3: Geografia fisica e dinamica quaternaria*, 1997, 20(2), p.305-308, With Italian summary. 8 refs.

Glacier surveys, Mountain glaciers, Glacier thickness, Bedrock, Topographic features, Radio echo soundings, Profiles, Italy—Apennines

53-1881

Kinematic wave theory: a priority of the Italian Glaciology (De Marchi, 1895).

Mazza, A., *Comitato glaciologico italiano. Bollettino. Ser.3: Geografia fisica e dinamica quaternaria*, 1997, 20(2), p.309-314, With Italian summary. 24 refs.

Glacier oscillation, Ice mechanics, Glacier surfaces, Elastic waves, Wave propagation, Velocity, Climatic factors, Analysis (mathematics), Theories, Computerized simulation

53-1882

Ice structure and dynamics of the Jumeaux Glacier, Valtouranche, Aosta Valley, Italy.

Motta, L., Motta, M., *Comitato glaciologico italiano. Bollettino. Ser.3: Geografia fisica e dinamica quaternaria*, 1997, 20(2), p.315-320, With Italian summary. 18 refs.

Glacier surveys, Mountain glaciers, Alpine glaciation, Glacier ice, Glacier flow, Ice structure, Ice composition, Firn stratification, Classifications, Thin sections, Italy—Alps

53-1883

Geomorphological map of the Valle Desertetto (Maritime Alps) and explanatory notes. [Carta geomorfologica della Valle Desertetto (Alpi Marittime) e note illustrative]

Pappalardo, M., Ribolini, A., *Comitato glaciologico italiano. Bollettino. Ser.3: Geografia fisica e dinamica quaternaria*, 1997, 20(2), p.321-328, In Italian with English summary. 15 refs.

Geomorphology, Geological maps, Alpine landscapes, Glacial geology, Slope processes, Cirques, Moraines, Landforms, Italy—Alps

53-1884

Response time of the Lys Glacier (Valle d'Aosta). An example of a dendrogeomorphological and environmental study.

Pelfini, M., Belloni, S., Rossi, G., Strumia, G., *Comitato glaciologico italiano. Bollettino. Ser.3: Geografia fisica e dinamica quaternaria*, 1997, 20(2), p.329-338, With Italian summary. 16 refs.

Climatology, Air temperature, Glacier surveys, Mountain glaciers, Glacier oscillation, Climatic factors, Trees (plants), Age determination, Statistical analysis, Correlation, Seasonal variations, Italy—Alps

53-1885

Holocene variations of the Yanzigou Glacier (Gongga Shan Massif, Da Xueshan, China).

Smiraglia, C., *Comitato glaciologico italiano. Bollettino. Ser.3: Geografia fisica e dinamica quaternaria*, 1997, 20(2), p.339-351, With Italian summary. 40 refs.

Glacier surveys, Mountain glaciers, Glacial geology, Glacier oscillation, Moraines, Quaternary deposits, Radioactive age determination, Geochronology, China—Tibet

53-1886

**Fall of the front of the Grandes Jorasses Glacier (Mont Blanc) occurred between 30 and 31 May 1998. [Crollo della fronte del ghiacciaio sommitale delle Grandes Jorasses (Monte Bianco) il 30-31 Maggio 1998]**

Cerutti, A.V., *Comitato glaciologico italiano. Bollettino. Ser.3: Geografia fisica e dinamica quaternaria*, 1997, 20(2), p.355-357, In Italian with English and French summaries. 3 refs.

Mountain glaciers, Glacier surveys, Alpine glaciation, Ice deterioration, Icefalls, Permafrost distribution, Permafrost transformation, France—Mont Blanc

53-1887

**Reports on the Glaciological Survey of 1996.**

**[Relazioni della Campagna Glaciologica 1996]**

Armando, E., Baroni, C., Zanon, G., *Comitato glaciologico italiano. Bollettino. Ser.3: Geografia fisica e dinamica quaternaria*, 1997, 20(2), p.363-411, In Italian.

Glacier surveys, Alpine glaciation, Mountain glaciers, Glacier oscillation, Glacier mass balance, Seasonal variations, Ice edge, Italy—Alps

53-1888

**Glacial/interglacial variations in production and nitrogen fixation in the Cariaco Basin during the last 580 kyr.**

Haug, G.H., Pedersen, T.F., Sigman, D.M., Calvert, S.E., Nielsen, B., Peterson, L.C., *Paleoceanography*, Oct. 1998, 13(5), p.427-432, 28 refs.

Oceanographic surveys, Paleoclimatology, Glacial deposits, Paleobotany, Marine biology, Nutrient cycle, Periodic variations, Marine deposits, Bottom sediment

53-1889

**Millennial-scale iceberg discharges in the Irminger Basin during the last glacial period: relationship with the Heinrich events and environmental settings.**

Elliot, M., et al, *Paleoceanography*, Oct. 1998, 13(5), p.433-446, Refs. p.445-446.

Paleoclimatology, Glaciation, Marine geology, Icebergs, Ice air interface, Glacier melting, Glacial geology

53-1890

**Biodeterioration of rocks by lichens in hostile arctic environments studied by FT-Raman spectroscopy.**

Edwards, H.G.M., Holder, J.M., Russell, N.C., Wynn-Williams, D.D., *Spectroscopy of biological molecules: modern trends*. Edited by P. Carmona, R. Navarro, and A. Hernandez. Proceedings, Dordrecht, Netherlands, Kluwer Academic Publishers, 1997, p.509-510, 6 refs.

DLC QP519.9.S6S646 1997

Frozen rocks, Rock properties, Low temperature research, Lichens, Plant physiology, Spectroscopy, Weathering, Antarctica

53-1891

**Inorganic chemical analysis of major rivers flowing into the Bay of Fundy, Scotian Shelf and Bras d'Or Lakes.**

Dalziel, J.A., Yeats, P.A., Amirault, B.P., *Canadian technical report of fisheries and aquatic sciences*, 1998, No.2226, 140p., With French summary. 5 refs.

River flow, Runoff, Stream flow, Suspended sediments, Sea water, Water pollution, Water chemistry, Hydrogeochemistry, Nutrient cycle, Geochemical cycles, Canada—New Brunswick, Canada—Nova Scotia, Canada—Fundy, Bay

53-1892

**Snow deposit melt and atmospheric icing: analysis and modelling by weather station data.**

Sundin, E., Luleå, Sweden, University of Technology, 1998, 40p. + appends., Ph.D. thesis. With Swedish summary. 62 refs.

Snow disposal, Snow heat flux, Snow melting, Snowmelt, Power line icing, Towers, Ice accretion, Ice loads, Ice forecasting, Meteorological data, Computerized simulation, Sweden

53-1893

**Mineral investigations in the Stikine area, south-east Alaska, 1997.**

McDonald, M.E., Jr., Still, J.C., Bittenbender, P.E., Coldwell, J.R., *U.S. Bureau of Land Management. Alaska State Office, Anchorage. BLM-Alaska open file report*, Aug. 1998, No.72, 29p. + fold. map, 13 refs.

Exploration, Geological surveys, Geochemistry, Minerals, Natural resources, United States—Alaska

53-1894

**Arctic Technology Preservation Project bibliographic database April 1997 to March 1998.**

Calgary, Alberta. University. Arctic Institute of North America, Ottawa, National Research Council Canada, Canadian Hydraulics Centre, Program on Energy Research and Development (PERD), Mar. 1998, 7p., CHC report 35-3.

Petroleum industry, Economic development, Regional planning, Research projects, Bibliographies, Data processing, Canada

53-1895

**Glaciological research in Norway 1996 and 1997. [Glasiologiske undersøkelser i Norge 1996 og 1997]**

Kjøllmoen, B., ed, *Norges vassdrags- og energiverk (NVE) (Norwegian Water Resources and Energy Administration). Rapport*, 1998, No.20, 134p. + appends., In Norwegian with English captions and chapter summaries. 19 refs. + publication list.

Glacier surveys, Mountain glaciers, Glacier mass balance, Glacier oscillation, Glacial meteorology, Glacial hydrology, Norway

53-1896

**LTTP seasonal asphalt concrete (AC) pavement temperature models.**

Mohseni, A., *U.S. Federal Highway Administration. Office of Engineering Research and Development. Report*, Sep. 1998, FHWA-RD-97-103, 65p., 6 refs.

Bituminous concretes, Concrete pavements, Frost resistance, Low temperature tests, Cold weather performance, Road maintenance, Computer programs

53-1897

**Maritime Institute of Finland annual report 1997.**

Espoo, Finland, VTT (Valtion teknillinen tutkimuskeskus, Technical Research Centre) Manufacturing Technology and HUT (Helsinki University of Technology) Ship Laboratory, [1998], 6p., Pamphlet. List of publications p.5-6.

Organizations, Research projects, Ships, Ice navigation, Offshore drilling

53-1898

**Cataloguing of northern oil and gas industry reports into the Arctic Institute collection of the University of Calgary Library; final report.**

Calgary, Alberta. University. Library, Ottawa, National Research Council Canada, Canadian Hydraulics Centre, Program on Energy Research and Development (PERD), Mar. 1998, n.p., PERD/CHC report 35-4, Consists of inventory list of 608 reports.

Petroleum industry, Bibliographies, Data processing, Canada

53-1899

**Albedo changes, Milankovitch forcing and late Quaternary climate changes in the Central Andes.**

Kull, C., Grosjean, M., *Climate dynamics*, Nov. 1998, 14(12), p.871-881, 45 refs.

Pleistocene, Paleoclimatology, Climatic changes, Precipitation (meteorology), Humidity, Mountains, Insolation, Albedo, Radiation balance, Snow cover effect, Ice cover effect, Ice age theory, Chile—Andes

53-1900

**GCM simulations of the Last Glacial Maximum surface climate of Greenland and Antarctica.**

Krinner, G., Genthon, C., *Climate dynamics*, Sep. 1998, 14(10), p.741-758, 71 refs.

Pleistocene, Paleoclimatology, Polar atmospheres, Climatic changes, Snow accumulation, Surface temperature, Atmospheric circulation, Ice sheets, Ice air interface, Topographic effects, Ice cores, Simulation, Antarctica, Greenland

53-1901

**Incoherent scatter radar observations of horizontal F region plasma structure over Sondrestrom, Greenland, during polar cap patch events.**

Pedersen, T.R., Fejer, B.G., Doe, R.A., Weber, E.J., *Radio science*, Nov.-Dec. 1998, 33(6), p.1847-1866, 35 refs.

Atmospheric physics, Atmospheric electricity, Electric fields, Polar atmospheres, Radio echo soundings, Scattering, Profiles, Ionization, Ion density (concentration), Statistical analysis, Greenland—Sondrestrom

53-1902

**F region height change produced by gravity waves.**

MacDougall, J.W., Hall, G.E., *Radio science*, Nov.-Dec. 1998, 33(6), p.1867-1876, 9 refs.

Atmospheric physics, Polar atmospheres, Atmospheric electricity, Electric fields, Ionization, Gravity waves, Radio echo soundings, Convection, Velocity measurement, Simulation, Canada—Northwest Territories—Eureka

53-1903

**Magnetopause position as an indicator of the ionization level in the dayside high-latitude ionosphere.**

Makarova, L.N., Shirochikov, A.V., *Radio science*, Nov.-Dec. 1998, 33(6), p.1877-1884, 15 refs.

Atmospheric physics, Polar atmospheres, Geomagnetism, Atmospheric electricity, Electric fields, Ionization, Ion density (concentration), Solar radiation, Radio echo soundings, Correlation, Diurnal variations, Russia—Dickson Island, Antarctica—Mirnyy Station, Antarctica—Vostok Station

53-1904

**Characteristics of plasma structuring in the cusp/cleft region at Svalbard.**

Basu, S., et al, *Radio science*, Nov.-Dec. 1998, 33(6), p.1885-1899, 32 refs.

Atmospheric physics, Polar atmospheres, Geomagnetism, Atmospheric electricity, Convection, Ionization, Ion density (concentration), Scintillation, Radio echo soundings, Spectra, Norway—Svalbard

53-1905

**Size effect in penetration of sea ice plate with part-through cracks. I: theory.**

Bazant, Z.P., Kim, J.J.H., *Journal of engineering mechanics*, Dec. 1998, 124(12), p.1310-1315, 51 refs.

Ice mechanics, Sea ice, Ice strength, Floating ice, Ice cracks, Crack propagation, Projectile penetration, Plates, Ice solid interface, Plastic deformation, Dynamic loads, Analysis (mathematics), Theories

53-1906

**Size effect in penetration of sea ice plate with part-through cracks. II: results.**

Bazant, Z.P., Kim, J.J.H., *Journal of engineering mechanics*, Dec. 1998, 124(12), p.1316-1324, 36 refs.

Ice mechanics, Sea ice, Ice strength, Floating ice, Ice cracks, Crack propagation, Projectile penetration, Ice solid interface, Dynamic loads, Plastic deformation, Stress concentration, Statistical analysis, Mathematical models

53-1907

**Antarctic circumpolar wave: a beta effect in ocean-atmosphere coupling over the southern ocean.**

White, W.B., Chen, S.C., Peterson, R.G., *Journal of physical oceanography*, Dec. 1998, 28(12), p.2345-2361, 16 refs.

Climatology, Marine atmospheres, Surface temperature, Temperature variations, Atmospheric circulation, Heat flux, Advection, Air water interactions, Sea ice distribution, Seasonal variations, Mathematical models, Antarctica

## 53-1908

**Eddy maintenance and attrition in a vertically sheared current under arctic ice.**

Chao, S.Y., Shaw, P.T., *Journal of physical oceanography*, Dec. 1998, 28(12), p.2427-2443, 15 refs.

Oceanography, Ocean currents, Fluid dynamics, Sea ice, Drift, Ice water interface, Ice cover effect, Shear flow, Brines, Turbulent diffusion, Advection, Profiles, Mathematical models, Arctic Ocean

## 53-1909

**Intercomparison of simulated global vegetation distributions in response to 6 kyr BP orbital forcing.**

Harrison, S.P., et al, *Journal of climate*, Nov. 1998, 11(11), p.2721-2742, Refs. p.2740-2742.

Paleoclimatology, Climatic changes, Global warming, Insolation, Snow cover distribution, Sea ice distribution, Paleoecology, Vegetation patterns, Tundra vegetation, Temperature effects, Simulation, Maps, Models

## 53-1910

**Sea ice effects on the sensitivity of the thermohaline circulation.**

Lohmann, G., Gerdes, R., *Journal of climate*, Nov. 1998, 11(11), p.2789-2803, 48 refs.

Climatology, Boundary layer, Marine atmospheres, Surface temperature, Ocean currents, Salinity, Turbulent diffusion, Sea ice distribution, Ice cover effect, Air ice water interaction, Heat balance, Mathematical models, Thermodynamics

## 53-1911

**Relative impacts of snow and sea surface temperature anomalies on an extreme phase in the winter atmospheric circulation.**

Watanabe, M., Nitta, T., *Journal of climate*, Nov. 1998, 11(11), p.2837-2857, 37 refs.

Climatology, Atmospheric circulation, Air temperature, Global change, Winter, Temperature variations, Snow air interface, Snow depth, Snow cover distribution, Snow cover effect, Surface temperature, Mathematical models, Simulation, Eurasia

## 53-1912

**Arctic cloud-radiation-temperature associations in observational data and atmospheric reanalyses.**

Walsh, J.E., Chapman, W.L., *Journal of climate*, Nov. 1998, 11(11), p.3030-3045, 31 refs.

Climatology, Polar atmospheres, Air temperature, Cloud cover, Insolation, Radiation balance, Surface temperature, Drift stations, Weather forecasting, Seasonal variations, Statistical analysis, Ice cover effect, Arctic Ocean

## 53-1913

**Simulations of H<sub>2</sub>O solid, liquid, and clusters, with an emphasis on ferroelectric ordering transition in hexagonal ice.**

Buch, V., Sandler, P., Sadlej, J., *Journal of physical chemistry B*, Oct. 29, 1998, 102(44), p.8641-8653, 55 refs.

Ice physics, Ice structure, Water structure, Ice dielectrics, Self diffusion, Polarization (charge separation), Molecular structure, Aggregates, Orientation, Molecular energy levels, Computerized simulation

## 53-1914

**Climatic soil freezing modeled in centrifuge.**

Yang, D., Goodings, D.J., *Journal of geotechnical and geoenvironmental engineering*, Dec. 1998, 124(12), p.1186-1194, 22 refs.

Frozen ground mechanics, Frost heave, Soil freezing, Thermal regime, Freeze thaw cycles, Ice formation, Thin sections, Stress concentration, Mechanical tests, Simulation, Accuracy

## 53-1915

**Program and abstracts. International cooperation in arctic research: detecting global change and its impacts in the western Arctic.**

Arctic Science Conference, 49th/IARC (University of Alaska Fairbanks International Arctic Research Center) Inauguration, Fairbanks, AK, Oct. 25-28, 1998, Fairbanks, American Association for the Advancement of Science, Arctic Division, 1998, 214p. Research projects, International cooperation, Polar atmospheres, Global warming, Air ice water interaction, Paleoclimatology, Environmental impact, Regional planning

## 53-1916

**Biennial report 1995-1996.**

Alaska. University. Geophysical Institute, Fairbanks, 1998, 217p., List of publications passim. Research projects, Organizations, Geophysical surveys, Polar atmospheres, Global change, Seismology, Tectonics, Ice surveys, Glacier surveys, Permafrost surveys, Cost analysis

## 53-1917

**Glaciers of the Swiss Alps 1991/92 and 1992/93. [Die Gletscher der Schweizer Alpen 1991/92 und 1992/93]**

Herren, E.R., Hoelzle, M., *Schweizerische Akademie der Naturwissenschaften. Glaziologische Kommission. Jahrbuch. Bericht*, 1998, No.113/114, 114p., In German and French with English table of contents and summary. 37 refs.

Mountain glaciers, Glacier surveys, Glacier oscillation, Glacier mass balance, Glacial hydrology, Glacial meteorology, Switzerland

## 53-1918

**Circulation on the north central Chukchi Sea shelf.**

Weingartner, T.J., Fairbanks, University of Alaska, Coastal Marine Institute, June 1998, 39p., 34 refs. OCS study MMS 98-0026 funded in part by the U.S. Minerals Management Service, Alaska Outer Continental Shelf Region and University of Alaska Fairbanks.

Oceanographic surveys, Ocean currents, Water transport, Sea water, Water temperature, Salinity, Ice water interface, Ice edge, Polynyas, Sea ice distribution, United States—Alaska, Chukchi Sea

## 53-1919

**Comparisons between petroleum systems in the Arctic National Wildlife Refuge, Alaska.**

Banet, A.C., Jr., Mowatt, T.C., *U.S. Bureau of Land Management. Alaska State Office, Anchorage. BLM-Alaska technical report*, Sep. 1998, No.18, 22p., 48 refs.

Exploration, Geological surveys, Stratigraphy, Tectonics, Crude oil, Natural gas, Natural resources, United States—Alaska—Arctic National Wildlife Refuge

## 53-1920

**Development and demonstration of FRP composite fender, loadbearing, and sheet piling systems.**

Lampo, R.G., et al, MP 5270, *U.S. Army Construction Engineering Research Laboratories, Champaign, IL. Technical report*, Sep. 1998, USACERL TR 98/123, Construction Productivity Advancement Research (CPAR) Program, 81p. + appends., Refs. p.79-81.

Composite materials, Polymers, Piles, Pile structures, Piers, Wharves, Low temperature tests, Structural analysis, Pile load tests  
Traditional piling systems are inherently unsuited for harsh waterfront environments. Deterioration of wood, concrete, and steel piling systems is estimated to cost the U.S. military and civilian marine and waterfront communities over \$1 billion annually. Fiber-reinforced polymer (FRP) composites represent an alternative construction material without many of the performance disadvantages of traditional materials as described above. A proposal was submitted to develop composite piling systems under the U.S. Army Corps of Engineers' Construction Productivity Advancement Research (CPAR) Program. This CPAR Project developed, tested, and demonstrated high-performance polymer composite fender, load-bearing, and sheet pile (bulkheads) systems for marine/waterfront civil engineering applications. In phase one, mechanical, operating, and physical performance requirements were established. In phase two, laboratory tests were conducted to assess the preliminary designs. Promising designs were further developed and tested. Selected fender piles that met the established requirements, as determined by

the laboratory tests, were installed in a field demonstration. Development and adoption of industry consensus specifications and standards for composite piling systems was initiated. The Composites Institute and member manufacturers have promoted and will continue to promote the commercialization of the composite piling developed under this project.

## 53-1921

**Engineering and design. Runoff from snowmelt.**

U.S. Army Corps of Engineers, Pangburn, T., MP 5271, *Engineer manual*, Mar. 31, 1998, EM 1110-2-1406, Var. p., Refs. p.A/1-A/9.

Snow hydrology, Snow heat flux, Snow water equivalent, Snow melting, Snowmelt, Stream flow, Runoff forecasting, Mathematical models, Statistical analysis, Manuals

## 53-1922

**Temperature dependent multiphase flow and transport.**

Sykes, J.F., Merry, A.G., Zhu, J., International Conference on Computational Methods in Water Resources, 12th, Crete, Greece, June 1998. Proceedings, Vol.2: Computational methods in surface and ground water transport. Edited by V.N. Burganos, G.P. Karatzas, A.C. Payatakes, C.A. Brebbia, W.G. Gray and G.F. Pinder, Southampton, UK and Boston, MA, USA, Computational Mechanics Publications, Computational Mechanics, Inc., 1998, p.19-26, 4 refs.

DLC GB656.2.E43C65 1998 Vol.2

Soil temperature, Frozen ground, Freeze thaw cycles, Mathematical models, Mass transfer, Fluid flow

## 53-1923

**Comparative approach to the entomological diversity of polar regions.**

Vernon, P., Vannier, G., Trehen, P., *Acta oecologica*, May/June 1998, 19(3), p.303-308, 81 refs.

Climate, Animals, Environments, Biogeography, Cold tolerance, Iceland, Norway—Svalbard, Canada—Northwest Territories—Bathurst Island, Antarctica

## 53-1924

**Snow density measurement using acoustic properties. [Mesure de la densité de la neige à partir de ses propriétés acoustiques]**

Marco, O., Villemain, P., Touvier, F., *La houille blanche*, Dec. 1998, No.5/6, p.117-123, In French with English summary. 27 refs.

Snow density, Snow acoustics, Porosity, Mathematical models, Wave propagation, Sound waves

## 53-1925

**Deep coring on the Lys Glacier (Monte Rosa): first results. [Carottage profond sur le glacier du Lys (Monte Rosa): résultats préliminaires]**

Rossi, G., Novo, A., Maggi, V., Ormelli, G., Smiraglia, C., *La houille blanche*, Dec. 1998, No.5/6, p.124-127, In French with English summary. 5 refs.

Glaciers, Radiometry, Isotope analysis, Ice density, Ice cores, Glacier oscillation, Italy—Monte Rosa, Italy—Lys Glacier

## 53-1926

**Innovative concepts for preventive maintenance.**

Galehouse, L., *Transportation research record*, 1998, No.1627, Pavement and winter maintenance, p.1-6, 4 refs.

Pavements, Road maintenance, Highway planning, Cost analysis, United States—Michigan

## 53-1927

**Joint seal practices in the United States: observations and considerations.**

Morian, D.A., Stoffels, S., *Transportation research record*, 1998, No.1627, Pavement and winter maintenance, p.7-12, 12 refs.

Pavements, Joints (junctions), Sealing, Waterproofing, Weatherproofing, Cold weather performance, Road maintenance, United States

53-1928

Laboratory investigation of factors affecting bond strength in joint sealants.

Gurjar, A., Kim, H.B., Moody, E., Buch, N.J., *Transportation research record*, 1998, No.1627, Pavement and winter maintenance, p.13-21, 7 refs.

Concrete pavements, Concrete aggregates, Joints (junctions), Sealing, Waterproofing, Weatherproofing, Cold weather performance, Road maintenance

53-1929

Pavement pressure generation: neglected aspect of jointed pavement behavior.

Burke, M.P., Jr., *Transportation research record*, 1998, No.1627, Pavement and winter maintenance, p.22-28, 9 refs.

Bridges, Pavements, Joints (junctions), Sealing, Thermal stresses, Road maintenance

53-1930

Winter road condition recognition using video image classification.

Kuehne, A., Burghout, W., *Transportation research record*, 1998, No.1627, Pavement and winter maintenance, p.29-33, 7 refs.

Road icing, Ice detection, Photographic techniques, Photographic reconnaissance, Image processing, Data transmission, Weather observations, Weather forecasting, Warning systems, Safety, Road maintenance, Sweden

53-1931

Road snow removal and the snowfall information system in the city of Sapporo.

Kanemura, N., *Transportation research record*, 1998, No.1627, Pavement and winter maintenance, p.34-40. Snowfall, Urban planning, Streets, Weather observations, Weather forecasting, Data transmission, Snow removal, Road maintenance, Japan—Hokkaido

53-1932

Life cycle cost-benefit model for road weather information systems.

McKeever, B., Haas, C., Weissmann, J., Greer, R., *Transportation research record*, 1998, No.1627, Pavement and winter maintenance, p.41-48, 14 refs.

Road icing, Ice detection, Highway planning, Weather observations, Weather forecasting, Data transmission, Warning systems, Road maintenance, Cost analysis, United States—Texas

53-1933

Physical evaluation of a hail suppression project with silver iodide ground burners in southwestern France.

Dessens, J., *Journal of applied meteorology*, Dec. 1998, 37(12), p.1588-1599, 36 refs. Climatology, Precipitation (meteorology), Weather modification, Hail prevention, Cloud seeding, Silver iodide, Aerosols, Smoke generators, Hailstones, Statistical analysis, Performance, France

53-1934

Correction of three-dimensional effects for passive microwave remote sensing of convective clouds.

Bauer, P., Schanz, L., Roberti, L., *Journal of applied meteorology*, Dec. 1998, 37(12), p.1619-1632, 22 refs.

Precipitation (meteorology), Cloud physics, Radiometry, Imaging, Sensors, Orientation, Resolution, Scattering, Brightness, Ice detection, Radiation balance, Mathematical models

53-1935

Contributions on mountain geomorphology. [Beiträge aus der Gebirgs-Geomorphologie]

Vischer, D., ed. *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen*, 1998, No.158, 226p., In German, English or French. Refs. passim. For selected papers see 53-1936 through 53-1952.

Periglacial processes, Permafrost distribution, Permafrost indicators, Rock glaciers, Slope stability, Alpine glaciation, Glacial geology, Glacial deposits, Soil dating, Paleoclimatology, Switzerland

53-1936

Monitoring rockwall instability in the Murtèl-Corvatsch region, Upper Engadin.

Matsuoka, N., *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen*, 1998, No.158, Beiträge aus der Gebirgs-Geomorphologie (Contributions on mountain geomorphology). Edited by D. Vischer, p.7-14, With German summary. 14 refs. Rock glaciers, Slope stability, Frost weathering, Frost shattering, Talus, Landslides, Switzerland

53-1937

Debris flows in Val Bever, Upper Engadin—a hazard analysis. [Murgänge im Val Bever, Oberengadin—eine Gefahrenanalyse]

Bommer, M., Kneisel, C., Tressel, E., Baumhauer, R., *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen*, 1998, No.158, Beiträge aus der Gebirgs-Geomorphologie (Contributions on mountain geomorphology). Edited by D. Vischer, p.15-23, In German with English summary. 11 refs. Railroad tunnels, Mudflows, Slope stability, Avalanche forecasting, Landslide control, Switzerland

53-1938

Firn and ice temperatures in the Alps. [Firn- und Eistemperaturen in den Alpen]

Suter, S., *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen*, 1998, No.158, Beiträge aus der Gebirgs-Geomorphologie (Contributions on mountain geomorphology). Edited by D. Vischer, p.24-41, In German with English summary. 34 refs.

Glacier surveys, Firn, Glacier ice, Ice temperature, Temperature distribution, Glacier heat balance, Boreholes, Alps

53-1939

Soil mapping in the study area of Gemmi (Wallis Alps) by geomorphological methods. [Bodenkartierungen im Untersuchungsgebiet der Gemmi (Walliser Alpen) mit Hilfe geomorphologischer Methoden]

Döbeli, C., *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen*, 1998, No.158, Beiträge aus der Gebirgs-Geomorphologie (Contributions on mountain geomorphology). Edited by D. Vischer, p.42-54, In German with English summary. 14 refs.

Mountain soils, Soil surveys, Soil mapping, Soil classification, Switzerland

53-1940

Permafrost studies with GIS. A study in the Fletschhorn region. [Permafrostuntersuchungen mit GIS. Eine Studie im Fletschhorngebiet]

Frauenfelder, R., *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen*, 1998, No.158, Beiträge aus der Gebirgs-Geomorphologie (Contributions on mountain geomorphology). Edited by D. Vischer, p.55-68, In German with English summary. 11 refs.

Permafrost surveys, Permafrost distribution, Permafrost indicators, Permafrost forecasting, Periglacial processes, Computerized simulation, Switzerland

53-1941

Geomorphological maps of the pre-Alps and Vaud Alps. Computer-assisted drafting (dessin assisté par ordinateur) procedure. [Cartes géomorphologiques des Préalpes et des Alpes vaudoises. Procédure d'édition par DAO]

Schoeneich, P., *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen*, 1998, No.158, Beiträge aus der Gebirgs-Geomorphologie (Contributions on mountain geomorphology). Edited by D. Vischer, p.69-74, In French with English summary. 4 refs.

Topographic surveys, Topographic maps, Mapping, Terrain identification, Environment simulation, Image processing, Computer applications, Switzerland

53-1942

Rock glaciers of Entremont (Valais Alps): inventory and spatial analysis by GIS. [Les glaciers rocheux de la région d'Entremont (Alpes Valaisannes): inventaire et analyse spatiale à l'aide d'un SIG]

Delaloye, R., Morand, S., *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen*, 1998, No.158, Beiträge aus der Gebirgs-Geomorphologie (Contributions on mountain geomorphology). Edited by D. Vischer, p.75-86, In French with English summary. 22 refs.

Rock glaciers, Permafrost indicators, Discontinuous permafrost, Permafrost distribution, Periglacial processes, Paleoclimatology, Computerized simulation, Switzerland

53-1943

High alpine lake sediments as evidence of a late to early postglacial glacier history in Upper Engadin. [Hochalpine Seesedimente als Zeugnisse der spät- bis früh postglazialen Gletschergeschichte im Oberengadin]

Ohlendorf, C., *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen*, 1998, No.158, Beiträge aus der Gebirgs-Geomorphologie (Contributions on mountain geomorphology). Edited by D. Vischer, p.87-97, In German with English summary. 32 refs.

Alpine glaciation, Glacial geology, Glacial deposits, Glacial lakes, Lacustrine deposits, Stratigraphy, Soil dating, Paleoclimatology, Switzerland

53-1944

Inn/Flaz flood protection project. [Das Hochwasserschutzprojekt Inn/Flaz]

Herzog, B., *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen*, 1998, No.158, Beiträge aus der Gebirgs-Geomorphologie (Contributions on mountain geomorphology). Edited by D. Vischer, p.98-110, In German with English summary.

River flow, Dams, Flood forecasting, Flood control, Switzerland

53-1945

Discovery trails on climate change in Upper Engadin. Teaching aid on the complex natural sciences problem. [Erlebnislehrpfad zur Klimaveränderung im Oberengadin. Zur Didaktik komplexer naturwissenschaftlicher Probleme]

Arn, D., *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen*, 1998, No.158, Beiträge aus der Gebirgs-Geomorphologie (Contributions on mountain geomorphology). Edited by D. Vischer, p.111-120, In German with English summary. 13 refs.

Climatic changes, Human factors, Environmental impact, Environmental protection, Education, Switzerland

53-1946

Surface kinematics of selected rock glaciers in Upper Engadin. [Oberflächenkinematik ausgewählter Blockgletscher des Oberengadins]

Käab, A., *Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen*, 1998, No.158, Beiträge aus der Gebirgs-Geomorphologie (Contributions on mountain geomorphology). Edited by D. Vischer, p.121-140, In German with English summary. 22 refs.

Rock glaciers, Slope processes, Periglacial processes, Permafrost indicators, Permafrost distribution, Solifluction, Soil creep, Climatic changes, Switzerland



53-1947

Association and characteristics of surface and ground ice respectively. Permafrost in glacier forefields that have recently become ice free: basic study from preliminary results in Upper Engadin. [Vergesellschaftung und Charakteristiken von Oberflächen- und Untergrunds bzw. Permafrost in jüngst eisfrei gewordenen Gletschervorfeldern: eine Grundlagenstudie mit ersten Ergebnissen aus dem Obere Engadin]

Kneisel, C., Zürich. *Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen*, 1998, No. 158, Beiträge aus der Gebirgs-Geomorphologie (Contributions on mountain geomorphology). Edited by D. Vischer, p.141-151, In German with English summary. 30 refs.

Alpine glaciation, Cirque glaciers, Periglacial processes, Permafrost indicators, Permafrost distribution, Ground ice, Fossil ice, Switzerland

53-1948

Energy balance over alpine permafrost. [Energiebilanz über alpines Permafrost]

Mittaz, C., Zürich. *Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen*, 1998, No. 158, Beiträge aus der Gebirgs-Geomorphologie (Contributions on mountain geomorphology). Edited by D. Vischer, p.152-167, In German with English summary. 20 refs.

Rock glaciers, Periglacial processes, Permafrost heat transfer, Permafrost heat balance, Permafrost distribution, Soil air interface, Switzerland

53-1949

Engineering geology and alpine permafrost in Switzerland. [Geotechnik und Alpiner Permafrost in der Schweiz]

Arenson, L., Springman, S.M., Zürich. *Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen*, 1998, No. 158, Beiträge aus der Gebirgs-Geomorphologie (Contributions on mountain geomorphology). Edited by D. Vischer, p.168-177, In German with English summary. 38 refs.

Permafrost beneath structures, Permafrost preservation, Permafrost control, Frozen ground strength, Soil creep, Slope stability, Soil stabilization, Engineering geology, Switzerland

53-1950

Laboratory studies on debris flow initiation. [Laboruntersuchungen zur Murgangentstehung]

Tognacca, C., Zürich. *Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen*, 1998, No. 158, Beiträge aus der Gebirgs-Geomorphologie (Contributions on mountain geomorphology). Edited by D. Vischer, p.178-191, In German with English summary. 12 refs.

Mudflows, Avalanche formation, Avalanche modeling, Avalanche erosion, Sediment transport, Environmental tests

53-1951

Late glacial stades of the Vaud pre-Alps and their correlation with the model of the eastern Alps. [Les stades tardiglaciaires des Préalpes vaudoises et leur corrélation avec le modèle des Alpes orientales]

Schoeneich, P., Zürich. *Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen*, 1998, No. 158, Beiträge aus der Gebirgs-Geomorphologie (Contributions on mountain geomorphology). Edited by D. Vischer, p.192-206, In French with English summary. 11 refs.

Alpine glaciation, Glacial geology, Glacier oscillation, Glacial deposits, Moraines, Geochronology, Soil dating, Paleoclimatology, Alps

53-1952

Timing of the late Holocene debris supply and glacial fluctuations in Langtang Himal, central Nepal Himalaya.

Watanabe, T., Zürich. *Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen*, 1998, No. 158, Beiträge aus der Gebirgs-Geomorphologie (Contributions on mountain geomorphology). Edited by D. Vischer, p.207-216, With German summary. 11 refs. Alpine glaciation, Glacial geology, Glacial deposits, Glacier oscillation, Landslides, Avalanche deposits, Talus, Soil dating, Geochronology, Paleoclimatology, Nepal

53-1953

Proceedings of the 51st annual Eastern Snow Conference, Dearborn, MI, June 15-16, 1994.

Eastern Snow Conference, Albert, M.R., Taylor, S., MP 5272, 1994, 173p., Refs. passim. For selected papers see 53-1954 through 53-1970.

Snow surveys, Snowfall, Snow cover distribution, Snow depth, Snow cover effect, Snow hydrology, Snow water equivalent, Snowmelt, Weather forecasting, Runoff forecasting

53-1954

Sensitivity of the arctic climate system to snowfall: evidence from the Canadian high Arctic.

Brown, R.D., Goodison, B.E., *Eastern Snow Conference. Proceedings*, 1994, 51st, p.1-10, 19 refs. Polar atmospheres, Marine atmospheres, Snowfall, Snow cover effect, Snow ice interface, Snow air interface, Snow heat flux, Air ice water interaction, Sea ice, Freezeup, Ice breakup, Ice conditions, Ice heat flux, Global warming, Computerized simulation, Canada—Northwest Territories—Arctic Archipelago

53-1955

Diagnosing the impacts of the Great Lakes on an Alberta Clipper.

Mann, G.E., *Eastern Snow Conference. Proceedings*, 1994, 51st, p.11-22, 18 refs. Atmospheric circulation, Atmospheric disturbances, Lake effects, Snowstorms, Snowfall, Synoptic meteorology, Weather forecasting, Great Lakes

53-1956

30-year mass balance of a high arctic glacier: perspectives from the White Glacier, Axel Heiberg Island, NWT, Canada.

Ecclestone, M.A., Cogley, J.G., Adams, W.P., *Eastern Snow Conference. Proceedings*, 1994, 51st, p.23-29, 10 refs.

Glacier surveys, Glacier oscillation, Glacier tongues, Glacier mass balance, Snow line, Sea level, Statistical analysis, Canada—Northwest Territories—Axel Heiberg Island

53-1957

Analysis of the winter low-flow balance of the semi-arid White River, Nebraska and South Dakota.

Ferrick, M.G., Mulherin, N.D., Calkins, D.J., MP 5273, *Eastern Snow Conference. Proceedings*, 1994, 51st, p.31-43, 19 refs. For other versions see 49-6505 and 50-1074.

River basins, River ice, Ice growth, Ice (water storage), Ice cover effect, River flow, Stream flow, Ground water, Water table, Water balance, Statistical analysis, United States—Nebraska—White River, United States—South Dakota—White River Low-flow studies improve understanding of flow paths during critical base-flow periods and are needed to assess the effects of water consumption on stream flow, water quality, groundwater resources, and contaminant transport. The inflows to a river from its subbasins and corresponding alluvial aquifers in a semi-arid cold region are most readily quantified in winter. The authors investigated the low-flow water balance of eight subbasins of the White River at a monthly time scale over seven consecutive winters. Water going into or out of storage as ice or melt, obtained with a temperature index model, can be a dominant component of the water balance. The point estimate method is used to account for parameter uncertainty and variability, providing the mean, variance and limits of dependent variables such as water storage as ice and inflow from a subbasin. Negative water yield from subbasins of several thousand square kilometers occurred regularly through the period, indicating a significant flow from the river to the alluvial aquifers. The authors discuss the winter water balance by subbasin and between years. The results suggest a perched river or a coupled surface water-groundwater

hydrologic system in particular subbasins, consistent with the field investigations of Rodhock (1942). The winter flow exchange between the surface and subsurface can be used to estimate the annual exchange for both conditions.

53-1958

Computation of ice-affected streamflow by use of simulation modeling and error integration.

Holtschlag, D.J., *Eastern Snow Conference. Proceedings*, 1994, 51st, p.45-54, 9 refs.

River ice, Ice water interface, Ice cover effect, River flow, Stream flow, Runoff forecasting, Statistical analysis, Computerized simulation

53-1959

Ice formation in an Alaskan estuarine salt marsh.

Taylor, S., Racine, C.H., Collins, C.M., MP 5274, *Eastern Snow Conference. Proceedings*, 1994, 51st, p.55-66, 5 refs.

Estuaries, Floodplains, Wetlands, Ponds, Alluvium, Bottom sediment, Suspended sediments, Ice formation, Ice growth, Bottom ice, Ice cores, Ice salinity, Ice composition, United States—Alaska—Eagle River Flats

An extensive ice sheet builds up during the winter in a salt marsh complex (Eagle River Flats) at the mouth of the Eagle River near Anchorage, AK. Ice cores were taken along a transect beginning in a 0.5-m deep pond along the edge of the salt marsh and traversing marsh, shallow pond and subaerial mudflats closer to the river to elucidate how snow accumulation, periodic tidal flooding and freshwater flow contribute to the ice cover formation. The ice structure and chemistry at Eagle River Flats vary vertically and spatially. Salt and sediment content are correlated, indicating that most of the sediment is deposited by tidal flooding. Generally the ice thickness decreases, and the salt and sediment content increases, with proximity to the river. Except in the deeper pond at the periphery of the Flats, the ice appears to be grounded. The ice builds from the ground upward and thickens when tidal waters flow over the previously flooded, now frozen, surface. The ice appears to be well bonded to the underlying sediment.

53-1960

Snowcover identification using the Special Sensor Microwave Imager.

Grody, N.C., Basist, A.N., *Eastern Snow Conference. Proceedings*, 1994, 51st, p.67-74, 10 refs.

Snow surveys, Snow cover distribution, Snowfall, Snow surface temperature, Terrain identification, Radiometry, Spaceborne photography, Image processing, Radiometry

53-1961

Local and regional estimation of snow using SNO-TEL.

Gwilliam, B.L., MP 5275, *Eastern Snow Conference. Proceedings*, 1994, 51st, p.75-82, 16 refs.

Snow surveys, Snow cover distribution, Snow hydrology, Snow water equivalent, Snowmelt, Forest canopy, Weather stations, Data processing, Statistical analysis, Runoff forecasting, United States—Arizona—Mogollon Rim

One aspect of snow research is concerned with understanding the spatial distribution of snow. Snow distribution includes the influence of locational attributes such as latitude, longitude, elevation and canopy cover. The 1990 snow data from six USDA Soil Conservation Service Snow Telemetry (SNOTEL) sites on the Mogollon Rim of Arizona provide an opportune case study of snow distribution as a function of locational attributes. Study results show that percent canopy cover effectively describes the variation between the study sites and a derived regional average. Canopy cover is included in a locationally adjusted spatial snow cover model, which provides strong predictive estimates of snow cover as shown by concurrently collected snow course data.

53-1962

Commentary on the pitfalls of cleaning snow data.

Jones, V.K., *Eastern Snow Conference. Proceedings*, 1994, 51st, p.83-88, 5 refs.

Snow surveys, Snowfall, Snow depth, Weather observations, Meteorological data, Data processing, Weather forecasting, Statistical analysis, United States—Michigan

53-1963

Determining the snow water equivalent of shallow prairie snowcovers.

Shook, K., Gray, D.M., *Eastern Snow Conference. Proceedings*, 1994, 51st, p.89-95, 8 refs.

Plains, Snow surveys, Snow cover distribution, Snow depth, Snow density, Snow water equivalent, Snow hydrology, Snowmelt, Runoff forecasting, Statistical analysis, Canada—Saskatchewan

53-1964

**Case study of Great Lakes aggregate effects on lake-effect snow in Michigan.**

Sousounis, P.J., Mann, G.E., *Eastern Snow Conference. Proceedings*, 1994, 51st, p.97-104, 12 refs. Atmospheric circulation, Atmospheric disturbances, Lake effects, Snowstorms, Snowfall, Weather forecasting, Computerized simulation, Great Lakes, United States—Michigan

53-1965

**Effect of cover type on snow isotopic composition.**

Brammer, D.D., Brown, V.A., Houck, R.E., Kendall, C., McDonnell, J.J., Titus, A.C., *Eastern Snow Conference. Proceedings*, 1994, 51st, p.105-114, 27 refs. Vegetation patterns, Vegetation factors, Snow composition, Metamorphism (snow), Snow stratigraphy, Snow hydrology, Snowmelt, Runoff, Isotope analysis, United States—New York

53-1966

**Organic chemical permeation and storage in seasonal snow.**

Hogan, A.W., Leggett, D.C., MP 5276, *Eastern Snow Conference. Proceedings*, 1994, 51st, p.115-120, 8 refs.

Explosives, Waste disposal, Soil pollution, Vapor transfer, Snow cover effect, Snow permeability, Snow composition, Snow impurities

Experiments were conducted near the laboratory, where shallow trays or inverted containers containing nitroaromatic compounds as vapor sources were placed in contact with the surface prior to snowfall. Snow was allowed to accumulate over the sources, and the temperature profile within the adjacent snow and soil was recorded. After several days snow blocks were collected at 5 cm intervals above the trays. Snow densities, particle sizes, and grain character were determined on site. Nitroaromatic compounds in the meltwater were determined in the laboratory by liquid chromatography. Their concentrations were examined with respect to temperature gradient, snow density, and grain size distribution and found to vary systematically with distance from the source. None of the specimens analyzed contained the equivalent of a monolayer of compound based on the estimated specific surface of the snow. The front of instrumental detection of nitroaromatics was a function of the vapor pressure of the particular source compound; DNT permeated about 1 cm/day in "dry" snow.

53-1967

**Surface hoarfrost measurement and climatology.**

Ryerson, C.C., Claffey, K.J., Lemieux, G.E., MP 5277, *Eastern Snow Conference. Proceedings*, 1994, 51st, p.121-130, 8 refs.

Hoarfrost, Glaze, Ice accretion, Ice detection, Ice forecasting, Frost forecasting, Warning systems  
Surface hoarfrost modifies snowpacks and reduces travel safety, and it is neither measured nor forecast by weather services. The objectives of the authors are to show the reliability of hoarfrost measurements made with an ice detector and to simulate hoarfrost events. During evaluation of a Rosemount glaze ice detector, they found that it reliably indicated hoarfrost accretion. The ice detector probe's frequency was compared to the accreted frost weight on vertically and horizontally oriented metal test plates on 22 mornings. Ice detector probe frequency drop and plate frost weight correlated with  $R^2 > 0.6$ . The ice detector probe's vertical axis indicated the onset of frost accretion on vertical surfaces well, but horizontal surfaces typically began to frost a few hours earlier. Weather conditions at the onset and cessation of frost events were used to develop a rule-based forecast technique that successfully predicted most frost events observed by the ice detector.

53-1968

**Temporal and spatial variability of winter thermal background scenes.**

Peck, L., MP 5278, *Eastern Snow Conference. Proceedings*, 1994, 51st, p.131-141, 11 refs.

Snow optics, Snow surface temperature, Snow cover effect, Grasses, Vegetation factors, Soil temperature, Surface temperature, Infrared reconnaissance, Warning systems

This paper contrasts three winter backgrounds at a northern New England site in terms of surface temperature range, rate of temperature change, and spatial homogeneity. Ground cover surface temperatures usually are expressed as averages over several hours or days, which makes seasonal differences in thermal radiance apparent but obscures shorter-term variations that affect energy exchanges and infrared sensor systems. For this study, surface temperatures of the three winter ground covers are determined at half-hour intervals. The early winter background is a uniform grass cover following the end of the growing season. By late winter this has become a heterogeneous ground cover of thatch, new-growth grass, and exposed soil, which is a dynamic thermal background with strong daytime/nighttime differences. The midwinter snow cover is a stable thermal background because of its typically low rates of temperature change and low thermal radiance. It is shown that these three backgrounds produce distinctly different responses by passive infrared thermal

devices (PIRS) that are sensitive to the spatial variability of changes (both magnitude and rate of change) in thermal radiance from the area being viewed. It is proposed that a PIR could be used to determine remotely the nature of the ground cover (grass, snow, grass-thatch-soil) and particularly to detect early and late winter transient snow covers.

53-1969

**Measurement and data analysis of weather and avalanche records: recent directions and perspectives with case studies.**

Davis, R.E., Elder, K., MP 5279, *Eastern Snow Conference. Proceedings*, 1994, 51st, p.143-150, 24 refs. Snow surveys, Snowfall, Snow depth, Snow water equivalent, Meteorological factors, Avalanche forecasting, Data processing, Computerized simulation, Statistical analysis

Records of avalanche occurrence and control efforts have traditionally been correlated to snow and weather observations from local study plots. Recent attempts to rank or score the sensitivity of various study plot and meteorological observations to avalanche activity are reviewed with discussion on the utility of different methods of analysis. The discussion is expanded by showing examples using decision-tree methodology on data from a site under a maritime climate regime. It is shown that characterization of avalanche activity does not seem to affect the ranking of important variables, but it is important to overall classification accuracy. The rank order of the five primary variables was: new snow (24 hr) depth, snow water equivalent of the storm snow, storm total snow depth, average wind speed and total snow depth. The probability of correct classification was much higher for the maximum size class, compared with the total number of avalanche releases.

53-1970

**Reduction of winter driving hazards: a review of research and development in Ontario.**

Perchanok, M.S., *Eastern Snow Conference. Proceedings*, 1994, 51st, p.151-156, 19 refs.

Road icing, Ice detection, Snowdrifts, Blowing snow, Snow fences, Snow hedges, Salting, Sanding, Chemical ice prevention, Snow removal, Highway planning, Road maintenance, Cost analysis, Canada—Ontario

53-1971

**Papers.**

International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997, McClung, D.M., ed, *Annals of glaciology*, 1998, Vol.26, 394p., Refs. passim. For individual papers see 53-1972 through 53-2041.

Snow cover structure, Snow stratigraphy, Snow density, Snow strength, Snow cover stability, Snow air interface, Blowing snow, Snowdrifts, Snow erosion, Wind erosion, Avalanche mechanics, Avalanche modeling, Avalanche forecasting

53-1972

**Mechanical and structural properties of weak snow layers measured in situ.**

Föhn, P.M.B., Camponovo, C., Krüsi, G., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.1-6, 23 refs.

Snow cover structure, Snow stratigraphy, Depth hoar, Snow strength, Snow cover stability, Snow slides, Avalanche forecasting

53-1973

**Field observation and modelling of weak-layer evolution.**

Fierz, C., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.7-13, 12 refs.

Snow cover structure, Snow stratigraphy, Metamorphism (snow), Snow strength, Snow cover stability, Avalanche forecasting

53-1974

**Dependence of new-snow density on slope angle.**

Endo, Y., Kominami, Y., Niwano, S., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.14-18, 6 refs.

Snow depth, Snow accumulation, Snow density, Slope processes, Snow compression, Snow cover stability, Avalanche forecasting

53-1975

**Snow-creep forces on masts.**

Larsen, J.O., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.19-21, 5 refs.

Power line supports, Towers, Power line icing, Snow creep, Snow slides, Snow loads

53-1976

**Daytime preservation of surface-hoar crystals.**

Hachikubo, A., Akitaya, E., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.22-26, 9 refs.

Snow surface, Snow air interface, Snow crystal growth, Hoarfrost, Snow stratigraphy, Depth hoar, Snow strength, Snow cover stability, Snow slides, Avalanche forecasting

53-1977

**Measurement of snow-hardness distribution.**

Takeuchi, Y., Nohguchi, Y., Kawashima, K., Izumi, K., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.27-30, 5 refs.

Snow cover structure, Snow stratigraphy, Snow hardness, Snow density, Snow strength, Snow survey tools, Snow samplers

53-1978

**Tentative investigations on surface hoar in mountain forests.**

Höller, P., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.31-34, 12 refs.

Forest land, Forest lines, Snow air interface, Snow heat flux, Snow surface, Snow cover structure, Snow stratigraphy, Hoarfrost, Depth hoar, Snow cover stability, Snow slides, Avalanche formation, Avalanche forecasting, Austria

53-1979

**Energy balance and formation of sun crust in snow.**

Ozeki, T., Akitaya, E., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.35-38, 8 refs.

Snow surface, Snow air interface, Snow heat flux, Snow crust

53-1980

**Modelling of the densification of polar firn: characterization of the snow-firn transition.**

Arnaud, L., Lipenkov, V.I.A., Barnola, J.M., Gay, M., Duval, P., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.39-44, 30 refs.

Ice sheets, Snow compression, Firn stratification, Snow ice interface, Ice sintering, Glacier ice, Ice density

53-1981

**Modelling the change in structure and mechanical properties in dry-snow densification to ice.**

Golubev, V.N., Frolov, A.D., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.45-50, 10 refs.

Snow cover structure, Snow strength, Snow elasticity, Snow compression, Snow density, Snow ice interface, Ice formation, Mathematical models

53-1982

**Preliminary numerical investigation of the micro-mechanics of snow compaction.**

Johnson, J.B., MP 5280, *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.51-54, 15 refs.

Snow cover structure, Microstructure, Snow density, Snow strength, Snow elasticity, Snow plasticity, Snow deformation, Snow creep, Snow compaction, Snow compression, Computerized simulation

A dynamic finite-element computer program was used to examine the evolution of microstructure and its effect on continuum-scale deformation for the constant-speed uniaxial-strain compaction of an aggregate of roughly spherical elastic-plastic particles. Simulation results are used to explain some micromechanical aspects of snow compaction. Different compaction rates were used to examine the limits of quasi-static response and the effects of inertial stresses. Four stages of microstructurally controlled compaction were observed for quasi-static loading: particle re-arrangement, elastic deformation and two stages of plastic deformation. Observed pressure-density profiles for polar snow exhibit the same features of critical density and changes in the pressure-density ratio as found in the simulation and consist of four compaction stages: particle re-arrangement and three stages of creep particle deformation each following a critical density. Shear stresses appear to enhance the compaction during the stage III creep deformation of snow.

53-1983

**Elastic properties of snow-ice formations in their whole density range.**

Frolov, A.D., Fediukin, I.V., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.55-58, 16 refs.

Snow cover structure, Snow acoustics, Snow elasticity, Snow strength, Snow compression, Snow ice interface, Ice formation

53-1984

**Hemispherical-directional reflectance measurements of natural snow in the 0.9-1.45  $\mu$ m spectral range: comparison with adding-doubling modeling.**

Sergent, C., Leroux, C., Pougatch, E., Guirado, F., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.59-63, 20 refs.

Snow cover structure, Metamorphism (snow), Snow morphology, Snow optics, Reflectivity, Ice crystal size, Ice crystal optics

53-1985

**Irreducible water saturation in snow: experimental results in a cold laboratory.**

Coléou, C., Lesaffre, B., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.64-68, 11 refs.

Wet snow, Snow water content, Snow permeability, Snow density, Snow cover structure, Snow morphology

53-1986

**Measurement of density and wetness in snow using time-domain reflectometry.**

Schneebeil, M., Coléou, C., Touvier, F., Lesaffre, B., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.69-72, 14 refs.

Snow density, Snow water content, Snow electrical properties, Ice dielectrics, Snow survey tools, Snow samplers, Moisture meters

53-1987

**Wavy temperature and density distributions formed in snow.**

Sokratov, S.A., Maeno, N., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.73-76, 12 refs.

Snow density, Snow thermal properties, Snow temperature, Snow heat flux, Snow permeability, Water vapor, Vapor diffusion

53-1988

**Viscous compression model for estimating the depth of new snow.**

Kominami, Y., Endo, Y., Niwano, S., Ushioda, S., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.77-82, 13 refs.

Snow depth, Snow accumulation, Snow compression, Snow density, Snow stratigraphy, Mathematical models, Statistical analysis

53-1989

**Formation of ice layers by infiltration and refreezing of meltwater.**

Pfeffer, W.T., Humphrey, N.F., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.83-91, 27 refs.

Ice sheets, Ice cores, Glacier alimentation, Glacial hydrology, Snow stratigraphy, Snow ice interface, Snow ice, Snowmelt, Meltwater, Seepage, Regelation, Glacier ice, Firn stratification, Mathematical models, Greenland

53-1990

**Acoustic impedance measurement of snow density.**

Marco, O., Buser, O., Villemain, P., Touvier, F., Revol, P., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.92-96, 22 refs.

Snow cover structure, Snow density, Snow acoustics, Acoustic measurement, Mathematical models

53-1991

**Laboratory experiments on shear failure of snow.**

Schweizer, J., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.97-102, 29 refs.

Snow strength, Snow deformation, Snow cover stability, Snow slides, Avalanche formation, Avalanche forecasting

53-1992

**Portable calorimeter for measuring liquid-water content of wet snow.**

Kawashima, K., Endo, T., Takeuchi, Y., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.103-106, 17 refs.

Wet snow, Snow water content, Moisture meters, Calorimeters, Snow survey tools, Snow samplers

53-1993

**Constant-speed penetrometer for high-resolution snow stratigraphy.**

Schneebeil, M., Johnson, J.B., MP 5281, *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.107-111, 16 refs.

Snow cover structure, Snow stratigraphy, Snow strength, Snow hardness, Snow cover stability, Avalanche forecasting, Penetration tests, Penetrometers, Snow survey tools, Snow samplers

A new constant-speed penetrometer for field and laboratory measurements has been developed. The initially independent work of SFISAR and CRREL has been brought together, and a portable field device is now in an advanced stage of testing. The new penetrometer has high rigidity and a high-resolution large dynamic range force sensor. It uses a much smaller sensing head (5 mm) than previous designs and has a constant-speed drive. With this construction, the penetration resistance of very fine layers and the influence of the bonding strength between snow grains can be more accurately determined than is possible with the ramsonde or Pandalp. Artificial foam layers as thin as 2 mm and thin layers in snow have been detected by the penetrometer. Thin snow layers detected from penetration-resistance profiles have been correlated to fine layering as determined from plane-section microphotographs of samples taken adjacent to the profile. The instrument's measurements are highly repeatable and the lack of subjective decisions when operating the penetrometer makes the penetration resistance a quantitative measure of snow stratigraphy.

53-1994

**Objective determination of snow-grain characteristics from images.**

Lesaffre, B., Pougatch, E., Martin, E., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.112-118, 6 refs.

Snow cover structure, Snow morphology, Metamorphism (snow), Snow crystal structure, Ice crystal size, Ice crystal replicas, Computer applications, Image processing

53-1995

**Snowpack water-equivalent estimates from satellite and aircraft remote-sensing measurements of the Red River basin, north-central U.S.A.**

Josberger, E.G., Mognard, N.M., Lind, B., Matthews, R., Carroll, T., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.119-124, 25 refs.

Snow surveys, Snow cover distribution, Snow water equivalent, Terrain identification, Radiometry, Aerial surveys, Spaceborne photography, Image processing, United States—North Dakota, United States—South Dakota, United States—Minnesota

53-1996

**Differences in compaction behavior of three climate classes of snow.**

Sturm, M., Holmgren, J., MP 5282, *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.125-130, 22 refs.

Snow surveys, Snow cover distribution, Snow morphology, Snow compaction, Snow compression, Snow density, Snow water equivalent, Climatic factors, Meteorological data, Data processing, Statistical analysis

In a recent paper (Sturm et al., 1995), a global seasonal snow-cover classification system was developed with each class defined by snow properties like grain-size and type. Here, characteristic bulk density vs time curves are assigned to three classes using snow-course data from Alaskan and Canadian sites. Within each class, curves have similar slopes and intercepts but between classes they are different. The relationship between slope, intercept and snow rheology has been investigated using a finite-difference model in which snow layers are assumed to behave as viscous fluids. Using observed slopes, the density-dependent compactive viscosity of each class has been determined. These are consistent with published values. Results indicate that load and load history are less important to the compaction behavior than grain and bond characteristics, snow temperature and wetness. The study suggests that differences in compaction behavior arise primarily from differences in rheology, the result of climatically controlled differences in the character of the snow. This finding explains why regional snow densities have been successfully predicted from air temperature and wind speed alone, without considering snow depth.

53-1997

**New categories for the climatic division of snowy areas in Japan.**

Ishizaka, M., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.131-137, 7 refs.

Snow surveys, Snow cover distribution, Snow morphology, Snow depth, Wet snow, Depth hoar, Air temperature, Climatic factors, Meteorological data, Statistical analysis, Japan

53-1998

**Validation of an application for forecasting blowing snow.**

Guyomarc'h, G., Mérindol, L., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.138-143, 14 refs.

Blowing snow, Snowdrifts, Wind erosion, Snow erosion, Weather forecasting, Avalanche triggering, Avalanche forecasting, Statistical analysis, Computerized simulation, France

53-1999

**Relationship between snowdrift development and drifted snow during a wind episode.**

Mases, M., Font, D., Vilaplana, J.M., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.144-148, 10 refs.

Blowing snow, Snowdrifts, Snow depth, Wind erosion, Snow erosion, Weather forecasting, Spain—Pyrenees

53-2000

**Determination of snow-covered area in different land covers in central Alaska, U.S.A., from aircraft data—April 1995.**

Hall, D.K., Foster, J.L., Chang, A.T.C., Benson, C.S., Chien, J.Y.L., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.149-155, 16 refs.

Snow surveys, Snow cover distribution, Snow depth, Snow density, Snow water equivalent, Forest land, Forest canopy, Radiometry, Terrain identification, Aerial surveys, Image processing, Mapping, United States—Alaska

53-2001

**Solute in high arctic glacier snow cover and its impact on runoff chemistry.**

Hodgkins, R., Tranter, M., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.156-160, 23 refs.

Glacial hydrology, Snow hydrology, Snow composition, Snowmelt, Meltwater, Air pollution, Scavenging, Water pollution, Runoff, Hydrogeochemistry, Water chemistry, Norway—Spitsbergen

53-2002

**Snowmelt modelling on Signy Island, South Orkney Islands.**

Gardiner, M.J., Ellis-Evans, J.C., Anderson, M.G., Tranter, M., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.161-166, 31 refs.

Snow air interface, Albedo, Snow heat flux, Snow hydrology, Snow water equivalent, Snow melting, Snowmelt, Runoff forecasting, Computerized simulation, Antarctica—Signy Island

53-2003

**Interaction between drifting snow and atmospheric turbulence.**

Bintanja, R., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.167-173, 28 refs.

Snow air interface, Blowing snow, Snowdrifts, Wind erosion, Snow erosion, Wind velocity, Atmospheric boundary layer, Turbulence, Turbulent exchange, Mathematical models

53-2004

**Blowing and drifting snow in alpine terrain: numerical simulation and related field measurements.**

Gauer, P., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.174-178, 16 refs.

Snow air interface, Blowing snow, Snowdrifts, Wind erosion, Snow erosion, Avalanche forecasting, Mathematical models

53-2005

**Turbulent fluxes above the snow surface.**

Martin, E., Lejeune, Y., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.179-183, 13 refs.

Snow air interface, Snow heat flux, Atmospheric boundary layer, Turbulent exchange, Computerized simulation

53-2006

**Measurements and numerical simulations of snow-particle saltation.**

Nishimura, K., Sugiura, K., Nemoto, M., Maeno, N., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.184-190, 21 refs.

Snow air interface, Blowing snow, Snowdrifts, Wind erosion, Snow erosion, Wind tunnels, Environment simulation, Mathematical models

53-2007

**Numerical simulation of drifting snow: erosion and deposition models.**

Naaim, M., Naaim-Bouvet, F., Martinez, H., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.191-196, 13 refs.

Snow air interface, Blowing snow, Snowdrifts, Wind erosion, Snow erosion, Turbulent exchange, Mathematical models, Computerized simulation

53-2008

**Development of a rule-based spatial model of wind transport and deposition of snow.**

Purves, R.S., Barton, J.S., Mackaness, W.A., Sugden, D.E., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.197-202, 11 refs.

Snow air interface, Blowing snow, Snowdrifts, Snow accumulation, Wind erosion, Snow erosion, Topographic effects, Computerized simulation

53-2009

**Simulation of blowing snow over the Antarctic ice sheet.**

Galleé, H., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.203-206, 24 refs.

Blowing snow, Snow air interface, Snow evaporation, Polar atmospheres, Atmospheric circulation, Atmospheric pressure, Atmospheric density, Wind (meteorology), Computerized simulation, Antarctica

53-2010

**Charge-to-mass ratio of individual blowing-snow particles.**

Schmidt, D.S., Dent, J.D., Schmidt, R.A., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.207-211, 13 refs.

Snow air interface, Blowing snow, Wind erosion, Snow erosion, Snow electrical properties, Cloud electrification, Charge transfer

53-2011

**Snowdrift modelling in a wind tunnel: vertical and horizontal variation of the snow flux.**

Naaim-Bouvet, F., Naaim, M., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.212-216, 16 refs.

Snowstorms, Snow air interface, Blowing snow, Snowdrifts, Wind erosion, Snow erosion, Wind tunnels, Environment simulation

53-2012

**Field experiments on "living" snow fences.**

Naaim-Bouvet, F., Mullenbach, P., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.217-220, 8 refs.

Blowing snow, Snowdrifts, Snow fences, Snow hedges, Protective vegetation, France

53-2013

**Drifting-snow acoustic detector: experimental tests in La Molina, Spanish Pyrenees.**

Font, D., Naaim-Bouvet, F., Roussel, M., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.221-224, 9 refs.

Blowing snow, Snowdrifts, Snow acoustics, Acoustic measurement, Anemometers, Precipitation gages, Spain—Pyrenees

53-2014

**Experimental mass-flux measurements: a comparison of different gauges with estimated theoretical data.**

Font, D., Mases, M., Vilaplana, J.M., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.225-230, 10 refs.

Blowing snow, Snowdrifts, Wind erosion, Snow erosion, Precipitation gages, Anemometers, Spain—Pyrenees

53-2015

**Passive snow removal with a vortex generator at the Pegasus runway, Antarctica.**

Lang, R.M., Blaisdell, G.L., MP 5283, *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.231-236, 10 refs.

Ice shelves, Ice runways, Snow ice interface, Snow removal, Snow removal equipment, Snow fences, Wind erosion, Snow erosion, Antarctica—McMurdo Ice Shelf

During the construction phase of the Pegasus runway on the McMurdo Ice Shelf, relatively large amounts of snow and ice were cleared to meet basic grade requirements for the runway surface. A considerable amount of material remains adjacent to the runway in two north-south extending mounds (berms). The runway was originally constructed on an experimental basis so attention was not focused on developing and executing a snow-removal/accumulation plan. After the runway was successfully constructed and supporting routine flight operations, concern developed over the possibility of snow accumulation adjacent to the berm area eventually inundating the runway. The intent of this project was to analyze snow accumulation and to recommend passive methods for removing some of the berm material and snow adjacent to the berm. The authors found that large quantities of excess snow could be removed by use of vortex fences which cause erosion on the leeward side of the fence. The vortex fence was designed to be portable (unlike traditional jet or blower fences) and self-orienting into the wind to allow snow removal regardless of the wind direction. The vortices generated by the fence do not dissipate rapidly, providing effective and sustained erosion.

53-2016

**Empirical model for snowdrift distribution in avalanche-starting zones.**

Mases, M., Buisson, L., Frey, W., Marti, G., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.237-241, 8 refs.

Blowing snow, Snowdrifts, Wind erosion, Snow erosion, Avalanche formation, Avalanche modeling, Avalanche forecasting, Switzerland

53-2017

**Physical modelling of avalanches using an aerosol cloud of powder materials.**

Bozhinskiĭ, A.N., Sukhanov, L.A., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.242-246, 11 refs.

Avalanche mechanics, Avalanche tracks, Avalanche deposits, Avalanche modeling, Environment simulation

## 53-2018

**Density, velocity and friction measurements in a dry-snow avalanche.**

Dent, J.D., Burrell, K.J., Schmidt, D.S., Louge, M.Y., Adams, E.E., Jazbutis, T.G., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.247-252, 8 refs.

Snow density, Avalanche mechanics, Avalanche tracks, Avalanche modeling, Shear flow, Snow loads

## 53-2019

**Modelling of snow entrainment and deposition in powder-snow avalanches.**

Issler, D., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.253-258, 21 refs.

Snow density, Snow erosion, Avalanche formation, Avalanche tracks, Avalanche deposits, Avalanche mechanics, Avalanche modeling, Mathematical models

## 53-2020

**Measurements of the velocity distribution in ping-pong-ball avalanches.**

Keller, S., Ito, Y., Nishimura, K., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.259-264, 14 refs.

Avalanche mechanics, Avalanche modeling

## 53-2021

**Simulations of dense-snow avalanches on deflecting dams.**

Irgens, F., Schieldrop, B., Harbitz, C.B., Domaas, U., Opsahl, R., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.265-271, 14 refs.

Avalanche mechanics, Avalanche modeling, Avalanche engineering, Snow loads, Snow fences, Mathematical models

## 53-2022

**Limiting stress states in granular avalanches.**

Tai, Y.C., Gray, J.M.N.T., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.272-276, 7 refs.

Avalanche mechanics, Avalanche modeling, Shear flow, Mathematical models

## 53-2023

**On the inclusion of a velocity-dependent basal drag in avalanche models.**

Gray, J.M.N.T., Tai, Y.C., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.277-280, 6 refs.

Avalanche mechanics, Avalanche modeling, Shear flow, Mathematical models

## 53-2024

**Mathematical and physical modelling of powder-snow avalanches in Russia.**

Eglit, M.E., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.281-284, 31 refs.

Avalanche mechanics, Avalanche modeling, Turbulent flow, Mathematical models

## 53-2025

**Statistical prediction of maximum avalanche run-out distances from topographic data in the western Catalan Pyrenees (northeast Spain).**

Furdada, G., Vilaplana, J.M., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.285-288, 9 refs.

Avalanche tracks, Avalanche deposits, Avalanche mechanics, Avalanche modeling, Avalanche forecasting, Statistical analysis, Spain—Pyrenees

## 53-2026

**Physical and numerical analysis of the front of a gravity current on a horizontal bottom.**

Naaim, M., Pellarin, T., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.289-295, 15 refs.

Avalanche mechanics, Avalanche modeling, Turbulent flow, Mathematical models

## 53-2027

**Refinements to the stability index for skier-triggered dry-slab avalanches.**

Jamieson, J.B., Johnston, C.D., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.296-302, 24 refs.

Snow cover structure, Snow strength, Snow cover stability, Avalanche triggering, Avalanche forecasting, Mathematical models, Statistical analysis

## 53-2028

**Probabilistic evaluation of snow-slab stability on mountain slopes.**

Chernous, P.A., Fedorenko, I.U.V., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.303-306, 8 refs.

Snow strength, Snow cover stability, Avalanche triggering, Avalanche forecasting, Statistical analysis

## 53-2029

**Impact of surface perturbations on snow-slope stability.**

Conway, H., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.307-312, 16 refs.

Snow strength, Snow cover stability, Snow slides, Avalanche triggering, Avalanche forecasting, Mathematical models

## 53-2030

**Prototype for operational seismic detection of natural avalanches.**

Leprettre, B., Navarre, J.P., Panel, J.M., Touvier, F., Taillefer, A., Roule, J., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.313-318, 6 refs.

Snow cover stability, Snow acoustics, Snowquakes, Avalanche forecasting, Seismic surveys, Warning systems, Data transmission, France

## 53-2031

**Study of avalanche dynamics by seismic methods, image-processing techniques and numerical models.**

Sabot, F., Naaim, M., Granada, F., Suriñach, E., Planet, P., Furdada, G., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.319-323, 8 refs.

Snow acoustics, Snowquakes, Avalanche modeling, Avalanche tracks, Seismic surveys, Image processing, Spain—Pyrenees

## 53-2032

**Infrasonic monitoring of snow-avalanche activity: what do we know and where do we go from here.**

Adam, V., Chritin, V., Rossi, M., Van Lancker, E., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.324-328, 5 refs.

Snow cover stability, Snow acoustics, Snowquakes, Avalanche forecasting, Acoustic measurement, Warning systems, Switzerland

## 53-2033

**Spatial characteristics of avalanche activity in an Alpine valley—a GIS approach.**

Stoffel, A., Meister, R., Schweizer, J., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.329-336, 10 refs.

Avalanches, Avalanche formation, Avalanche triggering, Avalanche tracks, Accidents, Avalanche forecasting, Data processing, Statistical analysis, Switzerland

## 53-2034

**Global distribution of snow avalanches and changing activity in the Northern Hemisphere due to climate change.**

Glazovskaia, T.G., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.337-342, 3 refs.

Snow cover distribution, Global warming, Avalanches, Avalanche forecasting, Long range forecasting, Computerized simulation

## 53-2035

**Field method for avalanche danger-level verification.**

Cagnati, A., Valt, M., Soratroi, G., Gavaldà, J., Sellés, C.G., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.343-346, 8 refs.

Snow cover stability, Avalanche forecasting, Data processing, Italy, Spain

## 53-2036

**Crocus test results for snowpack modeling in two snow climates with respect to avalanche forecasting.**

Mingo, L., McClung, D.M., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.347-356, 19 refs.

Snow depth, Snow density, Snow temperature, Metamorphism (snow), Snow cover structure, Snow stratigraphy, Hoarfrost, Depth hoar, Snow cover stability, Avalanche forecasting, Computerized simulation, Canada—British Columbia—Glacier National Park, Canada—British Columbia—Coast Mountains

## 53-2037

**Short-term numerical avalanche forecast used operationally at Météo-France over the Alps and Pyrenees.**

Durand, Y., Giraud, G., Mérindol, L., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.357-366, 14 refs.

Precipitation (meteorology), Meteorological data, Data processing, Weather forecasting, Snow cover stability, Avalanche forecasting, Computerized simulation, France—Alps, France—Pyrenees

## 53-2038

**Inferential statistics to verify prediction models.**

Bolognesi, R., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.367-369, 4 refs.

Avalanche forecasting, Data processing, Computerized simulation, Statistical analysis

53-2039

Slushflow hazard—where, why and when? 25 years of experience with slushflow consulting and research.

Hestnes, E., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.370-376, 16 refs.

Snow cover stability, Slush, Avalanche formation, Avalanche triggering, Avalanche forecasting, Flood forecasting, Norway

53-2040

Atmospheric and hydrological boundary conditions for slushflow initiation due to snowmelt.

Scherer, D., Gude, M., Gempeler, M., Parlow, E., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.377-380, 14 refs.

Snow hydrology, Snowmelt, Slush, Snow cover stability, Avalanche formation, Avalanche triggering, Avalanche forecasting, Flood forecasting, Norway—Spitsbergen, Sweden

53-2041

Snowmelt and slushflows: hydrological and hazard implications.

Gude, M., Scherer, D., *Annals of glaciology*, 1998, Vol.26, International Symposium on Snow and Avalanches, Chamonix Mont-Blanc, France, May 26-30, 1997. Papers. Edited by D.M. McClung, et al, p.381-384, 17 refs.

Snow hydrology, Snowmelt, Slush, Snow cover stability, Avalanche formation, Avalanche triggering, Avalanche forecasting, Flood forecasting, Norway—Spitsbergen, Sweden

53-2042

Neodymium and strontium isotopic and trace element composition of a Mesozoic CFB suite from Dronning Maud Land, Antarctica: implications for lithosphere and asthenosphere contributions to Karoo magmatism.

Luttinen, A.V., Rämö, O.T., Huhma, H., *Geochimica et cosmochimica acta*, Aug. 1998, 62(15), p.2701-2714, Refs. p.2712-2714.

Geologic structures, Geochemistry, Magma, Isotopes, South Africa, Antarctica—Queen Maud Land

53-2043

Geology, geochemistry and geophysics of the Kerguelen Islands. [Géologie, géochimie et géophysique des Kerguelen]

Schlich, R., Giret, A., *Société Géologique de France. Mémoires. Nouvelle série*, 1994, No.166, 108p., In French or English. Refs. passim. For individual papers see 53-2043 through 53-2052.

DLC QE1.S7 n.s. No.166

Marine geology, Bottom sediment, Volcanoes, Magma, Geochemistry, Hydrothermal processes, Earth crust, Continental drift, Tectonics, Stratigraphy, Geochronology, Kerguelen Islands

53-2044

Distribution of felsic rocks within the alkaline igneous centres.

Bonin, B., Bardintzeff, J.M., Giret, A., *Société Géologique de France. Mémoires. Nouvelle série*, 1994, No.166, Géologie, géochimie et géophysique des Kerguelen. Edited by R. Schlich and A. Giret, p.9-24, With French summary. Refs. p.21-24.

DLC QE1.S7 n.s. No.166

Geological surveys, Geophysical surveys, Rock properties, Lithology, Volcanoes, Magma, Hydrothermal processes, Geochemistry, Tectonics, Earth crust, Geochronology, Kerguelen Islands

53-2045

Chemical and carbon isotopic compositions of the fumaroles of the Rallier du Baty peninsula (Kerguelen Islands). [Étude chimique et rapport isotopique du carbone des fumaroles de la péninsule Rallier du Baty (îles Kerguelen)]

Delorme, H., Verdier, O., Cheminée, J.L., Giret, A., Pineau, F., Javoy, M., *Société Géologique de France. Mémoires. Nouvelle série*, 1994, No.166, Géologie, géochimie et géophysique des Kerguelen. Edited by R. Schlich and A. Giret, p.25-30, In French with English summary. 24 refs.

DLC QE1.S7 n.s. No.166  
Volcanoes, Magma, Hydrothermal processes, Geothermy, Geochemistry, Chemical analysis, Isotope analysis, Kerguelen Islands

53-2046

Zeolites of Kerguelen Islands: nature and diversity. [Nature et diversité des zéolites de Kerguelen]

Nativel, P., Verdier, O., Giret, A., *Société Géologique de France. Mémoires. Nouvelle série*, 1994, No.166, Géologie, géochimie et géophysique des Kerguelen. Edited by R. Schlich and A. Giret, p.31-45, In French with English summary. 58 refs.

DLC QE1.S7 n.s. NO.166  
Minerals, Volcanoes, Magma, Geochemistry, Hydrogeochemistry, Geothermy, Hydrothermal processes, Kerguelen Islands

53-2047

Kerguelen plutonic complexes: Sr, Nd, Pb isotopic study and inferences about their sources, age, and geodynamic setting.

Weis, D., Giret, A., *Société Géologique de France. Mémoires. Nouvelle série*, 1994, No.166, Géologie, géochimie et géophysique des Kerguelen. Edited by R. Schlich and A. Giret, p.47-59, With French summary. 51 refs.

DLC QE1.S7 n.s. No.166  
Geochemistry, Isotope analysis, Lithology, Volcanoes, Magma, Earth crust, Geochronology, Tectonics, Kerguelen Islands

53-2048

Magmatic activity associated with the Kerguelen-Heard plume: implications for plume dynamics.

Saunders, A.D., Storey, M., Kent, R.W., Gibson, I.L., *Société Géologique de France. Mémoires. Nouvelle série*, 1994, No.166, Géologie, géochimie et géophysique des Kerguelen. Edited by R. Schlich and A. Giret, p.61-72, With French summary. 69 refs.

DLC QE1.S7 n.s. No.166  
Earth crust, Continental drift, Tectonics, Volcanoes, Magma, Geochemistry, Geochronology, Kerguelen Islands

53-2049

Campanian-Maastrichtian foraminifera and nannoplankton from the Kerguelen-Heard Plateau.

[Foraminifères et nannoplankton du Campanien-Maastrichtien inférieur sur le plateau de Kerguelen-Heard (océan Indien)]  
Robaszynski, F., Acheriteguy, J., Fröhlich, F., *Société Géologique de France. Mémoires. Nouvelle série*, 1994, No.166, Géologie, géochimie et géophysique des Kerguelen. Edited by R. Schlich and A. Giret, p.73-80, In French with English summary. 12 refs.

DLC QE1.S7 n.s. No.166  
Marine geology, Marine deposits, Bottom sediment, Fossils, Drill core analysis, Stratigraphy, Soil dating, Geochronology, Kerguelen Islands

53-2050

Geologic evolution of the Kerguelen-Heard Plateau (Indian Ocean). [Évolution géologique du plateau de Kerguelen-Heard (océan Indien)]

Fröhlich, F., Gely, J.P., Perseil, E.A., Wicquart, E., Verdier, O., *Société Géologique de France. Mémoires. Nouvelle série*, 1994, No.166, Géologie, géochimie et géophysique des Kerguelen. Edited by R. Schlich and A. Giret, p.81-90, In French with English summary. 36 refs.

DLC QE1.S7 n.s. No.166  
Geological surveys, Geophysical surveys, Marine geology, Bottom sediment, Magma, Geochemistry, Hydrothermal processes, Earth crust, Continental drift, Tectonics, Stratigraphy, Geochronology, Kerguelen Islands

53-2051

77°E graben and the history of the southern Kerguelen Plateau.

Leclaire, L., Bassias, Y., *Société Géologique de France. Mémoires. Nouvelle série*, 1994, No.166, Géologie, géochimie et géophysique des Kerguelen. Edited by R. Schlich and A. Giret, p.91-97, With French summary. 33 refs.

DLC QE1.S7 n.s. No.166

Geological surveys, Geophysical surveys, Marine geology, Bottom topography, Bottom sediment, Tectonics, Magma, Earth crust, Continental drift, Stratigraphy, Geochronology, Kerguelen Islands

53-2052

Extensive tectonics on the Kerguelen Plateau. [Tectonique extensive sur le plateau de Kerguelen]

Munsch, M., Fritsch, B., Schlich, R., Rotstein, Y., *Société Géologique de France. Mémoires. Nouvelle série*, 1994, No.166, Géologie, géochimie et géophysique des Kerguelen. Edited by R. Schlich and A. Giret, p.99-108, In French with English summary. 42 refs.

DLC QE1.S7 n.s. No.166

Marine geology, Bottom topography, Bottom sediment, Magma, Earth crust, Continental drift, Tectonics, Drill core analysis, Stratigraphy, Geochronology, Kerguelen Islands

53-2053

Testing the frost resistance of chippings. [Prüfung der Frostbeständigkeit von Körnungen]

Eppensteiner, W., Krzemien, R., *Austria. Bundesministerium für Wirtschaftliche Angelegenheiten. Straßenforschung (Federal Ministry for Economic Affairs. Road research)*, 1990, No.389, p.1-62, In German with French and English summaries. 25 refs.

Pavements, Bitumens, Frost resistance, Freeze thaw tests, Road maintenance, Austria

53-2054

Low temperature behavior of polymer-modified bitumen layers. [Zum Kälteverhalten polymer-modifizierter Asphaltsschichten]

Baumann, H., Fenz, G., Krzemien, R., Rainer, A., Waldhans, H., *Austria. Bundesministerium für Wirtschaftliche Angelegenheiten. Straßenforschung (Federal Ministry for Economic Affairs. Road research)*, 1990, No.389, p.63-87, In German with French and English summaries. 27 refs.

Pavements, Bitumens, Polymers, Low temperature tests, Road maintenance, Austria

53-2055

Avalanche radar for road protection. Final report. [Lawinenradar für die Straßensicherung Enderbericht]

Riedler, W., Randeu, W., Okorn, R., *Austria. Bundesministerium für wirtschaftliche Angelegenheiten. Straßenforschung (Federal Ministry for Economic Affairs. Road research)*, 1991, No.396, 31p., In German with French and English summaries. 5 refs.

Avalanche triggering, Avalanche tracks, Explosives, Blasting, Radar tracking, Safety, Road maintenance, Austria

53-2056

Ice warning systems test 1990/91. [Glatteisfrühwarnsysteme Test 1990/91]

Scharsching, H., *Austria. Bundesministerium für Wirtschaftliche Angelegenheiten. Straßenforschung (Federal Ministry for Economic Affairs. Road research)*, 1992, No.412, 233p., In German with French and English summaries. 19 Refs.

Road icing, Glaze, Ice detection, Ice forecasting, Warning systems, Cold weather tests, Road maintenance, Austria



53-2057

**Non-frost susceptible unbound road bases. [Frost-sichere, ungebundene Tragschichten aus sandarmen Korngemischen]**

Krzemien, R., Langer, W., Austria. *Bundesministerium für Wirtschaftliche Angelegenheiten. Straßenforschung (Federal Ministry for Economic Affairs. Road research)*, 1995, No.430, p.59-111, In German with French and English summaries. 47 refs.

Subgrades, Aggregates, Frost resistance, Frost protection, Subgrade maintenance, Road maintenance, Austria

53-2058

**Retrieval of tropical cirrus thermal optical depth, crystal size, and shape using a dual-view instrument at 3.7 and 10.8  $\mu\text{m}$ .**

Baran, A.J., Brown, S.J., Foot, J.S., Mitchell, D.L., *Journal of the atmospheric sciences*, Jan. 1, 1999, 56(1), p.92-110, 54 refs.

Climatology, Radiation balance, Cloud physics, Ice crystal optics, Ice crystal size, Ice crystal structure, Attenuation, Radiometry, Mathematical models, Spaceborne photography

53-2059

**Apparatus for measuring the growth velocity of dendritic ice in undercooled water.**

Ohsaka, K., Trinh, E.H., *Journal of crystal growth*, Nov. 1998, 194(1), p.138-142, 9 refs.

Ice physics, Ice crystal growth, Dendritic ice, Velocity measurement, Temperature effects, Nucleation, Ice water interface, Solutions, Cavitation, Thermal diffusion, Instruments

53-2060

**Evaluation of ship-based electromagnetic-inductive thickness measurements of summer sea-ice in the Bellingshausen and Amundsen Seas, Antarctica.**

Haas, C., *Cold regions science and technology*, Feb. 1998, 27(1), p.1-16, 35 refs.

Oceanographic surveys, Sea ice, Ice cover thickness, Sounding, Electrical measurement, Profiles, Lasers, Pressure ridges, Statistical analysis, Accuracy, Antarctica—Bellingshausen Sea, Antarctica—Amundsen Sea

53-2061

**Extensive measurements of snow depth using FM-CW radar.**

Holmgren, J., Sturm, M., Yankielun, N.E., Koh, G., MP 5284, *Cold regions science and technology*, Feb. 1998, 27(1), p.17-30, 15 refs.

Snow surveys, Tundra terrain, Radar echoes, Snow depth, Probes, Computerized simulation, Spectra, Data processing, Statistical analysis, Filters, Accuracy

A sled-mounted X-band FM-CW radar and field data reduction system was developed and field tested. An integral part of the measurement program was the use of a computer algorithm to pick peak radar amplitudes, which were needed to convert radar data into depths in the field. A set of field protocols, designed to collocate radar and hand-probe depth measurements, were used with the algorithm to locally calibrate the radar because, without local calibration, depths were unreliable. Mean snow depths determined using the calibrated radar agreed with mean depths determined by hand to within 3% but had a consistently larger variance because of radar measurement errors. An analysis of the errors indicates that they are random and can be removed by filtering using an Optimal (Wiener) filter, thereby producing both the same mean and variance in snow depth from the radar as that obtained by hand-probing.

53-2062

**Fracture mechanics approach to penetration of surface crevasses on glaciers.**

Van der Veen, C.J., *Cold regions science and technology*, Feb. 1998, 27(1), p.31-47, 33 refs.

Glacier ice, Ice mechanics, Glacier surfaces, Calving, Crevasses, Water level, Meltwater, Crack propagation, Orientation, Stress concentration, Tensile properties, Elastic properties

53-2063

**Review of insect survival in frozen soils with particular reference to soil-dwelling stages of corn rootworms.**

Ellsbury, M.M., Pikul, J.L., Jr., Woodson, W.D., *Cold regions science and technology*, Feb. 1998, 27(1), p.49-56, 49 refs.

Frozen ground mechanics, Freeze thaw cycles, Biomass, Damage, Cold weather survival, Distribution, Soil temperature, Temperature effects, Countermeasures

53-2064

**Model tests of a submerged turret loading concept in level ice, broken ice and pressure ridges.**

Løset, S., Kanestrøm, Ø., Pytte, T., *Cold regions science and technology*, Feb. 1998, 27(1), p.57-73, 16 refs.

Ships, Moorings, Loads (forces), Ice cover effect, Pressure ridges, Statistical analysis, Mechanical tests, Simulation, Models

53-2065

**Natural abundance of carbon and nitrogen isotopes in potential sources of organic matter to soils of Taylor Valley, Antarctica.**

Burkins, M.B., Chamberlain, C.P., Virginia, R.A., Freckman, D.W., *Antarctic journal of the United States*, 1996, 31(2), p.209-210, 6 refs.

Soil surveys, Soil chemistry, Desert soils, Geochemistry, Isotope analysis, Carbon isotopes, Nutrient cycle, Ecology, Antarctica—Taylor Valley

53-2066

**Role of phytoplankton extracellular release in bacterioplankton growth of Taylor Valley Lakes, Antarctica.**

Takacs, C.D., Priscu, J.C., *Antarctic journal of the United States*, 1996, 31(2), p.211-212, 7 refs.

Limnology, Plankton, Photosynthesis, Bacteria, Microbiology, Plant physiology, Frozen lakes, Water chemistry, Ecology, Antarctica—Bonney, Lake, Antarctica—Hoare, Lake, Antarctica—Fryxell, Lake

53-2067

**Microbially mediated transformations of manganese in Lake Vanda.**

Bratina, B.J., Schmidt, T.M., Green, W.J., *Antarctic journal of the United States*, 1996, 31(2), p.213-214, 9 refs.

Microbiology, Limnology, Geochemistry, Water chemistry, Frozen lakes, Antarctica—Vanda, Lake

53-2068

**Lake-ice algal phototroph community composition and growth rates, Lake Bonney, dry valley lakes, Antarctica.**

Pinckney, J.L., Pearl, H.W., *Antarctic journal of the United States*, 1996, 31(2), p.215-216, 4 refs.

Lake ice, Plant physiology, Algae, Biomass, Microbiology, Chemical analysis, Bacteria, Ice cover effect, Frozen lakes, Antarctica—Bonney, Lake

53-2069

**Photosynthetic characteristics of cyanobacteria in permanent ice covers on lakes in the McMurdo Dry Valleys, Antarctica.**

Fritsen, C.H., Priscu, J.C., *Antarctic journal of the United States*, 1996, 31(2), p.216-218, 4 refs.

Limnology, Frozen lakes, Ice cover effect, Plant physiology, Microbiology, Bacteria, Photosynthesis, Ice composition, Sediments, Algae, Light (visible radiation), Antarctica—McMurdo Dry Valleys

53-2070

**Nitrogen fixation within permanent ice covers on lakes in the McMurdo Dry Valleys, Antarctica.**

Grue, A.M., Fritsen, C.H., Priscu, J.C., *Antarctic journal of the United States*, 1996, 31(2), p.218-220, 7 refs.

Lake ice, Ice composition, Frozen lakes, Microbiology, Bacteria, Sediments, Ice cores, Limnology, Antarctica—McMurdo Dry Valleys

53-2071

**Ice aggregates as a microbial habitat in Lake Bonney, dry valley lakes, Antarctica: Nutrient-rich microzones in an oligotrophic ecosystem.**

Pearl, H.W., Pinckney, J.L., *Antarctic journal of the United States*, 1996, 31(2), p.220-222, 6 refs.

Microbiology, Limnology, Plant physiology, Lake ice, Nutrient cycle, Bacteria, Frozen lakes, Geochemistry, Antarctica—Bonney, Lake

53-2072

**Antarctic lake-ice microbial consortia: origin, distribution, and growth physiology.**

Priscu, J.C., Fritsen, C.H., *Antarctic journal of the United States*, 1996, 31(2), p.223-224, 7 refs.

Microbiology, Lake ice, Frozen lakes, Limnology, Bacteria, Plant physiology, Algae, Sediments, Ice composition, Antarctica—Bonney, Lake

53-2073

**Cyanobacterial communities associated with mineral particles in antarctic lake ice.**

Gordon, D., Lanol, B., Giovannoni, S., Priscu, J.C., *Antarctic journal of the United States*, 1996, 31(2), p.224-225, 3 refs.

Limnology, Frozen lakes, Lake ice, Minerals, Microbiology, Chemical analysis, Antarctica—Bonney, Lake

53-2074

**Impacts of climate change on antarctic vascular plants: warming and ultraviolet-B radiation.**

Day, T.A., Grobe, C.W., Ruhland, C.T., *Antarctic journal of the United States*, 1996, 31(2), p.226-227, 7 refs.

Plant physiology, Climatic changes, Ultraviolet radiation, Air temperature, Photosynthesis, Global warming, Physiological effects, Antarctica—Antarctic Peninsula

53-2075

**Photoinhibition in antarctic phytoplankton by ultraviolet-B radiation in relation to column ozone values.**

Holm-Hansen, O., Villafañe, V.E., Helbling, E.W., *Antarctic journal of the United States*, 1996, 31(2), p.229-230, 4 refs.

Marine biology, Plant physiology, Ultraviolet radiation, Ozone, Biomass, Antarctica—Arthur Harbor

53-2076

**Correlation between ozone loss and volcanic aerosol at altitudes below 14 kilometers over McMurdo Station, Antarctica.**

Deshler, T., Nardi, B., Hofmann, D.J., Johnson, B.J., *Antarctic journal of the United States*, 1996, 31(2), p.231-233, 6 refs.

Aerosols, Volcanic ash, Ozone, Atmospheric composition, Air pollution, Stratosphere, Antarctica—McMurdo Station

53-2077

**Temporal variation of snow accumulation rate at two Ross Ice Shelf locations influenced by katabatic wind.**

Braaten, D.A., *Antarctic journal of the United States*, 1996, 31(2), p.235-236, 3 refs.

Snow accumulation, Variations, Wind factors, Ice shelves, Antarctica—Ross Ice Shelf

53-2078

**Recent trends in stratospheric temperatures during austral springtime.**

Dou, W.Y., Parish, T.R., *Antarctic journal of the United States*, 1996, 31(2), p.237-238, 6 refs.

Ozone, Air temperature, Stratosphere, Seasonal variations, Climatic changes, Statistical analysis, Antarctica

53-2079

**Infrared radiation studies of winter marine antarctic atmosphere.**

Simmons, J.L., Stamnes, K., Murcray, F., Liu, X., *Antarctic journal of the United States*, 1996, 31(2), p.260-261, 4 refs.

Infrared radiation, Low temperature research, Marine meteorology, Clouds (meteorology), Cloud cover, Polar atmospheres, Marine atmospheres, Radiation balance, Antarctica

53-2080

Support Office for Aerogeophysical Research (SOAR): West antarctic field activities (1994-1996).

Richter, T.G., Williams, J.L., Blankenship, D.D., Bell, R.E., *Antarctic journal of the United States*, 1996, 31(2), p.263-265, 4 refs.

Research projects, Geophysical surveys, Topographic surveys, Airborne equipment, Navigation, Aircraft, Antarctica

53-2081

Undergraduate research initiative: Antarctic marine geology and geophysics.

Domack, E.W., *Antarctic journal of the United States*, 1996, 31(2), p.265-266, 6 refs.

Research projects, Marine geology, Geophysical surveys, Education, Antarctica

53-2082

Geodesy and mapping program of the United States in Antarctica.

Mullins, J.L., Hothem, L.D., *Antarctic journal of the United States*, 1996, 31(2), p.267-268.

Research projects, Geodetic surveys, Mapping, Low temperature research, Antarctica

53-2083

Subsurface soil temperature measurements at McMurdo Station, Antarctica.

Tumeo, M.A., Cummings, M.A., *Antarctic journal of the United States*, 1996, 31(2), p.268-272, 4 refs.

Soil temperature, Frozen ground temperature, Oil spills, Soil patterns, Freeze thaw cycles, Subsurface investigations, Temperature measurement, Antarctica

53-2084

Fundamental cryobiology of human hematopoietic progenitor cells. I: Osmotic characteristics and volume distribution.

Gao, D.Y., et al, *Cryobiology*, Feb. 1998, 36(1), p.40-48, 44 refs.

Cryobiology, Physiological effects, Freezing, Preserving, Health

53-2085

Cold stress responses in mesophilic bacteria.

Panoff, J.M., Thamnavongs, B., Guéguen, M., Boutibonnes, P., *Cryobiology*, Mar. 1998, 36(2), p.75-83, 89 refs.

Cryobiology, Cold stress, Low temperature research, Bacteria, Cold tolerance, Physiological effects

53-2086

Crystallization of ice in aqueous solutions of glycerol and dimethyl sulfoxide. 2: Ice crystal growth kinetics.

Hey, J.M., MacFarlane, D.R., *Cryobiology*, Sep. 1998, 37(2), p.119-130, 24 refs.

Cryobiology, Solutions, Ice crystal growth, Antifreezes

53-2087

Respiratory responses to chilling and freezing in two sub-Antarctic insects.

Block, W., Worland, M.R., Bale, J., *Cryobiology*, Sep. 1998, 37(2), p.163-166, 13 refs.

Cryobiology, Physiological effects, Cold stress, Freezing, Animals, Low temperature research, Cold tolerance, South Georgia

53-2088

Aggregate for traffic surfaces, manufacture of the aggregate, and method for incorporating the aggregate in bitumen-bonded traffic surfaces.

Kämereit, W., *Germany Patent Office. Patent*, Mar. 12, 1998, n.p., No.19638743.

Road icing, Bituminous concretes, Concrete pavements, Concrete aggregates, Frost resistance, Frost protection, Concrete admixtures, Chemical ice prevention, Antifreezes, Road maintenance

53-2089

Anti-freeze and de-icing composition.

Käs, G., *European Patent Office. Patent*, Mar. 4, 1998, n.p., No.826759.

Road icing, Salting, Chemical ice prevention, Antifreezes, Road maintenance

53-2090

Review of processes involved in the exchange of persistent organic pollutants across the air-sea interface.

Wania, F., Axelman, J., Broman, D., *Environmental pollution*, 1998, 102(1), p.3-23, Refs. p.18-23.

Marine atmospheres, Atmospheric circulation, Air water interactions, Atmospheric composition, Air pollution, Water pollution, Ocean currents, Nutrient cycle

53-2091

Effects of snow and ice on the environmental behaviour of hydrophobic organic chemicals.

Wania, F., Hoff, J.T., Jia, C.Q., Mackay, D., *Environmental pollution*, 1998, 102(1), p.25-41, Refs. p.38-41.

Air pollution, Water pollution, Soil pollution, Atmospheric circulation, Atmospheric composition, Scavenging, Snow composition, Snow impurities, Ice composition

53-2092

Chiral pesticides as tracers of air-surface exchange.

Bidleman, T.F., et al, *Environmental pollution*, 1998, 102(1), p.43-49, 23 refs.

Atmospheric circulation, Atmospheric composition, Air pollution, Water pollution, Soil pollution, Air water interactions, Soil air interface, Great Lakes

53-2093

Multi-year observations of organohalogen pesticides in the arctic atmosphere.

Halsall, C.J., et al, *Environmental pollution*, 1998, 102(1), p.51-62, 32 refs.

Polar atmospheres, Marine atmospheres, Atmospheric composition, Atmospheric circulation, Air pollution

53-2094

Bioaccumulation of organochlorines through a remote freshwater food web in the Canadian Arctic.

Kidd, K.A., Hesslein, R.H., Ross, B.J., Koczenski, K., Stephens, G.R., Muir, D.C.G., *Environmental pollution*, 1998, 102(1), p.91-103, Refs. p.101-103.

Air pollution, Air water interactions, Lake water, Water pollution, Limnology, Nutrient cycle, Canada—Northwest Territories—Peter Lake

53-2095

Interpretation for the thermodynamic features of ice Ih $\leftrightarrow$ ice XI transformation.

Johari, G.P., *Journal of chemical physics*, Dec. 1, 1998, 109(21), p.9543-9548, 28 refs.

High pressure ice, Ice crystal structure, Ice crystal growth, Molecular structure, Molecular energy levels, Phase transformations, Solid phases

53-2096

Hydrogen bonding in glassy liquid water from Raman spectroscopic studies.

Tulk, C.A., Klug, D.D., Branderhorst, R., Sharpe, P., Ripmeester, J.A., *Journal of chemical physics*, Nov. 15, 1998, 109(19), p.8478-8484, 38 refs.

Water structure, Molecular structure, Molecular energy levels, Hydrogen bonds, Amorphous ice, Vitreous ice, Ice spectroscopy

53-2097

Free energy calculations on systems of rigid molecules: an application to the TIP4P model of H<sub>2</sub>O.

Vlot, M.J., Huinink, J., Van der Eerden, J.P., *Journal of chemical physics*, Jan. 1, 1999, 110(1), p.55-61, 28 refs.

Water structure, Molecular structure, Molecular energy levels, Hydrogen bonds, Ice crystal structure, Ice crystal growth, Ice models, Phase transformations

53-2098

New analytic equation of state for liquid water.

Jeffery, C.A., Austin, P.H., *Journal of chemical physics*, Jan. 1, 1999, 9901, p.484-496, 46 refs.

Water structure, Molecular structure, Molecular energy levels, Hydrogen bonds, Phase transformations, Liquid phases, Supercooling, Homogeneous nucleation, Mathematical models

53-2099

Quantum cluster equilibrium theory of liquids: freezing of QCE/3-21G water to tetrakaidecahedral "Bucky-ice".

Ludwig, R., Weinhold, F., *Journal of chemical physics*, Jan. 1, 1999, 110(1), p.508-515, 28 refs.

Water structure, Molecular structure, Molecular energy levels, Hydrogen bonds, Ice crystal structure, Ice crystal growth, Ice models, Phase transformations

53-2100

Winter fluxes of CO<sub>2</sub> and CH<sub>4</sub> from subalpine soils in Rocky Mountain National Park, Colorado.

Mast, M.A., Wickland, K.P., Striegl, R.T., Clow, D.W., *Global biogeochemical cycles*, Dec. 1998, 12(4), p.607-620, 46 refs.

Wetlands, Mountain soils, Soil air interface, Soil microbiology, Soil chemistry, Nutrient cycle, Snow composition, Snow cover effect, Snow permeability, Snow air interface, United States—Colorado—Rocky Mountain National Park

53-2101

Soil carbon stocks and their rates of accumulation and loss in a boreal forest landscape.

Rapalee, G., Trumbore, S.E., Davidson, E.A., Harden, J.W., Veldhuis, H., *Global biogeochemical cycles*, Dec. 1998, 12(4), p.687-701, 39 refs.

Taiga, Forest soils, Soil microbiology, Soil chemistry, Soil air interface, Forest fires, Nutrient cycle, Biomass, Geochemical cycles

53-2102

Seasonal patterns and controls on net ecosystem CO<sub>2</sub> exchange in a boreal peatland complex.

Bubier, J.L., Crill, P.M., Moore, T.R., Savage, K., Varner, R.K., *Global biogeochemical cycles*, Dec. 1998, 12(4), p.703-714, 63 refs.

Peat, Wetlands, Tundra climate, Tundra vegetation, Plant physiology, Plant ecology, Snow cover effect, Nutrient cycle, Geochemical cycles, Biomass, Canada—Manitoba

53-2103

Stochastic appraisal of the annual carbon budget of a large circumboreal peatland, Rapid River Watershed, northern Minnesota.

Rivers, J.S., et al, *Global biogeochemical cycles*, Dec. 1998, 12(4), p.715-727, Refs. p.725-727.

Peat, Wetlands, Vegetation patterns, Nutrient cycle, Geochemical cycles, Biomass, Statistical analysis, United States—Minnesota—Rapid River Watershed

53-2104

Carbon dioxide fluxes in a northern fen during a hot, dry summer.

Schreuder, C.P., Rouse, W.R., Griffis, T.J., Boudreau, L.D., Blanken, P.D., *Global biogeochemical cycles*, Dec. 1998, 12(4), p.729-740, 30 refs.

Peat, Wetlands, Vegetation patterns, Nutrient cycle, Geochemical cycles, Biomass, Canada—Manitoba

53-2105

Allerød—Younger Dryas Coleoptera from western Cape Breton Island, Nova Scotia, Canada.

Miller, R.F., *Canadian journal of earth sciences*, Jan. 1996, 33(1), p.33-41, With French summary. 45 refs.

Glaciation, Glacial deposits, Forest tundra, Forest lines, Tundra soils, Quaternary deposits, Fossils, Soil dating, Paleocology, Paleoclimatology, Canada—Nova Scotia—Cape Breton Island

53-2106

Multivariate mineralogical analyses of late Wisconsinan sediments in southwestern Yukon. [Analyses minéralogiques multivariées de sédiments du Wisconsinien supérieur au sud-ouest du Yukon]

Dewez, V., Geurts, M.A., *Canadian journal of earth sciences*, Jan. 1996, 33(1), p.42-51, In French with English summary. 40 refs.

Glacial geology, Glacial deposits, Quaternary deposits, Mineralogy, Lithology, Geochemistry, Canada—Yukon Territory—Ruby Range, Canada—Yukon Territory—Aishihik Basin

53-2107

Late Quaternary history of the Mackenzie-Beaufort region, Arctic Canada, from modelling of permafrost temperatures. 1. The onshore-offshore transition.

Taylor, A.E., Dallimore, S.R., Outcalt, S.I., *Canadian journal of earth sciences*, Jan. 1996, 33(1), p.52-61 + append., With French summary. Refs. p.58-60.

Marine geology, Marine deposits, Quaternary deposits, Sea level, Subsea permafrost, Permafrost origin, Permafrost heat transfer, Permafrost heat balance, Permafrost indicators, Permafrost dating, Frozen ground temperature, Paleoclimatology, Canada—Northwest Territories—Mackenzie Delta, Beaufort Sea

53-2108

Late Quaternary history of the Mackenzie-Beaufort region, Arctic Canada, from modelling of permafrost temperatures. 2. The Mackenzie Delta—Tuktoyaktuk Coastlands.

Taylor, A.E., Dallimore, S.R., Judge, A.S., *Canadian journal of earth sciences*, Jan. 1996, 33(1), p.62-71, With French summary. 37 refs.

Marine geology, Marine deposits, Quaternary deposits, Subsea permafrost, Permafrost thickness, Permafrost heat balance, Permafrost dating, Frozen ground temperature, Paleoclimatology, Canada—Northwest Territories—Mackenzie Delta, Canada—Northwest Territories—Tuktoyaktuk Coastlands, Beaufort Sea

53-2109

Optical-cell evidence for superheated ice under gas-hydrate-forming conditions.

Stern, L.A., Hogenboom, D.L., Durham, W.B., Kirby, S.H., Chou, I.M., *Journal of physical chemistry B*, Apr. 9, 1998, 102(15), p.2627-2632, 20 refs.

Clathrates, Hydrates, Superheated ice, Ice composition, Ice sublimation

53-2110

Environmental impact assessment of used snow transportation on human environment: road accidents and land use conflicts. [Évaluation de certains impacts du transport des neiges usées sur le milieu humain: accidents de la route et conflits sur l'utilisation du territoire]

Dériger, L., Delisle, C.E., André, P., Thouez, J.P., Fortin, É., Janelle, R., *Vecteur environnement*, Feb. 1998, 31(1), p.45-53, In French with English summary. 40 refs.

Snow removal, Snow disposal, Environmental impact, Accidents, Safety, Urban planning, Road maintenance, Canada—Quebec—Montreal

53-2111

New regulation on removal of polluted snow. End to discharge into streams in the year 2000. [Nouveau règlement sur l'élimination des neiges usées: fin des déversements dans les cours d'eau pour l'an 2000]

Tremblay, S., *Vecteur environnement*, Dec. 1997, 30(6), p.15-16, In French.

Snow impurities, Snow removal, Snow disposal, Water pollution, Environmental protection, Legislation, Canada—Quebec

53-2112

Synthesis of physico-chemical data of used snow in Quebec and their environmental impacts. [Synthèse des données physico-chimiques sur les neiges usées au Québec et leurs répercussions environnementales]

Delisle, C.E., Chenevier, C., André, P., *Vecteur environnement*, Dec. 1997, 30(6), p.33-44, In French with English summary. 22 refs.

Snow composition, Snow impurities, Snow removal, Snow disposal, Water pollution, Soil pollution, Environmental impact, Health, Urban planning, Canada—Quebec—Montreal

53-2113

Aquatic palynomorphs: reconstruction of Holocene sea-surface water masses in the eastern Laptev Sea. [Rekonstruktion der Oberflächenwassertemperaturen der östlichen Laptevsee im Holozän anhand von aquatischen Palynomorphen]

Kunz-Pirring, M., *Berichte zur Polarforschung*, 1998, No.281, 117p., In German with English summary. Refs. p.101-106.

Marine biology, Algae, Marine deposits, Bottom sediment, Paleoclimatology, Ocean currents, Statistical analysis, Paleoecology, Russia—Laptev Sea

53-2114

Modelling hydrogen-bonded crystal structures beyond resolution of diffraction methods.

Katrusiak, A., *Polish journal of chemistry*, Feb. 1998, 72(2), p.449-459, 31 refs.

Water structure, Molecular structure, Molecular energy levels, Hydrogen bonds, Ice crystal structure, X ray diffraction

53-2115

Satellite imaging polar aspects, effects of ice, snow and frost. WEAG Euclid CEPA 9, RTP 9.1, WP 25200. Final report.

Weydahl, D.J., *Norwegian Defence Research Establishment Report*, Feb. 29, 1996, No.96/01122, 45p., PB97-101752, 37 refs.

Snow optics, Ice optics, Snow cover effect, Ice cover effect, Synthetic aperture radar, Radio echo soundings, Backscattering, Radar photography, Photographic reconnaissance, Terrain identification

53-2116

Dynamics of carbon resources in litters of southern taiga with different degrees of soil hydromorphism: the Central Forest Reserve.

Dorofeeva, E.I., Trofimov, S.I.A., *Doklady biological sciences*, Sep.-Oct. 1998, Vol.362, p.457-459, Translated from *Doklady Akademii nauk*. 8 refs.

Taiga, Litter, Podsol, Minerals, Peat, Decomposition, Soil classification, Forest soils, Swamps, Soil chemistry

53-2117

Sediments in arctic sea ice—entrainment, characterization and quantification. [Sedimente im arktischen Meer eis—Eintrag, Charakterisierung und Quantifizierung]

Lindemann, F., *Berichte zur Polarforschung*, 1998, No.283, 124p., In German with English summary. Refs. p.116-124.

Sea ice, Sediments, Suspended sediments, Sediment transport, Frazil ice, Polynyas, Ice composition, Ice rafting, Ice water interface, Arctic Ocean, Russia—Laptev Sea

53-2118

Longtime analysis of Antarctica's sea-ice from passive microwave data. [Langzeitanalyse der antarktischen Meereisbedeckung aus passiven Mikrowellendaten]

Thomas, C.H., *Berichte zur Polarforschung*, 1998, No.284, 177p., In German with English summary. Refs. p.171-175.

Sea ice distribution, Spaceborne photography, Microwaves, Remote sensing, Greenhouse effect, Global change, Climatic changes, Models, Statistical analysis, Ice water interface, Antarctica—Ross Sea, Antarctica—Weddell Sea

53-2119

Use of RADARSAT data in the Canadian Ice Service.

Ramsay, B., Manore, M., Weir, L., Wilson, K., Bradley, D., *Canadian journal of remote sensing*, Mar. 1998, 24(1), p.36-42, With French summary. 5 refs. Ice surveys, Sea ice distribution, Ice conditions, Ice reporting, Ice navigation, Ice routing, Ice detection, Ice forecasting, Spaceborne photography, Synthetic aperture radar, Radar tracking, Data transmission, Canada

53-2120

Evaluation of multirate ERS-1 and multispectral Landsat imagery for wetland detection in southern Ontario.

Wang, J., Shang, J., Brisco, B., Brown, R.J., *Canadian journal of remote sensing*, Mar. 1998, 24(1), p.60-68, With French summary. 25 refs.

Wetlands, Vegetation patterns, Terrain identification, Geobotanical interpretation, Spaceborne photography, Synthetic aperture radar, Image processing, Canada—Ontario

53-2121

Demonstration of ERS tandem mission SAR interferometry for mapping land fast ice evolution.

Hirose, T., Vachon, P.W., *Canadian journal of remote sensing*, Mar. 1998, 24(1), p.89-92, With French summary. 5 refs.

Ice surveys, Sea ice distribution, Ice conditions, Fast ice, Ice cracks, Ice breakup, Ice forecasting, Spaceborne photography, Synthetic aperture radar, Canada—Northwest Territories—Resolute Channel

53-2122

Modelling of deep seated hill slope creep in permafrost.

Foriero, A., Ladanyi, B., Dallimore, S.R., Egginton, P.A., Nixon, F.M., *Canadian geotechnical journal*, Aug. 1998, 35(4), p.560-578, With French summary. 37 refs.

Permafrost structure, Permafrost thickness, Permafrost thermal properties, Frozen ground strength, Frozen ground thermodynamics, Ground ice, Periglacial processes, Slope processes, Talus, Solifluction, Soil creep, Mathematical models, Canada—Northwest Territories—Tuktoyaktuk

53-2123

Modeling soil freeze-thaw and ice effect on canal bank.

Zhang, Z.X., Kushwaha, R.L., *Canadian geotechnical journal*, Aug. 1998, 35(4), p.655-665, With French summary. 21 refs.

Channels (waterways), Channel stabilization, Banks (waterways), Bank protection (waterways), Ice push, Ice erosion, Soil freezing, Frost heave, Ice lenses, Soil tests, Freeze thaw tests, Frost protection, Soil stabilization

53-2124

Ice loads from first-year ice ridges and rubble fields.

Blanchet, D., *Canadian journal of civil engineering*, Apr. 1998, 25(2), p.206-219, With French summary. Refs. p.217-219.

Offshore structures, Ice solid interface, Ice loads, Ice pressure, Ice friction, Pressure ridges, Ice deformation, Ice cover strength, Ice breaking, Ice pileup

53-2125

Iceing, frost and aircraft flight.

Kind, R.J., *Canadian aeronautics and space journal*, June 1998, 44(2), p.110-118, 3 refs.

Aircraft icing, Ice accretion, Glaze, Ice loads, Ice forecasting, Computerized simulation

53-2126

Composition for plant nutrition and protection against frost damage.

Artozon Sylvester, R.I., *U.S. Patent Office. Patent*, Apr. 8, 1997, n.p., USP-5,618,330.

Plant physiology, Agriculture, Frost protection, Antifreezes

53-2127

Ice- and snow-repellent roofing materials coated with photocatalyst-containing silicoes.

Kitamura, A., Hayakawa, M., *Japan Patent Office. Patent*, June 16, 1998, n.p., No.98159264.

Roofs, Protective coatings, Chemical ice prevention, Waterproofing

53-2128

**Simulating the behavior of poorly understood continua using neural networks.**

Flood, I., *Artificial intelligence for engineering design, analysis and manufacturing*, Nov. 1996, 15(5), p.391-400, 9 refs.  
DLC TA174.A78

Soil freezing, Ground thawing, Frost heave, Frozen ground settling, Computerized simulation

53-2129

**Sea change in the Arctic.**

Monastersky, R., *Science news*, Feb. 13, 1999, 155(7), p.104-106, 4 refs.

Climatic changes, Weather modification, Sea ice, Water temperature, Global warming, Arctic Ocean

53-2130

**<sup>13</sup>C-depleted carbon microparticles in >3700-Ma sea-floor sedimentary rocks from West Greenland.**

Rosing, M.T., *Science*, Jan. 29, 1999, 283(5402), p.674-676, 26 refs.

Rocks, Sediments, Greenland

53-2131

**Chemical analysis of polar stratospheric cloud particles.**

Schreiner, J., Voigt, C., Kohlmann, A., Arnold, F., Mauersberger, K., Larsen, N., *Science*, Feb. 12, 1999, 283(5404), p.968-970, 24 refs.

Polar stratospheric clouds, Chemical analysis, Airborne equipment, Remote sensing, Cloud physics

53-2132

**0.5-million-year record of millennial-scale climate variability in the North Atlantic.**

McManus, J.F., Oppo, D.W., Cullen, J.L., *Science*, Feb. 12, 1999, 283(5404), p.971-975, 37 refs.

Climatic changes, Sea ice distribution, Oxygen isotopes, Isotope analysis, Paleoclimatology, Marine deposits, Sediments, North Atlantic Ocean

53-2133

**Roofing materials having ice- and snow-repellent coatings.**

Machida, M., Hayakawa, M., *Japan Patent Office. Patent*, June 16, 1998, n.p., No.98159265.

Roofs, Protective coatings, Chemical ice prevention, Waterproofing

53-2134

**Snow-melting apparatus.**

Sajiki, H., *Japan Patent Office. Patent*, June 23, 1998, n.p., No.98168850.

Heat recovery, Artificial melting, Snow melting, Snow removal, Snow removal equipment

53-2135

**Materials preventing freezing of molten snow and coating materials and sheets and tiles and exterior materials and roofings and roads and defreezing apparatus therewith.**

Kakuta, K., *Japan Patent Office. Patent*, June 23, 1998, n.p., No.98168433.

Snowmelt, Antifreezes, Chemical ice prevention

53-2136

**Modified polysiloxanes, rubber compositions and tire tread rubber compositions containing the same with good wear and ice and wet skid resistance, and reactive plasticizers.**

Ishikawa, K., Yatsuyanagi, F., *World Intellectual Property Organization. Patent Cooperation Treaty. Patent*, July 9, 1998, n.p., No.9829473.

Tires, Rubber, Rubber ice friction, Skid resistance

53-2137

**Photophysiological evidence of nutrient limitation of platelet ice algae in McMurdo Sound, Antarctica.**

Robinson, D.H., Arrigo, K.R., Kolber, Z., Gosselin, M., Sullivan, C.W., *Journal of phycology*, Oct. 1998, 34(5), p.788-797, 49 refs.

Algae, Marine biology, Ice cover effect, Ice water interface, Acclimatization, Nutrient cycle, Photosynthesis, Light effects, Biomass, Antarctica—McMurdo Sound

53-2138

**Vertical flux of phytoplankton and particulate biogenic matter in the marginal ice zone of the Barents Sea in May 1993.**

Andreassen, I.J., Wassmann, P., *Marine ecology progress series*, Sep. 3, 1998, Vol.170, p.1-14, 63 refs.

Algae, Plankton, Marine biology, Ice cover effect, Ice edge, Ice water interface, Suspended sediments, Nutrient cycle, Biomass, Barents Sea

53-2139

**Proceedings.**

International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998, Lewkowicz, A.G., ed, Allard, M., ed, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, 1276p., Refs. passim. For individual papers see 53-2140 through 53-2327. For Russian versions of papers submitted to this conference see 53-2374 through 53-2401.

Permafrost surveys, Permafrost distribution, Permafrost thickness, Permafrost heat transfer, Permafrost heat balance, Permafrost hydrology, Permafrost origin, Permafrost dating, Permafrost indicators, Permafrost forecasting, Permafrost control, Permafrost preservation, Frozen ground thermodynamics, Frozen ground temperature, Frozen ground strength, Soil freezing, Ground ice, Periglacial processes, Active layer, Paleoclimatology

53-2140

**Material composition and strength characteristics of saline frozen soils.**

Aksenov, V.I., Klinova, G.I., Sheikin, I.V., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1-4, 3 refs.

Saline soils, Soil freezing, Unfrozen water content, Frozen ground temperature, Frozen ground thermodynamics, Frozen ground chemistry, Frozen ground strength

53-2141

**Temperature conditions for ice-wedge cracking: field measurements from Salluit, northern Québec.**

Allard, M., Kasper, J.N., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.5-12, 19 refs.

Tundra soils, Tundra terrain, Soil freezing, Frozen ground temperature, Frost action, Cracking (fracturing), Polygonal topography, Patterned ground, Ice wedges, Permafrost indicators, Canada—Québec—Salluit

53-2142

**Influence of climatic, geodynamic and anthropogenic factors on permafrost conditions in Western Siberia.**

An, V.V., Deviatkin, V.N., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.13-17, 12 refs.

Oil wells, Gas wells, Permafrost distribution, Permafrost thickness, Permafrost thermal properties, Permafrost heat balance, Geothermy, Boreholes, Frozen ground temperature, Ground thawing, Global warming, Russia—Siberia

53-2143

**Seasonal structure of taliks beneath arctic streams determined with ground-penetrating radar.**

Arcone, S.A., Chacho, E.F., Delaney, A.J., MP 5285, International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.19-24, 13 refs.

Floodplains, Permafrost beneath rivers, Permafrost surveys, Permafrost hydrology, Taliks beneath rivers, Electromagnetic prospecting, Radio echo soundings, Subsurface investigations, United States—Alaska—Sagavanirktok River

The authors interpret the structure and development of taliks beneath stream channels from 375-MHz ground-penetrating radar profiles obtained in Jan. and Apr. within the Sagavanirktok River floodplain in Alaska. The upper surfaces appear smooth, often show an ice layer, and vary in depth with channel bathymetry. Partial freezing within taliks appears to cause weak reflections from the talik surface, internal reflections, and a distorted talik radar image. The taliks shrink as they propagate downward through the winter. Some taliks completely freeze by mid-Apr. Others may exist at 3.7 m beneath a typical, 1.8-m deep frozen channel, and deeper beneath channels that do not freeze completely. The persistent though diminishing flow from drill holes demonstrates their permeability.

53-2144

**Contribution of shore thermoabrasion to the Laptev Sea sediment balance.**

Are, F.E., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.25-30, 32 refs.

Subsea permafrost, Permafrost weathering, Coastal topographic features, Shore erosion, Shoreline modification, Sediment transport, Russia—Laptev Sea

53-2145

**Evolution of permafrost in environments with rapid sedimentation and denudation.**

Basistyi, V.A., Buisikh, A.A., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.31-34, 7 refs.

Permafrost origin, Permafrost weathering, Permafrost thickness, Permafrost dating, Permafrost heat balance, Frozen rock temperature, Tectonics, Paleoclimatology, Russia—Magadan

53-2146

**Processes of snow/permafrost-interactions at a high-mountain site, Murtèl/Corvatsch, eastern Swiss Alps.**

Bernhard, L., Sutter, F., Haeberli, W., Keller, F., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.35-41, 23 refs.

Rock glaciers, Periglacial processes, Snow heat flux, Snow melting, Snow thermal properties, Snow cover effect, Active layer, Permafrost heat balance, Switzerland

53-2147

**Migration of petroleum contaminants into permafrost.**

Biggar, K.W., Nahir, M., Haidar, S., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.43-49, 9 refs.

Oil spills, Soil pollution, Water pollution, Permafrost hydrology, Permafrost preservation, Frozen ground chemistry, Permeability, Seepage, Soil water migration

53-2148

**Statistical investigations of shallow permafrost by electromagnetic profiling.**

Bobrov, N.I.U., Krylov, S.S., Soroka, I.V., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.51-55, 5 refs.

Permafrost surveys, Permafrost samplers, Permafrost structure, Ground ice, Ice detection, Electromagnetic prospecting, Russia—Yamal Peninsula

53-2149

**Nature, occurrence and origin of dry permafrost.**

Bockheim, J.G., Tarnocai, C., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.57-63, 61 refs.

Permafrost hydrology, Permafrost origin, Permafrost thickness, Permafrost distribution, Permafrost indicators, Permafrost dating, Active layer, Frozen ground temperature, Desert soils, Desiccation, Antarctica—McMurdo Dry Valleys

53-2150

**Climatological and hydrological influences on stable hydrogen and oxygen isotopes of active layer waters, Levinson-Lessing Lake area, Taymyr Peninsula.**

Boike, J., Hubberten, H.W., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.65-70, 14 refs.

Permafrost hydrology, Active layer, Soil water, Frozen ground chemistry, Hydrogeochemistry, Precipitation (meteorology), Isotope analysis, Paleoclimatology, Russia—Taymyr Peninsula

53-2151

**Wetness variability and dynamics of the thermokarst processes in central Yakutia.**

Bosikov, N.P., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.71-74, 8 refs. For a Russian version see 53-2391.

Permafrost hydrology, Alassy, Thermokarst development, Thermokarst lakes, Climatic changes, Climatic factors, Russia—Yakutia

53-2152

**Preferential incorporation of coarse sediment during needle-ice growth: a preliminary analysis.**

Branson, J., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.75-82, 23 refs.

Soil freezing, Ground ice, Ice needles, Ice formation, Ice crystal growth, Periglacial processes, Frost action, Cryoturbation, Sorting, Soil structure, Soil profiles, Grain size

53-2153

**Characterization and mapping of the permafrost zone on land based seismic reflection data, Canadian Arctic Islands.**

Brent, T.A., Harrison, J.C., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.83-88, 9 refs.

Gas wells, Hydrates, Exploration, Seismic surveys, Permafrost surveys, Permafrost thickness, Permafrost bases, Permafrost dating, Bedrock, Stratigraphy, Canada—Northwest Territories—Arctic Archipelago

53-2154

**Permafrost-affected soils in the Pangnirtung Pass area, Baffin Island, Canada.**

Broll, G., Müller, G., Tarnocai, C., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.89-94, 17 refs.

Permafrost surveys, Permafrost distribution, Glacial till, Moraines, Glacial deposits, Periglacial processes, Cryogenic soils, Soil surveys, Soil formation, Soil profiles, Soil classification, Canada—Northwest Territories—Baffin Island

53-2155

**Seasonal pipe movement in permafrost terrain, KP2 study site, Norman Wells pipeline.**

Burgess, M.M., Nixon, J.F., Lawrence, D.E., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.95-100, 7 refs.

Underground pipelines, Permafrost beneath structures, Permafrost preservation, Permafrost control, Frost heave, Frozen ground settling, Canada—Northwest Territories—Norman Wells

53-2156

**Electrical potentials measured during growth of lake ice, Mackenzie Delta area, N.W.T., Canada.**

Burn, C.R., Parameswaran, V.R., Kutny, L., Boyle, L., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.101-106, 17 refs.

Lake ice, Ice electrical properties, Freezing potential (electrical), Ice water interface, Freezup, Ice formation, Ice growth, Freezing front, Freezing rate, Canada—Northwest Territories—Mackenzie Delta

53-2157

**Field investigations of permafrost and climatic change in northwest North America.**

Burn, C.R., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.107-120, 101 refs.

Permafrost distribution, Permafrost thickness, Permafrost heat transfer, Permafrost heat balance, Permafrost dating, Permafrost forecasting, Active layer, Frozen ground temperature, Soil air interface, Paleoclimatology, Climatic changes, Global warming

53-2158

**Permafrost properties in the McMurdo Sound-Dry Valley region of Antarctica.**

Campbell, I.B., Claridge, G.G.C., Campbell, D.I., Balks, M.R., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.121-126, 17 refs.

Permafrost surveys, Permafrost distribution, Permafrost thickness, Permafrost weathering, Active layer, Frozen ground temperature, Frozen ground chemistry, Soil water, Salinity, Antarctica—McMurdo Dry Valleys

53-2159

**Case study of active layer thaw and its controlling factors.**

Carey, S.K., Woo, M.K., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.127-131, 16 refs.

Permafrost surveys, Permafrost thickness, Permafrost heat transfer, Permafrost heat balance, Active layer, Soil air interface, Ground ice, Ground thawing, Thaw depth, Canada—Northwest Territories—Resolute

53-2160

**Investigation of the microstructure of frozen soil at fatigue failure under dynamic cycling load with confining pressure.**

Chen, Y.M., Sun, Y.F., Liu, H.X., Yin, Y.H., Wang, J.C., Zhang, J.Y., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.133-137, 7 refs.

Clay soils, Frozen ground strength, Frozen ground compression, Soil structure, Microstructure, Soil creep, Dynamic loads, Soil tests, Strain tests

53-2161

**On the correlation of elastic and strength properties for saline frozen soils.**

Chervinskaja, O.P., Frolov, A.D., Zykov, I.U.D., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.139-143, 9 refs.

Saline soils, Soil structure, Soil creep, Frozen ground chemistry, Frozen ground strength

53-2162

**Results of physical simulation of frost heaving in soils.**

Cheverev, V.G., Ershov, E.D., Magomedgadzhieva, M.A., Vidiapin, I.P., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.145-149, 5 refs.

Soil freezing, Freezing front, Soil water migration, Frozen ground thermodynamics, Frost heave

53-2163

**Tritium in Siberian permafrost.**

Chizhov, A.B., Dereviagin, A.I.U., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.151-156, 6 refs.

Permafrost surveys, Permafrost samplers, Permafrost hydrology, Permafrost dating, Active layer, Ground ice, Ice composition, Frozen ground chemistry, Soil water migration, Russia—Siberia

53-2164

**Characteristics of permafrost and foundation design in Mongolia.**

Choibalsan, N., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.157-160.

Permafrost distribution, Permafrost beneath structures, Permafrost preservation, Permafrost control, Buildings, Foundations, Settlement (structural), Mongolia

53-2165

**West Dock Causeway Bridge foundations.**

Christopherson, A.B., Nottingham, T.S., Pickering, J.W., Braun, K.W., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.161-166, 4 refs.

Bridges, Piers, Piles, Foundations, Subsea permafrost, Permafrost beneath structures, Ice loads, Ice control, Pile load tests, United States—Alaska—Prudhoe Bay

53-2166

**Ionic migration in frozen soils and ice.**

Chuvilin, E.M., Ershov, E.D., Smirnova, O.G., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.167-171, 10 refs.

Waste disposal, Soil pollution, Frozen ground chemistry, Ground ice, Ice composition, Impurities, Permeability, Ion diffusion

53-2167

**Mass transfer and structure formation in freezing saline soils.**

Chuvilin, E.M., Ershov, E.D., Naletova, N.S., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.173-179, 15 refs.

Saline soils, Soil freezing, Frozen ground chemistry, Soil water migration, Ion diffusion

53-2168

**Permafrost data and information: advances since the Fifth International Conference on Permafrost.**

Clark, M.J., Barry, R.G., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.181-188, 6 refs.

Permafrost surveys, Geocryology, Research projects, International cooperation, Data processing, Data transmission

53-2169

**Quantitative assessment of gas hydrates in the Mallik L-38 well, Mackenzie Delta, N.W.T., Canada.**

Collett, T.S., Dallimore, S.R., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.189-194, 6 refs.

Exploration, Natural gas, Hydrates, Gas wells, Well logging, Subsea permafrost, Stratigraphy, Canada—Northwest Territories—Mackenzie Delta

53-2170

**Assessment of ground ice volume near Eureka, Northwest Territories.**

Couture, N.J., Pollard, W.H., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.195-200, 23 refs.

Permafrost surveys, Permafrost distribution, Permafrost thickness, Permafrost structure, Ground ice, Ice lenses, Ice wedges, Ice volume, Canada—Northwest Territories—Eureka

53-2171

**Gas hydrates associated with deep permafrost in the Mackenzie Delta, N.W.T., Canada: regional overview.**

Dallimore, S.R., Collett, T.S., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.201-206, 22 refs.

Exploration, Natural gas, Hydrates, Gas wells, Well logging, Subsea permafrost, Permafrost structure, Permafrost thickness, Frozen ground chemistry, Canada—Northwest Territories—Mackenzie Delta

53-2172

**Pleistocene-Holocene permafrost of the East Siberian Eurasian arctic shelf.**

Danilov, I.D., Komarov, I.A., Vlasenko, A.I.U., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.207-212, 19 refs.

Marine geology, Subsea permafrost, Permafrost distribution, Permafrost thickness, Permafrost origin, Permafrost dating, Sea level, Paleoclimatology, Pleistocene, Russia—Laptev Sea, Russia—East Siberian Sea, Chukchi Sea

53-2173

**Numerical simulation of offshore permafrost development in the Laptev Sea, Siberia.**

Delisle, G., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.213-219, 10 refs.

Marine geology, Seismic surveys, Subsea permafrost, Permafrost distribution, Permafrost thickness, Permafrost origin, Permafrost indicators, Permafrost dating, Permafrost heat balance, Paleoclimatology, Russia—Laptev Sea

53-2174

**Problems of frozen rock engineering in the Dabanshan tunnel in Qinghai Province.**

Deng, Y.S., Zhu, L.N., Wu, Z.W., Zang, E.M., Li, Y.F., Ma, Z.X., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.221-223, 2 refs.

Tunnels, Frozen rock temperature, Frozen rock strength, Permafrost forecasting, Permafrost control, Frost protection, Thermal insulation, China—Qilian Mountains

53-2175

**Recent degradation of permafrost in China and the response to climatic warming.**

Ding, Y.J., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.225-230, 17 refs.

Permafrost distribution, Permafrost thickness, Permafrost heat balance, Permafrost forecasting, Active layer, Frozen ground temperature, Ground thawing, Global warming, China

53-2176

**Permafrost occurrence in the alpine zone of the Tatra Mountains, Poland.**

Dobinski, W., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.231-237, 28 refs.

Permafrost surveys, Permafrost distribution, Permafrost indicators, Permafrost forecasting, Frozen ground temperature, Frost penetration, Thaw depth, Poland—Tatra Mountains

53-2177

**Effect of consolidation on frost susceptibility of silty soils.**

Doré, G., Konrad, J.M., Bérubé, M.A., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.239-244, 6 refs.

Clay soils, Soil structure, Soil freezing, Freezing front, Unfrozen water content, Soil water migration, Frozen ground strength, Frost resistance, Frost action

53-2178

**Pollen, fungi and algae as age indicators of drained lake basins near Barrow, Alaska.**

Eisner, W.R., Peterson, K.M., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.245-250, 23 refs.

Permafrost hydrology, Thermokarst lakes, Thermokarst development, Lacustrine deposits, Permafrost dating, Soil dating, Palynology, Plant ecology, Revegetation, Paleobotany, Paleoclimatology, United States—Alaska—Barrow

53-2179

**Distribution of permafrost in southern Norway—a GIS approach.**

Etzelmüller, B., Berthling, I., Sollid, J.L., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.251-257, 26 refs.

Permafrost surveys, Permafrost distribution, Permafrost indicators, Permafrost forecasting, Mapping, Data processing, Norway

53-2180

**Observations of permafrost-landscape dynamics related to anthropogenic disturbances, Yukechi study site, central Yakutia.**

Fedorov, A.N., Konstantinov, P.I.A., Vasil'ev, I.S., Bosikov, N.P., Torgovkin, I.A.I., Samsonova, V.V., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.259-263, For a Russian version see 53-2390.

Permafrost surveys, Permafrost distribution, Permafrost preservation, Permafrost forecasting, Frozen ground settling, Ground thawing, Alassy, Thermokarst development, Thermokarst lakes, Global warming, Russia—Yakutia

53-2181

**Experimental investigations of gold migration in the frozen massifs.**

Fedoseeva, V.I., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.265-268, 11 refs. For a Russian version see 53-2388.

Exploration, Gold, Sands, Frozen fines, Frozen ground chemistry, Permafrost mass transfer

53-2182

**Cumulative impacts of vehicle traffic on high arctic tundra: soil temperature, plant biomass, species richness and mineral nutrition.**

Forbes, B.C., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.269-274, 20 refs.

Tracked vehicles, Environmental impact, Tundra soils, Soil erosion, Tundra vegetation, Vegetation patterns, Revegetation, Plant ecology, Permafrost weathering, Canada—Northwest Territories—Baffin Island

53-2183

**Induced polarization and resistivity logging in permafrost.**

Fortier, R., Allard, M., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.275-281, 4 refs.

Permafrost surveys, Permafrost distribution, Permafrost thickness, Permafrost thermal properties, Frozen ground temperature, Ground ice, Ice detection, Electromagnetic prospecting, Electrical logging, Canada—Quebec



53-2184

**Role of neotectonics in permafrost origin and features of the Baikal-Amur Mainline region, Russia.** Fotiev, S.M., Leibman, M.O., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.283-289, 13 refs.

Permafrost surveys, Permafrost distribution, Permafrost thickness, Permafrost structure, Permafrost indicators, Permafrost forecasting, Frozen ground temperature, Soil classification, Soil mapping, Tectonics, Topographic effects, Baykal Amur Railroad

53-2185

**Permafrost investigations with GIS—a case study in the Fletschhorn area, Wallis, Swiss Alps.** Frauenfelder, R., Allgöwer, B., Haerberli, W., Hoelzle, M., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.291-295, 12 refs. Permafrost surveys, Permafrost distribution, Permafrost indicators, Permafrost forecasting, Rock glaciers, Periglacial processes, Data processing, Computerized simulation, Switzerland

53-2186

**20th century variations in the southern limit of permafrost near Thompson, northern Manitoba, Canada.**

French, H.M., Egorov, I.E., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.297-304, 16 refs.

Permafrost surveys, Permafrost distribution, Permafrost indicators, Permafrost dating, Permafrost forecasting, Frozen ground temperature, Frost penetration, Thaw depth, Climatic changes, Canada—Manitoba—Thompson

53-2187

**Principal problems, progress, and directions of geophysical investigations in permafrost regions.** Frolov, A.D., Zykov, I.U.D., Snegirev, A.M., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.305-311, 7 refs. Permafrost surveys, Permafrost distribution, Permafrost thickness, Permafrost structure, Permafrost indicators, Permafrost forecasting, Frozen ground temperature, Electrical logging, Electromagnetic prospecting, Russia—Yamal Peninsula

53-2188

**Century of temperature observations of soil climate: methods of analysis and long-term trends.** Gilichinskiĭ, D.A., et al, International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.313-317. Weather stations, Meteorological data, Air temperature, Soil temperature, Active layer, Frost penetration, Thaw depth, Climatic changes, Global warming, Statistical analysis, Russia

53-2189

**Experimental investigation of air convection embankments for permafrost-resistant roadway design.**

Goering, D.J., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.319-326, 8 refs.

Permafrost beneath roads, Permafrost preservation, Permafrost heat transfer, Embankments, Soil stabilization, Soil air interface, Air flow, Convection, Road maintenance, Subgrade maintenance, United States—Alaska—Fairbanks

53-2190

**Rigid-ice model and stationary growth of ice.** Gorelik, I.A.B., Kolunin, V.S., Reshetnikov, A.K., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.327-333, 21 refs. Soil freezing, Freezing front, Frozen ground thermodynamics, Soil water migration, Ice lenses, Ground ice, Ice growth, Mathematical models

53-2191

**Origins of the ground ice in the ice-free lands of the northern foothills (northern Victoria Land, Antarctica).**

Gragnani, R., Guglielmin, M., Longinelli, A., Stenni, B., Smiraglia, C., Cimino, L., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.335-340, 29 refs.

Glacial deposits, Glacier ice, Talus, Periglacial processes, Permafrost surveys, Permafrost distribution, Permafrost origin, Fossil ice, Ground ice, Ice composition, Ice dating, Isotope analysis, Antarctica—Victoria Land

53-2192

**Delineation of discontinuous permafrost at Schefferville using RADARSAT in interferometric mode.**

Granberg, H.B., Vachon, P.W., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.341-345, 18 refs.

Permafrost surveys, Permafrost distribution, Permafrost indicators, Permafrost forecasting, Terrain identification, Snow cover effect, Synthetic aperture radar, Spaceborne photography, Mapping, Canada—Quebec—Schefferville

53-2193

**Dangerous movement of an anthropogenic "rock glacier", Norilsk region, northern Siberia.** Grebenets, V.I., Kerimov, A.G.O., Titkov, S.N., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.347-350, 5 refs.

Mining, Waste disposal, Tailings, Talus, Rock glaciers, Solifluction, Landslides, Mudflows, Slope protection, Soil stabilization, Avalanche forecasting, Russia—Noril'sk

53-2194

**Phase equilibrium and kinetics of saline soil water freezing.**

Grechishchev, S.E., Pavlov, A.V., Ponomarev, V.V., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.351-357, 9 refs.

Saline soils, Soil freezing, Ground thawing, Freezing front, Soil water migration, Frozen ground thermodynamics, Frozen ground chemistry, Phase transformations, Mathematical models

53-2195

**Design aspects of a buried oil pipeline on the Alaskan North Slope.**

Greenslade, J., Nixon, J.F., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.359-369, 10 refs.

Underground pipelines, Permafrost beneath structures, Permafrost control, Permafrost preservation, Frozen ground strength, Ground ice, Ice wedges, Frost heave, Frost protection, United States—Alaska—North Slope

53-2196

**Cryosol properties on permafrost: structure and dynamics.**

Gubin, S.V., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.371-373, 7 refs.

Permafrost distribution, Permafrost origin, Permafrost weathering, Permafrost indicators, Permafrost dating, Active layer, Cryogenic soils, Soil formation, Soil classification, Paleoclimatology, Russia

53-2197

**Rock glacier inventory of the Italian Alps.**

Guglielmin, M., Smiraglia, C., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.375-382, 10 refs.

Rock glaciers, Glacier surveys, Periglacial processes, Permafrost indicators, Permafrost distribution, Ground ice, Mapping, Italy—Alps

53-2198

**Ice food depot cooled with a heat pump: a feasibility study.**

Gulyĭ, S.A., Per'shteĭn, G.Z., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.383-390, 4 refs. For a Russian version see 53-2401.

Permafrost thermal properties, Permafrost heat transfer, Ice thermal properties, Ice refrigeration, Cold storage, Artificial freezing, Heat pumps, Russia—Magadan

53-2199

**Problems of interaction between structures and permafrost: the example of headframe foundations.**

Gur'ianov, I.E., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.391-396, 13 refs. For a Russian version see 53-2398.

Mine shafts, Towers, Foundations, Permafrost beneath structures, Permafrost control, Permafrost preservation, Taliks, Soil stabilization, Russia

53-2200

**Analysis of thermal measurements acquired in Nunavik: comparison of field data with numerical models.**

Hadj-Rabia, K., Cames-Pintaux, A.M., Allard, M., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.397-402, 7 refs.

Permafrost surveys, Permafrost thickness, Permafrost structure, Permafrost thermal properties, Permafrost heat transfer, Permafrost indicators, Permafrost forecasting, Active layer, Frozen ground temperature, Frozen ground thermodynamics, Mathematical models, Canada—Quebec

53-2201

**Ten years after drilling through the permafrost of the active rock glacier Murtel, eastern Swiss Alps: answered questions and new perspectives.**

Haerberli, W., Hoelzle, M., Käbb, A., Keller, F., Vonder Mühl, D., Wagner, S., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.403-410, 25 refs.

Rock glaciers, Permafrost surveys, Permafrost thickness, Permafrost structure, Permafrost indicators, Frozen ground temperature, Ground ice, Periglacial processes, Talus, Soil creep, Switzerland

53-2202

**GGD-Browse: bridging the gap between data descriptions and data.**

Haggerty, C., Hanson, C., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.411-414, 3 refs.

Permafrost surveys, Geocryology, Research projects, Data processing, Data transmission

53-2203

**Measurement of soil motion in sorted circles, western Spitsbergen.**

Hallet, B., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.415-420, 17 refs.

Periglacial processes, Frost action, Cryoturbation, Sorting, Patterned ground, Norway—Spitsbergen

53-2204

**Effects of the 1994 and 1995 forest fires on the slopes of the Norman Wells pipeline.**

Hanna, A.J., McNeill, D., Tchekhovski, A., Fridel, T., Babkirk, C., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.421-426, 5 refs.

Forest fires, Underground pipelines, Permafrost beneath structures, Pipeline insulation, Permafrost preservation, Embankments, Slope stability, Soil stabilization, Land reclamation, Canada—Northwest Territories—Norman Wells

53-2205

**Permafrost age and thickness at Moskuslagoon, Spitsbergen.**

Harada, K., Yoshikawa, K., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.427-431, 13 refs.

Permafrost surveys, Subsea permafrost, Permafrost distribution, Permafrost thickness, Permafrost dating, Paleoclimatology, Norway—Spitsbergen

53-2206

**Pressures recorded during laboratory freezing and thawing of a natural silt-rich soil.**

Harris, C., Davies, M.C.R., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.433-439, 18 refs.

Soil freezing, Ground thawing, Freezing front, Soil temperature, Soil pressure, Soil water migration, Frozen ground thermodynamics, Frozen ground compression, Frozen ground strength, Frozen ground temperature, Frozen ground settling

53-2207

**Nonsorted circles on Plateau Mountain, S.W. Alberta, Canada.**

Harris, S.A., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.441-448, 20 refs.

Permafrost distribution, Active layer, Alpine tundra, Tundra soils, Periglacial processes, Frost heave, Frost action, Solifluction, Patterned ground, Canada—Alberta

53-2208

**Statistical analyses of frozen soil creep properties.** He, P., Zhu, Y.L., Shi, Q.S., Zhang, Z., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.449-452, 3 refs.

Soil freezing, Frozen ground thermodynamics, Frozen ground strength, Frozen ground compression, Soil creep, Statistical analysis

53-2209

**Seismic evidence for the depth extent of permafrost in shelf sediments of the Laptev Sea, Russian Arctic?**

Hinz, K., Delisle, G., Block, M., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.453-457, 14 refs.

Marine geology, Marine deposits, Bottom sediment, Tectonics, Bottom topography, Earth crust, Seismic surveys, Subsea permafrost, Permafrost indicators, Permafrost distribution, Permafrost thickness, Permafrost origin, Permafrost dating, Russia—Laptev Sea

53-2210

**Biogeochemical survey of an arctic coastal wetland.**

Hinzman, L.D., Robinson, D.W., Kane, D.L., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.459-464, 15 refs.

Wetlands, Ponds, Thermokarst lakes, Permafrost hydrology, Tundra terrain, Tundra climate, Tundra vegetation, Ecosystems, Ecology, Limnology, Nutrient cycle, United States—Alaska—Prudhoe Bay

53-2211

**Surface movement and internal deformation of ice-rock mixtures within rock glaciers at Pontresina-Schafberg, Upper Engadin, Switzerland.**

Hoelzle, M., Wagner, S., Käb, A., Vonder Mühl, D., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.465-471, 31 refs.

Rock glaciers, Periglacial processes, Permafrost thickness, Permafrost distribution, Permafrost indicators, Ground ice, Frozen rock temperature, Solifluction, Talus, Soil creep, Switzerland

53-2212

**Evaluation of ground penetrating radar for investigation of palsa evolution, Macmillan Pass, NWT, Canada.**

Horvath, C.L., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.473-478, 15 refs.

Peat, Frost mounds, Periglacial processes, Ground ice, Permafrost hydrology, Permafrost indicators, Permafrost thickness, Permafrost structure, Electromagnetic prospecting, Canada—Northwest Territories—Macmillan Pass

53-2213

**Ground thermal regimes at a large earthwork reservoir on Baffin Island, Nunavut, Canada.**

Hyatt, J.A., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.479-486, 15 refs.

Reservoirs, Earthwork, Embankments, Water supply, Permafrost surveys, Permafrost heat balance, Permafrost thermal properties, Permafrost forecasting, Frozen ground temperature, Canada—Northwest Territories—Baffin Island

53-2214

**Origin of lake-bed ground ice at Water Supply Lake, Pond Inlet, Nunavut, Canada.**

Hyatt, J.A., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.487-493, 20 refs.

Lacustrine deposits, Bottom sediment, Permafrost beneath lakes, Permafrost origin, Permafrost dating, Ground ice, Ice lenses, Fossil ice, Ice composition, Ice dating, Canada—Northwest Territories—Baffin Island

53-2215

**Mechanical and thermal stabilisation of fill materials for road embankment construction on discontinuous permafrost in northward Russia.**

Instanes, A., Fannin, R.J., Nordorsen, K., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.495-500, 12 refs.

Embankments, Earth fills, Subgrade soils, Soil trafficability, Frozen ground strength, Thaw depth, Thaw weakening, Soil stabilization, Discontinuous permafrost, Permafrost beneath roads, Permafrost thermal properties, Permafrost preservation, Road maintenance, Russia—Komi

53-2216

**Development of a distributed hydrological model for permafrost regions considering 1-D heat and water transfer and river flow processes.**

Ishidaira, H., Koike, T., Lu, M.J., Hirose, N., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.501-507, 13 refs.

Permafrost hydrology, Permafrost heat transfer, Permafrost heat balance, Frozen ground thermodynamics, Soil air interface, Moisture transfer, Hydrologic cycle, Atmospheric circulation, River flow, Stream flow, Runoff forecasting, Global change, Mathematical models, Computerized simulation, China—Qinghai-Xizang Plateau

53-2217

**Improved step freezing test to determine segregation potential.**

Ito, Y., Vinson, T.S., Nixon, J.F., Stewart, D., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.509-516, 10 refs.

Soil freezing, Freezing front, Frost penetration, Cooling rate, Soil water migration, Frost heave, Ice lenses, Soil tests, Mathematical models

53-2218

**Bench stability control in a deep diamond open pit mine using thermal insulation.**

Izakson, V.I.U., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.517-518, 3 refs.

Mining, Pits (excavations), Frozen rock temperature, Slope stability, Slope protection, Soil stabilization, Permafrost preservation, Geotextiles, Thermal insulation, Russia—Yakutia

53-2219

**Design and construction of sewage lagoon in Grise Fiord, NWT.**

Johnson, K., Spry, S., Craig, G., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.519-522, 4 refs.

Waste disposal, Sewage treatment, Sewage disposal, Ponds, Permafrost beneath lakes, Permafrost control, Excavation, Cost analysis, Canada—Northwest Territories—Ellesmere Island

53-2220

**Evolution of a permafrost-dominated landscape on the Colville River Delta, northern Alaska.**

Jorgenson, M.T., Shur, I.U.L., Walker, H.J., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.523-529, 16 refs.  
Deltas, Alluvium, Floodplains, Permafrost surveys, Permafrost beneath rivers, Permafrost distribution, Permafrost thickness, Permafrost structure, Permafrost origin, Permafrost dating, Periglacial processes, Ground ice, Patterned ground, Terrain identification, United States—Alaska—Colville River Delta

53-2221

**Surface deformation of creeping mountain permafrost: photogrammetric investigations on Murtèl rock glacier, Swiss Alps.**

Kääb, A., Gudmundsson, G.H., Hoelzle, M., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.531-537, 17 refs.  
Rock glaciers, Slope processes, Periglacial processes, Permafrost thickness, Permafrost structure, Permafrost indicators, Solifluction, Talus, Soil creep, Photogrammetric surveys, Switzerland

53-2222

**Rainfall runoff of a nested watershed in the Alaskan Arctic.**

Kane, D.L., Soden, D.K., Hinzman, L.D., Gieck, R.E., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.539-544, 14 refs.  
Watersheds, River basins, Permafrost hydrology, Rain, Evapotranspiration, Water retention, Water storage, Water balance, Runoff forecasting, United States—Alaska—North Slope

53-2223

**Changes in permafrost conditions along linear engineering structures in the north-talga subzone of the arctic Yenisey area, Russia.**

Karpov, E.G., Baranovskii, E.L., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.545-550, For a Russian version see 53-2397.  
Power line supports, Railroads, Permafrost beneath structures, Permafrost beneath roads, Permafrost surveys, Permafrost distribution, Permafrost thickness, Permafrost weathering, Thermokarst, Taliks, Russia—Yenisey River, Russia—Noril'sk, Russia—Igarka

53-2224

**Deformation analysis of the Doesen rock glacier (Austria).**

Kaufmann, V., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.551-556, 9 refs.  
Rock glaciers, Glacier surveys, Glacier thickness, Glacier flow, Periglacial processes, Talus, Soil creep, Photogrammetric surveys, Austria

53-2225

**Permafrost map of Switzerland.**

Keller, F., et al, International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.557-562, 23 refs.  
Permafrost surveys, Permafrost distribution, Permafrost indicators, Permafrost forecasting, Data processing, Computer applications, Mapping, Switzerland

53-2226

**Use of computers in geocryological engineering.**

Khrustalev, L.N., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.563-567, 7 refs.

Permafrost beneath structures, Permafrost control, Permafrost forecasting, Frozen ground strength, Frozen ground temperature, Foundations, Engineering geology, Computer programs

53-2227

**Permafrost distribution and implications for construction in the Zermatt area, Swiss Alps.**

King, L., Kalisch, A., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.569-574, 25 refs.

Permafrost surveys, Permafrost distribution, Permafrost indicators, Permafrost forecasting, Permafrost beneath structures, Permafrost beneath roads, Permafrost control, Rock glaciers, Periglacial processes, Frozen ground temperature, Engineering geology, Computerized simulation, Switzerland

53-2228

**Occurrence of surface ice and ground ice/permafrost in recently deglaciated glacier forefields, St. Moritz area, eastern Swiss Alps.**

Kneisel, C., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.575-581, 34 refs.

Cirque glaciers, Rock glaciers, Periglacial processes, Ground ice, Fossil ice, Permafrost surveys, Permafrost distribution, Permafrost indicators, Permafrost origin, Permafrost dating, Permafrost forecasting, Electromagnetic prospecting, Switzerland

53-2229

**Long-term influence of active-layer detachment sliding on permafrost slope hydrology, Hot Weather Creek, Ellesmere Island, Canada.**

Kokelj, S.V., Lewkowicz, A.G., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.583-589, 12 refs.

Permafrost hydrology, Active layer, Periglacial processes, Slope processes, Landslides, Solifluction, Snow depth, Snowmelt, Snow erosion, Soil erosion, Stream flow, Runoff, Water balance, Canada—Northwest Territories—Ellesmere Island

53-2230

**Relationship between the lithology of active-layer materials and mean annual ground temperature in the former USSR.**

Konishchev, V.N., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.591-594, 5 refs.

Permafrost distribution, Permafrost thermal properties, Frozen ground temperature, Frozen ground chemistry, Active layer, Periglacial processes, Permafrost weathering, Frost weathering, Soil formation, Cryogenic soils, Soil composition, Soil structure, Russia

53-2231

**Prediction of frost heave induced deformation of dyke KA-7 in northern Quebec.**

Konrad, J.M., Shen, M., Ladet, R., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.595-599, 3 refs.

Reservoirs, Embankments, Earth dams, Earth fills, Soil freezing, Frost heave, Slope stability, Frozen ground thermodynamics, Permafrost heat transfer, Permafrost forecasting, Frost forecasting, Computerized simulation, Canada—Quebec—Canapiscou

53-2232

**Oil and gas bob complex creation in Yakutia: environmental issues.**

Konstantinov, I.P., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.601-606, 3 refs. For a Russian version see 53-2396.

Petroleum industry, Economic development, Environmental impact, Environmental protection, Pipelines, Permafrost beneath structures, Permafrost preservation, Russia—Yakutia

53-2233

**Gravimetric investigation of mounded till deposits, central Victoria Island, Northwest Territories, Canada.**

Kotler, E., Michel, F.A., Hodgson, D.A., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.607-610, 7 refs.

Geophysical surveys, Gravimetric prospecting, Glacial geology, Glacial deposits, Glacial till, Ground ice, Glacier ice, Fossil ice, Ice detection, Ice dating, Permafrost dating, Paleoclimatology, Canada—Northwest Territories—Victoria Island

53-2234

**Anomalous electrical properties of saline permafrost on the Yamal Peninsula, north-western Siberia, from field electromagnetic survey.**

Krylov, S.S., Bobrov, N.I.U., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.611-616, 13 refs.

Permafrost surveys, Permafrost distribution, Permafrost thickness, Permafrost indicators, Permafrost forecasting, Saline soils, Clay soils, Frozen ground chemistry, Electromagnetic prospecting, Russia—Yamal Peninsula

53-2235

**Experimental studies of the processes of ice formation and evaporation in air thermosyphons.**

Kuz'min, G.P., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.617-621, 2 refs. For a Russian version see 53-2400.

Permafrost beneath structures, Permafrost preservation, Permafrost heat transfer, Soil freezing, Artificial freezing, Soil stabilization, Cooling systems, Pipes (tubes), Air flow, Ice air interface, Ice prevention, Ice sublimation

53-2236

**Evolution of frost heaving stresses acting on a pile.**

Ladanyi, B., Foriero, A., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.623-633, 16 refs.

Piles, Pile load tests, Soil freezing, Frost penetration, Frost heave, Soil pressure, Frozen ground strength, Frozen ground compression, Mathematical models

53-2237

**Thaw depth measurements in marine saline sandy and clayey deposits of Yamal Peninsula, Russia: procedure and interpretation of results.**

Leibman, M.O., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.635-639, 2 refs.

Marine deposits, Saline soils, Clay soils, Active layer, Permafrost thickness, Permafrost thermal properties, Permafrost heat balance, Frozen ground temperature, Ground thawing, Thaw depth, Russia—Yamal Peninsula

53-2238

**Late-summer solifluction and active layer depths, Fosheim Peninsula, Ellesmere Island, Canada.**

Lewkowicz, A.G., Clarke, S., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.641-646, 18 refs.

Periglacial processes, Active layer, Permafrost thickness, Thaw depth, Frozen ground thermodynamics, Solifluction, Soil creep, Canada—Northwest Territories—Ellesmere Island

53-2239

**Modeling and predicting permafrost degradation due to climatic warming in the Huashixia Valley, eastern Qinghai-Tibet Plateau.**

Li, D.Q., Wu, Z.W., Fang, J.H., Wang, X.Y., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.647-650, 10 refs.

Permafrost distribution, Permafrost thickness, Permafrost heat balance, Permafrost forecasting, Ground thawing, Global warming, Long range forecasting, Mathematical models, China—Qinghai-Xizang Plateau

53-2240

**Simulation of the thermal regime of permafrost in northeast China under climate warming.**

Li, S.X., Chen, R.J., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.651-655, 4 refs.

Permafrost distribution, Permafrost thickness, Permafrost thermal properties, Permafrost heat balance, Permafrost forecasting, Frozen ground temperature, Ground thawing, Global warming, Long range forecasting, Mathematical models, China

53-2241

**Response of permafrost to global change on the Qinghai-Xizang Plateau—a GIS-aided model.**

Li, X., Cheng, G.D., Chen, X.Z., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.657-661, 10 refs.

Permafrost distribution, Permafrost heat balance, Permafrost forecasting, Global warming, Long range forecasting, Computerized simulation, China—Qinghai-Xizang Plateau

53-2242

**High-mountain permafrost in the Austrian Alps (Europe).**

Lieb, G.K., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.663-668, 11 refs.

Permafrost surveys, Permafrost distribution, Permafrost thickness, Permafrost indicators, Permafrost forecasting, Rock glaciers, Periglacial processes, Mapping, Data processing, Austria

53-2243

**Annual water balance for three nested watersheds on the North Slope of Alaska.**

Lilly, E.K., Kane, D.L., Hinzman, L.D., Gieck, R.E., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.669-674, 22 refs.

Watersheds, River basins, Permafrost hydrology, Water balance, Precipitation (meteorology), Snowfall, Snow water equivalent, Snowmelt, Stream flow, Runoff forecasting, Statistical analysis, United States—Alaska—North Slope

53-2244

**Dynamics of permafrost in northern Eurasia during the last 20,000 years.**

Lisitsyna, O.M., Romanovskii, N.N., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.675-681, 10 refs.

Permafrost distribution, Permafrost indicators, Permafrost origin, Permafrost dating, Permafrost forecasting, Periglacial processes, Fossil ice, Global change, Paleoclimatology

53-2245

**Permafrost of the Baikal-Patom Plateau.**

Litvin, V.M., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.683-687, 4 refs.

Permafrost surveys, Permafrost distribution, Permafrost thickness, Permafrost origin, Permafrost dating, Tectonics, Paleoclimatology, Russia—Baikal Range, Russia—Patom Plateau

53-2246

**Effect of convective heat transfer on thawing of frozen soil.**

Lunardini, V.J., MP 5286, International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.689-695, 13 refs.

Ground thawing, Frozen ground thermodynamics, Permafrost heat transfer, Soil water migration, Convection, Thawing rate, Thaw depth, Stefan problem, Mathematical models

Most analyses of the thawing of frozen soil are based on purely conductive heat transfer, a very good assumption in most cases, but vertical and horizontal water flows occur frequently in permafrost regions. The effect of vertical water movement on the rate of thaw and the thermal regime of the soil is quantified. An exact similarity solution only occurs when the vertical water velocity is proportional to the rate of thaw. This solution indicates that seepage flows (the magnitude of the water velocity is near that of the rate of thaw) have little effect upon the thaw process. Approximate solutions are also given for the case of constant water velocity, using the heat balance integral and quasi-steady methods; they agree with the exact solution if the Stefan number is not too large. Thaw can be greatly accelerated or retarded if the water velocity (Peclet number) is large. The effect upon thawing for the case of horizontal water flow is less than that for the same magnitude of vertical flow.

53-2247

**Monitoring the change of structures in frozen soil during the triaxial creep process by computer tomography.**

Ma, W., Wu, Z.W., Pu, Y.P., Chang, X.X., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.697-701, 5 refs.

Frozen ground strength, Frozen ground compression, Soil structure, Soil creep, X ray analysis, Computer applications

53-2248

**Constraint to the methane gas hydrate stability from the analysis of thermal data in the northern Canadian sedimentary basins—Arctic Archipelago case.**

Majorowicz, J.A., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.703-709, 18 refs.

Hydrates, Natural gas, Exploration, Well logging, Subsea permafrost, Permafrost heat balance, Bottom sediment, Global warming, Canada—Northwest Territories—Arctic Archipelago

53-2249

**Role of diurnal, annual and millennial freeze-thaw cycles in controlling alpine slope instability.**

Matsuoka, N., Kirakawa, K., Watanabe, T., Haeberli, W., Keller, F., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.711-717, 17 refs.

Permafrost origin, Permafrost heat balance, Permafrost weathering, Periglacial processes, Frost weathering, Slope stability, Slope processes, Rock glaciers, Talus, Solifluction, Landslides, Climatic changes, Paleoclimatology, Switzerland

53-2250

**Uniting basis for creation of ecological maps for the Russian cryolithozone.**

Mel'nikov, E.S., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.719-722, 15 refs.

Permafrost surveys, Permafrost distribution, Mapping, Terrain identification, Data processing, Russia

53-2251

**Monitoring of ground surface temperatures in various biophysical micro-environments near Umujaq, eastern Hudson Bay, Canada.**

Ménard, É., Allard, M., Michaud, Y., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.723-729, 23 refs.

Permafrost surveys, Permafrost distribution, Permafrost indicators, Permafrost thermal properties, Permafrost forecasting, Frozen ground temperature, Soil temperature, Surface temperature, Degree days, Frost penetration, Thaw depth, Snow depth, Snow cover effect, Vegetation factors, Mapping, Canada—Quebec

53-2252

**Spatial and temporal patterns of soil moisture and thaw depth at Barrow, Alaska, U.S.A.**

Miller, L.L., Hinkel, K.M., Nelson, F.E., Paetzold, R.F., Outcalt, S.I., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.731-737, 16 refs.

Permafrost hydrology, Permafrost thickness, Active layer, Soil water, Thaw depth, United States—Alaska—Barrow

- 53-2253**  
**Thermal assessment of passive cooled foundation soils beneath the Trans-Alaska Pipeline at Atigun Pass.**  
 Mobley, K.F., Fitzpatrick, M.R., Ferrell, J.E., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.739-743, 5 refs. Underground pipelines, Permafrost beneath structures, Permafrost heat transfer, Permafrost thermal properties, Permafrost preservation, Frozen ground temperature, Heat pipes, Cooling systems, Artificial freezing, Soil stabilization, United States—Alaska—Atigun Pass
- 53-2254**  
**Svalbard Airport geotechnical study: engineering methodology and results.**  
 Møllmann, T., Bergheim, B., Valeriotte, M., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.745-755, 1 ref. Airports, Runways, Site surveys, Permafrost surveys, Permafrost beneath roads, Permafrost thickness, Permafrost heat transfer, Permafrost control, Frozen ground temperature, Frozen ground settling, Thermal insulation, Soil stabilization, Norway—Spitsbergen
- 53-2255**  
**Development of tabular massive ground ice at Peninsula Point, N.W.T., Canada.**  
 Moorman, B.J., Michel, F.A., Wilson, A.T., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.757-762, 19 refs. Ground ice, Ice lenses, Fossil ice, Ice composition, Ice dating, Permafrost dating, Paleoclimatology, Canada—Northwest Territories—Mackenzie Delta
- 53-2256**  
**Impact of vegetation removal and its recovery after disturbance on permafrost.**  
 Moskalenko, N.G., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.763-769, 12 refs. Vegetation patterns, Vegetation factors, Revegetation, Soil erosion, Soil conservation, Land reclamation, Permafrost weathering, Permafrost preservation, Russia—Siberia
- 53-2257**  
**Soil temperature regimes and microtopographic contrasts, Baffin Island, N.W.T., Canada.**  
 Müller, G., Broll, G., Tarnocai, C., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.771-775, 21 refs. Permafrost hydrology, Permafrost heat transfer, Permafrost thermal properties, Permafrost thickness, Active layer, Soil temperature, Frozen ground temperature, Degree days, Canada—Northwest Territories—Baffin Island
- 53-2258**  
**Dating of thermokarst terrain, pleistocene Mackenzie Delta, Canada.**  
 Murton, J.B., French, H.M., Lamothe, M., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.777-782, 43 refs. Permafrost thickness, Permafrost origin, Permafrost dating, Active layer, Thermokarst development, Soil dating, Ground ice, Fossil ice, Ice dating, Paleoclimatology, Canada—Northwest Territories—Mackenzie Delta
- 53-2259**  
**Microscopic observation of ice lensing and frost heave in glass beads.**  
 Mutou, Y., Watanabe, K., Ishizaki, T., Mizoguchi, M., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.783-787, 8 refs. Soil freezing, Freezing front, Freezing rate, Soil water migration, Ice microstructure, Ice lenses, Frost heave
- 53-2260**  
**Development and testing of a thermal-mechanical numerical model for predicting arctic shore erosion processes.**  
 Nairn, R.B., Solomon, S.M., Kobayashi, N., Viridine, J., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.789-795, 17 refs. Marine geology, Ocean waves, Sea level, Subsea permafrost, Permafrost weathering, Permafrost heat transfer, Ground thawing, Shore erosion, Computerized simulation, Beaufort Sea
- 53-2261**  
**Spatial and temporal attributes of the active-layer thickness record, Barrow, Alaska, U.S.A.**  
 Nelson, F.E., Outcalt, S.I., Brown, J., Shiklomanov, N.I., Hinkel, K.M., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.797-802, 31 refs. Permafrost surveys, Permafrost distribution, Permafrost thickness, Permafrost heat transfer, Active layer, Thaw depth, Climatic changes, Permafrost forecasting, United States—Alaska—Barrow
- 53-2262**  
**Russian and North American approaches to pile design in relation to frost action.**  
 Nidowicz, B., Shur, I.U.L., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.803-809, 23 refs. Piles, Pile load tests, Foundations, Permafrost beneath structures, Permafrost control, Soil freezing, Frost heave, Frozen ground strength, Frost resistance, Frost protection, Design criteria
- 53-2263**  
**Damage model of frozen soil under multi-axial state stress.**  
 Niu, Y.H., Miao, T.D., Zhang, C.Y., Zhang, J.M., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.811-814, 9 refs. Frozen ground strength, Frozen ground compression, Soil creep, Strain tests, Cracking (fracturing), Ultimate strength, Mathematical models
- 53-2264**  
**Regional active layer monitoring across the sporadic, discontinuous and continuous permafrost zones, Mackenzie Valley, northwestern Canada.**  
 Nixon, F.M., Taylor, A.E., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.815-820, 27 refs. Permafrost surveys, Permafrost distribution, Permafrost thickness, Permafrost forecasting, Active layer, Thaw depth, Degree days, Climatic changes, Statistical analysis, Canada—Northwest Territories—Mackenzie River
- 53-2265**  
**Pipe uplift resistance testing in frozen soil.**  
 Nixon, J.F., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.821-831, 6 refs. Underground pipelines, Frozen ground strength, Frozen ground compression, Soil creep, Frost heave, Freeze thaw tests, Strain tests
- 53-2266**  
**Recent applications of geothermal analysis in northern engineering.**  
 Nixon, J.F., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.833-846, 17 refs. Mining, Tailings, Underground pipelines, Permafrost beneath structures, Permafrost thermal properties, Permafrost heat transfer, Permafrost heat balance, Permafrost forecasting, Permafrost control, Frozen ground thermodynamics, Frozen ground temperature, Frost penetration, Frost heave, Thermal analysis
- 53-2267**  
**Permafrost dynamics at the Rogovaya River peat plateau, subarctic Russia.**  
 Oksanen, P.O., Kuhry, P., Alekseeva, R.N., Kanev, V.V., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.847-854, 25 refs. Wetlands, Peat, Tundra vegetation, Vegetation patterns, Plant ecology, Paleobotany, Soil dating, Permafrost distribution, Permafrost origin, Permafrost dating, Paleoclimatology, Russia—Bol'shezemel'skaya Tundra
- 53-2268**  
**Permafrost as a frozen geochemical barrier.**  
 Ostroumov, V.E., Siebert, C., Alekseev, A., Demidov, V.V., Alekseeva, T., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.855-859, 10 refs. Permafrost hydrology, Permafrost structure, Active layer, Soil water migration, Seepage, Permeability, Geochemical cycles, Geochemistry, Frozen ground chemistry
- 53-2269**  
**Update of performance of slopes on the Norman Wells pipeline project.**  
 Oswell, J.M., Hanna, A.J., Doblanko, R.M., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.861-867, 6 refs. Underground pipelines, Permafrost beneath structures, Permafrost thickness, Permafrost weathering, Permafrost control, Permafrost preservation, Frost penetration, Thaw depth, Frozen ground settling, Embankments, Slope stability, Soil stabilization, Pipeline insulation, Canada—Northwest Territories—Norman Wells
- 53-2270**  
**Estimating the magnitude of coupled-flow effects in the active layer and upper permafrost, Barrow, Alaska, U.S.A.**  
 Outcalt, S.I., Hinkel, K.M., Nelson, F.E., Miller, L.L., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.869-873, 15 refs. Permafrost hydrology, Permafrost heat transfer, Frozen ground thermodynamics, Frozen ground temperature, Active layer, Soil temperature, Soil water migration, Soil air interface, Evaporation, United States—Alaska—Barrow

53-2271

**Active layer monitoring in northern West Siberia.** Pavlov, A.V., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.875-881, 11 refs.

Permafrost surveys, Permafrost distribution, Permafrost thickness, Permafrost heat transfer, Permafrost heat balance, Permafrost forecasting, Active layer, Degree days, Ground thawing, Thaw depth, Russia—Yamal Peninsula, Russia—Gydan Peninsula

53-2272

**Linear stability analysis for the inception of differential frost heave.**

Peterson, R.A., Krantz, W.B., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.883-889, 21 refs.

Soil freezing, Freezing front, Frost penetration, Freezing rate, Frost heave, Frozen ground thermodynamics, Periglacial processes, Patterned ground

53-2273

**Driven piles in warm permafrost.**

Phukan, A., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.891-895, 8 refs. Houses, Foundations, Steel structures, Piles, Pile driving, Permafrost beneath structures, Permafrost control, United States—Alaska—Bethel, United States—Alaska—Kongiganak

53-2274

**Numerical model for the organization of ice-wedge networks.**

Plug, L.J., Werner, B.T., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.897-902, 17 refs.

Periglacial processes, Ice wedges, Polygonal topography, Patterned ground, Permafrost indicators, Frozen ground strength, Crack propagation, Fractals, Computerized simulation, United States—Alaska—Espenberg, Cape, United States—Alaska—Brooks Range

53-2275

**Massive ice formation in the Eureka Sound lowlands: a landscape model.**

Pollard, W.H., Bell, T., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.903-908, 12 refs.

Glacial geology, Glacial deposits, Marine geology, Marine deposits, Permafrost distribution, Permafrost structure, Permafrost origin, Permafrost indicators, Permafrost dating, Periglacial processes, Ground ice, Fossil ice, Paleoclimatology, Canada—Northwest Territories—Ellesmere Island

53-2276

**Geomorphic and hydrologic characteristics of perennial springs on Axel Heiberg Island, Canadian High Arctic.**

Pollard, W.H., Omelon, C., Andersen, D., McKay, C., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.909-914, 17 refs.

Permafrost hydrology, Subpermafrost ground water, Suprapermafrost ground water, Taliks, Springs (water), Hydrogeochemistry, Water chemistry, Canada—Northwest Territories—Axel Heiberg Island

53-2277

**Frost weathering in a mountain permafrost area (Plateau Mountain, Alberta, Canada).**

Prick, A., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.915-920, 23 refs.

Periglacial processes, Frost weathering, Permafrost weathering, Frozen rock strength, Talus, Canada—Alberta—Plateau Mountain

53-2278

**Meltwater fluxes, hillslope runoff and stream flow in an arctic permafrost basin.**

Quinton, W.L., Marsh, P., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.921-926, 19 refs.

River basins, Snow hydrology, Snowmelt, Seepage, Permafrost hydrology, Stream flow, Runoff forecasting, Canada—Northwest Territories—Mackenzie Delta

53-2279

**Thermokarst vegetation in lowland birch forests on the Tanana Flats, interior Alaska, U.S.A.**

Racine, C.H., Jorgenson, M.T., Walters, J.C., MP 5287, International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.927-933, 15 refs.

Permafrost hydrology, Ground thawing, Thermokarst development, Taiga, Forest ecosystems, Wetlands, Swamps, Peat, Paludification, Vegetation patterns, Revegetation, Plant ecology, United States—Alaska—Fairbanks, United States—Alaska—Tanana River

The thawing of ice-rich permafrost beneath birch forests in the Tanana Flats area of interior Alaska has produced thermokarst features colonized by a range of species and wetland vegetation types. As the forest drowns along its border with fens, an open-water moat is colonized by minerotrophic species and a floating mat develops. At the same time, thawing in the birch forest interior produces water-filled pits and collapse scar bogs in which ombrotrophic vegetation develops through several stages to Sphagnum bogs. As the thawing front moves into the birch forest from the fen, these latter features are incorporated into the floating mat, accelerating the expansion of fens.

53-2280

**Exploring the limits of permafrost.**

Riseborough, D.W., Smith, M.W., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.935-941, 12 refs.

Permafrost distribution, Permafrost heat transfer, Permafrost heat balance, Permafrost indicators, Permafrost forecasting, Snow cover effect, Soil freezing, Ground thawing, Frozen ground thermodynamics, Frozen ground temperature, Mathematical models

53-2281

**Regional characteristics of subfluvial talik formation and structure, Yamal Peninsula, Russia.**

Rivkin, F.M., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.943-947, 1 ref.

Permafrost hydrology, Permafrost heat balance, Snow cover effect, Ground thawing, Taliks beneath rivers, Taliks beneath lakes, Russia—Yamal Peninsula

53-2282

**Massive ground ice within Eureka Sound bedrock, Ellesmere Island, Canada.**

Robinson, S.D., Pollard, W.H., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.949-954, 16 refs.

Permafrost structure, Permafrost origin, Permafrost dating, Permafrost indicators, Bedrock, Frozen rock strength, Ground ice, Ice wedges, Ice lenses, Fossil ice, Ice composition, Ice dating, Hydrogeochemistry, Canada—Northwest Territories—Ellesmere Island

53-2283

**Ground ice and relief evolution on the islands and coasts of the Russian Arctic.**

Romanenko, F.A., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.955-959, 3 refs.

Periglacial processes, Slope processes, Ground ice, Thermokarst development, Permafrost weathering, Frozen ground settling, Subsidence, Shore erosion, Soil erosion, Sediment transport, Russia

53-2284

**Regularities of permafrost interaction with gas and gas hydrate deposits.**

Romanovskii, N.N., Tipenko, G.S., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.961-966, 11 refs.

Hydrates, Natural gas, Exploration, Subsea permafrost, Permafrost thickness, Permafrost structure, Permafrost heat transfer, Permafrost heat balance, Frozen ground chemistry, Russia

53-2285

**Map of predicted offshore permafrost distribution on the Laptev Sea shelf.**

Romanovskii, N.N., et al, International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.967-972, 25 refs.

Marine geology, Bottom sediment, Subsea permafrost, Permafrost surveys, Permafrost distribution, Permafrost thickness, Permafrost indicators, Permafrost forecasting, Permafrost dating, Paleoclimatology, Russia—Laptev Sea

53-2286

**Model of Quaternary permafrost evolution in the Arctic.**

Rozenbaum, G.E., Shpolianskaia, N.A., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.973-978, 18 refs.

Permafrost distribution, Permafrost thickness, Permafrost origin, Permafrost indicators, Permafrost dating, Permafrost forecasting, Global change, Paleoclimatology

53-2287

**Trends of permafrost development in the Selenge River basin, Mongolia.**

Sharkhuu, N., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.979-985, 17 refs.

Permafrost surveys, Permafrost distribution, Permafrost thickness, Permafrost heat balance, Permafrost weathering, Permafrost forecasting, Ground thawing, Global warming, Mongolia



53-2288

**Numerical modeling of coupled moisture, solute and heat transport in frozen soils.**

Sheshukov, A.E., Egorov, A.G., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.987-992, 12 refs.

Permafrost heat transfer, Permafrost hydrology, Frozen ground thermodynamics, Frozen ground chemistry, Soil freezing, Soil water migration, Mathematical models

53-2289

**Cryostructure development on the floodplain of the Colville River Delta, northern Alaska.**

Shur, I.U.L., Jorgenson, M.T., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.993-999, 23 refs.

Deltas, Floodplains, Alluvium, Permafrost surveys, Permafrost beneath rivers, Permafrost structure, Periglacial processes, Ground ice, Ice wedges, United States—Alaska—Colville River Delta

53-2290

**Sources of natural gas within permafrost, north-west Siberia.**

Skorobogatov, V.A., Iakushev, V.S., Chuvilin, E.M., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1001-1007, 13 refs.

Gas wells, Natural gas, Hydrates, Exploration, Permafrost surveys, Permafrost thickness, Permafrost structure, Frozen ground chemistry, Geochemistry, Russia—Yamal Peninsula, Russia—Yamburg

53-2291

**Air and soil temperature relations along an ecological transect through the permafrost zones of northwestern Canada.**

Smith, C.A.S., Burn, C.R., Tarnocai, C., Sproule, B., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1009-1015, 15 refs.

Permafrost surveys, Permafrost distribution, Permafrost thickness, Permafrost thermal properties, Permafrost heat transfer, Active layer, Frozen ground temperature, Soil air interface, Air temperature, Degree days, Canada—Yukon Territory

53-2292

**Russian permafrost map bibliography and index.**

Streltskaia, I.D., Leibman, M.O., Gerhart, L.A., Haggerty, C.D., Brennan, A.M., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1017-1020, 3 refs.

Permafrost surveys, Permafrost distribution, Maps, Mapping, Bibliographies, Data processing, Russia

53-2293

**Cryopeg responses to periodic climate fluctuations.**

Streltskaia, I.D., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1021-1025, 4 refs.

Permafrost hydrology, Suprapermafrost ground water, Subpermafrost ground water, Taliks, Saline soils, Frozen ground chemistry, Frozen ground temperature, Climatic changes, Russia—Yamal Peninsula

53-2294

**Rock glaciers on James Ross Island, Antarctica.**

Strelin, J.A., Sone, T., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1027-1033, 14 refs.

Periglacial processes, Slope processes, Rock glaciers, Moraines, Ground ice, Nivation, Talus, Paleoclimatology, Antarctica—James Ross Island

53-2295

**Impact of soil freezing on the continental-scale seasonal cycle simulated by a general circulation model.**

Takata, K., Kimoto, M., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1035-1042, 13 refs.

Soil freezing, Frozen ground thermodynamics, Permafrost heat balance, Permafrost heat transfer, Permafrost hydrology, Soil air interface, Atmospheric circulation, Hydrologic cycle, Global warming, Computerized simulation

53-2296

**Effect of atmospheric temperature inversions on ground surface temperatures and discontinuous permafrost, Norman Wells, Mackenzie Valley, Canada.**

Taylor, A.E., Nixon, F.M., Eley, F.J., Burgess, M.M., Egginton, P., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1043-1048, 11 refs.

Discontinuous permafrost, Permafrost distribution, Permafrost thickness, Permafrost heat transfer, Permafrost heat balance, Permafrost forecasting, Taliks, Frozen ground temperature, Soil air interface, Surface temperature, Air temperature, Temperature inversions, Canada—Northwest Territories—Norman Wells

53-2297

**Snow supporting structures in steep permafrost terrain in the Swiss Alps.**

Thalparpan, P., Phillips, M., Amman, W., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1049-1056, 9 refs.

Avalanche engineering, Snow stabilization, Snow retention, Snow fences, Foundations, Permafrost beneath structures, Permafrost control, Permafrost preservation, Frozen ground strength, Slope stability, Soil creep, Solifluction, Soil stabilization, Switzerland

53-2298

**Construction experience on hydraulic fill in a permafrost area.**

Tseva, A.N., Ignatova, G.M., Egorov, G.E., Roman, L.T., Poleshchuk, V.L., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1057-1062, 8 refs.

Permafrost beneath structures, Permafrost hydrology, Permafrost control, Permafrost preservation, Hydraulic fill, Foundations, Frozen ground settling, Building codes, Russia—Yakutsk

53-2299

**Rock glaciers and permafrost reconstruction in the southern Carpathian Mountains, Romania.**

Urdea, P., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1063-1069, 29 refs.

Periglacial processes, Rock glaciers, Talus, Permafrost indicators, Permafrost origin, Permafrost dating, Paleoclimatology, Romania

53-2300

**Application of pollen and spores to determine the origin and formation conditions of ground ice in western Siberia.**

Vasil'chuk, A.C., Vasil'chuk, I.U.K., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1071-1076, 17 refs.

Periglacial processes, Ground ice, Ice wedges, Fossil ice, Permafrost origin, Permafrost dating, Ice dating, Palynology, Plant ecology, Paleobotany, Paleoclimatology, Russia—Yamal Peninsula, Russia—Gydan Peninsula

53-2301

**Oxygen-isotope and enzymatic activity variations in the Seyaha syngenetic ice-wedge complex of the Yamal Peninsula.**

Vasil'chuk, I.U.K., Vasil'chuk, A.C., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1077-1082, 13 refs.

Periglacial processes, Ground ice, Ice wedges, Fossil ice, Permafrost origin, Permafrost dating, Ice dating, Palynology, Paleobotany, Plant physiology, Isotope analysis, Paleoclimatology, Russia—Yamal Peninsula

53-2302

**Role of the zone of contact of frozen soils with foundation materials in the formation of adfreezing strength.**

Volokhov, S.S., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1083-1087, 15 refs.

Foundations, Permafrost beneath structures, Permafrost control, Ground ice, Ice adhesion, Frozen ground strength

53-2303

**Borehole temperatures in alpine permafrost: a ten year series.**

Vonder Mühl, D., Stucki, T., Haerberli, W., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1089-1095, 19 refs.

Periglacial processes, Rock glaciers, Permafrost indicators, Permafrost heat balance, Snow cover effect, Frozen ground temperature, Climatic changes, Permafrost forecasting, Switzerland

53-2304

**Influence of global warming on the state and geotechnical properties of permafrost.**

Vialov, S.S., Gerasimov, A.S., Fotiev, S.M., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1097-1102, 4 refs.

Permafrost distribution, Permafrost thickness, Permafrost heat transfer, Permafrost heat balance, Foundations, Permafrost beneath structures, Frozen ground temperature, Frozen ground strength, Global warming, Computerized simulation, Permafrost forecasting, Russia

53-2305

**Placing Colville River Delta research on the internet in a digital library format.**

Walker, H.J., Hadden, L., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1103-1107, 8 refs.

Deltas, Floodplains, Water erosion, Alluvium, Sediment transport, Permafrost surveys, Permafrost beneath rivers, Permafrost hydrology, Patterned ground, Research projects, Bibliographies, Data processing, United States—Alaska—Colville River Delta

53-2306

**Characteristics of permafrost in the Tanana Flats, interior Alaska.**

Walters, J.C., Racine, C.H., Jorgenson, M.T., MP 5288, International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1109-1114, 15 refs.

Permafrost surveys, Permafrost distribution, Permafrost hydrology, Permafrost forecasting, Ground thawing, Thermokarst development, Vegetation patterns, Vegetation factors, Forest land, Peat, Wetlands, Swamps, Paludification, United States—Alaska—Fairbanks, United States—Alaska—Tanana River

The Tanana Flats is a wetland region located on the distal slopes of an extensive alluvial fan complex built out of the Alaska Range. Vegetation in the Flats consists of a mosaic of fen, birch forest, black spruce forest, shrub, and bog. Permafrost is not present in the fen and bog areas, but it exists on the bordering forested or shrub areas 0.5 to 2 m above water level. The authors' studies show that permafrost in the Flats is relatively warm at -0.2 to -0.7°C, and that the distribution and characteristics of permafrost are related to the geobotanical conditions at a specific site. In general, permafrost is more ice rich and shows higher secondary porosity where finer-grained sediments (silt) are abundant. These are environments characterized by birch forest vegetation. Permafrost in areas of birch forest appears more susceptible to thaw and is currently showing signs of extensive degradation.

53-2307

**Study of the microstructure of frozen soils.**

Wang, J.C., Wang, Y.J., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1115-1118, 5 refs.

Frozen ground thermodynamics, Frozen ground strength, Frozen ground compression, Soil structure, Microstructure, Scanning electron microscopy

53-2308

**Recent geophysical investigations at a high alpine permafrost construction site in Switzerland.**

Wegmann, M., Keusen, H.R., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1119-1123, 11 refs.

Site surveys, Permafrost surveys, Permafrost thickness, Permafrost beneath structures, Permafrost control, Permafrost preservation, Frozen rock temperature, Frozen rock strength, Switzerland

53-2309

**Coastal permafrost investigations along a rapidly eroding shoreline, Tuktoyaktuk, N.W.T.**

Wolfe, S.A., Dallimore, S.R., Solomon, S.M., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1125-1131, 17 refs.

Permafrost surveys, Subsea permafrost, Permafrost distribution, Permafrost thickness, Permafrost heat transfer, Permafrost weathering, Ground ice, Ground thawing, Frozen ground temperature, Frozen ground settling, Shore erosion, Canada—Northwest Territories—Tuktoyaktuk

53-2310

**Massive ice associated with glaciolacustrine delta sediments, Slave Geological Province, N.W.T., Canada.**

Wolfe, S.A., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1133-1139, 19 refs.

Glacial geology, Glacial deposits, Glacial till, Outwash, Lacustrine deposits, Ground ice, Fossil ice, Ice dating, Thermokarst lakes, Permafrost beneath lakes, Permafrost thickness, Permafrost origin, Permafrost dating, Canada—Northwest Territories

53-2311

**Characteristics of patchy wetlands in a polar desert environment, Arctic Canada.**

Woo, M.K., Young, K.L., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1141-1146, 10 refs.

Deserts, Wetlands, Permafrost hydrology, Suprapermafrost ground water, Thermokarst lakes, Active layer, Canada—Northwest Territories—Cornwallis Island

53-2312

**Methane hydrate formation and dissociation in fine sands at temperatures near 0°C.**

Wright, J.F., Chuvilin, E.M., Dallimore, S.R., Iakushev, V.S., Nixon, F.M., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1147-1153, 12 refs.

Natural gas, Clathrates, Hydrates, Exploration, Permafrost structure, Frozen ground temperature, Frozen ground chemistry, Geochemistry

53-2313

**Model to evaluate the engineering geology on frozen ground from Xidatan to Wudaoliang along the Qinghai-Xizang Highway using GIS.**

Wu, Q.B., Mi, H.Z., Li, X., Li, W.J., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1155-1159, 10 refs.

Highway planning, Route surveys, Permafrost surveys, Permafrost beneath roads, Permafrost distribution, Permafrost thickness, Permafrost forecasting, Permafrost control, Permafrost preservation, Frozen ground temperature, Frozen ground strength, Computerized simulation, China—Qinghai-Xizang Plateau

53-2314

**Critical and design heights of fill material in permafrost regions on National Road 214, eastern Qinghai-Xizang Plateau, China.**

Wu, Z.W., Zhu, L.N., Guo, X.M., Wang, X.Y., Fang, J.H., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1161-1164, 4 refs.

Embankments, Earth fills, Permafrost beneath roads, Permafrost control, Permafrost preservation, Permafrost thickness, Permafrost depth, Active layer, Thaw depth, Frost heave, Frost protection, Road maintenance, China—Qinghai-Xizang Plateau

53-2315

**Soil carbon losses due to increased cloudiness in a high arctic tundra watershed (western Spitsbergen).**

Wüthrich, C., Möller, I., Thannheiser, D., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1165-1172, 26 refs.

Polar atmospheres, Atmospheric composition, Tundra climate, Tundra vegetation, Vegetation patterns, Plant ecology, Tundra soils, Nutrient cycle, Geochemical cycles, Soil air interface, Global warming, Norway—Spitsbergen

53-2316

**Hydrocarbon deposits and attendant anomalies of permafrost upper and lower boundaries.**

IAkupov, V.S., Akhmetshin, A.A., Iakupov, M.V., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1173-1175, 7 refs.

Natural gas, Crude oil, Exploration, Permafrost surveys, Permafrost thickness, Active layer, Frozen ground chemistry, Geochemistry, Electromagnetic prospecting, Russia

53-2317

**Groundwater hydraulics of open system pingos.**

Yoshikawa, K., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1177-1184, 15 refs.

Periglacial processes, Pingos, Frozen ground thermodynamics, Permafrost heat transfer, Permafrost hydrology, Subpermafrost ground water, Suprapermafrost ground water, Artesian water, Springs (water)

53-2318

**Experimental study of Poisson's ratio for frozen soil.**

Yu, Z.K., Zhu, Y.L., He, P., Zhang, J.Y., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1185-1186, 2 refs.

Loess, Frozen ground strength, Frozen ground compression, Soil creep, Soil tests, Strain tests

53-2319

**Latitudinal and altitudinal trends of seasonal soil thaw in Yakutia.**

Zabolotnik, S.I., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1187-1191, 16 refs. For a Russian version see 53-2385.

Permafrost heat transfer, Permafrost heat balance, Permafrost thickness, Permafrost forecasting, Active layer, Seasonal freeze thaw, Ground thawing, Thaw depth, Statistical analysis, Russia—Yakutia

53-2320

**Transient EM sounding in the study of permafrost.**

Zadorozhnaia, V.I.U., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1193-1199, 19 refs.

Permafrost surveys, Permafrost distribution, Permafrost thickness, Permafrost structure, Saline soils, Frozen rock temperature, Frozen ground chemistry, Unfrozen water content, Electrical logging, Electromagnetic prospecting, Russia

## 53-2321

**Geocryological map of the USSR at a scale of 1:2,500,000.**

Zaitsev, V.N., Ershov, E.D., Kondrat'eva, K.A., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1201-1205, 10 refs.

Permafrost surveys, Permafrost distribution, Permafrost thickness, Permafrost structure, Permafrost hydrology, Hydrogeology, Maps, Mapping, Russia

## 53-2322

**Postfire alterations of carbon balance in tundra ecosystems: possible contribution to climate change.**

Zamolodchikov, D.G., Karelin, D.V., Ivashchenko, A.I., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1207-1212, 20 refs.

Forest fires, Tundra vegetation, Tundra soils, Tundra climate, Vegetation patterns, Revegetation, Plant ecology, Soil air interface, Nutrient cycle, Geochemical cycles, Global warming, Russia—Vorkuta

## 53-2323

**Analyses of microstructure damage from the creep process in frozen soil using a scanning electron microscope.**

Zhang, J.M., Zhang, C.Q., Li, Y.F., Miao, T.D., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1213-1216, 5 refs.

Loess, Frozen ground strength, Frozen ground compression, Soil structure, Microstructure, Soil creep, Soil tests, Strain tests, Scanning electron microscopy

## 53-2324

**Adfreeze strength of model piles in frozen soil under dynamic loads.**

Zhang, J.M., Zhu, Y.L., Zhang, J.Y., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1217-1221, 4 refs.

Permafrost beneath structures, Permafrost control, Piles, Foundations, Pile load tests, Frozen ground strength, Frozen ground thermodynamics, Ice adhesion

## 53-2325

**Study of the relationship between the unfrozen water content of frozen soil and pressure.**

Zhang, L.X., Xu, X.Z., Deng, Y.S., Zhang, Z.X., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1223-1226, 3 refs.

Frozen ground strength, Frozen ground compression, Frozen ground thermodynamics, Frozen ground temperature, Soil freezing, Soil pressure, Unfrozen water content, Freezing points

## 53-2326

**Simulation of freezing and frozen soil behaviours using a radial basis function neural network.**

Zhang, Z.X., Kushwaha, R.L., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1227-1233, 10 refs.

Soil freezing, Frost penetration, Frost heave, Ground thawing, Thaw depth, Frozen ground thermodynamics, Frozen ground temperature, Frozen ground strength, Frozen ground compression, Computerized simulation

## 53-2327

**Effect of temperature and strain rate on the constitutive relation of frozen saturated silt.**

Zhu, Y.L., He, P., Zhang, J.Y., Zhang, J.M., International Conference on Permafrost, 7th, Yellowknife, Northwest Territories, June 23-27, 1998. Proceedings. Edited by A.G. Lewkowicz and M. Allard, Sainte-Foy, Québec, Université Laval, Centre d'études nordiques, 1998, p.1235-1239, 6 refs.

Loess, Frozen ground thermodynamics, Frozen ground temperature, Frozen ground strength, Frozen ground compression, Soil creep, Stress strain diagrams, Mathematical models

## 53-2328

**Scale effects in a distributed snow water equivalence and snowmelt model for mountain basins.**

Cline, D.W., Elder, K., Bales, R.C., *Hydrological processes*, Aug.-Sep. 1998, 12(10-11), p.1527-1536, 11 refs. For another version see 52-5552.

Snow surveys, Snow cover distribution, Snow hydrology, Snow water equivalent, Snowmelt, Runoff forecasting, Computerized simulation, United States—California—Sierra Nevada

## 53-2329

**Interactive multisensor snow and ice mapping system.**

Ramsay, B.H., *Hydrological processes*, Aug.-Sep. 1998, 12(10-11), p.1537-1546, 22 refs. For another version see 52-5540.

Snow surveys, Snow cover distribution, Snow depth, Snow line, Ice surveys, Sea ice distribution, Terrain identification, Radiometry, Spaceborne photography, Sensor mapping, Image processing, Data processing, Data transmission

## 53-2330

**Local advection of sensible heat in the snowmelt landscape of arctic tundra.**

Neumann, N., Marsh, P., *Hydrological processes*, Aug.-Sep. 1998, 12(10-11), p.1547-1560, 31 refs. For another version see 52-5538.

Forest tundra, Tundra climate, Snow heat flux, Snow hydrology, Snow melting, Snowmelt, Advection, Heat balance, Canada—Northwest Territories—Mackenzie Delta

## 53-2331

**Boreal forests and snow in climate models.**

Essery, R., *Hydrological processes*, Aug.-Sep. 1998, 12(10-11), p.1561-1567, 31 refs.

Taiga, Forest canopy, Snow hydrology, Snow heat flux, Snow cover effect, Heat balance, Water balance, Global warming, Computerized simulation

## 53-2332

**Sensitivity of snowmelt processes to climate conditions and forest cover during rain-on-snow: a case study of the 1996 Pacific Northwest flood.**

Marks, D., Kimball, J., Tingey, D., Link, T., *Hydrological processes*, Aug.-Sep. 1998, 12(10-11), p.1569-1587, 30 refs.

Snow hydrology, Snow heat flux, Snow water equivalent, Snowmelt, Forest canopy, Rain, Floods, Runoff forecasting, Flood forecasting, Mathematical models, Computerized simulation, United States—Oregon

## 53-2333

**Effects of climatic variability and flow regulation on ice-jam flooding of a northern delta.**

Prowse, T.D., Conly, F.M., *Hydrological processes*, Aug.-Sep. 1998, 12(10-11), p.1589-1610, 41 refs.

Deltas, River ice, Ice breakup, Ice jams, Ice water interface, Ice cover effect, River flow, Flow control, Snowmelt, Flood forecasting, Flood control, Canada—Alberta—Peace-Athabasca Delta

## 53-2334

**Measurements and modelling of snow interception in the boreal forest.**

Hedstrom, N.R., Pomeroy, J.W., *Hydrological processes*, Aug.-Sep. 1998, 12(10-11), p.1611-1625, 30 refs. For another version see 52-5534.

Taiga, Forest canopy, Interception, Snow hydrology, Snow accumulation, Snow water equivalent, Snow evaporation, Snowmelt, Runoff forecasting, Mathematical models

## 53-2335

**Effects of irradiance levels and spectral composition on mating strategies in the snow alga, *Chlorella* sp.-D, from the Tughill Plateau, New York State.**

Hoham, R.W., et al, *Hydrological processes*, Aug.-Sep. 1998, 12(10-11), p.1627-1639, 40 refs.

Snow cover effect, Snow composition, Snow optics, Snow cover effect, Snowmelt, Albedo, Light effects, Algae, Cryobiology, Biomass, United States—New York

## 53-2336

**Application of indexed snowmelt algorithms in a northern wetland regime.**

Hamlin, L., Pietroniro, A., Prowse, T.D., Soulis, R., Kouwen, N., *Hydrological processes*, Aug.-Sep. 1998, 12(10-11), p.1641-1657, 32 refs.

Wetlands, Snow surveys, Snow cover distribution, Snow heat flux, Snow temperature, Snow hydrology, Snowmelt, Runoff forecasting, Computerized simulation, Canada—Northwest Territories—Liard River

## 53-2337

**Effects of climate change on water resources and runoff in an alpine basin.**

Seidel, K., Ehrler, C., Martinec, J., *Hydrological processes*, Aug.-Sep. 1998, 12(10-11), p.1659-1669, 24 refs. For another version see 52-5542.

Snow cover distribution, Snow hydrology, Snow accumulation, Snow heat flux, Snowmelt, Snow water equivalent, Global warming, Water balance, Water reserves, Runoff forecasting, Computerized simulation, Switzerland

## 53-2338

**Influence of the spatial distribution of snow on basin-averaged snowmelt.**

Luce, C.H., Tarboton, D.G., Cooley, K.R., *Hydrological processes*, Aug.-Sep. 1998, 12(10-11), p.1671-1683, 20 refs.

River basins, Watersheds, Snow cover distribution, Snowdrifts, Snow accumulation, Snow hydrology, Snow water equivalent, Snowmelt, Topographic effects, Runoff forecasting, Water balance, Computerized simulation, United States—Idaho

## 53-2339

**Annual maxima and partial duration flood series analysis by parametric and non-parametric methods.**

Adamowski, K., Liang, G.C., Patry, G.G., *Hydrological processes*, Aug.-Sep. 1998, 12(10-11), p.1685-1699, 23 refs.

Stream flow, Floods, Flood forecasting, Mathematical models, Statistical analysis, Canada—Quebec, Canada—Ontario

## 53-2340

**Statistical model of spatially distributed snowmelt rates in a boreal forest basin.**

Metcalfe, R.A., Buttle, J.M., *Hydrological processes*, Aug.-Sep. 1998, 12(10-11), p.1701-1722, 24 refs. For another version see 52-5537.

Taiga, Forest tundra, Forest canopy, Vegetation patterns, Vegetation factors, Snow cover distribution, Snow heat flux, Snow water equivalent, Snow hydrology, Snowmelt, Seepage, Water balance, Runoff forecasting, Statistical analysis, Canada—Manitoba

## 53-2341

**Improving snow cover mapping in forests through the use of a canopy reflectance model.**

Klein, A.G., Hall, D.K., Riggs, G.A., *Hydrological processes*, Aug.-Sep. 1998, 12(10-11), p.1723-1744, 45 refs.

Snow surveys, Snow cover distribution, Mapping, Taiga, Forest canopy, Vegetation factors, Terrain identification, Radiometry, Spaceborne photography, Image processing, Canada—Saskatchewan—Prince Albert National Park

53-2342

**Effect of glacier wastage on the flow of the Bow River at Banff, Alberta, 1951-1993.**

Hopkinson, C., Young, G.J., *Hydrological processes*, Aug.-Sep. 1998, 12(10-11), p.1745-1762, 35 refs. Glacier surveys, Glacier oscillation, Glacier mass balance, Glacial meteorology, Glacier melting, Glacial rivers, Meltwater, River flow, Stream flow, Climatic changes, Runoff forecasting, Water reserves, Canada—Alberta—Banff

53-2343

**Snow ablation modelling in a mature aspen stand of the boreal forest.**

Hardy, J.P., Davis, R.E., Jordan, R., Ni, W., Woodcock, C.E., MP 5289, *Hydrological processes*, Aug.-Sep. 1998, 12(10-11), p.1763-1778, 38 refs.

Taiga, Forest canopy, Litter, Vegetation factors, Albedo, Snow heat flux, Snow hydrology, Snow air interface, Snow evaporation, Snow melting, Snowmelt, Computerized simulation, Canada—Saskatchewan—Prince Albert National Park

Snow ablation modelling at the stand scale must account for the variability in snow cover and the large variations of components of energy transfer at the forest floor. The authors' previous work successfully predicted snow ablation in a mature jack pine stand by using a one-dimensional snow process model and models predicting radiation below forest canopies. This work represents a second test of their basic modelling scenario by predicting snow ablation in a leafless, deciduous aspen stand and verifying the results with field data. New modifications to the snow model accounted for decreased albedo owing to radiation penetration through optically thin snowpacks. A provisional equation estimates litter fall on the snowpack, thereby reducing the areal averaged albedo. The authors showed that subcanopy radiation measurements can be used with a canopy model to estimate a branch area index for defoliated aspen as an analogue to the foliage area index used for conifers. Modelled incoming solar and long-wave radiation showed a strong correlation with measurements, with  $r^2=0.96$  and  $0.91$  for solar and long-wave radiation, respectively. Model results demonstrate that net radiation overwhelms turbulent exchanges as the most significant driving force for snowmelt in aspen forests. Predicted snow ablation in the aspen stand compared very favorably with available data on snow depth.

53-2344

**Six-year isotopic record of lake evaporation at a mine site in the Canadian subarctic: results and validation.**

Gibson, J.J., Reid, R., Spence, C., *Hydrological processes*, Aug.-Sep. 1998, 12(10-11), p.1779-1792, 34 refs.

Mining, Tailings, Soil pollution, Water pollution, Ponds, Lake water, Water chemistry, Hydrogeochemistry, Evaporation, Water balance, Isotope analysis, Canada—Northwest Territories—Yellowknife

53-2345

**Estimating the spatial distribution of snow water equivalence in a montane watershed.**

Elder, K., Rosenthal, W., Davis, R.E., MP 5290, *Hydrological processes*, Aug.-Sep. 1998, 12(10-11), p.1793-1808, 34 refs. For another version see 52-5524.

Snow surveys, Snow cover distribution, Snow depth, Snow density, Snow water equivalent, Snow hydrology, Snowmelt, Runoff forecasting, Statistical analysis, Computerized simulation, United States—California—Sierra Nevada

An approach to model distributed snow water equivalence (SWE) that merges field measurements of depth and density with remotely sensed snow-covered area (SCA) is described. In 1993, two teams conducted an intensive snow survey in the 92.8 km<sup>2</sup> Blackcap Basin of the Kings River. Snow depth was measured at 709 points and density in five snow pits and along five transects using a Federal Sampler. Sample locations were chosen to be representative of the range of elevation, slope and aspect of the basin. Regression tree models showed that net radiation, elevation and slope angle account for 60-70% of the variance in the depth measurements. Density was distributed over the basin on a 30 m grid with a multiple linear regression model that explained 70% of the observed variance as a function of the same three variables. The gridded depth estimates, combined with modelled density, produced spatially distributed estimates of SWE. An unsupervised spectral unmixing algorithm estimated snow cover fractions from Landsat-5 Thematic Mapper data acquired at the time as the snow survey. This method provides a snow cover fraction estimate for every pixel. This subpixel map was used as the best estimate for SCA and, combining it with the SWE map, allowed computation of the SWE volume. The estimated volume using the subpixel SCA map was compared with several SCA maps produced with simulations of binary SCA mapping techniques. Thresholds of 40, 50 and 60% fractional cover were used to map binary cases of full snow cover or no snow cover. The difference in basin SWE volume was up to 13% depending on the threshold used

to classify snow-covered versus snow-free areas. The percentage differences in volumes show a significant correlation to the percentage differences in SCA between the methods.

53-2346

**Environmental geomorphology.**

Panizza, M., *Developments in Earth Surface Processes*. Vol.4, Amsterdam, Netherlands, Elsevier Science B.V., 1996, 268p., Refs. p.240-262. DLC GB406.P36 1996

Geomorphology, Engineering geology, Landslides, Shore erosion, Avalanches, Rock glaciers, Glacier surges, Environmental impact

53-2347

**Freeze concentration of solutions and washing of ice crystals.**

Shirai, Y., Sakashita, S., *Japan Patent Office. Patent*, Nov. 25, 1997, n.p., No.97299704.

Frozen liquids, Artificial nucleation, Artificial freezing, Ice crystal growth

53-2348

**Antifreeze and deicing composition and method for inhibiting accumulation of snow and ice on outdoor surfaces.**

Janke, G.A., Johnson, W.D., Jr., *World Intellectual Property Organization. Patent Cooperation Treaty. Patent*, Oct. 30, 1997, n.p., No.9740119.

Antifreezes, Chemical ice prevention

53-2349

**System concept for electro-optical imaging of sea ice from space in the visible and infrared spectra.**

Jackson, B., *IEEE Aerospace Applications Conference*, Aspen, CO, Feb. 1-8, 1997. Proceedings, Vol.2, Piscataway, NJ, Institute of Electrical and Electronics Engineers, 1997, p.263-284. DLC TL3000.A1 I18a Vol.2

Ice surveys, Sea ice distribution, Icebergs, Drift, Ice detection, Ice reporting, Radar tracking, Spaceborne photography

53-2350

**Retrieval of biomass in boreal forests from multi-temporal ERS-1 and JERS-1 SAR images.**

Kurvonen, L., Pulliainen, J., Hallikainen, M., *IEEE transactions on geoscience and remote sensing*, Jan. 1999, 37(1)pt.1, p.198-205, 26 refs.

Taiga, Forest ecosystems, Vegetation patterns, Geobotanical interpretation, Terrain identification, Biomass, Spaceborne photography, Synthetic aperture radar, Finland

53-2351

**Monitoring soil moisture over the Canadian Prairies with the ERS scatterometer.**

Wagner, W., Noll, J., Borgeaud, M., Rott, H., *IEEE transactions on geoscience and remote sensing*, Jan. 1999, 37(1)pt.1, p.206-216, 21 refs.

Plains, Vegetation patterns, Meadow soils, Soil water, Water content, Moisture detection, Backscattering, Spaceborne photography, Canada

53-2352

**Bidirectional anisotropic reflectance of snow and sea ice in AVHRR Channel 1 and 2 spectral regions. Part I: theoretical analysis.**

Jin, Z.H., Simpson, J.J., *IEEE transactions on geoscience and remote sensing*, Jan. 1999, 37(1)pt.II, p.543-554, 43 refs.

Snow surveys, Ice surveys, Snow cover distribution, Snow surface, Sea ice distribution, Ice surface, Reflectivity, Radiometry, Spaceborne photography, Snow cover effect, Ice cover effect

53-2353

**Microwave transfer model differences in remote sensing of cloud liquid water at low temperatures.**

Lipton, A.E., Griffin, M.K., Ling, A.G., *IEEE transactions on geoscience and remote sensing*, Jan. 1999, 37(1)pt.II, p.620-623, 17 refs.

Supercooled clouds, Cloud physics, Unfrozen water content, Moisture detection, Microwaves, Attenuation

53-2354

**Analysis of glaciers and geomorphology on Svalbard using multitemporal ERS-1 SAR images.**

Engeset, R.V., Weydahl, D.J., *IEEE transactions on geoscience and remote sensing*, Nov. 1998, 36(6), p.1879-1887, 20 refs.

Glacier surveys, Glacier oscillation, Glacier mass balance, Glacier surfaces, Snow ice interface, Snow line, Moraines, Terrain identification, Spaceborne photography, Synthetic aperture radar, Backscattering, Norway—Svalbard

53-2355

**Airborne C-band SAR measurements of wet snow-covered areas.**

Baghdadi, N., Livingstone, C.E., Bernier, M., *IEEE transactions on geoscience and remote sensing*, Nov. 1998, 36(6), p.1977-1981, 13 refs.

Snow surveys, Snow cover distribution, Wet snow, Snow water content, Terrain identification, Spaceborne photography, Synthetic aperture radar, Canada—Quebec—James Bay

53-2356

**Developments in aviation forecasting in the UK.**

Hall, B.A., *Meteorological applications*, Sep. 1998, 5(3), p.191-204, 35 refs.

Aircraft icing, Ice storms, Turbulence, Visibility, Safety, Weather forecasting, United Kingdom

53-2357

**Autonomous approach to road temperature prediction.**

Hertl, S., Schaffar, G., *Meteorological applications*, Sep. 1998, 5(3), p.227-238, 13 refs.

Road icing, Ice forecasting, Frost forecasting, Safety, Statistical analysis, Austria

53-2358

**Use of environmental SEM to study asphalt-water interactions.**

Williams, T.M., Miknis, F.P., *Journal of materials in civil engineering*, May 1998, 10(2), p.121-124, 7 refs.

Bitumens, Pavements, Freeze thaw tests, Frost action, Frost penetration, Seepage, Scanning electron microscopy

53-2359

**Asphalt concrete damage associated with extreme low temperatures.**

El Hussein, H.M., Kim, K.W., Ponniah, J., *Journal of materials in civil engineering*, Nov. 1998, 10(4), p.269-274, 6 refs.

Bituminous concretes, Concrete pavements, Low temperature tests, Thermal stresses, Cold stress, Cracking (fracturing)

53-2360

**Transposed climates for study of water supply variability on the Laurentian Great Lakes.**

Kunkel, K.E., Changnon, S.A., Croley, T.E., II, Quinn, F.H., *Climatic change*, Apr. 1998, 38(4), p.387-404, 28 refs.

Global warming, Atmospheric circulation, Lake effects, Water balance, Water reserves, Computerized simulation, Great Lakes

53-2361

**Great Lakes hydrology under transposed climates.**

Croley, T.E., II, Quinn, F.H., Kunkel, K.E., Changnon, S.A., *Climatic change*, Apr. 1998, 38(4), p.405-433, 18 refs.

Global warming, Atmospheric circulation, Lake effects, Water balance, Water reserves, Computerized simulation, Great Lakes

53-2362

**Direct and interactive effects of allochthonous dissolved organic matter, inorganic nutrients, and ultraviolet radiation on an alpine littoral food web.**

Vinebrooke, R.D., Leavitt, P.R., *Limnology and oceanography*, Sep. 1998, 43(6), p.1065-1081, 96 refs.

Forest ecosystems, Ecology, Littoral zone, Limnology, Lake water, Water chemistry, Suspended sediments, Ultraviolet radiation, Algae, Bacteria, Chlorophylls, Nutrient cycle, Biomass, Canada—Alberta—Banff National Park

53-2363

**Development of a subsurface chlorophyll maximum at the entrance to the Gulf of Finland, Baltic Sea.**

Kononen, K., et al, *Limnology and oceanography*, Sep. 1998, 43(6), p.1089-1106, 75 refs.

Marine biology, Sea water, Water temperature, Water chemistry, Algae, Plankton, Bacteria, Chlorophylls, Biomass, Finland, Gulf

53-2364

**Oxygen and hydrogen isotope systematics of Lake Balkal, Siberia: implications for paleoclimate studies.**

Seal, R.R., II, Shanks, W.C., III, *Limnology and oceanography*, Sep. 1998, 43(6), p.1251-1261, 45 refs.

Limnology, Lake water, Water chemistry, Isotope analysis, Water balance, Paleoclimatology, Russia—Baykal, Lake

53-2365

**Predictive skill of an NWP system in the southern lower stratosphere.**

Waugh, D.W., Sisson, J.M., Karoly, D.J., *Royal Meteorological Society. Quarterly journal A*, Oct. 1998, 124(551), p.2181-2200, 23 refs.

Polar atmospheres, Stratosphere, Atmospheric circulation, Atmospheric pressure, Atmospheric disturbances, Air temperature, Weather forecasting, Statistical analysis, Antarctica

53-2366

**Extreme cold surge over the Greek peninsula.**

Lagouvardos, K., Kotroni, V., Kallos, G., *Royal Meteorological Society. Quarterly journal A*, Oct. 1998, 124(551), p.2299-2327, 33 refs.

Atmospheric circulation, Atmospheric pressure, Atmospheric disturbances, Synoptic meteorology, Wind (meteorology), Air temperature, Fronts (meteorology), Snowstorms, Records (extremes), Greece

53-2367

**Analysis of the eyes formed in simulated tropical cyclones and polar lows.**

Gray, S.L., *Royal Meteorological Society. Quarterly journal A*, Oct. 1998, 124(551), p.2357-2375, 31 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Atmospheric pressure, Atmospheric disturbances, Wind velocity, Air temperature, Mathematical models

53-2368

**Modelling the Asian summer monsoon rainfall and Eurasian winter/spring snow mass.**

Dong, B.W., Valdes, P.J., *Royal Meteorological Society. Quarterly journal B*, Oct. 1998, 124(552), p.2567-2596, 54 refs.

Atmospheric circulation, Snowfall, Snow cover effect, Precipitation (meteorology), Computerized simulation

53-2369

**Decrease of total ozone at low latitudes in the Southern Hemisphere by a combination of linear and nonlinear processes.**

Teitelbaum, H., Moustouli, M., Van Velthoven, P.F.J., Kelder, H., *Royal Meteorological Society. Quarterly journal B*, Oct. 1998, 124(552), p.2625-2644, 34 refs.

Polar atmospheres, Atmospheric circulation, Atmospheric composition, Ozone, Antarctica, Chile, Argentina

53-2370

**Radiolarian faunal provinces in surface sediments of the Greenland, Iceland and Norwegian (GIN) Seas.**

Bjørklund, K.R., Cortese, G., Swanberg, N., Schrader, H.J., *Marine micropaleontology*, Nov. 1998, 35(1-2), p.105-140, 79 refs.

Marine geology, Marine biology, Marine deposits, Bottom sediment, Fossils, Paleocology, Water temperature, Paleoclimatology, Greenland Sea, Iceland Sea, Norwegian Sea

53-2371

**Stability and meromixis in a water-filled mine pit.**

Stevens, C.L., Lawrence, G.A., *Limnology and oceanography*, July 1998, 43(5), p.946-954, 20 refs.

Mining, Pits (excavations), Tailings, Ponds, Lake ice, Ice cover effect, Lake water, Water pollution, Water chemistry, Water temperature, Salinity, Limnology, Land reclamation, Canada—British Columbia

53-2372

**Bifurcation rearrangement in cyclic water clusters: breaking and making hydrogen bonds.**

Brown, M.G., Keutsch, F.N., Saykally, R.J., *Journal of chemical physics*, Dec. 8, 1998, 109(22), p.9645-9647, 25 refs.

Water structure, Molecular structure, Molecular energy levels, Hydrogen bonds

53-2373

**Integral equation study of a simple point charge model of water.**

Lombardero, M., Martin, C., Jorge, S., Lado, F., Lomba, E., *Journal of chemical physics*, Jan. 8, 1999, 110(2), p.1148-1153, 27 refs.

Water structure, Molecular structure, Molecular energy levels, Electric charge, Liquid phases, Mathematical models, Computerized simulation

53-2374

**Problems of geocryology; collected papers. [Problemy geokriologii; sbornik dokladov]**

Kamenskii, R.M., ed, Kunitskii, V.V., ed, Olovin, B.A., ed, Shepelev, V.V., ed, Yakutsk, Melnikov Permafrost Institute, Siberian Branch, Russian Academy of Sciences, 1998, 209p., In Russian with English titles and summaries. Refs. passim. Submitted to the 7th International Conference on Permafrost, Yellowknife, Northwest Territories, June 23-27, 1998. For individual papers see 53-2375 through 53-2401.

For other papers from this conference see 53-2140 through 53-2327. Geocryology, Permafrost, Frozen ground temperature, Active layer, Thermal regime, Taliks, Cryogenic soils, Russia

53-2375

**Non-stability of the cryolithozone thermal condition and caused processes of geological-hydrogeological environment transformation.**

[Nestatsionarnost' teplovogo sostoiianiia kriolitozony i vyzhvaemye eliu protsessy preobrazovaniia geologo-gidrogeologicheskoi sredy]

Balobaev, V.T., Tetel'baum, A.S., Mordovskoi, S.D., *Problemy geokriologii; sbornik dokladov* (Problems of geocryology; collected papers). Edited by R.M. Kamenskii, V.V. Kunitskii, B.A. Olovin and V.V. Shepelev, Yakutsk, Melnikov Permafrost Institute, Siberian Branch, Russian Academy of Sciences, 1998, p.7-14, In Russian with English summary. 3 refs.

Geocryology, Geothermy, Hydrogeology, Permafrost hydrology, Permafrost heat transfer, Subpermafrost ground water, Thermal regime, Russia—Siberia

53-2376

**Global climate warming and future temperatures in Northern America. [Global'noe poteplenie klimata i budushchie temperatury v Severnoi Amerike]**

Gavrilova, M.K., *Problemy geokriologii; sbornik dokladov* (Problems of geocryology; collected papers). Edited by R.M. Kamenskii, V.V. Kunitskii, B.A. Olovin and V.V. Shepelev, Yakutsk, Melnikov Permafrost Institute, Siberian Branch, Russian Academy of Sciences, 1998, p.15-21, In Russian with English summary. 4 refs.

Global warming, Climatic changes, Air temperature, Temperature effects, Global change, North America

53-2377

**Response of Yakutia cryolithozone to long-term variations in climate elements. [Reaktsiia kriolitozony IAKutii na mnogoletniuiu izmenchivost' elementov klimata]**

Shender, N.I., Tetel'baum, A.S., Skachkov, I.U.B., *Problemy geokriologii; sbornik dokladov* (Problems of geocryology; collected papers). Edited by R.M. Kamenskii, V.V. Kunitskii, B.A. Olovin and V.V. Shepelev, Yakutsk, Melnikov Permafrost Institute, Siberian Branch, Russian Academy of Sciences, 1998, p.22-30, In Russian with English summary. 6 refs.

Geocryology, Temperature variations, Temperature effects, Climatic changes, Global warming, Air temperature, Carbon dioxide, Frozen ground temperature, Russia—Yakutia

53-2377

**Response of Yakutia cryolithozone to long-term variations in climate elements. [Reaktsiia kriolitozony IAKutii na mnogoletniuiu izmenchivost' elementov klimata]**

Shender, N.I., Tetel'baum, A.S., Skachkov, I.U.B., *Problemy geokriologii; sbornik dokladov* (Problems of geocryology; collected papers). Edited by R.M. Kamenskii, V.V. Kunitskii, B.A. Olovin and V.V. Shepelev, Yakutsk, Melnikov Permafrost Institute, Siberian Branch, Russian Academy of Sciences, 1998, p.22-30, In Russian with English summary. 6 refs.

Geocryology, Temperature variations, Temperature effects, Climatic changes, Global warming, Air temperature, Carbon dioxide, Frozen ground temperature, Russia—Yakutia

53-2378

**Climate warming and monitoring of thermal state of soils in Central Yakutia. [Poteplenie klimata i monitoring teplovogo sostoiianiia gruntov v Tsentral'noi IAKutii]**

Skriabin, P.N., Skachkov, I.U.B., Varlamov, S.P., *Problemy geokriologii; sbornik dokladov* (Problems of geocryology; collected papers). Edited by R.M. Kamenskii, V.V. Kunitskii, B.A. Olovin and V.V. Shepelev, Yakutsk, Melnikov Permafrost Institute, Siberian Branch, Russian Academy of Sciences, 1998, p.31-39, In Russian with English summary. 10 refs.

Global warming, Climatic changes, Air temperature, Temperature effects, Soil temperature, Frozen ground temperature, Thaw depth, Russia—Yakutia

53-2379

**Response of the thermal regime of the active layer to recent climatic changes in Yakutia. [Reaktsiia termicheskogo rezhima pochvogruntov IAKutii na sovremennye izmeneniia klimata]**

Vasil'ev, I.S., *Problemy geokriologii; sbornik dokladov* (Problems of geocryology; collected papers). Edited by R.M. Kamenskii, V.V. Kunitskii, B.A. Olovin and V.V. Shepelev, Yakutsk, Melnikov Permafrost Institute, Siberian Branch, Russian Academy of Sciences, 1998, p.40-45, In Russian with English summary. 2 refs.

Active layer, Thermal regime, Climatic changes, Soil temperature, Frozen ground temperature, Advection, Global warming, Air masses, Russia—Yakutia

53-2380

**Calculation of paleoclimate temperatures from cryogenic texture. [Raschet paleoklimaticheskikh temperatur po kriogennoi teksture]**

Kazanskii, O.A., *Problemy geokriologii; sbornik dokladov* (Problems of geocryology; collected papers). Edited by R.M. Kamenskii, V.V. Kunitskii, B.A. Olovin and V.V. Shepelev, Yakutsk, Melnikov Permafrost Institute, Siberian Branch, Russian Academy of Sciences, 1998, p.46-52, In Russian with English summary. 5 refs.

Paleoclimatology, Cryogenic structures, Permafrost origin, Soil freezing, Moisture transfer, Cryogenic soils, Analysis (mathematics), Stefan problem, Air temperature, Russia—Igarka River

53-2381

**Dynamics of the coastal zone of the Gulf of Anadyr, Bering Sea, due to tidal activity. [Dinamika pribrezhnoi zony Anadyrskogo zaliva Beringova moria pod vozdeistviem prilivov]**

Liubomirov, A.S., *Problemy geokriologii; sbornik dokladov* (Problems of geocryology; collected papers). Edited by R.M. Kamenskii, V.V. Kunitskii, B.A. Olovin and V.V. Shepelev, Yakutsk, Melnikov Permafrost Institute, Siberian Branch, Russian Academy of Sciences, 1998, p.53-59, In Russian with English summary. 4 refs.

Shores, Shoreline modification, Coastal topographic features, Shore erosion, Ocean currents, Hydrothermal processes, Russia—Anadyr' Bay

53-2382

Ice complex and cryoplanation terraces on Big Lyakhovsky Island. [Ledovyi kompleks i krioplanatsionnye terrasy ostrova Bol'shogo Lyakhovskogo]

Kunitskiĭ, V.V., Problemy geokriologii; sbornik dokladov (Problems of geocryology; collected papers). Edited by R.M. Kamenskii, V.V. Kunitskiĭ, B.A. Olovin and V.V. Shepelev, Yakutsk, Melnikov Permafrost Institute, Siberian Branch, Russian Academy of Sciences, 1998, p.60-72, In Russian with English summary. 21 refs.

Altiplanation, Terraces, Quaternary deposits, Alassy, Cryogenic soils, Soil dating, Ice veins, Age determination, Soil profiles, Russia—Novosibirskiy Islands, Russia—Bol'shoy Lyakhovskiy Island

53-2383

Genesis and paleogeographical conditions of massive ground ice formation in northern Yenisey. [Genezis i paleogeograficheskie uslovia obrazovaniia massivnykh zalezheĭ podzemnogo l'da na Eniseĭskom Severe]

Karpov, E.G., Baranovskii, E.L., Problemy geokriologii; sbornik dokladov (Problems of geocryology; collected papers). Edited by R.M. Kamenskii, V.V. Kunitskiĭ, B.A. Olovin and V.V. Shepelev, Yakutsk, Melnikov Permafrost Institute, Siberian Branch, Russian Academy of Sciences, 1998, p.73-81, In Russian with English summary. 4 refs.

Paleoclimatology, Ground ice, Age determination, Ice dating, Quaternary deposits, Ice veins, Glacier ice, Russia—Yenisey River

53-2384

Some regularities in formation and distribution of floodplain taliks. [Nekotorye zakonomernosti formirovaniia i rasprostraneniia poimennykh talikov]

Mikhaĭlov, V.M., Problemy geokriologii; sbornik dokladov (Problems of geocryology; collected papers). Edited by R.M. Kamenskii, V.V. Kunitskiĭ, B.A. Olovin and V.V. Shepelev, Yakutsk, Melnikov Permafrost Institute, Siberian Branch, Russian Academy of Sciences, 1998, p.82-87, In Russian with English summary. 6 refs.

Taliks, Floodplains, Alluvium, Rivers, Heat balance, Russia—Kolyma River

53-2385

Latitudinal and altitudinal regularities of soil seasonal thaw in Yakutia. [Shirotnye i vysotnye zakonomernosti sezonnogo protaivaniia gruntov v IAKutii]

Zabolotnik, S.I., Problemy geokriologii; sbornik dokladov (Problems of geocryology; collected papers). Edited by R.M. Kamenskii, V.V. Kunitskiĭ, B.A. Olovin and V.V. Shepelev, Yakutsk, Melnikov Permafrost Institute, Siberian Branch, Russian Academy of Sciences, 1998, p.88-94, In Russian with English summary. 16 refs. For English version see 53-2319.

Ground thawing, Seasonal freeze thaw, Thaw depth, Russia—Yakutia

53-2386

Modeling of heat- and mass-transfer in ground freezing and heaving. [Modelirovanie teplo- i masopere-nosa v promerzaiushchikh puchinyistyykh gruntakh]

Chistotinov, L.V., Problemy geokriologii; sbornik dokladov (Problems of geocryology; collected papers). Edited by R.M. Kamenskii, V.V. Kunitskiĭ, B.A. Olovin and V.V. Shepelev, Yakutsk, Melnikov Permafrost Institute, Siberian Branch, Russian Academy of Sciences, 1998, p.95-101, In Russian with English summary. 3 refs.

Frozen ground thermodynamics, Soil freezing, Frost heave, Frozen ground mechanics, Heat transfer, Mass transfer, Computer programs, Mathematical models, Moisture transfer, Soil water migration

53-2387

Specific properties of the quasiliquid film of the ice surface. [Nekotorye fiziko-khimicheskie osobennosti poverkhnostnogo sloia l'da]

Fedoseev, N.F., Problemy geokriologii; sbornik dokladov (Problems of geocryology; collected papers). Edited by R.M. Kamenskii, V.V. Kunitskiĭ, B.A. Olovin and V.V. Shepelev, Yakutsk, Melnikov Permafrost Institute, Siberian Branch, Russian Academy of Sciences, 1998, p.102-104, In Russian with English summary. 5 refs.

Electrical properties, Sands, Electrical resistivity, Frozen ground physics, Substrates

53-2388

Experimental study of gold migration in frozen sands. [Eksperimental'nye issledovaniia migratsii zolota v merzlykh peskakh]

Fedoseeva, V.I., Problemy geokriologii; sbornik dokladov (Problems of geocryology; collected papers). Edited by R.M. Kamenskii, V.V. Kunitskiĭ, B.A. Olovin and V.V. Shepelev, Yakutsk, Melnikov Permafrost Institute, Siberian Branch, Russian Academy of Sciences, 1998, p.105-109, In Russian with English summary. 10 refs. For English version see 53-2181.

Sands, Gold, Frozen ground chemistry, Frozen fines, Permafrost mass transfer

53-2389

Aeration zone in the cryolithosphere and its modification by developmental activities in northern areas. [Zona aeratsii kriolitosfery i ee izmeneniia pri tekhnogennom osvoenii severnykh territorii]

Anisimova, N.P., Shepelev, V.V., Problemy geokriologii; sbornik dokladov (Problems of geocryology; collected papers). Edited by R.M. Kamenskii, V.V. Kunitskiĭ, B.A. Olovin and V.V. Shepelev, Yakutsk, Melnikov Permafrost Institute, Siberian Branch, Russian Academy of Sciences, 1998, p.110-114, In Russian with English summary. 8 refs.

Aeration, Hydrogeology, Seasonal freeze thaw, Freeze thaw cycles, Geocryology, Active layer, Soil water migration

53-2390

Observations of permafrost-landscape dynamics related to anthropogenic disturbances, Yukechi study site, Central Yakutia. [Nabludeniiia za dinamikoĭ merzlotnykh landshaftov, svyazannye s antropogennymi narusheniami (poligon IUkechi, Tsentral'naiia IAKutia)]

Fedorov, A.N., Konstantinov, P.I.A., Vasil'ev, I.S., Bosikov, N.P., Torgovkin, I.A.I., Samsonova, V.V., Problemy geokriologii; sbornik dokladov (Problems of geocryology; collected papers). Edited by R.M. Kamenskii, V.V. Kunitskiĭ, B.A. Olovin and V.V. Shepelev, Yakutsk, Melnikov Permafrost Institute, Siberian Branch, Russian Academy of Sciences, 1998, p.115-122, In Russian with English summary. 3 refs. For English version see 53-2180.

Permafrost surveys, Permafrost distribution, Permafrost preservation, Permafrost forecasting, Frozen ground settling, Ground thawing, Alassy, Thermokarst development, Thermokarst lakes, Global warming, Russia—Yakutia

53-2391

Humidification fluctuation and dynamics of thermokarst processes in Central Yakutia. [Izmenchivost' uvlazhnenosti Tsentral'noi IAKutii i dinamika termokarstovykh protsessov]

Bosikov, N.P., Problemy geokriologii; sbornik dokladov (Problems of geocryology; collected papers). Edited by R.M. Kamenskii, V.V. Kunitskiĭ, B.A. Olovin and V.V. Shepelev, Yakutsk, Melnikov Permafrost Institute, Siberian Branch, Russian Academy of Sciences, 1998, p.123-127, In Russian with English summary. 8 refs. For English version see 53-2151.

Permafrost hydrology, Alassy, Thermokarst development, Thermokarst lakes, Climatic changes, Climatic factors, Russia—Yakutia

53-2392

Vegetation recovery on disturbed sites of permafrost terrain in the Bolshezemel'skaya Tundra. [O vosstanovlenii rastitel'nosti na narushennykh uchastkakh merzlotnykh landshaftov v Bol'shezemel'skoĭ tundre (Rossia)]

Chistotinov, L.V., Glavatskikh, V.V., Problemy geokriologii; sbornik dokladov (Problems of geocryology; collected papers). Edited by R.M. Kamenskii, V.V. Kunitskiĭ, B.A. Olovin and V.V. Shepelev, Yakutsk, Melnikov Permafrost Institute, Siberian Branch, Russian Academy of Sciences, 1998, p.128-136, In Russian with English summary. 19 refs.

Revegetation, Land reclamation, Tundra vegetation, Geocryology, Permafrost thermal properties, Temperature effects, Russia—Bol'shezemel'skaya Tundra

53-2393

Cryogenic processes in the active layer and their changes due to agricultural activities in Yakutia. [Kriogennyye protsessy v deiatel'nom sloe i ikh izmenenie pri sel'skokhoziaĭstvennom osvoenii territorii IAKutii]

Gavril'ev, P.P., Ugarov, I.S., Efreinov, P.V., Problemy geokriologii; sbornik dokladov (Problems of geocryology; collected papers). Edited by R.M. Kamenskii, V.V. Kunitskiĭ, B.A. Olovin and V.V. Shepelev, Yakutsk, Melnikov Permafrost Institute, Siberian Branch, Russian Academy of Sciences, 1998, p.137-144, In Russian with English summary. 11 refs.

Active layer, Agriculture, Geocryology, Ice wedges, Continuous permafrost, Thermokarst, Deformation, Ground thawing, Environmental impact, Russia—Yakutia

53-2394

Principles of geocryological-ecological zoning and mapping of northern agricultural lands. [Printsipy merzlotno-ekologicheskogo raionirovaniia i kartirovaniia zemel' Severa pri sel'skokhoziaĭstvennom osvoenii]

Ugarov, I.S., Gavril'ev, P.P., Efreinov, P.V., Problemy geokriologii; sbornik dokladov (Problems of geocryology; collected papers). Edited by R.M. Kamenskii, V.V. Kunitskiĭ, B.A. Olovin and V.V. Shepelev, Yakutsk, Melnikov Permafrost Institute, Siberian Branch, Russian Academy of Sciences, 1998, p.145-150, In Russian with English summary. 11 refs.

Geocryology, Agriculture, Ecology, Cryogenic soils, Permafrost preservation, Soil conservation, Regional planning, Mapping, Russia—Yakutia

53-2395

Concepts and principles of city designing and building in the Russian permafrost zone. [Konseptsiia i printsipy gradostroitel'stva v kriolitozone Rossii]

Kamenskii, R.M., Problemy geokriologii; sbornik dokladov (Problems of geocryology; collected papers). Edited by R.M. Kamenskii, V.V. Kunitskiĭ, B.A. Olovin and V.V. Shepelev, Yakutsk, Melnikov Permafrost Institute, Siberian Branch, Russian Academy of Sciences, 1998, p.151-156, In Russian with English summary. 5 refs.

Regional planning, Urban planning, Design criteria, Economic development, Cold weather construction, Cold weather operation, Russia

53-2396

Problems of the environment protection when developing oil and gas complexes in Yakutia. [Problemy okhrany prirody pri sozdanii neftegazovogo kompleksa IAKutii]

Konstantinov, I.P., Problemy geokriologii; sbornik dokladov (Problems of geocryology; collected papers). Edited by R.M. Kamenskii, V.V. Kunitskiĭ, B.A. Olovin and V.V. Shepelev, Yakutsk, Melnikov Permafrost Institute, Siberian Branch, Russian Academy of Sciences, 1998, p.157-164, In Russian with English summary. 3 refs. For English version see 53-2232.

Environmental impact, Environmental protection, Petroleum industry, Economic development, Pipelines, Permafrost preservation, Permafrost beneath structures, Russia—Yakutia



53-2397

**Changes in permafrost conditions along linear engineering structures in the north-taiga subzone of the arctic Yenisey area.** [Izmenenie geokriologicheskikh usloviy na trassakh lineynykh sooruzheniy severa-taizhnoy podzony Eniseyskogo Zapoll'ia] Karpov, E.G., Baranovskii, E.L., Problemy geokriologii; sbornik dokladov (Problems of geocryology; collected papers). Edited by R.M. Kamenskii, V.V. Kunitskii, B.A. Olovin and V.V. Shepelev, Yakutsk, Melnikov Permafrost Institute, Siberian Branch, Russian Academy of Sciences, 1998, p.165-173, In Russian with English summary. For English version see 53-2223.

Permafrost surveys, Permafrost distribution, Permafrost thickness, Permafrost weathering, Permafrost beneath structures, Permafrost beneath roads, Power line supports, Railroads, Thermokarst, Taliks, Russia—Yenisey River, Russia—Noril'sk, Russia—Igarka

53-2398

**Problems of interaction between structures on permafrost on the example of headframe foundations.** [Problematika vzaimodeystviya sooruzheniy na vostochnykh bashennykh koprov] Gur'ianov, I.E., Problemy geokriologii; sbornik dokladov (Problems of geocryology; collected papers). Edited by R.M. Kamenskii, V.V. Kunitskii, B.A. Olovin and V.V. Shepelev, Yakutsk, Melnikov Permafrost Institute, Siberian Branch, Russian Academy of Sciences, 1998, p.174-182, In Russian with English summary. 13 refs. For English version see 53-2199. Mine shafts, Towers, Foundations, Permafrost beneath structures, Permafrost control, Permafrost preservation, Taliks, Soil stabilization, Russia

53-2399

**Engineering properties of frozen soils in southern Trans-Balkal area.** [Zakonovernosti stroitel'nykh svoystv merzlykh gruntov v IUzhnom Zabalkal'e] Saf'nikov, P.I., Problemy geokriologii; sbornik dokladov (Problems of geocryology; collected papers). Edited by R.M. Kamenskii, V.V. Kunitskii, B.A. Olovin and V.V. Shepelev, Yakutsk, Melnikov Permafrost Institute, Siberian Branch, Russian Academy of Sciences, 1998, p.183-188, In Russian with English summary. 3 refs. Seasonal freeze thaw, Thaw depth, Discontinuous permafrost, Engineering geology, Frost heave, Foundations, Freezing front, Soil water migration, Slope orientation, Frozen ground mechanics, Russia—Transbaikal

53-2400

**Experimental studies of the processes of ice formation and evaporation in air thermosiphons.** [Eksperimental'nye issledovaniya protsessov obrazovaniya l'da v vozdukhnykh termosifonakh] Kuz'min, G.P., Problemy geokriologii; sbornik dokladov (Problems of geocryology; collected papers). Edited by R.M. Kamenskii, V.V. Kunitskii, B.A. Olovin and V.V. Shepelev, Yakutsk, Melnikov Permafrost Institute, Siberian Branch, Russian Academy of Sciences, 1998, p.189-195, In Russian with English summary. 2 refs. For English version see 53-2235. Permafrost beneath structures, Permafrost preservation, Permafrost heat transfer, Soil freezing, Artificial freezing, Soil stabilization, Cooling systems, Pipes (tubes), Air flow, Ice air interface, Ice prevention, Ice sublimation, Analysis (mathematics)

53-2401

**Ice food depot cooled with the heat pump; sketch-project.** [Ledianol' prodovol'stvennyy sklad s teplososnyim okhlazhdeniem; kontseptsia proekta] Gulyt, S.A., Perlshtein, G.Z., Problemy geokriologii; sbornik dokladov (Problems of geocryology; collected papers). Edited by R.M. Kamenskii, V.V. Kunitskii, B.A. Olovin and V.V. Shepelev, Yakutsk, Melnikov Permafrost Institute, Siberian Branch, Russian Academy of Sciences, 1998, p.196-205, In Russian with English summary. 4 refs. For English version see 53-2198. Permafrost thermal properties, Permafrost heat transfer, Ice thermal properties, Ice refrigeration, Cold storage, Artificial freezing, Heat pumps, Russia—Magadan

53-2402

**Impact resistance of polyurethane foam roofs against hail.** Kashiwagi, D.T., Pandey, M.K., *Journal of thermal insulation and building envelopes*, Oct. 1997, Vol.21, p.137-152, 21 refs. Roofs, Protective coatings, Thermal insulation, Cellular plastics, Hailstones, Hail prevention, Impact strength

53-2403

**Thermal performance patterns on solid masonry exterior walls of historic buildings.** Colantonio, A., *Journal of thermal insulation and building envelopes*, Oct. 1997, Vol.21, p.185-201, 3 refs. Buildings, Walls, Masonry, Air leakage, Weatherproofing, Frost action, Frost protection, Canada—Ontario—Ottawa

53-2404

**Agent for melting snow using water-insoluble particle loaded with calcium chloride.** Nakano, S., Ohara, M., Fukuyama, Y., *Japan Patent Office. Patent*, Sep. 16, 1997, n.p., No.97241621. Artificial melting, Snow melting, Snow removal, Chemical ice prevention, Salting

53-2405

**Apparatus for determining moisture content of snow by using IR sensor.** Kamidokoro, M., Tachizaki, S., Fukushi, A., Nakano, Y., Abe, K., *Japan Patent Office. Patent*, Sep. 5, 1997, n.p., No.97229852. Snow optics, Snow water content, Snow survey tools, Moisture meters, Moisture detection, Infrared equipment

53-2406

**Apparatus for measuring water content in falling snow using photo-electric conversion device.** Kamidokoro, M., Tachizaki, S., Fukushi, A., Abe, K., Nakano, Y., *Japan Patent Office. Patent*, Aug. 15, 1997, n.p., No.97210903. Falling snow, Snow optics, Snow water content, Snow survey tools, Meteorological instruments

53-2407

**Turf-safe sprayable snow-melting agents containing charcoal powder.** Tamagawa, K., *Japan Patent Office. Patent*, Aug. 12, 1997, n.p., No.97208936. Carbon black, Artificial melting, Snow melting, Snow removal

53-2408

**Evaluation of western coal fly ashes for stabilization of low-volume roads.** Turner, J.P., Testing soil mixed with waste or recycled materials. ASTM STP 1275. Edited by M.A. Wasemiller and K.B. Hoddinott, Philadelphia, American Society for Testing and Materials, 1997, p.157-171, 9 refs. Presented at a symposium in New Orleans, LA, Jan. 16-17, 1997. DLC TA749.T47 1997 Subgrade soils, Soil stabilization, Frost resistance, Freeze thaw tests, Subgrade maintenance, Road maintenance

53-2409

**Use of fly ash-stabilized sand mixtures as capping materials for landfills.** Taha, R.A., Pradeep, M.R., Testing soil mixed with waste or recycled materials. ASTM STP 1275. Edited by M.A. Wasemiller and K.B. Hoddinott, Philadelphia, American Society for Testing and Materials, 1997, p.172-180, 5 refs. Presented at a symposium in New Orleans, LA, Jan. 16-17, 1997. DLC TA749.T47 1997 Waste disposal, Earth fills, Linings, Soil stabilization, Permeability, Frost resistance, Frost protection, Freeze thaw tests

53-2410

**Avalanche forecasting methods Highway 550. Final report 1992-96.** Mears, A.I., *Colorado Department of Transportation. Report*, Jan. 1997, CDOT-DTD-97-1, 27p., PB97-146633, 5 refs. Snow cover stability, Avalanche tracks, Avalanche forecasting, Weather forecasting, Safety, Meteorological data, Data processing, Road maintenance, United States—Colorado

53-2411

**Added resistance experiments for a ship with blunt bow in short waves.** Piippo, H., Kalske, S., *Helsinki University of Technology. Ship Laboratory. Report*, 1996, M-211, 26p., PB97-137897, 2 refs. Ships, Icebreakers, Ocean waves, Hydrodynamics, Environmental tests

53-2412

**Chemical characteristics of springtime precipitation in Lushan Mountains, east China.** Zhang, Y.H., Qin, Y., *Journal of applied meteorology*, Oct. 1998, 37(10)pt.1, p.1143-1152, 19 refs. Atmospheric circulation, Atmospheric composition, Cloud physics, Air pollution, Precipitation (meteorology), Scavenging, China—Jiangxi Province

53-2413

**Air pollution background monitoring over the former Soviet Union: fifteen years of observations.** Paramonov, S.G., *Journal of applied meteorology*, Oct. 1998, 37(10)pt.1, p.1179-1189, 11 refs. Atmospheric circulation, Atmospheric composition, Air pollution, Precipitation (meteorology), Scavenging, Weather stations, Meteorological data, Russia, Estonia, Belarus, Latvia, Lithuania, Ukraine, CIS—Central Asia, Kazakhstan

53-2414

**Proglacial debris flows on Popocatepetl north face and their relation to 1995 eruption.** Palacios, D., Zamorano, J.J., Parrilla, G., *Zeitschrift für Geomorphologie*, Sep. 1998, 42(3), p.273-295, With German and French summaries. 38 refs. Volcanoes, Volcanic ash, Mountain glaciers, Glacial hydrology, Glacier melting, Snow cover effect, Geomorphology, Slope stability, Mudflows, Mexico—Popocatepetl

53-2415

**Aeolian and overwash sediment transport across a low barrier split, southeastern Canadian Beaufort Sea.** Cloutier, M., Héquette, A., *Zeitschrift für Geomorphologie*, Sep. 1998, 42(3), p.349-365, With German and French summaries. Refs. p.363-365. Marine geology, Ocean waves, Beaches, Shore erosion, Shoreline modification, Wind erosion, Eolian soils, Sediment transport, Beaufort Sea

53-2416

**Designing network partitions to improve maintenance routing.** Kandula, P., Wright, J.R., *Journal of infrastructure systems*, Dec. 1997, 3(4), p.160-168, 26 refs. Highway planning, Route surveys, Snow removal, Road maintenance, Computerized simulation

53-2417

**Palaeoenvironments of coastal lagoons in the southern Baltic Sea. I. The application of sedimentary C<sub>org</sub>/N ratios as source indicators of organic matter.** Müller, A., Mathesius, U., *Palaeogeography, palaeoclimatology, palaeoecology*, Jan. 1999, 145(1-3), p.1-16, 46 refs. Marine geology, Marine deposits, Bottom sediment, Sea level, Estuaries, Glacial lakes, Lacustrine deposits, Quaternary deposits, Paleobotany, Paleoclimatology, Baltic Sea

- 53-2418**  
**Palaeoenvironments of coastal lagoons in the southern Baltic Sea. II.  $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$  ratios of organic matter—sources and sediments.**  
 Müller, A., Voss, M., *Palaeogeography, palaeoclimatology, palaeoecology*, Jan. 1999, 145(1-3), p.17-32, 54 refs.  
 Marine geology, Marine deposits, Bottom sediment, Sea level, Estuaries, Glacial lakes, Lacustrine deposits, Quaternary deposits, Paleobotany, Paleoclimatology, Baltic Sea
- 53-2419**  
**Latest Eocene-Early Oligocene climate change and southern ocean fertility: inferences from sediment accumulation and stable isotope data.**  
 Salamy, K.A., Zachos, J.C., *Palaeogeography, palaeoclimatology, palaeoecology*, Jan. 1999, 145(1-3), p.61-77, 71 refs.  
 Marine biology, Upwelling, Biomass, Ocean currents, Marine deposits, Bottom sediment, Drill core analysis, Isotope analysis, Paleoclimatology, Glaciation, Global change, Paleoclimatology, Kerguelen Plateau
- 53-2420**  
**Bottom currents, sedimentation and ice-sheet retreat facies successions on the Mac Robertson shelf, East Antarctica.**  
 Harris, P.T., O'Brien, P.E., *Marine geology*, Oct. 1998, 151(1-4), p.47-72, 53 refs.  
 Marine geology, Marine deposits, Bottom sediment, Bottom topography, Ocean currents, Sea level, Quaternary deposits, Glaciation, Glacial geology, Glacial erosion, Glacial deposits, Moraines, Ice rafting, Glacier oscillation, Stratigraphy, Geochronology, Paleoclimatology, Global warming, Antarctica—Mac Robertson Land
- 53-2421**  
**Seismic stratigraphy of Palmer Deep: a fault-bounded late Quaternary sediment trap on the inner continental shelf, Antarctic Peninsula Pacific margin.**  
 Rebesco, M., Camerlenghi, A., De Santis, L., Domack, E.W., Kirby, M.E., *Marine geology*, Oct. 1998, 151(1-4), p.89-110, 19 refs.  
 Marine geology, Marine deposits, Bottom sediment, Bottom topography, Quaternary deposits, Glaciation, Glacial geology, Glacial deposits, Glacial lakes, Tectonics, Seismic surveys, Stratigraphy, Geochronology, Antarctica—Antarctic Peninsula
- 53-2422**  
**Hydrologic influence on methane and carbon dioxide dynamics at two north-central Minnesota lakes.**  
 Striegl, R.G., Michmerhuizen, C.M., *Limnology and oceanography*, Nov. 1998, 43(7), p.1519-1529, 34 refs.  
 Limnology, Lake water, Water chemistry, Air water interactions, Nutrient cycle, Geochemical cycles, United States—Minnesota
- 53-2423**  
**Spatial and temporal dynamics of major solute chemistry among Mackenzie Delta lakes.**  
 Lesack, L.F.W., Marsh, P., Hecky, R.E., *Limnology and oceanography*, Nov. 1998, 43(7), p.1530-1543, 49 refs.  
 Deltas, Floodplains, Wetlands, Snowmelt, Flooding, Limnology, Lake water, Water chemistry, Suspended sediments, Geochemical cycles, Nutrient cycle, Canada—Northwest Territories—Mackenzie Delta
- 53-2424**  
**Current meters for measurement of low-speed velocities in ice-covered lakes.**  
 Glinksiĭ, A., *Limnology and oceanography*, Nov. 1998, 43(7), p.1661-1668, 23 refs.  
 Frozen lakes, Lake ice, Ice cover effect, Ice water interface, Water flow, Flow measurement
- 53-2425**  
**Field study on currents in a shallow, ice-covered lake.**  
 Malm, J., et al. *Limnology and oceanography*, Nov. 1998, 43(7), p.1669-1679, 19 refs.  
 Frozen lakes, Lake ice, Ice cover effect, Ice water interface, Water flow, Russia—Karelia
- 53-2426**  
**Viruses in antarctic lakes.**  
 Kepner, R.L., Jr., Wharton, R.A., Jr., Suttle, C.A., *Limnology and oceanography*, Nov. 1998, 43(7), p.1754-1761, 41 refs.  
 Frozen lakes, Microbiology, Cryobiology, Bacteria, Antarctica—Taylor Valley
- 53-2427**  
**Early Mars climate models.**  
 Haberle, R.M., *Journal of geophysical research*, Nov. 25, 1998, 103(E12), p.28,467-28,479, 66 refs.  
 Mars (planet), Planetary environments, Atmospheric composition, Atmospheric physics, Climatology, Paleoclimatology, Global change
- 53-2428**  
**Antarctic paleolake sediments and the search for extinct life on Mars.**  
 Doran, P.T., Wharton, R.A., Jr., Des Marais, D.J., McKay, C.P., *Journal of geophysical research*, Nov. 25, 1998, 103(E12), p.28,481-28,493, 52 refs.  
 Frozen lakes, Glacial lakes, Deltas, Alluvium, Lacustrine deposits, Limnology, Cryobiology, Fossils, Paleoclimatology, Paleoclimatology, Mars (planet), Planetary environments, Antarctica—McMurdo Dry Valleys
- 53-2429**  
**Surviving the limits to life at the surface of Mars.**  
 Clark, B.C., *Journal of geophysical research*, Nov. 25, 1998, 103(E12), p.28,545-28,555, 88 refs.  
 Mars (planet), Planetary environments, Cryobiology, Microbiology, Paleoclimatology
- 53-2430**  
**Soil moisture redistribution and infiltration in frozen sandy soils.**  
 Ståhl, M., Jansson, P.E., Lundin, L.C., *Water resources research*, Jan. 1999, 35(1), p.95-103, 34 refs.  
 Snow heat flux, Snow cover effect, Snowmelt, Sands, Frozen ground thermodynamics, Permeability, Seepage, Soil water migration
- 53-2431**  
**Some properties of currents and mixing in a shallow ice-covered lake.**  
 Malm, J., *Water resources research*, Jan. 1999, 35(1), p.221-232, 24 refs.  
 Frozen lakes, Lake ice, Ice cover effect, Ice water interface, Lake water, Water flow, Convection, Limnology, Hydrodynamics, Russia—Karelia
- 53-2432**  
**Rate coefficient upper limits for the BrONO<sub>2</sub> and ClONO<sub>2</sub> + O<sub>3</sub> reactions.**  
 Burkholder, J.B., Orlando, J.J., *Geophysical research letters*, Oct. 1, 1998, 25(19), p.3567-3569, 8 refs.  
 Stratosphere, Atmospheric composition, Ozone, Environmental tests
- 53-2433**  
**Model calculations of stratospheric OBrO indicating very small abundances.**  
 Chipperfield, M.P., Glassup, T., Pundt, I., Rattigan, O.V., *Geophysical research letters*, Oct. 1, 1998, 25(19), p.3575-3578, 14 refs.  
 Stratosphere, Atmospheric composition, Photochemical reactions, Ozone
- 53-2434**  
**Assessment of the future development of the ozone layer.**  
 Dameris, M., Grewe, V., Hein, R., Schnadt, C., Brühl, C., Steil, B., *Geophysical research letters*, Oct. 1, 1998, 25(19), p.3579-3582, 19 refs.  
 Stratosphere, Atmospheric circulation, Atmospheric composition, Ozone, Computerized simulation
- 53-2435**  
**Case study on the influence of inhomogeneous surface albedo on UV irradiance.**  
 Degünther, M., Meerkötter, R., Albold, A., Seckmeyer, G., *Geophysical research letters*, Oct. 1, 1998, 25(19), p.3587-3590, 20 refs.  
 Snow surface, Snow optics, Snow heat flux, Snow cover effect, Ultraviolet radiation, Albedo, Reflectivity
- 53-2436**  
**Analysis of total cloud amount over China, 1951-1994.**  
 Kaiser, D.P., *Geophysical research letters*, Oct. 1, 1998, 25(19), p.3599-3602, 11 refs.  
 Cloud cover, Radiation balance, Climatic changes, Statistical analysis, China
- 53-2437**  
**Decadal climate oscillations in the Arctic: a new feedback loop for atmosphere-ice-ocean interactions.**  
 Mysak, L.A., Venegas, S.A., *Geophysical research letters*, Oct. 1, 1998, 25(19), p.3607-3610, 15 refs.  
 Polar atmospheres, Marine atmospheres, Atmospheric circulation, Air ice water interaction, Sea ice distribution, Ice conditions, Ice models, Climatic changes, Global change, Computerized simulation
- 53-2438**  
**Changes in sunshine duration are correlated with changes in daily temperature range this century: an analysis of Swiss climatological data.**  
 Rebetez, M., Beniston, M., *Geophysical research letters*, Oct. 1, 1998, 25(19), p.3611-3613, 10 refs.  
 Solar radiation, Insolation, Cloud cover, Air temperature, Surface temperature, Radiation balance, Climatic changes, Global warming, Statistical analysis, Switzerland
- 53-2439**  
**Unusual surface morphology from digital elevation models of the Greenland ice sheet.**  
 Ekholm, S., Keller, K., Bamber, J.L., Gogineni, S.P., *Geophysical research letters*, Oct. 1, 1998, 25(19), p.3623-3626, 12 refs.  
 Ice sheets, Glacier surveys, Glacier surfaces, Glacier flow, Glacier thickness, Glacier beds, Subglacial observations, Bottom topography, Glacial lakes, Radio echo soundings, Topographic surveys, Synthetic aperture radar, Spaceborne photography, Image processing, Greenland
- 53-2440**  
**Frozen saline soils of the Arctic coast, their origin and properties. [Zasolennnye merzlye porody Arkticheskogo poberezh'ia, ikh proiskhozhdenie i svoĭstva]**  
 Brushkov, A.V., Moscow, Izdatel'stvo Moskovskogo universiteta, 1998, 330p., In Russian with English table of contents. 370 refs.  
 Saline soils, Cryogenic soils, Frozen ground mechanics, Frozen ground chemistry, Frozen ground strength, Frozen ground thermodynamics, Electrical properties, Frozen ground settling, Loams, Shear strength, Frozen ground compression, Grain size, Mapping, Shores, Barents Sea, Russia—Chukotskiy Peninsula, Russia—Yamal Peninsula, Russia—Tazovskiy Peninsula, Russia—Yakutia, China—Tibet, North America
- 53-2441**  
**Moisture in the roofs of cold storage buildings.**  
 Tobiaasson, W., Greatorex, A., SR 98-13, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Nov. 1998, 36p., ADA-358 258, 5 refs.  
 Moisture, Roofs, Air leakage, Thermal insulation, Vapor diffusion, Cold storage, Buildings, Freeze thaw cycles  
 The low-slope roofs of 10 cold storage buildings in the Dallas area were examined visually and thermographically from above and below. Cores were taken to verify infrared findings and 12x12-in. specimens of many of the insulations were removed for laboratory studies of their thermal properties. Insulations included fibrous glass, fiberboard, perlite, wood fiber, expanded and extruded polystyrene, isocyanurate, and phenolic. Areas of wet insulation were found in 8 of the 10 roofs. Some wetness was due to leaks caused by flaws in the roofing membranes and their flashings, but some was associated with infiltration of warm, moist outside air at roof-wall intersections without effective air seals. Of all the insulations examined, permeable fibrous glass was the most susceptible to wetting by air infiltration. Sustained one-way vapor drive, the sealing-in of moisture at the base of insulation in roofs of cold storage buildings by freezing, and the limited opportunities for drying wet insulation in such roofs provide incentives to use insulation that is very resistant to wetting. Its very low rates of moisture gain by vapor diffusion and its resistance to wetting in the presence of freeze-thaw cycles make extruded polystyrene insulation particularly appealing for use in the roofs of cold storage buildings.

## 53-2442

**International Conference on Snow Hydrology: The Integration of Physical, Chemical, and Biological Systems; abstracts.**

International Conference on Snow Hydrology: The Integration of Physical, Chemical, and Biological Systems, Brownsville, VT, Oct. 6-9, 1998, Hardy, J., ed, Albert, M., ed, Marsh, P., ed, SR 98-10, U.S. Army Cold Regions Research and Engineering Laboratory. Special report, Aug. 1998, 112p., ADA-359 332, One-page abstracts of 109 papers presented at the conference.

Snow hydrology, Snow cover, Snow composition, Snow water equivalent, Snowmelt, Snow physics, Frozen ground, Ecology, Tundra, Metamorphism (snow), Models

This report comprises the abstracts of all papers presented at a special four-day conference on snow hydrology held in Vermont, USA, Oct. 6-9, 1998. The purpose of this conference was to provide a forum for sharing new knowledge on snow-cover properties and processes, chemical processes in the seasonal snow cover, biotic interactions with the seasonal snow cover, distributed snowmelt models, and scaling problems in snow hydrology. To encourage exchange between disciplines, papers were sought that addressed the relation between processes—physical, chemical and biological—and the integration and distribution of these processes over different spatial and temporal scales.

## 53-2443

**Nonstructural ice control.**

Haehnel, R.B., SR 98-14, U.S. Army Cold Regions Research and Engineering Laboratory. Special report, Dec. 1998, 36p., ADA-358 268, Refs. p.33-36.

Explosives, Ice control, Ice jams, Icebreakers, Ice cutting, Saws, Albedo, River ice, Cost analysis, Performance, Dusting, Ice blasting, Thermal regime, United States—Wisconsin—Oconto River, United States—Kankakee River

Nonstructural ice control measures are used for reducing the frequency and severity of ice jam damages that do not rely on the use of a structure placed in the river. This report is a comprehensive review of current nonstructural ice control methods in use. Both advance measures and emergency response methods are addressed. Where possible, the effectiveness of these methods has been assessed, and cost of application has been tabulated. In terms of development, some of these are still in their infancy, while others are well advanced in terms of available guidance and field experience. Nonstructural methods can be used to extend the operating envelope of structural measures and can play a role in an ice control strategy that uses both structural and nonstructural components to provide the desired results. There is little guidance currently available to predict the reduction in ice jam potential due to application of any of these measures. Further work in this area should focus on developing governing relationships that relate ice and river properties and meteorological conditions to ice jam potential and severity.

## 53-2444

**Technical assessment of maglev system concepts; final report by the Government Maglev System Assessment Team.**

Lever, J.H., ed, SR 98-12, U.S. Army Cold Regions Research and Engineering Laboratory. Special report, Oct. 1998, 215p., ADA-358 293, Refs. p.195-197.

Railroads, Cost analysis, Cold weather performance, Performance, Transportation, Maintenance, Design, Safety

The Government Maglev System Assessment Team operated from 1991-93 as part of the National Maglev Initiative. The authors assessed the technical viability of four U.S. maglev system concepts, using the French TGV high-speed train and the German TR07 maglev system as assessment baselines. Maglev in general offers advantages that include high speed potential, excellent system control, high capacity, low energy consumption, low maintenance, modest land requirements, low operating costs, and ability to meet a variety of transportation missions. Further, the U.S. maglev concepts could provide superior performance to TR07 for similar cost or similar performance for less cost. They also could achieve both lower trip times and lower energy consumption along typical U.S. routes. These advantages result generally from the use of large-gap magnetic suspensions, more powerful linear synchronous motors and tilting vehicles. Innovative concepts for motors, guideways, suspension, and superconducting magnets all contribute to a potential for superior long-term performance of U.S. maglev systems compared with TGV and TR07.

## 53-2445

**Accounting for clouds in sea ice models.**

Makshitas, A.P., Andreas, E.L., Sviashchennikov, P.N., Timachev, V.F., CR 98-09, U.S. Army Cold Regions Research and Engineering Laboratory. Report, Dec. 1998, 32p., ADA-358 288, 51 refs. Cloud cover, Radiation balance, Sea ice, Ice models, Mathematical models, Drift stations, Air temperature, Heat flux, Ice cover thickness, Ice air interface, Arctic Basin, Antarctica—Weddell Sea

Over sea ice in winter, the clouds, the surface-layer air temperature, and the longwave radiation are closely coupled. This report uses archived data from the Russian North Pole (NP) drifting stations and recent data from Ice Station Weddell (ISW) to investigate this coupling. Both arctic and antarctic distributions of total cloud amount are U-shaped: that is, observed cloud amounts are typically either 0-2 tenths or 8-10 tenths in the polar regions. These data obey beta distributions; roughly 70 station-years of observations from the NP stations yielded fitting parameters for each winter month. Although surface-layer air temperature and total cloud amount are correlated, it is not straightforward to predict one from the other, because temperature is normally distributed while cloud amount has a U-shaped distribution. Nevertheless, the report presents a statistical algorithm that can predict total cloud amount in winter from surface-layer temperature alone and, as required, produces a distribution of cloud amounts that is U-shaped. Because sea ice models usually need cloud data to estimate incoming longwave radiation, this algorithm, may be useful for estimating cloud amounts and, thus, for computing the surface heat budget where no visual cloud observations are available but temperature is measured—from the arctic buoy network or from automatic weather stations, for example. The incoming longwave radiation in sea ice models is generally highly parameterized. The report evaluates five common parameterizations using data from NP-25 and ISW. The formula for estimating incoming longwave radiation that König-Langlo and Augstein developed using both arctic and antarctic data has the best properties but does depend nonlinearly on total cloud amount. This nonlinearity is crucial since cloud distributions are U-shaped, while common sources of cloud data tabulate only mean monthly values. The report therefore closes by using a one-dimensional sea ice model to investigate how methods of averaging cloud amounts affect predicted sea ice thickness in the context of the five longwave radiation parameterizations.

## 53-2446

**Calcium magnesium acetate at lower production cost: production of CMA deicer from biomass.**

Basu, R., et al, U.S. Federal Highway Administration. Office of Engineering Research and Development. Report, Jan. 1999, FHWA-RD-98-055, 148p., 47 refs.

Sewage disposal, Waste disposal, Biomass, Chemical ice prevention, Road icing, Artificial melting, Snow removal, Ice removal, Road maintenance, Cost analysis

## 53-2447

**Development of a method to test holdover times of deicing and anti-icing fluids in a cold room using artificially generated snow.**

Rasmussen, R.M., Knight, C., Hills, A., U.S. Federal Aviation Administration. Office of Aviation Research, Washington, D.C. Report, Jan. 1999, DOT/FAA/AR-98/74, 14p., PB99-129967.

Aircraft icing, Chemical ice prevention, Ice removal, Snow removal, Snowstorms, Safety, Artificial snow, Cold chambers, Environmental tests

## 53-2448

**Evaluation of technologies for the design of a prototype in-flight remote aircraft icing potential detection system.**

Mead, J.B., Pazmany, A., Goodberlet, M., MP 5291, U.S. Federal Aviation Administration. Office of Aviation Research, Washington, D.C. Report, Dec. 1998, DOT/FAA/AR-98/72, 55p., PB99-130262, 38 refs.

Administered by the U.S. Army Cold Regions Research and Engineering Laboratory. Aircraft icing, Ice forecasting, Ice detection, Cloud physics, Cloud droplets, Water content, Moisture detection, Radiometry, Airborne radar, Radar tracking, Lidar, Computerized simulation

This document presents the results of an investigation of remote sensing technologies applicable to the problem of remote aircraft icing potential detection. The long-term goal is to develop an aircraft mounted sensor capable of detecting dangerous levels of supercooled liquid water tens of kilometers ahead of the aircraft. Instruments capable of mapping range profiles of cloud liquid water content and mean particle size were investigated, specifically multifrequency radar and lidar (light detection and ranging). Multifrequency radar provided to be the most promising method for detecting liquid water content and parameters related to particle size. Backscattered power measurements at one, two and three frequencies were input to a neural network trained to estimate liquid water content and two sizing parameters. This investigation showed that both

two- and three-frequency radars were able to extract liquid water content and particle size parameters for various trial distributions of clouds and precipitation. Accuracy was highest for the three-frequency algorithm, especially in the estimation of liquid water content. Instruments capable of providing horizontal profiles of air temperature were also investigated, because they potentially provide a means of detecting regions of warmer air, free of supercooled drops. The technologies studied for temperatures profiling were oxygen band radiometry and a radar-acoustic sensor. Neither of these technologies was deemed promising enough to warrant further development within the current program.

## 53-2449

**Method of detecting accretion of frazil ice on water.**

Yankielun, N.E., MP 5292, U.S. Patent Office.

Patent, Jan. 19, 1999, 4 col., USP-5,861,756, 18 refs.

Water intakes, Frazil ice, Ice accretion, Ice loads, Ice electrical properties, Ice dielectrics, Ice detection, Monitors, Warning systems

The spaced plates of a capacitor are immersed in water adjacent water intake grating so that water flowing toward the grating passes between and in contact with the plates; in this way frazil ice may accrete on the facing surfaces of the plates. As accretion occurs, the capacitance changes to indicate the amount of accretion of frazil ice which is detected, thereby providing an indication of the amount of accretion of frazil ice on the grating.

## 53-2450

**Durability of FRP composites.**

Dutta, P.K., MP 5293, International Conference on Fibre Reinforced Structural Plastics in Civil Engineering at Indian Institute of Technology, Madras, Dec. 18-20, 1995. Proceedings, New Delhi, Tata McGraw-Hill Publishing Company Limited, [1995], p.360-370, 22 refs.

Composite materials, Plastics, Polymers, Reinforced concretes, Concrete strength, Concrete durability, Freeze thaw tests, Low temperature tests, Frost resistance, Thermal stresses

The polymer matrix composite is the most mature of all composite technologies and is currently proving attractive as a structural material to replace metals. However, there are concerns about the durability of polymer composites, especially in extreme environment. Temperature and moisture influence its properties and life cycle. Influence of alkaline and saline environment may be detrimental. Ultraviolet rays, repetitive freezing and thawing, load cycling, and creep under sustained load are known to have degrading effects. Fire hazards and flammability issues also must be addressed. This paper reviews and summarizes these issues.

## 53-2451

**Design of fiber reinforced plastic (FRP) structural members.**

Ganga Rao, H.V.S., Lopez-Anido, R., Dutta, P.K., Trovillion, J.C., MP 5294, International Conference on Fibre Reinforced Structural Plastics in Civil Engineering at Indian Institute of Technology, Madras, Dec. 18-20, 1995. Proceedings, New Delhi, Tata McGraw-Hill Publishing Company Limited, [1995], p.481-489.

Composite materials, Plastics, Polymers, Structural analysis, Design criteria

The use of FRP structural members in civil applications requires a full understanding of the mechanical response. A general approach for characterization of structural FRP shapes was introduced. This methodology considers also different levels of analysis. This work is intended to assist structural engineering practitioners in the design of FRP structures. Within this approach, an application to design of wide-flange and box shapes was presented. In this application, the fiber architecture of existing shapes is optimized.

## 53-2452

**FRP composite grid/frame structures for reinforced concrete.**

Dutta, P.K., Bailey, D.M., MP 5295, International Conference on Fibre Reinforced Structural Plastics in Civil Engineering at Indian Institute of Technology, Madras, Dec. 18-20, 1995. Proceedings, New Delhi, Tata McGraw-Hill Publishing Company Limited, [1995], p.499-507, 6 refs.

Composite materials, Plastics, Polymers, Reinforced concretes, Concrete slabs, Concrete strength, Concrete durability, Structural analysis, Design criteria

This paper describes the use of continuous composite grid frames for applications as reinforcement for concrete. Potential applications are bridge decks, slabs, pile caps, and any other flat or curved concrete structures where the pace of construction must be fast. Alternative fiber systems and fabrication techniques are discussed. Preliminary design approach, analysis, and limited initial experimental data are presented.

53-2453

**Automated comparison of ice accretion shapes.**

Ruff, G.A., Reston, VA, American Institute of Aeronautics and Astronautics (AIAA), 1999, 11p., AIAA-99-0625, 11 refs. Presented at the AIAA 37th Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan. 11-14, 1999.

Aircraft icing, Ice accretion, Ice loads, Ice forecasting, Computerized simulation

53-2454

**Evaluation of three helicopter preflight deicing techniques.**

Ryerson, C.C., Gilligan, T.W., Koenig, G.G., MP 5296, Reston, VA, American Institute of Aeronautics and Astronautics (AIAA), 1999, 9p., AIAA-99-0499, 6 refs. Presented at the AIAA 37th Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan. 11-14, 1999.

Helicopters, Aircraft icing, Ice accretion, Ice loads, Artificial melting, Ice removal, Defrosting, Infrared equipment, Heating

Procedures for preflight deicing of helicopters have not been refined nor standardized. Parked helicopters are often exposed to weather, allowing freezing precipitation and snow to accumulate on airframe and blade surfaces. Unless removed, snow and ice may linger after precipitation ends, grounding aircraft for hours to days, depending upon temperature. Newer helicopters with composite blades and fuselage components are susceptible to damage from deicing operations because thermal and mechanical damage can cause delamination. In addition, glycol-based deicing fluids may cause corrosion of critical rotor head components. Therefore, there is a need to develop different ground deicing techniques for helicopters. This paper describes an experimental evaluation of the use of infrared radiation, hot water and hot air to deice helicopters before flight. The purpose of the experiment was to evaluate the effectiveness of each deicing method, and to assess the potential thermal effects of each on rotor blade composites. The authors' greatest interest was the potential for using infrared radiation as a deicing agent, a technique that has been used to deice fixed-wing aircraft, but not helicopters.

53-2455

**Cloud microphysical measurements in thunderstorm outflow regions during Allied/BAE 1997 flight trials.**

Strapp, J.W., et al, Reston, VA, American Institute of Aeronautics and Astronautics (AIAA), 1999, 10p., AIAA-99-0498, 18 refs. Presented at the AIAA 37th Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan. 11-14, 1999.

Aircraft icing, Ice accretion, Ice loads, Ice detection, Ice forecasting, Thunderstorms, Cloud physics

53-2456

**Morphology of ice crystals in aircraft contrails.**

Hallett, J., Meyers, M.B., Bailey, M.P., Arnott, W.P., Strauss, B., Wendling, P., Reston, VA, American Institute of Aeronautics and Astronautics (AIAA), 1999, 11p., AIAA-99-0497, 22 refs. Presented at the AIAA 37th Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan. 11-14, 1999.

Condensation trails, Condensation nuclei, Ice nuclei, Ice crystal growth, Ice crystal structure, Cloud physics

53-2457

**Meteorology surrounding the Roselawn accident.**

Sand, W.R., Biter, C.J., Reston, VA, American Institute of Aeronautics and Astronautics (AIAA), 1999, 9p., AIAA-99-0496, 8 refs. Presented at the AIAA 37th Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan. 11-14, 1999.

Aircraft icing, Ice accretion, Ice loads, Meteorological factors, Accidents, Safety

53-2458

**Shortcomings of the ATR-72 accident investigation and disposition of the case.**

Yeoman, K.E., Reston, VA, American Institute of Aeronautics and Astronautics (AIAA), 1999, 8p., AIAA-99-0495, 17 refs. Presented at the AIAA 37th Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan. 11-14, 1999.

Aircraft icing, Ice loads, Accidents, Safety

53-2459

**Measurements of aircraft icing environments which include supercooled large drops.**

Cober, S.G., Isaac, G.A., Korolev, A.V., Strapp, J.W., Marcotte, D.L., Reston, VA, American Institute of Aeronautics and Astronautics (AIAA), 1999, 11p., AIAA-99-0494, 23 refs. Presented at the AIAA 37th Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan. 11-14, 1999.

Aircraft icing, Ice accretion, Ice forecasting, Cloud physics, Supercooled clouds, Cloud droplets, Particle size distribution

53-2460

**Delivery of weather information to the NRC Con-voir 580 during CFDE-III.**

Jordan, J.E., Marcotte, D.L., Reston, VA, American Institute of Aeronautics and Astronautics (AIAA), 1999, 5p., AIAA-99-0493, 4 refs. Presented at the AIAA 37th Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan. 11-14, 1999.

Aircraft icing, Ice forecasting, Weather forecasting, Meteorological data, Data transmission, Radio communication, Telecommunication, Canada

53-2461

**Canadian Freezing Drizzle Experiment.**

Isaac, G.A., Cober, S.G., Korolev, A.V., Strapp, J.W., Tremblay, A., Marcotte, D.L., Reston, VA, American Institute of Aeronautics and Astronautics (AIAA), 1999, 10p., AIAA-99-0492, 13 refs. Presented at the AIAA 37th Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan. 11-14, 1999.

Aircraft icing, Ice accretion, Ice forecasting, Supercooled clouds, Cloud droplets, Great Lakes, Canada—Newfoundland

53-2462

**Experimental and numerical study of icing effects on the performance and controllability of a twin engine aircraft.**

Reehorst, A., Chung, J., Potapczuk, M., Choo, Y., Wright, W., Langhals, T., Reston, VA, American Institute of Aeronautics and Astronautics (AIAA), 1999, 16p., AIAA-99-0374, 11 refs. Presented at the AIAA 37th Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan. 11-14, 1999. Also published as U.S. National Aeronautics and Space Administration technical memorandum, NASA/TM-1999-208896.

Aircraft icing, Ice accretion, Ice loads, Ice air interface, Air flow, Accidents, Safety, Wind tunnels, Computerized simulation

53-2463

**Investigation of dynamic flight maneuvers with an iced tailplane.**

Van Zante, J.F., Ratvasky, T.P., Reston, VA, American Institute of Aeronautics and Astronautics (AIAA), 1999, 10p., AIAA-99-0371, 6 refs. Presented at the AIAA 37th Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan. 11-14, 1999. Also published as U.S. National Aeronautics and Space Administration technical memorandum, NASA/TM-1999-208849.

Aircraft icing, Ice accretion, Ice loads, Ice air interface, Air flow, Wind tunnels, Environmental tests, Computerized simulation

53-2464

**NASA/FAA Tallplane Icing Program overview.**

Ratvasky, T.P., Van Zante, J.F., Riley, J.T., Reston, VA, American Institute of Aeronautics and Astronautics (AIAA), 1999, 12p., AIAA-99-0370, 13 refs. Presented at the AIAA 37th Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan. 11-14, 1999. Also published as U.S. National Aeronautics and Space Administration technical memorandum, NASA/TM-1999-208901.

Aircraft icing, Ice accretion, Ice loads, Ice air interface, Air flow, Wind tunnels, Environmental tests, Computerized simulation

53-2465

**Ice accretion calculations for a commercial transport using the LEWICE3D, ICEGRID3D AND CMARC programs.**

Bidwell, C.S., Pinella, D., Garrison, P., Reston, VA, American Institute of Aeronautics and Astronautics (AIAA), 1999, 27p., AIAA-99-0250, 15 refs. Presented at the AIAA 37th Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan. 11-14, 1999. Also published as U.S. National Aeronautics and Space Administration technical memorandum, NASA/TM-1999-208895.

Aircraft icing, Ice accretion, Ice loads, Ice forecasting, Computer programs, Computerized simulation

53-2466

**Summary of validation results for LEWICE 2.0.**

Wright, W.B., Reston, VA, American Institute of Aeronautics and Astronautics (AIAA), 1999, 21p., AIAA-99-0249, 27 refs. Presented at the AIAA 37th Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan. 11-14, 1999. Also published as U.S. National Aeronautics and Space Administration contractor report, NASA-CR-1998-208687.

Aircraft icing, Ice accretion, Ice loads, Ice forecasting, Computer programs, Computerized simulation

53-2467

**Software development processes applied to computational icing simulation.**

Levinson, L.H., Potapczuk, M.G., Mellor, P.A., Reston, VA, American Institute of Aeronautics and Astronautics (AIAA), 1999, 14p., AIAA-99-0248, 9 refs. Presented at the AIAA 37th Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan. 11-14, 1999. Also published as U.S. National Aeronautics and Space Administration technical memorandum, NASA/TM-1999-208898.

Aircraft icing, Ice accretion, Ice loads, Ice forecasting, Computer programs, Computerized simulation

53-2468

**Evaluation of methods to select scale velocities in icing scaling tests.**

Anderson, D.N., Ruff, G.A., Reston, VA, American Institute of Aeronautics and Astronautics (AIAA), 1999, 11p., AIAA-99-0244, 13 refs. Presented at the AIAA 37th Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan. 11-14, 1999.

Aircraft icing, Ice accretion, Ice loads, Ice forecasting, Wind tunnels, Environmental tests

53-2469

**Review of NASA Lewis' development plans for computational simulation of aircraft icing.**

Potapczuk, M.G., Reston, VA, American Institute of Aeronautics and Astronautics (AIAA), 1999, 15p., AIAA-99-0243, 26 refs. Presented at the AIAA 37th Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan. 11-14, 1999. Also published as U.S. National Aeronautics and Space Administration technical memorandum, NASA/TM-1999-208904.

Aircraft icing, Ice accretion, Ice loads, Ice forecasting, Ice air interface, Air flow, Wind tunnels, Computer programs, Computerized simulation

53-2470

**Mixed-phase icing conditions: a survey of simulation capabilities.**

Riley, J.T., Reston, VA, American Institute of Aeronautics and Astronautics (AIAA), 1999, 5p., AIAA-99-0099, 13 refs. Presented at the AIAA 37th Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan. 11-14, 1999.

Aircraft icing, Ice accretion, Cloud physics, Cloud droplets, Ice nuclei, Ice forecasting, Wind tunnels, Computerized simulation

53-2471

**Parametric experimental study of the formation of glaze ice shapes on swept wings.**

Vargas, M., Reshotko, E., Reston, VA, American Institute of Aeronautics and Astronautics (AIAA), 1999, 29p., AIAA-99-0094, 9 refs. Presented at the AIAA 37th Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan. 11-14, 1999.

Aircraft icing, Ice accretion, Glaze, Ice loads, Ice forecasting, Wind tunnels, Computerized simulation

53-2472

**Effects of simulated-spanwise-ice shapes on airfoils: experimental investigation.**

Lee, S., Bragg, M.B., Reston, VA, American Institute of Aeronautics and Astronautics (AIAA), 1999, 15p., AIAA-99-0092, 15 refs. Presented at the AIAA 37th Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan. 11-14, 1999.

Aircraft icing, Ice accretion, Ice loads, Ice air interface, Air flow, Computerized simulation

53-2473

**Avalanche prediction for snow slabs: impossible mission? [Prévision des avalanches de plaques: mission impossible?]**

Duclos, A., *Neige et avalanches*, Dec. 1998, No.84, p.2-10,32, In French with English summary. 3 refs. Snow cover stability, Hoarfrost, Depth hoar, Snow slides, Avalanche formation, Avalanche triggering, Avalanche forecasting

53-2474

**Armourer's brief. [Brèves du petit artificier]**

Meffre, J.F., *Neige et avalanches*, Dec. 1998, No.84, p.11-12,32, In French with English summary. Avalanche triggering, Explosives, Blasting, Helicopters, Safety

53-2475

**What should we think about the new beacons. [Que penser des nouveaux ARVA]**

Sivardière, F., *Neige et avalanches*, Dec. 1998, No.84, p.15-18,32, In French with English summary. Avalanches, Accidents, Rescue equipment, Radio beacons

53-2476

**Snow cover evolution during the 1997-98 winter. [Aspects de l'hiver 1997-98]**

Météo-France, *Neige et avalanches*, Dec. 1998, No.84, p.19-23,32, In French with English summary. Snow cover distribution, Snowstorms, Snowfall, Snow depth, France

53-2477

**Avalanche accidents during 1997-98 in France. [Bilan des accidents d'avalanches 1997-98]**

Sivardière, F., Jarry, F., *Neige et avalanches*, Dec. 1998, No.84, p.24-27,32, In French with English summary.

Avalanches, Accidents, France

53-2478

**Dynamic in-situ synchrotron x-ray topographic observations of dislocations in notched ice crystals.**

Hu, X., Baker, I., Dudley, M., Applications of Synchrotron Radiation Techniques to Materials Science III, San Francisco, CA, Apr. 8-12, 1996. Materials Research Society Symposium Proceedings. Vol. 437, Pittsburgh, Materials Research Society, 1996, p.119-124, 16 refs.

DLC TA404.2.A67 1996

Ice crystal structure, Ice strength, Ice deformation, Crystal defects, Dislocations (materials), X ray analysis

53-2479

**Two-dimensional airfoil performance degradation because of simulated freezing drizzle.**

Ashenden, R., Lindberg, W., Marwitz, J., *Journal of aircraft*, Nov.-Dec. 1998, 35(6), p.905-911, 13 refs. Aircraft icing, Ice accretion, Ice loads, Supercooled clouds, Cloud droplets, Ice air interface, Air flow, Wind tunnels, Environmental tests

53-2480

**Certification and operation of helicopters in icing environments.**

Simpson, M.P., Render, P.M., *Journal of aircraft*, Nov.-Dec. 1998, 35(6), p.936-941, 8 refs.

Helicopters, Aircraft icing, Ice accretion, Ice loads, Ice forecasting, Safety, Europe, Canada

53-2481

**Method for detecting water equivalent of snow using secondary cosmic gamma radiation.**

Condreva, K.J., *U.S. Patent Office. Patent*, Jan. 14, 1997, n.p., USP-5,594,250.

Snow hydrology, Snow water equivalent, Snow optics, Snow survey tools, Gamma irradiation, Radiation absorption, Radiation measurement, Radiation measuring instruments

53-2482

**Water-repellent and frost-preventive metal articles and their manufacture.**

Sakata, M., Yamaguchi, H., Sakurai, M., *Japan Patent Office. Patent*, Dec. 10, 1996, n.p., No.96323285.

Protective coatings, Waterproofing, Frost protection, Chemical ice prevention

53-2483

**Climatic signals recorded in snow avalanche-dominated colluvium in western Norway: depositional facies successions and pollen records.**

Blikk, L.H., Selvik, S.F., *Holocene*, 1998, 8(6), p.631-658, Refs. p.656-658.

Snowstorms, Snowfall, Avalanches, Avalanche deposits, Talus, Palynology, Paleobotany, Soil dating, Stratigraphy, Paleoclimatology, Norway

53-2484

**Dynamics of the formation and development of hollows in raised bogs in Estonia.**

Karofeld, E., *Holocene*, 1998, 8(6), p.697-704, 49 refs.

Wetlands, Peat, Vegetation patterns, Paleobotany, Soil dating, Paleoclimatology, Lacustrine deposits, Climatic changes, Estonia

53-2485

**Middle-Holocene timberline fluctuation: influence on the genesis of podzols (spodosols), Norra Storfjället Massif, northern Sweden.**

Earl-Goulet, J.R., Mahaney, W.C., Sanmugadas, K., Kalm, V., Hancock, R.G.V., *Holocene*, 1998, 8(6), p.705-718, 41 refs.

Forest lines, Mountain soils, Forest soils, Podsol, Soil composition, Soil formation, Soil dating, Paleoclimatology, Sweden—Norra Storfjället Massif

53-2486

**'Little Ice Age' nivation activity in northeast Greenland.**

Christiansen, H.H., *Holocene*, 1998, 8(6), p.719-728, 34 refs.

Periglacial processes, Nivation, Alluvium, Eolian soils, Sediment transport, Soil dating, Paleoclimatology, Climatic changes, Greenland

53-2487

**Use of near-infrared reflectance spectroscopy (NIRS) in palaeoecological studies of peat.**

McTierman, K.B., Garnett, M.H., Mauquoy, D., Ineson, P., Coiteaux, M.M., *Holocene*, 1998, 8(6), p.729-740, 29 refs.

Wetlands, Peat, Lacustrine deposits, Plant ecology, Paleobotany, Soil composition, Soil dating, Paleoclimatology, Infrared spectroscopy, United Kingdom—England

53-2488

**Individual flood events detected in the recent sediments of the Petit Lac d'Annecy, eastern France.**

Thorndycraft, V., Hu, Y., Oldfield, F., Crooks, P.R.J., Appleby, P.G., *Holocene*, 1998, 8(6), p.741-746, 24 refs.

Lacustrine deposits, Palynology, Paleobotany, Soil dating, Paleoclimatology, France—Lac d'Annecy

53-2489

**Comparison of Arctic and Baltic Sea ice backscattering signatures and ice type classification potential at C-band.**

Grandell, J., Hallikainen, M., *Helsinki University of Technology. Laboratory of Space Technology. Report*, Mar. 1997, No.26, 9p., PB97-211346, 8 refs.

Ice surveys, Sea ice distribution, Ice conditions, Ice detection, Ice reporting, Synthetic aperture radar, Backscattering, Image processing, Statistical analysis, Baltic Sea, Arctic Ocean

53-2490

**Computer-aided design of drift control measures. Final report Feb. 94-Aug. 97.**

Tabler, R.D., *Wyoming Department of Transportation. Report*, Aug. 1997, FHWA/WY-97/02, 88p. + appends., PB97-212021, 23 refs.

Blowing snow, Snowdrifts, Snow erosion, Wind erosion, Snow fences, Highway planning, Road maintenance, Computer programs, Mathematical models, United States—Wyoming

53-2491

**Sea ice detection and classification by employing ERS-1 AMI wind scatterometer and SSM/I data.**

Grandell, J., Johannessen, J.A., Hallikainen, M., *Helsinki University of Technology. Laboratory of Space Technology. Report*, Mar. 1997, No.27, Var. p., PB97-211353, 39 refs. In two parts separately paged.

Ice surveys, Sea ice distribution, Ice conditions, Ice detection, Radiometry, Backscattering, Spaceborne photography, Image processing, Greenland Sea

53-2492

**Multi-parameter snow sounding probe: portable capacitance snow sounding probe.**

Foster, R.L., Louge, M.Y., *U.S. Army Research Office. Research Triangle Park, NC. Report*, June 15, 1997, ARO-36672.1-GS-SBI, 22p. + append., ADA-328 425, 9 refs. Supported by a Small Business Innovative Research Phase I SBIR grant.

Snow water content, Snow density, Snow electrical properties, Ice dielectrics, Snow survey tools, Probes, Mathematical models

53-2493

**Derivation of geomorphological forms and surface moisture conditions from ERS-1 SAR data for modelling of the icefree antarctic environment.**

Hochschild, V., IMACS World Congress on Scientific Computation, Modelling and Applied Mathematics, 15th, Berlin, Aug. 24-29, 1997. Proceedings, Vol.6. Application in modelling and simulation. Edited by A. Sydow, Berlin, Wissenschaft & Technik Verlag, 1997, p.35-40, 9 refs.

Geomorphology, Remote sensing, Synthetic aperture radar, Surface roughness, Soil water, Polynyas, Mapping, Water content, Microwaves, Antarctica—Antarctic Peninsula

53-2494

**Frozen ground. International Permafrost Association. News bulletin**, Dec. 1998, No.22, 44p.

Permafrost, Organizations, Meetings, Research projects

53-2495

**Application of a dissolved oxygen model to an ice-covered river.**

Pietroniro, A., Chambers, P.A., Ferguson, M.E., *Canadian water resources journal*, 1998, 23(4), p.351-368, With French summary. 27 refs.

River ice, Oxygen, Water chemistry, Models, Subglacial observations, Ice cover effect, Statistical analysis, Sedimentation, Aeration, Canada—Alberta—Athabasca River

53-2496

**Short-range forecasting of lowland-river runoff.**

Alekhin, I.U.M., Jerusalem, Israel Program for Scientific Translations, 1964, 229p., 178 refs. Translation of "Kratkosrochnye prognozy stoka na ravinnykh rekakh," Leningrad, 1956.

Runoff forecasting, Runoff, Accuracy, Snowmelt, Analysis (mathematics), Water balance, River basins, Heat balance, Snow cover, Snow water equivalent, River flow, Heat transfer, Russia

53-2497

**Pleistocene geology of Anaktuvuk Pass, central Brooks Range, Alaska.**

Porter, S.C., *Arctic Institute of North America. Technical paper*, Apr. 1966, No.18, 100p. + 1 fold. col. map, Refs. p.97-100.

Geological surveys, Alpine glaciation, Glacial geology, Glacial erosion, Glacial deposits, Periglacial processes, Snow line, Pleistocene, Paleoclimatology, Global change, United States—Alaska—Anaktuvuk Pass

53-2544

Waterproof, hydrolyzable silyl-modified fluo-ropolymer coating compositions with good adhesion to substrates.

Ihara, T., Takarada, A., Yamaguchi, K., *Japan Patent Office. Patent*, May 12, 1998, n.p., No.98120941. Protective coatings, Chemical ice prevention, Waterproofing

53-2545

Ice chemistry on the Galilean satellites.

Delitsky, M.L., Lane, A.L., *Journal of geophysical research*, Dec. 25, 1998, 103(E13), p.31,391-31,403, 73 refs.

Satellites (natural), Extraterrestrial ice, Ice composition, Ice spectroscopy

53-2546

AvalLung, a revolutionary avalanche safety tool.

Conger, S., *Avalanche review*, Feb. 1999, 17(4), p.1,3.

Rescue equipment, Safety, Avalanches

53-2547

Airspace and CO<sub>2</sub> narcosis.

Radwin, M.I., *Avalanche review*, Feb. 1999, 17(4), p.1.

Avalanches, Carbon dioxide, Oxygen, Accidents, Safety, Physiological effects

53-2548

National Ski Patrol Avalanche Education Program.

Kempner, C., *Avalanche review*, Feb. 1999, 17(4), p.4.

Avalanches, Education, Safety

53-2549

Sledding in avalanche country.

Bachman, D., *Avalanche review*, Feb. 1999, 17(4), p.6-7.

Avalanches, Accidents, Safety, Sleds

53-2550

Evolution of the cryosphere in the Tibetan Plateau, China, and its relationship with the global change in the mid-Quaternary. [Disiji zhongqi Qingzang gaoyuan bingdongguan de yanhua ji qi yu quanqiu bianhua de lianxi]

Shi, Y.F., *Journal of glaciology and geocryology*, Sep. 1998, 20(3), p.197-208, In Chinese with English summary. 27 refs.

Glaciation, Glacial geology, Glacial meteorology, Glacier oscillation, Permafrost distribution, Tectonics, Geochronology, Precipitation (meteorology), Atmospheric circulation, Global change, Paleoclimatology, China—Qinghai-Xizang Plateau

53-2551

Glaciology and geocryology of China in the past 40 years: progress and prospect. [Zhongguo bingchuanxue he dongtuxue yanjiu 40 nian jinzhan he zhanwang]

Cheng, G.D., *Journal of glaciology and geocryology*, Sep. 1998, 20(3), p.213-226, In Chinese with English summary. Refs. p.222-226.

Research projects, Glaciology, Geocryology, Bibliographies, China

53-2552

Retrospect and prospect on the study of antarctic glaciology in China in the last 10 years. [Zhongguo Nanji bingchuanxue yanjiu 10 nian huigu yu zhanwang]

Qin, D.H., Ren, J.W., Kang, S.C., *Journal of glaciology and geocryology*, Sep. 1998, 20(3), p.227-232, In Chinese with English summary. 33 refs.

Research projects, Glaciology, Glacier surveys, Paleoclimatology, Global change, Antarctica

53-2553

Ice core study of the Tibetan Plateau. [Qingzang gaoyuan bingxin yanjiu]

Yao, T.D., *Journal of glaciology and geocryology*, Sep. 1998, 20(3), p.233-237, In Chinese with English summary. 46 refs.

Research projects, Ice cores, Glaciation, Glacier oscillation, Glacial meteorology, Paleoclimatology, Global change, China—Qinghai-Xizang Plateau

53-2554

Review and prospect of studies on hydrology of cold and dry regions in China. [Hanqu he ganhanqu shuiwen yanjiu de huigu he zhanwang]

Kang, E.S., *Journal of glaciology and geocryology*, Sep. 1998, 20(3), p.238-244, In Chinese with English summary. 75 refs.

Deserts, Steppes, Glacial hydrology, Snow hydrology, Permafrost hydrology, Meltwater, Snowmelt, Floods, Runoff, Water reserves, Global warming, Regional planning, China

53-2555

Carving out a way and gratifying achievements.

[Xuebing yaogan 20 nian de jinzhan yu chengguo] Feng, X.Z., Chen, X.Z., *Journal of glaciology and geocryology*, Sep. 1998, 20(3), p.245-248, In Chinese with English summary. 22 refs.

Research projects, Snow surveys, Snow cover distribution, Snowstorms, Weather forecasting, Ice surveys, Spaceborne photography, Data processing, Regional planning

53-2556

Review and prospect of research on disasters from snow, glaciers and debris flow. [Bingchuan, jixue yu nishilü zaihai yanjiu de huigu yu shixiang]

Qi, L., *Journal of glaciology and geocryology*, Sep. 1998, 20(3), p.249-257, In Chinese with English summary. 71 refs.

Research projects, Avalanches, Floods, Lake bursts, Mudflows, Avalanche forecasting, Flood forecasting, Avalanche engineering, Flood control, Regional planning, China

53-2557

State Key Laboratory of Frozen Soil Engineering: review and prospect. [Dongtu gongcheng guojia zhongdian shiyanshi de huigu yu zhanwang]

Ma, W., Zhu, Y.L., Xu, X.Z., *Journal of glaciology and geocryology*, Sep. 1998, 20(3), p.264-272, In Chinese with English summary. Refs. p.268-272.

Organizations, Laboratories, Research projects, Geocryology, China

53-2558

Laboratory of the Ice Core and Cold Regions Environment: retrospect and prospect. [Bingxin yu hanqu huanjing kaifang yanjiu shiyanshi de huigu yu zhanwang]

Qin, D.H., Yao, T.D., *Journal of glaciology and geocryology*, Sep. 1998, 20(3), p.273-279, In Chinese with English summary. 65 refs.

Organizations, Laboratories, Research projects, Ice cores, China

53-2559

Ten years of progress in the Tianshan Glaciological Station. [Tianshan bingchuan guance shiyanzhan 10 nian lai de huigu yu zhanwang]

Li, Z.Q., Ye, B.S., *Journal of glaciology and geocryology*, Sep. 1998, 20(3), p.280-286, In Chinese with English summary. 75 refs.

Organizations, Stations, Research projects, Glacier surveys, Glaciology, China—Tian Shan

53-2560

Past and the future of the Observation and Research Station of the Qinghai-Tibet Plateau.

[Qingzang gaoyuan zonghe guance yanjiuzhuan de huigu yu zhanwang]

Zhao, L., Guo, D.X., Li, S.X., *Journal of glaciology and geocryology*, Sep. 1998, 20(3), p.287-292, In Chinese with English summary. 32 refs.

Organizations, Stations, Research projects, Geocryology, China—Qinghai-Xizang Plateau

53-2561

Proceedings.

Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994, Orombelli, G., ed, *Terra Antarctica. Reports*, 1998, No.1, 177p., Refs. passim. For selected papers see 53-2562 through 53-2594.

Glacier surveys, Ice shelves, Glacier oscillation, Glacier thickness, Glacier flow, Glacier ice, Ice cores, Ice composition, Paleoclimatology, Topographic surveys, Geodetic surveys, Mapping, Antarctica

53-2562

Recording vertical movement of a small antarctic ice shelf by static GPS measurements (Hells Gate Ice Shelf, Victoria Land).

Bondesan, A., Capra, A., Gubellini, A., Tison, J.L., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.5-8, 5 refs.

Glacier surveys, Ice shelves, Glacier tongues, Glacier thickness, Glacier flow, Glacier oscillation, Tides, Ice water interface, Geodetic surveys, Topographic surveys, Antarctica—Hells Gate

53-2563

Glaciological map of Hells Gate Ice Shelf (Terra Nova Bay, Antarctica).

Bondesan, A., Tison, J.L., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.9-11, 13 refs.

Glacier surveys, Ice shelves, Aerial surveys, Topographic maps, Antarctica—Hells Gate

53-2564

Preliminary GPS measurement of David Glacier and Drygalski Ice Tongue.

Frezzotti, M., Vittuari, L., Maggi, V., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.13-17, 11 refs.

Glacier surveys, Glacier tongues, Glacier flow, Glacier thickness, Tides, Ice water interface, Topographic surveys, Geodetic surveys, Antarctica—David Glacier, Antarctica—Drygalski Ice Tongue

53-2565

Preliminary results from 60 shallow cores and from one 45-m deep marine ice core at Hells Gate Ice Shelf (Victoria Land, Antarctica).

Lorrain, R., Tison, J.L., Bondesan, A., Ronveaux, D., Meneghel, M., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.19-24, 10 refs.

Glacier surveys, Ice shelves, Glacier thickness, Glacier mass balance, Glacier ice, Sea ice, Ice water interface, Ice composition, Ice structure, Ice cores, Antarctica—Hells Gate

53-2566

Kinematic GPS method for mass balance evaluation in small antarctic glaciers.

Meneghel, M., Salvatore, M.C., Vittuari, L., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.25-28, 14 refs.

Glacier surveys, Glacier flow, Glacier mass balance, Glacier oscillation, Glacier surfaces, Topographic surveys, Geodetic surveys, Antarctica—Terra Nova Bay

53-2567

Ice shelf/ocean interactions at the front of Hells Gate Ice Shelf (Terra Nova Bay—Antarctica).

Tison, J.L., Barbante, C., Bondesan, A., Lorrain, R., Capra, A., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.29-32, 12 refs.

Glacier surveys, Ice shelves, Glacier flow, Glacier mass balance, Glacier thickness, Glacier oscillation, Ice water interface, Antarctica—Hells Gate



53-2568

**Dynamical approach to explain ice structures and complex morainic genesis on a partially grounded ice shelf (Hells Gate Ice Shelf—Victoria Land, Antarctica).**

Tison, J.L., Bondesan, A., Delisle, G., Lozej, A., Merlanti, F., Janssens, L., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.33-37, 6 refs. Glacier surveys, Ice shelves, Glacier flow, Ice deformation, Glacier surfaces, Ice water interface, Moraines, Topographic surveys, Antarctica—Hells Gate

53-2569

**Preliminary data of ice front fluctuation and iceberg production along Victoria Land coast (Antarctica).**

Frezzotti, M., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.39-42, 16 refs.

Glacier surveys, Glacier oscillation, Glacier flow, Ice shelves, Glacier tongues, Ice water interface, Calving, Icebergs, Antarctica—Victoria Land

53-2570

**Surface wind field of Victoria Land (Antarctica) from surveys of aeolian morphologic features.**

Frezzotti, M., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.43-45, 9 refs.

Glacier surfaces, Glacier ablation, Ice air interface, Wind velocity, Wind direction, Wind erosion, Sastugi, Antarctica—Victoria Land

53-2571

**Physical observations and monitoring on small lakes connected with Tarn Flat glacier.**

Libera, V., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.47-49, 4 refs.

Frozen lakes, Glacial lakes, Lake water, Water temperature, Water level, Water balance, Antarctica—Terra Nova Bay Station

53-2572

**Airborne GPS assisted photogrammetry pilot project in Antarctica.**

Marsella, M.A., Hothem, L.D., Vittuari, L., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.51-56, 7 refs.

Geodetic surveys, Topographic surveys, Photogrammetric surveys, Aerial surveys, Mapping, Antarctica

53-2573

**Experimental tests of continuous kinematic GPS in Antarctica.**

Vittuari, L., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.57-63, 13 refs.

Research projects, Geodetic surveys, Data processing, Data transmission, Antarctica

53-2574

**Estimation of rates of snow deposition from shallow cores in northern Victoria Land (Antarctica).**

Barbolani, E., et al., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.65-70, 19 refs.

Glacier surveys, Glacier alimentation, Core samplers, Snow ice interface, Snow accumulation, Snow composition, Snow density, Antarctica—Victoria Land

53-2575

**Stratigraphic, isotopic and chemical profiles of a firn core from Drygalski Ice Tongue and of a snow pit from Aviator Glacier (Northern Victoria Land, Antarctica).**

Caprioli, R., et al., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.71-76, 21 refs. Atmospheric composition, Air pollution, Scavenging, Snow ice interface, Firn, Glacier ice, Ice cores, Core samplers, Snow samplers, Ice composition, Snow stratigraphy, Antarctica—Drygalski Ice Tongue, Antarctica—Aviator Glacier

53-2576

**Oceanic source contribution to the snow composition, as function of elevation, at two coastal stations in the Terra Nova Bay area (Antarctica).**

Casella, F., Udisti, R., Piccardi, G., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.77-80, 6 refs.

Marine atmospheres, Atmospheric composition, Air pollution, Scavenging, Snow air interface, Snow composition, Antarctica—Terra Nova Bay

53-2577

**Oxygen isotopic study of a shallow ice-core drilled on the Strandline Glacier (northern Victoria Land, Antarctica).**

Dini, M., Longinelli, A., Meneghel, M., Orombelli, G., Smiraglia, C., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.81-84, 11 refs. Ice cores, Glacier ice, Ice composition, Isotope analysis, Antarctica—Terra Nova Bay

53-2578

**Soluble/insoluble spection of light elements in polar ice as measured by PIXE and SEM-EDAX.** Laj, P., Ghermandi, G., Maggi, V., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.85-90, 10 refs.

Glacier ice, Ice cores, Ice composition, Ice dating, Geochemical cycles, Paleoclimatology, Drill core analysis, X ray analysis, Scanning electron microscopy, Greenland

53-2579

**Density profiles in shallow firn cores, northern Victoria Land (Antarctica).**

Maggi, V., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.91-92, 5 refs.

Glacier surveys, Ice cores, Firn stratification, Glacier alimentation, Snow accumulation, Snow ice interface, Snow compression, Ice density, Antarctica—Victoria Land

53-2580

**Eemian to Last Glacial Maximum atmospheric microparticles background from the GRIP Project ice-core.**

Maggi, V., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.93-96, 6 refs.

Atmospheric composition, Ice cores, Glacier ice, Ice composition, Dust, Drill core analysis, Paleoclimatology, Global change, Greenland

53-2581

**Micropaleontological aspects of some cores from the western Ross Sea (Antarctica).**

Melis, R., Salvi, G., Dini, M., D'Onofrio, S., Pugliese, N., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.97-101, 9 refs.

Marine geology, Marine deposits, Bottom sediment, Quaternary deposits, Marine biology, Microbiology, Paleocology, Drill core analysis, Paleoclimatology, Antarctica—Ross Sea

53-2582

**Recent variations in the lead content of antarctic snow.**

Scarponi, G., Barbante, C., Turetta, C., Cescon, P., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.103-106, 21 refs.

Polar atmospheres, Atmospheric circulation, Atmospheric composition, Air pollution, Scavenging, Snow samplers, Snow composition, Snow impurities, Antarctica

53-2583

**Behaviour of the West Antarctic ice sheet in the last 20,000 years: a marine geology approach.**

Taviani, M., Trincardi, F., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.107-108, 13 refs.

Research projects, Glaciation, Ice sheets, Ice shelves, Glacier melting, Marine geology, Sea level, Global warming, Paleoclimatology, Antarctica—West Antarctica, Antarctica—Ross Sea

53-2584

**Dating and 20-year detailed chemical data series of shallow firn core from Hercules Névé (northern Victoria Land—Antarctica).**

Udisti, R., Barbolani, E., Becagli, S., Piccardi, G., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.109-113, 15 refs.

Polar atmospheres, Atmospheric circulation, Atmospheric composition, Air pollution, Scavenging, Snow composition, Snow impurities, Snow ice interface, Firn, Glacier ice, Ice composition, Core samplers, Ice dating, Antarctica—Victoria Land

53-2585

**Experimental methods for dynamic studies of floating ice shelves: an example from Hells Gate Ice Shelf (Victoria Land, Antarctica).**

Caneva, G., Lozej, A., Merlanti, F., Tabacco, I., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.115-117, 1 ref.

Research projects, Glacier surveys, Ice shelves, Glacier flow, Glacier oscillation, Icequakes, Seismic surveys, Antarctica—Hells Gate

53-2586

**Kinematic processing of GPS trajectories around Dome C and between Dome C and Dumont d'Urville.**

Cefalo, R., Manzoni, G., Tabacco, I.E., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.119-122, 3 refs.

Research projects, Geodetic surveys, Topographic surveys, Data processing, Data transmission, Antarctica—Charlie, Dome

53-2587

**Preliminary results of geoelectrical surveys on the Hells Gate Ice Shelf (Victoria Land, Antarctica).**

Lozej, A., Merlanti, F., Pavan, M., Tabacco, I., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.123-128, 1 ref.

Glacier surveys, Ice shelves, Ice structure, Ice electrical properties, Ice composition, Ice salinity, Electrical resistivity, Electromagnetic prospecting, Antarctica—Hells Gate

53-2588

**Preliminary results of R.E.S. surveys over the Hells Gate Ice Shelf (East Antarctica).**

Lozej, A., Merlanti, F., Pavan, M., Tabacco, I., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.129-132, 5 refs.

Glacier surveys, Ice shelves, Glacier thickness, Ice structure, Ice electrical properties, Radio echo soundings, Antarctica—Hells Gate

53-2589

**Preliminary results of refraction and reflection seismic surveys on the Hells Gate Ice Shelf (Victoria Land, Antarctica).**

Lozej, A., Merlanti, F., Pavan, M., Tabacco, I., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.133-138, 6 refs.

Glacier surveys, Ice shelves, Glacier thickness, Ice structure, Seismic surveys, Antarctica—Hells Gate

53-2590

**Thermal interaction between the Drygalski Ice Tongue and the ocean.**

Minale, M., Astarita, G., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.139-142, 6 refs.

Ice shelves, Glacier tongues, Glacier heat balance, Glacier mass balance, Ice bottom surface, Ice water interface, Antarctica—Drygalski Ice Tongue

53-2591

**Mapping of geomorphology and glacial cover of the Mount Melbourne sheet (Antarctica) by means of remote sensing and field survey.**

Biasini, A., Bisci, C., Caputo, C., Dramis, F., Pugliese, F., Salvatore, M.C., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.159-162, 12 refs.

Glacier surveys, Ice sheets, Glacier surfaces, Aerial surveys, Topographic surveys, Terrain identification, Photointerpretation, Mapping, Antarctica—Melbourne, Mount

53-2592

**TM data processing for geologic mapping in the Nash Ridge area (Victoria Land—Antarctica).**

Casacchia, R., Picchiotti, A., Salvatori, R., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.163-165, 6 refs.

Geological surveys, Terrain identification, Mapping, Spaceborne photography, Image processing, Antarctica—Victoria Land

53-2593

**Acquisition of Ground Control Points (GCP's) for satellite image georeferentiation.**

Manco, D., Rossi, L., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.167-170, 4 refs.

Geodetic surveys, Topographic surveys, Terrain identification, Mapping, Spaceborne photography, Image processing, Data processing, Antarctica

53-2594

**Use of stratospheric balloons of the Boomerang Project as remote-sensing platform.**

Salvini, F., Romeo, G., Biasini, A., *Terra Antarctica. Reports*, 1998, No.1, Meeting on Antarctic Glaciology and Paleoclimate, Rome, Italy, June 20-21, 1994. Proceedings. Edited by G. Orombelli, p.171-175, 5 refs.

Research projects, Balloons, Aerial surveys, Topographic surveys, Terrain identification, Mapping, Data processing, Image processing, Antarctica

53-2595

**Raman spectroscopic studies of THF clathrate hydrate.**

Tulk, C.A., Klug, D.D., Ripmeester, J.A., *Journal of physical chemistry A*, Nov. 5, 1998, 102(45), p.8734-8739, 28 refs.

Spectra, Ice spectroscopy, Clathrates, Hydrates, Latticed structures, Hydrogen bonds, Deuterium oxide ice, Molecular energy levels, Temperature effects

53-2596

**New optical technique to study aerosol phase transitions: the nucleation of ice from H<sub>2</sub>SO<sub>4</sub> aerosols.**

Koop, T., Ng, H.P., Molina, L.T., Molina, M.J., *Journal of physical chemistry A*, Nov. 5, 1998, 102(45), p.8924-8931, 40 refs.

Ice nuclei, Nucleation, Aerosols, Cooling rate, Melting points, Laboratory techniques, Thermodynamics, Cloud droplets, Polar stratospheric clouds, Phase transformations, Freezing points

53-2597

**Radical generation upon  $\gamma$ -irradiation of two amorphous and two crystalline forms of water at 77 K.**

Bednarek, J., Plonka, A., Hallbrucker, A., Mayer, E., *Journal of physical chemistry A*, Nov. 5, 1998, 102(45), p.9091-9094, 44 refs.

Cubic ice, Gamma irradiation, Electron paramagnetic resonance, Water vapor, Hydrogen bonds, Spectra, Ice physics, Ice crystals

53-2598

**Evaluation of traffic markings in cold regions.**

Lu, J.J., Barter, T., *Journal of transportation engineering*, Jan./Feb. 1998, 124(1), p.42-51, 20 refs.

Highway planning, Safety, Visibility, Road maintenance, Cold weather performance, United States—Alaska

53-2599

**367 nm photochemistry of chlorine dioxide in and on amorphous ice.**

Anderson, L.D., Roberts, J.T., Grassian, V.H., *SPIE—The International Society for Optical Engineering. Proceedings*, 1998, Vol.3272, Laser techniques for surface science III. Edited by H.L. Dai and H.J. Freund, p.286-295, 35 refs.

DLC TA418.7.L3583 1998

Amorphous ice, Ice composition, Ice spectroscopy, Photochemical reactions

53-2600

**Stratospheric ozone chemistry on ice surfaces.**

Geiger, F.M., Hicks, J.M., *SPIE—The International Society for Optical Engineering. Proceedings*, 1998, Vol.3272, Laser techniques for surface science III. Edited by H.L. Dai and H.J. Freund, p.296-305, 59 refs.

DLC TA418.7.L3583 1998

Air pollution, Atmospheric composition, Polar stratospheric clouds, Cloud physics, Ice composition, Ice vapor interface, Ice nuclei, Ozone, Antarctica

53-2601

**Remedial measures connected with aquatic macrophytes in Norwegian regulated rivers and reservoirs.**

Rørslett, B., Johansen, S.W., *Regulated rivers: research & management*, July-Oct. 1996, 12(4-5), International Workshop on Remedial Strategies in Regulated Rivers. Proceedings. Lycksele, Sweden, Sep. 25-28, 1995, p.509-522, 47 refs.

River flow, Flow control, Reservoirs, Plant ecology, Vegetation factors, Ice cover effect, Norway

53-2602

**Towards an ecologically based regulation practice in Finnish hydroelectric lakes.**

Hellsten, S., Marttunen, M., Palomäki, R., Riihimäki, J., Alasaarela, E., *Regulated rivers: research & management*, July-Oct. 1996, 12(4-5), International Workshop on Remedial Strategies in Regulated Rivers. Proceedings. Lycksele, Sweden, Sep. 25-28, 1995, p.535-545, 26 refs.

Lakes, Reservoirs, Water level, Lake ice, Ice cover effect, Ice control, Flood control, Environmental protection, Cost analysis, Finland

53-2603

**Low temperature applications of variable conductance heat pipes.**

Shekrladze, I.G., Machavariani, E.S., Rusishvili, J.G., Machavariani, D.E., International Heat Pipe Symposium, 5th, Melbourne, Australia, Nov. 17-20, 1996. Proceedings. Heat pipe technology: theory, applications and prospects. Edited by J. Andrews, A. Akbarzadeh, and I. Sauciu, Oxford, Elsevier Science Ltd., 1997, p.344-349, 3 refs.

DLC TJ264.159 1996

Heat pipes, Ice melting, Artificial melting, Agriculture, Plant physiology, Frost protection, Temperature control

53-2604

**Experimental study of effect of vibration on ice contact melting within rectangular enclosures.**

Quan, L., Zhang, Z.Q., Faghri, M., National Heat Transfer Conference, 32nd, Baltimore, MD, Aug. 8-12, 1997. Proceedings. Vol.4: Fundamentals of bubble and droplet dynamics; phase change and two phase flow. Edited by S.G. Kandlikar, C.H. Amon, M.E. Ulucakli and J. O'Brien, New York, American Society of Mechanical Engineers, 1997, p.111-118, HTD-Vol.342, 15 refs.

DLC TJ260.N36 1997 Vol.4

Ice melting, Artificial melting, Ice removal, Ice prevention, Heat transfer, Defrosting

53-2605

**Mechanics of frozen soil for deep alluvium—a new field of frozen soil mechanics. [Shentu dongtu lixue—dongtu lixue fazhan de xin lingyu]**

Cui, G.X., *Journal of glaciology and geocryology*, June 1998, 20(2), p.97-100, In Chinese with English summary. 8 refs.

Alluvium, Permafrost beneath structures, Permafrost preservation, Foundations, Soil freezing, Artificial freezing, Soil stabilization, Frozen ground strength

53-2606

**Saline soils in Gansu Province and discussion on the three links of improving soil water. [Gansu yanzitu ji turang shuifen gailiang san huanjie tantao]**

Xu, X.Z., Zhang, L.X., Liu, Y.Z., Wang, J.C., Gu, T.X., *Journal of glaciology and geocryology*, June 1998, 20(2), p.101-107, In Chinese with English summary. 6 refs.

Saline soils, Soil composition, Soil chemistry, Soil water, Water table, Water retention, Evaporation control, Drainage, Irrigation, Soil conservation, Land reclamation, China—Gansu Province

53-2607

**Salt expansion accumulation of sulphate salty soil under freezing and thawing cycles. [Liusuan yanzitu zai duo ci dongrong xunhuan shi de yan-zhang lejia gulu]**

Chu, C.P., Li, B., Hou, Z.J., *Journal of glaciology and geocryology*, June 1998, 20(2), p.108-111, In Chinese with English summary. 3 refs.

Saline soils, Frozen ground chemistry, Frozen ground strength, Soil freezing, Frost heave, Freeze thaw tests

53-2608

**Application of the fracture mechanics of frozen soil to the calculation of stability of pile foundation uplift. [Dongtu duanlie lixue zai zhuangji dongba wending jisuan zhong de yingyong]**

Li, H.S., Liu, Z.L., Zhu, Y.L., *Journal of glaciology and geocryology*, June 1998, 20(2), p.112-115, In Chinese with English summary. 7 refs.

Soil freezing, Frost heave, Frozen ground strength, Piles, Foundations, Pile load tests, Frost resistance, Fracturing, Mathematical models

53-2609

**Calculation depth of the permafrost table under asphalt pavement. [Liqing lumian xia duonian dongtu shangxian bianhua jisuan de tantao]**

Mi, H.Z., Wu, Q.B., Ma, Z.X., *Journal of glaciology and geocryology*, June 1998, 20(2), p.116-119, In Chinese with English summary. 4 refs.

Permafrost beneath roads, Permafrost depth, Permafrost thickness, Permafrost preservation, Active layer, Frost penetration, Thaw depth, Pavements, Road maintenance, Mathematical models

53-2610

Extra-force on a structure due to thaw settlement of saturated sand. [Baoshui shaceng zhong jiegou de rongchen fujiall yanjiu]

Zhou, G.Q., *Journal of glaciology and geocryology*, June 1998, 20(2), p.120-123, In Chinese with English summary. 10 refs.

Sands, Ground thawing, Frozen ground settling, Thaw consolidation, Settlement (structural)

53-2611

Experimental study of the relationship between the unfrozen water content of frozen soil and pressure. [Dongtu weidong shuilianliang yu yali guanxi de shiyan yanjiu]

Zhang, L.X., Xu, X.Z., Zhang, Z.X., Deng, Y.S., *Journal of glaciology and geocryology*, June 1998, 20(2), p.124-127, In Chinese with English summary. 5 refs.

Soil freezing, Frozen ground strength, Frozen ground compression, Unfrozen water content, Soil pressure, Freezing points

53-2612

Observation of the forming and thawing of frozen walls. [Dongjie bi xingcheng ji jiedong gully shice yanjiu]

Yang, P., Chen, M.H., Zhang, W.M., Zhao, H.G., Yu, C.H., *Journal of glaciology and geocryology*, June 1998, 20(2), p.128-132, In Chinese with English summary. 2 refs.

Shaft sinking, Walls, Artificial freezing, Soil freezing, Freezing rate, Soil stabilization, Frozen ground temperature, Ground thawing, Artificial thawing

53-2613

Pollen evidence of climate during the Last Glacial Maximum in eastern Tibetan Plateau. [Qingzang gaoyuan dongbu moci bingqi zulshengqi qihou de huafen zhengjiu]

Tang, L.Y., Shen, C.M., Kong, Z.Z., Wang, F.B., Liu, K.B., *Journal of glaciology and geocryology*, June 1998, 20(2), p.133-140, In Chinese with English summary. 41 refs.

Lacustrine deposits, Bottom sediment, Core samplers, Soil dating, Palynology, Paleobotany, Global change, Paleoclimatology, China—Qinghai-Xizang Plateau

53-2614

Quaternary palynological record and environment at the northeast margin of the Tibetan Plateau. [Qingzang gaoyuan dongbei bianyuan disiji baofen ji qi huanjing]

Pan, A.D., *Journal of glaciology and geocryology*, June 1998, 20(2), p.141-149, In Chinese with English summary. 8 refs.

Quaternary deposits, Stratigraphy, Palynology, Paleobotany, Global change, Paleoclimatology, China—Qinghai-Xizang Plateau

53-2615

Carbon isotope evidence of the soil organic matter for the ecological variation during late-Pleistocene in Jiujiang region, Jiangxi Province. [Jiangxi Jiujiang diqu wan gengxinshi shengtai bianqian de turang youji zhi tan tongweisu zhengjiu]

Zhang, P.Z., et al, *Journal of glaciology and geocryology*, June 1998, 20(2), p.150-156, In Chinese with English summary. 32 refs.

Quaternary deposits, Organic soils, Soil composition, Soil profiles, Carbon isotopes, Isotope analysis, Soil dating, Paleobotany, Global change, Paleoclimatology, China—Jiujiang

53-2616

Potential direct solar radiation based on GIS and glacier mass balance. [Ji yu dili xinxi xitong de taiyang zhijie fushe yu bigchuan wuzhi pingheng de guanxi]

Ding, Y.J., Li, X., Cheng, G.D., Hoelzle, M., Haerberli, W., *Journal of glaciology and geocryology*, June 1998, 20(2), p.157-162, In Chinese with English summary. 9 refs.

Glacier surveys, Glacier heat balance, Glacier mass balance, Insolation, Data processing, China—Tian Shan

53-2617

Preliminary analyses of biogenic organic acids in Guliya ice core. [Guliya binxin zhong shengwu youji suan de chubu fenxi]

Sun, J.Y., Qin, D.H., Yao, T.D., Li, Z.Q., *Journal of glaciology and geocryology*, June 1998, 20(2), p.163-166, In Chinese with English summary. 10 refs.

Mountain glaciers, Ice cores, Glacier ice, Ice composition, Ice dating, Paleoclimatology, China—Kunlun Mountains

53-2618

Experimental study on the uniaxial compressive strength characteristics of fine grain ethanol model ice. [Xili jiujiu moxing bing danzhou yasuo qiangdu tezhen shiyan yanjiu]

Li, Z.J., Riska, K., *Journal of glaciology and geocryology*, June 1998, 20(2), p.167-171, In Chinese with English summary. 7 refs.

Artificial ice, Ice structure, Ice strength, Compressive properties, Strain tests

53-2619

Study on CH<sub>4</sub> fluxes from alpine wetlands at the Huashixia Permafrost Station, Tibetan Plateau. [Qingzang gaoyuan Huashixia dongtu zhan gao han shidi CH<sub>4</sub> paifang yanjiu]

Jin, H.J., Cheng, G.D., Xu, B.Q., Nakano, T., *Journal of glaciology and geocryology*, June 1998, 20(2), p.172-174, In Chinese with English summary. 8 refs.

Wetlands, Mountain soils, Meadow soils, Grasses, Plant ecology, Soil air interface, Nutrient cycle, Atmospheric composition, China—Qinghai-Xizang Plateau

53-2620

Study of hydrogen isotope in precipitation in west China. [Zhongguo xibu jiangshui zhong δD de chubu yanjiu]

Tian, L.D., Yao, T.D., Stievenard, M., Jouzel, J., *Journal of glaciology and geocryology*, June 1998, 20(2), p.175-179, In Chinese with English summary. 18 refs.

Atmospheric circulation, Atmospheric composition, Precipitation (meteorology), Heavy water, Climatic changes, Statistical analysis, China

53-2621

Analysis on the fractal structure features and formation mechanism of the Quaternary boulder clay in the Mt. Huangshan. [Huangshan disiji nili chenjiwu fenxing jiegou tezhen yu chengyin jizhi fenxi]

Zhou, B.G., *Journal of glaciology and geocryology*, June 1998, 20(2), p.180-183, In Chinese with English summary. 8 refs.

Periglacial processes, Quaternary deposits, Glacial till, Clay soils, Mudflows, Soil formation, Soil structure, Soil classification, Paleoclimatology, China—Anhui Province

53-2622

Climatic warming causes the glacier retreat in Mt. Qomolangma. [Qihou biannuan shi Zhumulangma feng diqu bingchuan chu yu tuisuo zhuanngtai]

Ren, J.W., Qin, D.H., Jing, Z.F., *Journal of glaciology and geocryology*, June 1998, 20(2), p.184-185, In Chinese with English summary. 5 refs.

Glacier surveys, Mountain glaciers, Glacier oscillation, Glacier melting, Global warming, Himalaya Mountains

53-2623

Review of the study on the impact of snow cover in the Tibetan Plateau on Asian monsoon. [Qingzang gaoyuan xuegai dui Yazhou jifeng yingxiang yanjiu jinzhan]

Yang, M.X., Yao, T.D., *Journal of glaciology and geocryology*, June 1998, 20(2), p.186-191, In Chinese with English summary. 34 refs.

Snow cover distribution, Snow heat flux, Snow air interface, Snow cover effect, Atmospheric circulation, Precipitation (meteorology), China—Qinghai-Xizang Plateau

53-2624

Proceedings of the 55th annual Eastern Snow Conference, Jackson, NH, June 2-3, 1998.

Eastern Snow Conference, Taylor, S., ed, Hardy, J.P., ed, MP 5297, *Eastern Snow Conference. Proceedings*, 1998, 55th, 173p., Refs. passim. For individual papers see 53-2625 through 53-2642.

Snow surveys, Snow cover distribution, Snowfall, Snow accumulation, Snow hydrology, Snow air interface, Snow heat flux, Snow water equivalent, Snowmelt, Atmospheric circulation, Weather forecasting, Runoff forecasting

53-2625

Revised snow measurement guidelines for National Weather Service cooperative observers.

Leffler, R.J., Horvitz, A., Doesken, N.J., *Eastern Snow Conference. Proceedings*, 1998, 55th, p.1-4, 6 refs.

Snow surveys, Snowfall, Snow depth, Snow water equivalent, Weather observations, Weather forecasting, Meteorological data

53-2626

Forecasting snowfall amounts: an ingredients-based methodology supporting the Garcia Method.

Nietfeld, D.D., Kennedy, D.A., *Eastern Snow Conference. Proceedings*, 1998, 55th, p.5-12, 9 refs.

Snowstorms, Snowfall, Precipitation (meteorology), Weather forecasting, Computerized simulation, Statistical analysis, United States—Kansas

53-2627

Using rare earth elements as chemical tracers in snow studies.

Taylor, S., Feng, X., Klaue, B., Albert, M.R., Kirchner, J., MP 5298, *Eastern Snow Conference. Proceedings*, 1998, 55th, p.13-20, 19 refs.

Snow composition, Snow hydrology, Snow melting, Snowmelt, Snow samplers, Water chemistry, Isotopic labeling

The authors used rare earth element (REE) tracers to study snowpack dynamics at the Sleepers River Research Watershed, Vermont. REEs are ideal tracers for snow because they have very low natural abundances in snow, are soluble in natural precipitation, and can be detected at part-per-trillion concentrations. There are 14 different REEs available to mark snow layers. These elements have not previously been used as tracers in snow, and the preliminary observations confirmed their usefulness. Fresh snow was sampled after each major storm during the winter of 1997-98, and chemical analyses of five REEs (Ce, Dy, Pr, Tm and La) show that their natural background ranges from 1 to 10 ppt (ng/L). After each storm, spike solutions of these REEs were sprayed onto the snowpack overlying a lysimeter and an adjacent test area. Snow cores were taken from the test area before the main melt event. The distributions of REEs in the snow cores clearly mark the snow layers on which the tracers were applied. Some fraction of each tracer was lost from the snowpack before the main melt, but there was no sign of bleeding throughout the snowpack. The tracers near the top of the pack are eluted out earlier than tracers near the base, and refreezing of meltwater, as it moves through subzero sections of the snowpack, may cause some of the high tracer concentrations observed at low melt rates. This work is part of a larger study aimed at understanding stable isotopic variability and snow solute chemistry in snowpacks and in snowmelt.

53-2628

Snowpack development and ablation on glaciers and alpine areas in the North Cascades, Washington.

Pelto, M.S., *Eastern Snow Conference. Proceedings*, 1998, 55th, p.21-26, 11 refs.

Snow surveys, Snow accumulation, Ablation, Snow hydrology, Snow water equivalent, Glacial hydrology, Glacier alimentation, Glacier mass balance, Runoff forecasting, United States—Washington—North Cascade Range

53-2629

Outburst and rainfall-induced peak runoff events in glacierised alpine basins.

Collins, D.N., *Eastern Snow Conference. Proceedings*, 1998, 55th, p.27-36, 22 refs.

Glacial hydrology, Glacial rivers, Glacial lakes, Subglacial drainage, Snow line, Snowmelt, Rain, Lake bursts, Floods, Flood forecasting, Switzerland

53-2630

**Algorithm intercomparison for accuracy assessment of the MODIS snow-mapping algorithm.** Klein, A.G., Hall, D.K., Seidel, K., *Eastern Snow Conference. Proceedings*, 1998, 55th, p.37-45, 10 refs.

Snow surveys, Snow cover distribution, Forest canopy, Vegetation patterns, Terrain identification, Sensor mapping, Radiometry, Spaceborne photography, Image processing

53-2631

**Case study of the synoptic patterns influencing midwinter snowmelt across the northern Great Plains.**

Grundstein, A.J., Leathers, D.J., *Eastern Snow Conference. Proceedings*, 1998, 55th, p.47-56, 24 refs. Snow hydrology, Snow heat flux, Snow melting, Snowmelt, Snow air interface, Atmospheric circulation, Synoptic meteorology, Computerized simulation, Runoff forecasting, Flood forecasting, United States—Great Plains

53-2632

**Evaluation of snow processes for land surface modelling.**

Pomeroy, J.W., et al, *Eastern Snow Conference. Proceedings*, 1998, 55th, p.57-79, 82 refs.

Snow hydrology, Snow heat flux, Snow melting, Snowmelt, Snow cover distribution, Snow water equivalent, Interception, Snow air interface, Atmospheric circulation, Mathematical models, Computerized simulation, Runoff forecasting

53-2633

**Snowfall trends in the central and southern Appalachians 1963-1964 to 1992-1993.**

Hartley, S., *Eastern Snow Conference. Proceedings*, 1998, 55th, p.81-90, 28 refs.

Snowfall, Snow accumulation, Snow air interface, Weather forecasting, Climatic changes, Statistical analysis, United States—Appalachian Mountains

53-2634

**Comparison of neural network and multiple regression transmission line icing models.**

McComber, P., De Lafontaine, J., Druetz, J.A., Laflamme, J., Paradis, A., *Eastern Snow Conference. Proceedings*, 1998, 55th, p.91-99, 11 refs.

Power line icing, Ice accretion, Icing rate, Ice loads, Ice forecasting, Weather forecasting, Statistical analysis, Computerized simulation

53-2635

**Coupled modelling of forest snow interception and sublimation.**

Pomeroy, J.W., Parviainen, J., Hedstrom, N., Gray, D.M., *Eastern Snow Conference. Proceedings*, 1998, 55th, p.101-114, 37 refs.

Taiga, Snow hydrology, Snow heat flux, Snow air interface, Interception, Snow evaporation, Snow water equivalent, Statistical analysis, Computerized simulation, Runoff forecasting

53-2636

**Application of weather radar to model the snow hydrology of southern Ontario.**

Fassnacht, S.R., Soulis, E.D., Snelgrove, K.R., Kouwen, N., *Eastern Snow Conference. Proceedings*, 1998, 55th, p.115-123, 16 refs.

Snow hydrology, Snowfall, Snow accumulation, Snowmelt, Snow water equivalent, Radar tracking, Computerized simulation, Runoff forecasting, Canada—Ontario

53-2637

**Connecticut snowfall distributions.**

Czikowsky, M.J., Castillo, R.A., *Eastern Snow Conference. Proceedings*, 1998, 55th, p.125-129, 2 refs. Snowfall, Snow cover distribution, Snow accumulation, Statistical analysis, United States—Connecticut

53-2638

**Local snow sampling with grade school children.**

Fassnacht, S.R., Soulis, E.D., Kouwen, N., *Eastern Snow Conference. Proceedings*, 1998, 55th, p.131-136, 11 refs.

Snow surveys, Snow samplers, Education, Canada—Ontario

53-2639

**Association between spatially autocorrelated patterns of SSM/I derived prairie snow cover and atmospheric circulations.**

Derksen, C., Vulder, M., LeDrew, E., Goodison, B., *Eastern Snow Conference. Proceedings*, 1998, 55th, p.137-145, 27 refs.

Plains, Snow surveys, Snow cover distribution, Snow water equivalent, Snow air interface, Atmospheric circulation, Terrain identification, Radiometry, Spaceborne photography, Image processing, Statistical analysis

53-2640

**Automated procedure for plotting snow stratigraphy.**

Shultz, E.F., Albert, M.R., MP 5299, *Eastern Snow Conference. Proceedings*, 1998, 55th, p.147-151, 3 refs.

Snow surveys, Snow survey tools, Snow samplers, Snow stratigraphy, Snow morphology, Computer programs

Because snowpack stratigraphy influences the behavior of the pack, reports of research on snow often present illustrations of stratigraphy of the snowpack. Producing snowpack profiles by traditional manual methods is costly and time consuming. This paper describes a new, easy-to-use procedure for automatically plotting snowpack stratigraphy, either from one pit or from a series of pits; employing the software SnowPit98, the authors' macro (program) and custom font for the commercially-available software, Excel97. The custom font is used to label the snow layering with the International Snow Classification symbols. This paper describes the software, provides a user guide to its use, and shows example snow stratigraphy plots that can be generated. This software should be useful to snow physicists, hydrologists and chemists and avalanche forecasters.

53-2641

**Variations in snow accumulation in the southern boreal forest: preliminary analysis of 1993-1994 and 1994-1995 measurements.**

Davis, R.E., Metcalfe, J.R., Hardy, J.P., Goodison, B., MP 5300, *Eastern Snow Conference. Proceedings*, 1998, 55th, p.153-164, 32 refs.

Taiga, Forest canopy, Snow surveys, Snow cover distribution, Snow accumulation, Snow hydrology, Snowmelt, Interception, Snow evaporation, Snow water equivalent, Canada—Saskatchewan

Snow measurements were made during the 1993-94 and 1994-95 snow cover seasons in the southern study areas of the Boreal Ecosystem Atmosphere Study to examine spatial distribution and snow accumulation on the ground. Snow water equivalent (SWE) measured along snow courses in conifer stands was less than SWE measured in an open area and an aspen stand during the accumulation period, an indication of the effect of sublimation of intercepted snow. Differences increased with time to maximum accumulation. A weighted combination of snow course and undercrown measurements was used to estimate SWE for the stands. Differences in total accumulation between the two years were large; 1993-94 had significantly less snow than 1994-95. The black spruce stand had 36 mm water equivalent less than the open area in both years. The mature jack pine stand had 28 mm and 27 mm less than the open area in both years, while the young jack pine had 22 mm less the first year and 9 mm less the second. There was essentially no difference in accumulation between the open area and the snow course in the aspen stand in each of the two years.

53-2642

**El Niño and North American snow cover.**

Brown, R.D., *Eastern Snow Conference. Proceedings*, 1998, 55th, p.165-172, 26 refs.

Atmospheric circulation, Snow air interface, Snow cover distribution, Snowfall, Snow depth, Spaceborne photography, Statistical analysis, North America

53-2643

**Probabilistic model of rain and ice depolarisation based on the experimental estimation of the atmospheric ice content.**

Paraboni, A., Martellucci, A., Polonio, R., SBMO/IEEE MTT-S International Microwave and Optoelectronics Conference, Natal, Brazil, Aug. 11-14, 1997. *Proceedings*, Vol.2., Piscataway, NJ, Institute of Electrical and Electronics Engineers, Inc., 1997, p.707-712, 9 refs.

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Cloud physics, Ice crystal size, Ice electrical properties, Ice detection, Microwaves, Wave propagation, Polarization (waves), Precipitation (meteorology), Weather forecasting, Statistical analysis, Mathematical models, Italy

53-2644

**Electric conductivity and temperature variations within a raised bog in Finland: implications for bog development.**

Puranen, R., Mäkilä, M., Säävuori, H., *Holocene*, 1999, 9(1), p.13-24, 48 refs.

Peat, Wetlands, Swamps, Paludification, Electromagnetic prospecting, Soil temperature, Soil chemistry, Soil air interface, Atmospheric composition, Nutrient cycle, Geochemical cycles, Finland

53-2645

**Environmental changes of the last three centuries indicated by siliceous microfossil records from the southwestern Baltic Sea.**

Andrén, E., Shimmield, G., Brand, T., *Holocene*, 1999, 9(1), p.25-38, Refs. p.37-38.

Marine deposits, Bottom sediment, Algae, Fossils, Water pollution, Climatic changes, Baltic Sea

53-2646

**1119-year tree-ring-width chronology from western Prince William Sound, southern Alaska.**

Barclay, D.J., Wiles, G.C., Calkin, P.E., *Holocene*, 1999, 9(1), p.79-84, 32 refs.

Paleobotany, Plant ecology, Climatic changes, Phenology, Paleoclimatology, United States—Alaska—Prince William Sound

53-2647

**Spring-temperature variations in western Himalaya, India, as reconstructed from tree-rings: AD 1390-1987.**

Yadav, R.R., Park, W.K., Bhattacharyya, A., *Holocene*, 1999, 9(1), p.85-90, 36 refs.

Plant ecology, Phenology, Trees (plants), Growth, Air temperature, Climatic changes, India—Himalaya Mountains

53-2648

**Antifriction coatings and their application to snow ski bases.**

Ramer, P., *U.S. Patent Office. Patent*, Apr. 29, 1997, n.p., USP-5,624,713.

Skis, Wood snow friction, Plastics snow friction, Protective coatings, Polymers, Lubricants

53-2649

**Polymer-thickened deicing and anti-icing agents for aircraft.**

Poellmann, K., Kapfinger, J., *European Patent Office. Patent*, Apr. 23, 1997, n.p., No.769541.

Aircraft icing, Chemical ice prevention, Ice removal, Polymers

53-2650

**Solute/solvent separation by gas evolution under freezing conditions.**

Sloan, J.C., Lurie, W., Ferramosca, A.C., *U.S. Patent Office. Patent*, Nov. 1, 1994, n.p., USP-5,360,554.

Water treatment, Brines, Artificial freezing, Desalting

53-2651

**Operation of a radar altimeter over the Greenland ice sheet.**

Grund, M.D., *U.S. National Aeronautics and Space Administration. Contractor report*, May 1996, NASA/CR-96-206083, 78p., N19970041279, MS thesis submitted to the University of Massachusetts, Amherst. 16 refs.

Ice sheets, Glacier surveys, Glacier oscillation, Glacier thickness, Glacier mass balance, Glacier surfaces, Aerial surveys, Topographic surveys, Airborne radar, Radio echo soundings, Height finding, Greenland

53-2652

**Systems and techniques for identifying and avoiding ice. Final report.**

Hansman, R.J., *U.S. National Aeronautics and Space Administration. Contractor report*, Dec. 1995, NASA/CR-97-205871, 12p., N19970037565.

Aircraft icing, Ice detection, Ice forecasting, Weather forecasting, Safety

53-2653

**Spectral analysis and experimental modeling of ice accretion roughness.**

Orr, D.J., Breuer, K.S., Torres, B.E., Hansman, R.J., *U.S. National Aeronautics and Space Administration. Contractor report*, 1996, NASA/CR-96-112616, 11p., N19970040741, 8 refs. Presented at the 34th Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan. 15-18, 1996, sponsored by the American Institute of Aeronautics and Astronautics (AIAA).

Aircraft icing, Ice accretion, Ice loads, Ice forecasting, Surface roughness, Heat transfer, Wind tunnels, Environmental tests, Image processing

53-2654

**Microbial phototrophic, heterotrophic, and diazotrophic activities associated with aggregates in the permanent ice cover of Lake Bonney, Antarctica.**

Paerl, H.W., Priscu, J.C., *Microbial ecology*, Nov.-Dec. 1998, 36(3), p.221-230, 28 refs.

Microbiology, Ice cover, Lake ice, Ecosystems, Nutrient cycle, Bacteria, Frozen lakes, Ice composition, Limnology, Biomass, Antarctica—Bonney, Lake

53-2655

**N<sub>2</sub>-fixing microbial consortia associated with the ice cover of Lake Bonney, Antarctica.**

Olson, J.B., Steppe, T.F., Litaker, R.W., Paerl, H.W., *Microbial ecology*, 1998, 36(3), p.231-238, 26 refs.

Microbiology, Ice cover, Lake ice, Ecosystems, Nutrient cycle, Bacteria, Frozen lakes, Ice composition, Limnology, Antarctica—Bonney, Lake

53-2656

**Bacterioplankton dynamics in the McMurdo Dry Valley lakes, Antarctica: production and biomass loss over four seasons.**

Takacs, C.D., Priscu, J.C., *Microbial ecology*, Nov.-Dec. 1998, 36(3), p.239-250, 50 refs.

Bacteria, Plankton, Microbiology, Ice cover, Lake ice, Biomass, Ecology, Nutrient cycle, Photosynthesis, Frozen lakes, Ice composition, Limnology, Antarctica—Bonney, Lake, Antarctica—Fryxell, Lake, Antarctica—Hoare, Lake

53-2657

**Microbial diversity and community structure in two different agricultural soil communities.**

Ørveås, L., Torsvik, V., *Microbial ecology*, Nov.-Dec. 1998, 36(3), p.303-315, 70 refs.

Soil microbiology, Agriculture, Sands, Organic soils, Bacteria, Soil analysis, Norway—Stend

53-2658

**Vegetation composition determines microbial activities in a boreal forest soil.**

Ohtonen, R., Väre, H., *Microbial ecology*, Nov.-Dec. 1998, 36(3), p.328-335, 51 refs.

Soil microbiology, Forest soils, Forest ecosystems, Biomass, Fungi, Lichens, Roots, Trees (plants), Vegetation factors, Mosses, Fennoscandia

53-2659

**Chemical composition of fresh snowfalls at Palmer Station, Antarctica.**

DeFelice, T.P., *Atmospheric environment*, Jan. 1999, 33(1), p.155-161, 37 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Atmospheric composition, Air pollution, Scavenging, Snowfall, Snow composition, Snow impurities, Snow samplers, Ice cores, Ice composition, Antarctica—Palmer Station

53-2660

**Sequence stratigraphy and sea-level history of Oligocene strata of the northern Aral Sea region (Kazakhstan): implications for glacioeustatic reconstructions.**

Pinous, O.V., Akhmetiev, M.A., Sahagian, D.L., *Geological Society of America. Bulletin*, Jan. 1999, 111(1), p.1-10, 45 refs.

Marine geology, Marine deposits, Stratigraphy, Sea level, Geochronology, Glaciation, Global change, Paleoclimatology, Kazakhstan

53-2661

**Distinguishing subglacial till and glacial marine diamictons in the western Ross Sea, Antarctica: implications for a last glacial maximum grounding line.**

Licht, K.J., Dunbar, N.W., Andrews, J.T., Jennings, A.E., *Geological Society of America. Bulletin*, Jan. 1999, 111(1), p.91-103, 60 refs.

Marine geology, Marine deposits, Bottom sediment, Glaciation, Glacier oscillation, Glacial deposits, Glacial till, Drill core analysis, Paleoclimatology, Antarctica—Ross Sea

53-2662

**System implications of rain and ice depolarisation in Ka-band satellite communications.**

Vasseur, H., Amaya, C., Vanhoenacker, D., International Conference on Antennas and Propagation, 10th, Heriot-Watt University, Edinburgh, UK, Apr. 14-17, 1997. Vol.2, Conference publication No.436, London, Institution of Electrical Engineers, 1997, p.2.115-2.118, 7 refs.

DLC TK7871.6.147a 10th Pt.2 1997

Radio communication, Telecommunication, Data transmission, Spacecraft, Cloud physics, Ice crystals, Ice electrical properties, Radio waves, Wave propagation, Polarization (waves)

53-2663

**Precipitation induced co and cross-polar effects from a 9 km link operating at 38 GHz.**

Thurai, M., Woodroffe, J.M., International Conference on Antennas and Propagation, 10th, Heriot-Watt University, Edinburgh, UK, Apr. 14-17, 1997. Vol.2, Conference publication No.436, London, Institution of Electrical Engineers, 1997, p.2.222-2.225, 4 refs.

DLC TK7871.6.147a 10th Pt.2 1997

Radio communication, Telecommunication, Data transmission, Radio waves, Wave propagation, Polarization (waves), Falling snow, Snow electrical properties

53-2664

**Effects of precipitation and reflections from a snow covered ground measured at 40 and 60 GHz on a 600 m experimental link in Norway.**

Tjelta, T., Nordbotten, A., Kårstad, J., International Conference on Antennas and Propagation, 10th, Heriot-Watt University, Edinburgh, UK, Apr. 14-17, 1997. Vol.2, Conference publication No.436, London, Institution of Electrical Engineers, 1997, p.2.234-2.238, 3 refs.

DLC TK7871.6.147a 10th Pt.2 1997

Radio communication, Telecommunication, Radio waves, Wave propagation, Snow cover effect, Snow electrical properties, Norway

53-2665

**Determination of nitroaromatic, nitramine, and nitrate ester explosives in water using solid-phase extraction and gas chromatography-electron capture detection: comparison with high-performance liquid chromatography.**

Walsh, M.E., Ranney, T., *MP 5301, Journal of chromatographic science*, Aug. 1998, 36(8), p.406-416, 26 refs.

Explosives, Waste disposal, Soil pollution, Wells, Water pollution, Water chemistry, Chemical analysis, Military facilities, Environmental impact

An analytical method for nitroaromatic, nitramine, and nitrate-ester explosives and co-contaminants in water based on solid-phase extraction (SPE) and gas chromatography-electron capture detector (GC-ECD) is described. Samples are preconcentrated using cartridge or membrane SPE followed by elution with acetonitrile. Quantitative GC analyses are obtained with deactivated direct-injection port liners, short wide-bore capillary columns, and high linear carrier gas velocities. Recoveries are 90% or greater for each of the nitroaromatics and nitrate esters and greater than 70% for nitramines and amino-nitrotoluenes. Concentration estimates for well water extracts from military sites analyzed by GC-ECD and high-performance liquid chromatography (HPLC) methods show good agreement for the analytes most frequently detected. The GC provides lower method detection limits than HPLC for most analytes, but accurate calibration is more difficult. The ultraviolet detector used for HPLC has a much greater linear range than the ECD. The GC requires more care than the HPLC.

53-2666

**Proceedings.**

CANMET/ACI/JCI International Conference on Recent Advances in Concrete Technology, 4th, Tokushima, Japan, June 7-11, 1998, Malhotra, V.M., ed, ACI special publication SP-179, Farmington Hills, MI, American Concrete Institute, 1998, 1109p., Refs. passim. For selected papers see 53-2667-2677.

DLC TA439.R347 1998

Concrete durability, Concrete strength, Frost resistance, Freeze thaw tests

53-2667

**Some durability considerations in the design of the Confederation Bridge.**

Langley, W.S., Forbes, G., Tromposch, E., CANMET/ACI/JCI International Conference on Recent Advances in Concrete Technology, 4th, Tokushima, Japan, June 7-11, 1998. Proceedings. ACI special publication SP-179. Edited by V.M. Malhotra, Farmington Hills, MI, American Concrete Institute, 1998, p.1-22.

DLC TA439.R347 1998

Bridges, Piers, Concrete durability, Concrete strength, Concrete curing, Frost resistance, Ice control, Freeze thaw tests, Design criteria, Canada—Northumberland Strait

53-2668

**Mechanical properties, drying shrinkage and resistance to freezing and thawing of concrete using recycled aggregate.**

Yamato, T., Emoto, Y., Soeda, M., CANMET/ACI/JCI International Conference on Recent Advances in Concrete Technology, 4th, Tokushima, Japan, June 7-11, 1998. Proceedings. ACI special publication SP-179. Edited by V.M. Malhotra, Farmington Hills, MI, American Concrete Institute, 1998, p.105-121, 12 refs.

DLC TA439.R347 1998

Concrete aggregates, Concrete durability, Concrete strength, Frost resistance, Freeze thaw tests

53-2669

**Strength and durability of concrete using bottom ash as replacement for fine aggregate.**

Bakoshi, T., Kohno, K., Kawasaki, S., Yamaji, N., CANMET/ACI/JCI International Conference on Recent Advances in Concrete Technology, 4th, Tokushima, Japan, June 7-11, 1998. Proceedings. ACI special publication SP-179. Edited by V.M. Malhotra, Farmington Hills, MI, American Concrete Institute, 1998, p.159-172, 6 refs.

DLC TA439.R347 1998

Concrete aggregates, Concrete durability, Concrete strength, Frost resistance, Freeze thaw tests

53-2670

**Properties of high-strength porous concrete.**

Fujiwara, H., Tomita, R., Okamoto, T., Dozono, A., Obatake, A., CANMET/ACI/JCI International Conference on Recent Advances in Concrete Technology, 4th, Tokushima, Japan, June 7-11, 1998. Proceedings. ACI special publication SP-179. Edited by V.M. Malhotra, Farmington Hills, MI, American Concrete Institute, 1998, p.173-187, 10 refs.

DLC TA439.R347 1998

Cellular concretes, Lightweight concretes, Concrete strength, Concrete durability, Frost resistance, Freeze thaw tests

53-2671

**Use of a water-repellent admixture to improve concrete performance.**

Shoya, M., Sugita, S., Tsukinaga, Y., Aba, M., Ohba, M., CANMET/ACI/JCI International Conference on Recent Advances in Concrete Technology, 4th, Tokushima, Japan, June 7-11, 1998. Proceedings. ACI special publication SP-179. Edited by V.M. Malhotra, Farmington Hills, MI, American Concrete Institute, 1998, p.217-234, 4 refs.

DLC TA439.R347 1998

Concrete admixtures, Concrete strength, Concrete durability, Waterproofing, Frost resistance, Frost protection, Freeze thaw tests

53-2672

**High-performance lightweight concrete for the precast prestressed concrete industry.**  
Curcio, F., Galeota, D., Gallo, A., Giammatteo, M.M., CANMET/ACI/JCI International Conference on Recent Advances in Concrete Technology, 4th, Tokushima, Japan, June 7-11, 1998. Proceedings. ACI special publication SP-179. Edited by V.M. Malhotra, Farmington Hills, MI, American Concrete Institute, 1998, p.389-405, 12 refs.  
DLC TA439.R347 1998  
Lightweight concretes, Precast concretes, Prestressed concretes, Concrete strength, Concrete durability, Frost resistance, Freeze thaw tests

53-2673

**Investigations on durability of high-volume fly ash concrete.**  
Kawaguchi, N., Kohno, K., Kurose, Y., Bakoshi, T., CANMET/ACI/JCI International Conference on Recent Advances in Concrete Technology, 4th, Tokushima, Japan, June 7-11, 1998. Proceedings. ACI special publication SP-179. Edited by V.M. Malhotra, Farmington Hills, MI, American Concrete Institute, 1998, p.715-730, 12 refs.  
DLC TA439.R347 1998  
Concrete admixtures, Concrete durability, Concrete strength, Frost resistance, Freeze thaw tests

53-2674

**Performance of solid concrete pavers under freeze-thaw and deicing salt environments of newly adopted ASTM C 1262 test method.**  
Ghafoori, N., Kassel, S., CANMET/ACI/JCI International Conference on Recent Advances in Concrete Technology, 4th, Tokushima, Japan, June 7-11, 1998. Proceedings. ACI special publication SP-179. Edited by V.M. Malhotra, Farmington Hills, MI, American Concrete Institute, 1998, p.777-789, 17 refs.  
DLC TA439.R347 1998  
Concrete pavements, Concrete strength, Concrete durability, Frost resistance, Freeze thaw tests, Road maintenance

53-2675

**Freezing and thawing resistance of lightweight aggregate concrete.**  
Fujiki, E., Kokubu, K., Hosaka, T., Umehara, T., Takaha, N., CANMET/ACI/JCI International Conference on Recent Advances in Concrete Technology, 4th, Tokushima, Japan, June 7-11, 1998. Proceedings. ACI special publication SP-179. Edited by V.M. Malhotra, Farmington Hills, MI, American Concrete Institute, 1998, p.791-814, 17 refs.  
DLC TA439.R347 1998  
Lightweight concretes, Concrete aggregates, Concrete strength, Concrete durability, Frost resistance, Freeze thaw tests

53-2676

**Effects of curing methods in cold regions on strength of concrete incorporating ground granulated blast furnace slag.**  
Miura, T., Iwaki, I., CANMET/ACI/JCI International Conference on Recent Advances in Concrete Technology, 4th, Tokushima, Japan, June 7-11, 1998. Proceedings. ACI special publication SP-179. Edited by V.M. Malhotra, Farmington Hills, MI, American Concrete Institute, 1998, p.815-829, 4 refs.  
DLC TA439.R347 1998  
Concrete admixtures, Winter concreting, Concrete curing, Concrete strength, Concrete durability

53-2677

**Freezing and thawing resistance of high slag content concrete.**  
Nakamoto, J., Togawa, K., Miyagawa, T., Fujii, M., Nagaoka, S., CANMET/ACI/JCI International Conference on Recent Advances in Concrete Technology, 4th, Tokushima, Japan, June 7-11, 1998. Proceedings. ACI special publication SP-179. Edited by V.M. Malhotra, Farmington Hills, MI, American Concrete Institute, 1998, p.1059-1072, 2 refs.  
DLC TA439.R347 1998  
Concrete admixtures, Concrete durability, Concrete strength, Frost resistance, Freeze thaw tests

53-2678

**Summary of the avalanche beacon test LVS-98.**  
Swiss Federal Institute for Forest, Snow and Landscape Research, *Avalanche review*, Jan. 1999, 17(3), p.3,8.  
Rescue equipment, Radio beacons, Avalanche protection, Performance, Tests, Accuracy, Safety, Accidents

53-2679  
**Zen in the art of avalanche hazard forecasting.**  
Davis, R.L., *Avalanche review*, Jan. 1999, 17(3), p.4-5, 11 refs.  
Avalanche forecasting, Avalanche protection

53-2680

**Avalanche climatic regions of the western United States: an update.**  
Mock, C., Birkeland, K., *Avalanche review*, Jan. 1999, 17(3), p.6-7, 14 refs.  
Avalanche formation, Avalanche modeling, Climatic factors, United States

53-2681

**Bioremediation of hydrocarbon-contaminated soils and groundwater in northern climates; final report.**  
Reynolds, C.M., Braley, W.A., Travis, M.D., Perry, L.B., Iskandar, I.K., MP 5302, *U.S. Army Cold Regions Research and Engineering Laboratory*, Mar. 1998, Construction Productivity Advancement Research (CPAR) Program, 18p., 23 refs. For another source see 52-5985.  
Land reclamation, Ground water, Hydrocarbons, Soil pollution, Water pollution, Water treatment, Cost analysis, Leaching, Design, United States—Alaska—Fairbanks

53-2682

**Potential of SPOT-Vegetation data for fire scar detection in boreal forests.**  
Eastwood, J.A., Plummer, S.E., Wyatt, B.K., Stocks, B.J., *International journal of remote sensing*, Dec. 1998, 19(18), p.3681-3687, 9 refs.  
Forest fires, Forest ecosystems, Remote sensing, LANDSAT, Synthetic aperture radar, Radiometry, Spaceborne photography, Global warming, Climatic changes

53-2683

**Using satellite thermal infrared imagery to study boundary layer structure in an antarctic katabatic wind region.**  
King, J.C., Varley, M.J., Lachlan-Cope, T.A., *International journal of remote sensing*, Nov. 20, 1998, 19(17), p.3335-3348, 20 refs.  
Atmospheric boundary layer, Infrared photography, Snow surface temperature, Radiometry, Brightness, Air temperature, Topographic surveys, Remote sensing, Antarctica—Coats Land

53-2684

**Radiance coefficients of ice and water clouds in the 0.4-4.0- $\mu$ m range.**  
Veselov, D.P., Lobanova, G.I., Popov, O.I., Fedorova, E.O., *Journal of optical technology*, Nov. 1998, 65(11), p.887-889, 9 refs. Translated from *Opticheskiy zhurnal*.  
Radiance, Cloud physics, Spectra, Cloud droplets, Scattering, Ice crystals

53-2685

**HEC-RAS River Analysis System: hydraulic reference manual, Version 2.2.**  
Brunner, G.W., MP 5303, *U.S. Army Corps of Engineers. Hydraulic Engineering Center*, Sep. 1998, CPD-69, Var. p.(251p.), PB99-501363 (CD-ROM), 40 refs. P.11-1 through 11-8 written by S.F. Daly, CRREL.  
Manuals, Computer programs, Rivers, River ice, Ice jams, Hydraulics, River flow, Bridges, Culverts, Models, Computerized simulation, Spillways  
This manual describes the theory and data requirements for the hydraulic calculations performed by HEC-RAS. Equations are presented along with the assumptions used in their derivation. Discussions are provided on how to estimate model parameters, as well as guidelines on various modeling approaches. Routines for modeling ice cover and wider river ice jams are included.

53-2686

**HEC-RAS River Analysis System: user's manual, Version 2.2.**  
Brunner, G.W., MP 5304, *U.S. Army Corps of Engineers. Hydraulic Engineering Center*, Sep. 1998, CPD-68, Var. p.(243p.), PB99-501363 (CD-ROM), 19 refs. P.6-68 through 6-73 written by S.F. Daly, CRREL.  
Manuals, Computer programs, Data processing, Computers, Rivers, River ice, Ice jams, Hydraulics, River flow, Bridges, Culverts, Models, Streams, Spillways

This manual is a guide to using the HEC-RAS. The manual provides an introduction and overview of the modeling system, installation instructions, how to get started, simple examples, detailed descriptions of each of the major modeling components, and how to view graphical and tabular output. Instructions for entering and editing river ice data and setting tolerances for ice jam calculations are included.

53-2687

**HEC-RAS River Analysis System: applications guide, Version 2.2.**  
Warner, J.C., Brunner, G.W., MP 5305, *U.S. Army Corps of Engineers. Hydraulic Engineering Center*, Sep. 1998, CPD-70, Var. p.(283p.), PB99-501363 (CD-ROM), 12 refs. P.14-1 through 14-9 written by S.F. Daly, CRREL.  
Manuals, Computer applications, Computer programs, Computers, Rivers, River ice, Ice cover, Ice jams, Hydraulics, River flow, Bridges, Culverts, Models, Streams, Spillways

This document contains a series of examples that demonstrate various aspects of the HEC-RAS. Each example consists of a problem statement, data requirements, general outline of solution steps, displays of key input and output screens, and discussions of important modeling aspects. Example 14 presents an ice-covered river, including ice cover and ice jam analysis.

53-2688

**Mineral resources of the Chichagof and Baranof Islands area, southeast Alaska.**  
Bittenbender, P.E., Still, J.C., Maas, K.M., McDonald, M.E., Jr., *U.S. Bureau of Land Management. Alaska State Office. BLM-Alaska technical report*, Feb. 1999, No.19, 222p. + 3 fold. maps, Refs. p.133-150.  
Natural resources, Minerals, Geological surveys, Exploration, Mining, Geochemistry, Lithology, United States—Alaska—Baranof Island, United States—Alaska—Chichagof Island

53-2689

**Review of science issues, deployment strategy, and status for the ARM North Slope of Alaska-Adjacent Arctic Ocean climate research site.**  
Stamnes, K., Ellingson, R.G., Curry, J.A., Walsh, J.E., Zak, B.D., *Journal of climate*, Jan. 1999, 12(1), p.46-63, 105 refs.  
Weather stations, Research projects, Polar atmospheres, Atmospheric circulation, Atmospheric composition, Air ice water interaction, Cloud cover, Radiation balance, Radiation measurement, Global warming, United States—Alaska—North Slope

53-2690

**Global thermohaline circulation. Part I: sensitivity to atmospheric moisture transport.**  
Wang, X.L., Stone, P.H., Marotzke, J., *Journal of climate*, Jan. 1999, 12(1), p.71-82, 39 refs.  
Ocean currents, Water transport, Water temperature, Salinity, Air water interactions, Moisture transfer, Atmospheric circulation, Hydrologic cycle, Global change, Computerized simulation

53-2691

**Global thermohaline circulation. Part II: sensitivity with interactive atmospheric transports.**  
Wang, X.L., Stone, P.H., Marotzke, J., *Journal of climate*, Jan. 1999, 12(1), p.83-91, 30 refs.  
Ocean currents, Water transport, Water temperature, Salinity, Air water interactions, Heat balance, Heat flux, Atmospheric circulation, Global change, Computerized simulation



53-2692

**Southern high-latitude ocean climate drift in a coupled model.**

Cai, W.J., Gordon, H.B., *Journal of climate*, Jan. 1999, 12(1), p.132-146, 53 refs.

Polar atmospheres, Marine atmospheres, Ocean currents, Water transport, Atmospheric circulation, Air ice water interaction, Ice models, Global change, Computerized simulation

53-2693

**Influence of solar zenith angle and cloud type on cloud radiative forcing at the surface in the Arctic.**

Minnett, P.J., *Journal of climate*, Jan. 1999, 12(1), p.147-158, 31 refs.

Polar atmospheres, Cloud cover, Insolation, Radiation balance, Ice air interface, Sea ice distribution, Ice conditions, Global warming

53-2694

**Enhanced climate change and its detection over the Rocky Mountains.**

Fyfe, J.C., Flato, G.M., *Journal of climate*, Jan. 1999, 12(1), p.230-243, 11 refs.

Atmospheric circulation, Snow air interface, Snow cover distribution, Snow depth, Snow line, Global warming, Computerized simulation, United States—Rocky Mountains, Canada—Rocky Mountains

53-2695

**Material coordinate treatment of the sea-ice dynamics equations.**

Morland, L.W., Staroszczyk, R., *Royal Society of London. Proceedings. Series A*, Nov. 8, 1998, 454(1979), p.2819-2857, 20 refs.

Oceanography, Sea ice, Pack ice, Plastic deformation, Drift, Wind factors, Air ice water interaction, Viscous flow, Rheology, Mathematical models, Boundary value problems

53-2696

**Analog light scattering experiment of hexagonal ice-like particles. Part I: experimental apparatus and test measurements.**

Barkey, B., Liou, K.N., Gellerman, W., Sokolsky, P., *Journal of the atmospheric sciences*, Feb. 15, 1999, 56(4), p.605-612, 23 refs.

Cloud physics, Light scattering, Particles, Spheres, Artificial ice, Ice optics, Simulation, Profiles, Test equipment, Design

53-2697

**Analog light scattering experiment of hexagonal ice-like particles. Part II: experimental and theoretical results.**

Barkey, B., Liou, K.N., Takano, Y., Gellerman, W., Sokolsky, P., *Journal of the atmospheric sciences*, Feb. 15, 1999, 56(4), p.613-625, 16 refs.

Cloud physics, Light scattering, Wave propagation, Ice crystal optics, Ice crystal size, Particles, Artificial ice, Simulation

53-2698

**Parameterization of water and ice cloud near-infrared single-scattering co-albedo in broadband radiation schemes.**

Räsänen, P., *Journal of the atmospheric sciences*, Feb. 15, 1999, 56(4), p.626-641, 24 refs.

Cloud physics, Optical properties, Ice optics, Radiation absorption, Light scattering, Albedo, Cloud droplets, Water vapor, Spectra, Statistical analysis, Correlation

53-2699

**Variation of southern ocean sea level and its possible relation with antarctic sea ice.**

Chen, G., Ezraty, R., *International journal of remote sensing*, Jan. 10, 1999, 20(1), p.31-47, 34 refs.

Oceanography, Sea level, Ocean currents, Seasonal variations, Heat flux, Sea ice distribution, Ice cover effect, Ice water interface, Remote sensing, Height finding, Analysis (mathematics), Antarctica—Weddell Sea

53-2700

**Passive microwave data for snow-depth and snow-extent estimations in the Himalayan mountains.**

Saraf, A.K., Foster, J.L., Singh, P., Tarafdar, S., *International journal of remote sensing*, Jan. 10, 1999, 20(1), p.83-95, 13 refs.

Snow surveys, Mountains, Radiometry, Sensor mapping, Snow cover distribution, Snow depth, Mathematical models, Correlation, Runoff forecasting, India—Himalaya Mountains

53-2701

**Response of the normalized difference vegetation index to varying cloud conditions in arctic tundra environments.**

Hope, A.S., Pence, K.R., Stow, D.A., *International journal of remote sensing*, Jan. 10, 1999, 20(1), p.207-212, 8 refs.

Climatology, Cloud cover, Radiometry, Solar radiation, Radiance, Spectra, Tundra climate, Tundra vegetation, Vegetation patterns, Classifications, Indexes (ratios), Statistical analysis, United States—Alaska—Happy Valley, United States—Alaska—White Hills, United States—Alaska—North Slope

53-2702

**Model molecular dynamics simulation of hydrochloric acid ionization at the surface of stratospheric ice.**

Gertner, B.J., Hynes, J.T., *Chemical Society, London. Faraday discussions*, 1998, No.110, p.301-322, 51 refs.

Cloud physics, Stratosphere, Aerosols, Ice crystals, Molecular structure, Surface properties, Ice vapor interface, Adsorption, Ionization, Proton transport, Molecular energy levels, Simulation

53-2703

**Evaluation of wear resistance of snow plow blade cutting edges using the scratch test method.**

Wei, Y.C., Nixon, W.A., Shi, Z.W., *Journal of testing and evaluation*, Nov. 1998, 26(6), p.527-531, 7 refs.

Snow removal equipment, Metals, Surface properties, Abrasion, Mechanical tests, Hardness tests, Specifications

53-2704

**New interpretation of the OH-stretch spectrum of ice.**

Buch, V., Devlin, J.P., *Journal of chemical physics*, Feb. 15, 1999, 110(7), p.3437-3443, 17 refs.

Ice physics, Molecular structure, Hydrogen bonds, Vibration, Spectra, Protons, Molecular energy levels, Ice spectroscopy, Models

53-2705

**Effect of HNO<sub>3</sub> and HCl on D<sub>2</sub>O desorption kinetics from crystalline D<sub>2</sub>O ice.**

Livingston, F.E., George, S.M., *Journal of physical chemistry A*, Dec. 10, 1998, 102(50), p.10,280-10,288, 108 refs.

Climatology, Aerosols, Atmospheric composition, Ice composition, Impurities, Ice physics, Ice vapor interface, Ice sublimation, Adsorption, Molecular energy levels, Probes, Deuterium oxide ice, Simulation

53-2706

**Real-time kinetic measurements of the condensation and evaporation of D<sub>2</sub>O molecules on ice at 140 K <T< 220 K.**

Chaix, L., Van den Bergh, H., Rossi, M.J., *Journal of physical chemistry A*, Dec. 10, 1998, 102(50), p.10300-10309, 43 refs.

Climatology, Cloud physics, Ice physics, Polar stratospheric clouds, Aerosols, Ice vapor interface, Ice sublimation, Ice crystal growth, Adsorption, Deuterium oxide ice, Simulation, Temperature effects

53-2707

**Ferroelectricity in water ice.**

Iedema, M.J., et al, *Journal of physical chemistry B*, Nov. 12, 1998, 102(46), p.9203-9314, 30 refs.

Ice physics, Cubic ice, Amorphous ice, Ice dielectrics, Molecular structure, Ice growth, Polarization (charge separation), Orientation, Molecular energy levels, Monomolecular films, Ice spectroscopy, Temperature effects

53-2708

**Permeability and volume changes in till due to cyclic freeze/thaw.**

Viklander, P., *Canadian geotechnical journal*, June 1998, 35(3), p.471-477, With French summary. 20 refs.

Frozen ground mechanics, Soil structure, Soil compaction, Microstructure, Volume, Permeability, Glacial till, Freeze thaw cycles, Freeze thaw tests

53-2709

**Pack ice convergence measurements by GPS-ARGOS ice beacons.**

Prinsenbergh, S.J., Fowler, G.A., Van der Baaren, A., *Cold regions science and technology*, Oct. 1998, 28(2), p.59-72, 2 refs.

Oceanography, Sea ice distribution, Ice surveys, Radio beacons, Spaceborne photography, Pack ice, Drift, Ice navigation, Accuracy, Performance, Statistical analysis, Canada—Labrador

53-2710

**Portable capacitance snow sounding instrument.**

Louge, M.Y., Foster, R.L., Jensen, N., Patterson, R., *Cold regions science and technology*, Oct. 1998, 28(2), p.73-81, 13 refs.

Snow physics, Snow density, Snow cover structure, Dielectric properties, Profiles, Sounding, Portable equipment, Probes, Design, Performance, Avalanche forecasting

53-2711

**Gibbs thermodynamic potential of sea ice.**

Feistel, R., Hagen, E., *Cold regions science and technology*, Oct. 1998, 28(2), p.83-142, 49 refs.

Oceanography, Sea ice, Sea water, Ice physics, Freezing points, Melting points, Thermodynamic properties, Salinity, Brines, Ice water interface, Enthalpy, Mathematical models

53-2712

**Environmental changes during the Late Glacial and Post-Glacial in the central Pyrenees (France): new charcoal analysis and archaeological data.**

Heinz, C., Barbaza, M., *Review of palaeobotany and palynology*, 1998, 104(1), p.1-17, 44 refs.

Paleobotany, Vegetation patterns, Revegetation, Carbon black, Paleoclimatology, France—Pyrenees

53-2713

**Initial research into traffic accidents in the cold region.**

Pei, Y.L., Ding, J.M., Meng, X.H., Luo, J.Y., Traffic Congestion and Traffic Safety in the 21st Century, Chicago, IL, June 8-11, 1997. Proceedings. Challenges, Innovations, and Opportunities. Edited by R.F. Benekohal, New York, American Society of Civil Engineers, 1997, p.389-395.

DLC HE336.C64T697 1997

Road icing, Highway planning, Safety, Accidents, Cost analysis, Statistical analysis, China—Heilongjiang Province, China—Liaoning Province

53-2714

**Field and laboratory investigation of the effect of cold in-place recycled asphalt on transverse cracking.**

Lauter, K.A., Ottawa, Ontario, Carleton University, 1998, 180p., National Library of Canada, Ottawa, Canadian theses MQ-27017, M.Eng. thesis. 48 refs.

Bitumens, Pavements, Thermal stresses, Cracking (fracturing), Paving, Cold weather construction, Cold weather tests, Highway planning, Road maintenance, Cost analysis, Canada

53-2715

**Bioremediation of PCB-contaminated soil: an arctic case study.**

Adamsson, T., Kingston, Ontario, Queen's University, 1998, 77p., National Library of Canada, Ottawa, Canadian theses MQ-28169, M.S. thesis. 39 refs.

Soil pollution, Waste disposal, Soil microbiology, Land reclamation, Nutrient cycle, Canada—Labrador—Saglek Bay

53-2716

**Subglacial conditions associated with the Laurentide, Lac La Biche ice stream.**

Wilson, P.J., Edmonton, University of Alberta, 1998, 235p., National Library of Canada, Ottawa, Canadian theses MQ-29000, M.S. thesis. Refs. p.154-165.

Glaciation, Glacial geology, Glacier flow, Basal sliding, Glacial hydrology, Subglacial drainage, Glacial lakes, Glacial deposits, Glacial till, Lacustrine deposits, Quaternary deposits, Soil formation, Soil dating, Geochronology, Paleoclimatology, Canada—Alberta—Lac La Biche

53-2717

**Use of propylene glycol in solution with water to prevent frozen evaporation pans during winter months.**

Lora, C.A., Arlington, University of Texas, 1998, 88p., University Microfilms order No.1390177, M.S. thesis. 21 refs.

Reservoirs, Water supply, Evaporation control, Evaporimeters, Antifreezes, Chemical ice prevention, United States—Texas—Fort Worth

53-2718

**Nitric acid adsorption on ice at environmental temperatures.**

Laird, S.K., Laramie, University of Wyoming, 1998, 84p., University Microfilms order No.9833338, Ph.D. thesis. Refs. passim.

Atmospheric composition, Air pollution, Scavenging, Ice surface, Ice vapor interface, Adsorption, Snow permeability, Vapor diffusion, Snow composition, Snow impurities

53-2719

**Spatial and temporal variations of basal conditions beneath glaciers and ice sheets inferred from radio echo-sounding measurements.**

Gades, A.M., Seattle, University of Washington, 1998, 192p., University Microfilms order No.9836169, Ph.D. thesis. Refs. p.147-158.

Glacier surveys, Mountain glaciers, Ice sheets, Glacial hydrology, Subglacial drainage, Glacier beds, Bottom topography, Glacier flow, Subglacial observations, Ice electrical properties, Ice dielectrics, Electromagnetic prospecting, Radio echo soundings, United States—Alaska—Black Rapids Glacier, Antarctica—Siple Coast

53-2720

**Nearshore ice formation and sediment transport in southern Lake Michigan.**

Kempema, E.W., Seattle, University of Washington, 1998, 152p., University Microfilms order No.9836195, Ph.D. thesis. Refs. p.146-152.

Lake ice, Fast ice, Bottom ice, Frazil ice, Ice erosion, Shore erosion, Ice rafting, Sediment transport, United States—Michigan, Lake

53-2721

**ALPTRAC: High Alpine Aerosol and Snow Chemistry.**

Puxbaum, H., ed, Wagenbach, D., ed, *Atmospheric environment*, Dec. 1998, 32(23), p.3923-4088, Refs. passim. ALPTRAC is a subproject of EUROTRAC (European Study on Transport and Chemical Transformation of Pollutants in the Atmosphere). For individual papers see 53-2722 through 53-2735.

Atmospheric circulation, Atmospheric composition, Air pollution, Aerosols, Cloud physics, Supercooled clouds, Cloud droplets, Scavenging, Snowfall, Snow composition, Snow impurities, Alps

53-2722

**Seasonal variation of SO<sub>2</sub>, HNO<sub>3</sub>, NH<sub>3</sub> and selected aerosol components at Sonnblick (3106 m a.s.l.).**

Kasper, A., Puxbaum, H., *Atmospheric environment*, Dec. 1998, 32(23), ALPTRAC: High Alpine Aerosol and Snow Chemistry. Edited by H. Puxbaum and D. Wagenbach, p.3925-3939, 31 refs.

Atmospheric circulation, Atmospheric composition, Air pollution, Aerosols, Cloud physics, Cloud droplets, Precipitation (meteorology), Scavenging, Snow composition, Snow impurities, Austria

53-2723

**On-line measurements of sulfur dioxide at the 3 km level over central Europe (Sonnblick Observatory, Austria) and statistical trajectory source analysis.**

Tscherwenka, W., Seibert, P., Kasper, A., Puxbaum, H., *Atmospheric environment*, Dec. 1998, 32(23), ALPTRAC: High Alpine Aerosol and Snow Chemistry. Edited by H. Puxbaum and D. Wagenbach, p.3941-3952, 32 refs.

Atmospheric circulation, Atmospheric composition, Air pollution, Air masses, Cloud physics, Statistical analysis, Austria

53-2724

**Transport of polluted boundary layer air from the Po Valley to high alpine sites.**

Seibert, P., et al, *Atmospheric environment*, Dec. 1998, 32(23), ALPTRAC: High Alpine Aerosol and Snow Chemistry. Edited by H. Puxbaum and D. Wagenbach, p.3953-3965, 19 refs.

Atmospheric circulation, Atmospheric composition, Atmospheric boundary layer, Aerosols, Air pollution, Scavenging, Snow composition, Snow impurities, Austria, Switzerland, Italy

53-2725

**Scavenging efficiency of lead and sulfate in supercooled clouds at Sonnblick, 3106 m a.s.l., Austria.**

Kasper, A., Puxbaum, H., Brantner, B., Paleczek, S., *Atmospheric environment*, Dec. 1998, 32(23), ALPTRAC: High Alpine Aerosol and Snow Chemistry. Edited by H. Puxbaum and D. Wagenbach, p.3967-3974, 33 refs.

Atmospheric circulation, Atmospheric composition, Air pollution, Aerosols, Supercooled clouds, Cloud physics, Cloud droplets, Scavenging, Austria

53-2726

**Scavenging of atmospheric constituents in mixed phase clouds at the high-alpine site Jungfraujoch. Part I: basic concept and aerosol scavenging by clouds.**

Baltensperger, U., Schwikowski, M., Jost, D.T., Nyeki, S., Gäggeler, H.W., Poulida, O., *Atmospheric environment*, Dec. 1998, 32(23), ALPTRAC: High Alpine Aerosol and Snow Chemistry. Edited by H. Puxbaum and D. Wagenbach, p.3975-3983, 55 refs.

Atmospheric circulation, Atmospheric composition, Air pollution, Aerosols, Cloud physics, Condensation nuclei, Cloud droplets, Scavenging, Snow composition, Snow impurities, Switzerland

53-2727

**Scavenging of atmospheric constituents in mixed phase clouds at the high-alpine site Jungfraujoch. Part II: influence of riming on the scavenging of particulate and gaseous chemical species.**

Poulida, O., Schwikowski, M., Baltensperger, U., Staehelin, J., Gäggeler, H.W., *Atmospheric environment*, Dec. 1998, 32(23), ALPTRAC: High Alpine Aerosol and Snow Chemistry. Edited by H. Puxbaum and D. Wagenbach, p.3985-4000, 23 refs.

Atmospheric circulation, Atmospheric composition, Air pollution, Aerosols, Supercooled clouds, Cloud physics, Cloud droplets, Snow crystal nuclei, Snow crystal growth, Snowfall, Scavenging, Snow composition, Snow impurities, Switzerland

53-2728

**Scavenging of atmospheric constituents in mixed phase clouds at the high-alpine site Jungfraujoch. Part III: quantification of the removal of chemical species by precipitating snow.**

Schwikowski, M., Baltensperger, U., Gäggeler, H.W., Poulida, O., *Atmospheric environment*, Dec. 1998, 32(23), ALPTRAC: High Alpine Aerosol and Snow Chemistry. Edited by H. Puxbaum and D. Wagenbach, p.4001-4010, 23 refs.

Atmospheric circulation, Atmospheric composition, Air pollution, Aerosols, Supercooled clouds, Cloud physics, Cloud droplets, Snow crystal nuclei, Snow crystal growth, Snowfall, Scavenging, Snow composition, Snow impurities, Switzerland

53-2729

**Relationships of major ions in snow fall and rime at Sonnblick Observatory (SBO, 3106 m) and implications for scavenging processes in mixed clouds.**

Puxbaum, H., Tscherwenka, W., *Atmospheric environment*, Dec. 1998, 32(23), ALPTRAC: High Alpine Aerosol and Snow Chemistry. Edited by H. Puxbaum and D. Wagenbach, p.4011-4022, 34 refs.

Atmospheric circulation, Atmospheric composition, Air pollution, Supercooled clouds, Cloud physics, Cloud droplets, Ice nuclei, Snow crystal nuclei, Snow crystal growth, Snowfall, Scavenging, Snow composition, Snow impurities, Austria

53-2730

**Automatic recorder for air/firn transfer studies of chemical aerosol species at remote glacier sites.**

Preunkert, S., Wagenbach, D., *Atmospheric environment*, Dec. 1998, 32(23), ALPTRAC: High Alpine Aerosol and Snow Chemistry. Edited by H. Puxbaum and D. Wagenbach, p.4021-4030, 41 refs.

Atmospheric circulation, Atmospheric composition, Air pollution, Aerosols, Snow air interface, Scavenging, Snow composition, Snow impurities, Firm, Mountain glaciers, Ice cores, Core samplers, Ice composition, Switzerland

53-2731

**Concentration of ionic compounds in the winter-time deposition: results and trends from the Austrian Alps over 11 years (1983-1993).**

Winiwarter, W., et al, *Atmospheric environment*, Dec. 1998, 32(23), ALPTRAC: High Alpine Aerosol and Snow Chemistry. Edited by H. Puxbaum and D. Wagenbach, p.4031-4040, 31 refs.

Atmospheric circulation, Atmospheric composition, Air pollution, Scavenging, Snow composition, Snow impurities, Mountain glaciers, Snow ice interface, Snow samplers, Ion density (concentration), Austria

53-2732

**Seasonal development of ion concentration in a high alpine snow pack.**

Kuhn, M., Haslhofer, J., Nickus, U., Schellander, H., *Atmospheric environment*, Dec. 1998, 32(23), ALPTRAC: High Alpine Aerosol and Snow Chemistry. Edited by H. Puxbaum and D. Wagenbach, p.4041-4051, 21 refs.

Atmospheric circulation, Atmospheric composition, Air pollution, Scavenging, Snowfall, Snow composition, Snow impurities, Snow samplers, Ion density (concentration), Austria

53-2733

**Major element chemistry in alpine snow along a north-south transect in the eastern Alps.**

Nickus, U., Kuhn, M., Novo, A., Rossi, G.C., *Atmospheric environment*, Dec. 1998, 32(23), ALPTRAC: High Alpine Aerosol and Snow Chemistry. Edited by H. Puxbaum and D. Wagenbach, p.4053-4060, 22 refs.

Atmospheric circulation, Atmospheric composition, Air pollution, Scavenging, Snowfall, Snow composition, Snow impurities, Snow samplers, Ion density (concentration), Alps

53-2734

**Four-year record (1990-94) of snow chemistry at two glacier fields in the Italian Alps (Careser, 3090 m; Colle Vincent, 4086 m).**

Novo, A., Rossi, G.C., *Atmospheric environment*, Dec. 1998, 32(23), ALPTRAC: High Alpine Aerosol and Snow Chemistry. Edited by H. Puxbaum and D. Wagenbach, p.4061-4073, 36 refs.

Atmospheric circulation, Atmospheric composition, Air pollution, Scavenging, Snowfall, Snow composition, Snow impurities, Mountain glaciers, Snow ice interface, Snow samplers, Italy—Alps

53-2735

**Stable isotope analysis for characterization of pollutants at high elevation alpine sites.**

Pichlmayer, F., Schöner, W., Seibert, P., Stichler, W., Wagenbach, D., *Atmospheric environment*, Dec. 1998, 32(23), ALPTRAC: High Alpine Aerosol and Snow Chemistry. Edited by H. Puxbaum and D. Wagenbach, p.4075-4085, 35 refs.

Atmospheric circulation, Atmospheric composition, Air pollution, Aerosols, Scavenging, Snow composition, Snow impurities, Snow stratigraphy, Snow samplers, Isotope analysis, Austria

53-2736

**Into the second century of worldwide glacier monitoring—prospects and strategies.**

Haerberli, W., ed, Hoelzle, M., ed, Suter, S., ed, *Studies and reports in hydrology*, No.56, Paris, UNESCO, 1998, 227p., Refs. passim. For individual papers see 53-2737 through 53-2749.

DLC GB2403.2158 1998

Glacier surveys, Glacier oscillation, Glacier mass balance, Glacial meteorology, Climatic changes, Mapping

53-2737

**Periodical variations of glaciers. [Les variations périodiques des glaciers]**

Forel, F.A., Into the second century of worldwide glacier monitoring—prospects and strategies. *Studies and reports in hydrology*, No.56. Edited by W. Haerberli, M. Hoelzle, and S. Suter, Paris, UNESCO, 1998, p.11-33, In French. Footnotes passim. Reprinted from *Archives des sciences physiques et naturelles*, Geneva, 1895, Vol.34, p.209-229.

DLC GB2403.2158 1998

Glacier surveys, Glacier oscillation

53-2738

**Historical evolution and operational aspects of worldwide glacier monitoring.**

Haerberli, W., Into the second century of worldwide glacier monitoring—prospects and strategies. *Studies and reports in hydrology*, No.56. Edited by W. Haerberli, M. Hoelzle, and S. Suter, Paris, UNESCO, 1998, p.35-51, 114 refs.

DLC GB2403.2158 1998

Glacier surveys, Glacier oscillation, Glacier mass balance, Glacier heat balance, Glacial meteorology, Paleoclimatology, Climatic changes, Global warming

53-2739

**Data management and application.**

Hoelzle, M., Trindler, M., Into the second century of worldwide glacier monitoring—prospects and strategies. *Studies and reports in hydrology*, No.56. Edited by W. Haerberli, M. Hoelzle, and S. Suter, Paris, UNESCO, 1998, p.53-72, 20 refs.

DLC GB2403.2158 1998

Glacier surveys, Glacier oscillation, Glacier mass balance, Data processing, Data transmission, Computer programs

53-2740

**Statistical analysis of glacier mass balance data.**

Reynaud, L., Dobrovolskiĭ, S.G., Into the second century of worldwide glacier monitoring—prospects and strategies. *Studies and reports in hydrology*, No.56. Edited by W. Haerberli, M. Hoelzle, and S. Suter, Paris, UNESCO, 1998, p.73-83, 35 refs.

DLC GB2403.2158 1998

Glacier surveys, Glacier oscillation, Glacier mass balance, Statistical analysis

53-2741

**Modelling glacier fluctuations.**

Oerlemans, J., Into the second century of worldwide glacier monitoring—prospects and strategies. *Studies and reports in hydrology*, No.56. Edited by W. Haerberli, M. Hoelzle, and S. Suter, Paris, UNESCO, 1998, p.85-96, 49 refs.

DLC GB2403.2158 1998

Glacier surveys, Glacier oscillation, Glacier mass balance, Glacier flow, Glacial meteorology, Computerized simulation

53-2742

**Use of remote-sensing techniques.**

Williams, R.S., Jr., Hall, D.K., Into the second century of worldwide glacier monitoring—prospects and strategies. *Studies and reports in hydrology*, No.56. Edited by W. Haerberli, M. Hoelzle, and S. Suter, Paris, UNESCO, 1998, p.97-111, 81 refs.

DLC GB2403.2158 1998

Glacier surveys, Glacier oscillation, Glacier mass balance, Aerial surveys, Topographic surveys, Spaceborne photography, Radio echo soundings, Mapping

53-2743

**Glaciers in North America.**

Ommanney, C.S.L., Demuth, M., Meier, M.F., Into the second century of worldwide glacier monitoring—prospects and strategies. *Studies and reports in hydrology*, No.56. Edited by W. Haerberli, M. Hoelzle, and S. Suter, Paris, UNESCO, 1998, p.113-123, 98 refs.

DLC GB2403.2158 1998

Glacier surveys, Glacier oscillation, Glacier mass balance, Research projects, Data processing, Mapping, Canada

53-2744

**Glaciers in South America.**

Casassa, G., Espizua, L.E., Francou, B., Ribstein, P., Ames, A., Alean, J., Into the second century of worldwide glacier monitoring—prospects and strategies. *Studies and reports in hydrology*, No.56. Edited by W. Haerberli, M. Hoelzle, and S. Suter, Paris, UNESCO, 1998, p.125-146, 126 refs.

DLC GB2403.2158 1998

Glacier surveys, Glacier oscillation, Glacier mass balance, Glacial hydrology, Glacial meteorology, Snow line, Meltwater, Runoff, Lake bursts, Floods, Accidents, Andes

53-2745

**Glaciers in Europe.**

Hagen, J.O., Zanon, G., Martínez de Pisón, E., Into the second century of worldwide glacier monitoring—prospects and strategies. *Studies and reports in hydrology*, No.56. Edited by W. Haerberli, M. Hoelzle, and S. Suter, Paris, UNESCO, 1998, p.147-166, 89 refs.

DLC GB2403.2158 1998

Glacier surveys, Glacier oscillation, Glacier mass balance, Glacial meteorology, Climatic changes

53-2746

**Glaciers in Africa and New Zealand.**

Hastenrath, S., Chinn, T.J.H., Into the second century of worldwide glacier monitoring—prospects and strategies. *Studies and reports in hydrology*, No.56. Edited by W. Haerberli, M. Hoelzle, and S. Suter, Paris, UNESCO, 1998, p.167-175, 23 refs.

DLC GB2403.2158 1998

Glacier surveys, Glacier oscillation, Mass balance, Climatic changes, Africa, New Zealand

53-2747

**Glaciers in Asia.**

Tsvetkov, D.G., Osipova, G.B., Xie, Z.C., Wang, Z.T., Ageta, Y., Baast, P., Into the second century of worldwide glacier monitoring—prospects and strategies. *Studies and reports in hydrology*, No.56. Edited by W. Haerberli, M. Hoelzle, and S. Suter, Paris, UNESCO, 1998, p.177-196, 80 refs.

DLC GB2403.2158 1998

Glacier surveys, Glacier oscillation, Mass balance, Research projects, Topographic maps, Data processing

53-2748

**Local glaciers surrounding the continental ice sheets.**

Weidick, A., Morris, E., Into the second century of worldwide glacier monitoring—prospects and strategies. *Studies and reports in hydrology*, No.56. Edited by W. Haerberli, M. Hoelzle, and S. Suter, Paris, UNESCO, 1998, p.197-207, 41 refs.

DLC GB2403.2158 1998

Glacier surveys, Glacier oscillation, Mass balance, Research projects, Mapping, Greenland, Antarctica

53-2749

**Monitoring ice sheets, ice caps and large glaciers.**

Meier, M.F., Into the second century of worldwide glacier monitoring—prospects and strategies. *Studies and reports in hydrology*, No.56. Edited by W. Haerberli, M. Hoelzle, and S. Suter, Paris, UNESCO, 1998, p.209-214, 31 refs.

DLC GB2403.2158 1998

Glacier surveys, Glacier oscillation, Mass balance, Ice sheets, Calving, Research projects, Greenland, Antarctica

53-2750

**Use of geosynthetics to mitigate frost heave in soils.**

Henry, K.S., MP 5306, Seattle, University of Washington, 1998, 333p., University Microfilms order No.DA99-16667, Ph.D. thesis. Refs. p.149-156. Geotextiles, Composite materials, Capillarity, Frost heave, Pavements, Freezing front, Water table, Soil water, Soil freezing, Heat flux, Frost penetration, Thermodynamics, Soil stabilization, Frost protection A capillary barrier is a layer of coarse, porous material placed in soil above the water table to prevent unsaturated water flow across the layer. Capillary barriers reduce frost heave in soils and pavement systems when they are located between the water table and the freezing front. Due their large pore sizes, geotextiles and geocomposites are capillary barrier candidates. The objectives of this research were to determine (1) the range of soil and thermal conditions under which geosynthetic capillary barriers can reduce frost heave, and (2) geosynthetic properties required for capillary barrier performance. Based on estimates of heat flux in the field and freezing test results, capillary barriers should be beneficial in most cold regions. The frost heave of soil specimens with and without geosynthetic capillary barriers was examined through freezing tests of frost-susceptible soils. Theory, capillary rise, and water retention tests showed that moist geotextiles that contain soil fines take on and transmit water more easily than geotextiles as received from the manufacturer; this was verified by freezing tests. Moist geocomposites containing soil fines effectively cut off frost heave in highly frost-susceptible soil when the soil above the capillary barrier was 75% saturated or less, but they did not work when the soil above them was more than 80% saturated. The geocomposites consisted of combinations of two different geotextiles and two different nets, and the results were not product dependent. Filtration tests verified that the geotextiles used as filters on the geocomposite performed adequately as filters in a frost-susceptible soil.

53-2751

**Papers.**

International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997, Budd, W.F., ed, *Annals of glaciology*, 1998, Vol.27, 728p., Refs. passim. For individual papers see 53-2752 through 53-2866. Polar atmospheres, Marine atmospheres, Atmospheric circulation, Atmospheric composition, Ice sheets, Ice shelves, Glacier surveys, Glacier oscillation, Glacier thickness, Glacier flow, Glacier mass balance, Glacial meteorology, Ice cores, Ice composition, Air ice water interaction, Sea ice distribution, Ice models, Climatic changes, Global warming, Paleoclimatology, Antarctica

53-2752

**Identifying areas of low-profile ice sheet and outcrop damming in the antarctic ice sheet by ERS-1 satellite altimetry.**

Vaughan, D.G., Bamber, J.L., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.1-6, 31 refs. Ice sheets, Glacier surveys, Glacier thickness, Glacier beds, Glacier flow, Glacier surfaces, Spaceborne photography, Topographic surveys, Image processing, Computerized simulation, Antarctica

53-2753

**Elevation changes on the East Antarctic ice sheet, 1978-93, from satellite radar altimetry: a preliminary assessment.**

Lingle, C.S., Covey, D.N., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.7-18, 34 refs. Ice sheets, Glacier surveys, Glacier thickness, Glacier oscillation, Glacier surfaces, Spaceborne photography, Height finding, Radio echo soundings, Topographic surveys, Statistical analysis, Antarctica—East Antarctica

53-2754

**Comparison of ERS satellite radar altimeter heights with GPS-derived heights on the Amery Ice Shelf, East Antarctica.**

Phillips, H.A., Allison, I., Coleman, R., Hyland, G., Morgan, P.J., Young, N.W., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.19-24, 16 refs. Ice shelves, Glacier surveys, Glacier thickness, Glacier surfaces, Spaceborne photography, Height finding, Topographic surveys, Image processing, Statistical analysis, Antarctica—Amery Ice Shelf

53-2755

**Radar interferometry detection of hinge-line migration on Rutford Ice Stream and Carlson Inlet, Antarctica.**

Rignot, E., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.25-32, 27 refs.

Glacier surveys, Ice shelves, Glacier tongues, Glacier flow, Glacier thickness, Glacier mass balance, Glacier oscillation, Ice water interface, Tides, Spaceborne photography, Radio echo soundings, Antarctica—Rutford Ice Stream, Antarctica—Carlson Inlet

53-2756

**Analysis of coastal change in Marie Byrd Land and Ellsworth Land, West Antarctica, using Landsat imagery.**

Ferrigno, J.G., Williams, R.S., Jr., Rosanova, C.E., Lucchitta, B.K., Swinbank, C., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.33-40, 23 refs.

Glacier surveys, Ice shelves, Glacier tongues, Glacier oscillation, Glacier thickness, Glacier flow, Calving, Spaceborne photography, Antarctica—Ellsworth Land, Antarctica—Marie Byrd Land

53-2757

**Retreat of northern margins of George VI and Wilkins Ice Shelves, Antarctic Peninsula.**

Lucchitta, B.K., Rosanova, C.E., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.41-46, 31 refs.

Glacier surveys, Ice shelves, Glacier oscillation, Glacier ablation, Calving, Ice breakup, Global warming, Spaceborne photography, Antarctica—George VI Ice Shelf, Antarctica—Wilkins Ice Shelf

53-2758

**Velocities of Thwaites Glacier and smaller glaciers along the Marie Byrd Land coast, West Antarctica.**

Rosanova, C.E., Lucchitta, B.K., Ferrigno, J.G., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.47-53, 28 refs.

Glacier surveys, Glacier tongues, Ice shelves, Glacier flow, Glacier oscillation, Spaceborne photography, Antarctica—Thwaites Glacier

53-2759

**Comparison between glacier ice velocities inferred from GPS and sequential satellite images.**

Frezzotti, M., Capra, A., Vittuari, L., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.54-60, 23 refs.

Glacier surveys, Glacier oscillation, Glacier mass balance, Glacier flow, Geodetic surveys, Spaceborne photography, Image processing, Antarctica—Terra Nova Bay

53-2760

**Detailed topography of Roosevelt Island and Siple Dome, West Antarctica.**

Scambos, T.A., Nereson, N.A., Fahnestock, M.A., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.61-67, 22 refs.

Glacier surveys, Ice sheets, Ice shelves, Glacier flow, Glacier oscillation, Glacier mass balance, Glacier thickness, Glacier surfaces, Topographic surveys, Spaceborne photography, Image processing, Antarctica—Roosevelt Island, Antarctica—Siple Coast

53-2761

**Near-coastal iceberg distributions in East Antarctica, 50-145°E.**

Young, N.W., Turner, D., Hyland, G., Williams, R.N., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.68-74, 16 refs.

Calving, Icebergs, Ice detection, Drift, Synthetic aperture radar, Radar tracking, Spaceborne photography, Image processing, Statistical analysis, Antarctica—East Antarctica

53-2762

**Effects of ocean warming on melting and ocean circulation under the Amery Ice Shelf, East Antarctica.**

Williams, M.J.M., Warner, R.C., Budd, W.F., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.75-80, 15 refs.

Ice shelves, Ice bottom surface, Ice water interface, Glacier mass balance, Glacier melting, Ice melting, Ocean currents, Global warming, Ice models, Computerized simulation, Antarctica—Amery Ice Shelf

53-2763

**Antarctic non-stationary signals derived from Seasat-ERS-1 altimetry comparison.**

Rémy, F., Legrésy, B., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.81-85, 23 refs.

Glacier surveys, Ice sheets, Glacier mass balance, Glacier thickness, Glacier oscillation, Glacier surfaces, Height finding, Topographic surveys, Radio echo soundings, Spaceborne photography, Image processing, Antarctica—East Antarctica

53-2764

**Climatically induced retreat and collapse of northern Larsen Ice Shelf, Antarctic Peninsula.**

Rott, H., Rack, W., Nagler, T., Skvarca, P., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.86-92, 12 refs.

Glacier surveys, Ice shelves, Glacier oscillation, Glacier mass balance, Glacial meteorology, Glacier melting, Ice breakup, Global warming, Synthetic aperture radar, Spaceborne photography, Image processing, Antarctica—Larsen Ice Shelf

53-2765

**Continued northward expansion of the Ross ice Shelf, Antarctica.**

Keys, H.J.R., Jacobs, S.S., Brigham, L.W., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.93-98, 28 refs.

Glacier surveys, Ice shelves, Glacier oscillation, Glacier flow, Glacier mass balance, Glacier thickness, Calving, Antarctica—Ross Ice Shelf

53-2766

**Circulation beneath the Filchner Ice Shelf, Antarctica, and its sensitivity to changes in the oceanic environment: a case study.**

Grosfeld, K., Gerdes, R., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.99-104, 26 refs.

Ice shelves, Ice bottom surface, Ice water interface, Glacier mass balance, Glacier melting, Ice melting, Sea water freezing, Ocean currents, Sea water, Salinity, Global warming, Ice models, Antarctica—Filchner Ice Shelf

53-2767

**Glaciological studies on the King George Island ice cap, South Shetland Islands, Antarctica.**

Wen, J.H., Kang, J.C., Han, J.K., Xie, Z.C., Liu, L.B., Wang, D.L., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.105-109, 17 refs.

Glacier surveys, Glacial meteorology, Glacier mass balance, Glacier ice, Firm stratification, Ice structure, Ice temperature, Ice composition, Antarctica—King George Island

53-2768

**Holocene deglaciation and climate history of the northern Antarctic Peninsula region: a discussion of correlations between the Southern and Northern Hemispheres.**

Hjort, C., Björck, S., Ingólfsson, Ó., Möller, P., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.110-112, 24 refs.

Glaciation, Glacial geology, Glacial deposits, Glacial meteorology, Glacier melting, Marine geology, Marine deposits, Quaternary deposits, Soil dating, Geochronology, Global change, Paleoclimatology, Antarctica—Antarctic Peninsula

53-2769

**Surface lowering of the ice ramp at Rothera Point, Antarctic Peninsula, in response to regional climate change.**

Smith, A.M., Vaughan, D.G., Doake, C.S.M., Johnson, A.C., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.113-118, 22 refs.

Glacier surveys, Glacier oscillation, Glacier mass balance, Glacier thickness, Glacier ablation, Glacier surfaces, Height finding, Topographic surveys, Climatic changes, Antarctica—Rothera Point

53-2770

**Recent fluctuations of the Dry Valleys glaciers, McMurdo Sound, Antarctica.**

Chinn, T.J., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.119-124, 22 refs.

Glacier surveys, Glacier oscillation, Glacier thickness, Glacier flow, Antarctica—McMurdo Dry Valleys

53-2771

**First point measurements of ice-sheet thickness change in Antarctica.**

Hamilton, G.S., Whillans, I.M., Morgan, P.J., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.125-129, 24 refs.

Glacier surveys, Ice sheets, Glacier oscillation, Glacier thickness, Glacier flow, Glacier mass balance, Geodetic surveys, Antarctica—Marie Byrd Land

53-2772

**Mass balance of the antarctic ice sheet at Patriot Hills.**

Casassa, G., Brecher, H.H., Cárdenas, C., Rivera, A., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.130-134, 17 refs.

Glacier surveys, Ice sheets, Glacier thickness, Glacier mass balance, Radio echo soundings, Height finding, Antarctica—Patriot Hills

53-2773

**Variations in shear deformation rate with depth at Dome Summit South, Law Dome, East Antarctica.**

Morgan, V., Van Ommen, T.D., Elcheikh, A., Li, J., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.135-139, 16 refs.

Ice sheets, Glacier thickness, Glacier mass balance, Glacier flow, Glacier friction, Glacier ice, Ice structure, Ice deformation, Ice creep, Ice cores, Boreholes, Antarctica—Law Dome

53-2774

**Delineation of a catchment boundary using velocity and elevation measurements.**

Price, S.F., Whillans, I.M., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.140-144, 13 refs.

Glacier surveys, Ice sheets, Glacier flow, Glacier mass balance, Glacier oscillation, Glacier thickness, Height finding, Topographic surveys, Geodetic surveys, Statistical analysis, Antarctica—Marie Byrd Land

53-2775

**Origin and longevity of flow stripes on antarctic ice streams.**

Gudmundsson, G.H., Raymond, C.F., Bindshadler, R., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.145-152, 21 refs.

Ice sheets, Glacier flow, Glacier thickness, Glacier beds, Glacier friction, Glacier surfaces, Topographic features, Mathematical models, Antarctica—West Antarctica

53-2776

**Modelling the antarctic and Northern Hemisphere ice-sheet changes with global climate through the glacial cycle.**

Budd, W.F., Coutts, B., Warner, R.C., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.153-160, 39 refs.

Glaciation, Ice sheets, Glacier oscillation, Glacier heat balance, Glacier mass balance, Glacial meteorology, Radiation balance, Global change, Paleoclimatology, Ice age theory, Ice models, Computerized simulation

53-2777

**Modelling the long-term response of the antarctic ice sheet to global warming.**

Warner, R.C., Budd, W.F., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.161-168, 32 refs.

Ice sheets, Glacial meteorology, Glacier oscillation, Glacier melting, Global warming, Ice models, Computerized simulation, Antarctica

53-2778

**Simulations of the Northern Hemisphere through the last glacial-interglacial cycle with a vertically integrated and a three-dimensional thermomechanical ice-sheet model coupled to a climate model.**

Calov, R., Marsiat, I., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.169-176, 15 refs.

Ice sheets, Glaciation, Glacier oscillation, Glacial meteorology, Glacier mass balance, Glacier heat balance, Paleoclimatology, Global change, Ice age theory, Ice models, Mathematical models, Computerized simulation

53-2779

**Surface meltstreams on the Amery Ice Shelf, East Antarctica.**

Phillips, H.A., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.177-181, 11 refs.

Ice shelves, Glacier surfaces, Glacial hydrology, Glacier melting, Meltwater, Stream flow, Surface drainage, Antarctica—Amery Ice Shelf

53-2780

**Comparison of ice-shelf creep flow simulations with ice-front motion of Filchner-Ronne Ice Shelf, Antarctica, detected by SAR interferometry.**

Hulbe, C.L., Rignot, E., MacAyeal, D.R., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.182-186, 10 refs.

Ice shelves, Glacier surveys, Glacier oscillation, Glacier flow, Glacier friction, Calving, Ice breakup, Ice creep, Ice deformation, Synthetic aperture radar, Spaceborne photography, Image processing, Computerized simulation, Antarctica—Filchner Ice Shelf, Antarctica—Ronne Ice Shelf

53-2781

**Relative magnitudes of shear and longitudinal strain rates in the inland antarctic ice sheet, and response to increasing accumulation.**

Lingle, C.S., Troshina, E.N., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.187-193, 26 refs.

Ice sheets, Glacier oscillation, Glacier flow, Glacier friction, Glacier alimentation, Glacier thickness, Ice creep, Ice deformation, Computerized simulation, Antarctica

53-2782

**Simulation of the influence of ice rheology on velocity profiles and ice-sheet mass balance.**

Wang, W.L., Warner, R.C., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.194-200, 32 refs.

Ice sheets, Glacier oscillation, Glacier flow, Glacier friction, Glacier thickness, Glacier mass balance, Ice creep, Ice deformation, Ice models, Computerized simulation, Antarctica

53-2783

**Simulation of the antarctic ice sheet with a three-dimensional polythermal ice-sheet model, in support of the EPICA project.**

Calov, R., Savvin, A., Greve, R., Hansen, I., Hutter, K., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.201-206, 23 refs.

Ice sheets, Glacier oscillation, Glacier thickness, Glacier flow, Glacier friction, Glacier heat balance, Glacial meteorology, Ice cores, Ice temperature, Ice dating, Ice models, Paleoclimatology, Computerized simulation, Antarctica

53-2784

**Sensitivity of the divide position at Siple Dome, West Antarctica, to boundary forcing.**

Nereson, N.A., Hindmarsh, R.C.A., Raymond, C.F., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.207-214, 22 refs.

Ice sheets, Glacier oscillation, Glacier flow, Glacier friction, Glacier mass balance, Glacier thickness, Glacier surfaces, Glacial meteorology, Paleoclimatology, Ice models, Mathematical models, Antarctica—Siple Coast

53-2785

**70 years of northern Victoria Land (Antarctica) accumulation rate.**

Maggi, V., et al, *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.215-219, 26 refs.

Ice sheets, Glacier oscillation, Glacier mass balance, Glacial meteorology, Glacier alimentation, Ice cores, Core samplers, Ice composition, Ice dating, Climatic changes, Antarctica—Hercules Névé

53-2786

**Antarctic precipitation and its contribution to the global sea-level budget.**

Bromwich, D.H., Cullather, R.I., Van Woert, M.L., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.220-226, 39 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Precipitation (meteorology), Evaporation, Water retention, Water balance, Hydrologic cycle, Sea level, Weather forecasting, Statistical analysis, Antarctica

53-2787

**Variability of accumulation rate in the catchments of Ice Streams B, C, D and E, Antarctica.**

Venteris, E.R., Whillans, I.M., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.227-230, 22 refs.

Ice sheets, Glacier oscillation, Glacier thickness, Glacier alimentation, Glacier mass balance, Glacier flow, Snow accumulation, Ice cores, Core samplers, Statistical analysis, Antarctica—Marie Byrd Land

53-2788

**Large spatial variation in accumulation rate in Jutulstraumen ice stream, Dronning Maud Land, Antarctica.**

Melvold, K., Hagen, J.O., Pinglot, J.F., Gundestrup, N., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.231-238, 36 refs.

Ice sheets, Glacier surveys, Glacier oscillation, Glacier thickness, Glacier mass balance, Glacier flow, Glacier alimentation, Snow accumulation, Ice cores, Core samplers, Statistical analysis, Antarctica—Queen Maud Land

53-2789

**Firnification and the effects of wind-packing on antarctic snow.**

Craven, M., Allison, I., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.239-245, 17 refs. Snow erosion, Wind erosion, Wind pressure, Snow compression, Snow density, Snow ice interface, Firn stratification, Glacier alimentation, Glacier ice, Ice density, Statistical analysis, Antarctica

53-2790

**Model estimates of antarctic accumulation rates and their relationship to temperature changes.**

Smith, I.N., Budd, W.F., Reid, P., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.246-250, 22 refs.

Ice sheets, Glacier oscillation, Glacier alimentation, Glacier mass balance, Snow accumulation, Atmospheric circulation, Surface temperature, Air ice water interaction, Global warming, Sea level, Computerized simulation, Antarctica

53-2791

**Contribution of snowdrift sublimation to the surface mass balance of Antarctica.**

Bintanja, R., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.251-259, 36 refs.

Ice sheets, Glacial meteorology, Glacier oscillation, Glacier mass balance, Snowdrifts, Snow air interface, Snow evaporation, Statistical analysis, Antarctica—East Antarctica

53-2792

**Very high-resolution seismic definition of glacial and postglacial sediment bodies in the continental shelves of the northern Trinity Peninsula region, Antarctica.**

Canals, M., Estrada, F., Urgeles, R., GEBRAP 96/97 Team, *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.260-264, 12 refs.

Seismic surveys, Marine geology, Marine deposits, Bottom sediment, Bottom topography, Glacial geology, Glacial deposits, Geochronology, Paleoclimatology, Antarctica—Trinity Peninsula

53-2793

**Internal structure and seismic facies of the deep-water sediment drifts off northern Graham Land, Antarctic Peninsula: results from a very high-resolution survey.**

Canals, M., Urgeles, R., Estrada, F., GEBRAP 96/97 Team, *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.265-267, 9 refs.

Seismic surveys, Marine geology, Marine deposits, Bottom sediment, Bottom topography, Sediment transport, Antarctica—Graham Land

53-2794

**Geochemical study of marine sediments from the Mac. Robertson shelf, East Antarctica: initial results and palaeoenvironmental implications.**

Sedwick, P.N., Harris, P.T., Robertson, L.G., McMurtry, G.M., Cremer, M.D., Robinson, P., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.268-274, 25 refs.

Marine geology, Marine deposits, Bottom sediment, Sediment transport, Drill core analysis, Geochemistry, Soil dating, Paleocology, Paleoclimatology, Antarctica—Mac. Robertson Land

53-2795

**Late Quaternary paleoenvironment of the Ross Sea continental shelf, Antarctica.**

Nishimura, A., Nakasone, T., Hiramatsu, C., Tanahashi, M., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.275-280, 15 refs.

Marine geology, Marine deposits, Bottom sediment, Glacial deposits, Glacial till, Quaternary deposits, Drill core analysis, Soil dating, Geochronology, Paleoclimatology, Antarctica—Ross Sea

53-2796

**New depositional model for ice shelves, based upon sediment cores from the Ross Sea and the Mac. Robertson shelf, Antarctica.**

Domack, E.W., Harris, P.T., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.281-284, 22 refs.

Glaciation, Ice sheets, Ice shelves, Glacier oscillation, Glacial deposits, Glacial till, Ice rafting, Marine geology, Marine deposits, Bottom sediment, Drill core analysis, Soil dating, Paleoclimatology, Antarctica—Ross Sea, Antarctica—Mac. Robertson Land

53-2797

**Identification and correlation of distal tephra layers in deep-sea sediment cores, Scotia Sea, Antarctica.**

Moreton, S.G., Smellie, J.L., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.285-289, 18 refs.

Marine geology, Marine deposits, Bottom sediment, Quaternary deposits, Volcanic ash, Geochemistry, Drill core analysis, Soil dating, Stratigraphy, Scotia Sea

53-2798

**Provenance, geochemistry and grain-sizes of glaciogenic sediments, including the Sirius Group, and late Cenozoic glacial history of the southern Prince Albert Mountains, Victoria Land, Antarctica.**

Passchier, S., Verbers, A.L.L.M., Van der Wateren, F.M., Vermeulen, F.J.M., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.290-296, 29 refs.

Nunataks, Glaciation, Glacial geology, Glacial deposits, Glacial till, Moraines, Geochemistry, Soil dating, Stratigraphy, Geochronology, Paleoclimatology, Antarctica—Prince Albert Mountains

53-2799

**Fluctuations of the East Antarctic ice-sheet margin since the last glaciation from the stratigraphy of raised beach deposits along the Soya Coast.**

Miura, H., Moriwaki, K., Maemoku, H., Hirakawa, K., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.297-301, 14 refs.

Glaciation, Ice sheets, Glacier oscillation, Marine geology, Marine deposits, Beaches, Quaternary deposits, Fossils, Stratigraphy, Sea level, Paleoclimatology, Antarctica—Lützw-Holm Bay

53-2800

**Sea-ice extent in the southern ocean during the Last Glacial Maximum: another approach to the problem.**

Burckle, L.H., Mortlock, R., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.302-304, 15 refs.

Sea ice distribution, Ice conditions, Marine deposits, Bottom sediment, Fossils, Drill core analysis, Paleoclimatology

53-2801

**Changes in climate, ocean and ice-sheet conditions in the Ross embayment, Antarctica, at 6 ka.**

Steig, E.J., Hart, C.P., White, J.W.C., Cunningham, W.L., Davis, M.D., Saltzman, E.S., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.305-310, 62 refs.

Glaciation, Ice sheets, Ice shelves, Glacier oscillation, Glacial meteorology, Marine deposits, Bottom sediment, Fossils, Soil dating, Ice cores, Ice composition, Ice dating, Paleoclimatology, Antarctica—Ross Sea

53-2802

**Effect of meltwater input from the antarctic ice sheet on the thermohaline circulation.**

Mikolajewicz, U., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.311-315, 24 refs.

Ice sheets, Glacial meteorology, Glacial hydrology, Glacier melting, Meltwater, Air ice water interaction, Ocean currents, Water temperature, Salinity, Atmospheric circulation, Ice models, Ice age theory, Global change, Paleoclimatology, Antarctica

53-2803

**Freezing at the grounding line in East Antarctica: possible implications for sediment export efficiency.**

Souchez, R., Khazendar, A., Ronveaux, D., Tison, J.L., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.316-320, 20 refs.

Ice sheets, Ice shelves, Glacier oscillation, Glacier mass balance, Ice bottom surface, Glacier melting, Ice water interface, Sea water freezing, Ice rafting, Sediment transport, Paleoclimatology, Antarctica—Terra Nova Bay

53-2804

**Glacial isostasy and the crustal structure of Antarctica.**

Zweck, C., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.321-326, 20 refs.

Ice sheets, Glaciation, Glacier oscillation, Glacial geology, Earth crust, Tectonics, Isostasy, Sea level, Global change, Paleoclimatology, Computerized simulation, Antarctica

53-2805

**Ice dynamics near antarctic marginal mountain ranges: implications for interpreting the glacial-geological evidence.**

Pattyn, F., Declerq, H., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.327-332, 20 refs.

Ice sheets, Glaciation, Glacial geology, Glacial meteorology, Glacier oscillation, Glacier thickness, Glacier flow, Glacier mass balance, Glacier heat balance, Global change, Paleoclimatology, Ice models, Computerized simulation, Antarctica—Queen Maud Land



53-2806

Deep ice-core drilling at Dome Fuji and glaciological studies in east Dronning Maud Land, Antarctica.

Watanabe, O., et al, Dome-F Deep Coring Group, *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.333-337, 17 refs.

Ice cores, Ice coring drills, Drilling, Coring, Antarctica—Dome Fuji Station

53-2807

Preliminary investigation of palaeoclimate signals recorded in the ice core from Dome Fuji Station, east Dronning Maud Land, Antarctica.

Watanabe, O., et al, Dome-F Ice Core Research Group, *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.338-342, 5 refs.

Ice sheets, Ice cores, Ice composition, Glacial meteorology, Ice dating, Paleoclimatology, Antarctica—Dome Fuji Station

53-2808

Crystal-size and microparticle record in the ice core from Dome Summit South, Law Dome, East Antarctica.

Li, J., Jacka, T.H., Morgan, V., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.343-348, 20 refs.

Ice sheets, Ice cores, Ice composition, Dust, Impurities, Ice crystal size, Glacial meteorology, Ice dating, Paleoclimatology, Antarctica—Law Dome

53-2809

Lead isotopes and selected metals in ice from Law Dome, Antarctica.

Rosman, K.J.R., et al, *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.349-354, 26 refs.

Ice sheets, Ice cores, Ice composition, Impurities, Dust, Isotope analysis, Ice dating, Glacial meteorology, Paleoclimatology, Antarctica—Law Dome

53-2810

Atmospheric dust concentration record from the Hercules Névé firn core, northern Victoria Land, Antarctica.

Maggi, V., Petit, J.R., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.355-359, 19 refs.

Ice cores, Core samplers, Air pollution, Dust, Ice composition, Climatic changes, Antarctica—Hercules Névé

53-2811

Internal radio-echo layering at Vostok Station, Antarctica, as an independent stratigraphic control on the ice-core record.

Siegert, M.J., Hodgkins, R., Dowdeswell, J.A., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.360-364, 12 refs.

Ice sheets, Radio echo soundings, Glacier thickness, Ice electrical properties, Ice cores, Ice composition, Volcanic ash, Firn stratification, Ice dating, Drill core analysis, Antarctica—Vostok Station

53-2812

Iron in ice cores from Law Dome, East Antarctica: implications for past deposition of aerosol iron.

Edwards, R., Sedwick, P.N., Morgan, V., Boutron, C.F., Hong, S., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.365-370, 26 refs.

Ice sheets, Ice cores, Atmospheric composition, Aerosols, Glacial meteorology, Ice composition, Dust, Impurities, Geochemical cycles, Ice dating, Paleoclimatology, Antarctica—Law Dome

53-2813

Limited migration of soluble ionic species in a Siple Dome, Antarctica, ice core.

Kreutz, K.J., Mayewski, P.A., Whitlow, S.I., Twickler, M.S., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.371-377, 33 refs.

Ice cores, Core samplers, Glacial meteorology, Atmospheric composition, Air pollution, Ice composition, Impurities, Ion diffusion, Geochemical cycles, Paleoclimatology, Antarctica—Siple Coast

53-2814

Spatial variability of snow chemistry in western Dronning Maud Land, Antarctica.

Stenberg, M., et al, *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.378-384, 28 refs.

Atmospheric circulation, Atmospheric composition, Air pollution, Scavenging, Geochemical cycles, Snow composition, Snow impurities, Snow samplers, Core samplers, Antarctica—Queen Maud Land

53-2815

Seasonal characteristics of the major ions in the high-accumulation Dome Summit South ice core, Law Dome, Antarctica.

Curran, M.A.J., Van Ommen, T.D., Morgan, V., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.385-390, 30 refs.

Ice sheets, Ice cores, Core samplers, Polar atmospheres, Marine atmospheres, Atmospheric composition, Aerosols, Air pollution, Geochemical cycles, Ice composition, Impurities, Ion density (concentration), Paleoclimatology, Antarctica—Law Dome

53-2816

Preliminary evidence of a biomass-burning event from a 60 year-old firn core from Antarctica by ion chromatographic determination of carboxylic acids.

Udisti, R., Becagli, S., Traversi, R., Vernigli, S., Piccardi, G., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.391-397, 27 refs.

Forest fires, Air pollution, Atmospheric composition, Dust, Scavenging, Snow composition, Snow impurities, Ice cores, Core samplers, Ice dating, Paleoclimatology, Antarctica—Hercules Névé

53-2817

Implications for the interpretation of ice-core isotope data from analysis of modelled antarctic precipitation.

Noone, D., Simmonds, I., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.398-402, 20 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Precipitation (meteorology), Ice cores, Ice composition, Isotope analysis, Paleoclimatology, Computerized simulation, Antarctica

53-2818

Interannual variations and regionality of antarctic sea-ice-temperature associations.

Carleton, A.M., John, G., Welsch, R., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.403-408, 34 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Air ice water interaction, Sea ice distribution, Ice conditions, Ice cover effect, Surface temperature, Statistical analysis, Antarctica

53-2819

Relationships between antarctic sea-ice concentration, wind stress and temperature temporal variability, and their changes with distance from the coast.

Watkins, A.B., Simmonds, I., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.409-412, 7 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Sea ice distribution, Ice conditions, Ice cover effect, Wind pressure, Surface temperature, Air ice water interaction, Statistical analysis, Antarctica

53-2820

Modelling global warming and antarctic sea-ice changes over the past century.

Wu, X.R., Budd, W.F., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.413-419, 34 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Sea ice distribution, Ice cover thickness, Ice conditions, Ice heat flux, Air ice water interaction, Global warming, Ice models, Computerized simulation, Antarctica

53-2821

Distribution and formative processes of latent-heat polynyas in East Antarctica.

Massom, R.A., Harris, P.T., Michael, K.J., Potter, M.J., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.420-426, 45 refs.

Ice surveys, Sea ice distribution, Ice conditions, Ice heat flux, Air ice water interaction, Polynyas, Wind factors, Radiometry, Spaceborne photography, Antarctica—East Antarctica

53-2822

East Antarctic sea ice: observations and modelling.

Worby, A.P., Wu, X.R., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.427-432, 24 refs.

Ice surveys, Sea ice distribution, Ice conditions, Ice cover thickness, Air ice water interaction, Ice models, Computerized simulation, Antarctica—East Antarctica

53-2823

Enhanced thermodynamic ice growth by sea-ice deformation.

Heil, P., Lytle, V.I., Allison, I., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.433-437, 20 refs.

Sea ice distribution, Sea water freezing, Ice formation, Ice growth, Ice heat flux, Drift, Ice friction, Ice deformation, Ice cover thickness, Antarctica—East Antarctica

53-2824

**Break-up of sea ice by ocean waves.**

Langhorne, P.J., Squire, V.A., Fox, C., Haskell, T.G., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.438-442, 17 refs.

Fast ice, Ice edge, Ice water interface, Ocean waves, Ice cover strength, Ice deformation, Ice breakup, Antarctica—McMurdo Sound

53-2825

**On simulating high-frequency variability in antarctic sea-ice dynamics models.**

Hibler, W.D., III, Heil, P., Lytle, V.I., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.443-448, 10 refs.

Sea ice distribution, Ice conditions, Ice cover thickness, Ice cover strength, Ice water interface, Wind pressure, Air ice water interaction, Drift, Ice friction, Ice deformation, Ice models, Computerized simulation, Antarctica

53-2826

**Sea-ice pressure ridges in East Antarctica.**

Lytle, V.I., Worby, A.P., Massom, R.A., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.449-454, 14 refs.

Ice surveys, Sea ice distribution, Ice conditions, Ice cover thickness, Ice deformation, Pressure ridges, Ice surface, Ice volume, Aerial surveys, Topographic surveys, Spaceborne photography, Antarctica—East Antarctica

53-2827

**Atmospheric drag coefficients of Weddell Sea ice computed from roughness profiles.**

Fisher, R., Lytle, V.I., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.455-460, 22 refs.

Sea ice distribution, Ice floes, Ice friction, Ice deformation, Ice surface, Surface roughness, Drift, Ice water interface, Ice air interface, Wind pressure, Ice models, Computerized simulation, Antarctica—Weddell Sea

53-2828

**Brine infiltration in the snow cover of sea ice in the eastern Weddell Sea, Antarctica.**

Rapley, M., Lytle, V.I., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.461-465, 16 refs.

Sea ice distribution, Ice cover thickness, Snow ice interface, Slush, Brines, Seepage, Ice heat flux, Ice growth, Statistical analysis, Antarctica—Weddell Sea

53-2829

**Radiometric measurements of sea-ice surface temperature in East Antarctica.**

Michael, K.J., Hungria, C.S., Massom, R.A., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.466-470, 19 refs.

Sea ice, Ice cover thickness, Snow ice interface, Snow cover effect, Ice surface, Ice air interface, Ice heat flux, Ice thermal properties, Ice temperature, Surface temperature, Radiometry, Antarctica—East Antarctica

53-2830

**Non-linear thermal transport and brine convection in first-year sea ice.**

McGuinness, M.J., Trodahl, H.J., Collins, K., Haskell, T.G., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.471-476, 17 refs.

Sea ice, Ice thermal properties, Ice temperature, Ice heat flux, Brines, Seepage, Antarctica—McMurdo Sound

53-2831

**East Antarctic seasonal sea-ice and ocean stability: a model study.**

Marsland, S., Wolff, J.O., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.477-482, 20 refs.

Sea ice, Ice cover effect, Ice heat flux, Sea water freezing, Salinity, Ice growth, Ice melting, Ice water interface, Air ice water interaction, Ice models, Computerized simulation, Antarctica—East Antarctica

53-2832

**Antarctic Circumpolar Wave in a coupled ocean-atmosphere model.**

Motoi, T., Kitoh, A., Koide, H., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.483-487, 13 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Ocean currents, Sea ice distribution, Ice cover effect, Air ice water interaction, Ice heat flux, Global change, Ice models, Computerized simulation, Antarctica

53-2833

**Intra-annual variability of antarctic precipitation from weather forecasts and high-resolution climate models.**

Genthon, C., Krinner, G., Déqué, M., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.488-494, 12 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Precipitation (meteorology), Meteorological data, Weather forecasting, Statistical analysis, Computerized simulation, Antarctica

53-2834

**Antarctic sea-ice simulations with a coupled ocean/sea-ice model on a telescoped grid.**

Wolff, J.O., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.495-500, 22 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Ocean currents, Sea ice distribution, Ice cover thickness, Ice heat flux, Ice cover effect, Air ice water interaction, Ice models, Mathematical models, Computerized simulation, Antarctica

53-2835

**Drift patterns in an antarctic channel from a quasi-geostrophic model with surface friction.**

Wolff, J.O., Bye, J.A.T., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.501-506, 13 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Ocean currents, Air water interactions, Icebergs, Drift, Mathematical models, Computerized simulation, Antarctica

53-2836

**Evaluation of a regional atmospheric model for January 1993, using in situ measurements from the Antarctic.**

Van Lipzig, N.P.M., Van Meijgaard, E., Oerlemans, J., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.507-514, 36 refs.

Polar atmospheres, Atmospheric circulation, Air temperature, Temperature gradients, Humidity, Ice sheets, Glacial meteorology, Glacier mass balance, Computerized simulation, Antarctica

53-2837

**Surface climate of the interior of the Lambert Glacier basin, Antarctica, from automatic weather station data.**

Allison, I., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.515-520, 16 refs.

Weather stations, Meteorological data, Air temperature, Wind direction, Wind velocity, Snow accumulation, Glacial meteorology, Topographic effects, Antarctica—Lambert Glacier

53-2838

**Global atmospheric responses to antarctic forcing.**

Bromwich, D.H., Chen, B., Hines, K.M., Cullather, R.I., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.521-527, 23 refs.

Ice shelves, Glacier melting, Ice breakup, Sea ice distribution, Ice melting, Air ice water interaction, Atmospheric circulation, Global warming, Computerized simulation, Antarctica

53-2839

**Automatic weather station program during Dome Fuji Project by JARE in east Dronning Maud Land, Antarctica.**

Takahashi, S., et al, *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.528-534, 19 refs.

Polar atmospheres, Atmospheric circulation, Weather stations, Meteorological data, Wind velocity, Wind direction, Insolation, Atmospheric pressure, Air temperature, Temperature gradients, Antarctica—Queen Maud Land

53-2840

**Spatial distribution and seasonal pattern of biogenic sulphur compounds in snow from northern Victoria Land, Antarctica.**

Udisti, R., Traversi, R., Becagli, S., Piccardi, G., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.535-542, 32 refs.

Polar atmospheres, Atmospheric circulation, Atmospheric composition, Air pollution, Scavenging, Snow samplers, Snow composition, Snow impurities, Statistical analysis, Antarctica—Victoria Land

53-2841

**Regional impacts of climate change in the Arctic and Antarctic.**

Weller, G., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.543-552, 27 refs.

Polar atmospheres, Global warming, Environmental impact, Regional planning, Computerized simulation, Antarctica

53-2842

**Detection of temperature and sea-ice-extent changes in the Antarctic and southern ocean, 1949-96.**

Jacka, T.H., Budd, W.F., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.553-559, 10 refs.

Polar atmospheres, Marine atmospheres, Weather stations, Meteorological data, Air temperature, Surface temperature, Sea ice distribution, Ice edge, Climatic changes, Global warming, Data processing, Statistical analysis, Antarctica

53-2843

**Monitoring of atmospheric aerosol particles on the Antarctic Peninsula.**

Correia, A., Artaxo, P., Maenhaut, W., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.560-564, 21 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Atmospheric composition, Aerosols, Air pollution, Geochemical cycles, Statistical analysis, Antarctica—Comandante Ferraz Station

53-2844

**Comparison of warming trends over the last century around Antarctica from three coupled models.**

Connolley, W.M., O'Farrell, S.P., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.565-570, 18 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Atmospheric composition, Carbon dioxide, Air temperature, Sea ice distribution, Air ice water interaction, Climatic changes, Global warming, Ice models, Computerized simulation, Antarctica

53-2845

**Climate change in the western Antarctic Peninsula since 1945: observations and possible causes.**

King, J.C., Harangozo, S.A., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.571-575, 17 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Air temperature, Sea ice distribution, Ice edge, Air ice water interaction, Climatic changes, Global warming, Statistical analysis, Antarctica—Antarctic Peninsula

53-2846

**Comparison of warming trends predicted over the next century around Antarctica from two coupled models.**

O'Farrell, S.P., Connolley, W.M., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.576-582, 15 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Atmospheric composition, Air pollution, Air temperature, Water temperature, Air ice water interaction, Sea ice distribution, Ice conditions, Climatic changes, Global warming, Computerized simulation, Antarctica

53-2847

**Areal distribution of the oxygen-isotope ratio in Antarctica: comparison of results based on field and remotely sensed data.**

Zwally, H.J., Giovinetto, M., Craven, M., Morgan, V., Goodwin, I., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.583-590, 33 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Atmospheric composition, Oxygen isotopes, Isotope analysis, Air temperature, Ice sheets, Ice shelves, Core samplers, Ice composition, Climatic changes, Global change, Mathematical models, Statistical analysis, Antarctica

53-2848

**Understanding Antarctic Peninsula precipitation distribution and variability using a numerical weather prediction model.**

Turner, J., Leonard, S., Lachlan-Cope, T., Marshall, G.J., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.591-596, 10 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Precipitation (meteorology), Snowfall, Snow accumulation, Snow samplers, Core samplers, Climatic changes, Computerized simulation, Antarctica—Antarctic Peninsula

53-2849

**Seasonal variations of cloud and precipitation at Syowa Station, Antarctica.**

Konishi, H., Wada, M., Endoh, T., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.597-602, 12 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Cloud cover, Clouds (meteorology), Precipitation (meteorology), Snowfall, Antarctica—Showa Station

53-2850

**Surface energy balance and meltwater production for a dry valley glacier, Taylor Valley, Antarctica.**

Lewis, K.J., Fountain, A.G., Dana, G.L., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.603-609, 15 refs.

Glacier surveys, Glacier oscillation, Glacial meteorology, Glacier heat balance, Glacier mass balance, Glacier ablation, Ice sublimation, Glacial hydrology, Glacier melting, Meltwater, Glacial lakes, Antarctica—Canada Glacier

53-2851

**Interpreting recent accumulation records through an understanding of the regional synoptic climatology: an example from the southern Antarctic Peninsula.**

Marshall, G.J., Turner, J., Miners, W.D., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.610-616, 25 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Precipitation (meteorology), Snow accumulation, Ice cores, Core samplers, Ice electrical properties, Ice composition, Climatic changes, Computerized simulation, Statistical analysis, Antarctica—Antarctic Peninsula

53-2852

**Multi-decadal climate variability in the antarctic region and global change.**

Simmonds, I., Jones, D.A., Walland, D.J., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.617-622, 31 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Air ice water interaction, Global warming, Computerized simulation, Antarctica

53-2853

**Monitoring climate variability on the Antarctic Peninsula by means of observations of the snow cover.**

Schneider, C., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.623-627, 16 refs.

Snowfall, Snow cover distribution, Snow accumulation, Snow heat flux, Glacial meteorology, Glacier alimention, Glacier heat balance, Glacier oscillation, Glacier surveys, Synthetic aperture radar, Spaceborne photography, Climatic changes, Computerized simulation, Antarctica—Antarctic Peninsula

53-2854

**Evidence of recent climatic warming on the eastern Antarctic Peninsula.**

Skvarca, P., Rack, W., Rott, H., Ibarzabal y Donángelo, T., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.628-632, 15 refs.

Polar atmospheres, Marine atmospheres, Weather stations, Meteorological data, Air temperature, Glacial meteorology, Glacier oscillation, Ice shelves, Glacier melting, Climatic changes, Global warming, Statistical analysis, Antarctica—Antarctic Peninsula

53-2855

**Recent retreat of ice cliffs, King George Island, South Shetland Islands, Antarctic Peninsula.**

Park, B.K., Chang, S.K., Yoon, H.I., Chung, H.S., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.633-635, 13 refs.

Glacier surveys, Glacier oscillation, Glacial meteorology, Aerial surveys, Topographic surveys, Climatic changes, Global warming, Antarctica—King George Island

53-2856

**Climate-change indicators from archival aerial photography of the Antarctic Peninsula.**

Fox, A.J., Cooper, A.P.R., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.636-642, 6 refs.

Aerial surveys, Photointerpretation, Terrain identification, Glacier surveys, Glacier oscillation, Snow cover distribution, Climatic changes, Antarctica—Antarctic Peninsula

53-2857

**Ice-front change and iceberg behaviour along Oates and George V Coasts, Antarctica, 1912-96.**

Frezzotti, M., Cimbelli, A., Ferrigno, J.G., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.643-650, 36 refs.

Glacier surveys, Ice shelves, Glacier tongues, Glacier oscillation, Glacier thickness, Glacier mass balance, Glacier ablation, Calving, Icebergs, Antarctica—Oates Coast, Antarctica—George V Coast

53-2858

**Geoelectric field: a link between the troposphere and solar variability.**

Burns, G.B., Frank-Kamenetskiĭ, A.V., Troshichev, O.A., Bering, E.A., Papatashvili, V.O., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.651-654, 14 refs.

Polar atmospheres, Atmospheric physics, Atmospheric electricity, Solar activity, Geomagnetism, Geoelectricity, Climatic changes, Antarctica—Vostok Station

53-2859

**PANGAEA information system for glaciological data management.**

Diepenbroek, M., Fütterer, D., Grobe, H., Miller, H., Reinke, M., Sieger, R., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.655-660, 8 refs. PANGAEA is an acronym for PaleoNetwork for Geological and Environmental Data, developed by the Alfred Wegener Institute for Polar and Marine Research, Bremerhaven, Germany, at www.pangaea.de.

Glacier surveys, Ice cores, Paleoclimatology, Research projects, Data processing, Data transmission, Computer programs

53-2860

**Re-examining the antarctic paradox: speculation on the southern ocean as a nutrient-limited system.**

Pridde, J., et al, *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.661-668, 52 refs.

Marine biology, Nutrient cycle, Geochemical cycles, Plankton, Algae, Chlorophylls, Biomass, Antarctica

53-2861

**Monitoring the antarctic mesopause region for signatures of climate change.**

Burns, G.B., French, W.J.R., Greet, P.A., Williams, P.F.B., Finlayson, K., Lowe, R.P., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.669-673, 10 refs.

Polar atmospheres, Atmospheric composition, Atmospheric physics, Air temperature, Temperature measurement, Climatic changes, Global change, Antarctica

53-2862

**Sources and origins of aerosols reaching Antarctica as revealed by lead concentration profiles in shallow snow.**

Barbante, C., Turetta, C., Gambaro, A., Capodaglio, G., Scarponi, G., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.674-678, 21 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Atmospheric composition, Aerosols, Air pollution, Scavenging, Snow composition, Snow impurities, Snow samplers, Antarctica

53-2863

**Chemical and isotopic profiles from snow pits and shallow firn cores on Campbell Glacier, northern Victoria Land, Antarctica.**

Gragani, R., Smiraglia, C., Stenni, B., Torcini, S., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.679-684, 37 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Atmospheric composition, Ice cores, Core samplers, Snow samplers, Snow composition, Glacier ice, Ice composition, Isotope analysis, Ice dating, Climatic changes, Antarctica—Campbell Glacier

53-2864

**Inorganic carbon-isotope distribution and budget in the Lake Hoare and Lake Fryxell basins, Taylor Valley, Antarctica.**

Neumann, K., Lyons, W.B., Des Marais, D.J., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.685-690, 34 refs.

Glacial lakes, Frozen lakes, Lake water, Water chemistry, Carbon isotopes, Isotope analysis, Nutrient cycle, Geochemical cycles, Algae, Biomass, Antarctica—Hoare, Lake, Antarctica—Fryxell, Lake

53-2865

**Arctic and antarctic lakes as optical indicators of global change.**

Vincent, W.F., Laurion, I., Pienitz, R., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.691-696, 30 refs.

Polar atmospheres, Frozen lakes, Lake ice, Ice conditions, Ice cover effect, Limnology, Photosynthesis, Light transmission, Nutrient cycle, Geochemical cycles, Water chemistry, Lacustrine deposits, Paleobotany, Paleoclimatology, Global change, Antarctica

53-2866

**Late Pleistocene-Holocene sedimentary fluxes of organic carbon and biogenic silica in the northwestern Ross Sea, Antarctica.**

Frigani, M., Giglio, F., Langone, L., Ravaoli, M., Mangini, A., *Annals of glaciology*, 1998, Vol.27, International Symposium on Antarctica and Global Change: Interactions and Impacts, Hobart, Tasmania, Australia, July 13-18, 1997. Papers. Edited by W.F. Budd, et al, p.697-703, 34 refs.

Marine deposits, Bottom sediment, Drill core analysis, Quaternary deposits, Glacial deposits, Ice rafting, Sediment transport, Nutrient cycle, Geochemical cycles, Soil dating, Paleoecology, Paleoclimatology, Antarctica—Ross Sea

53-2867

**General geocryology.**

Ershov, E.D., *Studies in polar research*, Cambridge, University Press, 1998, 580p., 21 refs. For Russian original see 45-1473.

DLC GB641.E75 1998

Taliks, Frost heave, Design criteria, Thermokarst, Geocryology, Ground thawing, Geologic processes, Engineering geology, Frozen rocks, Ground water, Freeze thaw cycles, Environmental protection, Moisture transfer, Frozen rock strength, Permafrost beneath structures, Frozen rock temperature, Cold weather construction, Sediments, Permafrost thickness, Permafrost origin, Forecasting

53-2868

**Environmental assessment atlas: proposed trans-Alaska pipeline system.**

U.S. Bureau of Land Management. Alaska State Office. Division of Pipeline, Price, N., ed, July 1973, n.p., 22 refs.

Maps, Environmental impact, Environmental protection, Pipelines, Watersheds, Soil pollution, Avalanches, Natural resources, Hydrology, Vegetation patterns, Route surveys, United States—Alaska

53-2869

**Recent natural and anthropogenic changes in a regulated river delta: Elvegård, northern Norway.** Corner, G.D., *Norsk geografisk tidsskrift*, Sep. 1998, 52(3), p.135-150, 20 refs.

Geomorphology, Landscape development, Subpolar regions, Deltas, Floodplains, Excavation, Sedimentation, River flow, Flow control, Environmental impact, Photogrammetric surveys, Hydrography, Norway—Elvegård

53-2870

**Comparison of semi-Langrangian and Eulerian polar climate simulations.**

Williamson, D.L., Olson, J.G., *Monthly weather review*, Apr. 1998, 126(4), p.991-1000, 26 refs. Climatology, Polar atmospheres, Air temperature, Temperature inversions, Stratification, Atmospheric boundary layer, Simulation, Statistical analysis, Resolution, Forecasting

53-2871

**Two or four Neoproterozoic glaciations?**

Kennedy, M.J., Runnegar, B., Prave, A.R., Hoffmann, K.H., Arthur, M.A., *Geology*, Dec. 1998, 26(12), p.1059-1063, 38 refs.

Pleistocene, Ice age theory, Glacial geology, Glaciation, Periodic variations, Marine deposits, Glacial geology, Radioactive isotopes, Stratigraphy, Tectonics, Geochronology

53-2872

**Late Devonian ice sheet characteristics: a palaeohydraulic approach.**

Sambrook Smith, G.H., Glasser, N.F., *Geological journal*, July-Sep. 1998, 33(3), p.149-158, 39 refs.

Pleistocene, Glacial geology, Ice sheets, Geomorphology, Glacier ablation, Meltwater, Water erosion, Lake bursts, Channels (waterways), Orientation, Subglacial drainage, Ice age theory, United Kingdom—Cheshire

53-2873

**Very high-resolution regional climate simulations over Scandinavia—present climate.**

Christensen, O.B., Christensen, J.H., Machenhauer, B., Botzet, M., *Journal of climate*, Dec. 1998, 11(12), p.3204-3229, 39 refs.

Climatology, Subpolar regions, Atmospheric circulation, Precipitation (meteorology), Surface temperature, Hydrologic cycle, Snowmelt, Runoff, Snow cover effect, Models, Simulation, Norway, Sweden

53-2874

**Modeling the Antarctic Circumpolar Current: a comparison of FRAM and equivalent barotropic model results.**

Ivchenko, V.O., Krupitskiĭ, A.E., Kamenkovich, V.M., Wells, N.C., *Journal of marine research*, Jan. 1999, 57(1), p.29-45, 15 refs.

Oceanography, Ocean currents, Velocity measurement, Stratification, Bottom topography, Friction, Correlation, Structural analysis, Simulation, Mathematical models, Drake Passage

53-2875

**Characteristics and implications of some Loch Lomond Stadial moraine ridges and later landforms, eastern Lake District, northern England.**

Wilson, P., Clark, R., *Geological journal*, Apr.-June 1998, 33(2), p.73-87, 44 refs.

Pleistocene, Quaternary deposits, Glacial geology, Glaciation, Ice edge, Geomorphology, Landforms, Moraines, Paleoclimatology, United Kingdom—Lake District

53-2876

**Changes in oxidation-reduction state and antioxidant enzymes in the roots of jack pine seedlings during cold acclimation.**

Zhao, S.Y., Blumwald, E., *Physiologia plantarum*, Sep. 1998, 104(1), p.134-142, 41 refs.

Plant physiology, Trees (plants), Roots, Oxygen, Chemical composition, Cold tolerance, Freeze thaw tests, Acclimatization, Low temperature tests, Temperature effects

53-2877

**Divergent strategies of photoprotection in high-mountain plants.**

Streb, P., Shang, W., Feierabend, J., Bligny, R., *Planta*, Dec. 1998, 207(2), p.313-324, 52 refs.

Plant physiology, Plant ecology, Plant tissues, Photosynthesis, Solar radiation, Light effects, Damage, Photochemical reactions, Luminescence, Protection, Simulation

53-2878

**Vacuolar membrane lesions induced by a freeze-thaw cycle in protoplasts isolated from deacclimated tubers of Jerusalem artichoke (*Helianthus tuberosus* L.).**

Murai, M., Yoshida, S., *Plant & cell physiology*, Jan. 1998, 39(1), p.87-96, 18 refs.

Plant physiology, Plant tissues, Roots, Acclimatization, Cold tolerance, Freeze thaw cycles, Freeze thaw tests, Damage, Chemical composition, Modification, Luminescence, Temperature effects

53-2879

**Effect of UV radiation on pigments of the antarctic macroalga *Leptosomia simplex* L.**

Döhler, G., *Photosynthetica*, 1998, 35(3), p.473-476, 18 refs.

Marine biology, Plant physiology, Algae, Ecology, Plant tissues, Photosynthesis, Chlorophylls, Ultraviolet radiation, Damage, Chemical analysis, Antarctica—Elephant Island

53-2880

**Seasonal hydroclimate change in the Sacramento River basin, California.**

Shelton, M.L., *Physical geography*, May-June 1998, 19(3), p.239-255, 19 refs.

Climatology, Climatic changes, River basins, Snow hydrology, Snowmelt, Stream flow, Runoff, Seasonal variations, Statistical analysis, Water supply, United States—California—Sacramento River

53-2881

**Kriging the potential tree level in Norway.**

Strand, G.H., *Norsk geografisk tidsskrift*, Mar. 1998, 52(1), p.17-25, 20 refs.

Forest lines, Subpolar regions, Growth, Altitude, Topographic maps, Statistical analysis, Indexes (ratios), Mathematical models, Forecasting, Norway

53-2882

**Morpho-statistical study of cirques and cirque glaciers in the Senja-Kilpisjärvi area, northern Scandinavia.**

Hassinen, S., *Norsk geografisk tidsskrift*, Mar. 1998, 52(1), p.27-36, 25 refs.

Geomorphology, Subpolar regions, Glacier surveys, Cirque glaciers, Snow line, Distribution, Altitude, Topographic maps, Topographic effects, Wind factors, Statistical analysis, Norway, Sweden, Finland

53-2883

**Contribution to the history of the Holocene distribution of *Ulmus glabra* in north Norway.**

Moe, D., *Norsk geografisk tidsskrift*, June 1998, 52(2), p.57-63, 46 refs.

Paleobotany, Subarctic landscapes, Vegetation patterns, Forest lines, Migration, Palynology, Quaternary deposits, Statistical analysis, Stratigraphy, Radioactive age determination, Climatic factors, Norway

53-2884

**Hans glacier moulines observed from 1988 to 1992, Svalbard.**

Schroeder, J., *Norsk geografisk tidsskrift*, June 1998, 52(2), p.79-88, 5 refs.

Glacial hydrology, Ice tunnels, Classifications, Meltwater, Drainage, Water level, Distribution, Migration, Hydraulic structures, Structural analysis, Norway—Svalbard

53-2885

**Subfossils of Scots pine (*Pinus sylvestris* L.) from the mountain area of south Norway as the basis for a long tree-ring chronology.**

Selsing, L., *Norsk geografisk tidsskrift*, June 1998, 52(2), p.89-103, 62 refs.

Paleoclimatology, Paleobotany, Subpolar regions, Forest lines, Radioactive age determination, Geochronology, Statistical analysis, Norway

53-2886

**Millimeter-wave characteristics of fallen snow.**

Takimoto, Y., Kotaki, M., *Electronics and communications in Japan. Part 1: communications*, Apr. 1999, 82(4), p.33-44, Translated from Denshi joho tsushin gakkai ronbunshi, Vol. J81-B-II, No.1, Jan. 1998, p.71-81. 10 refs.

Snow electrical properties, Ice dielectrics, Microwaves, Wave propagation, Snow cover effect, Electromagnetic prospecting, Radio echo soundings, Subsurface investigations, Safety, Road maintenance

53-2887

**Electromagnetic and geological transect across permafrost terrain, Mackenzie River delta, Canada.**

Todd, B.J., Dallimore, S.R., *Geophysics*, Nov.-Dec. 1998, 63(6), p.1914-1924, 31 refs.

Permafrost surveys, Permafrost distribution, Permafrost thickness, Permafrost structure, Permafrost indicators, Ground ice, Taliks, Geophysical surveys, Electromagnetic prospecting, Canada—Northwest Territories—Mackenzie Delta

53-2888

**Model for the bidirectional polarized reflectance of snow.**

Leroux, C., Lenoble, J., Brogniez, G., Hovenier, J.W., De Haan, J.F., *Journal of quantitative spectroscopy & radiative transfer*, Feb. 1999, 61(3), p.273-285, 44 refs.

Snow optics, Snow heat flux, Snow cover effect, Albedo, Reflectivity, Solar radiation, Thermal radiation, Infrared radiation, Wave propagation, Polarization (waves), Mathematical models

53-2889

**Importance of snow scavenging of polychlorinated biphenyl and polycyclic aromatic hydrocarbon vapors.**

Wania, F., Mackay, D., Hoff, J.T., *Environmental science & technology*, Jan. 1, 1999, 33(1), p.195-197, 13 refs.

Atmospheric composition, Air pollution, Scavenging, Snowfall, Snow composition, Snow impurities

53-2890

**Ground-based millimetre-wave technique for ozone observations in Antarctica.**

Arora, R.S., Nagar, V.C., *Indian journal of radio & space physics*, Apr. 1997, 26(2), p.85-89, 9 refs.

DLC QC801.142 Vol.26 1997  
Polar atmospheres, Atmospheric composition, Ozone, Radio echo soundings, Radiometry, Meteorological instruments, Antarctica

53-2891

**Atmospheric water vapour measurement at Maitri, Antarctica.**

Arya, B.C., Jain, S.L., *Indian journal of radio & space physics*, June 1997, 26(3), p.117-120, 14 refs.

DLC QC801.142 Vol.26 1997  
Polar atmospheres, Atmospheric composition, Water vapor, Humidity, Moisture detection, Antarctica—Maitri Station

53-2892

**Evaluation of the use of vegetation for reducing the environmental impact of deicing agents.**

Rice, P.J., Anderson, T.A., Coats, J.R., *Phytoremediation of Soil and Water Contaminants. ACS Symposium Series 664. Edited by E.L. Kruger, T.A. Anderson and J.R. Coats, Washington, D.C., American Chemical Society, 1997, p.162-176, 36 refs.*

DLC TD192.75.P48 1997  
Chemical ice prevention, Antifreezes, Soil pollution, Water pollution, Environmental protection, Land reclamation, Soil microbiology, Introduced plants, Revegetation, Protective vegetation, Grasses

53-2893

**Large scale motion and temperature distributions in land-based ice shields; the Greenland Ice Sheet in response to various climatic scenarios.**

Calov, R., Hutter, K., *Archives of mechanics*, 1997, 49(5), p.919-962, 188 refs.

DLC TA350.A73 Vol.49 Nos.4-6 1997

Ice sheets, Glacier heat balance, Glacier mass balance, Glacier flow, Glacier oscillation, Glacial meteorology, Ice heat flux, Ice temperature, Ice thermal properties, Ice age theory, Paleoclimatology, Mathematical models, Computerized simulation, Greenland

53-2894

**Snow & avalanche. Annual report 1996-1997.**

Colorado Avalanche Information Center, Denver, Colorado Geological Survey, July 1997, 32p.

Avalanches, Avalanche forecasting, Snow accumulation, Accidents, Seasonal variations, Statistical analysis, Safety, Education, United States—Colorado

53-2895

**Phytoplankton biomass and production during late austral spring (1991) and summer (1993) in the Bransfield Strait.**

Basterretxea, G., Aristegui, J., *Polar biology*, Jan. 1999, 21(1), p.11-22, Refs. p.21-22.

Marine biology, Ecosystems, Plankton, Biomass, Growth, Nutrient cycle, Chlorophylls, Photosynthesis, Hydrography, Sampling, Antarctica—Bransfield Strait

53-2896

**Impact of the Cerro Hudson and Pinatubo volcanic eruptions on the antarctic air and snow chemistry.**

Legrand, M., Wagenbach, D., *Journal of geophysical research*, Jan. 20, 1999, 104(D1), p.1581-1596, 60 refs.

Climatology, Polar atmospheres, Atmospheric composition, Atmospheric boundary layer, Aerosols, Volcanic ash, Fallout, Snow composition, Ice cores, Environmental impact, Sampling, Seasonal variations, Antarctica

53-2897

**Short-term variations in the <sup>13</sup>C/<sup>12</sup>C ratio of CO as a measure of Cl activation during tropospheric ozone depletion events in the Arctic.**

Röckmann, T., Brenninkmeijer, C.A.M., Crutzen, P.J., Platt, U., *Journal of geophysical research*, Jan. 20, 1999, 104(D1), p.1691-1697, 40 refs.

Climatology, Polar atmospheres, Atmospheric composition, Ozone, Degradation, Carbon isotopes, Isotope analysis, Environmental tests, Norway—Spitsbergen

53-2898

**Multiannual simulations with a three-dimensional chemical transport model.**

Chipperfield, M.P., *Journal of geophysical research*, Jan. 20, 1999, 104(D1), p.1781-1805, Refs. p.1803-1805.

Climatology, Stratosphere, Polar atmospheres, Atmospheric composition, Aerosols, Ozone, Photochemical reactions, Degradation, Seasonal variations, Chemical analysis, Models, Simulation

53-2899

**Fast in situ stratospheric hygrometers: a new family of balloon-borne and airborne Lyman  $\alpha$  photofragment fluorescence hygrometers.**

Zöger, M., et al, *Journal of geophysical research*, Jan. 20, 1999, 104(D1), p.1807-1816, 39 refs.

Hygrometers, Design, Meteorological instruments, Samplers, Atmospheric composition, Stratosphere, Water vapor, Aerosols, Photochemical reactions, Vapor diffusion, Performance

53-2900

**Widespread solid particle formation by mountain waves in the arctic stratosphere.**

Carlsaw, K.S., Peter, T., Bacmeister, J.T., Eckermann, S.D., *Journal of geophysical research*, Jan. 20, 1999, 104(D1), p.1827-1836, 39 refs.

Climatology, Polar atmospheres, Cloud physics, Polar stratospheric clouds, Heterogeneous nucleation, Particles, Ice formation, Hydrates, Mountains, Gravity waves, Atmospheric circulation, Synoptic meteorology, Topographic effects

53-2901

**Ozone depletion at the edge of the arctic polar vortex 1996/1997.**

Hansen, G., Chipperfield, M.P., *Journal of geophysical research*, Jan. 20, 1999, 104(D1), p.1837-1845, 26 refs.

Ozone, Degradation, Polar atmospheres, Atmospheric composition, Lidar, Models, Polar stratospheric clouds, Stratosphere, Atmospheric circulation

53-2902

**Polar stratospheric descent of NO<sub>x</sub> and CO and arctic denitrification during winter 1992-1993.**

Rinsland, C.P., et al, *Journal of geophysical research*, Jan. 20, 1999, 104(D1), p.1847-1861, 61 refs.

Climatology, Polar atmospheres, Stratosphere, Aerosols, Diffusion, Altitude, Atmospheric composition, Degradation, Spectroscopy, Photometry

53-2903

**Loss of volatile acid species from upper firn layers at Vostok, Antarctica.**

Wagon, P., Delmas, R.J., Legrand, M., *Journal of geophysical research*, Feb. 20, 1999, 104(D3), p.3423-3431, 47 refs.

Paleoclimatology, Firn, Snow composition, Snow air interface, Vapor transfer, Aerosols, Gases, Ion density (concentration), Ice cores, Sampling, Profiles, Accuracy, Antarctica—Vostok Station

53-2904

**Hydrocarbon measurements during tropospheric ozone depletion events: evidence for halogen atom chemistry.**

Ramacher, B., Rudolph, J., Koppmann, R., *Journal of geophysical research*, Feb. 20, 1999, 104(D3), p.3633-3653, 57 refs.

Climatology, Polar atmospheres, Atmospheric composition, Gases, Hydrocarbons, Ozone, Degradation, Turbulent diffusion, Sampling, Statistical analysis, Sounding, Norway—Svalbard

53-2905

**Toward understanding of the nonlinear nature of atmospheric photochemistry: multiple equilibrium states in the high-latitude lower stratospheric photochemical systems.**

Konovalov, I.B., Feigin, A.M., Mukhina, A.Y., *Journal of geophysical research*, Feb. 20, 1999, 104(D3), p.3669-3689, 64 refs.

Climatology, Polar atmospheres, Cloud physics, Stratosphere, Photochemical reactions, Stability, Ozone, Aerosols, Polar stratospheric clouds, Turbulent diffusion, Degradation, Models

53-2906

**Influence of the OH + NO<sub>2</sub> + M reaction on the NO<sub>x</sub> partitioning in the late arctic winter 1992/1993 as studied with KASIMA.**

Ruhnke, R., Kouker, R., Reddmann, T., *Journal of geophysical research*, Feb. 20, 1999, 104(D3), p.3755-3772, Refs. p.3770-3772.

Climatology, Polar atmospheres, Stratosphere, Atmospheric composition, Heterogeneous nucleation, Photochemical reactions, Gases, Ozone, Gravity waves, Turbulent diffusion, Degradation, Models

53-2907

**Magnetic proxy climate results from the Duanjiapo loess section, southernmost extremity of the Chinese loess plateau.**

Florindo, F., Zhu, R.X., Guo, B., Yue, L.P., Pan, Y.X., Speranza, F., *Journal of geophysical research*, Jan. 10, 1999, 104(B1), p.645-659, 44 refs.

Pleistocene, Paleoclimatology, Climatic changes, Loess, Stratigraphy, Remanent magnetism, Rock magnetism, Weathering, Soil formation, Statistical analysis, China—Loess Plateau

53-2908

**Oldest magnetic anomalies in the Australian-Antarctic Basin: are they isochrons?**

Tikku, A.A., Cande, S.C., *Journal of geophysical research*, Jan. 10, 1999, 104(B1), p.661-677, 58 refs.

Pleistocene, Marine geology, Tectonics, Earth crust, Deformation, Subpolar regions, Ocean bottom, Fracture zones, Magnetic anomalies, Geochronology, Continental drift, Antarctica—Wilkes Land, Indian Ocean

53-2909

**On the initiation of shear faults during brittle compressive failure: a new mechanism.**

Schulson, E.M., Iliescu, D., Renshaw, C.E., *Journal of geophysical research*, Jan. 10, 1999, 104(B1), p.695-705, 68 refs.

Brittleness, Loading, Solids, Ice mechanics, Ice deformation, Ice solid interface, Ice microstructure, Cracking (fracturing), Crack propagation, Orientation, Compressive properties, Shear stress, Mechanical tests, Simulation

53-2910

**Climatic impact of glacial cycle polar motion: coupled oscillations of ice sheet mass and rotation pole position.**

Bills, B.G., James, T.S., Mengel, J.G., *Journal of geophysical research*, Jan. 10, 1999, 104(B1), p.1059-1075, Refs. p.1073-1075.

Pleistocene, Paleoclimatology, Climatic changes, Tectonics, Viscosity, Insolation, Orientation, Ice sheets, Glacier oscillation, Glacier mass balance, Ice loads, Mathematical models, Ice age theory

53-2911

**Strain changes for the 1987 Vatnafjöll earthquake in south Iceland and possible magmatic triggering.**

Ágústsson, K., Linde, A.T., Stefánsson, R., Sacks, S., *Journal of geophysical research*, Jan. 10, 1999, 104(B1), p.1151-1161, 27 refs.

Earthquakes, Tectonics, Earth crust, Deformation, Subpolar regions, Volcanoes, Magma, Shock waves, Wave propagation, Seismology, Strain tests, Iceland

53-2912

**Seismotectonic analysis of the Tjörnes fracture zone, and active transform fault in north Iceland.**

Rögnvaldsson, S.T., Gudmundsson, A., Slunga, R., *Journal of geophysical research*, Dec. 10, 1998, 103(B12), p.30,117-30,129, 39 refs.

Tectonics, Earthquakes, Subpolar regions, Wave propagation, Marine geology, Earth crust, Magma, Fracture zones, Seismic reflection, Sensor mapping, Iceland

53-2913

**Anatomy of a buried complex impact structure: the Mjølneir structure, Barents Sea.**

Tsikalas, F., Gudlaugsson, S.T., Faleide, J.I., *Journal of geophysical research*, Dec. 10, 1998, 103(B12), p.30,469-30,483, Refs. p.30,481-30,483.

Pleistocene, Marine geology, Subpolar regions, Ocean bottom, Solids, Projectile penetration, Impact, Pit and mound topography, Seismic reflection, Sensor mapping, Structural analysis, Stratigraphy, Profiles, Barents Sea

53-2914

**Carbon utilization in the Eurasian sector of the Arctic Ocean.**

Olsson, K., Anderson, L.G., Frank, M., Luchetta, A., Smethie, W., *Limnology and oceanography*, Jan. 1999, 44(1), p.95-105, 56 refs.

Oceanographic surveys, Marine biology, Sea water, Water chemistry, Biomass, Carbon dioxide, Geochemical cycles, Sampling, Arctic Ocean

53-2915

**Redfield behavior of carbon, nitrogen, and phosphorous depletions in antarctic surface water.**

Hoppema, M., Goeyens, L., *Limnology and oceanography*, Jan. 1999, 44(1), p.220-224, 34 refs.

Oceanography, Marine biology, Geochemical cycles, Subpolar regions, Sea water, Water chemistry, Nutrient cycle, Biomass, Sampling, Indexes (ratios), Antarctica—Weddell Sea

53-2916

**Oceanographic data of the 35th Japanese Antarctic Research expedition from November 1993 to March 1994.**

Okano, H., Ogawa, A., *Japanese Antarctic Research Expedition. JARE data reports*, Oct. 1998, No.235, 56p., 9 refs.

Oceanographic surveys, Ocean currents, Sea water, Salinity, Water temperature, Water chemistry, Water pollution, Meteorological data, Tides, Antarctica

53-2917

**Variability of export fluxes of sinking particles under the antarctic fast ice (1992-1994). [1992 nen - 1994 nen no nankyoku tairiku engan teichakuhyo iki ni okeru chinko ryushi furakkusu no henka]**

Suzuki, H., Sasaki, H., Tanimura, A., Fukuchi, M., *Antarctic record*, Nov. 1998, 42(3), p.244-251, In Japanese with English summary. 6 refs.

Fast ice, Ice bottom surface, Ice water interface, Ice cover effect, Sea water, Algae, Plankton, Suspended sediments, Bottom sediment, Marine deposits, Nutrient cycle, Biomass, Antarctica—Showa Station

53-2918

**Composition of sinking particulates collected under fast ice near Syowa Station, East Antarctica, in early spring and early summer, 1994. [1994 nen shoshun oyobi shoka no nankyoku Showa kichi shuhen no teichakuhyo shita de saishu saretu chinko ryushi no sosei]**

Saito, R., Kudoh, S., Sato, T., Watanabe, K., Fukuchi, M., *Antarctic record*, Nov. 1998, 42(3), p.252-268, In Japanese with English summary. 24 refs.

Fast ice, Ice bottom surface, Ice water interface, Ice cover effect, Marine biology, Algae, Plankton, Suspended sediments, Bottom sediment, Marine deposits, Biomass, Antarctica—Showa Station

53-2919

**Activities of the wintering party of the 35th Japanese Antarctic Research Expedition in 1994-1995. [Dai 35 ji Nankyoku chiki kansokutai ettotai hokoku 1994-1995]**

Yokoyama, K., *Antarctic record*, Nov. 1998, 42(3), p.269-299, In Japanese with English summary. 7 refs.

Research projects, Stations, Logistics, Cold weather construction, Cold weather operation, Traverses, Ice cores, Meteorological data, Antarctica—Showa Station, Antarctica—Dome Fuji Station

53-2920

**Activities of the summer party of the 39th Japanese Antarctic Research Expedition in 1997-1998. [Dai 39 ji Nankyoku chiki kansokutai kaki kodo hokoku 1997-1998]**

Moriwaki, K., *Antarctic record*, Nov. 1998, 42(3), p.300-320, In Japanese with English summary. 2 refs.

Research projects, Stations, Logistics, Cold weather operation, Cold weather construction, Traverses, Oceanographic surveys, Antarctica—Showa Station, Antarctica—Dome Fuji Station



53-2921

**Economic value of the International Ice Patrol.** Pritchett, C.W., *U.S. Coast Guard Research and Development Center. Report*, Jan. 1997, USCG-D-14-97, 10p. + appends., ADA-323 740, 7 refs. Icebergs, Ice detection, Ice forecasting, Ice reporting, Ice routing, Safety, Cost analysis

53-2922

FYI 38: Icing.

Larabee, S., *U.S. Air Force Air Weather Service, Scott AFB, IL. Report*, Mar. 1997, 12p. + figs., ADA-324 098, 11 refs.

Aircraft icing, Ice accretion, Ice forecasting, Cloud physics, Weather forecasting

53-2923

**Constitutive laws for sea ice dynamics models.** Pritchard, R.S., San Rafael, CA, Icecasting, Inc., 1997, 4p., ADA-331 572, 10 refs.

Research projects, Sea ice distribution, Ice conditions, Ice cover thickness, Ice forecasting, Ice models, Computerized simulation

53-2924

**Mountain terrain analysis using a knowledge-based interface to a GIS.**

Peddle, D.R., Duguay, C.R., *Geomatca*, 1998, 52(3), p.265-272, With French summary. 22 refs.

Alpine landscapes, Alpine tundra, Topographic surveys, Terrain identification, Computer programs, Data processing, Image processing, Mapping, Rocky Mountains

53-2925

**St. Lawrence River Valley 1998 ice storm: maps and facts.**

Soulard, F., Trant, D., Filoso, J., Van Wesenbeeck, P., *Geomatca*, 1998, 52(3), p.310-315, 317-324, In English and French. 20 refs.

Ice storms, Power line icing, Ice loads, Accidents, Rescue operations, Cost analysis, Canada—Saint Lawrence River

53-2926

**Caltrans fleet clears mountain roads.**

Iwasaki, R.K., *Better roads*, Oct. 1998, 68(10), p.15-16.

Snow removal, Snow removal equipment, Highway planning, Road maintenance, Cost analysis, United States—California—Sierra Nevada

53-2927

**Rates and magnitudes of paraglacial fan formation in the Garhwal Himalaya: implications for landscape evolution.**

Owen, L.A., Sharma, M.C., *Geomorphology*, Dec. 1998, 26(1-3), p.171-184, 29 refs.

Geomorphology, Mountains, Landscape development, Glacial geology, Moraines, Outwash, Sedimentation, Glacial erosion, Mass movements (geology), India—Himalaya Mountains

53-2928

**Slope denudation and the supply of debris to cones in Langtang Himal, central Nepal Himalaya.**

Watanabe, T., Dali, L., Shiraiwa, T., *Geomorphology*, Dec. 1998, 26(1-3), p.185-197, 18 refs.

Geomorphology, Slope processes, Landforms, Glacial geology, Bedrock, Moraines, Rock streams, Sedimentation, Freeze thaw cycles, Photogrammetry, Radioactive age determination, Geochronology, Nepal—Himalaya Mountains

53-2929

**Observations on rock glaciers in the Himalayas and Karakoram Mountains of northern Pakistan and India.**

Owen, L.A., England, J., *Geomorphology*, Dec. 1998, 26(1-3), p.199-213, 33 refs.

Glacial geology, Periglacial processes, Geomorphology, Landscape development, Rock glaciers, Permafrost physics, Talus, Moraines, Mass flow, Classifications, India—Himalaya Mountains, Pakistan—Karakoram Mountains

53-2930

**Mass transport by active rockglaciers in the Khumbu Himalaya.**

Barsch, D., Jakob, M., *Geomorphology*, Dec. 1998, 26(1-3), p.215-222, 16 refs.

Geomorphology, Glacial geology, Rock glaciers, Talus, Periglacial processes, Mass movements (geology), Sediment transport, Seismic refraction, Permafrost indicators, Nepal—Khumbu Himalaya

53-2931

**Physical characteristics of summer sea ice across the Arctic Ocean.**

Tucker, W.B., Gow, A.J., Meese, D.A., Bosworth, H.W., Reimnitz, E., *MP 5307, Journal of geophysical research*, Jan. 15, 1999, 104(C1), p.1489-1504, 64 refs.

Oceanographic surveys, Ice surveys, Sea ice distribution, Ice structure, Physical properties, Chemical properties, Albedo, Ice cores, Ponds, Sediment transport, Ice rafting, Radiometry, Thin sections, Arctic Ocean

Sea ice characteristics were investigated during July and Aug. on the 1994 transect across the Arctic Ocean. Properties examined from ice cores included salinity, temperature and ice structure. Salinities measured near zero at the surface, increasing to 3-4 per mill at the ice-water interface. Ice crystal texture was dominated by columnar ice, comprising 90% of the ice sampled. Surface albedos of various ice types, measured with radiometers, showed integrated shortwave albedos of 0.1 to 0.3 for melt ponds, 0.5 for bare, discolored ice, and 0.6 to 0.8 for a deteriorated surface or snow-covered ice. Aerial photography was utilized to document the distribution of open melt ponds, which decreased from 12% coverage of the ice surface in late July at 76°N to almost none in mid-Aug. at 88°N. Most melt ponds were shallow, and depth bore no relationship to size. Sediment was pervasive from the southern Chukchi Sea to the north pole, occurring in bands or patches. It was absent in the Eurasian Arctic, where it had been observed on earlier expeditions. Calculations of reverse trajectories of the sediment-bearing floes suggest that the southernmost sediment was entrained during ice formation in the Beaufort Sea while more northerly samples probably originated in the East Siberian Sea, some as far west as the New Siberian Islands.

53-2932

**Location and dynamics of the Antarctic Polar Front from satellite sea surface temperature data.**

Moore, J.K., Abbott, M.R., Richman, J.G., *Journal of geophysical research*, Feb. 15, 1999, 104(C2), p.3059-3073, Refs. p.3071-3073.

Oceanography, Subpolar regions, Ocean currents, Boundary layer, Bottom topography, Topographic effects, Surface temperature, Spaceborne photography, Sensor mapping, Seasonal variations, Temperature effects, Statistical analysis, Antarctica

53-2933

**Tides and tidal torques of the world ocean since the last glacial maximum.**

Thomas, M., Sündermann, J., *Journal of geophysical research*, Feb. 15, 1999, 104(C2), p.3159-3183, 41 refs.

Pleistocene, Oceanography, Glacier oscillation, Ice cover effect, Tides, Friction, Sea level, Gravity, Mathematical models, Hydrodynamics, Turbulent exchange, Mathematical models

53-2934

**Non-Redfield carbon and nitrogen cycling in the Arctic: effects of ecosystem structure and dynamics.**

Daly, K.L., et al, *Journal of geophysical research*, Feb. 15, 1999, 104(C2), p.3185-3199, Refs. p.3197-3199.

Subpolar regions, Marine biology, Ecosystems, Biomass, Plankton, Water chemistry, Particles, Solubility, Geochemical cycles, Nutrient cycle, Sampling, Indexes (ratios), Accuracy, Arctic Ocean

53-2935

**Investigations of Fennoscandian glacial isostatic adjustment using modern sea level records.**

Davis, J.L., Mitrovica, J.X., Scherneck, H.G., Fan, H., *Journal of geophysical research*, Feb. 10, 1999, 104(B2), p.2733-2747, 38 refs.

Marine geology, Glacial geology, Subpolar regions, Sea level, Tides, Isostasy, Ice cover effect, Models, Viscoelasticity, Statistical analysis, Seasonal variations, Correlation, Baltic Sea

53-2936

**Experimental and theoretical fracture mechanics applied to antarctic ice fracture and surface crevasse.**

Rist, M.A., et al, *Journal of geophysical research*, Feb. 10, 1999, 104(B2), p.2973-2987, 74 refs.

Ice shelves, Ice mechanics, Crack propagation, Cracking (fracturing), Tensile properties, Crevasse, Orientation, Ice cores, Mechanical tests, Models, Theories, Antarctica—Ronne Ice Shelf, Antarctica—Filchner Ice Shelf

53-2937

**Freezing and melting of water in a single cylindrical pore: the pore-size dependence of freezing and melting behavior.**

Morishige, K., Kawano, K., *Journal of chemical physics*, Mar. 8, 1999, 110(10), p.4867-4872, 44 refs.

Ice physics, Water structure, Adsorption, Supercooling, Freezing points, Melting points, Phase transformations, Hygroscopic water, Freeze thaw cycles, Ice water interface, Porous materials, X ray diffraction

53-2938

**Evidence for a substantial role for dilution in northern mid-latitude ozone depletion.**

Knudsen, B.M., Lahoz, W.A., O'Neill, A., Morcrette, J.J., *Geophysical research letters*, Dec. 15, 1998, 25(24), p.4501-4504, 25 refs.

Climatology, Ozone, Photochemical reactions, Degradation, Polar atmospheres, Air masses, Migration, Advection

53-2939

**Automatic orbital tuning method for paleoclimate records.**

Yu, Z.W., Ding, Z.L., *Geophysical research letters*, Dec. 15, 1998, 25(24), p.4525-4528, 17 refs.

Paleoclimatology, Pleistocene, Climatic changes, Loess, Grain size, Sediments, Geochronology, Insolation, Mathematical models, Spectra, Correlation

53-2940

**Extreme fractionation of gases caused by formation of clathrate hydrates in Vostok antarctic ice.**

Ikeda, T., et al, *Geophysical research letters*, Jan. 1, 1999, 26(1), p.91-94, 28 refs.

Glaciology, Glacier ice, Ice physics, Ice air interface, Phase transformations, Bubbles, Natural gas, Vapor transfer, Clathrates, Hydrates, Ice spectroscopy, Antarctica

53-2941

**History of the last deglaciation and Holocene in the Nordic seas as revealed by coccolithophore assemblages.**

Andruleit, H.A., Baumann, K.H., *Marine micropaleontology*, Dec. 1998, 35(3-4), p.179-201, 57 refs.

Pleistocene, Paleocology, Plankton, Oceanography, Ocean currents, Subpolar regions, Glaciation, Bottom sediment, Drill core analysis, Radioactive age determination, Geochronology, Correlation, Atlantic Ocean, Norwegian Sea, Iceland Sea, Greenland Sea

53-2942

**Variability of snowmelt runoff and soil moisture recharge.**

Harms, T.E., Chanasyk, D.S., *Nordic hydrology*, 1998, 29(3), p.179-198, 18 refs.

Snow hydrology, Watersheds, Snowmelt, Runoff, Snow water equivalent, Soil water, Moisture transfer, Slope orientation, Soil temperature, Seasonal variations, Meteorological factors, Flow measurement, Canada—Alberta

53-2943

**Observations of ice and its sediments on the Baltic Sea coast.**

Leppäranta, M., Tikkanen, M., Shemeikka, P., *Nordic hydrology*, 1998, 29(3), p.199-220, 24 refs.

Oceanography, Sea ice, Sedimentation, Suspended sediments, Ice microstructure, Impurities, Snow ice interface, Salinity, Solubility, Meltwater, Chemical analysis, Thin sections, Baltic Sea

53-2944

**Snowpack chemistry during snow accumulation and melt in mature subalpine forest and regenerating clear-cut in the southern interior of B.C.** Hudson, R.O., Golding, D.L., *Nordic hydrology*, 1998, 29(3), p.221-244, 28 refs.  
Snow hydrology, Metamorphism (snow), Watersheds, Vegetation factors, Hydrogeochemistry, Meltwater, Leaching, Impurities, Sampling, Ion density (concentration), Profiles, Statistical analysis, Canada—British Columbia

53-2945

**Neotectonics and seismicity in the south-eastern Beaufort Sea, polar continental margin of north-western Canada.**

Stephenson, R.A., Smolianinova, E.I., *Journal of geodynamics*, Mar. 1999, 27(2), p.175-190, Refs. p.188-190.

Tectonics, Geological surveys, Marine geology, Subpolar regions, Earthquakes, Subsidence, Earth crust, Shear stress, Seismic refraction, Profiles, Mathematical models, Beaufort Sea

53-2946

**Holocene environmental history of a peatland in the Lena River valley, Siberia.**

Jasinski, J.P.P., et al, *Canadian journal of earth sciences*, June 1998, 35(6), p.637-648, With French summary, 49 refs.

Paleoecology, Palynology, Landscape development, Subpolar regions, Polygonal topography, Permafrost structure, Active layer, Quaternary deposits, Peat, Soil formation, Stratigraphy, Drill core analysis, Radioactive age determination, Russia—Siberia

53-2947

**Biomass burning signatures in the atmosphere of central Greenland.**

Jaffrezo, J.L., et al, *Journal of geophysical research*, Dec. 20, 1998, 103(D23), p.31,067-31,078, 59 refs.  
Climatology, Polar atmospheres, Ice sheets, Snow composition, Atmospheric composition, Aerosols, Sedimentation, Solubility, Biomass, Forest fires, Particle size distribution, Sampling, Origin, Greenland

53-2948

**Spreading and growth of contrails in a sheared environment.**

Jensen, E.J., Ackerman, A.S., Stevens, D.E., Toon, O.B., Minnis, P., *Journal of geophysical research*, Dec. 27, 1998, 103(D24), p.31,557-31,567, 24 refs.  
Climatology, Atmospheric composition, Cloud physics, Aerosols, Condensation trails, Vapor diffusion, Water content, Shear flow, Ice crystal growth, Heterogeneous nucleation, Radiant heating, Age determination, Simulation

53-2949

**Correction of thin cirrus path radiance in the 0.4-1.0 μm spectral region using the sensitive 1.375 μm cirrus detecting channel.**

Gao, B.C., Kaufman, Y.J., Han, W., Wiscombe, W.J., *Journal of geophysical research*, Dec. 27, 1998, 103(D24), p.32,169-32,176, 15 refs.

Remote sensing, Infrared spectroscopy, Cloud physics, Ice crystals, Ice optics, Radiance, Reflectivity, Resolution, Radiation absorption, Countermeasures, Image processing

53-2950

**Late 20th century increase in South Pole snow accumulation.**

Mosley-Thompson, E., Paskievitch, J.F., Gow, A.J., Thompson, L.G., MP 5308, *Journal of geophysical research*, Feb. 27, 1999, 104(D4), p.3877-3886, 49 refs.

Climatology, Global change, Global warming, Polar atmospheres, Precipitation (meteorology), Snow accumulation, Snow water equivalent, Ice cores, Isotope analysis, Seasonal variations, Statistical analysis, Antarctica—Amundsen-Scott Station

A compilation of the 37-year history of net accumulation at the South Pole suggests an increase in net annual accumulation since 1965. This record is sporadic and its quality is compromised by spatially restricted observations and nonsystematic measurement procedures. Results from a new, spatially extensive network of 236 accumulation poles document that the current 5-year (1992-97) average annual net accumulation at the South Pole is 84.4±8.9 mm water equivalent (w.e.). This accumulation rate reflects a 30% increase

since the 1960s when the best, although not optimal, records indicate that it was 65 mm w.e. Identification of two prominent beta radioactivity horizons (1954-55 and 1964-65) in six firm cores confirms an increase in accumulation since 1965. Viewed from a longer perspective of accumulation provided by ice cores and a snow mine study, the net accumulation of the 30-year period, 1965-1994, is the highest 30-year average of this millennium. Limited data suggest this recent accumulation increase extends beyond the South Pole region and may be characteristic of the high East Antarctic Plateau. Enhanced accumulation over the polar ice sheets has been identified as a potential early indicator of warmer sea surface temperatures and may offset a portion of the current rise in global sea level.

53-2951

**Importance of thermodynamics for modeling the volume of the Greenland ice sheet.**

Van de Wal, R.S.W., *Journal of geophysical research*, Feb. 27, 1999, 104(D4), p.3887-3898, 24 refs.

Pleistocene, Glaciology, Ice sheets, Glacier mass balance, Glacier flow, Ice volume, Spectra, Ice temperature, Surface energy, Thermodynamics, Models, Temperature effects, Greenland—Summit

53-2952

**Processes of buildup and retreat of the Greenland ice sheet.**

Van de Wal, R.S.W., *Journal of geophysical research*, Feb. 27, 1999, 104(D4), p.3899-3906, 36 refs.

Pleistocene, Ice sheets, Subpolar regions, Glacier oscillation, Glacier mass balance, Ice volume, Basal sliding, Bedrock, Insolation, Radiation balance, Thermodynamics, Models, Greenland

53-2953

**Annual cycle of energy balance of Zongo Glacier, Cordillera Real, Bolivia.**

Wagnon, P., Ribstein, P., Francou, B., Pouyaud, B., *Journal of geophysical research*, Feb. 27, 1999, 104(D4), p.3907-3923, 33 refs.

Glaciology, Mountain glaciers, Glacier mass balance, Surface energy, Radiation balance, Albedo, Heat flux, Turbulent exchange, Surface roughness, Seasonal variations, Snow evaporation, Sampling, Bolivia—Zongo Glacier

53-2954

**Energy exchange in early spring over sea ice in the Pacific sector of the southern ocean.**

Hauser, A., Wendler, G., Adolphs, U., Jeffries, M.O., *Journal of geophysical research*, Feb. 27, 1999, 104(D4), p.3925-3935, 40 refs.

Climatology, Sea ice, Albedo, Cloud cover, Radiation balance, Atmospheric boundary layer, Marine atmospheres, Snow ice interface, Heat flux, Turbulent exchange, Snow cover effect, Ice cover effect, Diurnal variations, Photometry, Antarctica—Ross Sea, Antarctica—Weddell Sea, Antarctica—Bellinghousen Sea

53-2955

**Atmospheric transmission of North Atlantic Heinrich events.**

Hostetler, S.W., Clark, P.U., Bartlein, P.J., Mix, A.C., Piasias, N.J., *Journal of geophysical research*, Feb. 27, 1999, 104(D4), p.3947-3952, 48 refs.

Paleoclimatology, Climatic changes, Atmospheric composition, Natural gas, Ocean currents, Water balance, Surface temperature, Glacier oscillation, Glacier surges, Ice rafting, Ice cover effect, Models, Ice age theory, Atlantic Ocean

53-2956

**In situ measurements of effective diameter and effective droplet number concentration.**

Korolev, A.V., Isaac, G.A., Strapp, J.W., Nevzorov, A.N., *Journal of geophysical research*, Feb. 27, 1999, 104(D4), p.3993-4003, 35 refs.

Climatology, Cloud physics, Optical properties, Radiation, Scattering, Attenuation, Cloud droplets, Ice crystal optics, Water content, Probes, Spectroscopy

53-2957

**Environmentally friendly anti- or deicing compositions, and process for deicing the exterior surface of aircraft and motor vehicles, and of road surfaces and sidewalks, using the compositions.**

Lockyer, R.T., Zuk, J., Haslim, L.A., *U.S. Patent Office. Patent*, June 30, 1998, n.p., USP-5,772,912, Cont.-in-part of USP-380913.

Aircraft icing, Ice removal, Chemical ice prevention, Antifreezes, Environmental protection

53-2958

**Snow-melting apparatus with integrated snow-melting tank for road surface.**

Ishii, S., Ono, M., Mochizuki, M., Chiba, T., Yamada, T., *Japan Patent Office. Patent*, Jan. 20, 1998, n.p., No.9818260.

Snow melting, Artificial melting, Snow removal equipment, Road maintenance

53-2959

**Ice- and snow-repellent antennas.**

Chouta, M., Hayakawa, M., *Japan Patent Office. Patent*, June 19, 1998, n.p., No.98163720.

Antennas, Radomes, Ice prevention, Snow removal, Protective coatings

53-2960

**Cold acclimatization of tropical men during short- & long-term sojourn to polar environment.**

Purkayastha, S.S., Majumdar, D., Selvamurthy, W., *Defence science journal*, Apr. 1997, 47(2), p.149-158, 25 refs.

DLC U395.15D4 V47 1997

Cold exposure, Physiological effects, Acclimatization, Health, Antarctica

53-2961

**Environmentally benign deicing/anti-icing technology.**

Sapienza, R.S., Heater, K.J., *U.S. Air Force Research Laboratory. Air Force Materiel Command, Wright-Patterson AFB, OH. Report*, June 1998, AFRLML-WP-TR-98-4045, 27p., ADA-346 962.

Aircraft icing, Chemical ice prevention, Antifreezes, Environmental protection

53-2962

**GPS heading determination using short antenna baselines.**

Vinnins, M., Gallop, L.D., *Canada. Defence Research Establishment, Ottawa. Technical note*, Apr. 1997, DREO-TN-98-001, 56p., ADA-341 662, With French summary, 17 refs.

Sea ice distribution, Ice conditions, Ice detection, Ice surveys, Drift, Ice reporting, Ice forecasting, Telemetering equipment, Canada

53-2963

**Evaluation of the natural biodegradation of aircraft deicing fluid components in soils.**

Johnson, L.M., *U.S. Air Force Institute of Technology, Wright-Patterson AFB, OH. Report*, Dec. 1997, AFIT/GEE/ENV/97D-12, Var. p. + appends., ADA-334 350, M.S. thesis submitted to Air Force Institute of Technology, Air University, Wright-Patterson AFB, OH, 35 refs.

Aircraft icing, Chemical ice prevention, Antifreezes, Soil pollution, Soil microbiology, Bacteria, Decomposition

53-2964

**Ice-cover influence on near-field mixing in dune-bed channel: numerical simulation.**

Tan, C.A., Sinha, S.K., Ettema, R., *Journal of cold regions engineering*, Mar. 1999, 13(1), p.1-20, 22 refs.

River flow, Hydrodynamics, River ice, Channels (waterways), Bottom topography, Ice cover effect, Buoyancy, Water intakes, Turbulent diffusion, Mathematical models, Impurities

53-2965

**Servo-hydraulic pin loading device (HPLD) for in situ ice testing.**

Vincent, M.R., Dempsey, J.P., *Journal of cold regions engineering*, Mar. 1999, 13(1), p.21-36, 11 refs.

Ice mechanics, Floating ice, Loading, Dynamic loads, Stabilization, Ice solid interface, Mechanical tests, Cracking (fracturing), Test equipment, Design criteria, Performance, Computer applications

53-2966

**Field testing of stabilized soil.**

Janoo, V.C., Firicano, A.J., Barna, L.A., Orchino, S.A., MP 5309, *Journal of cold regions engineering*, Mar. 1999, 13(1), p.37-53, 8 refs.

Soil tests, Pavement bases, Subgrade soils, Soil strength, Bearing strength, Compressive properties, Soil stabilization, Freeze thaw cycles, Frost penetration, Penetration tests

Remediation of a Superfund site in Stratford, CT, involved stabilization of the subgrade with portland cement. Part of the remediation site was to be used as a parking area. The stabilized soil was to be covered with natural base/subbase coarse materials and capped with an asphalt concrete cover. During the course of the remediation, a base-course layer could not be placed prior to the onset of winter. A field study was conducted to quantify any changes in the mechanical properties of the open stabilized subgrade subjected to freeze-thaw cycling during the winter of 1996-97. Field evaluation was conducted with pavement industry tools: the Clegg impact hammer and the dynamic cone penetrometer. Evaluation results show the viability of the Clegg hammer as an instrument for quality assurance and also show that there can be up to 50% loss in compressive strength of the subgrade within the uppermost layer of the material caused by freeze-thaw cycling.

53-2967

**Frozen ground conditions in the Russian Arctic during the Middle Pleistocene-Holocene.**

Rozenbaum, G.E., Shpolianskaia, N.S., *Polar geography*, Oct.-Dec. 1998, 22(4), p.249-267, Translated from *Akademiia nauk. Izvestiia. Seria geograficheskaiia* Refs. p.265-267.

Pleistocene, Paleoclimatology, Climatic changes, Geocryology, Subpolar regions, Permafrost transformation, Permafrost distribution, Permafrost thickness, Models, Classifications, Oscillations, Russia—Siberia

53-2968

**Contamination of bottom sediments in Kola Bay, Russia.**

Matishov, G.G., et al, *Polar geography*, Oct.-Dec. 1998, 22(4), p.283-292, Translated from *Akademiia nauk. Izvestiia. Seria geograficheskaiia*. 19 refs.

Oceanographic surveys, Water pollution, Subpolar regions, Bottom sediment, Hydrocarbons, Metals, Sampling, Environmental tests, Russia—Kola Bay

53-2969

**Carbon accumulation in the mineral subsoil of boreal mires.**

Turunen, J., Tolonen, K., Tolvanen, S., Remes, M., Ronkainen, J., Jungner, H., *Global biogeochemical cycles*, Mar. 1999, 13(1), p.71-79, 53 refs.

Geochemical cycles, Podsol, Paludification, Subpolar regions, Ecosystems, Peat, Swamps, Carbon dioxide, Subgrade soils, Soil dating, Radioactive age determination, Finland

53-2970

**Controls on CH<sub>4</sub> emissions from a northern peatland.**

Bellisario, L.M., Bubier, J.L., Moore, T.R., Chanton, J.P., *Global biogeochemical cycles*, Mar. 1999, 13(1), p.81-91, 48 refs.

Discontinuous permafrost, Peat, Wetlands, Biomass, Plant tissues, Decomposition, Water table, Geochemical cycles, Natural gas, Vapor transfer, Soil air interface, Vegetation factors, Sampling, Canada—Manitoba—Thompson

53-2971

**Methane flux in subalpine wetland and unsaturated soils in the southern Rocky Mountains.**

Wickland, K.P., Striegl, R.G., Schmidt, S.K., Mast, M.A., *Global biogeochemical cycles*, Mar. 1999, 13(1), p.101-113, 69 refs.

Soil chemistry, Mountain soils, Wetlands, Alpine landscapes, Natural gas, Vapor diffusion, Snow cover effect, Geochemical cycles, Soil air interface, Soil temperature, Seasonal variations, Sampling, United States—Colorado—Rocky Mountain National Park

53-2972

**Use of SSM/I ice concentration data in the ECMWF SST analysis.**

Fernandez, P., Kelly, G., Saunders, R., *Meteorological applications*, Dec. 1998, 5(4), p.287-296, 8 refs. Radiometry, Climatology, Polar atmospheres, Sea ice distribution, Ice edge, Seasonal variations, Water temperature, Ice temperature, Surface temperature, Weather forecasting, Statistical analysis, Antarctica

53-2973

**Particle size estimation in ice-phase clouds using multifrequency radar reflectivity measurements at 95, 33, and 2.8 GHz.**

Sekelsky, S.M., Ecklund, W.L., Firda, J.M., Gage, K.S., McIntosh, R.E., *Journal of applied meteorology*, Jan. 1999, 38(1), p.5-28, 53 refs.

Precipitation (meteorology), Cloud physics, Thunderstorms, Radar echoes, Profiles, Ice crystal optics, Refractivity, Ice detection, Particle size distribution, Mathematical models

53-2974

**Microwave properties of frozen precipitation around a North Atlantic cyclone.**

Schols, J.L., Weinman, J.A., Alexander, G.D., Stewart, R.E., Angus, L.J., Lee, A.C.L., *Journal of applied meteorology*, Jan. 1999, 38(1), p.29-43, 41 refs.

Precipitation (meteorology), Cloud physics, Storms, Spacecraft, Radiometry, Brightness, Falling snow, Ice detection, Aggregates, Snow melting, Profiles, Mathematical models, North Atlantic Ocean

53-2975

**Using the Special Sensor Microwave/Imager to monitor land surface temperatures, wetness, and snow cover.**

Basist, A., Grody, N.C., Peterson, T.C., Williams, C.N., *Journal of applied meteorology*, Sep. 1998, 37(9), p.888-911, 36 refs.

Climatology, Precipitation (meteorology), Atmospheric boundary layer, Surface temperature, Temperature measurement, Spacecraft, Radiometry, Brightness, Snow cover distribution, Snow cover effect, Indexes (ratios), Mathematical models, United States

53-2976

**Loess soils of China as records of climatic change.**

Kemp, R.A., Derbyshire, E., *European journal of soil science*, Dec. 1998, 49(4), p.525-539, 62 refs.

Pleistocene, Paleoclimatology, Climatic changes, Precipitation (meteorology), Loess, Sedimentation, Soil formation, Oxygen isotopes, Remanent magnetism, Stratigraphy, Soil dating, China

53-2977

**Late Cretaceous paleomagnetic data from the Median Range of Kamchatka, Russia: tectonic implications.**

Levashova, N.M., Shapiro, M.N., Bazhenov, M.L., *Earth and planetary science letters*, Nov. 1998, 163(1-4), p.235-246, 30 refs.

Pleistocene, Geological surveys, Subpolar regions, Continental drift, Tectonics, Earth crust, Lithology, Geomagnetism, Rock properties, Magnetic properties, Sampling, Russia—Kamchatka Peninsula

53-2978

**Refining the eustatic sea-level curve since the Last Glacial Maximum using far- and intermediate-field sites.**

Fleming, K., Johnston, P., Zwart, D., Yokoyama, Y., Lambeck, K., Chappell, J., *Earth and planetary science letters*, Nov. 1998, 163(1-4), p.327-342, 50 refs. Pleistocene, Oceanography, Sea level, Glacier oscillation, Glacier melting, Meltwater, Ice volume, Isostasy, Models

53-2979

**Spring ozone column values over Thule, Greenland in the period 1991-1998.**

Andersen, S.B., *Geophysical research letters*, Jan. 15, 1999, 26(2), p.193-196, 13 refs.

Climatology, Polar atmospheres, Atmospheric composition, Degradation, Aerosols, Ozone, Stratification, Seasonal variations, Spectroscopy, Greenland—Thule

53-2980

**On the frequency distribution of net annual snow accumulation at the South Pole.**

Van der Veen, C.J., Whillans, I.M., Gow, A.J., MP 5310, *Geophysical research letters*, Jan. 15, 1999, 26(2), p.239-242, 11 refs.

Paleoclimatology, Geochronology, Precipitation (meteorology), Polar atmospheres, Snow accumulation, Snow stratigraphy, Thickness, Seasonal variations, Statistical analysis, Accuracy, Antarctica—South Pole

The frequency distribution of stratigraphic layer thickness in cores and a snowmine at South Pole is not compatible with a significant number (>1%) of missing layers associated with zero-accumulation years inferred from pole-height measurements. A reconciliation of these data sets is needed if observed stratigraphic records are to be used as reliable paleoclimate indicators. Three explanations for the discrepancy are offered, namely (i) during a significant number of years, a visible stratigraphic horizon does not form or is not identified, (ii) the true distribution is characterized by two maxima, with a secondary maximum centered around zero layer thickness, or (iii) the pole-height measurements are misinterpreted and there are very few zero-accumulation years at South Pole. With the currently available data, it is not possible to discriminate among these three possibilities.

53-2981

**Compressive creep of ice containing a liquid intergranular phase: rate-controlling processes in the dislocation creep regime.**

De La Chapelle, S., Milsch, H., Castelnaud, O., Duval, P., *Geophysical research letters*, Jan. 15, 1999, 26(2), p.251-254, 25 refs.

Ice physics, Glacier ice, Ice creep, Brines, Meltwater, Phase transformations, Liquid phases, Ice water interface, Ice deformation, Ice microstructure, Strain tests

53-2982

**Layers of antarctic krill, *Euphausia superba*: are they just long krill swarms?**

Watkins, J.L., Murray, A.W.A., *Marine biology*, May 1998, 131(2), p.237-247, 54 refs.

Marine biology, Plankton, Ecology, Aggregates, Distribution, Stratification, Sampling, Sounding, Underwater acoustics, Antarctica—Elephant Island

53-2983

**Capability of dynamic photoinhibition in arctic macroalgae is related to their depth distribution.**

Hanelt, D., *Marine biology*, May 1998, 131(2), p.361-369, 46 refs.

Marine biology, Subpolar regions, Algae, Ecology, Growth, Photosynthesis, Photochemical reactions, Solar radiation, Light effects, Sampling, Simulation, Norway—Spitsbergen

53-2984

**North Atlantic deep water circulation collapse during Heinrich events.**

Seidov, D., Maslin, M., *Geology*, Jan. 1999, 27(1), p.23-26, 39 refs.

Pleistocene, Oceanography, Subpolar regions, Ocean currents, Convection, Glacier melting, Ice rafting, Meltwater, Salinity, Icebergs, Models, Atlantic Ocean, Barents Sea

53-2985

**Metasedimentary influence on metavolcanic-rock-hosted greenstone gold deposits: geochemistry of the Giant mine, Yellowknife, Northwest Territories, Canada.**

Van Hees, E.H.P., et al, *Geology*, Jan. 1999, 27(1), p.71-74, 23 refs.

Mining, Gold, Subpolar regions, Lithology, Mineralogy, Hydrothermal processes, Sedimentation, Rock properties, Quaternary deposits, Geochemistry, Drill core analysis, Canada—Northwest Territories—Yellowknife

53-2986

**Plant responses to species removal and experimental warming in Alaskan tussock tundra.**

Hobbie, S.E., Shevtsova, A., Chapin, F.S., III, *Oikos*, Mar. 1999, No.84, p.417-434, Refs. p.432-434.

Plant ecology, Tundra vegetation, Forest ecosystems, Air temperature, Modification, Biomass, Growth, Temperature effects, Global warming, Greenhouse effect, Simulation, United States—Alaska—Toolik Lake

53-2987

**Costs of reproduction in subarctic *Ranunculus acris*: a five-year field experiment.**

Hemborg, Å.M., *Oikos*, Nov. 1998, No.83, p.273-282, 62 refs.

Plant ecology, Alpine landscapes, Plants (botany), Plant tissues, Modification, Growth, Modification, Statistical analysis, Sweden—Abisko

53-2988

**Thermodynamic effects of sublimating, blowing snow in the atmospheric boundary layer.**

Déry, S.J., Taylor, P.A., Xiao, J.B., *Boundary-layer meteorology*, Nov. 1998, 89(2), p.251-283, 48 refs.

Atmospheric boundary layer, Snow physics, Blowing snow, Sublimation, Snow evaporation, Humidity, Snow air interface, Thermodynamics, Mathematical models, Wind factors

53-2989

**Water column sediment fluxes in the Ross Sea, Antarctica: atmospheric and sea ice forcing.**

Dunbar, R.B., Leventer, A.R., Mucciarone, D.A., *Journal of geophysical research*, Dec. 15, 1998, 103(C13), p.30,741-30,759, 68 refs.

Ocean environments, Sea water, Marine biology, Suspended sediments, Air water interactions, Sea ice distribution, Ice cover effect, Algae, Biomass, Nutrient cycle, Geochemical cycles, Antarctica—Ross Sea

53-2990

**Surface longwave radiation conditions in the eastern Weddell Sea during winter.**

Guest, P.S., *Journal of geophysical research*, Dec. 15, 1998, 103(C13), p.30,761-30,771, 40 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Ocean currents, Air ice water interaction, Ice heat flux, Cloud cover, Radiation balance, Statistical analysis, Antarctica—Weddell Sea

53-2991

**Investigation of subsurface water flow along the continental margin of the Eurasian Basin using the transient tracers tritium, <sup>3</sup>He, and CFCs.**

Frank, M., Smethie, W.M., Jr., Bayer, R., *Journal of geophysical research*, Dec. 15, 1998, 103(C13), p.30,773-30,792, 36 refs.

Oceanographic surveys, Ocean currents, Water transport, Sea water, Water temperature, Salinity, Water chemistry, Isotopic labeling, Radioactive age determination, Arctic Ocean

53-2992

**Dynamics of transport of "Atlantic signature" in the Arctic Ocean.**

Nazarenko, L., Holloway, G., Tausnev, N., *Journal of geophysical research*, Dec. 15, 1998, 103(C13), p.31,003-31,015, 53 refs.

Ocean currents, Water transport, Sea water, Water chemistry, Water pollution, Ice cover effect, Drift, Turbulent exchange, Mathematical models

53-2993

**Tidal variability of the geomagnetic polar cap mesopause above Resolute Bay.**

Fisher, G.M., Killeen, T.L., Wu, Q., Hays, P.B., Reeves, J.M., *Geophysical research letters*, Mar. 1, 1999, 26(5), p.573-576, 27 refs.

Climatology, Polar atmospheres, Wind direction, Velocity measurement, Gravity waves, Oscillations, Geomagnetism, Optical phenomena, Detection, Spectra, Oscillations, Radar echoes, Canada—Northwest Territories—Resolute Bay

53-2994

**Chemical ozone depletion during arctic winter 1997/98 derived from ground based millimeter-wave observations.**

Langer, J., Barry, B., Klein, U., Sinnhuber, B.M., Wohltmann, I., Künzi, K.F., *Geophysical research letters*, Mar. 1, 1999, 26(5), p.599-602, 14 refs.

Climatology, Polar atmospheres, Atmospheric composition, Stratosphere, Air masses, Aerosols, Degradation, Turbulent diffusion, Ozone, Radiometry, Profiles, Seasonal variations, Norway—Spitsbergen

53-2995

**Type I PSC-particle properties: measurements at ALOMAR 1995 to 1997.**

Mehrtens, H., Von Zahn, U., Fierli, F., Nardi, B., Deshler, T., *Geophysical research letters*, Mar. 1, 1999, 26(5), p.603-606, 14 refs.

Climatology, Polar atmospheres, Cloud physics, Cooling rate, Polar stratospheric clouds, Classifications, Particle size distribution, Optical properties, Thermodynamic properties, Lidar, Backscattering, Refractivity, Norway—Andenes

53-2996

**National Petroleum Reserve—Alaska: a review of recent exploration.**

Montgomery, S.L., *AAPG bulletin*, July 1998, 82(7), p.1281-1299, 19 refs.

Exploration, Natural resources, Crude oil, Petroleum industry, Hydrocarbons, United States—Alaska

53-2997

**Latest Cretaceous-Tertiary tectonic evolution of northern Yukon and adjacent arctic Alaska.**

Lane, L.S., *AAPG bulletin*, July 1998, 82(7), p.1353-1371, Refs. p.1369-1371.

Pleistocene, Subpolar regions, Tectonics, Earth crust, Deformation, Hydrocarbons, Reservoirs, Exploration, United States—Alaska, Canada—Yukon Territory

53-2998

**Glacial eustasy during the Cenozoic: sequence stratigraphic implications.**

Abreu, V.S., Anderson, J.B., *AAPG bulletin*, July 1998, 82(7), p.1385-1400, Refs. p.1397-1400.

Pleistocene, Glacial geology, Glaciation, Isostasy, Stratigraphy, Oxygen isotopes, Isotope analysis, Geochronology, Drill core analysis, Correlation, Antarctica

53-2999

**Implications for sedimentation changes on the Iberian margin over the last two glacial/interglacial transitions from (<sup>230</sup>Th)<sub>excess</sub> systematics.**

Thomson, J., Nixon, S., Summerhayes, C.P., Schönfeld, J., Zahn, R., Grootes, P., *Earth and planetary science letters*, Feb. 15, 1999, 165(3-4), p.255-270, 47 refs.

Pleistocene, Oceanography, Marine geology, Marine deposits, Sedimentation, Ice rafting, Radioactive age determination, Drill core analysis, Radioactivity, Indexes (ratios), Atlantic Ocean

53-3000

**200 ka geomagnetic chronostratigraphy for the Labrador Sea: indirect correlation of the sediment record to SPECMAP.**

Stoner, J.S., Channell, J.E.T., Hillaire-Marcel, C., *Earth and planetary science letters*, June 30, 1998, 159(3-4), p.165-181, 43 refs.

Pleistocene, Marine geology, Geomagnetism, Subpolar regions, Marine deposits, Ice rafting, Sedimentation, Drill core analysis, Stratigraphy, Geochronology, Radioactive age determination, Labrador Sea

53-3001

**Early-Holocene vegetation of northern Iceland: pollen and plant macrofossil evidence from the Skagi peninsula.**

Rundgren, M., *Holocene*, Sep. 1998, 8(5), p.553-564, 47 refs.

Paleoclimatology, Climatic changes, Subpolar regions, Paleobotany, Palynology, Tundra vegetation, Quaternary deposits, Lacustrine deposits, Vegetation patterns, Drill core analysis, Iceland

53-3002

**Latitudinal differences in the influx of microscopic charred particles to lake sediments in Finland.**

Sarmaja-Korjonen, K., *Holocene*, Sep. 1998, 8(5), p.589-597, 58 refs.

Paleoclimatology, Climatic changes, Subpolar regions, Forest ecosystems, Palynology, Lacustrine deposits, Lake ice, Ice cores, Sedimentation, Forest fires, Radioactive age determination, Distribution, Finland

53-3003

**Uncertainty in predicting the effect of climatic change on the carbon cycling of Canadian peatlands.**

Moore, T.R., Roulet, N.T., Waddington, J.M., *Climatic change*, Oct. 1998, 40(2), Workshop on Canadian Freshwater Wetlands and Climate Change, Marsh, Manitoba, Canada, Apr. 1997. Selected papers, p.229-245, Refs. p.242-245.

Climatology, Climatic changes, Global warming, Subarctic landscapes, Peat, Wetlands, Permafrost transformation, Soil air interface, Vapor transfer, Geochemical cycles, Carbon dioxide, Natural gas, Forecasting, Temperature effects, Canada—Northwest Territories

53-3004

**Northern Canadian wetlands: net ecosystem CO<sub>2</sub> exchange and climatic change.**

Waddington, J.M., Griffis, T.J., Rouse, W.R., *Climatic change*, Oct. 1998, 40(2), Workshop on Canadian Freshwater Wetlands and Climate Change, Marsh, Manitoba, Canada, Apr. 1997. Selected papers, p.267-275, 18 refs.

Climatic changes, Global warming, Permafrost hydrology, Wetlands, Ecosystems, Peat, Soil temperature, Continuous permafrost, Active layer, Water table, Geochemical cycles, Soil air interface, Vapor transfer, Models, Canada—Manitoba—Churchill

53-3005

**Holocene climate and the development of a subarctic peatland near Inuvik, Northwest Territories, Canada.**

Vardy, S.R., Warner, B.G., Aravena, R., *Climatic change*, Oct. 1998, 40(2), Workshop on Canadian Freshwater Wetlands and Climate Change, Marsh, Manitoba, Canada, Apr. 1997. Selected papers, p.285-313, Refs. p.310-313.

Paleoclimatology, Climatic changes, Landscape development, Soil formation, Paleocology, Subarctic landscapes, Continuous permafrost, Permafrost hydrology, Peat, Quaternary deposits, Stratigraphy, Drill core analysis, Vegetation patterns, Canada—Northwest Territories—Inuvik

53-3006

**Primary productivity and nutrient utilization ratios in the Pacific sector of the Southern Ocean based on seasonal changes in seawater chemistry.**

Rubin, S.I., Takahashi, T., Chipman, D.W., Goddard, J.G., *Deep-sea research I*, Aug. 1998, 45(8), p.1211-1234, 50 refs.

Sea water, Water chemistry, Ocean currents, Biomass, Nutrient cycle, Geochemical cycles, Antarctica—Ross Sea, Antarctica—Amundsen Sea, Antarctica—Bellingshausen Sea

53-3007

**Changes in lipid composition of copepods and *Euphausia superba* associated with diet and environmental conditions in the marginal ice zone, Bellingshausen Sea, Antarctica.**

Cripps, G.C., Hill, H.J., *Deep-sea research I*, Aug. 1998, 45(8), p.1357-1381, 51 refs.

Ice edge, Ice water interface, Ice cover effect, Marine biology, Algae, Biomass, Nutrient cycle, Antarctica—Bellingshausen Sea

53-3008

**Development of a synergetic sea ice retrieval method for the ERS-1 AMI wind scatterometer and SSM/I radiometer.**

Grandell, J., Johannessen, J.A., Hallikainen, M.T., *IEEE transactions on geoscience and remote sensing*, Mar. 1999, 37(2)pt.1, p.668-679, 20 refs.

Ice surveys, Sea ice distribution, Ice conditions, Ice detection, Spaceborne photography, Radiometry, Image processing

## 53-3009

**Textural information of multitemporal ERS-1 and JERS-1 SAR images with applications to land and forest type classification in boreal zone.**

Kurvonen, L., Hallikainen, M.T., *IEEE transactions on geoscience and remote sensing*, Mar. 1999, 37(2)pt.I, p.680-689, 25 refs.

Taiga, Forest canopy, Vegetation patterns, Terrain identification, Biomass, Spaceborne photography, Synthetic aperture radar, Image processing, Finland—Sodankylä

## 53-3010

**Mapping snow water equivalent by combining a spatially distributed snow hydrology model with passive microwave remote-sensing data.**

Wilson, L.L., Tsang, L., Hwang, J.N., Chen, C.T., *IEEE transactions on geoscience and remote sensing*, Mar. 1999, 37(2)pt.I, p.690-704, 28 refs.

Snow surveys, Snow cover distribution, Snow hydrology, Snow water equivalent, Radiometry, Spaceborne photography, Data processing, United States—Colorado—Rio Grande River

## 53-3011

**Seasat scatterometer observations of sea ice.**

Swift, C.T., *IEEE transactions on geoscience and remote sensing*, Mar. 1999, 37(2)pt.I, p.716-723, 16 refs.

Ice surveys, Sea ice distribution, Ice conditions, Ice detection, Ice edge, Synthetic aperture radar, Radiometry, Backscattering, Spaceborne photography, Beaufort Sea

## 53-3012

**Texture analysis of SAR sea ice imagery using gray level co-occurrence matrices.**

Soh, L.K., Tsatsoulis, C., *IEEE transactions on geoscience and remote sensing*, Mar. 1999, 37(2)pt.I, p.780-795, 70 refs.

Ice surveys, Sea ice distribution, Ice conditions, Ice detection, Spaceborne photography, Synthetic aperture radar, Image processing, Mathematical models

## 53-3013

**Monitoring tree moisture using an estimation algorithm applied to SAR data from BOREAS.**

Moghaddam, M., Saatchi, S.S., *IEEE transactions on geoscience and remote sensing*, Mar. 1999, 37(2)pt.II, p.901-916, 40 refs.

Taiga, Forest canopy, Forest ecosystems, Plant ecology, Trees (plants), Moisture transfer, Moisture detection, Water content, Water balance, Aerial surveys, Synthetic aperture radar, Data processing

## 53-3014

**Multitemporal behavior of L- and C-band SAR observations of boreal forests.**

Pulliainen, J.T., Kurvonen, L., Hallikainen, M.T., *IEEE transactions on geoscience and remote sensing*, Mar. 1999, 37(2)pt.II, p.927-937, 25 refs.

Taiga, Forest canopy, Vegetation patterns, Biomass, Frost penetration, Spaceborne photography, Synthetic aperture radar, Backscattering, Image processing, Finland

## 53-3015

**Effects of snow crystal shape on the scattering of passive microwave radiation.**

Foster, J.L., Hall, D.K., Chang, A.T.C., Rango, A., Wergin, W., Erbe, E., *IEEE transactions on geoscience and remote sensing*, Mar. 1999, 37(2)pt.II, p.1165-1168, 13 refs.

Snow crystal structure, Ice crystal size, Snow cover structure, Snow cover effect, Microwaves, Wave propagation, Scattering, Radiometry

## 53-3016

**Development of high-speed ice-skating rink. [Kosoku suketo rinku no kaihatu]**

Tsushima, K., Kiuchi, T., *Seppyo*, Sep. 1998, 60(5), p.349-356, In Japanese with English summary. 8 refs.

Artificial ice, Ice surface, Metal ice friction, Ice solid interface, Sliding

## 53-3017

**Carbon dioxide concentration under a seasonal snow cover occurring on a coastal plain in the central Japan. [Kisetsuteki sekisetsu chitai ni okeru sekisetsu shita no CO<sub>2</sub> nodo]**

Kominami, Y., Takami, S., Yokoyama, K., Inoue, S., *Seppyo*, Sep. 1998, 60(5), p.357-366, In Japanese with English summary and captions. 10 refs.

Atmospheric composition, Carbon dioxide, Scavenging, Snow composition, Snow permeability, Snow hydrology, Snowmelt, Seepage, Geochemical cycles, Mathematical models, Japan

## 53-3018

**Estimation of snowfall, maximum snow depth and snow cover condition in Japan under global climate change. [Chikyu kankyo henka toki ni okeru kosekisetu no hendo yosoku]**

Inoue, S., Yokoyama, K., *Seppyo*, Sep. 1998, 60(5), p.367-378, In Japanese with English summary. 11 refs.

Snowfall, Snow cover distribution, Snow depth, Global warming, Computerized simulation, Japan

## 53-3019

**Superimposed ice in a cold glacier on the Tibetan Plateau. [Tebetto kogen no kanrei hyoga ni okeru uwazumihyo no kenkyu]**

Fujita, K., *Seppyo*, Sep. 1998, 60(5), p.379-385, In Japanese. 17 refs.

Glacier alimentation, Regelation, Glacier ice, Ice temperature, Glacial hydrology, Glacier mass balance, Glacier heat balance, China—Qinghai-Xizang Plateau

## 53-3020

**Molecular and atomic vibrations of ice—new findings at -34°C. [Kori no naka no bunshi genshi no shindo no kenkyu—-34°C no nazo o chushin toshite]**

Mae, S., *Seppyo*, Sep. 1998, 60(5), p.387-388, In Japanese. 8 refs.

Ice crystal structure, Ice spectroscopy, Molecular structure, Molecular energy levels

## 53-3021

**Some more words on snow countermeasures for National Highway 17 (Part 14). [Kokudo 17-go yuki taisaku yowa (sono 14)]**

Abe, T., *Seppyo*, Sep. 1998, 60(5), p.401-404, In Japanese.

Buildings, Roofs, Snow removal, Drains, Channels (waterways), Japan

## 53-3022

**Snow cover classification of the Japanese Society of Snow and Ice. [Nihon seppyo gakkai sekisetsu bunrui]**

Japanese Society of Snow and Ice, *Seppyo*, Sep. 1998, 60(5), p.419-436, In Japanese with some tables and terms in English.

Snow morphology, Snow cover structure, Snow surveys, Terminology, Classifications

## 53-3023

**Avalanche classification of the Japanese Society of Snow and Ice. [Nihon seppyo gakkai yuki nadare bunrui]**

Japanese Society of Snow and Ice, *Seppyo*, Sep. 1998, 60(5), p.437-444, In Japanese.

Avalanches, Snow slides, Avalanche formation, Avalanche tracks, Terminology, Classifications

## 53-3024

**Comparison of a powder snow avalanche model with thermal experiments on inclined boundaries. [Ryushi fuyu samaru jikken ni yoru enkei yuki nadare ryudo moderu no kento]**

Fukushima, Y., Hagihara, T., Sakamoto, M., *Seppyo*, Nov. 1998, 60(6), p.453-462, In Japanese with English summary. 17 refs.

Avalanche mechanics, Avalanche modeling, Thermal analysis, Mathematical models

## 53-3025

**Japanese automatic weather observation in Antarctica (1992-1997).**

Japanese Society of Snow and Ice. Automatic Weather Station Development Group (Nihon seppyo gakkai Mujin kisho kansoku sochi kaihatu gurupu), Takahashi, S., *Seppyo*, Nov. 1998, 60(6), p.463-472, In Japanese with English summary. 11 refs.

Polar atmospheres, Weather stations, Meteorological instruments, Anemometers, Wind velocity, Air temperature, Wind power generation, Batteries, Antarctica—Queen Maud Land

## 53-3026

**Snow pressures on the leg structures of power transmission towers. [Soden-yo tetto kyakubu ni sayo suru sekisetsu kaju ni tsuite]**

Hongo, E., *Seppyo*, Nov. 1998, 60(6), p.473-490, In Japanese with English summary. 3 refs.

Power line supports, Towers, Snow loads, Design criteria, Mathematical models

## 53-3027

**Some more words on snow countermeasures for National Highway 17 (Part 15). [Kokudo 17-go yuki taisaku yowa (sono 15)]**

Abe, T., *Seppyo*, Nov. 1998, 60(6), p.491-495, In Japanese.

Snowstorms, Highway planning, Safety, Warning systems, Data transmission, Road maintenance, Japan

## 53-3028

**Three dimensional fine structures of bullet-type snow crystals and their growth conditions observed at Syowa Station, Antarctica. [Nankyoku Showa kichi de kansoku sareta hodan-gata sekkesho no sanjigenteki bisai kozo seicho joken]**

Iwai, K., *Seppyo*, Jan. 1999, 61(1), p.3-12, In Japanese with English summary. 25 refs.

Snow crystal growth, Snow crystal structure, Ice crystal replicas, Ice microstructure, Antarctica—Showa Station

## 53-3029

**Last 300-year volcanic signals recorded in an ice core from site H15, Antarctica.**

Kohno, M., Fujii, Y., Kusakabe, M., Fukuoka, T., *Seppyo*, Jan. 1999, 61(1), p.13-24, With Japanese summary. 32 refs.

Ice cores, Ice composition, Volcanic ash, Ice dating, Antarctica—Mizuho Plateau

## 53-3030

**Ice core drilling at Ushkovsky ice cap, Kamchatka, Russia. [Kamchatsuka hanto Ushukofusuki hyokan ni okeru seppyo koa kussaku]**

Shiraiwa, T., et al., *Seppyo*, Jan. 1999, 61(1), p.25-40, In Japanese with English summary. 21 refs.

Volcanoes, Mountain glaciers, Drilling, Coring, Ice cores, Core samplers, Ice composition, Ice temperature, Volcanic ash, Ice dating, Russia—Kamchatka Peninsula

## 53-3031

**Moulting and growth of the early stages of two species of antarctic calanoid copepods in relation to differences in food supply.**

Shreeve, R.S., Ward, P., *Marine ecology progress series*, Dec. 17, 1998, Vol.175, p.109-119, 39 refs.

Marine biology, Plankton, Ecosystems, Biomass, Growth, Nutrient cycle, Chlorophylls, Sampling, South Georgia

## 53-3032

**Seasonal carbon and nutrient mineralization in a high-arctic coastal marine sediment, Young Sound, northeast Greenland.**

Rysgaard, S., et al., *Marine ecology progress series*, Dec. 17, 1998, Vol.175, p.261-276, Refs. p.274-276.

Marine biology, Subpolar regions, Biomass, Bacteria, Nutrient cycle, Minerals, Sedimentation, Bottom sediment, Organic nuclei, Drill core analysis, Seasonal variations, Greenland—Young Sound

53-3033

**Biomagnification of mercury in an antarctic marine coastal food web.**Bargagli, R., Monaci, F., Sanchez-Hernandez, J.C., Cateni, D., *Marine ecology progress series*, Aug. 6, 1998, Vol.169, p.65-76, 63 refs.

Marine biology, Ecosystems, Ecology, Nutrient cycle, Bottom sediment, Biomass, Metals, Geochemical cycles, Sampling, Chemical analysis, Antarctica—Terra Nova Bay

53-3034

**Snow & Avalanche. Annual report 1997-1998.**

Colorado Avalanche Information Center, Denver, Colorado Geological Survey, June 1998, 36p.

Avalanches, Avalanche forecasting, Snowfall, Education, Safety, Warning systems, Meteorological data, Seasonal variations, United States—Colorado

53-3035

**On the origin and evolution of sea-ice anomalies in the Beaufort-Chukchi Sea.**Tremblay, L.B., Mysak, L.A., *Climate dynamics*, June 1998, 14(6), p.451-460, 22 refs.

Climatology, Subpolar regions, Sea ice distribution, Ice cover thickness, Ice edge, Drift, Salinity, Air temperature, Air ice water interaction, Seasonal variations, Wind factors, Mathematical models, Beaufort Sea, Chukchi Sea

53-3036

**Variations of atmospheric <sup>14</sup>C concentrations over the Allerød-Younger Dryas transition.**Goslar, T., Wohlfarth, B., Björck, S., Possnert, G., Björck, J., *Climate dynamics*, Jan. 1999, 15(1), p.29-42, Refs. p.40-42.

Pleistocene, Paleoclimatology, Climatic changes, Atmospheric composition, Carbon isotopes, Paleocology, Glacial deposits, Ocean currents, Isotope analysis, Radioactive age determination, Geochronology, Simulation, Poland—Gościąg, Lake, Sweden—Madtjäm, Lake

53-3037

**Avalanche! When the snow comes tumbling down.**Henson, R., *Weatherwise*, Jan./Feb. 1999, 52(1), p.14-21, 1 ref.

Avalanches, Safety, Survival, Avalanche forecasting, Weather forecasting, Snow accumulation

53-3038

**Riding out the storm.**Ott, C., *Weatherwise*, Jan./Feb. 1999, 52(1), p.31-34.

Precipitation (meteorology), Snowstorms, Transportation, Cold weather operation, Safety, United States

53-3039

**On frozen pond.**Knight, C., *Weatherwise*, Jan./Feb. 1999, 52(1), p.35-40.

Ponds, Ice formation, Slush, Snow hydrology, Snow ice interface, Surface structure

53-3040

**Ice-volume forcing of winter monsoon climate in the South China Sea.**Chen, M.T., Huang, C.Y., *Paleoceanography*, Dec. 1998, 13(6), p.622-633, 53 refs.

Glaciation, Glacial meteorology, Ice volume, Marine deposits, Bottom sediment, Drill core analysis, Paleocology, Paleoclimatology, Atmospheric circulation, Global change, South China Sea

53-3041

**Glacial-interglacial variability in upwelling and bioproductivity off NW Mexico: implications for Quaternary paleoclimate.**Ganeshram, R.S., Pedersen, T.F., *Paleoceanography*, Dec. 1998, 13(6), p.634-645, Refs. p.643-645.

Marine deposits, Bottom sediment, Quaternary deposits, Glaciation, Glacial meteorology, Glacier oscillation, Upwelling, Biomass, Global change, Paleoclimatology, Mexico

53-3042

**Dehydration of flocs by freezing.**Parker, P.J., Collins, A.G., *Environmental science & technology*, Feb. 1, 1999, 33(3), p.482-488, 71 refs. Water treatment, Sewage treatment, Sludges, Waste disposal, Artificial freezing, Freeze drying

53-3043

**Comparison of two stable hydrogen isotope-ratio measurement techniques on antarctic surface-water and ice samples.**Hopple, J.A., Hannon, J.E., Coplen, T.B., *Chemical geology*, Nov. 16, 1998, 152(3-4), p.321-323, 5 refs. Ice composition, Impurities, Meltwater, Water chemistry, Isotope analysis, Antarctica

53-3044

**Identification of volatile and extractable chloroorganics in rain and snow.**Laniewski, K., Boren, H., Grimvall, A., *Environmental science & technology*, Dec. 15, 1998, 32(24), p.3935-3940, 40 refs.

Air pollution, Atmospheric composition, Scavenging, Snow composition, Snow impurities

53-3045

**Recent metal pollution in Agassiz Ice Cap.**Cheam, V., Lawson, G., Lechner, J., Desrosiers, R., *Environmental science & technology*, Dec. 15, 1998, 32(24), p.3974-3979, 51 refs.

Polar atmospheres, Atmospheric composition, Atmospheric circulation, Air pollution, Glacier ice, Ice composition, Impurities, Canada—Northwest Territories—Agassiz Ice Cap, Greenland

53-3046

**Precipitation features observed by Doppler radar at Tuktoyaktuk, Northwest Territories, Canada, during the Beaufort and Arctic Storms Experiment.**Asuma, Y., Iwata, S., Kikuchi, K., Moore, G.W.K., Kimura, R., Tsuboki, K., *Monthly weather review*, Sep. 1998, 126(9), p.2384-2405, 28 refs.

Climatology, Precipitation (meteorology), Synoptic meteorology, Storms, Classifications, Atmospheric circulation, Advection, Moisture transfer, Origin, Sounding, Radar echoes, Canada—Northwest Territories—Tuktoyaktuk

53-3047

**Equivalent isobaric geopotential height and its application to synoptic analysis and a generalized  $\omega$  equation in  $\sigma$  coordinates.**Chen, Q.S., Bromwich, D.H., *Monthly weather review*, Feb. 1999, 127(2), p.145-172, 46 refs.

Synoptic meteorology, Subpolar regions, Atmospheric pressure, Precipitation (meteorology), Condensation, Air masses, Wind direction, Ice cover effect, Topographic effects, Analysis (mathematics), Weather forecasting, Greenland

53-3048

**Seasonal changes in the morphology of the subglacial drainage system, Haut Glacier d'Arolla, Switzerland.**Nienow, P., Sharp, M., Willis, I., *Earth surface processes and landforms*, Sep. 1998, 23(9), p.825-843, 32 refs.

Geomorphology, Glacial hydrology, Mountain glaciers, Glacier melting, Snowmelt, Seasonal ablation, Meltwater, Subglacial drainage, Channels (waterways), Crevasses, Classifications, Topographic effects, Seasonal variations, Switzerland—Haut Glacier d'Arolla

53-3049

**Origin of a bouldery diamicton, Kunlun Pass, Qinghai-Xizang Plateau, People's Republic of China: gelifluction deposit or rock glacier?**Harris, S.A., Cui, Z.J., Cheng, G.D., *Earth surface processes and landforms*, Oct. 1998, 23(10), p.943-952, 14 refs.

Geomorphology, Landforms, Periglacial processes, Mass transfer, Glacial till, Continuous permafrost, Active layer, Solifluction, Rock glaciers, Classifications, Theories, China—Kunlun Mountain Pass

53-3050

**On the implementation of a three-dimensional circulation model for Prince William Sound, Alaska.**Mooers, C.N.K., Wang, J., *Continental shelf research*, Feb.-Apr. 1998, 18(2-4), Joint Numerical Sea Modelling Group Biennial Workshop, 8th, Oslo, Norway, Aug. 12-15, 1996. JONSMOD '96. Selected papers. Edited by A.M. Davies and P.P.G. Dyke, p.253-277, 18 refs.

Oceanography, Shores, Ocean currents, Velocity, Buoyancy, Hydrography, Water transport, Wind factors, Topographic effects, Simulation, Mathematical models, United States—Alaska—Prince William Sound

53-3051

**Two-compartment model for understanding the simulated three-dimensional circulation in Prince William Sound, Alaska.**Deleersnijder, E., Wang, J., Mooers, C.N.K., *Continental shelf research*, Feb.-Apr. 1998, 18(2-4), Joint Numerical Sea Modelling Group Biennial Workshop, 8th, Oslo, Norway, Aug. 12-15, 1996. JONSMOD '96. Selected papers. Edited by A.M. Davies and P.P.G. Dyke, p.279-287, 4 refs.

Oceanography, Shores, Ocean currents, Advection, Turbulent diffusion, Water transport, Wind factors, Hydrodynamics, Simulation, United States—Alaska—Prince William Sound

53-3052

**Numerical simulation of the circulation in the Svalbardbanken area in the Barents Sea.**Ådlandsvik, B., Hansen, R., *Continental shelf research*, Feb.-Apr. 1998, 18(2-4), Joint Numerical Sea Modelling Group Biennial Workshop, 8th, Oslo, Norway, Aug. 12-15, 1996. JONSMOD '96. Selected papers. Edited by A.M. Davies and P.P.G. Dyke, p.341-355, 29 refs.

Oceanography, Subpolar regions, Ocean currents, Water transport, Turbulent diffusion, Meltwater, Bottom topography, Seasonal variations, Wind factors, Hydrography, Mathematical models, Simulation, Barents Sea

53-3053

**Numerical study of the  $M_2$  tide on the North Siberian Shelf.**Androsov, A.A., Liberman, I.U.M., Nekrasov, A.V., Romanenkov, D.A., Vol'tsing, N.E., *Continental shelf research*, June 1998, 18(7), p.715-738, 27 refs.

Oceanography, Subpolar regions, Ocean currents, Shores, Tidal currents, Oscillations, Wave propagation, Hydrodynamics, Mathematical models, Boundary value problems, Arctic Ocean

53-3054

**Measurements of the slope current, tidal characteristics and variability west of Vestfjorden, Norway.**Heathershaw, A.D., Hall, P., Huthnance, J.M., *Continental shelf research*, Oct. 1998, 18(12), p.1419-1453, 38 refs.

Oceanography, Subpolar regions, Shores, Ocean currents, Tidal currents, Velocity measurement, Diurnal variations, Water temperature, Temperature variations, Heat flux, Topographic effects, Moorings, Norwegian Sea

53-3055

**Effects of irradiance on nitrate uptake and dissolved organic nitrogen release by phytoplankton in the Ross Sea.**Hu, S.H., Smith, W.O., Jr., *Continental shelf research*, Aug. 1998, 18(9), p.971-990, Refs. p.988-990.

Marine biology, Plankton, Biomass, Ecology, Nutrient cycle, Particles, Solubility, Radiance, Light effects, Simulation, Antarctica—Ross Sea



- 53-3056**  
**Turbulent mixing in Barrow Strait.**  
 Crawford, G., Padman, L., McPhee, M., *Continental shelf research*, Feb. 1999, 19(2), p.205-245, Refs. p.243-245.  
 Oceanography, Shores, Ocean currents, Subpolar regions, Fast ice, Ice water interface, Mass transfer, Turbulent diffusion, Ice cover effect, Hydrography, Seasonal variations, Acoustic measurement, Profiles, Canada—Northwest Territories—Barrow Strait
- 53-3057**  
**Survey of dissolved barium in the estuaries of major arctic rivers and adjacent seas.**  
 Guay, C.K., Falkner, K.K., *Continental shelf research*, July 1998, 18(8), p.859-882, Refs. p.880-882.  
 Oceanography, Subpolar regions, Estuaries, Runoff, Sedimentation, Ocean currents, Water transport, Turbulent diffusion, Hydrologic cycle, Sampling, Arctic Ocean, Russia—Pechora River, Canada—Yukon Territory—Yukon River
- 53-3058**  
**Snowmelt hydrology of a small alpine watershed.**  
 Jordan, R.P., Vancouver, University of British Columbia, 1978, 201p., M.S. thesis. 72 refs.  
 Snow hydrology, Snow air interface, Snow heat flux, Snow melting, Snow density, Snow permeability, Seepage, Water balance, Stream flow, Runoff forecasting, Canada—British Columbia—Coast Mountains
- 53-3059**  
**Ice jams do much damage along Allegheny River.**  
*Engineering news-record*, Mar. 15, 1926, Vol.96, p.503.  
 River ice, Ice jams, Ice loads, Floods, Bridges, Piers, Accidents, United States—Pennsylvania—Allegheny River
- 53-3060**  
**Failure of dam at Minneapolis due to previous weakening through ice pressure.**  
 Rickey, J.W., *Engineering news*, May 11, 1899, Vol.41, p.307.  
 Dams, Accidents, Ice loads, Ice pressure, Ice push, United States—Minnesota—Minneapolis
- 53-3061**  
**Expansion and contraction of ice.** *Engineering news*, Jan. 12, 1893, Vol.29, p.37-38, p.38 is missing.  
 Bridges, Piers, Ice loads, Ice pressure, Ice push, Thermal expansion
- 53-3062**  
**Movement of bridge piers by expanding and contracting ice.** *Engineering news*, Jan. 12, 1893, Vol.29, p.41-42.  
 Bridges, Piers, Ice loads, Ice pressure, Ice push, Thermal expansion
- 53-3063**  
**Record ice jam at Niagara Falls wrecks famous arch bridge.** *Engineering news-record*, Feb. 3, 1938, p.161,168,169.  
 Bridges, Accidents, River ice, Ice jams, Ice push, Ice pressure, Ice loads, Niagara River
- 53-3064**  
**Floating debris control systems for hydroelectric plant intakes.**  
 Perham, R.E., MP 5311, *U.S. Army Corps of Engineers. Waterways Experiment Station. Repair, Evaluation, Maintenance, and Rehabilitation Research Program. REMR bulletin*, Sep. 1986, 3(2), p.1-3.  
 Water intakes, Waste disposal, Cranes (hoists), River flow, Flow control
- 53-3065**  
**Climate of northern Ontario.**  
 Chapman, L.J., Thomas, M.K., *Canada. Department of Transport. Meteorological Branch. Climatological studies*, 1968, No.6, 58p., 23 refs.  
 Precipitation (meteorology), Air temperature, Snowfall, Frost forecasting, Water balance, Meteorological data, Climatic factors, Canada—Ontario
- 53-3066**  
**Reversible freeze-injury.**  
 Ray, B., *Repairable lesions in microorganisms*, London, Academic Press, 1984, p.237-271, Refs. p.268-271.  
 Microbiology, Cryobiology, Bacteria, Cold exposure, Physiological effects, Cold tolerance
- 53-3067**  
**Contribution to data analysis in hydrometeorology. Forecasting of random phenomena and analysis of spatial fields. Application to avalanche forecasting in Davos and analysis of rain events in Cévennes. [Contribution à l'analyse des données en hydrométéorologie. La prévision des phénomènes accidentels et l'analyse des champs spatiaux. Application à la prévision des avalanches à Davos et à l'analyse des épisodes pluvieux Cévennes]**  
 Obled, C., Grenoble, France, Université Scientifique et Médicale and Institut National Polytechnique, 1979, 357p., In French. Ph.D. thesis. Refs. p.341-357.  
 Precipitation (meteorology), Meteorological data, Data processing, Statistical analysis, Mathematical models, Flood forecasting, Avalanche formation, Avalanche modeling, Avalanche forecasting, Switzerland, France
- 53-3068**  
**Effect of hail, snow, and melting hydrometeors on millimeter radio waves.**  
 Kobayashi, H.K., *U.S. Army Electronics Research and Development Command. Atmospheric Sciences Laboratory, White Sands Missile Range, NM. Report*, July 1981, ASL-TR-0092, 29p., 52 refs.  
 Falling snow, Hail, Radio waves, Wave propagation, Atmospheric attenuation
- 53-3069**  
**Energy exchange during melt of a prairie snow-cover.**  
 Granger, R.J., Saskatoon, University of Saskatchewan, 1977, 122p., M.S. thesis. With French summary. 54 refs.  
 Plains, Snow hydrology, Snow air interface, Snow permeability, Snow heat flux, Snow melting, Snow evaporation, Turbulent exchange, Mathematical models, Canada—Saskatchewan
- 53-3070**  
**Reconnaissance of a high mountain region.**  
 Faylor, R.C., Wood, W.A., Bishop, B.C., *Arctic Institute of North America. Report*, June 1967, 25p. + 2 fold. maps, 29 refs.  
 Mountains, Site surveys, Military research, Military operation, Logistics, Cold weather operation, Altitude, Physiological effects, Health, Acclimatization, United States—Alaska, Himalaya Mountains
- 53-3071**  
**Climatological observations in the St. Elias Mountains, Yukon and Alaska, May-August 1968.**  
 Kolberg, D.W., Brazel, A.J., *Arctic Institute of North America. Technical report*, Feb. 1969, No.3, 166p., 14 refs.  
 Weather stations, Weather observations, Meteorological data, Air temperature, Precipitation (meteorology), Humidity, Cloud cover, Atmospheric pressure, Insolation, Wind velocity, Wind direction, Canada—Yukon Territory—St. Elias Mountains, United States—Alaska—St. Elias Mountains
- 53-3072**  
**Basement geology of the Beardmore Glacier region.**  
 Gunner, J.D., *American Geophysical Union. Antarctic research series*, 1982, Vol.36, Paper 1, Geology of the central Transantarctic Mountains. Edited by M.D. Turner and J.E. Spletstoesser, p.1-9, 39 refs.  
 Geological surveys, Geologic structures, Lithology, Mineralogy, Geochemistry, Earth crust, Tectonics, Geochronology, Antarctica—Transantarctic Mountains
- 53-3073**  
**Triassic vertebrates in the Transantarctic Mountains.**  
 Colbert, E.H., *American Geophysical Union. Antarctic research series*, 1982, Vol.36, Paper 2, Geology of the central Transantarctic Mountains. Edited by M.D. Turner and J.E. Spletstoesser, p.11-35, 61 refs.  
 Geological surveys, Geologic structures, Stratigraphy, Fossils, Paleocology, Animals, Continental drift, Geochronology, Antarctica—Transantarctic Mountains
- 53-3074**  
**Forms and facies of *Vertebraria* in relation to Gondwana coal.**  
 Schopf, J.M., *American Geophysical Union. Antarctic research series*, 1982, Vol.36, Paper 3, Geology of the central Transantarctic Mountains. Edited by M.D. Turner and J.E. Spletstoesser, p.37-62, 46 refs.  
 Geological surveys, Paleobotany, Plant ecology, Paleocology, Plants (botany), Roots, Plant tissues, Fossils, Coal, Antarctica—Transantarctic Mountains
- 53-3075**  
**Late Paleozoic glacial patterns in the central Transantarctic Mountains, Antarctica.**  
 Coates, D.A., *American Geophysical Union. Antarctic research series*, 1985, Vol.36, Paper 13, Geology of the central Transantarctic Mountains. Edited by M.D. Turner and J.E. Spletstoesser, p.325-338 + fold. chart, 26 refs.  
 Geological surveys, Glacial geology, Glaciation, Glacial deposits, Glacial erosion, Glacial till, Stratigraphy, Geochronology, Antarctica—Transantarctic Mountains
- 53-3076**  
**Beacon Supergroup (Devonian-Triassic) and Ferrar Group (Jurassic) in the Beardmore Glacier area, Antarctica.**  
 Barrett, P.J., Elliot, D.H., Lindsay, J.F., *American Geophysical Union. Antarctic research series*, 1986, Vol.36, Paper 14, Geology of the central Transantarctic Mountains. Edited by M.D. Turner and J.E. Spletstoesser, p.339-428 + 3 fold. charts, Refs. p.423-428.  
 Geological surveys, Geologic structures, Stratigraphy, Glacial geology, Glacial deposits, Lithology, Mineralogy, Paleobotany, Paleocology, Fossils, Coal, Geochronology, Antarctica—Transantarctic Mountains
- 53-3077**  
**Geology of the basement complex, western Queen Maud Mountains, Antarctica.**  
 Wade, F.A., Cathey, C.A., *American Geophysical Union. Antarctic research series*, 1986, Vol.36, Paper 15, Geology of the central Transantarctic Mountains. Edited by M.D. Turner and J.E. Spletstoesser, p.429-453 + fold. map, 47 refs.  
 Geological surveys, Geologic structures, Tectonics, Lithology, Mineralogy, Geomorphology, Geochronology, Antarctica—Queen Maud Mountains
- 53-3078**  
**Study of sub-zero Canadian temperatures.**  
 Hagglund, M.G., Thompson, H.A., *Canada. Department of Transport. Meteorological Branch. Canadian meteorological memoirs*, 1964, No.16, 77p., 9 refs.  
 Air temperature, Degree days, Freezing indexes, Meteorological data, Meteorological charts, Frost forecasting, Statistical analysis, Canada
- 53-3079**  
**Tectonics of the Scotia Arc, Antarctica.**  
 Dalziel, I.W.D., et al, *International Geological Congress, 28th. Field trip guidebook T180*, Washington, D.C., American Geophysical Union, 1989, 206p., Refs. p.181-191.  
 Geological surveys, Geophysical surveys, Marine geology, Bottom topography, Offshore landforms, Geologic structures, Tectonics, Earth crust, Continental drift, Stratigraphy, Geomorphology, Geochronology, Scotia Sea

53-3080

**Report on Mississippi River ice 1976-1977.**

U.S. Army Corps of Engineers. St. Louis District, MO, Nov. 1977, 8p. + appends.

River ice, Ice conditions, Ice jams, Ice control, River flow, Degree days, Freezing indexes, United States—Mississippi River, United States—Missouri, United States—Illinois

53-3081

**Falling snow optical modeling.**

Martinez-Sanchez, M., Dvore, D.S., Ebersole, J.F., Vaglio-Laurin, R., Spaulding, T.E., *U.S. Army Electronics Research and Development Command. Atmospheric Sciences Laboratory, White Sands Missile Range, NM. Contractor report*, Nov. 1981, ASL-CR-81-0009-1, 65p., 19 refs.

Cloud physics, Cloud droplets, Snow crystal nuclei, Ice crystal size, Falling snow, Snowflakes, Snow optics, Light transmission, Wave propagation, Attenuation, Mathematical models

53-3082

**Particle-in-cell and finite difference approaches for the study of marginal ice zone problems.**

Huang, Z.J., Savage, S.B., *Cold regions science and technology*, Aug. 1998, 28(1), p.1-28, 26 refs.

Sea ice, Ice mechanics, Ice models, Ice water interface, Viscosity, Stress concentration, Plastic deformation, Ice cover thickness, Boundary value problems, Rheology, Mathematical models

53-3083

**Numerical simulations of frazil ice dynamics in the upper layers of the ocean.**

Svensson, U., Omstedt, A., *Cold regions science and technology*, Aug. 1998, 28(1), p.29-44, 34 refs.

Oceanography, Sea ice, Frazil ice, Ice formation, Ice crystal size, Ice water interface, Air ice water interaction, Turbulent boundary layer, Turbulent diffusion, Wind factors, Ice models, Mathematical models

53-3084

**Analysis of visual data from medium scale indentation experiments at Hobson's Choice Ice Island.**

Gagnon, R.E., *Cold regions science and technology*, Aug. 1998, 28(1), p.45-58, 20 refs.

Sea ice, Ice mechanics, Ice islands, Mechanical tests, Ice solid interface, Ice water interface, Water films, Dynamic loads, Impact tests, Cracking (fracturing), Viscous flow, Imaging, Canada—Newfoundland

53-3085

**Eddies in numerical models of the Antarctic Circumpolar Current and their influence on the mean flow.**

Best, S.E., Ivchenko, V.O., Richards, K.J., Smith, R.D., Malone, R.C., *Journal of physical oceanography*, Mar. 1999, 29(3), p.328-350, 40 refs.

Oceanography, Ocean currents, Water transport, Fluid dynamics, Mass transfer, Flow measurement, Velocity, Stability, Topographic effects, Mathematical models, Drake Passage, Antarctica

53-3086

**Hydrography within the central and east basins of the Bransfield Strait, Antarctica.**

Wilson, C., Klinkhammer, G.P., Chin, C.S., *Journal of physical oceanography*, Mar. 1999, 29(3), p.465-479, 32 refs.

Oceanography, Hydrography, Ocean currents, Mass transfer, Salinity, Heat flux, Water temperature, Models, Antarctica—Bransfield Strait

53-3087

**High-resolution <sup>10</sup>Be profile from deep sea sediment covering the last 70 Ka: indication for globally synchronized environmental events.**

Aldahan, A., Possnert, G., *Quaternary science reviews (Quaternary geochronology)*, Nov. 1998, 17(11), p.1023-1032, 47 refs.

Paleoclimatology, Climatic changes, Quaternary deposits, Marine deposits, Geomagnetism, Ice cores, Isotope geochemistry, Profiles, Geochronology, Correlation, Antarctica—Vostok Station

53-3088

**ESR age of *Portlandia arctica* shells from glacial deposits of central Latvia: an answer to a controversy on the age and genesis of their enclosing sediments.**

Molodkov, A., Dreimanis, A., Aboltins, O., Raukas, A., *Quaternary science reviews (Quaternary geochronology)*, Nov. 1998, 17(11), p.1077-1094, Refs. p.1092-1094.

Pleistocene, Quaternary deposits, Glacial geology, Glacial deposits, Marine deposits, Sedimentation, Geochronology, Electron paramagnetic resonance, Origin, Theories, Accuracy, Latvia

53-3089

**Ventilation coefficients for falling ice crystals in the atmosphere at low-intermediate Reynolds numbers.**

Ji, W.S., Wang, P.K., *Journal of the atmospheric sciences*, Mar. 15, 1999, 56(6), p.829-836, 14 refs.

Precipitation (meteorology), Cloud physics, Ice crystal growth, Velocity, Convection, Mass transfer, Ice vapor interface, Ventilation, Water vapor, Vapor diffusion, Mathematical models

53-3090

**Effect of the melting layer on the microwave emission of clouds over the ocean.**

Bauer, P., Poiras Baptista, J.P.V., De Iulius, M., *Journal of the atmospheric sciences*, Mar. 15, 1999, 56(6), p.852-867, 33 refs.

Cloud physics, Marine meteorology, Cloud cover, Optical properties, Falling snow, Ice melting, Air ice water interaction, Stratification, Brightness, Attenuation, Radiation balance, Forecasting, Accuracy

53-3091

**High-resolution diatom record of the palaeoclimates of East Siberia for the last 2.5 My from Lake Baikal.**

Grachev, M.A., et al, *Quaternary science reviews*, Dec. 1998, 17(12), p.1101-1106, 20 refs.

Pleistocene, Paleocology, Paleoclimatology, Climatic changes, Quaternary deposits, Lacustrine deposits, Biomass, Algae, Ecosystems, Drill core analysis, Microstructure, Russia—Baykal, Lake, Russia—Siberia

53-3092

**Long pollen record from Lac du Bouchet, Massif Central, France: for the period ca. 325 to 100 ka BP (OIS 9c to OIS 5e).**

Reille, M., Andrieu, V., De Beaulieu, J.L., Guenet, P., Goery, C., *Quaternary science reviews*, Dec. 1998, 17(12), p.1107-1123, 57 refs.

Pleistocene, Paleoclimatology, Climatic changes, Paleocology, Palynology, Vegetation patterns, Lacustrine deposits, Quaternary deposits, Drill core analysis, Stratigraphy, Ice cores, Correlation, France—Lac du Bouchet

53-3093

**Late Quaternary detrital carbonate (DC-) layers in Baffin Bay marine sediments (67°-74°N): correlation with Heinrich events in the North Atlantic?**

Andrews, J.T., Kirby, M.E., Aksu, A., Barber, D.C., Meese, D.A., MP 5312, *Quaternary science reviews*, Dec. 1998, 17(12), p.1125-1137, Refs. p.1134-1137.

Pleistocene, Quaternary deposits, Marine deposits, Marine geology, Glacier oscillation, Ice rafting, Drill core analysis, Stratigraphy, Geochronology, Radioactive age determination, Ice age theory, Canada—Northwest Territories, Atlantic Ocean, Baffin Bay Episodes of glaciation in the region north of Baffin Bay resulted in the erosion of Paleozoic carbonate outcrops in NW Greenland and the Canadian High Arctic. These events are recognized in the marine sediments of Baffin Bay (BB) as a series of detrital carbonate-rich (DC-) layers. BBDC-layers thin southward within Baffin Bay; thus, the contribution of Baffin Bay ice-rafted carbonate-rich sediments to the North Atlantic is probably slight, especially compared with sediment output from Hudson Strait during Heinrich events. The authors reexamine a series of nine piston cores from the axis of Baffin Bay and across the Davis Strait sill and provide a suite of 21 AMS <sup>14</sup>C dates on foraminifera which bracket the ages of several DC-layers. The onset of the last DC event is dated in six cores and has an age of ca. 12.4 ka. In northern and central Baffin Bay a thick DC-layer occurs at around 4 m in the cores and is dated >40 ka. There were three to six DC intervening events. The youngest BBDC event (possibly a double event) lags Heinrich event 1 (H-1) off Hudson Strait, dated at 14.5 ka, but it is coeval with the pronounced warming seen in GISP2 records from the Greenland Ice Sheet during interstadial #1.

The authors hypothesize that BBDC episodes are coeval with major interstadial <sup>18</sup>O peaks from GISP2 and other Greenland ice core records and are caused by or associated with the advection of Atlantic Water into Baffin Bay and the subsequent rapid retreat of ice streams in the northern approaches to Baffin Bay.

53-3094

**Extent, timing, and climatic implications of glacier advances, Mount Rainier, Washington, U.S.A., at the Pleistocene/Holocene transition.**

Heine, J.T., *Quaternary science reviews*, Dec. 1998, 17(12), p.1139-1148, 48 refs.

Pleistocene, Paleoclimatology, Climatic changes, Glacial geology, Glacier oscillation, Mountain glaciers, Quaternary deposits, Lacustrine deposits, Volcanic ash, Moraines, Radioactive age determination, United States—Washington—Rainier, Mount

53-3095

**Last ice sheet in north-west Scotland: reconstruction and implications.**

Ballantyne, C.K., McCarroll, D., Nesje, A., Dahl, S.O., Stone, J.O., *Quaternary science reviews*, Dec. 1998, 17(12), p.1149-1184, Refs. 1179-1184.

Pleistocene, Ice sheets, Altitude, Ice edge, Glacial geology, Glacier oscillation, Glacial deposits, Glacial erosion, Frost weathering, Periglacial processes, Nunataks, Radioactive age determination, Ice age theory, United Kingdom—Scotland

53-3096

**Continental collision and lateral escape deformation in the lower and upper crust: an example from Caledonide Svalbard.**

Lyberis, N., Manby, G., *Tectonics*, Feb. 1999, 18(1), p.40-63, Refs. p.62-63.

Pleistocene, Earth crust, Tectonics, Subpolar regions, Continental drift, Plastic deformation, Shear flow, Stratigraphy, Norway—Svalbard

53-3097

**Meteorite infall and transport in Antarctica: an analysis of icefields as accumulation surfaces.**

Benoit, P.H., Sears, D.W.G., *U.S. National Aeronautics and Space Administration. Contractor report*, 1997, NASA/CR-97-207734, 2p., N19980048382, 11 refs.

Ice sheets, Glacier flow, Glacier oscillation, Cosmic dust, Sediment transport, Geochronology, Antarctica

53-3098

**Debris/ice/tps assessment and integrated photographic analysis of shuttle mission STS-94.**

Bowen, B.C., Lin, J.D., *U.S. National Aeronautics and Space Administration. Technical memorandum*, Sep. 1997, NASA/TM-97-113228, 46p. + appends., N19970037582.

Spacecraft, Aircraft icing, Ice detection

53-3099

**Covalency of the hydrogen bond in ice: A direct x-ray measurement.**

Isaacs, E.D., Shukla, A., Platzman, P.M., Hamann, D.R., Barbiellini, B., Tulk, C.A., *Physical review letters*, Jan. 18, 1999, 82(3), p.600-603, 15 refs.

Ice crystal structure, Molecular structure, Molecular energy levels, Hydrogen bonds, X ray analysis

53-3100

**Continuous Holocene glacial record inferred from proglacial lake sediments in Banff National Park, Alberta, Canada.**

Leonard, E.M., Reasoner, M.A., *Quaternary research*, Jan. 1999, 51(1), p.1-13, 42 refs.

Alpine glaciation, Glacial geology, Glacial deposits, Glacier oscillation, Glacial lakes, Lacustrine deposits, Bottom sediment, Quaternary deposits, Drill core analysis, Paleobotany, Soil dating, Paleoclimatology, Canada—Alberta—Banff National Park

## 53-3101

**Lake-level chronology on the southern Bolivian Altiplano (18°-23°S) during late-glacial time and the early Holocene.**

Sylvestre, F., Servant, M., Servant-Vildary, S., Causse, C., Fournier, M., Ybert, J.P., *Quaternary research*, Jan. 1999, 51(1), p.54-66, 45 refs.

Lacustrine deposits, Quaternary deposits, Bottom sediment, Fossils, Radioactive age determination, Paleoclimatology, Soil dating, Geochronology, Bolivia

## 53-3102

**High-resolution marine record of climatic change in mid-latitude Chile during the last 28,000 years based on terrigenous sediment parameters.**

Lamy, F., Hebbeln, D., Wefer, G., *Quaternary research*, Jan. 1999, 51(1), p.83-93, 39 refs.

Marine geology, Marine deposits, Bottom sediment, Glaciation, Glacier oscillation, Glacial deposits, Sediment transport, Quaternary deposits, Drill core analysis, Soil dating, Paleoclimatology, Chile

## 53-3103

**Modeling and testing of permeability and transfer mechanisms in porous media during freezing. [Modélisation et expérimentation de la perméabilité et des mécanismes de transfert dans les milieux poreux au cours du gel]**

Djaballah-Masmoudi, N., Paris, Université 6 (Pierre et Marie Curie), [1997], 205p., Ph.D. thesis. In French. Numerous refs. passim.

Soil freezing, Freezing front, Soil water migration, Porous materials, Permeability, Frozen ground thermodynamics, Frozen rock strength, Frost shattering, Frost weathering, Stefan problem, Mathematical models

## 53-3104

**Characteristics of the ozone decline in the northern polar and middle latitudes during the winter-spring.**

Bojkov, R.D., Balis, D.S., Zerefos, C.S., *Meteorology and atmospheric physics*, 1998, 69(1-2), p.119-135, 52 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Atmospheric composition, Ozone

## 53-3105

**Laboratory tests of cable-based roof moisture detection system.**

Flanders, S.N., Yankielun, N.E., MP 5313, *Journal of architectural engineering*, Dec. 1998, 4(4), p.135-141, 7 refs.

Roofs, Leakage, Moisture detection, Moisture meters  
The authors have devised a prototype cable-based roof moisture detection and location system (U.S. Patent 5,648,724) that was tested in simulated conditions. The detection system can use a variety of principles to monitor roofing for the presence of moisture. The location system uses a metallic time-domain reflectometer (MTDR) to locate a suspected wet area by sending an electromagnetic pulse or step signal down the sensor cable and looking for reflections caused by a change in the dielectric constant surrounding the cable due to the presence of a wet area. Tests revealed the MTDR technique to be sensitive and able to locate the position of less than 1 L of water within 0.3 m over 30.5 m of cable. Where multiple regions of wetting were present along the length of the cable, it was possible to locate each boundary between wet and dry.

## 53-3106

**Repairing frost damage: walls.** Good repair guide 20, Part 2, Watford, England, Building Research Establishment Ltd. (BRE), Nov. 1998, 4p., 6 refs.

Walls, Bricks, Masonry, Mortars, Frost action, Frost resistance, Frost protection, Waterproofing, Cold weather construction

## 53-3107

**Repairing frost damage: roofing.** Good repair guide 20, Part 1, Watford, England, Building Research Establishment Ltd. (BRE), Oct. 1998, 4p., 14 refs.

Roofs, Masonry, Frost action, Frost resistance, Frost protection, Waterproofing, Cold weather construction

## 53-3108

**Alkalinity generation in snowmelt and rain runoff during short distance flow over rock.**

Clayton, J.L., *U.S. Forest Service. Rocky Mountain Research Station, Ogden, UT. Research paper*, Oct. 1998, RMRS-RP-12, 7p., 17 refs.

Air pollution, Scavenging, Snow composition, Snow impurities, Snowmelt, Mountain soils, Weathering, Soil chemistry, Soil pollution, Water pollution, United States—Wyoming—Wind River Range

## 53-3109

**Cyclic AMP-dependent protein kinase: role in anoxia and freezing tolerance of the marine periwinkle *Littorina littorea*.**

MacDonald, J.A., Storey, K.B., *Marine biology*, 1999, 133(2), p.193-203, 54 refs.

Marine biology, Animals, Cryobiology, Cold exposure, Physiological effects, Cold tolerance, Acclimatization

## 53-3110

**Testing of various types of bituminous mixtures in connection with a revision of the road standard for hot mix asphalt. [Fællesafprøvning af diverse asfalttyper i forbindelse med revision af vejregel for varmbladet asfalt]**

Raaberg, J., Andersson, O.G., Nielsen, O.J., *Denmark. Vejteknisk Institut (Road Institute). Eksternt notat*, 1998, No.8, 46p. + appends., In Danish with English summary.

Pavements, Bitumens, Bearing tests, Hardness tests, Trafficability, Road maintenance, Standards, Highway planning, Denmark

## 53-3111

**Pavement subgrade performance study. Part II: modeling pavement response and predicting pavement performance.**

Zhang, W., Ullidtz, P., Macdonald, R., *Danish Road Institute. Report*, 1998, No.87, 135p. + append., 10 refs.

Pavements, Subgrade soils, Soil trafficability, Strain tests, Hardness tests, Bearing tests, Impact tests, Subgrade maintenance, Road maintenance

## 53-3112

**Emissions from road traffic in the various regions of the Swedish National Road Administration: development with and without the optimal usage of engine heaters. [Avgasutsläpp från vägtrafiken i Vägarverkets regioner: utveckling utan, alternativt med, optimal användning av motorvärmare]**

Hammarström, U., Sweden. *Statens Väg och Transportforskningsinstitut (National Road and Transport Research Institute). VTI meddelande*, 1998, No.846, 47p. + appends., In Swedish with English summary, 17 refs.

Motor vehicles, Engine starters, Electric heating, Cold weather performance, Cold weather operation, Air pollution, Environmental protection, Health, Cost analysis, Sweden

## 53-3113

**Conditions of producing an ice layer with high purity for freeze wastewater treatment.**

Shirai, Y., Wakisaka, M., Miyawaki, O., Sakashita, S., *Journal of food engineering*, 1998(Pub. 1999), No.38, p.297-308, 12 refs.

Water treatment, Waste treatment, Artificial freezing, Artificial ice

## 53-3114

**Composite materials for civil engineering structures.** MP 5314, *U.S. Army Corps of Engineers. Engineer technical letter*, Mar. 31, 1997, ETL 1110-2-548, Var. p., 45 refs. Chapter 6: Durability, by P.K. Dutta.

Composite materials, Plastics, Polymers, Construction materials, Reinforced concretes, Concrete strength, Concrete durability, Strain tests, Structural analysis, Design criteria

## 53-3115

**Overview of the SHEBA atmospheric surface flux program.**

Andreas, E.L., Fairall, C.W., Guest, P.S., Persson, P.O.G., MP 5315, Conference on Polar Meteorology and Oceanography, 5th, Dallas, TX, Jan. 10-15, 1999. Preprint volume, Boston, American Meteorological Society, 1999, p.411-416, 10 refs.

Research projects, Drift stations, Polar atmospheres, Marine atmospheres, Atmospheric circulation, Air ice water interaction, Ice cover effect, Ice heat flux, Heat balance

## 53-3116

**Winter flounder "antifreeze" proteins: synthesis and ice growth inhibition of analogues that probe the relative importance of hydrophobic and hydrogen-bonding interactions.**

Haymet, A.D.J., Ward, L.G., Harding, M.M., *American Chemical Society. Journal*, Feb. 10, 1999, 121(5), p.941-948, 52 refs.

Antifreezes, Chemical ice prevention, Physiological effects, Cryobiology, Molecular structure, Hydrogen bonds

## 53-3117

**Mineral assessment of Ahtna, Inc. selections in the Wrangell-St. Elias National Park and Preserve, Alaska. 1998 preliminary report.**

Meyer, M.P., VandeWeg, D.A., *U.S. Bureau of Land Management. Alaska State Office, Anchorage. BLM-Alaska open file report*, Mar. 1999, No.72, 155p. + fold. maps, Refs. passim.

Geological surveys, Exploration, Geochemistry, Minerals, Natural resources, Mining, Economic development, United States—Alaska—Wrangell-St. Elias National Park and Preserve

## 53-3118

**Use of resistivity and EM techniques to map subsidence fractures in glacial drift.**

Carpenter, P.J., *Environmental & engineering geoscience*, Winter 1997, 3(4), p.523-536, 30 refs.

Geophysical surveys, Engineering geology, Site surveys, Glacial deposits, Glacial till, Lacustrine deposits, Soil strength, Mine shafts, Subsidence, Electromagnetic prospecting, Subsurface investigations, United States—Illinois

## 53-3119

**Holocene carbon-cycle dynamics based on CO<sub>2</sub> trapped in ice at Taylor Dome, Antarctica.**

Indermühle, A., et al, *Nature*, Mar. 11, 1999, Vol.398, p.121-126, 48 refs.

Atmospheric composition, Carbon dioxide, Ice cores, Ice composition, Isotope analysis, Geochemical cycles, Paleoclimatology, Global change, Antarctica—Taylor Dome

## 53-3120

**Study of the MSA, nssSO<sub>4</sub><sup>2-</sup> concentration and MSA to nssSO<sub>4</sub><sup>2-</sup> ratio in the snow/ice and atmospheric aerosols of the region surrounding Weddell Sea. [Nanji Welde hai zhoubian xue bing he daqi qirongjiao zhongde MSA, nssSO<sub>4</sub><sup>2-</sup> nongdu ji qi bilu yanjiu]**

Han, J.K., *Chinese journal of polar research (Jidi yanjiu)*, Dec. 1998, 10(4), p.241-251, In Chinese with English summary, 18 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Atmospheric composition, Aerosols, Air pollution, Scavenging, Snow composition, Ice composition, Impurities, Nutrient cycle, Ice cores, Antarctica—Weddell Sea

## 53-3121

**Geochemical characteristics and its climatic significance in the borecore AB-32 from Ikroavik Lake in the tundra Barrow, arctic Alaska. [Bei] Baluo talyuanqu hupo chenji de diqiu huaxue tezheng ji qi qihou yit]**

Yang, W.L., Zhang, Q.S., *Chinese journal of polar research (Jidi yanjiu)*, Dec. 1998, 10(4), p.252-261, In Chinese with English summary, 23 refs.

Polar atmospheres, Tundra climate, Thermokarst lakes, Lacustrine deposits, Hydrogeochemistry, Geochemistry, Soil composition, Drill core analysis, Core samplers, Soil dating, Climatic changes, United States—Alaska—Barrow

53-3122

Human impacts on the environment of Fildes Peninsula of King George Island, Antarctica. [Renlei huodong dui Nanji Qiaozhi wang dao Feierdesi bandao huanjing de yingxiang]

Zhao, Y., Li, T.J., Zhao, J.L., *Chinese journal of polar research (Jidi yanjiu)*, Dec. 1998, 10(4), p.262-271, In Chinese with English summary. 25 refs.

Plant ecology, Vegetation patterns, Soil pollution, Water pollution, Human factors, Environmental impact, Antarctica—Fildes Peninsula

53-3123

Observations on the spore morphology of four species mosses from Fildes Peninsula, Antarctica. [Nanji Feierdesi bandao si zhong xianlei baozi xingtai guancha]

Du, G.S., Li, X.D., Liu, J.X., Wang, H.J., *Chinese journal of polar research (Jidi yanjiu)*, Dec. 1998, 10(4), p.310-312, In Chinese with English summary. 6 refs.

Mosses, Palynology, Plant ecology, Plants (botany), Vegetation patterns, Antarctica—Fildes Peninsula

53-3124

<sup>40</sup>Ar-<sup>39</sup>Ar ages of hornblendes in Grt-Pl-bearing amphibolite from the Larsemann Hills, East Antarctica and their geological implications. [Dong Nanji Lasiman qiuling shiliu xiechang jiaoshan yan zhong jiaoshanshi de <sup>40</sup>Ar-<sup>39</sup>Ar nianling ji qi dizhi yiyi]

Tong, L.X., et al, *Chinese journal of polar research (Jidi yanjiu)*, Sep. 1998, 10(3), p.161-171, In Chinese with English summary. 39 refs. For English version see 53-3132.

Mineralogy, Lithology, Geologic structures, Tectonics, Geomorphology, Geochemistry, Geochronology, Radioactive age determination, Soil dating, Antarctica—Larsemann Hills

53-3125

Characteristics of major ion concentrations in snowpits in Longyearbyen, Svalbard, Arctic. [Beiji Svalbard qundao Longyearbyen diqu xuekeng zhuyao yin yang lizi tezheng yanjiu]

Kang, S.C., Qin, D.H., Ren, J.W., Gjessing, Y., *Chinese journal of polar research (Jidi yanjiu)*, Sep. 1998, 10(3), p.172-180, In Chinese with English summary. 23 refs. For English version see 53-3135.

Polar atmospheres, Atmospheric circulation, Atmospheric composition, Air pollution, Scavenging, Snow composition, Snow impurities, Snow samplers, Ion density (concentration), Norway—Spitsbergen

53-3126

Sedimentary process analysis of AB-67 drilling core in Barrow, Alaska. [Beiji Baluo AB-67 zuankong yanxin de chenji guocheng fenxi]

Wang, G., Zhang, Q.S., *Chinese journal of polar research (Jidi yanjiu)*, Sep. 1998, 10(3), p.181-190, In Chinese with English summary. 9 refs.

Marine geology, Marine deposits, Lacustrine deposits, Bottom sediment, Drill core analysis, Core samplers, Soil composition, Geochemistry, Grain size, Particle size distribution, United States—Alaska—Barrow

53-3127

Distribution of snow algae at King George Island, Antarctica with reference to physical and chemical characters of snow. [Nanji Qiaozhi Wangdao xuezhao de fenbu ji qi xiangguan de xue wuli he huaxue tezheng]

Ohtani, S., Chen, B., Nakatsubo, T., *Chinese journal of polar research (Jidi yanjiu)*, Sep. 1998, 10(3), p.191-203, In Chinese with English summary. 21 refs.

Algae, Plant ecology, Vegetation patterns, Cryobiology, Snow composition, Snow cover effect, Snowmelt, Water chemistry, Antarctica—King George Island

53-3128

Depletion of nutrients and the estimate of the new production in the ice-edge in Prydz Bay, Antarctica. [Nanji Pulizi wan yingyang yan xiaohao ji xin shengchanli de gusuan]

Chen, Z.Q., Wang, Y.H., Liu, J.D., *Chinese journal of polar research (Jidi yanjiu)*, Sep. 1998, 10(3), p.204-211, In Chinese with English summary. 17 refs. For English version see 53-3139.

Ice edge, Ice water interface, Ice cover effect, Marine biology, Sea water, Water chemistry, Suspended sediments, Nutrient cycle, Geochemical cycles, Biomass, Antarctica—Prydz Bay

53-3129

Content of COD<sub>Mn</sub> of the Great Wall Bay and adjacent sea areas, Antarctica. [Nanji Maikesiwei wan ji linjin haiyu gaomengsuanjia zhishu yanjiu]

Yuan, J.F., Chen, H.W., Li, Y.Q., Wu, B.L., *Chinese journal of polar research (Jidi yanjiu)*, Sep. 1998, 10(3), p.212-216, In Chinese with English summary. 7 refs.

Sea water, Water chemistry, Water pollution, Ocean environments, Environmental impact, Antarctica—Maxwell Bay

53-3130

SEM studies on the plant morphology of *Schistidium* Brid. from Fildes Peninsula, Antarctica. [Nanji Feierdesi bandao liechi xianshu zhiwu de yanjiu]

Liu, J.X., Li, X.D., *Chinese journal of polar research (Jidi yanjiu)*, Sep. 1998, 10(3), p.217-221, In Chinese with English summary. 5 refs.

Mosses, Vegetation patterns, Plant ecology, Plants (botany), Scanning electron microscopy, Antarctica—Fildes Peninsula

53-3131

Solid electrical conductivity measurement of polar ice cores and its environmental significance. [Jidi bingxin guti zhillu daodian texing jiance (ECM) ji huanjing yiyi]

Sun, B., Yao, T.D., Kang, J.C., Wen, J.H., *Chinese journal of polar research (Jidi yanjiu)*, Sep. 1998, 10(3), p.235-240, In Chinese with English summary. 25 refs.

Ice cores, Ice composition, Ice electrical properties, Ice dating, Core samplers, Drill core analysis, Electrical logging, Paleoclimatology

53-3132

<sup>40</sup>Ar-<sup>39</sup>Ar ages of hornblendes in Grt-Pl-bearing amphibolite from the Larsemann Hills, East Antarctica and their geological implications.

Tong, L.X., et al, *Chinese journal of polar science*, Dec. 1998, 9(2), p.79-91, 38 refs.

Mineralogy, Lithology, Geologic structures, Tectonics, Geomorphology, Geochemistry, Geochronology, Radioactive age determination, Soil dating, Antarctica—Larsemann Hills

53-3133

Carbon cycle in the arctic terrestrial ecosystems in relation to the global warming.

Fang, J.Y., Fei, S.L., *Chinese journal of polar science*, Dec. 1998, 9(2), p.92-100, 42 refs.

Polar atmospheres, Atmospheric composition, Soil air interface, Nutrient cycle, Geochemical cycles, Biomass, Global warming, Paleoclimatology

53-3134

Analysis of sedimentary environment of core AB-67 at Barrow.

Wang, G., Zhang, Q.S., Li, Y.F., *Chinese journal of polar science*, Dec. 1998, 9(2), p.101-108, 13 refs.

Marine geology, Sea level, Marine deposits, Lacustrine deposits, Bottom sediment, Drill core analysis, Core samplers, Soil dating, Climatic changes, Statistical analysis, United States—Alaska—Barrow

53-3135

Characteristics of ion concentrations in snowpits in Longyearbyen, Svalbard, Arctic.

Kang, S.C., Qin, D.H., Ren, J.W., Gjessing, Y., *Chinese journal of polar science*, Dec. 1998, 9(2), p.109-117, 24 refs.

Polar atmospheres, Atmospheric circulation, Atmospheric composition, Air pollution, Scavenging, Snow composition, Snow impurities, Snow samplers, Ion density (concentration), Norway—Spitsbergen

53-3136

Extraction of elevation information of ice-sheet surface on south area of the Larsemann Hills in East Antarctica.

Sun, J.B., Liu, J.L., Liu, L.M., Sun, Z.H., *Chinese journal of polar science*, Dec. 1998, 9(2), p.118-124, 5 refs.

Glacier surveys, Ice sheets, Glacier surfaces, Height finding, Topographic surveys, Infrared mapping, Radiometry, Spaceborne photography, Image processing, Statistical analysis, Antarctica—Larsemann Hills

53-3137

Late Palaeogene palynoflora from Point Hennequin of the Admiralty Bay, King George Island, Antarctica with reference to its stratigraphical significance.

Duan, W.W., Cao, L., *Chinese journal of polar science*, Dec. 1998, 9(2), p.133-132, 16 refs.

Paleobotany, Plant ecology, Vegetation patterns, Fossils, Palynology, Soil dating, Stratigraphy, Paleoclimatology, Antarctica—Hennequin, Point

53-3138

Ecology features of coastal saline lakes related to environmental evolution in the area of antarctic continental edge.

Wang, Z.P., Deprez, P., *Chinese journal of polar science*, Dec. 1998, 9(2), p.133-140, 20 refs.

Marine geology, Sea level, Glaciation, Ice sheets, Glacier oscillation, Isostasy, Salt lakes, Limnology, Ecosystems, Ecology, Lake water, Salinity, Water chemistry, Paleoclimatology, Global change, Antarctica—Vestfold Hills

53-3139

Depletion of nutrients and the estimation of the new production in the ice-edge of the Prydz Bay, Antarctica.

Chen, Z.Q., Wang, Y.H., Liu, J.D., *Chinese journal of polar science*, Dec. 1998, 9(2), p.141-148, 17 refs.

Ice edge, Ice water interface, Ice cover effect, Marine biology, Sea water, Water chemistry, Suspended sediments, Nutrient cycle, Geochemical cycles, Biomass, Antarctica—Prydz Bay

53-3140

Impact of the formation and ablation of antarctic ice sheet on global geoid and sea level.

Zhang, C.J., Lu, Y., *Chinese journal of polar science*, Dec. 1998, 9(2), p.149-153, 6 refs.

Ice sheets, Glaciation, Glacier oscillation, Earth crust, Geodesy, Isostasy, Sea level, Global change, Mathematical models, Antarctica

53-3141

Three species of bryophytes from the Fildes Peninsula of Antarctica under the observation of SEM.

Liu, J.X., Li, X.D., Chen, F.D., *Chinese journal of polar science*, Dec. 1998, 9(2), p.154-156, 5 refs.

Mosses, Vegetation patterns, Plant ecology, Plants (botany), Scanning electron microscopy, Antarctica—Fildes Peninsula

53-3142

Characteristic features of vertical ozone distribution in eastern Siberia in winter-spring of 1994-1996.

Dorokhov, V.M., Zaitsev, I.G., Potapova, T.E., Khattatov, B.U., Ilushkov, V.A., *Russian meteorology and hydrology*, 1998, No.4, p.31-41, Translated from *Meteorologiya i gidrologiya*. 27 refs.

Climatology, Polar atmospheres, Atmospheric composition, Ozone, Aerosols, Degradation, Seasonal variations, Sounding, Profiles, Russia—Siberia

53-3143

**Estimation of rate of dense cold water formation on the northern shelf of the Sea of Okhotsk.**

Gladyshev, S.V., *Russian meteorology and hydrology*, 1998, No.4, p.53-59, Translated from *Meteorologiya i gidrologiya*. 18 refs.

Oceanography, Subpolar regions, Polynyas, Ice volume, Ice formation, Brines, Salinity, Water structure, Ocean bottom, Stratification, Okhotsk Sea

53-3144

**Mathematical modeling of pollution dynamics in river basins of the arctic zone of Russia.**

Vinogradova, T.A., Vinogradov, I.U.B., *Russian meteorology and hydrology*, 1998, No.4, p.72-80, Translated from *Meteorologiya i gidrologiya*. 2 refs.

River basins, Subpolar regions, Runoff, Water pollution, Soil pollution, Snow impurities, Spacecraft, Fuels, Wastes, Adsorption, Absorption, Mathematical models, Russia—Sula River

53-3145

**Temperature trends in the lower stratosphere of the Arctic.**

Koshel'kov, I.U.P., Zakharov, G.R., *Soviet meteorology and hydrology*, 1998, No.5, p.29-36, Translated from *Meteorologiya i gidrologiya*. 10 refs.

Climatology, Polar atmospheres, Stratosphere, Air temperature, Radio echo soundings, Seasonal variations, Statistical analysis

53-3146

**Statistical modeling of ridge height distribution.**

Gudoshnikov, I.U.P., Kolesov, S.A., Naumov, A.K., *Soviet meteorology and hydrology*, 1998, No.5, p.45-49, Translated from *Meteorologiya i gidrologiya*. 9 refs.

Sea ice, Ice cover thickness, Surface structure, Topographic features, Pressure ridges, Distribution, Ice bottom surface, Photogrammetry, Stereophotography, Statistical analysis, Mathematical models, Russia—Pechora Bay

53-3147

**Estimation of influence of global warming on ice appearance and breakup dates on rivers based on joint use of ice and water regime models.**

Borshch, S.V., Ginzburg, M.M., Soldatova, I.I., *Soviet meteorology and hydrology*, 1998, No.5, p.57-62, Translated from *Meteorologiya i gidrologiya*. 14 refs.

Climatology, Climatic changes, Global warming, River ice, Seasonal freeze thaw, Freezeup, Ice breakup, Runoff, Air temperature, Ice air interface, Temperature effects, Forecasting, Analysis (mathematics)

53-3148

**Thermohaline structure of bottom water on the northern Okhotsk Sea shelf.**

Gladyshev, S.V., *Russian meteorology and hydrology*, 1998, No.3, p.39-46, Translated from *Meteorologiya i gidrologiya*. 22 refs.

Oceanography, Subpolar regions, Polynyas, Ocean bottom, Ocean currents, Water structure, Brines, Salinity, Stratification, Profiles, Statistical analysis, Okhotsk Sea

53-3149

**Role of boundary dynamic processes in the change of ice concentration in arctic seas in summer.**

Gudkovich, Z.M., Zakharov, V.F., *Russian meteorology and hydrology*, 1998, No.3, p.47-52, Translated from *Meteorologiya i gidrologiya*. 16 refs.

Oceanography, Subpolar regions, Sea ice distribution, Drift, Ice edge, Sea level, Seasonal variations, Mathematical models, Indexes (ratios), Arctic Ocean

53-3150

**Mechanism of brine migration in sea ice.**

Bogorodskii, P.V., *Russian meteorology and hydrology*, 1998, No.3, p.53-60, Translated from *Meteorologiya i gidrologiya*. 16 refs.

Oceanography, Sea ice, Ice structure, Ice water interface, Brines, Migration, Convection, Thermal diffusion, Permeability, Mathematical models

53-3151

**Mesoscale model simulation of the 4-5 January 1995 lake-effect snowstorm.**

Ballentine, R.J., Stamm, A.J., Chermack, E.E., Byrd, G.P., Schlee, D., *Weather and forecasting*, Dec. 1998, 13(4), p.893-920, 38 refs.

Precipitation (meteorology), Snowstorms, Snowfall, Fronts (meteorology), Lake effects, Moisture transfer, Advection, Synoptic meteorology, Models, Simulation, Weather forecasting, United States—Huron, Lake, United States—New York

53-3152

**Statistical characteristics of a real-time precipitation forecasting model.**

Gaudet, B., Cotton, W.R., *Weather and forecasting*, Dec. 1998, 13(4), p.966-982, 45 refs.

Climatology, Precipitation (meteorology), Snowfall, Distribution, Cloud physics, Classifications, Mountains, Topographic effects, Mathematical models, Weather forecasting, Statistical analysis, United States—Colorado

53-3153

**Evaluation of WSR-88D severe hail algorithms along the northeastern Gulf Coast.**

Lenning, E., Fuelberg, H.E., Watson, A.I., *Weather and forecasting*, Dec. 1998, 13(4), p.1029-1044, 28 refs.

Climatology, Precipitation (meteorology), Weather forecasting, Thunderstorms, Freezing points, Hail, Detection, Indexes (ratios), Radar echoes, Computer programs, Data processing, Performance, United States—Florida

53-3154

**Steadman wind chill: an improvement over present scales.**

Quayle, R.G., Steadman, R.G., *Weather and forecasting*, Dec. 1998, 13(4), p.1187-1193, 22 refs.

Climatology, Air temperature, Indexes (ratios), Wind chill, Statistical analysis, Accuracy

53-3155

**Palaeoecological, biogeographical and palaeoclimatological implications of early Holocene immigration of *Larix sibirica* Ledeb. into the Scandes Mountains, Sweden.**

Kullman, L., *Global ecology and biogeography letters*, May 1998, 7(3), p.181-188, 56 refs.

Paleoecology, Paleoclimatology, Biogeography, Subarctic landscapes, Forest lines, Vegetation patterns, Migration, Sediments, Quaternary deposits, Stratigraphy, Radioactive age determination, Geochronology, Sweden—Scandes Mountains

53-3156

**Vibrational dynamics of amorphous ice.**

Kolesnikov, A.I., Li, J.C., Parker, S.F., Eccleston, R.S., Loong, C.K., *Physical review B*, Feb. 1, 1999, 59(5), p.3569-3578, 56 refs.

Ice physics, Amorphous ice, Ice formation, Classifications, Ice density, Molecular energy levels, Vibration, Molecular structure, Spectra, Neutron scattering, Ice spectroscopy

53-3157

**Molecular dynamics simulation of polarizable ice adlayers on MgO(100).**

Soetens, J.C., Millot, C., Hoang, P.N.M., Girardet, C., *Surface science*, Dec. 24, 1998, 419(1), p.48-61, 24 refs.

Ice crystal structure, Ice adhesion, Water structure, Water films, Molecular structure, Molecular energy levels, Monomolecular films, Hydrogen bonds, Adsorption, Polarization (charge separation)

53-3158

**Cyanide and metal pollution by urban snowmelt: impact of deicing compounds.**

Novotny, V., Muehring, D., Zitomer, D.H., Smith, D.W., Facey, R., *Water science & technology*, Nov. 1998, 38(10), 19th Biennial Conference of the International Association on Water Quality, Vancouver, BC, Canada, June 21-26, 1998. Selected Proceedings, Pt.8, p.223-230, 14 refs.

Chemical ice prevention, Salting, Snow composition, Snow impurities, Snowmelt, Water pollution, Environmental impact, Health

53-3159

**Annual report 1998.**

National Snow and Ice Data Center. World Data Center-A for Glaciology, Boulder, University of Colorado, 1998, 38p., 54 refs.

Snow surveys, Ice surveys, Glacier surveys, Research projects, Organizations, Data processing

53-3160

**Medium-scale indentation tests on sea ice at various speeds.**

Sodhi, D.S., Takeuchi, T., Nakazawa, N., Akagawa, S., Saeki, H., MP 5316, *Cold regions science and technology*, 1998, 28(3), p.161-182, 74 refs.

Ice solid interface, Ice loads, Ice pressure, Ice friction, Ice cover strength, Ice deformation, Ice creep, Ice breaking, Strain tests, Penetration tests

As part of a five-year program involving laboratory and field tests in Japan, the authors conducted medium-scale indentation tests on sea ice in the harbor of Lake Noto, Hokkaido, by pushing a segmented indenter against the edge of a floating ice sheet. Measurements on each 10-cm wide segment included forces in three directions and the moment about a horizontal line parallel to the indenter face. During the tests in 1998, the authors also installed four pressure-sensing panels on the face of the segmented indenter and measured interfacial pressure during indentation tests at three speeds. They present the results from the load cells and the pressure-sensing panels. They obtained data on the actual contact area and the magnitude of interfacial pressures from the pressure-sensing panels. They observed both a 'line-like' contact during high-speed (3- and 30-mm/s) indentation tests, and a gradually enlarging contact area attributable to creep deformation of the ice during low-speed (0.3-mm/s) indentation tests. Using the results of a brittle flaking model from the literature, the authors estimate the apparent fracture toughness of the ice from the data on interfacial pressure and the width of the contact area. Taking creep and fracture properties into account, they present a theoretical model to estimate the speed at which the transition from ductile to brittle failure of ice takes place during ice-structure interaction.

53-3161

**Hypothermia—cold-induced injuries.** [Stockholm], Sweden, Socialstyrelsen (National Board of Health and Welfare), 1997, 110p., Refs. p.65-80.

Cold exposure, Physiological effects, Health, Cold weather survival

53-3162

**Annual report 1997.**

Colorado. University. Institute of Arctic and Alpine Research (INSTAAR), Boulder, University of Colorado, [1998], 44p., Refs. passim.

Organizations, Research projects, Education, Cost analysis

53-3163

**Birch Creek National Wild River, Alaska: resource values and instream flow recommendations.**

Sterin, B.G., Whittaker, D., Kostohry, J., U.S. Bureau of Land Management. Alaska State Office, Anchorage. [Report], Dec. 1998, BLM/AK/ST-98/002, 76p., Refs. p.45-50, 61.

Stream flow, River flow, Flow control, Channel stabilization, Natural resources, Ecology, Ecosystems, Environmental protection, United States—Alaska—Birch Creek

53-3164

**Annual report 1997. [Jahresbericht 1997]**

Bundesamt für Seeschifffahrt und Hydrographie (BSH. Federal Maritime and Hydrographic Agency), Hamburg, 1998, 226p., In German with English summary. Refs. passim.

Organizations, Research projects, Oceanographic surveys, Ships, Marine transportation, Economic development, Environmental protection, Route surveys, Weather forecasting, Ice forecasting, Ice reporting, Safety, Data processing, Data transmission, Cost analysis, Germany, North Sea, Baltic Sea

53-3165

**Formation of a jump by the dam-break wave over a granular bed.**

Capart, H., Young, D.L., *Journal of fluid mechanics*, Oct. 10, 1998, Vol.372, p.165-187, 58 refs.

Dams, Floods, Mudflows, Sediment transport, Water waves, Shock waves, Water flow, Unsteady flow, Turbulent flow, Hydrodynamics, Mathematical models

53-3166

**Activity and experience report on the avalanche warning service in Bavaria, winter 1997/1998.** [Tätigkeits- und Erfahrungsbericht über den Lawnenwarndienst in Bayern, Winter 1997/1998], Munich, Bayerisches Landesamt für Wasserwirtschaft (Bavarian Regional Office for Water Management), 1998, 100p., In German.

Snow surveys, Snow depth, Weather forecasting, Avalanches, Accidents, Avalanche forecasting, Safety, Germany

53-3167

**External sources of water for Mercury's putative ice deposits.**

Moses, J.I., Rawlins, K., Zahnle, K., Dones, L., *Icarus*, Feb. 1999, 137(2), p.197-221, 58 refs.

Extraterrestrial ice, Planetary environments, Satellites (natural), Cosmic dust, Mass transfer, Ground ice, Ice detection, Water transport, Origin, Impact, Mathematical models, Statistical analysis, Theories

53-3168

**Monte Carlo model for the flow of dust in a porous comet nucleus.**

Shoshany, Y., Podolak, M., Prialnik, D., Berkowitz, B., *Icarus*, Feb. 1999, 137(2), p.348-354, 17 refs.

Extraterrestrial ice, Ice physics, Satellites (natural), Porosity, Dust, Ice vapor interface, Particles, Ice sublimation, Vapor diffusion, Mathematical models, Fluid dynamics, Simulation

53-3169

**Regression of Martian north polar cap: 1990-1997 Hubble Space Telescope observations.**

Cantor, B.A., Wolff, M.J., James, P.B., Higgs, E., *Icarus*, Dec. 1998, 136(2), p.175-191, 50 refs.

Mars (planet), Extraterrestrial ice, Carbon dioxide, Ice sheets, Ice edge, Ice sublimation, Spaceborne photography, Polar regions, Albedo, Seasonal variations, Image processing

53-3170

**Preliminary measurements of the cryogenic dielectric properties of water-ammonia ices: implications for radar observations of icy satellites.**

Lorenz, R.D., *Icarus*, Dec. 1998, 136(2), p.344-348, 29 refs.

Satellites (natural), Extraterrestrial ice, Regolith, Magma, Ice physics, Radiation absorption, Ice composition, Dielectric properties, Solutions, Simulation, Cryogenics, Remote sensing, Electrical measurement

53-3171

**Upper limits for condensed O<sub>2</sub> on Saturn's icy satellites and rings.**

Spencer, J., *Icarus*, Dec. 1998, 136(2), p.349-352, 23 refs.

Extraterrestrial ice, Satellites (natural), Regolith, Oxygen, Condensation, Ice physics, Ice sublimation, Photochemical reactions, Radiation absorption, Ice spectroscopy, Spectra, Theories

53-3172

**Preservation of biomolecules in sub-fossil plants from raised peat bogs—a potential paleoenvironmental proxy.**

Kuder, T., Kruge, M.A., *Organic geochemistry*, 1998, 29(5-7), International Meeting on Organic Geochemistry, 18th, Maastricht, The Netherlands, Sep. 22-26 1997. Proceedings, Pt.II. Biogeochemistry. Edited by B. Horsfield et al, p.1355-1368, 48 refs.

Soil chemistry, Paleobotany, Paleoecology, Peat, Wetlands, Organic soils, Soil formation, Diagenesis, Degradation, Geochemistry, Drill core analysis, Stratigraphy, Poland

53-3173

**Origins and fate of dissolved sterols in the Weddell Sea, Antarctica.**

Mühlebach, A., Weber, K., *Organic geochemistry*, 1998, 29(5-7), International Meeting on Organic Geochemistry, 18th, Maastricht, The Netherlands, Sep. 22-26 1997. Proceedings, Pt.II. Biogeochemistry. Edited by B. Horsfield et al, p.1595-1607, 33 refs.

Oceanography, Geochemical cycles, Ocean bottom, Sea water, Hydrocarbons, Ecology, Particles, Solubility, Degradation, Distribution, Classifications, Spectroscopy, Antarctica—Weddell Sea

53-3174

**Petrology, organic geochemistry and palynology of Tertiary age Eureka Sound Group coals, arctic Canada.**

Kalkreuth, W., et al, *Organic geochemistry*, 1998, 29(1-3), International Meeting on Organic Geochemistry, 18th, Maastricht, The Netherlands, Sep. 22-26 1997. Proceedings, Pt.I. Petroleum geochemistry. Edited by B. Horsfield et al, p.799-809, 18 refs.

Pleistocene, Hydrocarbons, Earth crust, Subpolar regions, Coal, Classifications, Geochemistry, Palynology, Lithology, Exploration, Sampling, Chemical analysis, Canada—Northwest Territories—Ellesmere Island

53-3175

**Forest fire and lake-water acidity in a northern Swedish boreal area: Holocene changes in lake-water quality at Makkassjön.**

Korsman, T., Segerström, U., *Journal of ecology*, Feb. 1998, 86(1), p.113-124, 67 refs.

Paleoecology, Forest ecosystems, Limnology, Hydrogeochemistry, Lake water, Chemical properties, Forest fires, Hydrocarbons, Lacustrine deposits, Palynology, Drill core analysis, Environmental tests, Sweden—Makkassjön

53-3176

**Durability of repaired bridge deck overlays.**

Paulsson, J., Silfwerbrand, J., *Concrete international*, Feb. 1998, 20(2), p.76-82, 20 refs.

Bridges, Winter maintenance, Concrete pavements, Concrete durability, Concrete admixtures, Cracking (fracturing), Frost resistance, Freeze thaw cycles, Freeze thaw tests, Salt water, Seepage, Profiles

53-3177

**Deicing salt accumulation and loss in highway snowbanks.**

Buttle, J.M., Labadia, C.F., *Journal of environmental quality*, Jan.-Feb. 1999, 28(1), p.155-164, 21 refs.

Road icing, Salting, Chemical ice prevention, Snowmelt, Runoff, Snow water equivalent, Snow impurities, Soil pollution, Ion diffusion, Hydrogeochemistry, Sampling, Environmental impact

53-3178

**Neotectonics and seismicity in the south-eastern Beaufort Sea, polar continental margin of north-western Canada.**

Stephenson, R.A., Smolianinova, E.I., *Journal of geodynamics*, Mar. 1999, 27(2), p.175-190, Refs. p.188-190.

Pleistocene, Marine geology, Tectonics, Subpolar regions, Earth crust, Subsidence, Isostasy, Shear stress, Seismic reflection, Mathematical models, Beaufort Sea

53-3179

**Aqueous foams for frost protection of plants: stability and protective properties.**

Krasovitski, B., Kimmel, E., Rozenfeld, M., Amir, I., *Journal of agricultural engineering research*, Feb. 1999, 72(2), p.177-185, 11 refs.

Plant physiology, Plant ecology, Frost protection, Protective coatings, Chemical composition, Thermal insulation, Thermal conductivity, Stability, Mathematical models, Simulation

53-3180

**Lessons in political oceanography part I: a preliminary analysis of whether an oil spill off Cape Hinchinbrook, Alaska could (or would) directly impact the Copper River Delta.**

Salmon, D.K., *Spill science & technology bulletin*, Sep. 1997, 4(3), p.141-146, 7 refs.

Oceanography, Oil spills, Subpolar regions, Shores, Ocean currents, Wind direction, Advection, Air water interactions, Forecasting, Environmental protection, United States—Alaska—Prince William Sound

53-3181

**Complex slope failure on Beinn nan Cnaimhseag, Assynt, Sutherland.**

Sellier, D., Lawson, T.J., *Scottish geographical magazine*, Aug. 1998, 114(2), p.85-93, 30 refs.

Pleistocene, Geomorphology, Glacial geology, Slope processes, Periglacial processes, Mass movements (geology), Landslides, Talus, Rock mechanics, United Kingdom—Scotland

53-3182

**Cairngorms—a landscape of selective linear erosion.**

Rea, B.R., *Scottish geographical magazine*, Aug. 1998, 114(2), p.124-129, 19 refs.

Geomorphology, Pleistocene, Mountains, Landscape development, Glacial geology, Glacial erosion, Abrasion, Thermal regime, Valleys, United Kingdom—Scotland

53-3183

**Searching for manganese pollution from MMT anti-knock gasoline additives in snow from central Greenland.**

Veyssière, A., Van de Velde, K., Ferrari, C., Boutron, C., *Science of the total environment*, Oct. 8, 1998, 221(2-3), p.149-158, 36 refs.

Air pollution, Dust, Aerosols, Sedimentation, Snow impurities, Ice sheets, Metals, Fuel additives, Sampling, Theories, Origin, Environmental tests, Greenland

53-3184

**Mineralogical fingerprints of industrial emissions—an example from Ni mining and smelting on the Kola Peninsula, NW Russia.**

Gregurek, D., Reimann, C., Stumpf, E.F., *Science of the total environment*, Oct. 8, 1998, 221(2-3), p.189-200, 16 refs.

Air pollution, Polar atmospheres, Snow impurities, Snow composition, Aerosols, Particles, Metals, Mining, Mineralogy, Chemical analysis, Environmental tests, Russia—Kola Peninsula

53-3185

**Thermal springs of Bockfjord, Svalbard: occurrence and major ion hydrochemistry.**

Banks, D., Sletten, R.S., Haldorsen, S., Dale, B., Heim, M., Swensen, B., *Geothermics*, Aug. 1998, 27(4), p.445-467, 28 refs.

Geothermy, Subpolar regions, Hot springs, Hydrogeology, Hydrogeochemistry, Underwater geothermal measurement, Ion density (concentration), Chemical analysis, Norway—Svalbard

53-3186

**Quaternary deformation mapping with ground penetrating radar.**

Busby, J.P., Merritt, J.W., *Journal of applied geophysics*, Feb. 1999, 41(1), p.75-91, 19 refs.

Hydrogeology, Glacial geology, Ice push, Tectonics, Earth crust, Quaternary deposits, Deformation, Glacier ice, Ice melting, Radar echoes, Sensor mapping, Profiles, United Kingdom—Sellafield District

53-3187

**Mixed-phase icing conditions: a review.**

Riley, J.T., *U.S. Federal Aviation Administration. Office of Aviation Research, Washington, D.C. Report*, Dec. 1988, DOT/FAA/AR-98/76, 27p. + appends., PB99-126880, 53 refs.

Aircraft icing, Ice forecasting, Cloud physics, Supercooled clouds, Cloud droplets, Ice crystal size, Unfrozen water content, Weather forecasting, Safety



53-3188

**Snow and ice particle sizes and mass concentrations at altitudes up to 9 km (30,000 ft).**  
Jeck, R.K., U.S. Federal Aviation Administration, Office of Aviation Research, Washington, D.C. Report, Aug. 1988, DOT/FAA/AR-97/66, 72p. + append., PB99-126922, 58 refs.  
Aircraft icing, Ice forecasting, Cloud physics, Supercooled clouds, Cloud droplets, Ice crystal size, Snow pellets, Falling snow, Snowstorms, Weather forecasting, Computerized simulation

53-3189

**Planning considerations for winter sports resort development.**  
Wingle, H.P., Denver, CO, U.S. Forest Service, Rocky Mountain Regional Office, 1994, 108p.  
Regional planning, Cold weather construction, Cold weather operation, Human factors engineering, Economic development, Forestry, Avalanche forecasting, Safety, United States

53-3190

**Keep the convoys rolling.**  
Bush, A.J., III, ed, Ahlrich, R.C., ed, Webster, S.L., ed, Grau, R.H., ed, U.S. Army Waterways Experiment Station. Geotechnical Laboratory, Vicksburg, MS. Handbook, Apr. 1996, 16p.  
Military transportation, Military operation, Route surveys, Soil trafficability, Soil stabilization, Slope stability, Landslides, Geotextiles, Road maintenance, Hungary, Bosnia

53-3191

**Beat the mud handbook: expedient field guide to surviving the spring thaw.**  
Bush, A.J., III, ed, Arn, M.R., ed, Webster, S.L., ed, Grau, R.H., ed, U.S. Army Waterways Experiment Station. Geotechnical Laboratory, Vicksburg, MS. Handbook, Apr. 1996, 16p.  
Military facilities, Military operation, Thaw weakening, Soil trafficability, Soil stabilization, Drainage, Geotextiles, Road maintenance, Hungary, Bosnia

53-3192

**Guide to Alaska geologic and mineral information.**  
Daley, E.E., ed, Alaska Department of Natural Resources. Division of Geological and Geophysical Surveys. Information circular, [1998], No.44, 90p., Refs. and numerous web sites passim.  
Geological surveys, Exploration, Minerals, Natural resources, Mining, Petroleum industry, Economic development, Data processing, Bibliographies, United States—Alaska

53-3193

**Workshop on the Use of Hydrological Models for Evaluating the Impacts of Climate Change in Snowmelt Water Supply Basins, Santa Fe, New Mexico, April 20-22, 1993.**  
Gleick, P.H., Rango, A., Cooley, K., Oakland, CA, Pacific Institute for Studies in Development, Environment, and Security, 1994, 54p., Refs. p.47-52.  
Snow hydrology, Snowmelt, Runoff forecasting, Water supply, Water reserves, Global warming, Computerized simulation, Meetings, Research projects

53-3194

**Covalent HCl at the surface of crystalline ice at 125 K: the stable phase at submonolayer levels.**  
Uras, N., Rahman, M., Devlin, J.P., Journal of physical chemistry B, 1998, 102(47), p.9375-9377, 13 refs.  
Ice crystal structure, Ice composition, Ice spectroscopy, Ice surface, Ice vapor interface, Impurities, Adsorption, Monomolecular films, Molecular structure, Molecular energy levels, Hydrogen bonds

53-3195

**Reproductive success of lake herring in habitats near shipping channels and ice-breaking operation in the St. Marys River, Michigan, USA.**  
Blouin, M.A., Kostich, M.M., Todd, T.N., Savino, J.F., Archiv für Hydrobiologie, May 1998, Vol.50, p.15-24, 12 refs.  
River ice, Ice breaking, Ice cover effect, Environmental impact, Animals, Ecology, United States—Michigan—St. Marys River

53-3196

**Trace substances in snow and firn from the vicinity of two small research stations in Antarctica.**  
Stenberg, M., Eriksson, C., Heintzenberg, J., Ambio, Sep. 1998, 27(6), p.451-455, 34 refs.  
Atmospheric composition, Air pollution, Scavenging, Snow composition, Snow impurities, Snow samplers, Core samplers, Ion density (concentration), Antarctica—Wasa Station, Antarctica—Aboa Station

53-3197

**Mobilization of metal-contaminated sediment by ice-jam floods.**  
Moore, J.N., Landrigan, E.M., Environmental geology, Jan. 1999, 37(1-2), p.96-101, 18 refs.  
River ice, Ice jams, Ice erosion, Ice cover effect, Floods, Tailings, Soil pollution, Soil erosion, Water erosion, Suspended sediments, Water pollution, Sediment transport, Alluvium, United States—Montana—Clark Fork River, United States—Montana—Blackfoot River

53-3198

**British Columbia highways avalanche incident.**  
Boissoneault, M., Avalanche review, Mar. 1999, 17(5), p.3.  
Avalanches, Accidents, Canada—British Columbia

53-3199

**Explosive use for avalanche control.**  
Bachman, D., Heywood, L., Avalanche review, Mar. 1999, 17(5), p.6-8, 8 refs.  
Avalanche triggering, Explosives, Blasting, Safety

53-3200

**Unblocking of the Nares Strait by Greenland and Ellesmere ice-sheet retreat 10,000 years ago.**  
Zreda, M., England, J., Phillips, F., Elmore, D., Sharma, P., Nature, Mar. 11, 1999, Vol.398, p.139-142, 30 refs.  
Glaciation, Ice sheets, Glacial geology, Glacial deposits, Glacier oscillation, Marine geology, Marine deposits, Bedrock, Radioactive age determination, Geochronology, Paleoclimatology, Canada—Northwest Territories—Ellesmere Island, Greenland

53-3201

**Registration of "CD-II" crested wheatgrass.**  
Asay, K.H., et al, MP 5317, Crop science, 1997, Vol.37, p.1023, 1 ref.

Grasses, Plants (botany), Introduced plants, Plant physiology, Plant tissues, Plant ecology, Agriculture

53-3202

**Coping with spatial heterogeneity effects on sampling and analysis at an HMX-contaminated anti-tank firing range.**  
Jenkins, T.F., et al, MP 5318, Field analytical chemistry and technology, 1999, 3(1), p.19-28, 24 refs.  
Military facilities, Site surveys, Explosives, Soil pollution, Soil tests, Soil analysis, Soil chemistry, Chemical analysis, Statistical analysis

Short-range and mid-range (grid size) spatial heterogeneity in explosives concentrations within surface soils was studied at an active anti-tank firing range. Intensive sampling was conducted adjacent to two target tanks by establishing sixteen 6 m<sup>2</sup> grids. Each grid was subdivided into four quadrants, and in each quadrant an area-integrated surface sample was formed into a pile that included about 10% of the top 5 cm of soil in the quadrant. After in situ homogenization, random aliquots were combined to form replicate representative samples. Grid composites were also prepared by combining equal portions of soil from the four quadrants for each grid. In nine of the quadrants, a second area-integrated sample was prepared. On-site analysis showed concentrations of HMX ranging from as high as 2160 mg/kg near one target to  $\leq 1$  mg/kg at a distance of 20 m from the target. TNT concentrations, ranging from  $\leq 1$  to 23 mg/kg, were much lower than would be expected based on the 70:30 composition ratio of HMX to TNT in the melt-cast explosive used on site. On-site concentration estimates for HMX and TNT were in excellent agreement with laboratory HPLC results; correlation coefficients were 0.992 and 0.975, respectively. Spatial heterogeneity of HMX concentrations was large on both short- and mid-range scales, and this factor dominated the overall uncertainty associated with site characterization. Greater emphasis on sampling is urgently needed to improve the representativeness of explosives residue determinations in soil.

53-3203

**Temperature and germination relationships of Festuca varieties.**

Brar, G.S., Palazzo, A.J., MP 5319, Plant varieties and seeds, 1997, Vol.10, p.103-111, 25 refs.  
Grasses, Introduced plants, Plants (botany), Plant ecology, Plant physiology, Plant tissues, Revegetation, Soil conservation  
Many studies have shown that water potential at planting will affect the germination rate and final germination of *Festuca* varieties. Limited information is available about the extent of variability in temperature dependence of germination among different *Festuca* varieties. The objective of the authors was to study germination at five temperatures for a wide range of *Festuca* varieties. *Festuca* seeds were screened for germination during 28 days in polyethylene growth pouches held at constant temperatures of 10, 15, 20, 25 or 30°C. The germination percentage significantly ( $P < 0.05$ ) increased as the temperature increased from 10° to 15°C and decreased thereafter. The variety 'Clemfline' tall fescue (*Festuca arundinacea* Schreb) had the greatest germination percentage and 'Arctared' red fescue (*Festuca rubra* L.) had the least when averaged across the five temperatures. Conversely the average time to germination ( $A_{50}$ ) was greatest at 10°C and least at 30°C. Reaching a germination level of 80% or more of the seeds required 14 d at 10°C, 9 d at 15°C, 8 d at 20°C and 7 d at 25°C or 30°C. Base temperatures required for germination of *Festuca* species were 3.2°C for rapid germinators, 3.6 to 6°C for medium germinators, and 4 to 6°C for slow germinators. Heat units calculated for the rapid germinators were 129°C d, 120 to 140°C for medium germinators, and 135 to 191°C for the slow germinators. Germination decreased as heat units increased. The  $A_{50}$  and heat units regressions explained 91% and 66% of the variations in germination, respectively. The optimum temperature for germination of *Festuca* varieties was 15°C. Seeding time for some *Festuca* varieties could be varied based on expected seed zone temperatures for particular locations. Rapidity and total germination are the most obvious factors distinguishing *Festuca* varieties. This study demonstrates the variability in rate and extent of varieties germination in response to temperatures.

53-3204

**UXO detection at Jefferson Proving Ground using ground-penetrating radar.**

Arcone, S.A., Delaney, A.J., Sellmann, P.V., O'Neill, K., MP 5320, UXO (Unexploded Ordnance) Forum '98, Anaheim, CA, May 5-7, 1998, Alexandria, VA, U.S. Department of Defense Explosives Safety Board, 1998, p.1-24, 23 refs.

Military facilities, Explosives, Site surveys, Electromagnetic prospecting, Radio echo soundings, Subsurface investigations, United States—Indiana—Jefferson Proving Ground

The authors have used ground-penetrating radar (GPR) to detect unexploded ordnance (UXO) and non-ordnance on the 40-acre site (lot 54) of Jefferson Proving Ground, IN. The UXO are buried within about 1 m deep in a clayey silt for which the soil water content ranged from moist near the surface to near saturation at about 1 m. The authors used a 16-bit radar to profile along previously established lines, and transects over artificial targets that were placed. Data was recorded at 48-64 traces/s with minimal towing speeds during both dry and rainy weather. Target responses at about 300 (time range of 50 ns) and 600 MHz (30 ns) ranged from discrete diffractions to short reflection segments. The loss of the soil greatly attenuated diffraction hyperbolas. Theoretical analyses of these hyperbolas give an average soil dielectric constant of 10 at both 300 and 600 MHz. The phase polarity of many of the reflected and diffracted wavelets indicate targets with wave impedances higher than that of the soil. The authors assume these targets to be metallic and the responses of some, whose locations correlate with the position of UXO on burial maps, are shown in detail. Theoretical modeling of wavelet propagation for this soil confirms the high rate of attenuation (47-66 dB/m round trip), the maintenance of waveform, a shift in wavelet local frequency, and response to a typical UXO. It is concluded that GPR is effective for finding targets in this type of soil to no more than 2 m depth. The authors recommend that future surveys utilize high trace acquisition rates to capture the full target responses and a proved, heavy dielectric antenna sled to improve antenna-to-ground coupling and deflect surface obstacles such as vegetation.

53-3205

**Parent-progeny relationships for carbon isotope discrimination and related characters in crested wheatgrass.**

Asay, K.H., Johnson, D.A., Palazzo, A.J., MP 5321, International journal of plant sciences, 1998, 159(5), p.821-825, 25 refs.

Grasses, Introduced plants, Plants (botany), Plant physiology, Plant tissues, Plant ecology, Revegetation, Agriculture, Soil conservation, Land reclamation

Improved cultivars of perennial grasses developed for natural resource conservation and forage production on semiarid rangelands of western North America must persist under extreme environmental stress and make efficient use of limited water resources. A close negative relationship has been documented between carbon isotope discrimination ( $\Delta$ ) and water use efficiency (WUE) in temperate ( $C_3$ ) grasses, and preliminary evidence indicates that  $\Delta$  would be a promising indirect selection criterion to improve WUE in crested wheat-

grass, *Agropyron cristatum* (L.) Gaertner and *Agropyron desertorum* (Fisch. ex Link) Schultes, a widely used grass on semiarid rangelands. The authors determined the magnitude of genetic variability and parent-progeny relationships for  $\Delta$  and the correlation of this attribute with forage yield in a genetically broad-based crested wheatgrass breeding population. Significant differences ( $P < 0.01$ ) were found among clonal and progeny lines for  $\Delta$  of the leaves and seeds. Broad-sense heritability values for leaf and seed  $\Delta$  computed on a mean basis across two years exceeded 90%. Narrow-sense heritability for leaf  $\Delta$ , based on parent-progeny regression analysis across two years, was 60%. Broad- and narrow-sense heritability values for dry matter yield (DMY) were substantially less than the corresponding values for  $\Delta$ . The correlations between  $\Delta$  and DMY were generally low and nonsignificant. These data confirm earlier, preliminary conclusions that selection for  $\Delta$  to improve WUE would be a worthy breeding objective in crested wheatgrass and that genetic advances in  $\Delta$  and DMY could be achieved concurrently.

## 53-3206

**Fine fescue species determination by laser flow cytometry.**

Huff, D.R., Palazzo, A.J., MP 5322, *Crop science*, Mar.-Apr. 1998, Vol.38, p.445-450, 34 refs.

**Grasses, Plants (botany), Plant physiology, Plant tissues, Agriculture**

The close morphological resemblance among fine fescues (*Festuca* spp.) makes identification and classification of species a difficult problem for turfgrass and taxonomic scientists. Determining ploidy level has become a major taxonomic tool for identifying species of fine fescues. The present study used laser flow cytometry to determine ploidy levels of 48 fine fescue populations (accessions) and thereby infer species classification based on observed and previously reported chromosome numbers. The 10 species of fine fescues examined were strong creeping red fescue (*F. rubra* L. ssp. *rubra*), slender creeping red fescue (*F. rubra* var. *littoralis* Vasey), Chewings fescue (*F. rubra* ssp. *falax* (Thull.) Nyman), hard fescue (*F. brevipila* Tracey), sheep fescue (*F. ovina* L. ssp. *hirtula* (Hackel ex Travis) Wilkinson), hair fescue (*F. filiformis* Pourret), false sheep fescue (*F. pseudovina* Hackel ex Wiesb), alpine fescue (*G. brachyphylla* Schultes), bluebunch fescue (*F. idahoensis* Elmer), and tundra fescue (*F. lenesis* Drobov). Significant differences were observed between species ( $P < 0.01$ ) and among populations within species ( $P < 0.05$ ). DNA content among the 10 species was observed to be highly positively correlated with observed or reported chromosome numbers ( $r = 0.97$ ,  $n = 10$ ,  $P < 0.01$ ). Linear regression analysis predicted 2C DNA content values for each of the four ploidy levels to be 5.31 pg for diploids, 8.53 pg for tetraploids, 11.75 pg for hexaploids and 14.98 pg for octoploids. The observations and results of the present study are consistent with current taxonomic treatments of hard and sheep fescue species as well as the other fine fescue species examined. The information presented should aid breeders in accurately and easily determining primary breeding germplasm with respect to ploidy levels. It may also enable the turfgrass industry to define reliably seed products and the plant collector to begin to assign native and/or naturalized accessions to their proper species categories.

## 53-3207

**Environmental effects on detection of buried mines and UXO.**

Detsch, R.M., Jenkins, T.F., Arcone, S.A., Koh, G., O'Neill, K., MP 5323, *SPIE—The International Society for Optical Engineering. Proceedings. Part 2*, 1998, Vol.3392, Conference on Detection and Remediation Technologies for Mines and Minelike Targets III, Orlando, FL, Apr. 13-17, 1998, p.1261-1264, 4 refs.

**Mines (ordnance), Explosives, Frozen ground chemistry, Chemical analysis, Snow cover effect, Radio echo soundings, Electromagnetic prospecting, Infra-red photography, Subsurface investigations**

Several studies are under way at the U.S. Army Cold Regions Research and Engineering Laboratory (CRREL) to define environmental effects on detection and classification of buried mines and unexploded ordnance (UXO). Ground that is very wet, frozen, or snow covered can pose severe constraints on demining operations. The qualitative and quantitative nature of chemical signatures of buried land mines is being documented. Research to date indicates that although 2,4,6-trinitrotoluene constitutes over 99% of military-grade TNT, it is a minor component of the vapor signature at ground level. CRREL operates a year-round test site to determine the effect of weather on radar and IR systems used to detect buried mines. The New England site experiences many of the weather conditions likely to interfere with mine detection around the world. Short-pulse ground penetrating radar (GPR) was used to profile both ordnance and non-ordnance targets at the 40-acre UXO site at Jefferson Proving Ground. Analysis of the data indicates that future systems will have to operate at faster data acquisition rates. Radar modeling is being used to simulate the effects of the environment and identify new techniques for finding and classifying buried ferrous objects.

## 53-3208

**Plant and microbial influence on bioremediation of hydrocarbon-contaminated soils.**

Beyrouthy, C.A., Reynolds, C.M., Rogers, H.B., Nichols, T.D., Wolf, D.C., MP 5324, International Petroleum Environmental Conference, 3rd, Albuquerque, NM, Sep. 24-27, 1996. Proceedings. Vol.1, Washington, D.C., U.S. Department of Energy, [1996], p.465-474, 3 refs.

**Oil spills, Soil pollution, Grasses, Roots, Plant physiology, Protective vegetation, Revegetation, Soil microbiology, Bacteria, Nutrient cycle, Land reclamation**

The rhizosphere soil adjacent to the plant root exhibits high microbial activity that may enhance hydrocarbon contaminant biodegradation. The authors amended a soil with an organic contaminant mixture (OCM) containing equimolar amounts of benzoic acid, hexadecane, 2,2-dimethyl 4,n-propyl-benzene, phenanthrene, pyrene, and *cis*-decahydronaphthalene or cycloheptane to evaluate plant species that can satisfactorily grow in contaminated soils and enhance the potential for microbial decomposition of contaminants in the rhizosphere. In a plant screening of four legumes, four grasses, and one composite exposed to 0, 1000, 2000, 4000 or 8000 mg OCM/kg, plant growth was reduced at the 4000 and 8000 mg/kg rates. At 1000 and 2000 mg OCM/kg, root length and root dry weight of alpine bluegrass (*Poa alpina* L.) increased. Root growth for the remaining plant species generally decreased as OCM rate increased. These studies demonstrated that plants can germinate and grow in contaminated soil, that relative to the bulk soil there is an increase in the percentage of the rhizosphere microbial population capable of degrading contaminants, and that roots of select plants can explore contaminated soil. These data support the hypothesis that bioremediation of petroleum contaminated-soil can be enhanced by growth of appropriate plant species.

## 53-3209

**Phytoremediation of hydrocarbon contaminated soils.**

Reynolds, C.M., et al, MP 5325, International Petroleum Environmental Conference, 4th, San Antonio, TX, Sep. 9-12, 1997. Proceedings, Washington, D.C., U.S. Department of Energy, [1997], 10p., 16 refs.

**Oil spills, Soil pollution, Grasses, Roots, Plant physiology, Protective vegetation, Revegetation, Soil microbiology, Bacteria, Nutrient cycle, Land reclamation**

Using plants and their associated rhizosphere microorganisms to enhance biodegradation of organic contaminants may provide a viable, low-cost remediation option well-suited to remote sites or fragile ecosystems. The authors investigated changes in the microbial populations of a Captina silt loam with or without bahiagrass (*Paspalum notatum* Flugge, var. *Argentine*), amended with 0 or 2000 mg pyrene/kg soil, and incubated for 10 weeks. Microbial numbers were not significantly influenced by the pyrene level, but were greater in the rhizosphere compared to the bulk soil. Bacterial numbers were  $5.9 \times 10^8$  and  $3.6 \times 10^8$  CFU/g in the bulk and rhizosphere soil, respectively. The authors developed and used a "soil sock" technique in a field study to determine the effects of nutrient addition and plants on bacterial numbers and remediation of soil contaminated with diesel. Initial data from the study showed that addition of nutrients and plants together resulted in significantly higher bacterial numbers than the control and the greatest decrease in total petroleum hydrocarbon (TPH) levels. An Annual ryegrass (*Lolium multiflorum*, Lam.) and Arctosted red fescue (*Festuca rubra*, L.) mixture was effective in reducing TPH levels. These studies have demonstrated plant germination and growth in hydrocarbon-contaminated soil, the importance of rhizosphere microbial populations in pyrene degradation, and plants and nutrient stimulation of TPH biodegradation in the field. These data support the use of phytoremediation of hydrocarbon-contaminated soils as a technology especially well-suited to remote sites and fragile ecosystems.

## 53-3210

**Remote sensing of DMSP SSM/I over the South China Sea and retrieval algorithm of sea surface wind speeds.**

Jin, Y.Q., *Chinese journal of geophysics*, 1998, 41(1), p.29-37, 5 refs.

**Oceanographic surveys, Marine atmospheres, Air water interactions, Wind velocity, Sea states, Surface temperature, Radiometry, Radio echo soundings, Spaceborne photography, Mathematical models, South China Sea**

## 53-3211

**Decomposition of tree root litter in a climatic transect of coniferous forests in northern Europe: a synthesis.**

Berg, B., Johansson, M.B., Meentemeyer, V., Dratz, W., *Scandinavian journal of forest research*, 1998, 13(4), p.402-412, 33 refs.

**Plant ecology, Forest ecosystems, Climatology, Forest soils, Subarctic landscapes, Roots, Litter, Decomposition, Temperature effects, Sampling, Statistical analysis, Denmark, Sweden, Norway**

## 53-3212

**Relationships between crown condition, tree nutrition and soil properties in the coastal *Picea abies* forests (western Finland).**

Merilä, P., Lindgren, M., Raitio, H., Salemaa, M., *Scandinavian journal of forest research*, 1998, 13(4), p.413-420, 46 refs.

**Plant physiology, Trees (plants), Forest ecosystems, Forest canopy, Plant tissues, Degradation, Subarctic landscapes, Nutrient cycle, Forest soils, Soil chemistry, Finland**

## 53-3213

**Effects of SO<sub>2</sub> and heavy metal emissions from the Kola Peninsula, NW Russia, on soil acidity parameters in NW Russia and Finnish Lapland.**

Derome, J., Lindroos, A.J., Niska, K., *Scandinavian journal of forest research*, 1998, 13(4), p.421-428, 28 refs.

**Forest ecosystems, Subpolar regions, Air pollution, Aerosols, Metals, Sedimentation, Forest soils, Organic soils, Soil chemistry, Sampling, Environmental impact, Environmental tests, Russia—Kola Peninsula, Finland—Lapland**

## 53-3214

**Forest structure classes in central Finnish Lapland.**

Leppänen, P., Hallikainen, V., Mikkola, K., Puoskari, J., Sepponen, P., *Scandinavian journal of forest research*, 1998, 13(4), p.442-450, 44 refs.

**Forest ecosystems, Structural analysis, Classifications, Arctic landscapes, Altitude, Vegetation patterns, Statistical analysis, Finland—Lapland**

## 53-3215

**Structural changes in two virgin boreal forest stands in central Sweden over 72 years.**

Linder, P., *Scandinavian journal of forest research*, 1998, 13(4), p.451-461, 58 refs.

**Forest ecosystems, Plant ecology, Subarctic landscapes, Vegetation patterns, Biomass, Forest soils, Litter, Periodic variations, Forest fires, Environmental protection, Statistical analysis, Sweden**

## 53-3216

**Fire history recorded on pine trunks and stumps: influence of land use and fires on forest structure in North Karelia.**

Lehtonen, H., *Scandinavian journal of forest research*, 1998, 13(4), p.462-468, 35 refs.

**Forest ecosystems, Arctic landscapes, Vegetation patterns, Forest fires, Trees (plants), Plant tissues, Age determination, Environmental impact, Human factors, Finland—North Karelia**

## 53-3217

**Auroral activity and antarctic stratospheric ozone.**

Marcucci, M.F., Orsini, S., Candidi, M., Storini, M., *Physics and chemistry of the earth C*, 1999, 24(1-3), International Symposium on Solar-Terrestrial Coupling Processes, Paros, Greece, June 23-27, 1997. Selected papers, p.141-146, 31 refs.

**Geomagnetism, Electric fields, Climatology, Polar atmospheres, Ozone, Stratosphere, Solar radiation, Solar activity, Photochemical reactions, Seasonal variations, Spectroscopy, Statistical analysis, Antarctica**

53-3218

**Annual atmospheric deposition of 16 elements in eight catchments of the central Barents region.** Chekushin, V.A., Bogatyrev, I.V., De Caritat, P., Niskavaara, H., Reimann, C., *Science of the total environment*, Sep. 18, 1998, 220(2-3), p.95-114, 24 refs.

Precipitation (meteorology), Subpolar regions, Air pollution, Aerosols, Sedimentation, Snow impurities, Meltwater, Metals, Solubility, Environmental tests, Origin, Sampling, Russia—Kola Peninsula, Finland, Norway

53-3219

**Ambient air levels and atmospheric long-range transport of persistent organochlorines to Signy Island, Antarctica.**

Kallenborn, R., Oehme, M., Wynn-Williams, D.D., Schlabach, M., Harris, J., *Science of the total environment*, Sep. 18, 1998, 220(2-3), p.167-180, 20 refs. Climatology, Air pollution, Hydrocarbons, Aerosols, Particles, Polar atmospheres, Atmospheric circulation, Sampling, Origin, Environmental tests, Seasonal variations, Correlation, Antarctica—Signy Island

53-3220

**Portable drilling rig for coring permafrosted sediments.**

Dickinson, W., Cooper, P., Webster, B., Ashby, J., *Journal of sedimentary research B*, Mar. 1999, 69(2), p.518-521, 5 refs.

Soil tests, Glacial deposits, Percussion drilling, Permafrost samplers, Core samplers, Portable equipment, Design, Performance

53-3221

**Energy balance of a corn residue-covered field during snowmelt.**

Sauer, T.J., Hatfield, J.L., Prueger, J.H., Logsdon, S.D., *American Water Resources Association. Journal*, Dec. 1998, 34(6), p.1401-1414, 29 refs.

Snow hydrology, Agriculture, Soil temperature, Surface temperature, Litter, Snowmelt, Snow air interface, Snow cover effect, Heat flux, Heat balance, Seasonal variations, Radiometry

53-3222

**Snow and ice albedo measured with two types of pyranometers.**

Henneman, H.E., Stefan, H.G., *American Water Resources Association. Journal*, Dec. 1998, 34(6), p.1487-1494, 14 refs.

Climatology, Radiation balance, Albedo, Solar radiation, Snow optics, Ice optics, Sensors, Photometers, Specifications, Performance, Accuracy

53-3223

**Airfield construction team 1984—Casey '84.**

Australian National Antarctic Research Expedition, [Kingston, Tasmania], [1984], n.p.

Stations, Site surveys, Aircraft landing areas, Ice runways, Snow (construction material), Snow compaction, Trafficability, Antarctica—Casey Station

53-3224

**Annual report—Fiscal Year 1982.**

U.S. National Aeronautics and Space Administration. Goddard Space Flight Center. Goddard Laboratory for Atmospheric Sciences. Oceans and Ice Branch, Greenbelt, MD, [1983], 73p., Refs. passim. Organizations, Research projects, Oceanographic surveys, Ice surveys, Glacier surveys, Air ice water interaction

53-3225

**Construction activities in permafrost. [Anlättningsverksamhet vid permafrost]**

Knutsson, S., *Högskolan i Luleå. Teknisk rapport (Luleå University. Technical report)*, Mar. 1985, No.1985:31 T, 22p., In Swedish. 8 refs.

Permafrost beneath roads, Permafrost beneath structures, Permafrost control, Permafrost preservation, Frost protection, Soil stabilization

53-3226

**Heaving and settling as a result of freezing along land reclamation heat collector pipes. [Hävning och sättning till följd av frysnings invid markförälgda kollektorslangar]**

Knutsson, S., *Högskolan i Luleå. Teknisk rapport (Luleå University. Technical report)*, [1983], No.1983:62 T, 11p., In Swedish. 8 refs.

Soil freezing, Frost heave, Frozen ground settling, Heat pumps, Heat pipes, Frost protection, Land reclamation, Soil stabilization

53-3227

**Field study of the properties of an axially extensible plastic drain pipe in frost heaving soil. [Fältstudie av en axiellt töjbar plastbrunnens egenskaper i tjällyftande jord]**

Knutsson, S., Vikström, L., *Högskolan i Luleå. Teknisk rapport (Luleå University. Technical report)*, Dec. 1982, No.1983:17 T, 51p., In Swedish with English summary. 9 refs.

Soil freezing, Frost heave, Frost action, Drains, Pipes (tubes), Drainage, Frost resistance, Frost protection, Road maintenance

53-3228

**Effect of cyclic freezing on the consistency limits of clay. [Inverkan av cyklisk frysnings på lerors konsistensgränser]**

Knutsson, S., *Högskolan i Luleå. Forskningsrapport (Luleå University. Research report)*, [1984], TULEA 1984:04, 8p., In Swedish. 5 refs.

Clay soils, Soil freezing, Soil structure, Frost action, Frost resistance, Frozen ground strength

53-3229

**Field study of storm drains and manholes with protective covers. [Fältstudie av rännstensbrunnar och nedstigningsbrunnar försedda med fogskydd]**

Knutsson, S., *Högskolan i Luleå. Forskningsrapport (Luleå University. Research report)*, Mar. 1982, TULEA 1982:14, 112p. + appends., In Swedish. 14 refs.

Soil freezing, Frost action, Drains, Drainage, Water intakes, Covering, Frost protection

53-3230

**Some regularities in thermokarst development.**

Jahn, A., *Université de Liège. Congrès et colloques*, 1972, Vol.67, Symposium International de Géomorphologie, Liège, Belgium, 1972, p.167-176, 19 refs. For another paper from the same symposium see 39-884.

Permafrost hydrology, Permafrost heat balance, Ground thawing, Thermokarst development, Thermokarst lakes

53-3231

**High intensity radiated field external environments for civil aircraft operating in the United States of America.**

Heather, F.W., *U.S. Naval Air Warfare Center Aircraft Division, Patuxent River, MD. Technical memorandum*, Dec. 1998, NAWCADPAX-98-156-TM, 129p., ADA-359 456, 12 refs. Also published as U.S. Federal Aviation Administration, Office of Aviation Research. Washington, D.C., Report, DOT/FAA/AR-98/69.

Aircraft, Airplanes, Helicopters, Radio waves, Electric fields, Radiation measurement, Route surveys, Safety, United States

53-3232

**Mid-Pleistocene cosmogenic minimum-age limits for pre-Wisconsinan glacial surfaces in southwestern Minnesota and southern Baffin Island: a multiple nuclide approach.**

Bierman, P.R., Marsella, K.A., Patterson, C., Davis, P.T., Caffee, M., *Geomorphology*, Feb. 1999, 27(1-2), p.25-39, 31 refs.

Pleistocene, Geomorphology, Glacial geology, Bedrock, Weathering, Striations, Glacial erosion, Gamma irradiation, Isotope analysis, Radioactive age determination, Statistical analysis, Canada—Northwest Territories—Baffin Island, United States—Minnesota

53-3233

**Use of cosmogenic <sup>35</sup>S for comparing ages of water from three alpine-subalpine basins in the Colorado Front Range.**

Sueker, J.K., Turk, J.T., Michel, R.L., *Geomorphology*, Feb. 1999, 27(1-2), p.61-74, 34 refs.

Watersheds, Water storage, Snow hydrology, Snowmelt, Runoff, Alpine landscapes, Subsurface drainage, Hydrography, Radioactive age determination, Gamma irradiation, Isotope analysis, Topographic effects, Seasonal variations, United States—Colorado—Front Range

53-3234

**Determining the times and distances of particle transit in a mountain stream using fallout radionuclides.**

Bonniwell, E.C., Matisoff, G., Whiting, P.J., *Geomorphology*, Feb. 1999, 27(1-2), p.75-92, 21 refs.

Watersheds, Geomorphology, Water erosion, Sediment transport, Soil profiles, Snow hydrology, Snowmelt, Runoff, Hydrography, Suspended sediments, Fallout, Radioactive isotopes, Isotope analysis, United States—Idaho—Gold Fork River

53-3235

**Long-term rates of denudation in the Dry Valleys, Transantarctic Mountains, southern Victoria Land, Antarctica based on in-situ-produced cosmogenic <sup>21</sup>Ne.**

Summerfield, M.A., et al., *Geomorphology*, Feb. 1999, 27(1-2), p.113-129, 52 refs.

Pleistocene, Paleoclimatology, Geomorphology, Glacier oscillation, Landscape development, Bedrock, Erosion, Gamma irradiation, Isotope analysis, Theories, Antarctica—Transantarctic Mountains

53-3236

**Estimates of the rate of regolith production using <sup>10</sup>Be and <sup>26</sup>Al from an alpine hillslope.**

Small, E.E., Anderson, R.S., Hancock, G.S., *Geomorphology*, Feb. 1999, 27(1-2), p.131-150, 33 refs.

Geomorphology, Geologic processes, Alpine landscapes, Bedrock, Regolith, Erosion, Slope processes, Mass balance, Gamma irradiation, Mathematical models, Sampling, United States—Wyoming—Wind River Range

53-3237

**Non-analogous tree flora in the Scandes Mountains, Sweden, during the early Holocene—macrofossil evidence of rapid geographic spread and response to palaeoclimate.**

Kullman, L., *Boreas*, Sep. 1998, 27(3), p.153-161, Refs. p.159-161.

Paleoecology, Paleoclimatology, Subpolar regions, Biogeography, Vegetation patterns, Quaternary deposits, Fossils, Palynology, Stratigraphy, Radioactive age determination, Sweden—Scandes Mountains

53-3238

**Deglaciation chronology and marine environments in southwestern Sweden.**

Wastegård, S., *Boreas*, Sep. 1998, 27(3), p.178-194, Refs. p.192-194.

Pleistocene, Paleoclimatology, Paleoecology, Glacial geology, Lacustrine deposits, Subpolar regions, Shoreline modification, Glacier oscillation, Ice edge, Geochronology, Radioactive age determination, Stratigraphy, Drill core analysis, Sweden

53-3239

**Little goes a long way: discovery of a new mid-Holocene tephra in Sweden.**

Boyle, J., *Boreas*, Sep. 1998, 27(3), p.195-199, 31 refs.

Quaternary deposits, Volcanic ash, Aerosols, Geochronology, Radioactive age determination, Subarctic landscapes, Geochemistry, Drill core analysis, Stratigraphy, Sweden

53-3240

Early Weichselian dust storm layer at Achenheim in Alsace, France.

Rousseau, D.D., Kukla, G., Zöller, L., Hradilova, J., *Boreas*, Sep. 1998, 27(3), p.200-207, 47 refs.

Pleistocene, Paleoclimatology, Climatic changes, Quaternary deposits, Soil formation, Landscape development, Loess, Storms, Stratigraphy, Remanent magnetism, Correlation, France—Alsace

53-3241

Reconstruction of Holocene climatic changes from peat bogs in north-west Scotland.

Anderson, D.E., *Boreas*, Sep. 1998, 27(3), p.208-224, Refs. p.222-224.

Paleoclimatology, Climatic changes, Paleoecology, Palynology, Quaternary deposits, Peat, Stratigraphy, Radioactive age determination, Drill core analysis, Humidity, Swamps, United Kingdom—Scotland

53-3242

"Pre-Younger Dryas resurgence of the southwestern margin of the Cordilleran ice sheet, British Columbia, Canada": comments and reply.

Easterbrook, D.J., et al, *Boreas*, Sep. 1998, 27(3), p.225-230, 22 refs. For pertinent paper see 52-3385.

Pleistocene, Ice sheets, Glacial geology, Glacial deposits, Glacier oscillation, Geochronology, Accuracy, Ice age theory, Canada—British Columbia

53-3243

Tracking polar stratospheric cloud development with POAM II and a microphysical model.

Steele, H.M., Drdla, K., Turco, R.P., Lumpe, J.D., Bevilacqua, R.M., *Geophysical research letters*, Feb. 1, 1999, 26(3), p.287-290, 24 refs.

Climatology, Polar atmospheres, Cloud physics, Polar stratospheric clouds, Attenuation, Particle size distribution, Aerosols, Heterogeneous nucleation, Ice formation, Sampling, Models, Antarctica

53-3244

Intercomparison of ATMOS, SAGE II, and ER-2 observations in arctic vortex and extra-vortex air masses during spring 1993.

Michelsen, H.A., et al, *Geophysical research letters*, Feb. 1, 1999, 26(3), p.291-294, 20 refs.

Climatology, Polar atmospheres, Air masses, Chemical composition, Aerosols, Turbulent diffusion, Spectroscopy, Sampling, Photochemical reactions, Correlation

53-3245

CF<sub>4</sub> and the age of mesospheric and polar vortex air.

Harnisch, J., Borchers, R., Fabian, P., Maiss, M., *Geophysical research letters*, Feb. 1, 1999, 26(3), p.295-298, 26 refs.

Climatology, Air pollution, Aerosols, Gases, Turbulent diffusion, Atmospheric boundary layer, Polar atmospheres, Sampling, Age determination

53-3246

TDLAS trace gas measurements within mountain waves over northern Scandinavia during the POLSTAR campaign in early 1997.

Schilling, T., Lübken, F.J., Wienhold, F.G., Hoor, P., Fischer, H., *Geophysical research letters*, Feb. 1, 1999, 26(3), p.303-306, 6 refs.

Climatology, Polar atmospheres, Atmospheric composition, Gravity waves, Wind direction, Mountains, Topographic effects, Gases, Aerial surveys, Spectroscopy, Sweden

53-3247

Correction to "Ozone loss rates in the arctic stratosphere in the winter 1991/92: model calculations compared with Match results".

Becker, G., Müller, R., McKenna, D.S., Rex, M., Carslaw, K.S., *Geophysical research letters*, Feb. 1, 1999, 26(3), p.327, 1 ref. For pertinent paper see 53-1712.

Climatology, Polar atmospheres, Stratosphere, Atmospheric composition, Ozone, Degradation, Models

53-3248

Eurasian snow cover variability and northern hemisphere climate predictability.

Cohen, J., Entekhabi, D., *Geophysical research letters*, Feb. 1, 1999, 26(3), p.345-348, 20 refs.

Climatology, Precipitation (meteorology), Snow cover distribution, Atmospheric boundary layer, Atmospheric circulation, Snow air interface, Snow cover effect, Wind direction, Seasonal variations, Correlation

53-3249

Study of the energy balance climate model with CO<sub>2</sub>-dependent outgoing radiation: implication for the glaciation during the Cenozoic.

Ikeda, T., Tajika, E., *Geophysical research letters*, Feb. 1, 1999, 26(3), p.349-352, 20 refs.

Pleistocene, Paleoclimatology, Climatic changes, Glaciation, Glacier oscillation, Greenhouse effect, Carbon dioxide, Radiation balance, Heat transfer, Thermal diffusion, Mathematical models

53-3250

Difference between sorted circle and polygon morphology and their distribution in two alpine areas, northern Sweden.

Kling, J., *Zeitschrift für Geomorphologie*, Dec. 1998, 42(4), p.439-452, With German and French summaries. 29 refs.

Geomorphology, Alpine landscapes, Geophysical surveys, Geocryology, Solifluction, Polygonal topography, Patterned ground, Sorting, Distribution, Statistical analysis, Sweden

53-3251

Active vegetation-banked terraces on Macquarie Island.

Selkirk, J.M., *Zeitschrift für Geomorphologie*, Dec. 1998, 42(4), p.483-496, With German and French summaries. 34 refs.

Geomorphology, Geocryology, Periglacial processes, Subarctic landscapes, Patterned ground, Gravel, Sorting, Terraces, Vegetation factors, Macquarie Island

53-3252

Large volume silicic volcanism along the proto-Pacific margin in Gondwana: lithological and stratigraphical investigations from the Antarctic Peninsula.

Riley, T.R., Leat, P.T., *Geological magazine*, Jan. 1999, 136(1), p.1-16, Refs. p.13-16.

Tectonics, Subpolar regions, Geologic processes, Earth crust, Volcanoes, Magma, Lithology, Stratigraphy, Geochronology, Antarctica—Antarctic Peninsula

53-3253

Widespread bacterial populations at glacier beds and their relationship to rock weathering and carbon cycling.

Sharp, M., Parkes, J., Cragg, B., Fairchild, I.J., Lamb, H., Tranter, M., *Geology*, Feb. 1999, 27(2), p.107-110, 30 refs.

Glacial hydrology, Glacier beds, Weathering, Ice solid interface, Microbiology, Bacteria, Biomass, Carbon dioxide, Protons, Geochemical cycles, Sampling, Switzerland—Haut Glacier d'Arolla

53-3254

Radiocarbon constraints on ice sheet advance and retreat in the Weddell Sea, Antarctica.

Anderson, J.B., Andrews, J.T., *Geology*, Feb. 1999, 27(2), p.179-182, 32 refs.

Glacial geology, Ice sheets, Glacier oscillation, Ice shelves, Quaternary deposits, Marine deposits, Ice rafting, Lithology, Radioactive age determination, Drill core analysis, Geochronology, Antarctica—Weddell Sea

53-3255

Definition of Antarctic Oscillation Index.

Gong, D.Y., Wang, S.W., *Geophysical research letters*, Feb. 15, 1999, 26(4), p.459-462, 23 refs.

Climatology, Polar atmospheres, Atmospheric circulation, Atmospheric pressure, Oscillations, Indexes (ratios), Statistical analysis, Standards, Antarctica

53-3256

Two-year (1996/1997) ozone DIAL measurement over Dumont d'Urville (Antarctica).

Santacesaria, V., Stefanutti, L., Morandi, M., Guzzi, D., MacKenzie, A.R., *Geophysical research letters*, Feb. 15, 1999, 26(4), p.463-466, 13 refs.

Climatology, Polar atmospheres, Cloud physics, Polar stratospheric clouds, Ozone, Subsidence, Turbulent diffusion, Degradation, Seasonal variations, Sampling, Antarctica—Dumont d'Urville Station

53-3257

Decadal-scale variability in long-range atmospheric transport to the Summit of the Greenland ice sheet.

Kahl, J.D.W., Galbraith, J.A., Martinez, D.A., *Geophysical research letters*, Feb. 15, 1999, 26(4), p.481-484, 18 refs.

Paleoclimatology, Climatic changes, Ice sheets, Ice cores, Sedimentation, Chemical composition, Atmospheric circulation, Seasonal variations, Origin, Sampling, Greenland—Summit

53-3258

Geomagnetic excursions recorded in Chinese loess in the last 70,000 years.

Zhu, R.X., Pan, Y.X., Liu, Q.S., *Geophysical research letters*, Feb. 15, 1999, 26(4), p.505-508, 21 refs.

Pleistocene, Geomagnetism, Oscillations, Loess, Rock magnetism, Remanent magnetism, Sedimentation, Stratigraphy, China—Loess Plateau

53-3259

Lipids and trophic interactions of ice fauna and pelagic zooplankton in the marginal ice zone of the Barents Sea.

Scott, C.L., Falk-Petersen, S., Sargent, J.R., Hop, H., Lønne, O.J., Poltermann, M., *Polar biology*, Feb. 1999, 21(2), p.65-70, 38 refs.

Marine biology, Sea ice, Ice edge, Ecosystems, Plankton, Nutrient cycle, Sampling, Chemical analysis, Barents Sea

53-3260

Sub-ice fauna of the Laptev Sea and the adjacent Arctic Ocean in summer 1995.

Werner, I., Martinez Arbizu, P., *Polar biology*, Feb. 1999, 21(2), p.71-79, 62 refs.

Marine biology, Ecosystems, Plankton, Biomass, Classifications, Ice water interface, Subglacial observations, Hydrography, Arctic Ocean, Russia—Laptev Sea

53-3261

New records of Acari from the sub-antarctic Prince Edwards Islands.

Marshall, D.J., et al, *Polar biology*, Feb. 1999, 21(2), p.84-89, 39 refs.

Biogeography, Ecosystems, Biomass, Ecology, Littoral zone, Subpolar regions, Classifications, Distribution, Sampling, Prince Edward Islands, Marion Island

53-3262

*Penicillium* species from terrestrial habitats in the Windmill Islands, East Antarctica, including a new species, *Penicillium antarcticum*.

McRae, C.F., Hocking, A.D., Sappelt, R.D., *Polar biology*, Feb. 1999, 21(2), p.97-111, 37 refs.

Soil microbiology, Bacteria, Subpolar regions, Ecology, Biomass, Ecosystems, Distribution, Classifications, Antarctica—Windmill Islands

53-3263

Feeding dynamics and respiration of the bottom-dwelling caridean shrimp *Nauticaris marionis* Bate, 1888 (Crustacea: Decapoda) in the vicinity of Marion Island (southern ocean).

Pakhomov, E.A., Froneman, P.W., Kuun, P.J., Balarin, M., *Polar biology*, Feb. 1999, 21(2), p.112-121, 41 refs.

Marine biology, Subpolar regions, Biomass, Ecology, Nutrient cycle, Ocean bottom, Sampling, Marion Island

53-3264

**Annual report 1987.**

National Snow and Ice Data Center. World Data Center-A for Glaciology, Boulder, University of Colorado, 1987, 27p., Refs. passim.

Snow surveys, Ice surveys, Glacier surveys, Organizations, Research projects, Data processing, Cost analysis

53-3265

**1990 Military Mountaineering Conference.**

Military Mountaineering Conference, Jericho, VT, Apr. 17-19, 1990, Jericho, Vermont Army National Guard (ARNG) Mountain Warfare School, 1990, Var. p., For selected papers see 53-3266 through 53-3271. Military operation, Cold weather operation, Cold weather survival, Cold exposure, Physiological effects, Health, Safety

53-3266

**Individual cold weather operations and medicine.**

Hamlet, M., Military Mountaineering Conference, Jericho, VT, Apr. 17-19, 1990, Jericho, Vermont Army National Guard (ARNG) Mountain Warfare School, 1990, p.5/4-5/13.

Cold exposure, Frostbite, Physiological effects, Health, Safety, Cold weather survival

53-3267

**Mountain weather forecasting.**

Ferguson, S.A., Military Mountaineering Conference, Jericho, VT, Apr. 17-19, 1990, Jericho, Vermont Army National Guard (ARNG) Mountain Warfare School, 1990, p.5/17-5/24. Thunderstorms, Snowstorms, Fronts (meteorology), Wind (meteorology), Precipitation (meteorology), Air temperature, Frost forecasting, Weather forecasting

53-3268

**U.S. Army snow and avalanche training, past and present.**

Montagne, J., Military Mountaineering Conference, Jericho, VT, Apr. 17-19, 1990, Jericho, Vermont Army National Guard (ARNG) Mountain Warfare School, 1990, p.5/26-5/36, 17 refs.

Snow cover stability, Avalanche forecasting, Military operation, Education, Safety, Cold weather operation, Cold weather survival

53-3269

**Stresses of high mountains.**

Houston, C.S., Military Mountaineering Conference, Jericho, VT, Apr. 17-19, 1990, Jericho, Vermont Army National Guard (ARNG) Mountain Warfare School, 1990, p.5/37-5/40.

Cold exposure, Frostbite, Physiological effects, Health, Safety, Cold weather survival

53-3270

**Small unit tactics in Norway during WW II.**

Colby, W.E., Military Mountaineering Conference, Jericho, VT, Apr. 17-19, 1990, Jericho, Vermont Army National Guard (ARNG) Mountain Warfare School, 1990, p.5/55-5/65.

Military operation, History, Cold weather operation, Cold weather survival, Norway

53-3271

**Austrian mountain school.**

Lasser, M., Military Mountaineering Conference, Jericho, VT, Apr. 17-19, 1990, Jericho, Vermont Army National Guard (ARNG) Mountain Warfare School, 1990, p.5/66-5/70.

Military operation, Education, Cold weather operation, Cold weather survival, Austria

53-3272

**Sediment fluxes along the northeastern European margin: inferring hydrological changes between 20 and 8 kyr.**

Abrantes, F., et al, *Marine geology*, Nov. 1998, 152(1-3), p.7-23, Refs. p.21-23.

Marine geology, Ocean currents, Paleoclimatology, Surface temperature, Paleogeology, Icebergs, Ice rafting, Sediment transport, Drill core analysis, Radioactive age determination, Hydrography, Norwegian Sea, Atlantic Ocean

53-3273

**Mid-depth oxygen drawdown during Heinrich events: evidence from benthic foraminiferal community structure, trace-fossil tiering, and benthic  $\delta^{13}\text{C}$  at the Portuguese margin.**

Baas, J.H., Schönfeld, J., Zahn, R., *Marine geology*, Nov. 1998, 152(1-3), p.25-55, Refs. p.52-55.

Pleistocene, Paleogeology, Oceanography, Marine geology, Plankton, Ice rafting, Bottom sediment, Water chemistry, Oxygen, Solubility, Isotope analysis, Drill core analysis, Stratigraphy, Atlantic Ocean

53-3274

**Norwegian Sea overflow variability and NE Atlantic surface hydrography during the past 150,000 years.**

Kuijpers, A.H., Troelstra, S.R., Wisse, M., Heier Nielsen, S., Van Weering, T.C.E., *Marine geology*, Nov. 1998, 152(1-3), p.75-99, Refs. p.96-99.

Pleistocene, Oceanography, Marine geology, Paleogeology, Ocean currents, Boundary layer, Marine deposits, Drill core analysis, Radioactive age determination, Hydrography, Stratigraphy, Norwegian Sea

53-3275

**Quaternary sedimentation and Norwegian Sea overflow pathways around Bill Bailey Bank, northeastern Atlantic.**

Kuijpers, A.H., Andersen, M.S., Kenyon, N.H., Kuzendorf, H., Van Weering, T.C.E., *Marine geology*, Nov. 1998, 152(1-3), p.101-127, 58 refs.

Oceanography, Marine geology, Subpolar regions, Ocean currents, Velocity, Sedimentation, Grain size, Quaternary deposits, Seismic refraction, Profiles, Drill core analysis, Norwegian Sea, Atlantic Ocean

53-3276

**Neogene seismic facies and deep-water gateways in the Faeroe Bank area, NE Atlantic.**

Boldreel, L.O., Andersen, M.S., Kuijpers, A.H., *Marine geology*, Nov. 1998, 152(1-3), p.129-140, 28 refs.

Pleistocene, Oceanography, Marine geology, Subpolar regions, Ocean currents, Orientation, Bottom sediment, Seismic reflection, Profiles, Norwegian Sea

53-3277

**Seismic stratigraphy and sedimentary processes at the Norwegian Sea margin northeast of the Faeroe Islands.**

Nielsen, T., Van Weering, T.C.E., *Marine geology*, Nov. 1998, 152(1-3), p.141-157, 27 refs.

Marine geology, Subpolar regions, Oceanography, Pleistocene, Sedimentation, Icebergs, Ice scoring, Bottom sediment, Stratigraphy, Seismic reflection, Profiles, Age determination, Norwegian Sea

53-3278

**Sediments and sedimentation at the NE Faeroe continental margin; contourites and large-scale sliding.**

Van Weering, T.C.E., Nielsen, T., Kenyon, N.H., Akentjeva, K., Kuijpers, A.H., *Marine geology*, Nov. 1998, 152(1-3), p.159-176, 31 refs.

Pleistocene, Subpolar regions, Marine geology, Sedimentation, Bottom topography, Geomorphology, Mass flow, Sliding, Seismic reflection, Profiles, Stratigraphy, Norwegian Sea

53-3279

**Rapid changes in the oceanic fronts in the Norwegian Sea during the last deglaciation: implications for the Younger Dryas cooling event.**

Klitgaard-Kristensen, D., Rasmussen, T.L., Sejrup, H.P., Hafidason, H., Van Weering, T.C.E., *Marine geology*, Nov. 1998, 152(1-3), p.177-188, 31 refs.

Pleistocene, Paleoclimatology, Surface temperature, Marine geology, Bottom sediment, Paleogeology, Climatic changes, Ice rafting, Sedimentation, Ocean currents, Boundary layer, Drill core analysis, Norwegian Sea

53-3280

**Late Weichselian and Holocene sediment fluxes of the northern North Sea margin.**

Hafidason, H., King, E.L., Sejrup, H.P., *Marine geology*, Nov. 1998, 152(1-3), p.189-215, Refs. p.212-215.

Pleistocene, Marine geology, Glacier oscillation, Icebergs, Subpolar regions, Ocean currents, Bottom sediment, Glacial deposits, Sedimentation, Drill core analysis, Lithology, Geochronology, North Sea

53-3281

**Glacigenic debris flows on the North Sea trough mouth fan during ice stream maxima.**

King, E.L., Hafidason, H., Sejrup, H.P., Lavlie, R., *Marine geology*, Nov. 1998, 152(1-3), p.217-246, 38 refs.

Pleistocene, Glacial geology, Marine geology, Subpolar regions, Ice shelves, Glacier flow, Marine deposits, Glacial deposits, Sediment transport, Stratigraphy, Lithology, Drill core analysis, Remanent magnetism, North Sea

53-3282

**Investigation of pole-to-pole performances of spaceborne atmospheric chemistry sensors with the NDSC.**

Lambert, J.C., et al, *Journal of the atmospheric sciences*, Jan. 15, 1999, 56(2), Conference on Global Measurement Systems for Atmospheric Composition, Toronto, Ontario, Canada, May 1997. Selected papers, p.176-193, Refs. p.191-193.

Climatology, Climatic changes, Global change, Atmospheric composition, Stratosphere, Ozone, Chemical composition, Polar atmospheres, Remote sensing, Spacecraft, Sensors, Classifications, Sensor mapping, Performance

53-3283

**Observations of stratospheric aerosols using CPFM polarized limb radiances.**

McLinden, C.A., McConnell, J.C., McElroy, C.T., Griffioen, E., *Journal of the atmospheric sciences*, Jan. 15, 1999, 56(2), Conference on Global Measurement Systems for Atmospheric Composition, Toronto, Ontario, Canada, May 1997. Selected papers, p.233-240, 24 refs.

Climatology, Polar atmospheres, Stratosphere, Atmospheric composition, Aerosols, Photochemical reactions, Particle size distribution, Aerial surveys, Radiance, Attenuation, Profiles, Polarization (waves), Radiometry

53-3284

**Identification of source nature and seasonal variations of arctic aerosol by positive matrix factorization.**

Xie, Y.L., Hopke, P.K., Paatero, P., Barrie, L.A., Li, S.M., *Journal of the atmospheric sciences*, Jan. 15, 1999, 56(2), Conference on Global Measurement Systems for Atmospheric Composition, Toronto, Ontario, Canada, May 1997. Selected papers, p.249-260, 38 refs.

Climatology, Polar atmospheres, Atmospheric composition, Aerosols, Chemical analysis, Classifications, Photochemical reactions, Ion density (concentration), Origin, Sampling, Statistical analysis, Canada—Northwest Territories—Alert

53-3285

**Tropospheric gases and aerosols in northeast Greenland.**

Heidam, N.Z., Wählin, P., Christensen, J.H., *Journal of the atmospheric sciences*, Jan. 15, 1999, 56(2), Conference on Global Measurement Systems for Atmospheric Composition, Toronto, Ontario, Canada, May 1997. Selected papers, p.261-278, 29 refs.

Climatology, Polar atmospheres, Air pollution, Atmospheric composition, Atmospheric circulation, Aerosols, Gases, Seasonal variations, Origin, Sampling, Models, Environmental tests, Greenland

53-3286

**Aquatic sources and sinks of CO<sub>2</sub> and CH<sub>4</sub> in the polar regions.**

Semiletov, I.P., *Journal of the atmospheric sciences*, Jan. 15, 1999, 56(2), Conference on Global Measurement Systems for Atmospheric Composition, Toronto, Ontario, Canada, May 1997. Selected papers, p.286-306, Refs. p.304-306.

Climatology, Oceanographic surveys, Marine atmospheres, Polar atmospheres, Surface waters, Atmospheric composition, Aerosols, Natural gas, Carbon dioxide, Saturation, Vapor transfer, Hydrography, Arctic Ocean, Russia—Siberia

53-3287

**U-Pb geochronology of Riphean sandstone and gabbro from southeast Siberia and its bearing on the Laurentia-Siberia connection.**

Rainbird, R.H., Stern, R.A., Khudolei, K., Kropachev, A.P., Heaman, L.M., Sukhorukov, V.I., *Earth and planetary science letters*, Dec. 30, 1998, 164(3-4), p.409-420, 51 refs.

Pleistocene, Tectonics, Subpolar regions, Geochronology, Lithology, Magma, Stratigraphy, Isotope analysis, Radioactive age determination, Origin, Continental drift, Models, Russia—Siberia

53-3288

**Fission-track evidence for apparent out-of-sequence Cenozoic deformation along the Philip Smith Mountain front, northeastern Brooks Range, Alaska.**

O'Sullivan, P.B., Wallace, W.K., Murphy, J.M., *Earth and planetary science letters*, Dec. 30, 1998, 164(3-4), p.435-449, 33 refs.

Pleistocene, Earth crust, Subpolar regions, Tectonics, Lithology, Stratigraphy, Deformation, Geochronology, Radioactive age determination, Sampling, Statistical analysis, United States—Alaska—Brooks Range

53-3289

**Seasonal variations of heavy metals in the 1960s alpine ice: sources versus meteorological factors.**

Van de Velde, K., et al., *Earth and planetary science letters*, Dec. 30, 1998, 164(3-4), p.521-533, 38 refs.

Environmental tests, Air pollution, Meteorological factors, Aerosols, Alpine landscapes, Glacier ice, Ice cores, Metals, Sampling, Origin, Ice dating, Seasonal variations, France—Mont Blanc

53-3290

**Magnetic anisotropy and environmental changes in two sedimentary cores from the Norwegian Sea and the North Atlantic.**

Kissel, C., Laj, C., Mazaud, A., Dokken, T., *Earth and planetary science letters*, Dec. 30, 1998, 164(3-4), p.617-626, 27 refs.

Pleistocene, Paleoclimatology, Climatic changes, Oceanographic surveys, Subpolar regions, Bottom sediment, Sedimentation, Drill core analysis, Grain size, Remanent magnetism, Anisotropy, Norwegian Sea, Atlantic Ocean

53-3291

**Problems with using radiocarbon to infer ocean ventilation rates for past and present climates.**

Campin, J.M., Fichet, T., Duplessy, J.C., *Earth and planetary science letters*, Jan. 15, 1999, 165(1), p.17-24, 38 refs.

Paleoclimatology, Sea water, Radioactive age determination, Ocean currents, Ventilation, Marine deposits, Carbon isotopes, Air water interactions, Ice age theory, Ice cover effect, Models, Antarctica—Weddell Sea, Bering Strait

53-3292

**Mantle flow, melting, and dehydration of the Iceland mantle plume.**

Ito, G., Shen, Y., Hirth, G., Wolfe, C.J., *Earth and planetary science letters*, Jan. 15, 1999, 165(1), p.81-96, 50 refs.

Marine geology, Subpolar regions, Ocean bottom, Geologic processes, Earth crust, Magma, Viscosity, Water content, Geochemistry, Rheology, Mathematical models, Iceland

53-3293

**High-resolution chronostratigraphy from down-hole susceptibility logging tuned by palaeoclimatic orbital frequencies.**

Barthès, V., Pozzi, J.P., Vibert-Charbonnel, P., Thibaut, J., Mélières, M.A., *Earth and planetary science letters*, Jan. 15, 1999, 165(1), p.97-116, 43 refs.

Pleistocene, Paleoclimatology, Climatic changes, Insolation, Marine deposits, Stratigraphy, Boreholes, Remanent magnetism, Oxygen isotopes, Spectra, Correlation, Geochronology, North Sea

53-3294

**Torfajökull: a radiogenic end-member of the Iceland Pb-isotopic array.**

Stecher, O., Carlson, R.W., Gunnarsson, B., *Earth and planetary science letters*, Jan. 15, 1999, 165(1), p.117-127, 43 refs.

Pleistocene, Lithology, Subpolar regions, Earth crust, Geologic structures, Geologic processes, Volcanoes, Magma, Radioactive isotopes, Isotope analysis, Statistical analysis, Iceland—Torfajökull

53-3295

**Stalagmite luminescence and peat humification records of palaeo-moisture for the last 2500 years.**

Baker, A., et al., *Earth and planetary science letters*, Jan. 15, 1999, 165(1), p.157-162, 25 refs.

Paleoclimatology, Climatic changes, Swamps, Peat, Organic soils, Moisture transfer, Soil formation, Oscillations, Luminescence, Spectroscopy, United Kingdom—Scotland

53-3296

**Distribution of Late Valday mammals and plants on the northern Russian plain.**

Markova, A.K., Simakova, A.N., *Polar geography*, July-Sep. 1998, 22(3), p.155-168, Translated from *Akademiia nauk. Izvestiia. Seria geograficheskaiia*, 30 refs.

Pleistocene, Paleoclimatology, Global change, Paleogeology, Palynology, Subarctic landscapes, Plains, Tundra vegetation, Forest ecosystems, Vegetation patterns, Distribution, Russia

53-3297

**Small cryogenic erosional relief forms in the steppes of Transbaykalia.**

Liubtsova, E.M., *Polar geography*, July-Sep. 1998, 22(3), p.170-180, Translated from *Geografii i prirodnye resursy*, 9 refs.

Geocryology, Permafrost hydrology, Gullies, Steppes, Geomorphology, Cryogenic soils, Soil erosion, Surface drainage, Frost action, Naleds, Climatic factors, Seasonal variations, Russia—Siberia

53-3298

**Lakes of the Novaya Zemlya archipelago.**

Vekhov, N.V., *Polar geography*, July-Sep. 1998, 22(3), p.181-191, Translated from *Geografii i prirodnye resursy*, 6 refs.

Lakes, Surveys, Tundra terrain, Arctic landscapes, Distribution, Geography, Classifications, Environmental protection, Russia—Novaya Zemlya

53-3299

**Monitoring ground-temperature conditions in central Sakha.**

Skriabin, P.N., Varlamov, S.P., Skachkov, I.U.B., *Polar geography*, July-Sep. 1998, 22(3), p.192-200, Translated from *Geografii i prirodnye resursy*.

Climatology, Global warming, Permafrost surveys, Permafrost transformation, Frozen ground temperature, Air temperature, Temperature measurement, Seasonal freeze thaw, Classifications, Seasonal variations, Correlation, Russia—Yakutsk

53-3300

**Vertical vegetation zonation in the mountains of northeast Siberia.**

Ogureeva, G.N., *Polar geography*, July-Sep. 1998, 22(3), p.201-210, Translated from *Geografii i prirodnye resursy*, 20 refs.

Plant ecology, Arctic landscapes, Mountains, Tundra terrain, Tundra vegetation, Vegetation patterns, Classifications, Altitude, Microclimatology, Russia—Siberia

53-3301

**Water-heat budget and ecological structure of icing landscape complexes.**

Alekseev, V.R., *Polar geography*, July-Sep. 1998, 22(3), p.211-221, Translated from *Geografii i prirodnye resursy*, 12 refs.

Geocryology, Naleds, Icing, Periglacial processes, Ecosystems, Landscape development, Landscape types, Classifications, Analysis (mathematics)

53-3302

**Moisture conditions in xeric plant associations along the Upper Kolyma.**

Prokopets, M.E., Alfimov, A.V., *Polar geography*, July-Sep. 1998, 22(3), p.222-230, Translated from *Geografii i prirodnye resursy*, 18 refs.

Plant ecology, Ecosystems, Arctic landscapes, Deserts, Tundra vegetation, Vegetation patterns, Plant physiology, Evaporation, Moisture transfer, Wind factors, Turbulent diffusion, Microclimatology, Russia—Kolyma River

53-3303

**Glaciations in European highlands.**

[Vergletscherungen in europäischen Mittelgebirgen]

Kostrzewski, A., ed, Hagedorn, H., ed, *Zeitschrift für Geomorphologie. Supplementband*, 1999, Vol.113, 95p., In German or English. Refs. passim. For selected papers see 53-3304 through 53-3309.

Alpine glaciation, Geological surveys, Glacial geology, Glacial erosion, Glacial deposits, Moraines, Geomorphology, Geochronology, Paleoclimatology

53-3304

**Glaciation of the Riesengebirge (Giant Mountains in English, Karkonosze in Polish). [Die Vergletscherung des Riesengebirges]**

Chmal, H., Traczyk, A., *Zeitschrift für Geomorphologie. Supplementband*, 1999, Vol.113, Vergletscherungen in europäischen Mittelgebirgen (Glaciations in European highlands). Edited by A. Kostrzewski and H. Hagedorn, p.11-17, In German. 21 refs.

Alpine glaciation, Glacial geology, Glacial deposits, Moraines, Rock glaciers, Geological surveys, Stratigraphy, Geochronology, Paleoclimatology, Poland

53-3305

**Problems of glaciation of the High Tatra Mountains—Joseph Partsch synthesis in the light of current knowledge.**

Kotarba, A., Baumgart-Kotarba, M., *Zeitschrift für Geomorphologie. Supplementband*, 1999, Vol.113, Vergletscherungen in europäischen Mittelgebirgen (Glaciations in European highlands). Edited by A. Kostrzewski and H. Hagedorn, p.19-31, 17 refs.

Alpine glaciation, Glacial geology, Glacial erosion, Glacial deposits, Moraines, Lacustrine deposits, Forest lines, Snow line, Geochronology, Paleoclimatology, Poland—Tatra Mountains

53-3306

**Role of "reglacial" relief in the development of mountain glaciation in the Sudetes, with the special reference to the Karkonosze Mountains.**

Migoń, P., *Zeitschrift für Geomorphologie. Supplementband*, 1999, Vol.113, Vergletscherungen in europäischen Mittelgebirgen (Glaciations in European highlands). Edited by A. Kostrzewski and H. Hagedorn, p.33-44, 25 refs.

Alpine glaciation, Geological surveys, Glacial geology, Glacial erosion, Nivation, Topographic effects, Tectonics, Geomorphology, Geochronology, Poland

53-3307

**Glacial landforms in the area of Kleiner Arbersee (Bavarian Forest, Germany). [Der glaziale Formenschatz im Gebiet um den Kleinen Arbersee (Bayerischer Wald, Deutschland)]**

Bucher, M., *Zeitschrift für Geomorphologie. Supplementband*, 1999, Vol.113, Vergletscherungen in europäischen Mittelgebirgen (Glaciations in European highlands). Edited by A. Kostrzewski and H. Hagedorn, p.45-58, In German with English summary. 15 refs.

Alpine glaciation, Geological surveys, Glacial geology, Glacial erosion, Glacial deposits, Moraines, Glacial lakes, Nivation, Snow line, Geomorphology, Germany



53-3308

**Pleistocene glaciation in the east of the Russian Plain: Ural or Scandinavian glacier?** [Die pleistozäne Vergletscherung im Osten der Russischen Ebene: Zentrum im Ural oder Skandinavien?] Dedkov, A.P., Butakov, G.P., *Zeitschrift für Geomorphologie. Supplementband*, 1999, Vol.113, Vergletscherungen in europäischen Mittelgebirgen (Glaciations in European highlands). Edited by A. Kostrzewski and H. Hagedorn, p.59-67, In German with English summary. 11 refs.

Glaciation, Geological surveys, Glacial geology, Glacial erosion, Glacial deposits, Glacial till, Moraines, Pleistocene, Soil dating, Geochronology, Paleoclimatology, Russia

53-3309

**Lateral moraines—morphology, genesis, and relation to glacier fluctuations (examples from the eastern Alps and western and central Norway).** [Lateralmoränen—Morphologie, Genese und Beziehung zu Gletscherstandsschwankungen (Beispiele aus Ostalpen und West-/Zentralnorwegen)] Winkler, S., Hagedorn, H., *Zeitschrift für Geomorphologie. Supplementband*, 1999, Vol.113, Vergletscherungen in europäischen Mittelgebirgen (Glaciations in European highlands). Edited by A. Kostrzewski and H. Hagedorn, p.69-84, In German with English summary. 24 refs.

Alpine glaciation, Geological surveys, Glacial geology, Glacial erosion, Glacial deposits, Glacial till, Moraines, Glacier oscillation, Geomorphology, Geochronology, Paleoclimatology, Alps, Norway

53-3310

**New instrument for measuring cloud condensation nuclei: cloud condensation nucleus "remover"** Ji, Q., Shaw, G.E., Cantrell, W., *Journal of geophysical research*, Nov. 20, 1998, 103(D21), p.28,013-28,019, 17 refs.

Cloud physics, Cloud droplets, Aerosols, Condensation nuclei, Supersaturation, Nucleus counters, Meteorological instruments, Mathematical models

53-3311

**Soluble species in aerosol and snow and their relationship at Glacier 1, Tien Shan, China.** Sun, J.Y., et al, *Journal of geophysical research*, Nov. 20, 1998, 103(D21), p.28,021-28,028, 40 refs.

Atmospheric composition, Aerosols, Dust, Air pollution, Snow air interface, Scavenging, Snow composition, Snow impurities, Snow samplers, Glacial meteorology, Ice composition, China—Tian Shan

53-3312

**Correlations of stratospheric abundances of NO<sub>y</sub>, O<sub>3</sub>, N<sub>2</sub>O, and CH<sub>4</sub>, derived from ATMOS measurements.** Michelsen, H.A., Manney, G.L., Gunson, M.R., Zander, R., *Journal of geophysical research*, Nov. 20, 1998, 103(D21), p.28,347-28,359, 78 refs.

Polar atmospheres, Stratosphere, Atmospheric circulation, Atmospheric composition, Air masses, Ozone, Statistical analysis

53-3313

**Polar Ozone and Aerosol Measurement (POAM) II stratospheric NO<sub>2</sub>, 1993-1996.** Randall, C.E., Rusch, D.W., Bevilacqua, R.M., Hopfel, K.W., Lumpe, J.D., *Journal of geophysical research*, Nov. 20, 1998, 103(D21), p.28,361-28,371, 47 refs.

Polar atmospheres, Stratosphere, Atmospheric circulation, Atmospheric composition, Aerosols, Ozone, Photochemical reactions

53-3314

**Two-dimensional model with input parameters from a general circulation model: ozone sensitivity to different formulations for the longitudinal temperature variation.** Smyshliaev, S.P., Dvortsov, V.L., Geller, M.A., Yudin, V.A., *Journal of geophysical research*, Nov. 20, 1998, 103(D21), p.28,373-28,387, 59 refs.

Polar atmospheres, Atmospheric circulation, Atmospheric composition, Air pollution, Ozone, Polar stratospheric clouds, Computerized simulation

53-3315

**Model sensitivity studies of arctic ozone depletion.** Chipperfield, M.P., Pyle, J.A., *Journal of geophysical research*, Nov. 20, 1998, 103(D21), p.28,389-28,403, 45 refs.

Polar atmospheres, Atmospheric circulation, Atmospheric composition, Air pollution, Ozone, Polar stratospheric clouds, Computerized simulation

53-3316

**Composition-dependent freezing nucleation rates for HNO<sub>3</sub>/H<sub>2</sub>O aerosols resembling gravity-wave-perturbed stratospheric particles.** Prenni, A.J., Onasch, T.B., Tisdale, R.T., Siefert, R.L., Tolbert, M.A., *Journal of geophysical research*, Nov. 20, 1998, 103(D21), p.28,439-28,450, 37 refs.

Atmospheric composition, Aerosols, Polar stratospheric clouds, Cloud physics, Freezing nuclei, Ice nuclei, Nucleation rate

53-3317

**[Proceedings].** National Institute of Polar Research (NIPR) Symposium on Polar Meteorology and Glaciology, 20th, Tokyo, Nov. 26-27, 1997, Watanabe, O., ed, *Polar meteorology and glaciology*, Nov. 1998, No.12, 177p., Refs. passim. For individual papers see 53-3318 through 53-3332.

Polar atmospheres, Atmospheric circulation, Atmospheric composition, Air pollution, Air ice water interaction, Sea ice distribution, Ice conditions

53-3318

**Spectral albedo observation on the snow field at Barrow, Alaska.** Aoki, T., et al, *Polar meteorology and glaciology*, Nov. 1998, No.12, National Institute of Polar Research (NIPR) Symposium on Polar Meteorology and Glaciology, 20th, Tokyo, Nov. 26-27, 1997, p.1-9, 14 refs.

Snow cover structure, Snow stratigraphy, Snow composition, Snow impurities, Dust, Carbon black, Snow air interface, Snow heat flux, Snow optics, Albedo, United States—Alaska—Barrow

53-3319

**Observations of liquid water, water vapor, and downward flux of infrared radiation in the arctic region with a microwave radiometer and a pyrgeometer.** Ishida, H., et al, *Polar meteorology and glaciology*, Nov. 1998, No.12, National Institute of Polar Research (NIPR) Symposium on Polar Meteorology and Glaciology, 20th, Tokyo, Nov. 26-27, 1997, p.10-18, 8 refs.

Polar atmospheres, Atmospheric composition, Cloud cover, Cloud physics, Unfrozen water content, Water vapor, Humidity, Air temperature, Radiation balance, Infrared radiation, Radiation measuring instruments, Radiometry, Canada—Northwest Territories—Inuvik, Sweden

53-3320

**On the stratospheric ozone loss over Eureka Station in the Canadian Arctic.** Hirota, M., et al, *Polar meteorology and glaciology*, Nov. 1998, No.12, National Institute of Polar Research (NIPR) Symposium on Polar Meteorology and Glaciology, 20th, Tokyo, Nov. 26-27, 1997, p.19-28, 10 refs.

Polar atmospheres, Atmospheric composition, Air temperature, Polar stratospheric clouds, Ozone, Canada—Northwest Territories—Eureka

53-3321

**Lidar observation above Svalbard, Norway in the winter of 1996/97—characteristics of backscattering ratio and depolarization ratio of PSC particles.** Shiraiishi, K., et al, *Polar meteorology and glaciology*, Nov. 1998, No.12, National Institute of Polar Research (NIPR) Symposium on Polar Meteorology and Glaciology, 20th, Tokyo, Nov. 26-27, 1997, p.29-39, 15 refs.

Polar atmospheres, Atmospheric composition, Polar stratospheric clouds, Cloud physics, Ozone, Lidar, Backscattering, Norway—Spitsbergen

53-3322

**Size distribution of aerosols at Barrow in Alaska—a case study in spring.** Zaizen, Y., et al, *Polar meteorology and glaciology*, Nov. 1998, No.12, National Institute of Polar Research (NIPR) Symposium on Polar Meteorology and Glaciology, 20th, Tokyo, Nov. 26-27, 1997, p.40-48, 12 refs.

Polar atmospheres, Atmospheric composition, Air pollution, Haze, Aerosols, Condensation nuclei, Particle size distribution, United States—Alaska—Barrow

53-3323

**Ionic constituents in aerosol particles at Syowa Station, East Antarctica, during 1996.** Osada, K., Hayashi, M., Ui, H., Iwasaka, Y., *Polar meteorology and glaciology*, Nov. 1998, No.12, National Institute of Polar Research (NIPR) Symposium on Polar Meteorology and Glaciology, 20th, Tokyo, Nov. 26-27, 1997, p.49-57, 27 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Atmospheric composition, Air pollution, Aerosols, Particle size distribution, Ion density (concentration), Antarctica—Showa Station

53-3324

**North-Pacific sea ice and Kuroshio SST variability and its relation to the winter monsoon.** Fang, Z.F., Wallace, J.M., *Polar meteorology and glaciology*, Nov. 1998, No.12, National Institute of Polar Research (NIPR) Symposium on Polar Meteorology and Glaciology, 20th, Tokyo, Nov. 26-27, 1997, p.58-67, 13 refs.

Marine atmospheres, Atmospheric circulation, Ocean currents, Surface temperature, Air ice water interaction, Sea ice distribution, Ice edge, Drift, Ice cover effect, Statistical analysis

53-3325

**Preliminary study on decadal oscillation and its oscillation source in the sea-ice-air system in the Northern Hemisphere.** Gao, D.Y., Wu, B.Y., *Polar meteorology and glaciology*, Nov. 1998, No.12, National Institute of Polar Research (NIPR) Symposium on Polar Meteorology and Glaciology, 20th, Tokyo, Nov. 26-27, 1997, p.68-78, 15 refs.

Sea ice distribution, Ice conditions, Ice cover effect, Air ice water interaction, Ocean currents, Marine atmospheres, Atmospheric circulation, Statistical analysis, Barents Sea, Russia—Kara Sea

53-3326

**Role of floe size in ice dynamics.** Ito, H., *Polar meteorology and glaciology*, Nov. 1998, No.12, National Institute of Polar Research (NIPR) Symposium on Polar Meteorology and Glaciology, 20th, Tokyo, Nov. 26-27, 1997, p.79-85.

Sea ice distribution, Ice conditions, Ice floes, Ice water interface, Drift, Ice friction, Ice pressure, Ice cover strength, Ice deformation, Ice growth, Ice models

53-3327

**Observation of sea ice conditions using visible and near infrared channels in MOS-1/MESSR and ADEOS/AVNIR.** Shirasaki, K., Enomoto, H., Tateyama, K., Washina, H., Watanabe, A., *Polar meteorology and glaciology*, Nov. 1998, No.12, National Institute of Polar Research (NIPR) Symposium on Polar Meteorology and Glaciology, 20th, Tokyo, Nov. 26-27, 1997, p.86-96, 6 refs.

Ice surveys, Sea ice distribution, Ice conditions, Ice detection, Radiometry, Spaceborne photography, Russia—Sakhalin Island, Okhotsk Sea, Antarctica—Molodzhnaya Station

53-3328

**Cloud extraction from polar satellite data using modified Mahalanobis classifier.**  
Kubo, M., Saito, H., Muramoto, K., Yamanouchi, T., *Polar meteorology and glaciology*, Nov. 1998, No.12, National Institute of Polar Research (NIPR) Symposium on Polar Meteorology and Glaciology, 20th, Tokyo, Nov. 26-27, 1997, p.97-103, 10 refs.  
Cloud cover, Terrain identification, Albedo, Radiometry, Spaceborne photography, Image processing, Antarctica—Showa Station

53-3329

**Shirase flow-line model: an additional tool for interpreting the Dome-Fuji signal.**  
Pattyn, F., Declair, H., *Polar meteorology and glaciology*, Nov. 1998, No.12, National Institute of Polar Research (NIPR) Symposium on Polar Meteorology and Glaciology, 20th, Tokyo, Nov. 26-27, 1997, p.104-111, 12 refs.  
Ice sheets, Glacier oscillation, Glacier thickness, Glacier mass balance, Glacier flow, Ice dating, Paleoclimatology, Computerized simulation, Antarctica—Queen Maud Land

53-3330

**Preliminary results from radon observation at Syowa Station, Antarctica, during 1996.**  
Ui, H., Tasaka, S., Hayashi, M., Osada, K., Iwasaka, Y., *Polar meteorology and glaciology*, Nov. 1998, No.12, National Institute of Polar Research (NIPR) Symposium on Polar Meteorology and Glaciology, 20th, Tokyo, Nov. 26-27, 1997, p.112-123, 20 refs.  
Polar atmospheres, Atmospheric circulation, Atmospheric composition, Air pollution, Radioactive isotopes, Antarctica—Showa Station

53-3331

**Comparison of temperature data measured by RS2-91 and RS2-80 rawinsondes at Syowa Station, Antarctica.**  
Nakamura, M., Miyamoto, H., Narita, O., Yokota, A., *Polar meteorology and glaciology*, Nov. 1998, No.12, National Institute of Polar Research (NIPR) Symposium on Polar Meteorology and Glaciology, 20th, Tokyo, Nov. 26-27, 1997, p.124-129, 7 refs.  
Polar atmospheres, Stratosphere, Air temperature, Atmospheric pressure, Temperature gradients, Meteorological instruments, Sounding, Antarctica—Showa Station

53-3332

**Experimental study on light scattering from an artificial ice cloud.**  
Sasaki, Y., Nishiyama, N., Furukawa, Y., *Polar meteorology and glaciology*, Nov. 1998, No.12, National Institute of Polar Research (NIPR) Symposium on Polar Meteorology and Glaciology, 20th, Tokyo, Nov. 26-27, 1997, p.130-139, 16 refs.  
Cloud chambers, Cloud physics, Ice crystal replicas, Ice crystal structure, Ice crystal size, Ice crystal optics, Light scattering, Lidar

53-3333

**Velocity structure, flow instability and mass flux on a large arctic ice cap from satellite radar interferometry.**  
Dowdeswell, J.A., Unwin, B., Nuttall, A.M., Wingham, D.J., *Earth and planetary science letters*, Apr. 15, 1999, 167(3-4), p.131-140, 32 refs.  
Glacier surveys, Glacier flow, Glacier surfaces, Glacier mass balance, Mass transfer, Glacier oscillation, Velocity measurement, Spaceborne photography, Synthetic aperture radar, Periodic variations, Norway—Svalbard

53-3334

**Response of beryllium and radiogenic isotope ratios in northern Atlantic deep water to the onset of northern hemisphere glaciation.**  
Von Blanckenburg, F., O'Nions, R.K., *Earth and planetary science letters*, Apr. 15, 1999, 167(3-4), p.175-182, 45 refs.  
Pleistocene, Paleoclimatology, Glaciation, Oceanography, Glacial deposits, Marine deposits, Ice rafting, Ocean currents, Water transport, Sea water, Isotope analysis, Ice age theory, Geochronology, Atlantic Ocean

53-3335

**Cosmogenic noble gas studies in the oldest landscape on earth: surface exposure ages of the Dry Valleys, Antarctica.**  
Schäfer, J.M., et al, *Earth and planetary science letters*, Apr. 15, 1999, 167(3-4), p.215-226, 35 refs.  
Pleistocene, Paleoclimatology, Geomorphology, Bedrock, Landscape development, Gamma irradiation, Isotope analysis, Geochronology, Antarctica—Fleming, Mount

53-3336

**Effects of changing climate on game-animal and human use of the Colorado high country (U.S.A.) since 1000 BC.**  
Benedict, J.B., *Arctic, antarctic, and alpine research*, Feb. 1999, 31(1), p.1-15, Refs. p.12-15.  
Paleoclimatology, Alpine tundra, Paleoecology, Climatic changes, Snowstorms, Snow cover effect, Human factors, Lichens, Revegetation, Radioactive age determination, Geochronology, Theories, United States—Colorado

53-3337

**Effect of mobile tree islands on soil phosphorus concentrations and distribution in an alpine tundra ecosystem on Niwot Ridge, Colorado Front Range, U.S.A.**  
Parker, E.R., Sanford, R.L., Jr., *Arctic, antarctic, and alpine research*, Feb. 1999, 31(1), p.16-20, 31 refs.  
Plant ecology, Alpine tundra, Tundra vegetation, Nutrient cycle, Tundra soils, Organic soils, Soil chemistry, Trees (plants), Vegetation patterns, Migration, Soil analysis, United States—Colorado—Front Range

53-3338

**Exact growth and increased nitrogen compensation by the arctic sedge *Carex aquatilis* var. *stans* after simulated grazing.**  
Raillard, M.C., Svoboda, J., *Arctic, antarctic, and alpine research*, Feb. 1999, 31(1), p.21-26, 27 refs.  
Plant ecology, Plant physiology, Arctic landscapes, Plant tissues, Nutrient cycle, Biomass, Damage, Growth, Animals, Environmental impact, Simulation, Canada—Northwest Territories—Ellesmere Island

53-3339

**Ecological significance of different growth forms of purple saxifrage, *Saxifraga oppositifolia* L., in the high arctic, Ny-Alesund, Svalbard.**  
Kume, A., Nakatsubo, T., Bekku, Y., Masuzawa, T., *Arctic, antarctic, and alpine research*, Feb. 1999, 31(1), p.27-33, 22 refs.  
Plant ecology, Arctic landscapes, Biomass, Mosses, Growth, Vegetation patterns, Plant tissues, Structural analysis, Classifications, Acclimatization, Norway—Svalbard

53-3340

**Infrared and red stimulated luminescence dating of Late Quaternary nearshore sediments from Spitsbergen, Svalbard.**  
Forman, S.L., *Arctic, antarctic, and alpine research*, Feb. 1999, 31(1), p.34-49, Refs. p.47-49.  
Pleistocene, Marine geology, Subpolar regions, Marine deposits, Littoral zone, Quaternary deposits, Geochronology, Luminescence, Stratigraphy, Radioactive age determination, Norway—Svalbard

53-3341

**High-resolution seismic evidence for multiple glaciation across the southwest Iceland shelf.**  
Syvitski, J.P., Jennings, A.E., Andrews, J.T., *Arctic, antarctic, and alpine research*, Feb. 1999, 31(1), p.50-57, 40 refs.  
Pleistocene, Glacial geology, Glaciation, Glacier oscillation, Moraines, Marine deposits, Ice edge, Subpolar regions, Seismic reflection, Drill core analysis, Mud, ice scoring, Radioactive age determination, Iceland

53-3342

**Hydrodynamics of a supraglacial lake and its effect on the basin expansion: Tsho Rolpa, Rolwaling Valley, Nepal Himalaya.**  
Chikita, K., Jha, J., Yamada, T., *Arctic, antarctic, and alpine research*, Feb. 1999, 31(1), p.58-70, 12 refs.  
Glacial hydrology, Glacial lakes, Bottom ice, Glacier melting, Lake water, Hydrography, Suspended sediments, Stratification, Flow measurement, Hydrodynamics, Wind factors, Nepal

53-3343

**Lacustrine bulk organic  $\delta^{13}\text{C}$  in the British Isles during the last glacial-Holocene transition (14-9 ka  $^{14}\text{C}$  BP).**  
Turney, C.S.M., *Arctic, antarctic, and alpine research*, Feb. 1999, 31(1), p.71-81, 53 refs.  
Pleistocene, Paleoclimatology, Climatic changes, Paleoecology, Geochronology, Lacustrine deposits, Carbon isotopes, Isotope analysis, Stratigraphy, Profiles, Statistical analysis, United Kingdom—Scotland, United Kingdom—England, United Kingdom—Wales

53-3344

**Paleolimnological reconstruction of Holocene climatic trends from two boreal treeline lakes, Northwest Territories, Canada.**  
Pienitz, R., Smol, J.P., MacDonald, G.M., *Arctic, antarctic, and alpine research*, Feb. 1999, 31(1), p.82-93, Refs. p.91-93.  
Paleoclimatology, Climatic changes, Paleoecology, Forest tundra, Algae, Forest lines, Limnology, Lacustrine deposits, Organic nuclei, Drill core analysis, Profiles, Canada—Northwest Territories

53-3345

**Insights on the climatic constraints on the beetle fauna of coastal Alaska, U.S.A., derived from the Mutual Climatic Range method of paleoclimate reconstruction.**  
Elias, S.A., Andrews, J.T., Anderson, K.H., *Arctic, antarctic, and alpine research*, Feb. 1999, 31(1), p.94-98, 9 refs.  
Paleoclimatology, Climatic changes, Paleoecology, Fossils, Air temperature, Temperature variations, Models, Statistical analysis, Correlation, United States—Alaska

53-3346

**Large-scale bedrock displacement by cirque glaciers.**  
Bennett, M.R., Huddart, D., Glasser, N.F., *Arctic, antarctic, and alpine research*, Feb. 1999, 31(1), p.99-107, 29 refs.  
Glacial geology, Subpolar regions, Landforms, Glacial erosion, Geomorphology, Cirque glaciers, Tectonics, Bedrock, Cracking (fracturing), Moraines, Structural analysis, Norway—Svalbard

53-3347

**Assessment of bedload delivery from tributaries: the Drôme River case, France.**  
Liébault, F., Clément, P., Piégay, H., Landon, N., *Arctic, antarctic, and alpine research*, Feb. 1999, 31(1), p.108-117, 48 refs.  
Watersheds, Geomorphology, River flow, Alpine landscapes, Sediment transport, Bottom sediment, Gravel, Degradation, Countermeasures, Vegetation factors, France—Drôme River

53-3348

**Estimation of cirrus and multi-layer cloud parameters from multispectral measurements in the near-infrared.**  
Costanzo, C., Bakan, S., *Physics and chemistry of the earth B*, 1999, 24(3), p.191-196, 14 refs.  
Climatology, Cloud physics, Cloud cover, Layers, Optical properties, Ice detection, Ice crystal optics, Particle size distribution, Aerial surveys, Spectroscopy, Statistical analysis

53-3349

**Validation of POLDER/ADEOS data using a ground-based lidar network: preliminary results for cirrus clouds.**

Chepfer, H., et al, *Physics and chemistry of the earth B*, 1999, 24(3), p.203-206, 7 refs.

Climatology, Cloud physics, Cloud height indicators, Radiation balance, Ice detection, Ice crystal optics, Phase transformations, Lidar, Radiometry, Correlation

53-3350

**Radar parameters calculations for  $\Gamma$  distribution of cloud particles in single scattering approximation.**

Prodi, F., Sturmiolo, O., Medini, R., Battaglia, A., *Physics and chemistry of the earth B*, 1999, 24(3), p.213-218, 14 refs.

Climatology, Cloud physics, Radar echoes, Backscattering, Ice crystal optics, Ice detection, Particle size distribution, Reflectivity, Models

53-3351

**Ground based passive remote sensing of ice clouds with scattered solar radiation in the near infrared.**

Betancor Gothe, M., Dreyer, M., Bakan, S., Costanzo, C., *Physics and chemistry of the earth B*, 1999, 24(3), p.219-224, 12 refs.

Climatology, Cloud cover, Optical properties, Cloud physics, Condensation trails, Ice crystal optics, Ice detection, Solar radiation, Scattering, Infrared spectroscopy, Photometry, Particle size distribution

53-3352

**New parameterization scheme for the optical properties of ice crystals for use in general circulation models of the atmosphere.**

Kristjánsson, J.E., Edwards, J.M., Mitchell, D.L., *Physics and chemistry of the earth B*, 1999, 24(3), p.231-236, 22 refs.

Climatology, Cloud physics, Cloud cover, Optical properties, Ice crystal optics, Ice crystal size, Albedo, Particle size distribution, Mathematical models

53-3353

**Far infrared scattering effects in cloudy sky.**

Di Giuseppe, F., Rizzi, R., *Physics and chemistry of the earth B*, 1999, 24(3), p.243-247, 9 refs.

Climatology, Cloud cover, Optical properties, Ice crystal optics, Ice crystal size, Particle size distribution, Scattering, Radiance, Infrared radiation, Models

53-3354

**Optical and geometrical properties of northern midlatitude cirrus clouds observed with a UV Raman lidar.**

Reichardt, J., *Physics and chemistry of the earth B*, 1999, 24(3), p.255-260, 14 refs.

Climatology, Cloud cover, Cloud physics, Optical properties, Ice crystal optics, Backscattering, Lidar, Statistical analysis

53-3355

**Cirrus cloud optical properties in far infrared.**

Mannozi, L., Di Giuseppe, F., Rizzi, R., *Physics and chemistry of the earth B*, 1999, 24(3), p.269-273, 13 refs.

Climatology, Cloud physics, Optical properties, Ice crystal optics, Infrared radiation, Scattering, Analysis (mathematics), Transmissivity

53-3356

**Biological processes in cold soils.**

Stonehouse, B., *Polar record*, Jan. 1999, 35(192), Conference on Contaminants in Freezing Ground, Cambridge, UK, July 13-15, 1997. Selected papers, p.5-10, 22 refs.

Soil physics, Soil formation, Soil microbiology, Ecosystems, Arctic landscapes, Frozen ground chemistry, Soil freezing, Permafrost hydrology, Damage, Degradation, Environmental protection

53-3357

**Examination of rapid, centrifuge physical modeling studies of contaminant movement in freezing soil.**

Goodings, D.J., *Polar record*, Jan. 1999, 35(192), Conference on Contaminants in Freezing Ground, Cambridge, UK, July 13-15, 1997. Selected papers, p.11-18, 30 refs.

Soil pollution, Soil physics, Frozen ground chemistry, Frozen ground mechanics, Impurities, Migration, Frost heave, Seasonal freeze thaw, Simulation, Models, Mechanical tests

53-3358

**Remote sensing of oil spills on frozen ground.**

Rees, W.G., *Polar record*, Jan. 1999, 35(192), Conference on Contaminants in Freezing Ground, Cambridge, UK, July 13-15, 1997. Selected papers, p.19-24, 12 refs.

Soil pollution, Oil spills, Detection, Subpolar regions, Ecosystems, Frozen ground, Remote sensing, Synthetic aperture radar, Geophysical surveys, Spaceborne photography, Forecasting

53-3359

**Influence of soil microstructure on hydraulic properties of hydrocarbon-contaminated freezing ground.**

White, T.L., Williams, P.J., *Polar record*, Jan. 1999, 35(192), Conference on Contaminants in Freezing Ground, Cambridge, UK, July 13-15, 1997. Selected papers, p.25-32, 18 refs.

Frozen ground mechanics, Frozen ground thermodynamics, Soil pollution, Hydrocarbons, Clay soils, Soil structure, Microstructure, Ice water interface, Hydraulics, Freeze thaw cycles, Porosity, Scanning electron microscopy

53-3360

**Plant enhancement of indigenous soil microorganisms: a low-cost treatment of contaminated soils.**

Reynolds, C.M., et al, MP 5326, *Polar record*, Jan. 1999, 35(192), Conference on Contaminants in Freezing Ground, Cambridge, UK, July 13-15, 1997. Selected papers, p.33-40, 20 refs.

Soil pollution, Oil spills, Soil microbiology, Grasses, Roots, Biomass, Soil conservation, Revegetation, Permafrost preservation, Protective vegetation, Cost analysis

The United States has more than 1000 individual areas of petroleum-contaminated soil at formerly used defense sites located in cold regions. This paper investigates biotreatment systems based on exploiting naturally occurring phenomena in the rhizosphere—the soil adjacent to and influenced by plant roots. Rhizosphere-based remediation systems would be inexpensive to implement and maintain and would be applicable to remote or permafrost sites. This paper provides the rationale for using rhizosphere-based biotreatment systems and some initial results. In both laboratory and field studies, successful plant germination, plant growth, and root intrusion into and through contaminated soil are demonstrated. Using a Captina silt loam in a 10-week laboratory study, the effects of vegetation and contamination on microbial numbers were compared. The vegetation treatments included an unvegetated control and a vegetated treatment seeded with bahiagrass (*Paspalum notatum*). The contamination treatments included an uncontaminated control and a treatment with 2000 mg pyrene/kg soil added. Microbial numbers at 10 weeks were not significantly influenced by the contaminant level of 2000 mg pyrene/kg soil compared to the control. However, microbial numbers were greater in the rhizosphere of the bahiagrass-vegetated soil compared to the unvegetated soil. In a 34-week field study, total petroleum hydrocarbon (TPH) concentrations of a diesel-contaminated soil decreased significantly more in the rhizosphere-nutrient treatment compared to the control that was not vegetated or fertilized. Bacterial numbers in the field study were 287 times greater in the rhizosphere+nutrient treated soils than in the control treatments. Measurable TPH compounds in the plant tissue were insignificant. The data demonstrated that rhizosphere-enhanced treatment of organic-contaminated soils can be effective in reducing soil petroleum concentrations and may be a cost-effective strategy particularly suited for treating cold-region sites where remediation options are limited by cost, remoteness of the site, and/or brevity of the treatment season.

53-3361

**Modification of silt microstructure by hydrocarbon contamination in freezing ground.**

White, T.L., Coutard, J.P., *Polar record*, Jan. 1999, 35(192), Conference on Contaminants in Freezing Ground, Cambridge, UK, July 13-15, 1997. Selected papers, p.41-50, 23 refs.

Soil pollution, Hydrocarbons, Oil spills, Frozen ground chemistry, Clay minerals, Soil colloids, Modification, Freeze thaw cycles, Active layer, Microstructure, Porosity, Scanning electron microscopy

53-3362

**Arctic environmental cooperation in transition.**

Scrivener, D., *Polar record*, Jan. 1999, 35(192), Conference on Contaminants in Freezing Ground, Cambridge, UK, July 13-15, 1997. Selected papers, p.51-58, 31 refs.

International cooperation, Environmental protection, Environmental impact, Organizations, Environmental tests, Economic development

53-3363

**Migration of ions of chemical elements in freezing and frozen soils.**

Chuvilin, E.M., *Polar record*, Jan. 1999, 35(192), Conference on Contaminants in Freezing Ground, Cambridge, UK, July 13-15, 1997. Selected papers, p.59-66, 6 refs.

Frozen ground chemistry, Frozen ground mechanics, Soil pollution, Freeze thaw cycles, Permeability, Moisture transfer, Ion diffusion, Mass transfer, Salinity, Migration

53-3364

**Laboratory simulation of thermal erosion: possible application to pollution problems.**

Makhloufi, N., Costard, F., Aguirre Puente, J., Costard, J., Posado Cano, R., Guillemet, G., *Polar record*, Jan. 1999, 35(192), Conference on Contaminants in Freezing Ground, Cambridge, UK, July 13-15, 1997. Selected papers, p.67-72, 5 refs.

Frozen ground thermodynamics, Frozen ground mechanics, Permafrost physics, Frozen ground temperature, Soil erosion, Water erosion, Ground thawing, Heat transfer coefficient, Mathematical models, Temperature effects

53-3365

**Dendroglaciologie in the Canadian Rockies. [Dendroglaciologie dans les Rocheuses du Canada]**

Luckman, B.H., *Géographie physique et Quaternaire*, 1998, 52(2), p.139-151, In French with English and German summaries. 28 refs.

Mountain glaciers, Glacier oscillation, Landforms, Moraines, Ice edge, Ice override, Trees (plants), Plant tissues, Age determination, Geochronology, Correlation, Canada—Alberta—Peyto Glacier

53-3366

**Landslides and dynamics of an alpine geosystem: dendrogeomorphic study of two locations in the Boule Valley (Diois, France). [Mouvements de masse et dynamique d'un géosystème alpestre: étude dendrogeomorphologique de deux sites de la vallée de Boule (Diois, France)]**

Astrade, L., Bravard, J.P., Landon, N., *Géographie physique et Quaternaire*, 1998, 52(2), p.153-165, In French with English and German summaries. 48 refs.

Geomorphology, Alpine landscapes, Watersheds, Landslides, Mass movements (geology), Slope stability, Trees (plants), Plant tissues, Sedimentation, Age determination, Geochronology, France—Diois

53-3367

**Alpine vascular flora of the Big Level Plateau, Gros Morne National Park, Newfoundland. [La flore vasculaire alpine du plateau Big Level, au parc national du Gros-Morne, Terre-Neuve]**

Brouillet, L., Hay, S., Turcotte, P., Bouchard, A., *Géographie physique et Quaternaire*, 1998, 52(2), p.175-193, In French with English and German summaries. Refs. p.191-193.

Plant ecology, Alpine landscapes, Ecosystems, Biogeography, Vegetation patterns, Hummocks, Patterned ground, Frost action, Snowmelt, Classifications, Sampling, Canada—Newfoundland

53-3368

**Pedoanthracological studies of the upper tree-limit change during the Holocene in the French Alps.** [Études pédoanthracologiques des variations de la limite supérieure des arbres au cours de l'Holocène dans les Alpes françaises] Talon, B., Carcaillet, C., Thimon, M., *Géographie physique et Quaternaire*, 1998, 52(2), p.195-208, In French with English and German summaries. Refs. p.206-208.

Forest ecosystems, Alpine landscapes, Forest lines, Paleocology, Modification, Sediments, Quaternary deposits, Fossils, Fires, Human factors, Radioactive age determination, France—Alps

53-3369

**Modern pollen rain and the vegetation belt in the Taillefer Massif (Isère, France).** [Transect de pluie pollinique et étagement de la végétation dans le massif du Taillefer (Isère, France)] Brugiapaglia, E., De Beaulieu, J.L., Guiot, J., Reille, M., *Géographie physique et Quaternaire*, 1998, 52(2), p.209-218, In French with English and German summaries. 26 refs.

Palynology, Alpine landscapes, Forest ecosystems, Forest lines, Vegetation patterns, Mosses, Pollen, Classifications, Distribution, Spectra, France—Alps

53-3370

**Light rings chronology from black spruce (*Picea mariana* [Mill.] BSP) in subarctic Québec AD 706 to 1675.** [Chronologie des cernes pâles de l'épnette noire (*Picea mariana* [Mill.] BSP) au Québec subarctique: de 706 à 1675 ap. J.-C.]

Arseneault, D., Payette, S., *Géographie physique et Quaternaire*, 1998, 52(2), p.219-226, In French with English and German summaries. 33 refs. Paleocology, Forest ecosystems, Subarctic landscapes, Trees (plants), Plant tissues, Peat, Sediments, Age determination, Geochronology, Statistical analysis, Canada—Quebec

53-3371

**Reforestation and natural dynamics in the subalpine forests (Haut-Verdon, southern Alps, France).** [Reboisement et dynamique naturelle dans les forêts sub-alpines (Haut-Verdon, Alpes du Sud, France)]

Belingard, C., Tessier, L., Édouard, J.L., *Géographie physique et Quaternaire*, 1998, 52(2), p.227-236, In French with English and German summaries. 28 refs. Plant ecology, Forest lines, Forest ecosystems, Alpine landscapes, Revegetation, Survival, Soil stabilization, Sediments, Plant tissues, Age determination, France—Alps

53-3372

**Timberline and environmental change: the importance of scale and space for the study of high altitude ecosystems.** [Limite supraforestière et changements environnementaux: pour une approche pluriscalaire et spatialisée des écosystèmes d'altitude]

Didier, L., Brun, J.J., *Géographie physique et Quaternaire*, 1998, 52(2), p.245-253, In French with English and German summaries. 43 refs. Forest ecosystems, Forest lines, Altitude, Alpine landscapes, Geomorphology, Landscape development, Vegetation patterns, Climatic changes, Periodic variations, France—Savoie

53-3373

**Passive sampling of summer concentrations of NO<sub>2</sub> and O<sub>3</sub> in an alpine valley, Chamonix, France.** [Répartition estivale du dioxyde d'azote et de l'ozone dans une vallée alpine, Chamonix, France]

Marcoux, N., Tessier, L., Bégin, Y., *Géographie physique et Quaternaire*, 1998, 52(2), p.255-263, In French with English and Spanish summaries. 25 refs. Climatology, Air pollution, Atmospheric boundary layer, Alpine landscapes, Valleys, Roads, Aerosols, Ozone, Turbulent exchange, Topographic effects, Environmental tests, France—Chamonix

53-3374

**Simple model of the ice particle size distribution in noctilucent clouds.**

Klostermeyer, J., *Journal of geophysical research*, Nov. 27, 1998, 103(D22), p.28,743-28,752, 43 refs. Polar atmospheres, Clouds (meteorology), Cloud physics, Ice nuclei, Ice crystal optics, Ice crystal size, Atmospheric physics, Optical phenomena, Mathematical models

53-3375

**Annual accumulation at two sites in northwest Greenland during recent centuries.**

Anklin, M., Bales, R.C., Mosley-Thompson, E., Steffen, K., *Journal of geophysical research*, Nov. 27, 1998, 103(D22), p.28,775-28,783, 33 refs. Ice sheets, Glacial meteorology, Glacier alimentation, Glacier oscillation, Glacier mass balance, Snow ice interface, Snow accumulation, Snow composition, Ice cores, Ice dating, Climatic changes, Greenland

53-3376

**Effects of snow cover on UV irradiance and surface albedo: a case study.**

McKenzie, R.L., Paulin, K.J., Madronich, S., *Journal of geophysical research*, Nov. 27, 1998, 103(D22), p.28,785-28,792, 28 refs. Snow optics, Snow cover effect, Ozone, Solar radiation, Ultraviolet radiation, Albedo, New Zealand

53-3377

**Global patterns of lake ice phenology and climate: model simulations and observations.**

Walsh, S.E., Vavrus, S.J., Foley, J.A., Fisher, V.A., Wynne, R.H., Lenters, J.D., *Journal of geophysical research*, Nov. 27, 1998, 103(D22), p.28,825-28,837, 37 refs. Lake ice, Ice conditions, Freezeup, Ice breakup, Ice air interface, Ice heat flux, Degree days, Ice forecasting, Ice models, Climatic changes, Global change, Computerized simulation

53-3378

**Introduction to special section: Land-Air-Ice Interactions (LAI) Flux Study.**

Kane, D.L., Reeburgh, W.S., *Journal of geophysical research*, Nov. 27, 1998, 103(D22), p.28,913-28,915, 18 refs. Polar atmospheres, Atmospheric circulation, Atmospheric composition, Tundra climate, Tundra soils, Permafrost heat balance, Soil air interface, Nutrient cycle, Geochemical cycles, Global warming, Research projects

53-3379

**Characteristics of cryogenic soils along a latitudinal transect in arctic Alaska.**

Ping, C.L., Bockheim, J.G., Kimble, J.M., Michaelson, G.J., Walker, D.A., *Journal of geophysical research*, Nov. 27, 1998, 103(D22), p.28,917-28,928, 61 refs. Tundra soils, Cryogenic soils, Soil surveys, Arctic landscapes, Soil classification, Continuous permafrost, Cryoturbation, Soil formation, Organic soils, Soil structure, Chemical properties, Sampling, United States—Alaska

53-3380

**High-resolution pollen analysis of tundra polygons from the North Slope of Alaska.**

Eisner, W.R., Peterson, K.M., *Journal of geophysical research*, Nov. 27, 1998, 103(D22), p.28,929-28,937, 47 refs. Geocryology, Tundra soils, Patterned ground, Palynology, Vegetation patterns, Landscape development, Peat, Soil formation, Radioactive age determination, United States—Alaska—North Slope

53-3381

**Character and bioactivity of dissolved organic matter at thaw and in the spring runoff waters of the arctic tundra north slope, Alaska.**

Michaelson, G.J., Ping, C.L., Kling, G.W., Hobbie, J.E., *Journal of geophysical research*, Nov. 27, 1998, 103(D22), p.28,939-28,946, 32 refs. Tundra soils, Ecosystems, Ground thawing, Soil water, Runoff, Leaching, Soil analysis, Organic soils, Soil microbiology, Solubility, Drill core analysis, Hydrogeochemistry, United States—Alaska—North Slope

53-3382

**Subgrid-scale variability in the surface energy balance of arctic tundra.**

McFadden, J.P., Chapin, F.S., III, Hollinger, D.Y., *Journal of geophysical research*, Nov. 27, 1998, 103(D22), p.28,947-28,961, 60 refs. Soil physics, Forest tundra, Tundra vegetation, Tundra soils, Arctic landscapes, Surface energy, Soil air interface, Evaporation, Vegetation factors, Moisture transfer, Sampling, United States—Alaska—Happy Valley

53-3383

**Active-layer thickness in north central Alaska: systematic sampling, scale, and spatial autocorrelation.**

Nelson, F.E., Hinkel, K.M., Shiklomanov, N.I., Mueller, G.R., Miller, L.L., Walker, D.A., *Journal of geophysical research*, Nov. 27, 1998, 103(D22), p.28,963-28,973, 60 refs. Permafrost structure, Permafrost hydrology, Ground thawing, Tundra soils, Arctic landscapes, Active layer, Thaw depth, Sampling, Statistical analysis, Seasonal variations, United States—Alaska

53-3384

**Distributed thermal model for calculating soil temperature profiles and depth of thaw in permafrost regions.**

Hinzman, L.D., Goering, D.J., Kane, D.L., *Journal of geophysical research*, Nov. 27, 1998, 103(D22), p.28,975-28,991, 41 refs. Permafrost physics, Permafrost thermal properties, Tundra soils, Arctic landscapes, Soil temperature, Surface temperature, Active layer, Thaw depth, Soil air interface, Thermal analysis, Mathematical models, United States—Alaska—North Slope

53-3385

**Intercomparison among chamber, tower, and aircraft net CO<sub>2</sub> and energy fluxes measured during the Arctic System Science Land-Atmosphere-Ice Interactions (ARCSS-LAI) flux study.**

Oechel, W.C., Vourlitis, G.L., Brooks, S., Crawford, T.L., Dumas, E., *Journal of geophysical research*, Nov. 27, 1998, 103(D22), p.28,993-29,003, 52 refs. Soil surveys, Tundra soils, Ecosystems, Arctic landscapes, Surface energy, Soil air interface, Heat flux, Vapor transfer, Carbon dioxide, Soil air interface, Sampling, Correlation, United States—Alaska—Happy Valley

53-3386

**CH<sub>4</sub> emission estimate for the Kuparuk River basin, Alaska.**

Reeburgh, W.S., King, J.Y., Regli, S.K., Kling, G.W., Auerbach, N.A., Walker, D.A., *Journal of geophysical research*, Nov. 27, 1998, 103(D22), p.29,005-29,013, 43 refs. Soil surveys, Tundra soils, Tundra vegetation, Arctic landscapes, Wetlands, Soil air interface, Natural gas, Soil air interface, Vapor transfer, Sampling, Statistical analysis, United States—Alaska—Kuparuk River

53-3387

**Environmental controls on soil respiration in the Eurasian and Greenlandic Arctic.**

Christensen, T.R., Jonasson, S., Michelsen, A., Callaghan, T.V., Havström, M., *Journal of geophysical research*, Nov. 27, 1998, 103(D22), p.29,015-29,021, 27 refs. Soil physics, Soil chemistry, Ecosystems, Decomposition, Tundra soils, Arctic landscapes, Soil air interface, Carbon dioxide, Vapor transfer, Soil water, Surface temperature, Sampling, Greenland—Zackenbergl, Sweden—Abisko

53-3388

Winter and early spring CO<sub>2</sub> efflux from tundra communities of northern Alaska. Fahnestock, J.T., Jones, M.H., Brooks, P.D., Walker, D.A., Welker, J.M., *Journal of geophysical research*, Nov. 27, 1998, 103(D22), p.29,023-29,027, 36 refs. Ecosystems, Tundra soils, Soil microbiology, Tundra vegetation, Snow depth, Snow cover effect, Snow air interface, Vapor transfer, Geochemical cycles, Carbon dioxide, Seasonal variations, Sampling, United States—Alaska—North Slope

53-3389

Methane efflux from high-latitude lakes during spring ice melt. Phelps, A.R., Peterson, K.M., Jeffries, M.O., *Journal of geophysical research*, Nov. 27, 1998, 103(D22), p.29,029-29,036, 25 refs. Climatology, Tundra terrain, Icebound lakes, Ice breakup, Natural gas, Tundra climate, Vapor transfer, Ice melting, Air ice water interaction, Ice cores, Drill core analysis, Climatic factors, United States—Alaska—Mosquito Lake, United States—Alaska—Goose Lake

53-3390

Snow-albedo feedback and the spring transition in a regional climate system model: influence of land surface model. Lynch, A.H., McGinnis, D.L., Bailey, D.A., *Journal of geophysical research*, Nov. 27, 1998, 103(D22), p.29,037-29,049, 55 refs. Climatology, Snow hydrology, Hydrologic cycle, Snowmelt, Snow depth, Albedo, Surface energy, Seasonal variations, Models, Statistical analysis, Snow cover effect, United States—Alaska

53-3391

On the applicability of current land surface schemes for arctic tundra: an intercomparison study. Tilley, J.S., Lynch, A.H., *Journal of geophysical research*, Nov. 27, 1998, 103(D22), p.29,051-29,063, 28 refs. Soil physics, Arctic landscapes, Tundra soils, Surface properties, Soil temperature, Surface temperature, Soil air interface, Heat flux, Evapotranspiration, Simulation, Models, United States—Alaska—North Slope

53-3392

Carbon cycling in the Kuparuk basin: plant production, carbon storage, and sensitivity to future changes. Hobbie, J.E., Kwiatkowski, B.L., Rastetter, E.B., Walker, D.A., McKane, R.B., *Journal of geophysical research*, Nov. 27, 1998, 103(D22), p.29,065-29,073, 23 refs. Climatology, Global change, Ecosystems, Arctic landscapes, Tundra vegetation, Carbon dioxide, Geochemical cycles, Biomass, Soil air interface, Global warming, Climatic factors, Models, United States—Alaska—Toolik Lake

53-3393

Effects of extended growing season and soil warming on carbon dioxide and methane exchange of tussock tundra in Alaska. Oberbauer, S.F., Starr, G., Pop, E.W., *Journal of geophysical research*, Nov. 27, 1998, 103(D22), p.29,075-29,082, 35 refs. Ecosystems, Tundra climate, Tundra soils, Tundra vegetation, Phenology, Soil temperature, Heating, Soil air interface, Degree days, Carbon dioxide, Vapor transfer, Snowmelt, Simulation, United States—Alaska—Toolik

53-3394

Methane emission and transport by arctic sedges in Alaska: results of a vegetation removal experiment. King, J.Y., Reeburgh, W.S., Regli, S.K., *Journal of geophysical research*, Nov. 27, 1998, 103(D22), p.29,083-29,092, 47 refs. Wetlands, Ecosystems, Tundra vegetation, Natural gas, Vapor diffusion, Natural gas, Soil air interface, Profiles, Vegetation factors, Simulation, United States—Alaska—Toolik Lake

53-3395

CH<sub>4</sub> oxidation by tundra wetlands as measured by a selective inhibitor technique. Moosavi, S.C., Crill, P.M., *Journal of geophysical research*, Nov. 27, 1998, 103(D22), p.29,093-29,106, 72 refs. Tundra climate, Wetlands, Tundra soils, Tundra vegetation, Natural gas, Oxygen, Vapor transfer, Soil air interface, Simulation, Sampling, Geochemical cycles, United States—Alaska—North Slope

53-3396

Frost resistance of concrete; proceedings of the International RILEM Workshop. International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997, Setzer, M.J., ed, Auberg, R., ed, RILEM Proceedings No.34, Suffolk, E & FN Spon, 1997, 356p., Refs. passim. For individual papers see 53-3397 through 53-3430. DLC TA439.I673 1997 Concrete durability, Concrete strength, Concrete aggregates, Cement admixtures, Chemical properties, Mechanical properties, Frost resistance, Freeze thaw cycles, Freeze thaw tests, Degradation, Damage, Mechanical tests, Laboratory techniques, Meetings

53-3397

Influence of material parameters on freeze-thaw resistance with and without deicing salt. Janssen, D.J., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.3-10, 16 refs. DLC TA439.I673 1997 Concrete durability, Concrete strength, Freeze thaw cycles, Frost resistance, Damage, Concrete aggregates, Air entrainment, Water cement ratio, Salting, Ice removal, Mechanical properties, Specifications

53-3398

Effects of fly ash on microstructure and deicer salt scaling resistance of concrete. Marchand, J., Maltais, Y., Machabée, Y., Talbot, C., Pigeon, M., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.11-20, 13 refs. DLC TA439.I673 1997 Concrete durability, Mechanical properties, Porosity, Frost resistance, Concrete aggregates, Water cement ratio, Degradation, Salting, Mechanical tests, Chemical analysis

53-3399

Laboratory and field studies of salt scaling in fly ash concrete. Thomas, M.D.A., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.21-30, 17 refs. DLC TA439.I673 1997 Concrete durability, Concrete aggregates, Concrete structures, Degradation, Salting, Frost resistance, Freeze thaw cycles, Mechanical tests

53-3400

Influence of the type of cement on the freeze-thaw resistance of the mortar phase of concrete. Girodet, C., Chabannet, M., Bosc, J.L., Pera, J., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.31-40, 13 refs. DLC TA439.I673 1997 Concrete durability, Mortars, Frost resistance, Damage, Porosity, Freeze thaw cycles, Freeze thaw tests, Cement admixtures, Chemical properties, Water cement ratio, Classifications, Mechanical tests

53-3401

Frost resisting and waterproof fine-grained slag ash concrete for roofs of residential structures. Pavlenko, S.I., Permiakov, A.A., Afanas'ev, V.K., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.41-47, 14 refs. DLC TA439.I673 1997 Concrete durability, Frost resistance, Roofs, Coatings, Waterproofing, Concrete admixtures, Concrete aggregates, Chemical properties, Water cement ratio, Specifications, Freeze thaw cycles

53-3402

Water resistant low water consumption plaster binder. Abdrakhmanova, K.K., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.48-52, 2 refs. DLC TA439.I673 1997 Concrete durability, Winter concreting, Concrete strength, Frost resistance, Concrete admixtures, Chemical properties, Water content, Porosity, Liquid phases

53-3403

Influence of sand on the freeze-thaw resistance of the mortar phase of concrete. Girodet, C., Bosc, J.L., Chabannet, M., Pera, J., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.53-60, 12 refs. DLC TA439.I673 1997 Concrete durability, Concrete strength, Tensile properties, Mortars, Frost resistance, Sands, Concrete aggregates, Physical properties, Mechanical tests, Freeze thaw tests, Dynamic loads

53-3404

Investigations on freeze-thaw resistance of recycling concrete. Hilsdorf, H.K., Kottas, R., Müller, H.S., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.61-72, 9 refs. DLC TA439.I673 1997 Concrete durability, Concrete strength, Concrete aggregates, Frost resistance, Freeze thaw tests, Porosity, Pavements, Waste treatment

53-3405

Freeze-thaw resistance of concrete with recycled aggregates. Dillmann, R., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.73-80, 11 refs. DLC TA439.I673 1997 Concrete durability, Concrete strength, Freeze thaw cycles, Waste treatment, Frost resistance, Freeze thaw tests, Compressive properties

53-3406

Frost resistance with and without deicing salt—a purely physical problem? Stark, J., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.83-99, 20 refs. DLC TA439.I673 1997 Concrete durability, Concrete strength, Frost resistance, Freeze thaw tests, Concrete aggregates, Cement admixtures, Salting, Degradation, Water cement ratio, Physical properties

53-3407

**Influence of C<sub>3</sub>A content on frost and scaling resistance.**

Stark, J., Eckart, A., Ludwig, H.M., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.100-110, 17 refs.  
DLC TA439.1673 1997

Concrete durability, Concrete strength, Frost resistance, Salting, Damage, Concrete freezing, Phase transformations, Cement admixtures, Chemical properties, Hydrates, X ray analysis

53-3408

**Influence of cement type on resistance against freezing and thawing, with or without deicing chemicals, of cement mortar.**

Balters, U., Ludwig, U., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.111-122, 6 refs.  
DLC TA439.1673 1997

Concrete durability, Concrete strength, Mortars, Frost resistance, Freeze thaw cycles, Cement admixtures, Classifications, Chemical composition, Scanning electron microscopy

53-3409

**Freeze-deicing salt resistance of concretes containing cement rich in slag.**

Stark, J., Ludwig, H.M., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.123-138, 21 refs.  
DLC TA439.1673 1997

Concrete durability, Frost resistance, Freeze thaw cycles, Cement admixtures, Chemical composition, Salting, Degradation, Air entrainment, Freeze thaw tests

53-3410

**Frost and frost-deicing salt resistance of supersulphated cement concrete.**

Knaack, U., Stark, J., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.139-145, 5 refs.  
DLC TA439.1673 1997

Concrete durability, Concrete strength, Cement admixtures, Concrete aggregates, Chemical composition, Concrete curing, Frost resistance, Degradation, Salting, Freeze thaw tests

53-3411

**Sorption of chlorides on hydrated cements and C<sub>3</sub>S pastes.**

Wowra, O., Setzer, M.J., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.146-153, 13 refs.  
DLC TA439.1673 1997

Concrete durability, Cement admixtures, Corrosion, Frost resistance, Salting, Absorption, Hydrates, Ion exchange, Chemical analysis

53-3412

**Basis of testing the freeze-thaw resistance: surface and internal deterioration.**

Setzer, M.J., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.157-173, 48 refs.  
DLC TA439.1673 1997

Concrete durability, Concrete strength, Frost resistance, Concrete freezing, Freeze thaw tests, Damage, Models, Mechanical tests, Standards

53-3413

**Effect of finishing, forming and curing on de-icer salt scaling resistance of concretes.**

Hooton, R.D., Boyd, A., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.174-183, 3 refs.  
DLC TA439.1673 1997

Concrete durability, Concrete curing, Concrete placing, Degradation, Salting, Frost resistance, Freeze thaw tests, Mechanical tests

53-3414

**Influence of preconditioning on scaling resistance for different types of test surfaces.**

Utgenannt, P., Petersson, P.E., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.184-194, 7 refs.  
DLC TA439.1673 1997

Concrete durability, Concrete aggregates, Frost resistance, Damage, Freeze thaw cycles, Freeze thaw tests, Concrete slabs, Mechanical tests, Laboratory techniques, Accuracy

53-3415

**Experimental study on frost resistance of concrete considering drying effects.**

Hama, Y., Kamada, E., Han, C.G., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.195-201, 2 refs.  
DLC TA439.1673 1997

Concrete durability, Concrete strength, Concrete aggregates, Frost resistance, Air entrainment, Freeze thaw cycles, Freeze thaw tests, Weathering, Drying

53-3416

**Mechanism of frost damage of concrete under supercooling.**

Katsura, O., Kamada, E., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.202-211, 7 refs.  
DLC TA439.1673 1997

Concrete durability, Concrete freezing, Supercooling, Ice crystal growth, Damage, Porosity, Capillary ice, Water pressure, Supercooling, Mathematical models

53-3417

**Length changes of concrete specimen during frost deicing salt resistance test.**

Kaufmann, J., Studer, W., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.212-221, 10 refs.  
DLC TA439.1673 1997

Concrete pavements, Concrete durability, Concrete admixtures, Surface structure, Freeze thaw cycles, Freeze thaw tests, Frost resistance, Salting, Damage, Thermal expansion

53-3418

**Moisture absorption from salt solutions in cement mortar discs during freezing.**

Lindmark, S., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.222-231, 3 refs.  
DLC TA439.1673 1997

Concrete durability, Concrete aggregates, Mortars, Frost resistance, Concrete freezing, Damage, Salinity, Solutions, Absorption, Moisture transfer

53-3419

**Influence of water uptake during freezing and thawing.**

Auberg, R., Setzer, M.J., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.232-245, 3 refs.  
DLC TA439.1673 1997

Concrete durability, Frost resistance, Freeze thaw cycles, Freeze thaw tests, Damage, Capillarity, Saturation, Absorption

53-3420

**Scaling and internal cracking in wet freeze/thaw testing.**

Jacobsen, S., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.246-254, 12 refs.  
DLC TA439.1673 1997

Concrete durability, Concrete strength, Frost resistance, Freeze thaw cycles, Concrete freezing, Corrosion, Cracking (fracturing), Salting, Saturation, Absorption, Freeze thaw tests

53-3421

**Infrared thermal image characteristic and injured degree evaluation of freeze-thaw injured concrete.**

Zhang, X.O., Han, J.H., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.255-260, 2 refs.  
DLC TA439.1673 1997

Concrete durability, Frost resistance, Freeze thaw cycles, Damage, Infrared photography, Imaging, Ultrasonic tests

53-3422

**Testing of freeze-thaw resistance portland cement compositions by low temperature dilatometry.**

Sanitskii, M.A., Mel'nyk, V.M., Loza, M.A., Shichenko, I.V., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.261-268, 6 refs.  
DLC TA439.1673 1997

Concrete durability, Frost resistance, Concrete hardening, Cement admixtures, Solutions, Freeze thaw cycles, Freeze thaw tests, Chemical composition, Antifreezes, Freezing points

53-3423

**Reasons of damping maximums of hardened cement paste (hcp) at extremely low temperature.**

Xu, X., Setzer, M.J., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.269-280, 24 refs.  
DLC TA439.1673 1997

Cement admixtures, Elastic properties, Ice formation, Damping, Temperature effects, Porosity, Water content, Salinity, Low temperature tests

53-3424

**Subzero temperature investigation of autoclaved concrete with gypsum added.**

Adolphs, J., Setzer, M.J., Shibata, S., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.281-287, 11 refs.  
DLC TA439.1673 1997

Concrete durability, Concrete aggregates, Admixtures, Waste disposal, Construction materials, Chemical composition, Porosity, Freezing points, Elastic properties, Low temperature tests, Mechanical tests



- 53-3425**  
Damping measurements for nondestructive evaluation of concrete beams.  
Vokes, E.A., Clarke, S.L., Janssen, D.J., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.288-297, 21 refs.  
DLC TA439.I673 1997  
Concrete durability, Deformation, Frost resistance, Freeze thaw cycles, Concrete slabs, Damage, Vibration, Elastic properties, Damping, Forecasting
- 53-3426**  
Frost failure and rapid test method of concrete frost resistance.  
Panchenko, A.I., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.299-306, 2 refs.  
DLC TA439.I673 1997  
Concrete durability, Concrete strength, Frost resistance, Cracking (fracturing), Fatigue (materials), Stress concentration, Freeze thaw tests, Accuracy
- 53-3427**  
Concrete frost resistance test methods.  
Rozenal', N.K., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.307-313, 8 refs.  
DLC TA439.I673 1997  
Concrete durability, Reinforced concretes, Frost resistance, Salting, Freeze thaw tests, Freeze thaw cycles, Mechanical tests, Design criteria, Standards
- 53-3428**  
Temperature shock test for the determination of the freeze-thaw resistance of concrete.  
Maultzsch, M., Günther, K., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.314-320, 9 refs.  
DLC TA439.I673 1997  
Concrete durability, Frost resistance, Freeze thaw cycles, Freeze thaw tests, Concrete freezing, Laboratory techniques, Mechanical tests, Modification, Temperature control
- 53-3429**  
Internal frost attack—state of the art.  
Fagerlund, G., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.321-338, 25 refs.  
DLC TA439.I673 1997  
Concrete durability, Frost resistance, Concrete freezing, Ice formation, Moisture transfer, Absorption, Frost penetration, Damage, Models, Classifications
- 53-3430**  
RILEM TC 117-FDC: freeze-thaw and deicing resistance of concrete; CDF test—test method for the freeze-thaw resistance of concrete; tests with sodium chloride solution (CDF). Recommendation.  
Setzer, M.J., Fagerlund, G., Janssen, D.J., International RILEM Workshop on Frost Resistance of Concrete to Freezing and Thawing with or without De-icing Chemicals, Essen, Germany, Sep. 22-23, 1997. Proceedings. Edited by M.J. Setzer and R. Auberg, Suffolk, E & FN Spon, 1997, p.341-351, For another version see 52-2079.  
Concrete durability, Concrete strength, Frost resistance, Damage, Antifreezes, Solutions, Freeze thaw cycles, Freeze thaw tests, Mechanical tests, Standards, Laboratory techniques
- 53-3431**  
Tree water relations and climatic variations at the alpine timberline: seasonal changes of sap flux and xylem water potential in *Larix decidua* Miller, *Picea abies* (L.) Karst. and *Pinus cembra* L.  
Anfodillo, T., Rento, S., Carraro, V., Furlanetto, L., Urbinati, C., Carrer, M., *Annales des sciences forestières*, Jan.-Feb. 1998, 55(1-2), p.159-172, With French summary. 35 refs.  
Forest ecosystems, Plant physiology, Transpiration, Alpine landscapes, Forest lines, Global warming, Water supply, Water retention, Periodic variations, Meteorological factors, Trees (plants), Italy—Alps
- 53-3432**  
Frost formation in rotary heat and moisture exchangers.  
Bilodeau, S., Brousseau, P., Lacroix, M., Mercadier, Y., *International journal of heat and mass transfer*, July 1999, 42(14), p.2605-2619, 15 refs.  
Ice physics, Heat pumps, Frost, Glaze, Ice formation, Defrosting, Freeze thaw cycles, Ice vapor interface, Ice solid interface, Humidity, Mathematical models, Mass flow, Thermodynamics
- 53-3433**  
Prediction of <sup>137</sup>Cs deposition from atmospheric nuclear weapons tests within the Arctic.  
Wright, S.M., Howard, B.J., Strand, P., Nylén, T., Sichel, M.A.K., *Environmental pollution*, Jan. 1999, 104(1), p.131-143, 31 refs.  
Air pollution, Polar atmospheres, Nuclear explosions, Fallout, Distribution, Precipitation (meteorology), Radioactive isotopes, Statistical analysis, Forecasting, Standards
- 53-3434**  
Assimilation of crustal xenoliths in a basaltic magma chamber: Sr and Nd isotopic constraints from the Hasvik Layered Intrusion, Norway.  
Tegner, C., Robins, B., Reginiussen, H., Grundvig, S., *Journal of petrology*, Mar. 1999, 40(3), p.363-380, Refs. p.378-380.  
Tectonics, Earth crust, Subpolar regions, Rock properties, Magma, Sedimentation, Migration, Sampling, Isotope analysis, Mineralogy, Norway
- 53-3435**  
Seasonal variability and mitigation options for N<sub>2</sub>O emissions from differently managed grasslands.  
Kammann, C., Grünhage, L., Müller, C., Jacobi, S., Jäger, H.J., *Environmental pollution*, 1998, 102(suppl. 1), International Nitrogen Conference, 1st, Noordwijkerhout, The Netherlands, Mar. 23-27, 1998. Nitrogen, the Confer-N-s. Edited by K.W.Van der Hoek et al, p.179-186, 36 refs.  
Climatology, Air pollution, Aerosols, Agriculture, Soil chemistry, Soil air interface, Vapor transfer, Freeze thaw cycles, Frozen ground chemistry, Countermeasures, Environmental impact
- 53-3436**  
Factors influencing NO<sub>3</sub> concentrations in rain, stream water, ground water and podzol profiles of eight small catchments in the European Arctic.  
Kashulina, G., Reimann, C., Finne, T.E., De Caritat, P., Niskavaara, H., *Environmental pollution*, 1998, 102(suppl. 1), International Nitrogen Conference, 1st, Noordwijkerhout, The Netherlands, Mar. 23-27, 1998. Nitrogen, the Confer-N-s. Edited by K.W.Van der Hoek et al, p.559-568, 36 refs.  
Air pollution, Soil pollution, Subpolar regions, Hydrogeochemistry, Forest ecosystems, Damage, Soil chemistry, Podsol, Aerosols, Sedimentation, Sampling, Soil profiles, Environmental impact, Russia—Kola Peninsula
- 53-3437**  
Factors to consider when freeze-proofing a blade.  
McIlwaine, D.B., *Materials performance*, Sep. 1998, 37(9), p.44-47, 7 refs. Article based on CORROSION/98 paper No.364, presented in San Diego, CA. Petroleum industry, Cold weather performance, Freezing points, Chemical ice prevention, Antifreezes
- 53-3438**  
Retrieval of atmospheric water vapor content in polar regions using spaceborne microwave radiometry. [Bestimmung des atmosphärischen Wasserdampfgehaltes in Polargebieten mit Hilfe der passiven Mikrowellenradiometrie]  
Miao, J.G., *Berichte zur Polarforschung*, 1998, No.289, 109p., Refs. p.105-109.  
Water vapor, Microwaves, Radiometry, Surface temperature, Land ice, Sea ice, Ice temperature, Cloud cover, Polar atmospheres, Remote sensing, Antarctica
- 53-3439**  
Dynamics of arctic sea ice—validation of different rheology schemes for the use in climate models. [Dynamik des arktischen Meereises—Validierung verschiedener Rheologieansätze für die Anwendung in Klimamodellen]  
Kreyscher, M., *Berichte zur Polarforschung*, 1998, No.291, 116p., In German with English summary. Refs. p.110-116.  
Sea ice, Climatology, Models, Rheology, Air ice water interaction, Drift, Fram Strait
- 53-3440**  
Anthropogenic organic trace compounds in the Arctic Ocean. [Anthropogene organische Spurenstoffe im Arktischen Ozean: Untersuchungen chlorierter Biphenyle und Pestizide in der Laptevsee, technische und methodische Entwicklungen zur Probenahme in der Arktis und zur Spurenstoffanalyse]  
Utschakovski, S., *Berichte zur Polarforschung*, 1998, No.292, 141p., In German with English summary. Refs. p.130-140.  
Water pollution, Environmental impact, Sea ice, Sampling, Hydrocarbons, Bottom sediment, Seasonal variations, River flow, Ocean currents, Russia—Laptev Sea, Arctic Ocean, Russia—Lena River
- 53-3441**  
Advanced icing wind tunnel for flight test development of icing rate systems.  
Webb, L., Society of Flight Test Engineers, Annual Symposium, 16th, Seattle, WA, July 29-Aug. 2, 1985. Proceedings. Flight testing—evolution and revolution, Lancaster, CA, Society of Flight Test Engineers, 1985, p.4.6-1-4.6-4.  
DLC TL671.7.S576 1985  
Wind tunnels, Aircraft icing, Icing rate, Unfrozen water content, Design, Cloud droplets, Helicopters
- 53-3442**  
Transarctic Acoustic Propagation Experiment and climate monitoring in the Arctic.  
Mikhalevsky, P.N., Gavrilov, A.N., Baggeroer, A.B., *IEEE journal of oceanic engineering*, Apr. 1999, 24(2), p.183-201, 34 refs.  
Oceanography, Subpolar regions, Sea ice distribution, Ice cover thickness, Water temperature, Underwater acoustics, Ice acoustics, Wave propagation, Velocity measurement, Profiles, Climatology, Arctic Ocean
- 53-3443**  
Quantitative characteristics of Lithuania glacial relief.  
Cesnulevičius, A., *Comitato Glaciologico Italiano. Bollettino. Ser. 3: Geografia fisica e dinamica quaternaria*, 1998, 21(1), International Association of Geomorphologists. European Regional Conference. Veszprém, Hungary, Apr. 9-12, 1996. Selected papers, p.9-13, With Italian summary. 3 refs.  
Pleistocene, Glacial geology, Geomorphology, Glacier oscillation, Ice edge, Landforms, Moraines, Topographic features, Lithuania
- 53-3444**  
Paleoenvironmental implications of a loess profile in S-Transdanubia, Hungary.  
Czigány, S., *Comitato Glaciologico Italiano. Bollettino. Ser. 3: Geografia fisica e dinamica quaternaria*, 1998, 21(1), International Association of Geomorphologists. European Regional Conference. Veszprém, Hungary, Apr. 9-12, 1996. Selected papers, p.15-17, With Italian summary. 5 refs.  
Pleistocene, Geomorphology, Soil formation, Loess, Mountain soils, Quaternary deposits, Soil profiles, Soil analysis, Weathering, Hungary

53-3445

**Cryogenic features in Canada and Hungary and their significance for past climate.**

Tarnocai, C., Schweitzer, F., *Comitato Glaciologico Italiano. Bollettino. Ser. 3: Geografia fisica e dinamica quaternaria*, 1998, 21(1), International Association of Geomorphologists. European Regional Conference. Veszprém, Hungary, Apr. 9-12, 1996. Selected papers, p.87-92, With Italian summary. 34 refs.

Geocryology, Pleistocene, Paleoclimatology, Cryoturbation, Patterned ground, Periglacial processes, Permafrost distribution, Permafrost structure, Frozen ground mechanics, Hungary, Canada

53-3446

**Extent of oceanic crust in the Labrador Sea.**

Srivastava, S.P., Roest, W.R., *Marine and petroleum geology*, Feb. 1999, 16(1), p.65-84, 63 refs.

Pleistocene, Marine geology, Earth crust, Tectonics, Ocean bottom, Migration, Subpolar regions, Models, Geomagnetism, Seismic reflection, Gravity anomalies, Profiles, Labrador Sea

53-3447

**Monthly profiles of DOC, mono- and polysaccharides at two locations in the Trondheimsfjord (Norway) during two years.**

Børshem, K.Y., Mykkestad, S.M., Sneli, J.A., *Marine chemistry*, Jan. 1999, 63(3-4), p.255-272, 25 refs.

Oceanography, Sea water, Water chemistry, Subpolar regions, Shores, Geochemical cycles, Organic nuclei, Polymers, Solubility, Spectroscopy, Seasonal variations

53-3448

**Biomarkers as organic-carbon-source and environmental indicators in the Late Quaternary Arctic Ocean: problems and perspectives.**

Fahl, K., Stein, R., *Marine chemistry*, Jan. 1999, 63(3-4), p.293-309, Refs. p.307-309.

Pleistocene, Oceanography, Subpolar regions, Marine deposits, Geochemical cycles, Sedimentation, Upwelling, Biomass, Hydrocarbons, Organic nuclei, Drill core analysis, Arctic Ocean

53-3449

**Numerical model for interdecadal variability of sea ice cover in the Greenland-Iceland-Norwegian Sea.**

Morales-Maqueda, M.A., Willmott, A.J., Darby, M.S., *Climate dynamics*, Feb. 1999, 15(2), p.89-113, 34 refs.

Climatology, Surface temperature, Heat balance, Ocean currents, Marine atmospheres, Subpolar regions, Sea ice distribution, Periodic variations, Air ice water interaction, Ice cover effect, Mathematical models, Thermodynamics, Greenland Sea, Iceland Sea, Norwegian Sea

53-3450

**Thermomechanical model of ice flow in West Antarctica.**

Payne, A.J., *Climate dynamics*, Feb. 1999, 15(2), p.115-125, 37 refs.

Glaciology, Ice sheets, Glacier flow, Ice mechanics, Ice solid interface, Ice heat flux, Water pressure, Ice friction, Basal sliding, Mathematical models, Topographic effects, Forecasting, Antarctica—West Antarctica

53-3451

**Effect of snow on antarctic sea ice simulations in a coupled atmosphere-sea ice model.**

Wu, X., Budd, W.F., Lytle, V.I., Massom, R.A., *Climate dynamics*, Feb. 1999, 15(2), p.127-143, 50 refs.

Climatology, Snow cover effect, Sea ice distribution, Ice cover thickness, Snow ice interface, Snow thermal properties, Thermal conductivity, Simulation, Air ice water interaction, Antarctica

53-3452

**Post-eruptive gravity changes from 1990 to 1996 at Krafla volcano, Iceland.**

Rymer, H., Cassidy, J., Locke, C.A., Sigmundsson, F., *Journal of volcanology and geothermal research*, Dec. 1998, 87(1-4), p.141-149, 30 refs.

Tectonics, Subpolar regions, Geologic processes, Gravity anomalies, Earth crust, Deformation, Subsidence, Volcanoes, Magma, Fluid dynamics, Iceland

53-3453

**Modeling the transport of radioactive contaminants in the Arctic.**

Preller, R.H., Cheng, A., *Marine pollution bulletin*, Feb. 1999, 38(2), p.71-91, 20 refs.

Oceanography, Subpolar regions, Water pollution, Radioactive wastes, Dispersions, Runoff, Ocean currents, Estuaries, Mathematical models, Radioactive isotopes, Arctic Ocean

53-3454

**Classical trajectory study of argon-ice collision dynamics.**

Bolton, K., Svanberg, M., Pettersson, J.B.C., *Journal of chemical physics*, Mar. 15, 1999, 110(11), p.5380-5391, 110 refs.

Ice physics, Polar stratospheric clouds, Cloud physics, Simulation, Ice surface, Ice vapor interface, Gases, Impact, Velocity, Attenuation, Molecular energy levels, Thermodynamic properties

53-3455

**Economic placement of water lines in cold regions.**

Coutermarsh, B.A., MP 5327, *Public works*, Feb. 1999, 130(2), p.36,38.

Cold weather construction, Water pipelines, Underground pipelines, Excavation, Frost protection, Pipeline insulation, Cellular plastics, Cost analysis, Cold weather tests

53-3456

**Correlation functions and correlation lengths for dry snow.**

Wang, H., Pulliainen, J., Hallikainen, M., *Journal of electromagnetic waves and applications*, Oct. 1998, 12(10), p.1337-1347, 6 refs. For another version see 52-6510.

Snow physics, Snow optics, Anisotropy, Grain size, Ice crystal size, Dielectric properties, Spheres, Microwaves, Scattering, Correlation, Image processing, Analysis (mathematics)

53-3457

**Regional maturation study in the King Christian Island area, arctic Canada.**

Gentzis, T., Goodarzi, F., Mukhopadhyay, P.K., *Energy sources*, Dec. 1998, 20(10), p.891-912, 25 refs.

Geological surveys, Hydrocarbons, Migration, Subpolar regions, Reservoirs, Sedimentation, Tectonics, Stratigraphy, Pleistocene, Drill core analysis, Canada—Northwest Territories—King Christian Island

53-3458

**Thermal maturation in the Ellef Ringnes Island and surrounding area, Sverdrup basin.**

Gentzis, T., Goodarzi, F., *Energy sources*, Dec. 1998, 20(10), p.913-934, 17 refs.

Geological surveys, Subpolar regions, Hydrocarbons, Reservoirs, Oil wells, Geochemistry, Drill core analysis, Stratigraphy, Profiles, Canada—Northwest Territories—Ellef Ringnes Island

53-3459

**Sedimentology of fine lacustrine deposits from Glacial Lake Bascom.**

Dethier, D.P., Hamachek, M., *Northeastern geology and environmental sciences*, Sep. 1998, 20(3), p.192-199, 14 refs.

Pleistocene, Quaternary deposits, Glacial geology, Glacial lakes, Sedimentation, Glacial deposits, Lacustrine deposits, Hydrogeology, Drill core analysis, Physical properties, Stratigraphy, United States—Vermont, United States—Massachusetts

53-3460

**Mass movement and reworking of late glacial and postglacial sediments in northern Seneca Lake, New York.**

Halfman, J.D., Herrick, D.T., *Northeastern geology and environmental sciences*, Sep. 1998, 20(3), p.227-241, 45 refs.

Pleistocene, Glacial geology, Glacial erosion, Lacustrine deposits, Sedimentation, Mass movements (geology), Profiles, Seismic reflection, Drill core analysis, Stratigraphy, Lithology, United States—New York—Seneca Lake

53-3461

**Macrofaunal community patterns at the continental margin off East Greenland. [Besiedlungsmuster der benthischen Makrofauna auf dem ostrgonländischen Kontinentalhang]**

Schnack, K., *Berichte zur Polarforschung*, 1998, No.294, 124p., In German with English summary. Refs. p.95-106.

Marine biology, Biomass, Ocean bottom, Sedimentation, Greenland

53-3462

**Scientific Cruise Report of the Arctic Expedition ARK-XIII/1 of RV Polarstern in 1997. [Wissenschaftlicher Fahrbericht über die Arktis-Expedition ARK-XIII/1 von 1997 mit FS "Polarstern"]**

Spindler, M., ed, Hagen, W., ed, Stübing, D., ed, *Berichte zur Polarforschung*, 1998, No.296, 65p. Sea ice, Marine biology, Ocean bottom, Plankton, Ice cover effect, Paleoecology, Algae, Greenland Sea, Barents Sea, Fram Strait

53-3463

**Analysis of planktic foraminiferal tests from high latitudes: indicators of climate change during the last 140,000 years. [Gehäuseuntersuchungen an planktischen Foraminiferen hoher Breiten: Hinweise auf Umweltveränderungen während der letzten 140.000 Jahre]**

Hommers, H., *Berichte zur Polarforschung*, 1998, No.295, 97p., In German with English summary. Refs. p.82-90.

Plankton, Marine biology, Paleoclimatology, Microbiology, Ocean currents, Salinity, Oxygen isotopes, Arctic Ocean, Norwegian Sea, Greenland Sea, Antarctica—Weddell Sea, South Atlantic Ocean

53-3464

**Changes in the  $^{18}\text{O}/^{16}\text{O}$  ratios of fluids as evidence for different metamorphic episodes in high grade gneisses from the Konovolov Mountains area (Rayner Complex, East Antarctica).**

Krylov, D.P., Hoernes, S., Bridgwater, D., *Chemical geology*, May 25, 1998, 147(3-4), p.295-312, 44 refs.

Pleistocene, Geologic processes, Subpolar regions, Earth crust, Magma, Sedimentation, Fluid dynamics, Geochemistry, Oxygen isotopes, Isotope analysis, Rock properties, Mineralogy, Antarctica—East Antarctica

53-3465

**Fluorine geochemistry in volcanic rock series: examples from Iceland and Jan Mayen.**

Stecher, O., *Geochimica et cosmochimica acta*, Sep. 1998, 62(18), p.3117-3130, 74 refs.

Marine geology, Earth crust, Subpolar regions, Lithology, Geochemistry, Vapor diffusion, Magma, Geologic processes, Rock properties, Chemical analysis, Sampling, Iceland—Reykjanes Peninsula

53-3466

**New, major Silurian reef tract and overview of regional Silurian reef development, Canadian Arctic and north Greenland.**

De Freitas, T.A., Nowlan, G.S., *Bulletin of Canadian petroleum geology*, Sep. 1998, 46(3), p.327-349, With French summary. Refs. p.347-349.

Pleistocene, Paleoecology, Geologic processes, Sedimentation, Subpolar regions, Earth crust, Stratigraphy, Lithology, Fossils, Scanning electron microscopy, Greenland, Canada—Northwest Territories—Ellesmere Island

53-3467

**Stratigraphy and hydrocarbon potential of Cambrian strata, Northern Interior Plains, Northwest Territories.**

Dixon, J., Stasiuk, L.D., *Bulletin of Canadian petroleum geology*, Sep. 1998, 46(3), p.445-470, With French summary. 50 refs.

Pleistocene, Subpolar regions, Geologic processes, Earth crust, Hydrocarbons, Tectonics, Sedimentation, Reservoirs, Well logging, Stratigraphy, Classifications, Geochemistry, Canada—Northwest Territories

53-3468

**Multiproxy climate reconstructions for the Eemian and Early Weichselian.**

Aalbersberg, G., Litt, T., *Journal of Quaternary science*, Sep.-Oct. 1998, 13(5), p.367-390, Refs. p.387-390.

Paleoclimatology, Climatic changes, Paleobotany, Palynology, Classifications, Quaternary deposits, Stratigraphy, Periglacial processes, Air temperature, Seasonal variations, Statistical analysis, Europe

53-3469

**Climate reconstruction of the Weichselian Pleniglacial in northwestern and central Europe.**

Huijzer, B., Vandenberghe, J., *Journal of Quaternary science*, Sep.-Oct. 1998, 13(5), p.391-417, Refs. p.413-417.

Pleistocene, Paleoclimatology, Paleobotany, Climatic changes, Temperature variations, Periglacial processes, Quaternary deposits, Eolian soils, Simulation, Statistical analysis, Europe

53-3470

**Temperature gradients in northern Europe during the last glacial-Holocene transition (14-9 <sup>14</sup>C kyr BP) interpreted from coleopteran assemblages.**

Coope, G.R., Lemdahl, G., Lowe, J.J., Walkling, A., *Journal of Quaternary science*, Sep.-Oct. 1998, 13(5), p.419-433, 61 refs.

Paleoclimatology, Climatic changes, Pleistocene, Paleogeology, Ice sheets, Ice edge, Quaternary deposits, Stratigraphy, Fossils, Air temperature, Temperature gradients, Radioactive age determination, Models, Europe

53-3471

**Regression coefficients of thermal gradients in northwestern Europe during the last glacial-Holocene transition using beetle MCR data.**

Witte, H.J.L., Coope, G.R., Lemdahl, G., Lowe, J.J., *Journal of Quaternary science*, Sep.-Oct. 1998, 13(5), p.435-445, 68 refs.

Pleistocene, Paleoclimatology, Climatic changes, Air temperature, Temperature gradients, Quaternary deposits, Paleogeology, Fossils, Radioactive age determination, Statistical analysis, Europe

53-3472

**Impact of the North Atlantic Ocean on the Younger Dryas climate in northwestern and central Europe.**

Isarin, R.F.B., Renssen, H., Vandenberghe, J., *Journal of Quaternary science*, Sep.-Oct. 1998, 13(5), p.447-453, 51 refs.

Pleistocene, Paleoclimatology, Climatic changes, Air temperature, Temperature variations, Atmospheric circulation, Sea ice distribution, Ice edge, Air ice water interaction, Ice cover effect, Simulation, Atlantic Ocean, Europe

53-3473

**Weichselian Late Pleniglacial and Late-glacial depositional environments, Coleoptera and periglacial climatic records from central Poland (Belchatów).**

Kasse, C., Huijzer, A.S., Krzyszkowski, D., Bohncke, S.J.P., Coope, G.R., *Journal of Quaternary science*, Sep.-Oct. 1998, 13(5), p.455-469, 70 refs.

Pleistocene, Paleoclimatology, Paleogeology, River basins, Sedimentation, Quaternary deposits, Lacustrine deposits, Periglacial processes, Ice wedges, Tundra climate, Stratigraphy, Geochronology, Poland

53-3474

**Short climatic oscillations in a western European loess sequence (Kesselt, Belgium).**

Vandenberghe, J., Huijzer, B.S., Mûcher, H., Laan, W., *Journal of Quaternary science*, Sep.-Oct. 1998, 13(5), p.471-485, 48 refs.

Pleistocene, Paleoclimatology, Climatic changes, Quaternary deposits, Loess, Grain size, Periglacial processes, Tundra soils, Thin sections, Radioactive age determination, Stratigraphy, Belgium

53-3475

**Late Pleistocene loess deposits and palaeosols of eastern Belgium: new TL age determinations.**

Van den Haute, P., Vancraeynest, L., De Corte, F., *Journal of Quaternary science*, Sep.-Oct. 1998, 13(5), p.487-497, 42 refs.

Pleistocene, Quaternary deposits, Loess, Quaternary processes, Luminescence, Stratigraphy, Tundra soils, Soil dating, Geochronology, Statistical analysis, Belgium

53-3476

**100 year record of ion chemistry from Agassiz Ice Cap northern Ellesmere Island NWT, Canada.**

Koerner, R.M., Fisher, D.A., Goto-Azuma, K., *Atmospheric environment*, Feb. 1999, 33(3), p.347-357, 39 refs.

Climatology, Air pollution, Aerosols, Sedimentation, Ice sheets, Snow accumulation, Ion density (concentration), Ice cores, Snow air interface, Seasonal variations, Sampling, Origin, Canada—Northwest Territories—Ellesmere Island

53-3477

**Antarctic snow record of cadmium, copper, and zinc content during the twentieth century.**

Wolff, E.W., Suttie, E.D., Peel, D.A., *Atmospheric environment*, May 1999, 33(10), p.1535-1541, 28 refs.

Climatology, Air pollution, Polar atmospheres, Atmospheric composition, Aerosols, Snow composition, Metals, Ice cores, Chemical analysis, Origin, Seasonal variations, Environmental tests, Antarctica

53-3478

**Geographical variations of major and trace elements in East Antarctica.**

Ikegawa, M., et al., *Atmospheric environment*, Apr. 1999, 33(9), p.1457-1467, 38 refs.

Climatology, Air pollution, Precipitation (meteorology), Polar atmospheres, Snow composition, Aerosols, Metals, Fallout, Distribution, Origin, Chemical analysis, Antarctica—Dome Fuji Station

53-3479

**Oxygen isotopic fluxes associated with high-temperature processes in the rift zones of Iceland.**

Gautason, B., Muehlenbachs, K., *Chemical geology*, Apr. 15, 1998, 145(3-4), p.275-286, 66 refs.

Tectonics, Geologic processes, Subpolar regions, Earth crust, Sea water, Water chemistry, Oxygen isotopes, Vapor transfer, Indexes (ratios), Magma, Hydrothermal processes, Models, Iceland

53-3480

**Detrital sediment fluxes from continents to oceans.**

Hay, W.W., *Chemical geology*, Apr. 15, 1998, 145(3-4), p.287-323, Refs. p.319-323.

Geochemical cycles, Marine geology, Sediment transport, Mass transfer, Weathering, Surface drainage, Glacier flow, Glacial erosion, Eolian soils, River basins, Wind factors, Models, Statistical analysis

53-3481

**Climate extremes in loess of China coupled with the strength of deep-water formation in the North Atlantic.**

Guo, Z.T., et al., *Global and planetary change*, Sep. 1998, 18(3-4), International Geological Congress, 30th, Beijing, China, Aug. 1996. Symposium on Transsects from the Pole-equator-pole. Selected papers. Edited by J.R. Dodson and Z.T. Guo, p.113-128, 70 refs.

Pleistocene, Paleoclimatology, Climatic changes, Precipitation (meteorology), Air temperature, Ocean currents, Loess, Carbon isotopes, Stratigraphy, Geochemical cycles, Remanent magnetism, Correlation, China—Loess Plateau

53-3482

**Holocene delevelling of Devon Island, arctic Canada: implications for ice sheet geometry and crustal response.**

Dyke, A.S., *Canadian journal of earth sciences*, Aug. 1998, 35(8), p.885-904, With French summary. 52 refs.

Pleistocene, Earth crust, Glacial geology, Geomorphology, Isostasy, Quaternary deposits, Sea level, Shoreline modification, Statistical analysis, Radioactive age determination, Canada—Northwest Territories—Devon Island

53-3483

**Climatically influenced distribution of *Gymnodinium catenatum* during the past 2000 years in coastal sediments of southern Norway.**

Thorsen, T.A., Dale, B., *Palaeogeography, palaeoclimatology, palaeoecology*, Oct. 30, 1998, 143(1-3), p.159-177, 55 refs.

Paleoclimatology, Climatic changes, Paleogeology, Plankton, Classifications, Distribution, Marine deposits, Drill core analysis, North Sea, Norway—Skagerak

53-3484

**Diatoms as quantitative paleodepth indicators in coastal areas of the southeastern Beaufort Sea, Arctic Ocean.**

Campeau, S., Pienitz, R., Héquette, A., *Palaeogeography, palaeoclimatology, palaeoecology*, Feb. 15, 1999, 146(1-4), p.67-97, Refs. p.94-97.

Pleistocene, Paleogeology, Oceanography, Sea level, Subpolar regions, Plankton, Classifications, Distribution, Bottom sediment, Profiles, Drill core analysis, Statistical analysis, Beaufort Sea, Arctic Ocean

53-3485

**Clay mineral evidence of nepheloid layer contributions to the Heinrich layers in the northwest Atlantic.**

Bout-Roumazeilles, V., Cortijo, E., Labeyrie, L., Debrabant, P., *Palaeogeography, palaeoclimatology, palaeoecology*, Feb. 15, 1999, 146(1-4), p.211-228, 57 refs.

Pleistocene, Glacial geology, Subpolar regions, Ocean currents, Glacier oscillation, Glacial erosion, Marine deposits, Ice rafting, Sediment transport, Clay minerals, Geochemical cycles, Drill core analysis, Atlantic Ocean

53-3486

**Late-glacial and Holocene paleoceanography and sedimentary environments in the St. Anna Trough, Eurasian Arctic Ocean margin.**

Hald, M., et al., *Palaeogeography, palaeoclimatology, palaeoecology*, Feb. 15, 1999, 146(1-4), p.229-249, Refs. p.247-249.

Pleistocene, Marine geology, Subpolar regions, Paleoclimatology, Paleogeology, Ocean currents, Sediment transport, Drill core analysis, Stratigraphy, Geochronology, Geochemical cycles, Arctic Ocean

53-3487

**Total volume and temporal variation of meltwater from last glacial maximum inferred from sea-level observations at Barbados and Tahiti.**

Okuno, J., Nakada, M., *Palaeogeography, palaeoclimatology, palaeoecology*, Feb. 15, 1999, 146(1-4), p.283-293, 33 refs.

Pleistocene, Paleoclimatology, Glacier oscillation, Glacier melting, Meltwater, Sea level, Isostasy, Ice models, Drill core analysis, Tahiti, Barbados

53-3488

**Preliminary evidence of early deglaciation in southern Chile.**

Anderson, D.M., Archer, R.B., *Palaeogeography, palaeoclimatology, palaeoecology*, Feb. 15, 1999, 146(1-4), p.295-301, 25 refs.

Pleistocene, Paleoclimatology, Climatic changes, Glaciation, Glacier melting, Insolation, Glacial lakes, Lacustrine deposits, Radioactive age determination, Ice age theory, Chile

53-3489

**Hydrochemistry of meltwaters draining a polythermal-based, high arctic glacier, south Svalbard. I. The ablation season.**

Wadham, J.L., Hodson, A.J., Tranter, M., Dowdeswell, J.A., *Hydrological processes*, Oct. 15, 1998, 12(12), p.1825-1849, 48 refs.

Glacial hydrology, Snowmelt, Seasonal ablation, Meltwater, Hydrogeochemistry, Subglacial drainage, Upwelling, Runoff, Ion density (concentration), Sampling, Norway—Svalbard

53-3490

**Flow separation on Zongo Glacier, Cordillera Real, Bolivia.**

Wagnon, P., Ribstein, P., Schuler, T., Francou, B., *Hydrological processes*, Oct. 15, 1998, 12(12), p.1911-1926, 19 refs.

Glacial hydrology, Mountain glaciers, Glacier melting, Subglacial drainage, Channels (waterways), Water flow, Hydrogeochemistry, Hydrography, Electrical measurement, Diurnal variations, Bolivia—Zongo Glacier

53-3491

**Analysis of litter decomposition in an alpine tundra.**

Bryant, D.M., Holland, E.A., Seastedt, T.R., Walker, M.D., *Canadian journal of botany*, July 1998, 76(7), p.1295-1304, With French summary. 45 refs.

Forest ecosystems, Alpine tundra, Nutrient cycle, Tundra soils, Plant tissues, Litter, Biomass, Decomposition, Geochemical cycles, Moisture transfer, Statistical analysis, United States—Colorado—Niwot Ridge

53-3492

**Lattice dynamics of helium gas hydrates based on ice framework: dynamic and thermodynamic stability.**

Belosludov, R.V., Kawazoe, Y., Grachev, E.V., Dadian, I.U.A., Belosludov, V.R., *Solid state communications*, Dec. 16, 1998, 109(3), p.157-162, 15 refs.

Ice physics, Ice crystal structure, Molecular structure, Latticed structures, Gases, Hydrates, Stability, Thermodynamic properties, Molecular energy levels, Analysis (mathematics)

53-3493

**Hydrology of Tierney Creek, Vestfold Hills, Antarctica.**

Bronge, C., *Polar record*, Apr. 1999, 35(193), p.139-148, 42 refs.

Limnology, Stream flow, Glacial lakes, Ice dams, Glacial hydrology, Meltwater, Runoff, Hydrography, Insolation, Diurnal variations, Seasonal variations, Antarctica—Vestfold Hills

53-3494

**Model study of the atmospheric boundary layer in the Mars Pathfinder lander conditions.**

Savijarvi, H., *Royal Meteorological Society. Quarterly journal B*, Jan. 1999, 125(554), p.483-493, 10 refs.

Mars (planet), Radiation balance, Hydrologic cycle, Climatology, Atmospheric boundary layer, Air temperature, Water vapor, Ice vapor interface, Ice sublimation, Surface temperature, Regolith, Frost, Mathematical models

53-3495

**Tomographic evidence for a narrow whole mantle plume below Iceland.**

Bijwaard, H., Spakman, W., *Earth and planetary science letters*, Mar. 15, 1999, 166(3-4), p.121-126, 39 refs.

Marine geology, Earth crust, Subpolar regions, Seismology, Magma, Hydrothermal processes, Upwelling, Imaging, Iceland

53-3496

**Particle size characteristics of suspended sediments and subglacial hydrology of Dokriani Glacier, Garhwal Himalaya, India.**

Thayyen, R.J., Gergan, J.T., Dobhal, D.P., *Hydrological sciences journal*, Feb. 1999, 44(1), p.47-61, With French summary. 22 refs.

Glacial hydrology, Mountain glaciers, Cirque glaciers, Subglacial drainage, Sediment transport, Meltwater, Suspended sediments, Particle size distribution, Hydrogeochemistry, Seasonal variations, Hydrography, India—Himalaya Mountains

53-3497

**Dielectric loss mechanism of biological material during low temperature freezing.**

Zhong, L.S., Liu, Y.Y., Xu, C.X., IEEE Conference on Electrical Insulation and Dielectric Phenomena, 65th, Millbrae, CA, Oct. 20-23, 1996. Annual report, Vol.1, Piscataway, NJ, Institute of Electrical and Electronics Engineers, Inc., 1996, p.245-248, 8 refs.

DLC TK3421.A1C65 v.1 1996  
Dielectric properties, Low temperature research, Cryobiology, Phase transformations

53-3498

**Modeling and rendering method for snow by using metaballs.**

Nishita, T., Iwasaki, H., Dobashi, Y., Nakamae, E., *Computer graphics forum*, Sep. 1997, 16(3), European Association for Computer Graphics, 18th, Budapest, Hungary, Sep. 4-8, 1997. EUROGRAPH-ICS '97. Proceedings, p.C357-C364, 27 refs.  
DLC T385.C5746 V16 1997

Snow, Light scattering, Computerized simulation

53-3499

**Miniature ice detection sensor systems for aerospace applications.**

Roy, S., DeAnna, R.G., Izad, A., Mehregany, M., IEEE International Workshop on Micro Electro Mechanical Systems: An Investigation of Micro Structures, Sensors, Actuators, Machines and Systems, 11th, Heidelberg, Germany, Jan. 25-29, 1998. Proceedings, Piscataway, NJ, Institute of Electrical and Electronics Engineers, Inc., 1998, p.75-80, 8 refs.  
DLC TK7875.I35 1998

Ice detection, Ice accretion, Aircraft icing, Sensors, Design, Ice adhesion

53-3500

**Modelling of ice thermodynamics in natural water bodies.**

Launianen, J., Cheng, B., *Cold regions science and technology*, June 1998, 27(3), p.153-178, 59 refs.  
Sea ice, Ice physics, Atmospheric boundary layer, Ice cover thickness, Ice temperature, Surface temperature, Ice water interface, Thermal radiation, Ice heat flux, Snow cover effect, Mathematical models, Thermodynamics, Baltic Sea

53-3501

**Nonsimultaneous crushing during edge indentation of freshwater ice sheets.**

Sodhi, D.S., MP 5328, *Cold regions science and technology*, June 1998, 27(3), p.179-195, 37 refs.  
Ice sheets, Floating ice, Ice mechanics, Ice solid interface, Ice deformation, Ice breaking, Loads (forces), Impact tests, Dynamic properties, Velocity measurement, Statistical analysis, Fractals, Correlation

Indentation tests were conducted by pushing segmented indentors into the edge of freshwater ice sheets at different velocities. Ice crushing forces were measured independently in each segment. Results of these tests indicate that there is simultaneous generation of forces on all segments during low-velocity indentation, whereas there is a nonsimultaneous force acting on the segments during high-velocity indentation. For brittle crushing of ice at a high indentation rate, the effective pressures measured during these tests are in the range of pressures measured in the field during the impact of ice floes against large structures. Under the assumption that the size of crushing zones becomes small with increasing indentation speed, a statistical model is used to determine the correlation between the forces measured in different segments in terms of a correlation length parameter. A comparison of the trends in the plots of experimental data with theoretical results shows that the correlation length parameter decreases as the reciprocal of the indentation velocity. Under the

assumption of the similarity principle, according to replica modeling, an estimate of the correlation length parameter is empirically obtained in terms of ice thickness and indentation velocity.

53-3502

**Role of discrete failures in local ice loads.**

Daley, C., Tuhkuri, J., Riska, K., *Cold regions science and technology*, June 1998, 27(3), p.197-211, 35 refs.

Ice mechanics, Ice sheets, Floating ice, Ice loads, Ice solid interface, Ice breaking, Cracking (fracturing), Oscillations, Dynamic properties, Classifications, Theories, Models, Fractals

53-3503

**Fracture mechanics approach to penetration of bottom crevasses on glaciers.**

Van der Veen, C.J., *Cold regions science and technology*, June 1998, 27(3), p.213-223, 33 refs.

Glacial hydrology, Ice shelves, Ice mechanics, Floating ice, Grounded ice, Crack propagation, Ice water interface, Ice bottom surface, Crevasses, Penetration, Water pressure, Stress concentration, Mathematical models

53-3504

**Laptev Sea flaw lead—detailed investigation on ice formation and export during 1991/1992 winter season.**

Dethleff, D., Loewe, P., Kleine, E., *Cold regions science and technology*, June 1998, 27(3), p.225-243, 26 refs.

Oceanography, Subpolar regions, Ice shelves, Sea ice distribution, Ice openings, Drift, Ice growth, Ice volume, Air ice water interaction, Heat flux, Mathematical models, Spaceborne photography, Wind factors, Russia—Laptev Sea

53-3505

**Sediment entrainment into ice via suspended ice crystals.**

Eidsvik, K.J., *Cold regions science and engineering*, Dec. 1998, 28(3), p.143-159, 19 refs.

Ice physics, Floating ice, Sedimentation, Turbulent diffusion, Suspended sediments, Ice crystal growth, Coagulation, Ice water interface, Mathematical models, Wind factors

53-3506

**Heat stability analysis of embankment on the degrading permafrost district in the east of the Tibetan Plateau, China.**

Li, D.Q., Wu, Z.W., Fang, J.H., Li, Y.C., Lu, N.A., *Cold regions science and engineering*, Dec. 1998, 28(3), p.183-188, 13 refs.

Roads, Embankments, Physical properties, Permafrost beneath structures, Frozen ground temperature, Permafrost mass transfer, Permafrost thermal properties, Degradation, Boreholes, Profiles, Mathematical models, China—Qinghai-Xizang Plateau

53-3507

**Antifreeze thermal ice core drilling: an effective approach to the acquisition of ice cores.**

Zagorodnov, V., Thompson, L.G., Kelley, J.J., Koci, B., Mikhailenko, V., *Cold regions science and engineering*, Dec. 1998, 28(3), p.189-202, 31 refs.

Glaciology, Drill core analysis, Ice cores, Borehole instruments, Thermal drills, Core samplers, Drilling fluids, Antifreezes, Mechanical tests, Performance, Design

53-3508

**Detecting freezing and thawing damage in concrete using signal energy.**

Akhras, N.M., *Cement and concrete research*, Sep. 1998, 28(9), p.1275-1280, 8 refs.

Concrete durability, Frost action, Freeze thaw cycles, Freeze thaw tests, Damage, Detection, Ultrasonic tests, Sound waves, Velocity, Acoustic measurement, Spectra

53-3509

**Freeze-thaw durability of concrete: ice formation process in pores.**

Cai, H., Liu, X., *Cement and concrete research*, Sep. 1998, 28(9), p.1281-1287, 7 refs.

Concrete durability, Frost resistance, Concrete freezing, Freeze thaw cycles, Ice formation, Porosity, Saturation, Solutions, Freezing rate, Electrical measurement

53-3510

**Genetic variability of rock glaciers.**

Clark, D.H., Steig, E.J., Potter, N., Jr., Gillespie, A.R., *Geografiska annaler*, 1998, 80A(3-4), p.175-182, 61 refs.

Geomorphology, Landforms, Rock glaciers, Classifications, Permafrost mass transfer, Periglacial processes, Glacial geology, Origin, Theories

53-3511

**Possible outburst floods from debris-covered glaciers in the Sierra Nevada, California.**

Konrad, S.K., *Geografiska annaler*, 1998, 80A(3-4), p.183-192, 22 refs.

Glacial hydrology, Glacial geology, Rock glaciers, Cirque glaciers, Glacier ablation, Lake bursts, Flooding, Ice deterioration, Water pressure, Subglacial drainage, Reservoirs, Models, United States—California—Sierra Nevada

53-3512

**Relationship between climate and rock glacier distribution in the Ben Ohau Range, New Zealand.**

Brazier, V., Kirkbride, M.P., Owens, I.F., *Geografiska annaler*, 1998, 80A(3-4), p.193-207, 44 refs.

Alpine landscapes, Landforms, Geomorphology, Glacial geology, Rock glaciers, Periglacial processes, Sediment transport, Classifications, Climatic factors, Topographic effects, New Zealand—Southern Alps

53-3513

**Sublimation of ice through sediment in Beacon Valley, Antarctica.**

Hindmarsh, R.C.A., Van der Wateren, F.M., Verbers, A.L.L.M., *Geografiska annaler*, 1998, 80A(3-4), p.209-219, 18 refs.

Glacial geology, Subglacial observations, Glacial till, Volcanic ash, Ice wedges, Ice dating, Ice sublimation, Ice solid interface, Vapor diffusion, Thermodynamics, Mathematical models, Antarctica—Beacon Valley

53-3514

**Glacial interpretation for the origin and formation of the Marinnet Rock Glacier, Alpes Maritimes, France.**

Whalley, W.B., Palmer, C.F., *Geografiska annaler*, 1998, 80A(3-4), p.221-236, 27 refs.

Geomorphology, Glacial geology, Rock glaciers, Alpine landscapes, Periglacial processes, Permafrost physics, Origin, Sediment transport, Velocity, Theories, Models, France—Alpes Maritimes

53-3515

**Decadal and millennial velocities of rock glaciers, Selwyn Mountains, Canada.**

Sloan, V.F., Dyke, L.D., *Geografiska annaler*, 1998, 80A(3-4), p.237-249, 40 refs.

Geomorphology, Periglacial processes, Alpine landscapes, Rock glaciers, Sediment transport, Velocity, Slope processes, Age determination, Correlation, Periodic variations, Canada—Yukon Territory—Selwyn Mountains

53-3516

**Galena Creek rock glacier revisited—new observations on an old controversy.**

Potter, N., Jr., Steig, E.J., Clark, D.H., Speece, M.A., Clark, G.M., Updike, A.B., *Geografiska annaler*, 1998, 80A(3-4), p.251-265, 24 refs.

Geomorphology, Rock glaciers, Glacial geology, Sediments, Basal sliding, Profiles, Ice cores, Glacier ice, Seismic refraction, Classifications, Accuracy, Theories, Models, United States—Wyoming—Galena Creek

53-3517

**Rock glacier/debris-covered glacier system at Galena Creek, Absaroka Mountains, Wyoming.**

Ackert, R.P., Jr., *Geografiska annaler*, 1998, 80A(3-4), p.267-276, 24 refs.

Geomorphology, Glacial geology, Rock glaciers, Cirques, Sediment transport, Phase transformations, Glacier ice, Age determination, Classifications, United States—Wyoming—Galena Creek

53-3518

**Geochemical record in rock glaciers.**

Steig, E.J., Fitzpatrick, J.J., Potter, N., Jr., Clark, D.H., *Geografiska annaler*, 1998, 80A(3-4), p.277-286, 53 refs.

Geomorphology, Glacial geology, Rock glaciers, Glacier ice, Ice cores, Ice composition, Geochemistry, Stratigraphy, Isotope analysis, Profiles, Origin, United States—Wyoming—Galena Creek

53-3519

**Isotopic composition of ice cores and meltwater from upper Fremont Glacier and Galena Creek rock glacier, Wyoming.**

Cecil, L.D., Green, J.R., Vogt, S., Michel, R., Cottrell, G., *Geografiska annaler*, 1998, 80A(3-4), p.287-292, 12 refs.

Glacial hydrology, Glacial geology, Glacier melting, Snowmelt, Meltwater, Runoff, Ice cores, Fallout, Radioactive isotopes, Isotope analysis, Sampling, Origin, United States—Wyoming

53-3520

**No evidence for strong fields during the R3-N3 Icelandic geomagnetic reversal.**

Goguitchaichvili, A.T., Prévot, M., Camps, P., *Earth and planetary science letters*, Mar. 30, 1999, 167(1-2), p.15-34, 44 refs.

Pleistocene, Geomagnetism, Electric fields, Periodic variations, Subpolar regions, Earth crust, Magma, Remanent magnetism, Drill core analysis, Stratigraphy, Statistical analysis, Iceland

53-3521

**Long-distance transport of magmas in the Jurassic Ferrar Large Igneous Province, Antarctica.**

Elliot, D.H., Fleming, T.H., Kyle, P.R., Foland, K.A., *Earth and planetary science letters*, Mar. 30, 1999, 167(1-2), p.89-104, 50 refs.

Pleistocene, Earth crust, Tectonics, Geologic processes, Magma, Migration, Lithology, Geochemistry, Isotope analysis, Geochronology, Antarctica—Transantarctic Mountains

53-3522

**Pulverized fuel ash concrete: air entrainment and freeze/thaw durability.**

Dhir, R.K., McCarthy, M.J., Limbachiya, M.C., El Sayad, H.I., Zhang, D.S., *Magazine of concrete research*, Feb. 1999, 51(1), p.53-64, 39 refs.

Concrete durability, Concrete admixtures, Concrete aggregates, Physical properties, Porosity, Frost resistance, Air entrainment, Freeze thaw tests, Waste disposal

53-3523

**Some observations on Holocene changes in periglacial activity at Long Ridge, Marion Island.**

Holness, S., Boelhouwers, J., *South African journal of science*, Aug. 1998, 94(8), p.399-403, 11 refs.

Paleoclimatology, Climatic changes, Geocryology, Geomorphology, Periglacial processes, Landforms, Patterned ground, Sorting, Altitude, Marion Island

53-3524

**Vulnerability to freeze stress of seedlings of *Quercus ilex* L.: an ecological interpretation.**

Nardini, A., GHIRARDI, L., SALLEO, S., *Annales des sciences forestières*, June-July 1998, 55(5), p.553-565, With French summary. 33 refs.

Plant ecology, Trees (plants), Plant physiology, Thermal stresses, Frost resistance, Plant tissues, Damage, Water retention, Cold weather tests, Cold weather survival, Forest lines

53-3525

**Calculations of weathering rate and soil solution chemistry for forest soils in the Norwegian-Russian border area with the PROFILE model.**

Koptsik, G., Teveldal, S., Aamlid, D., Venn, K., *Applied geochemistry*, Mar. 1999, 14(2), p.173-185, 45 refs.

Air pollution, Subpolar regions, Forest ecosystems, Forest soils, Degradation, Weathering, Aerosols, Sedimentation, Soil chemistry, Geochemistry, Models, Environmental impact, Russia, Norway

53-3526

**Deglaciation-induced climate variability: an explicit model of the glacial-interglacial transition that simulates both the Bolling/Allerød and Younger-Dryas events.**

Sakai, K., Peltier, W.R., *Meteorological Society of Japan. Journal*, Dec. 1998, 76(6), p.1029-1044, 22 refs.

Pleistocene, Paleoclimatology, Climatic changes, Ocean currents, Glacier melting, Meltwater, Heat transfer, Models, Simulation, Ice cores, Isotope analysis, Albedo, Ice cover effect, Greenland—Summit, Antarctica—Vostok Station

53-3527

**Major ion chemistry and weathering control in a high altitude basin: Alaknanda River, Garhwal Himalaya, India.**

Singh, A.K., Hasnain, S.I., *Hydrological sciences journal*, Dec. 1998, 43(6), p.825-843, With French summary. 38 refs.

River basins, Glacial hydrology, Mountain glaciers, Glacial rivers, River flow, Hydrogeology, Hydrogeochemistry, Weathering, Ion density (concentration), Statistical analysis, India—Garhwal Himalaya

53-3528

**SLURP model and GIS for estimation of runoff in a part of Satluj catchment, India.**

Jain, S.K., Kumar, N., Ahmad, T., Kite, G.W., *Hydrological sciences journal*, Dec. 1998, 43(6), p.875-884, With French summary. 12 refs.

River basins, Watersheds, Water balance, Geophysical surveys, Runoff forecasting, Snow hydrology, Snowmelt, Meltwater, Water supply, Topographic effects, Models, Meteorological factors, India

53-3529

**Comparative study on the backscattering ability of raindrops and ice particles (hail).**

Wang, Q.G., Ouyang, Z.X., Liu, L.P., Chao, Z.M., *Contributions to atmospheric physics*, Nov. 1998, 71(4), p.377-386, 12 refs.

Precipitation (meteorology), Cloud physics, Ice crystal optics, Hail, Particle size distribution, Hailstone structure, Raindrops, Microwaves, Backscattering, Resonance, Mathematical models

53-3530

**Continental slope sedimentation adjacent to an ice margin. III. The upper Labrador Slope.**

Hesse, R., Klauke, I., Khodabakhsh, S., Piper, D., *Marine geology*, Mar. 1, 1999, 155(3-4), p.249-276, 45 refs.

Pleistocene, Geomorphology, Marine geology, Ocean bottom, Glacial geology, Ice rafting, Glacial deposits, Suspended sediments, Sediment transport, Seismic reflection, Profiles, Drill core analysis, Labrador Sea

53-3531

**Some properties of deep stratiform ice cloud revealed by 95 GHz GKSS cloud radar—a case study.**

Fujiyoshi, Y., Quante, M., Danne, O., Raschke, E., *Contributions to atmospheric physics*, Feb. 1999, 72(1), p.113-125, 48 refs.

Climatology, Atmospheric circulation, Cloud physics, Ice sublimation, Radar echoes, Reflectivity, Ice detection, Ice crystal optics, Gravity waves, Shear flow, Velocity measurement, Profiles, Germany

53-3532

**Temperature extremes.**Hickox, D., *Weatherwise*, Mar.-Apr. 1999, 52(2), p.56-61.

Climatology, Air temperature, Temperature measurement, Records (extremes), Seasonal variations, Meteorological data, Statistical analysis, United States

53-3533

**1997-1998 snow season.**Kocin, P.J., Graf, D.H., Gartner, W.E., *Weatherwise*, Mar.-Apr. 1999, 52(2), p.62-67.

Climatology, Precipitation (meteorology), Snowfall, Snowstorms, Damage, Seasonal variations, United States

53-3534

**Christmas snowstorms of 1906, with emphasis on the Scottish Highlands: part 1.**McConnell, D., *Weather*, Dec. 1998, 53(12), p.406-412, 3 refs.

Climatology, Precipitation (meteorology), Snowstorms, Synoptic meteorology, Atmospheric pressure, Turbulent boundary layer, History, Weather observations, United Kingdom—Scotland

53-3535

**Fractional flow dimensions and hydraulic properties of a fracture-zone aquifer, Leppävirta, Finland.**Leveinen, J., Rönkä, E., Tikkanen, J., Karro, E., *Hydrogeology journal*, Oct. 1998, 6(3), p.327-340, With French and Spanish summaries. 39 refs.

Geologic processes, Hydrogeology, Subpolar regions, Ground water, Well logging, Fracture zones, Hydraulics, Boreholes, Models, Finland

53-3536

**Martian north polar cap 1996-1997.**Iwasaki, K., Parker, D.C., Larson, S., Akabane, T., *Icarus*, Mar. 1999, 138(1), Mars Telescopic Observations Workshop, 2nd, Tucson, AZ, Oct. 1997. Selected papers, p.20-24, 25 refs.

Mars (planet), Extraterrestrial ice, Polar regions, Ice sheets, Seasonal variations, Remote sensing, Imaging

53-3537

**Infrared spectral imaging of Martian clouds and ices.**Klassen, D.R., et al, *Icarus*, Mar. 1999, 138(1), Mars Telescopic Observations Workshop, 2nd, Tucson, AZ, Oct. 1997. Selected papers, p.36-48, 57 refs.

Mars (planet), Extraterrestrial ice, Ground ice, Frost, Atmospheric composition, Cloud physics, Carbon dioxide, Ice crystals, Ice detection, Infrared spectroscopy, Imaging

53-3538

**Discharge or leakage current of ice accreted insulators at close to flashover voltage in high conductivity fog.**

Sugawara, N., Murakami, H., Ito, S., Nakauchi, H., IEEE Conference on Electrical Insulation and Dielectric Phenomena, 66th, Minneapolis, MN, Oct. 19-22, 1997. Annual report, Vol.2, Piscataway, NJ, Institute of Electrical and Electronics Engineers, Inc., 1997, p.366-369, 9 refs.

DLC TK3421.A1C65 v.2 1997

Ice accretion, Meltwater, Transmission lines, Electrical insulation, Leakage, Ice fog, Icing

53-3539

**[Proceedings].**National Institute of Polar Research (NIPR) Symposium on Antarctic Geosciences, 17th, Tokyo, Oct. 15-16, 1997, Doi, K., ed, *Polar geoscience*, Oct. 1998, No.11, 277p., Refs. passim. For selected papers see 53-3540 through 53-3549.

Geological surveys, Glaciation, Glacial geology, Glacial deposits, Marine geology, Marine deposits, Bottom sediment, Quaternary deposits, Soil dating, Geochronology, Paleoclimatology, Antarctica

53-3540

**Analysis of GPS data at Syowa Station and IGS tracking stations.**Yamada, A., et al, *Polar geoscience*, Oct. 1998, No.11, National Institute of Polar Research (NIPR) Symposium on Antarctic Geosciences, 17th, Tokyo, Oct. 15-16, 1997, p.1-8, 9 refs. Geodetic surveys, Earth crust, Continental drift, Radar tracking, Telemetering equipment, Data transmission, Data processing, Antarctica—Showa Station

53-3541

**Measurement of ice sheet movement at S16, East Antarctica using GPS.**Ootaki, O., Fujiwara, S., *Polar geoscience*, Oct. 1998, No.11, National Institute of Polar Research (NIPR) Symposium on Antarctic Geosciences, 17th, Tokyo, Oct. 15-16, 1997, p.9-13, 2 refs. Ice sheets, Glacier surveys, Glacier flow, Geodetic surveys, Topographic surveys, Telemetering equipment, Synthetic aperture radar, Radio echo soundings, Spaceborne photography, Antarctica—Showa Station

53-3542

**Preliminary study to generate a DEM of Amundsen Bay, Antarctica by interferometric SAR.**Doi, K., Ozawa, T., Shibuya, K., Nakagawa, H., Omura, M., Koike, K., *Polar geoscience*, Oct. 1998, No.11, National Institute of Polar Research (NIPR) Symposium on Antarctic Geosciences, 17th, Tokyo, Oct. 15-16, 1997, p.14-22, 6 refs. Topographic surveys, Topographic maps, Synthetic aperture radar, Radio echo soundings, Height finding, Spaceborne photography, Image processing, Antarctica—Amundsen Bay

53-3543

**Geology of the Mt. Riiser-Larsen area of the Napier Complex, Enderby Land, East Antarctica.**Ishizuka, H., Ishikawa, M., Hokada, T., Suzuki, S., *Polar geoscience*, Oct. 1998, No.11, National Institute of Polar Research (NIPR) Symposium on Antarctic Geosciences, 17th, Tokyo, Oct. 15-16, 1997, p.154-171, 20 refs. Geological surveys, Geological maps, Geologic structures, Lithology, Geochemistry, Mineralogy, Geochronology, Antarctica—Enderby Land

53-3544

**CHIME ages for granulites from the Napier Complex, East Antarctica.**Asami, M., Suzuki, K., Grew, E.S., Adachi, M., *Polar geoscience*, Oct. 1998, No.11, National Institute of Polar Research (NIPR) Symposium on Antarctic Geosciences, 17th, Tokyo, Oct. 15-16, 1997, p.172-199, 37 refs.

Geologic structures, Lithology, Mineralogy, Geochemistry, Geochronology, Radioactive age determination, Antarctica—Enderby Land

53-3545

**Sediment cores and their radiocarbon ages in the western Ross Sea, Antarctica.**Nishimura, A., Nakasone, T., Hiramatsu, C., Tanahashi, M., *Polar geoscience*, Oct. 1998, No.11, National Institute of Polar Research (NIPR) Symposium on Antarctic Geosciences, 17th, Tokyo, Oct. 15-16, 1997, p.208-221, 22 refs.

Marine geology, Marine deposits, Bottom sediment, Glaciation, Ice sheets, Ice shelves, Glacier oscillation, Glacial geology, Glacial deposits, Quaternary deposits, Drill core analysis, Soil dating, Radioactive age determination, Geochronology, Paleoclimatology, Antarctica—Ross Sea

53-3546

**Paleomagnetic study of marine sediments from antarctic sea—central Wilkes Land margin, Dumont d'Urville Sea and Victoria Land Basin.**Sakai, H., Kikawa, E., Ishihara, T., Kobayashi, H., Komori, K., Sunagawa, A., *Polar geoscience*, Oct. 1998, No.11, National Institute of Polar Research (NIPR) Symposium on Antarctic Geosciences, 17th, Tokyo, Oct. 15-16, 1997, p.222-238, 13 refs.

Marine geology, Marine deposits, Bottom sediment, Drill core analysis, Remanent magnetism, Soil dating, Global change, Paleoclimatology, Antarctica—Wilkes Land, Antarctica—Ross Sea

53-3547

**Radiocarbon and thermoluminescence ages in the Mt. Riiser-Larsen area, Enderby Land, East Antarctica.**Takada, M., Miura, H., Zwart, D.P., *Polar geoscience*, Oct. 1998, No.11, National Institute of Polar Research (NIPR) Symposium on Antarctic Geosciences, 17th, Tokyo, Oct. 15-16, 1997, p.239-248, 36 refs.

Glaciation, Glacier oscillation, Glacial geology, Glacial deposits, Glacial till, Quaternary deposits, Pleistocene, Clay soils, Soil dating, Geochronology, Paleoclimatology, Antarctica—Enderby Land

53-3548

**Holocene lake sediments and sea-level change at Mt. Riiser-Larsen.**Zwart, D.P., Miura, H., Takada, M., Moriwaki, K., *Polar geoscience*, Oct. 1998, No.11, National Institute of Polar Research (NIPR) Symposium on Antarctic Geosciences, 17th, Tokyo, Oct. 15-16, 1997, p.249-259, 20 refs.

Marine geology, Marine deposits, Lacustrine deposits, Bottom sediment, Quaternary deposits, Core samplers, Soil dating, Sea level, Isostasy, Global change, Paleoclimatology, Antarctica—Riiser-Larsen, Mount

53-3549

**Late Quaternary East Antarctic melting event in the Söya Coast region based on stratigraphy and oxygen isotopic ratio of fossil molluscs.**Miura, H., Maemoku, H., Seto, K., Moriwaki, K., *Polar geoscience*, Oct. 1998, No.11, National Institute of Polar Research (NIPR) Symposium on Antarctic Geosciences, 17th, Tokyo, Oct. 15-16, 1997, p.260-274, 25 refs.

Marine geology, Marine deposits, Quaternary deposits, Fossils, Ice sheets, Glacier melting, Meltwater, Outwash, Geochronology, Soil dating, Paleoclimatology, Antarctica—Lützow-Holm Bay

53-3550

**Formation of Olympus Mons and the aureole-escarpment problem on Mars.**Helgason, J., *Geology*, Mar. 1999, 27(3), p.231-234, 11 refs.

Mars (planet), Extraterrestrial ice, Geocryology, Ground ice, Regolith, Landforms, Volcanoes, Magma, Ice solid interface, Geomorphology, Theories, Models

53-3551

**Amplitudes of Late Pennsylvanian glacioeustasy.**Soreghan, G.S., Giles, K.A., *Geology*, Mar. 1999, 27(3), p.255-258, 23 refs.

Pleistocene, Glacial geology, Glacial deposits, Paleogeology, Sea level, Subsidence, Stratigraphy, Isostasy, Ice volume, United States—New Mexico—San Andreas Mountains

53-3552

**Jæren area, a border zone of the Norwegian Channel ice stream.**Sejrup, H.P., Landvik, J.Y., Larsen, E., Janocko, J., Eiriksson, J., King, E., *Quaternary science reviews*, Sep. 1998, 17(9-10), p.801-812, 59 refs.

Pleistocene, Quaternary deposits, Geomorphology, Glacial geology, Ice sheets, Glacier oscillation, Glacial erosion, Subglacial drainage, Glacial deposits, Sedimentation, Drill core analysis, Stratigraphy, Radioactive age determination, Isostasy, Norway—Jæren

53-3553

**Interglacial and glacial climate oscillations in a marine shelf sequence from northern Denmark—a multidisciplinary study.**Kristensen, P., Knudsen, K.L., Lykke-Andersen, H., Nørmark, E., Peacock, J.D., Sinnott, A., *Quaternary science reviews*, Sep. 1998, 17(9-10), p.813-837, Refs. p.835-837.

Paleoclimatology, Quaternary deposits, Glacial geology, Paleogeology, Glacier oscillation, Sedimentation, Drill core analysis, Stratigraphy, Lithology, Luminescence, Geochronology, Denmark



53-3554

**Pollen stratigraphy of Late Pleistocene marine sediments at Nørre Lyngby and Skagen, north Denmark.**

Glaister, C.G., Gibbard, P.L., *Quaternary science reviews*, Sep. 1998, 17(9-10), p.839-854, Refs. p.852-854.

Pleistocene, Paleoclimatology, Paleobotany, Vegetation patterns, Quaternary deposits, Marine deposits, Palynology, Drill core analysis, Stratigraphy, Pollen, Classifications, Denmark

53-3555

**Pleistocene pollen stratigraphy from borehole 81/34, Devil's Hole area, central North Sea.**

Ekman, S.R., *Quaternary science reviews*, Sep. 1998, 17(9-10), p.855-869, 62 refs.

Pleistocene, Marine geology, Quaternary deposits, Marine deposits, Paleobotany, Palynology, Vegetation patterns, Pollen, Classifications, Boreholes, Stratigraphy, Geochronology, North Sea

53-3556

**Middle Pleistocene shallow marine interglacial sequence, Inner Silver Pit, southern North Sea: pollen and dinoflagellate cyst stratigraphy and sea-level history.**

Scourse, J.D., Ansari, M.H., Wingfield, R.T.R., Harland, R., Balson, P.S., *Quaternary science reviews*, Sep. 1998, 17(9-10), p.871-900, Refs. p.897-900.

Pleistocene, Sea level, Marine geology, Glacial geology, Glacial erosion, Quaternary deposits, Marine deposits, Paleobotany, Palynology, Stratigraphy, Seismic reflection, Isostasy, North Sea

53-3557

**Middle Pleistocene glacial-interglacial succession in the Inner Silver Pit, southern North Sea: foraminiferal stratigraphy and amino acid geochronology.**

Kristensen, P., Knudsen, K.L., Sejrup, H.P., *Quaternary science reviews*, Sep. 1998, 17(9-10), p.901-911, 62 refs.

Pleistocene, Quaternary deposits, Glacial geology, Glacier oscillation, Marine geology, Paleocology, Stratigraphy, Geochronology, Correlation, North Sea

53-3558

**Paleoecology and geochemistry of shallow marine ostracoda from the Sand Hole formation, Inner Silver Pit, southern North Sea.**

Ingram, C., *Quaternary science reviews*, Sep. 1998, 17(9-10), p.913-929, Refs. p.927-929.

Pleistocene, Paleoclimatology, Quaternary deposits, Marine deposits, Paleocology, Palynology, Boreholes, Stratigraphy, Geochemistry, Isotope analysis, North Sea

53-3559

**Middle Pleistocene pollen biostratigraphy in the central North Sea.**

Ekman, S.R., *Quaternary science reviews*, Sep. 1998, 17(9-10), p.931-944, 62 refs.

Pleistocene, Marine deposits, Quaternary deposits, Glacial deposits, Paleocology, Palynology, Vegetation patterns, Boreholes, Stratigraphy, Correlation, North Sea

53-3560

**Palynology, aminostratigraphy and U-series dating of marine Gortian interglacial sediments in Cork Harbour, southern Ireland.**

Dowling, L.A., Sejrup, H.P., Coxon, P., Heijnis, H., *Quaternary science reviews*, Sep. 1998, 17(9-10), p.945-962, Refs. p.960-962.

Pleistocene, Quaternary deposits, Clays, Paleocology, Palynology, Classifications, Boreholes, Stratigraphy, Radioactive age determination, Geochronology, Ireland

53-3561

**Variability in surface and deep water conditions in the Nordic seas during the last interglacial period.**

Fronval, T., Jansen, E., Hafliðason, H., Sejrup, H.P., *Quaternary science reviews*, Sep. 1998, 17(9-10), p.963-985, Refs. p.979-981.

Pleistocene, Paleoclimatology, Oceanography, Quaternary deposits, Marine deposits, Ocean currents, Water temperature, Ventilation, Ice rafting, Paleocology, Stratigraphy, Isotope analysis, Norwegian Sea, Iceland Sea, Greenland Sea

53-3562

**Ice and snow-type classification in the Vestfold Hills, East Antarctica, using Landsat-TM data and ground radiometer measurements.**

Boresjö Bronge, L., Bronge, C., *International journal of remote sensing*, Jan. 20, 1999, 20(2), Circumpolar Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Selected papers. Edited by P. Gudmandsen, p.225-240, 25 refs.

Snow surveys, Snow surface, Glacier surfaces, Spaceborne photography, Radiometry, LANDSAT, Spectra, Classifications, Image processing, Colored ice, Metamorphism (snow), Antarctica—Vestfold Hills

53-3563

**Atlas of Antarctica north of 72.1°S from GEO-SAT radar altimeter data.**

Herzfeld, U.C., Matassa, M.S., *International journal of remote sensing*, Jan. 20, 1999, 20(2), Circumpolar Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Selected papers. Edited by P. Gudmandsen, p.241-258, 42 refs.

Geophysical surveys, Height finding, Glacier surveys, Geodetic surveys, Topographic surveys, Radar echoes, Spacecraft, Sensor mapping, Glacier mass balance, Statistical analysis, Maps, Antarctica

53-3564

**Comparison of annual changes in winter ERS-1 SAR images and glacier mass balance of Slakbreen, Svalbard.**

Engeset, R.V., Ødegård, R.S., *International journal of remote sensing*, Jan. 20, 1999, 20(2), Circumpolar Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Selected papers. Edited by P. Gudmandsen, p.259-271, 16 refs.

Spaceborne photography, Synthetic aperture radar, Glacier surveys, Glacier mass balance, Surface properties, Seasonal variations, Backscattering, Profiles, Image processing, Norway—Svalbard

53-3565

**Glacier mapping of the Illecillewaet icefield, British Columbia, Canada, using Landsat TM and digital elevation data.**

Sidjak, R.W., Wheate, R.D., *International journal of remote sensing*, Jan. 20, 1999, 20(2), Circumpolar Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Selected papers. Edited by P. Gudmandsen, p.273-284, 19 refs.

Spaceborne photography, LANDSAT, Glacier surveys, Glacier surfaces, Topographic features, Sensor mapping, Height finding, Classifications, Image processing, Canada—British Columbia—Glacier National Park

53-3566

**Use of coincident DMSP SSM/I and OLS satellite data to improve snow cover detection and discrimination.**

Standley, A.P., Barrett, E.C., *International journal of remote sensing*, Jan. 20, 1999, 20(2), Circumpolar Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Selected papers. Edited by P. Gudmandsen, p.285-305, 15 refs.

Spaceborne photography, Snow surveys, Snow cover structure, Radiometry, Precipitation (meteorology), Cloud cover, Snow cover structure, Classifications, Accuracy, Resolution, Image processing, Norway

53-3567

**Geostatistical interpolation and classification of remote sensing data from ice surfaces.**

Herzfeld, U.C., *International journal of remote sensing*, Jan. 20, 1999, 20(2), Circumpolar Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Selected papers. Edited by P. Gudmandsen, p.307-327, 42 refs.

Geophysical surveys, Ice sheets, Glacier surveys, Ice surface, Glacier surges, Height finding, Spaceborne photography, Synthetic aperture radar, Image processing, Classifications, Statistical analysis, United States—Alaska—Bering Glacier, Antarctica—Lambert Glacier

53-3568

**Airborne line scanner measurements for ERS-1 SAR interpretation of sea ice.**

Bochert, A., *International journal of remote sensing*, Jan. 20, 1999, 20(2), Circumpolar Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Selected papers. Edited by P. Gudmandsen, p.329-348, 38 refs.

Spaceborne photography, Sea ice, Ice surveys, Synthetic aperture radar, Ice surface, Image processing, Classifications, Resolution

53-3569

**Multifrequency scatterometer measurements of Baltic Sea ice during EMAC-95.**

Dierking, W., Pettersson, M.I., Askne, J., *International journal of remote sensing*, Jan. 20, 1999, 20(2), Circumpolar Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Selected papers. Edited by P. Gudmandsen, p.349-372, 37 refs.

Remote sensing, Sea ice, Ice structure, Radar echoes, Backscattering, Classifications, Ice water interface, Snow ice interface, Snow cover effect, Mathematical models, Baltic Sea

53-3570

**Ice cover discrimination in the Greenland waters using first-order texture parameters of ERS SAR images.**

Gill, R.S., Valeur, H.H., *International journal of remote sensing*, Jan. 20, 1999, 20(2), Circumpolar Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Selected papers. Edited by P. Gudmandsen, p.373-385, 17 refs.

Spaceborne photography, Synthetic aperture radar, Sea ice, Surface structure, Young ice, Ice openings, Fast ice, Classifications, Image processing, Filters, Statistical analysis, Greenland

53-3571

**Summer environmental mapping potential of a large-scale ERS-1 SAR mosaic of the state of Alaska.**

Li, S.S., et al., *International journal of remote sensing*, Jan. 20, 1999, 20(2), Circumpolar Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Selected papers. Edited by P. Gudmandsen, p.387-401, 32 refs.

Geophysical surveys, Spaceborne photography, Sensor mapping, Synthetic aperture radar, Image processing, Terrain identification, Resolution, United States—Alaska

53-3572

**Rock-type discrimination by field TM and SPOT data, Tarn Flat, Antarctica.**

Casacchia, R., Mazzarini, F., Salvatori, R., Salvini, F., *International journal of remote sensing*, Jan. 20, 1999, 20(2), Circumpolar Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Selected papers. Edited by P. Gudmandsen, p.403-420, 24 refs.

Geological surveys, Lithology, Glacial deposits, Sensor mapping, Rock properties, Classifications, Spaceborne photography, LANDSAT, Radiometry, Reflectivity, Image processing, Antarctica—Victoria Land

53-3573

**Landsat TM mapping of evidence for current wind activity in northern Fennoscandia.**  
Käyhkö, J., Vuorela, A., Pye, K., Worsley, P., *International journal of remote sensing*, Jan. 20, 1999, 20(2), Circumpolar Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Selected papers. Edited by P. Gudmandsen, p.421-443, 64 refs.  
Geophysical surveys, Soil surveys, Spaceborne photography, LANDSAT, Bolian soils, Forest soils, Sensor mapping, Sediment transport, Subpolar regions, Wind factors, Image processing, Classifications, Finland, Sweden

53-3574

**Estimation of the soil heat flux/net radiation ratio based on spectral vegetation indexes in high-latitude arctic areas.**

Jacobsen, A., Hansen, B.U., *International journal of remote sensing*, Jan. 20, 1999, 20(2), Circumpolar Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Selected papers. Edited by P. Gudmandsen, p.445-461, 33 refs.

Soil surveys, Subpolar regions, Tundra soils, Vegetation patterns, Radiometry, Spaceborne photography, Heat flux, Radiation balance, Biomass, Indexes (ratios), Spectra, Greenland—Zackenbergl

53-3575

**Mapping plant communities in a local arctic landscape applying a scanned infrared aerial photograph in a geographical information system.**

Nilsen, L., Brossard, T., Joly, D., *International journal of remote sensing*, Jan. 20, 1999, 20(2), Circumpolar Symposium on Remote Sensing of the Polar Environments, 4th, Lyngby, Denmark, Apr. 29-May 1, 1996. Selected papers. Edited by P. Gudmandsen, p.463-480, 24 refs.

Sensor mapping, Spaceborne photography, Subpolar regions, Infrared photography, Vegetation patterns, Ecosystems, Classifications, Image processing, Norway—Svalbard

53-3576

**Motorized snow vehicle.**

Bibollett, J.C., Isambert, A., *U.S. Patent Office. Patent*, Apr. 25, 1989, n.p., USP-4,823,903.  
Motor vehicles, Snow removal equipment, Road maintenance

53-3577

**Snow plow alignment and storage system.**

Pester, W.D., *U.S. Patent Office. Patent*, Apr. 18, 1989, n.p., USP-4,821,435.  
Motor vehicles, Snow removal equipment, Road maintenance

53-3578

**Headwear with face tunnel for cold weather environment.**

Clanton, J.M., Harlow, J., Phillips, J.G., Jr., *U.S. Patent Office. Patent*, Apr. 25, 1989, n.p., USP-4,823,407.  
Clothing, Cold weather performance

53-3579

**Investigations of explosives and their conjugated transformation products in biotreatment matrices.**  
Thorne, P.G., Leggett, D.C., SR 99-03, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Feb. 1999, 12p., ADA-361 904, 27 refs.

Explosives, Soil pollution, Land reclamation  
Samples of soil that had been aerobically composted or anaerobically digested were extracted with solvent, then hydrolyzed with base and then acid. The concentrations of extractable TNT and its monoamino and diamino transformation products fell rapidly after the first days of treatment. Hydrolysis of the solvent-extracted residues released significant quantities of intact transformation products. The concentrations of RDX and HMX were reduced in a similar fashion without the appearance of significant quantities of transformation products. A generalized approach to biotreatment matrices analyses was developed. Spike-recovery studies indicated that analyses of bioremediation matrices should be considered as a qualitative descriptor of the progress of humification and the capacity to covalently conjugate transformation products rather than as a quantitative measure of the absolute amounts of various analytes present.

53-3580

**Validation of automated cloud top phase algorithms: distinguishing between cirrus clouds and snow in a priori analyses of AVHRR imagery.**

Hutchison, K.D., Etherton, B.J., Topping, P.C., *Optical engineering*, June 1997, 36(6), p.1727-1737, 11 refs.

Clouds (meteorology), Snow cover effect, Radiometry, Synthetic aperture radar, Image processing, Spaceborne photography, Albedo, Reflectivity, Brightness, Ice detection

53-3581

**Substrate induced crystallization of amorphous solid water at low temperatures.**

Dohnálek, Z., Ciolli, R.L., Kimmel, G.A., Stevenson, K.P., Smith, R.S., Kay, B.D., *Journal of chemical physics*, Mar. 22, 1999, 110(12), p.5489-5492, 20 refs.

Ice physics, Amorphous ice, Phase transformations, Low temperature research, Ice crystal growth, Spectra

53-3582

**Look at Canada's provincial and territorial geological surveys.**

Boon, J., *Geoscience Canada*, Dec. 1998, 25(4), p.145-170, With French summary. 6 refs.

Geological surveys, Organizations, Research projects, History, Canada

53-3583

**Neutron scattering by heavy water and ice under hydrostatic pressure of argon.**

Malenkov, G.G., Averkiev, A.A., Bobrowicz-Sarga, L., Bragin, S.I., Natkaniec, I., Smirnov, L.S., *Crystallography reports*, Jan.-Feb. 1999, 44(1), p.62-68, Translated from *Kristallografiia*. 36 refs.

Neutron scattering, Heavy water, High pressure tests, High pressure ice, Clathrates, Hydrates

53-3584

**Brittle compressive failure of orthotropic ice under triaxial loading.**

Schulson, E.M., Gratz, E.T., *Acta materialia*, Feb. 5, 1999, 47(3), p.745-755, 51 refs.

Ice physics, Ice mechanics, Ice strength, Compressive properties, Brittleness, Loads (forces), Ice deformation, Thin sections, Salt ice, Stress strain diagrams

53-3585

**Particle size account in electron probe x-ray microanalysis of solid sediments in snow cover.**

Belozeroval, O.I.U., Finkel'shtein, A.L., Pavlova, L.A., Barankevich, V.G., *Journal of analytical chemistry*, Jan. 1999, 54(1), p.24-27, Translated from *Zhurnal analiticheskoi khimii*. 10 refs.

Snow cover, X ray analysis, Microanalysis, Particle size distribution, Accuracy, Sediments

53-3586

**Detection of the structure of the wing of the Rayleigh line in ice, water, and heavy water using four-photon polarization spectroscopy.**

Andreeva, N.P., Bunkin, A.F., Nurmatov, A.A., *JETP letters*, Jan. 10, 1999, 69(1), p.11-14, Translated from *Pis'ma v zhurnal éksperimental'noi i teoreticheskoi fiziki*. 9 refs.

Spectra, Spectroscopy, Water structure, Heavy water, Ice structure, Ice physics

53-3587

**Seasonal spatial and diurnal variation in chemical composition of snow, ice and melt water from Naradu Glacier.**

Kalsotra, B.L., Sheikh, H.N., *Indian journal of environmental protection*, May 1996, 16(5), p.365-372, 32 refs.

Ice composition, Glacier ice, Meltwater, Snow composition, Seasonal variations, Glacial hydrology, Water chemistry, India—Himalaya Mountains

53-3588

**Ice physics and the natural environment.**

Wettlaufer, J.S., ed, Dash, J.G., ed, Untersteiner, N., ed, NATO Advanced Research Workshop on Ice Physics in the Natural and Endangered Environment, Maratea, Italy, Sep. 1997. Proceedings and NATO ASI, Series I. Global Environmental Change. Vol.56, Berlin, Springer-Verlag, 1999, 355p., Refs. passim. For individual papers see 53-3589 through 53-3617.

DLC QC926.32.I25 1999

Ice physics, Sea ice, Glacier ice, Geocryology, Ice melting, Extraterrestrial ice, Ice composition, Pollution, Environmental protection, Ice water interface, Ice crystal growth, Theories

53-3589

**History of the search for a theory of melting.**

Dash, J.G., NATO Advanced Research Workshop on Ice Physics in the Natural and Endangered Environment, Maratea, Italy, Sep. 1997. Proceedings. Ice physics and the natural environment. Edited by J.S. Wettlaufer et al and NATO ASI, Series I. Global and Environmental Change. Vol.56, Berlin, Springer-Verlag, 1999, p.11-21, 33 refs.

DLC QC926.32.I25 1999

Ice physics, Ice melting, Molecular energy levels, Vibration, Ice surface, Surface properties, Ice water interface, Adsorption, Phase transformations, Theories, Thermodynamics

53-3590

**Nucleation and surface melting of ice.**

Oxtoby, D.W., NATO Advanced Research Workshop on Ice Physics in the Natural and Endangered Environment, Maratea, Italy, Sep. 1997. Proceedings. Ice physics and the natural environment. Edited by J.S. Wettlaufer et al and NATO ASI, Series I. Global and Environmental Change. Vol.56, Berlin, Springer-Verlag, 1999, p.23-38, 43 refs.

DLC QC926.32.I25 1999

Ice physics, Ice melting, Melting points, Ice surface, Molecular energy levels, Ice water interface, Phase transformations, Homogeneous nucleation, Analysis (mathematics), Theories, Thermodynamics

53-3591

**Crystal growth, surface phase transitions and thermomolecular pressure.**

Wettlaufer, J.S., NATO Advanced Research Workshop on Ice Physics in the Natural and Endangered Environment, Maratea, Italy, Sep. 1997. Proceedings. Ice physics and the natural environment. Edited by J.S. Wettlaufer et al and NATO ASI, Series I. Global and Environmental Change. Vol.56, Berlin, Springer-Verlag, 1999, p.39-67, Refs. p.64-67.

DLC QC926.32.I25 1999

Ice physics, Ice melting, Ice crystal growth, Ice crystal structure, Anisotropy, Phase transformations, Ice surface, Vapor pressure, Ice water interface, Surface roughness, Thermodynamics, Analysis (mathematics)

53-3592

**Some aspects of the physics of glaciers.**

Paterson, W.S.B., NATO Advanced Research Workshop on Ice Physics in the Natural and Endangered Environment, Maratea, Italy, Sep. 1997. Proceedings. Ice physics and the natural environment. Edited by J.S. Wettlaufer et al and NATO ASI, Series I. Global and Environmental Change. Vol.56, Berlin, Springer-Verlag, 1999, p.69-88, 38 refs.

DLC QC926.32.I25 1999

Ice physics, Glacier flow, Ice mechanics, Ice deformation, Glacier surges, Unsteady flow, Calving, Ice rafting, Glacier mass balance, Pleistocene, Analysis (mathematics)

53-3593

**Stable isotope records from Greenland deep ice cores: the climate signal and the role of diffusion.**

Johnsen, S.J., Clausen, H.B., Jouzel, J., Schwander, J., Sveinbjörnsdóttir, A.E., White, J., NATO Advanced Research Workshop on Ice Physics in the Natural and Endangered Environment, Maratea, Italy, Sep. 1997. Proceedings. Ice physics and the natural environment. Edited by J.S. Wettlaufer et al and NATO ASI, Series I. Global and Environmental Change. Vol.56, Berlin, Springer-Verlag, 1999, p.89-107, Refs. p.103-107.

DLC QC926.32.I25 1999

Pleistocene, Paleoclimatology, Climatic changes, Air temperature, Ice sheets, Ice cores, Vapor diffusion, Self diffusion, Isotope analysis, Profiles, Mathematical models, Greenland

53-3594

**Present and past glaciations: a geological perspective.**

Birkenmajer, K., NATO Advanced Research Workshop on Ice Physics in the Natural and Endangered Environment, Maratea, Italy, Sep. 1997. Proceedings. Ice physics and the natural environment. Edited by J.S. Wettlaufer et al and NATO ASI, Series I. Global and Environmental Change. Vol.56, Berlin, Springer-Verlag, 1999, p.109-119, 38 refs.

DLC QC926.32.I25 1999

Pleistocene, Paleoclimatology, Glaciation, Glacier oscillation, Glacial geology, Geochronology, Ice age theory, Antarctica

53-3595

**Ice in the troposphere.**

Baker, M.B., NATO Advanced Research Workshop on Ice Physics in the Natural and Endangered Environment, Maratea, Italy, Sep. 1997. Proceedings. Edited by J.S. Wettlaufer et al and NATO ASI, Series I. Global and Environmental Change. Vol.56, Berlin, Springer-Verlag, 1999, p.121-142, 92 refs.

DLC QC926.32.I25 1999

Climatology, Ice physics, Cloud physics, Ice sublimation, Ice vapor interface, Ice crystal growth, Particles, Ice nuclei, Impurities, Heterogeneous nucleation, Cloud electrification, Charge transfer

53-3596

**Physico-chemistry of polar stratospheric clouds.**

Peter, T., NATO Advanced Research Workshop on Ice Physics in the Natural and Endangered Environment, Maratea, Italy, Sep. 1997. Proceedings. Ice physics and the natural environment. Edited by J.S. Wettlaufer et al and NATO ASI, Series I. Global and Environmental Change. Vol.56, Berlin, Springer-Verlag, 1999, p.143-167, 67 refs.

DLC QC926.32.I25 1999

Climatology, Cloud physics, Phase transformations, Ozone, Polar stratospheric clouds, Chemical properties, Particles, Aerosols, Ice vapor interface, Heterogeneous nucleation

53-3597

**Minimal model of sea ice and climate.**

Thorndike, A., NATO Advanced Research Workshop on Ice Physics in the Natural and Endangered Environment, Maratea, Italy, Sep. 1997. Proceedings. Ice physics and the natural environment. Edited by J.S. Wettlaufer et al and NATO ASI, Series I. Global and Environmental Change. Vol.56, Berlin, Springer-Verlag, 1999, p.169-183, 4 refs.

DLC QC926.32.I25 1999

Climatology, Global warming, Greenhouse effect, Sea ice, Air temperature, Air ice water interaction, Albedo, Ice cover effect, Radiation balance, Advection, Mathematical models

53-3598

**Forecasting ice on lakes, estuaries and shelf seas.**

Omstedt, A., NATO Advanced Research Workshop on Ice Physics in the Natural and Endangered Environment, Maratea, Italy, Sep. 1997. Proceedings. Ice physics and the natural environment. Edited by J.S. Wettlaufer et al and NATO ASI, Series I. Global and Environmental Change. Vol.56, Berlin, Springer-Verlag, 1999, p.185-207, 27 refs.

DLC QC926.32.I25 1999

Ice forecasting, Lake ice, River ice, Sea ice, Estuaries, Air ice water interaction, Surface temperature, Ice formation, Cooling rate, Ice cover effect, Mathematical models, Thermodynamics

53-3599

**On productivity in ice-covered polar oceans.**

Lønne, O.J., NATO Advanced Research Workshop on Ice Physics in the Natural and Endangered Environment, Maratea, Italy, Sep. 1997. Proceedings. Ice physics and the natural environment. Edited by J.S. Wettlaufer et al and NATO ASI, Series I. Global and Environmental Change. Vol.56, Berlin, Springer-Verlag, 1999, p.209-218, 31 refs.

DLC QC926.32.I25 1999

Marine biology, Ecosystems, Biomass, Algae, Ice water interface, Ice bottom surface, Sea ice distribution, Ice formation, Drift, Ice cover effect

53-3600

**Freezing of soils: ice in a porous medium and its environmental significance.**

Williams, P.J., NATO Advanced Research Workshop on Ice Physics in the Natural and Endangered Environment, Maratea, Italy, Sep. 1997. Proceedings. Ice physics and the natural environment. Edited by J.S. Wettlaufer et al and NATO ASI, Series I. Global and Environmental Change. Vol.56, Berlin, Springer-Verlag, 1999, p.219-239, 36 refs.

DLC QC926.32.I25 1999

Geocryology, Soil freezing, Frost heave, Frozen ground mechanics, Porosity, Microstructure, Unfrozen water content, Capillarity, Thermodynamic properties, Soil conservation

53-3601

**Ground freezing technology for environmental remediation.**

Dash, J.G., NATO Advanced Research Workshop on Ice Physics in the Natural and Endangered Environment, Maratea, Italy, Sep. 1997. Proceedings. Ice physics and the natural environment. Edited by J.S. Wettlaufer et al and NATO ASI, Series I. Global and Environmental Change. Vol.56, Berlin, Springer-Verlag, 1999, p.241-251, 23 refs.

DLC QC926.32.I25 1999

Geocryology, Soil pollution, Radioactive wastes, Leaching, Thermal diffusion, Artificial freezing, Cryogenic structures, Linings, Waste treatment, Soil conservation, Environmental protection

53-3602

**Nuclear contamination and environmental damage from oil spills in polar regions of FSU.**

Popova, L., NATO Advanced Research Workshop on Ice Physics in the Natural and Endangered Environment, Maratea, Italy, Sep. 1997. Proceedings. Ice physics and the natural environment. Edited by J.S. Wettlaufer et al and NATO ASI, Series I. Global and Environmental Change. Vol.56, Berlin, Springer-Verlag, 1999, p.253-271, 18 refs.

DLC QC926.32.I25 1999

Air pollution, Soil pollution, Subpolar regions, Nuclear explosions, Fallout, Radioactive wastes, Oil spills, Damage, Environmental impact, Environmental protection, International cooperation, Arctic Ocean, Barents Sea, Russia—Kara Sea

53-3603

**Lecture notes on water in ice: microscopic and geophysical scales.**

Nye, J.F., NATO Advanced Research Workshop on Ice Physics in the Natural and Endangered Environment, Maratea, Italy, Sep. 1997. Proceedings. Ice physics and the natural environment. Edited by J.S. Wettlaufer et al and NATO ASI, Series I. Global and Environmental Change. Vol.56, Berlin, Springer-Verlag, 1999, p.273-279, 21 refs.

DLC QC926.32.I25 1999

Ice physics, Glacier ice, Glacial hydrology, Lake bursts, Ice water interface, Freezing points, Analysis (mathematics)

53-3604

**Local ice deformation under the influence of natural forces. Field observations and analyses of cyclic oscillations.**

Aksenov, E., Wadhams, P., NATO Advanced Research Workshop on Ice Physics in the Natural and Endangered Environment, Maratea, Italy, Sep. 1997. Proceedings. Ice physics and the natural environment. Edited by J.S. Wettlaufer et al and NATO ASI, Series I. Global and Environmental Change. Vol.56, Berlin, Springer-Verlag, 1999, p.281-284, 10 refs.

DLC QC926.32.I25 1999

Oceanography, Sea ice, Water waves, Gravity waves, Ice mechanics, Ice water interface, Ice deformation, Oscillations, Spectra

53-3605

**Corrugations of the sea-ice-ocean interface caused by ocean shear.**

Feltham, D.L., Worster, M.G., NATO Advanced Research Workshop on Ice Physics in the Natural and Endangered Environment, Maratea, Italy, Sep. 1997. Proceedings. Ice physics and the natural environment. Edited by J.S. Wettlaufer et al and NATO ASI, Series I. Global and Environmental Change. Vol.56, Berlin, Springer-Verlag, 1999, p.285-287, 7 refs.

DLC QC926.32.I25 1999

Oceanography, Sea ice, Ice mechanics, Pressure ridges, Ice bottom surface, Permeability, Surface roughness, Topographic features, Air ice water interaction, Shear flow, Turbulent flow

53-3606

**Climatic changes in the mountain glacier area of Pamir.**

Finaev, A., NATO Advanced Research Workshop on Ice Physics in the Natural and Endangered Environment, Maratea, Italy, Sep. 1997. Proceedings. Ice physics and the natural environment. Edited by J.S. Wettlaufer et al and NATO ASI, Series I. Global and Environmental Change. Vol.56, Berlin, Springer-Verlag, 1999, p.289-294, 8 refs.

DLC QC926.32.I25 1999

Climatology, Climatic changes, Glacial hydrology, Mountain glaciers, Glacier ablation, Air temperature, Statistical analysis, Tajikistan, CIS—Central Asia, Pamirs, Pamir-Alay

53-3607

**Geometric selection in ice polycrystals: concavity, faceting, and kinetics.**

Hodgkin, V.A., Wettlaufer, J.S., Dash, J.G., NATO Advanced Research Workshop on Ice Physics in the Natural and Endangered Environment, Maratea, Italy, Sep. 1997. Proceedings. Ice physics and the natural environment. Edited by J.S. Wettlaufer et al and NATO ASI, Series I. Global and Environmental Change. Vol.56, Berlin, Springer-Verlag, 1999, p.295-297, 3 refs.

DLC QC926.32.I25 1999

Ice physics, Ice microstructure, Ice crystal growth, Ice crystal structure, Ice water interface, Topographic features, Mechanical tests

53-3608

**Snowpack accumulation trends in California.**

Johnson, T., Dozier, J., Michaelsen, J., NATO Advanced Research Workshop on Ice Physics in the Natural and Endangered Environment, Maratea, Italy, Sep. 1997. Proceedings. Ice physics and the natural environment. Edited by J.S. Wettlaufer et al and NATO ASI, Series I. Global and Environmental Change. Vol.56, Berlin, Springer-Verlag, 1999, p.299-304, 6 refs.

DLC QC926.32.I25 1999

Precipitation (meteorology), Snow hydrology, Snow accumulation, Altitude, Seasonal variations, Snow courses, Sampling, Statistical analysis, United States—California

53-3609

**Neutron spectroscopy of vapour deposited amorphous ice.**

Kolesnikov, A.I., Li, J.C., NATO Advanced Research Workshop on Ice Physics in the Natural and Endangered Environment, Maratea, Italy, Sep. 1997. Proceedings. Ice physics and the natural environment. Edited by J.S. Wettlaufer et al and NATO ASI, Series I. Global and Environmental Change. Vol.56, Berlin, Springer-Verlag, 1999, p.305-307, 14 refs.

DLC QC926.32.I25 1999

Ice physics, Amorphous ice, Ice vapor interface, Adsorption, Ice density, Ice spectroscopy, Neutron scattering

53-3610

**Comet 46P/Wirtanen: the influence of grain sintering on the evolution layer.**

Kossacki, K.J., Szutowicz, S., NATO Advanced Research Workshop on Ice Physics in the Natural and Endangered Environment, Maratea, Italy, Sep. 1997. Proceedings. Ice physics and the natural environment. Edited by J.S. Wettlaufer et al and NATO ASI, Series I. Global and Environmental Change. Vol.56, Berlin, Springer-Verlag, 1999, p.309-313, 12 refs.

DLC QC926.32.I25 1999

Extraterrestrial ice, Satellites (natural), Surface properties, Ice physics, Ice composition, Dust, Vapor diffusion, Ice sublimation, Sintering, Porosity, Models

53-3611

**Water ice as the main component of icy satellites.**

Leliwa-Kopystynski, J., NATO Advanced Research Workshop on Ice Physics in the Natural and Endangered Environment, Maratea, Italy, Sep. 1997. Proceedings. Ice physics and the natural environment. Edited by J.S. Wettlaufer et al and NATO ASI, Series I. Global and Environmental Change. Vol.56, Berlin, Springer-Verlag, 1999, p.315-320, 7 refs.

DLC QC926.32.I25 1999

Extraterrestrial ice, Satellites (natural), Ice physics, Regolith, Ice composition, Porosity, Phase transformations, Rheology, Models

53-3612

**Surface melting of ice and thunderstorm electrification.**

Mason, B.L., Dash, J.G., NATO Advanced Research Workshop on Ice Physics in the Natural and Endangered Environment, Maratea, Italy, Sep. 1997. Proceedings. Ice physics and the natural environment. Edited by J.S. Wettlaufer et al and NATO ASI, Series I. Global and Environmental Change. Vol.56, Berlin, Springer-Verlag, 1999, p.321-324, 5 refs.

DLC QC926.32.I25 1999

Precipitation (meteorology), Cloud physics, Thunderstorms, Cloud electrification, Ice crystal growth, Particles, Ice melting, Ice crystal collision, Mass transfer, Simulation

53-3613

**Mathematical model of wide subglacial water drainage channels.**

Ng, F.S.L., NATO Advanced Research Workshop on Ice Physics in the Natural and Endangered Environment, Maratea, Italy, Sep. 1997. Proceedings. Ice physics and the natural environment. Edited by J.S. Wettlaufer et al and NATO ASI, Series I. Global and Environmental Change. Vol.56, Berlin, Springer-Verlag, 1999, p.325-327, 7 refs.

DLC QC926.32.I25 1999

Glacial hydrology, Subglacial drainage, Ice water interface, Turbulent flow, Glacier beds, Channels (waterways), Mathematical models

53-3614

**High uptake efficiency and conductivity of polycrystalline ice: implication to UT/LS clouds and contrails.**

Persiantseva, N.V., Popovitcheva, O.B., Rakhimova, T.V., NATO Advanced Research Workshop on Ice Physics in the Natural and Endangered Environment, Maratea, Italy, Sep. 1997. Proceedings. Ice physics and the natural environment. Edited by J.S. Wettlaufer et al and NATO ASI, Series I. Global and Environmental Change. Vol.56, Berlin, Springer-Verlag, 1999, p.329-334, 14 refs.

DLC QC926.32.I25 1999

Cloud physics, Condensation trails, Polar stratospheric clouds, Heterogeneous nucleation, Aerosols, Ice vapor interface, Simulation

53-3615

**Methane bubble inclusions in ice on high latitude lakes.**

Phelps, A.R., Jeffries, M.O., NATO Advanced Research Workshop on Ice Physics in the Natural and Endangered Environment, Maratea, Italy, Sep. 1997. Proceedings. Ice physics and the natural environment. Edited by J.S. Wettlaufer et al and NATO ASI, Series I. Global and Environmental Change. Vol.56, Berlin, Springer-Verlag, 1999, p.335-339, 10 refs.

DLC QC926.32.I25 1999

Lake ice, Ice composition, Bubbles, Nucleation, Natural gas, Gas inclusions, Ice cores, Drill core analysis, Seasonal variations

53-3616

**Modelling sea ice roughness in the Arctic.**

Steiner, N., Harder, M., Lemke, P., NATO Advanced Research Workshop on Ice Physics in the Natural and Endangered Environment, Maratea, Italy, Sep. 1997. Proceedings. Ice physics and the natural environment. Edited by J.S. Wettlaufer et al and NATO ASI, Series I. Global and Environmental Change. Vol.56, Berlin, Springer-Verlag, 1999, p.341-345, 19 refs.

DLC QC926.32.I25 1999

Sea ice, Ice physics, Ice mechanics, Surface roughness, Pressure ridges, Distribution, Ice deformation, Statistical analysis, Models

53-3617

**Dynamical calculations for the proton ordered ice II structure.**

Wang, Y., Dong, S.L., Li, J.C., NATO Advanced Research Workshop on Ice Physics in the Natural and Endangered Environment, Maratea, Italy, Sep. 1997. Proceedings. Ice physics and the natural environment. Edited by J.S. Wettlaufer et al and NATO ASI, Series I. Global and Environmental Change. Vol.56, Berlin, Springer-Verlag, 1999, p.347-349, 8 refs.

DLC QC926.32.I25 1999

Ice physics, Molecular structure, Hydrogen bonds, Protons, Molecular energy levels, Ice spectroscopy, Neutron scattering, Spectra

53-3618

**Using the temporal variability of satellite radar altimetric observations to map surface properties of the antarctic ice sheet.**

Legrésy, B., Rémy, F., *Journal of glaciology*, 1998, 44(147), p.197-206, 30 refs.

Glacier surveys, Spaceborne photography, Height finding, Sensor mapping, Ice sheets, Surface properties, Topographic features, Radar echoes, Attenuation, Grain size, Snow cover structure, Antarctica

53-3619

**Satellite gravity and the mass balance of the antarctic ice sheet.**

Bentley, C.R., Wahr, J.M., *Journal of glaciology*, 1998, 44(147), p.207-213, 17 refs.

Geophysical surveys, Glacier mass balance, Ice sheets, Glacier surveys, Glacier thickness, Isostasy, Gravity, Snow accumulation, Spacecraft, Correlation, Antarctica

53-3620

**Physical and chemical studies in the region of the southern slope of Mount Elbrus, Caucasus.**

Bazhev, A.M., Rototavaeva, O., Heintzenberg, J., Stenberg, M., Pinglot, J.F., *Journal of glaciology*, 1998, 44(147), p.214-222, 26 refs.

Mountain glaciers, Glacier ice, Impurities, Fallout, Aerosols, Ice composition, Snow composition, Ice cores, Stratigraphy, Ice microstructure, Ion density (concentration), Chemical analysis, Russia—Caucasus

53-3621

**Basal sliding of Ice Stream B, West Antarctica.**

Engelhardt, H., Kamb, B., *Journal of glaciology*, 1998, 44(147), p.223-230, 28 refs.

Glacier flow, Basal sliding, Shear flow, Ice solid interface, Ice mechanics, Boreholes, Markers, Velocity measurement, Oscillations, Models, Antarctica—Ross Ice Shelf, Antarctica—West Antarctica

53-3622

**1 year record of global radiation and albedo in the ablation zone of Morteratschgletscher, Switzerland.**

Oerlemans, J., Knap, W.H., *Journal of glaciology*, 1998, 44(147), p.231-238, 13 refs.

Glacial hydrology, Mountain glaciers, Glacier mass balance, Glacier melting, Solar radiation, Radiance, Photometry, Seasonal variations, Albedo, Ice optics, Models, Switzerland—Morteratschgletscher

53-3623

**Reconnaissance study of glacier energy balance in North Greenland, 1993-94.**

Braithwaite, R.J., Konzelmann, T., Marty, C., Olesen, O.B., *Journal of glaciology*, 1998, 44(147), p.239-247, 43 refs.

Glacier surveys, Glacier oscillation, Glacier ablation, Ice heat flux, Turbulent exchange, Ice air interface, Surface energy, Radiation balance, Albedo, Diurnal variations, Mathematical models, Greenland

53-3624

**Comparisons of sea-ice velocity fields from ERS-1 SAR and a dynamic model.**

Leppäranta, M., Sun, Y., Haapala, J., *Journal of glaciology*, 1998, 44(147), p.248-262, 26 refs.

Sea ice, Ice mechanics, Drift, Velocity measurement, Ice deformation, Air ice water interaction, Spaceborne photography, Radiometry, Synthetic aperture radar, Rheology, Ice models, Mathematical models, Baltic Sea

53-3625

**Geometric evolution and ice dynamics during a surge of Bakaninbreen, Svalbard.**

Murray, T., Dowdeswell, J.A., Drewry, D.J., Frearson, I., *Journal of glaciology*, 1998, 44(147), p.263-272, 35 refs.

Glacier surges, Glacier flow, Glacier oscillation, Velocity measurement, Dynamic properties, Strains, Shear stress, Ice mechanics, Profiles, Radio echo soundings, Norway—Svalbard

53-3626

**Isotopic diffusion in polar firn: implications for interpretation of seasonal climate parameters in ice-core records, with emphasis on central Greenland.**

Cuffey, K.M., Steig, E.J., *Journal of glaciology*, 1998, 44(147), p.273-284, 44 refs.

Paleoclimatology, Climatic changes, Ice sheets, Firn, Ice cores, Water vapor, Vapor diffusion, Isotope analysis, Analysis (mathematics), Seasonal variations, Snow air interface, Greenland

53-3627

**Stability of a viscous till sheet coupled with ice flow, considered at wavelengths less than the ice thickness.**

Hindmarsh, R.C.A., *Journal of glaciology*, 1998, 44(147), p.285-292, 19 refs.

Glacial geology, Ice mechanics, Glacier flow, Viscous flow, Shear flow, Glacial till, Glacier beds, Deformation, Stability, Ice solid interface, Analysis (mathematics)

53-3628

**Drumlinization and drumlin-forming instabilities: viscous till mechanisms.**

Hindmarsh, R.C.A., *Journal of glaciology*, 1998, 44(147), p.293-314, 56 refs.

Glacial geology, Glacial till, Geomorphology, Glacier flow, Viscous flow, Sediment transport, Ice solid interface, Plastic deformation, Rheology, Analysis (mathematics), Theories

53-3629

**Mass balance of glaciers other than the ice sheets.**

Cogley, J.G., Adams, W.P., *Journal of glaciology*, 1998, 44(147), p.315-325, 59 refs.

Glacier surveys, Glacier mass balance, Glacier oscillation, Seasonal variations, Statistical analysis, Simulation, Forecasting, Accuracy

53-3630

**Imaging of firn and bubbly ice in coaxial reflected light: a new technique for the characterization of these porous media.**

Arnaud, L., Gay, M., Barnola, J.M., Duval, P., *Journal of glaciology*, 1998, 44(147), p.326-332, 21 refs.

Glaciology, Firn, Structural analysis, Ice microstructure, Ice crystal size, Microrelief, Porosity, Bubbles, Imaging, Reflectivity, Photographic techniques, Photo-interpretation

53-3631

**Mass balance of McCall Glacier, Brooks Range, Alaska, U.S.A.; its regional relevance and implications for climate change in the Arctic.**

Rabus, B.T., Echelmeyer, K.A., *Journal of glaciology*, 1998, 44(147), p.333-351, 47 refs.

Glacier surveys, Glacier oscillation, Mountain glaciers, Glacier mass balance, Profiles, Seasonal variations, Climatic changes, Climatic factors, Meteorological data, Mathematical models, Correlation, United States—Alaska—McCall Glacier

53-3632

**Detection of abrupt changes in glacier mass balance in the Tien Shan Mountains.**

Cao, M.S., *Journal of glaciology*, 1998, 44(147), p.352-358, 18 refs.

Mountain glaciers, Glacier mass balance, Glacier oscillation, Seasonal variations, Meteorological factors, Climatic changes, Air temperature, Statistical analysis, China—Tian Shan, China—Urumqi Glacier No.1, Kazakhstan—Tuyuksu Glacier, CIS—Tien Shan

53-3633

**Short-term velocity and water-pressure variations down-glacier from a riegel, Storglaciären, Sweden.**

Hanson, B., Hooke, R.L., Grace, E.M., Jr., *Journal of glaciology*, 1998, 44(147), p.359-367, 35 refs.

Glacial hydrology, Glacier flow, Velocity measurement, Basal sliding, Subglacial drainage, Water pressure, Ice water interface, Diurnal variations, Sweden—Storglaciären

53-3634

**Comparison of a three-dimensional model for glacier flow with field data from Haut Glacier d'Arolla, Switzerland.**

Hubbard, A., Blatter, H., Nienow, P., Mair, D., Hubbard, B., *Journal of glaciology*, 1998, 44(147), p.368-378, 15 refs.

Mountain glaciers, Glacier flow, Basal sliding, Glacier oscillation, Glacier tongues, Velocity measurement, Surface structure, Crevasses, Stress concentration, Models, Switzerland—Haut Glacier d'Arolla

53-3635

**Sliding velocity over a sinusoidal bed at high water pressure.**

Truffer, M., Iken, A., *Journal of glaciology*, 1998, 44(147), p.379-382, 16 refs.

Glacier flow, Glacial hydrology, Glacier beds, Basal sliding, Ice solid interface, Shear stress, Water pressure, Velocity, Mathematical models

53-3636

**Sensitivity of Rhonegletscher, Switzerland, to climate change: experiments with a one-dimensional flowline model.**

Wallinga, J., Van de Wal, R.S.W., *Journal of glaciology*, 1998, 44(147), p.383-393, 38 refs.

Glacier oscillation, Glacier melting, Glacier mass balance, Mountain glaciers, Glacier flow, Velocity, Profiles, Climatic changes, Global warming, Temperature effects, Mathematical models, Switzerland—Rhonegletscher

53-3637

**Evolution of a surge-type glacier in its quiescent phase: Kongsvegen, Spitsbergen, 1964-1995.**

Melvoll, K., Hagen, J.O., *Journal of glaciology*, 1998, 44(147), p.394-404, 68 refs.

Glacier flow, Glacier surges, Glacier oscillation, Velocity measurement, Glacier mass balance, Glacier thickness, Shear stress, Seasonal variations, Markers, Norway—Spitsbergen

53-3638

**Ice-shelf dynamics near the front of the Filchner-Ronne Ice Shelf, Antarctica, revealed by SAR Interferometry.**

Rignot, E., MacAyeal, D.R., *Journal of glaciology*, 1998, 44(147), p.405-418, 27 refs.

Spaceborne photography, Synthetic aperture radar, Ice sheets, Glacier flow, Glacier oscillation, Ice edge, Ice shelves, Ice breakup, Ice deformation, Calving, Aggregates, Antarctica—Ronne Ice Shelf, Antarctica—Filchner Ice Shelf

53-3639

**Ice-shelf dynamics near the front of the Filchner-Ronne Ice Shelf, Antarctica, revealed by SAR Interferometry: model/interferogram comparison.**

MacAyeal, D.R., Rignot, E., Hulbe, C.L., *Journal of glaciology*, 1998, 44(147), p.419-428, 13 refs.

Ice sheets, Ice shelves, Glacier flow, Calving, Ice edge, Surface structure, Aggregates, Mechanical properties, Spaceborne photography, Synthetic aperture radar, Simulation, Correlation, Antarctica—Filchner Ice Shelf, Antarctica—Ronne Ice Shelf

53-3640

**Inter-borehole electrical resistivity imaging of englacial drainage.**

Hubbard, B., Binley, A., Slater, L., Middleton, R., Kulesa, B., *Journal of glaciology*, 1998, 44(147), p.429-434, 33 refs.

Glaciology, Glacial hydrology, Subglacial drainage, Hydrogeology, Borehole instruments, Electrical measurement, Electrical resistivity, Imaging, Design, Switzerland—Haut Glacier d'Arolla

53-3641

**Late Pleistocene-Holocene marine conditions in the Ross Sea, Antarctica: evidence from the diatom record.**

Cunningham, W.L., Leventer, A., Andrews, J.T., Jennings, A.E., Licht, K.J., *Holocene*, Mar. 1999, 9(2), p.129-139, 74 refs.

Pleistocene, Paleoclimatology, Oceanography, Marine deposits, Paleocology, Biomass, Sea ice distribution, Ice melting, Sedimentation, Radioactive age determination, Geochronology, Stratigraphy, Drill core analysis, Antarctica—Ross Sea

53-3642

**Tree-ring-dated 'Little Ice Age' histories of maritime glaciers from western Prince William Sound, Alaska.**

Wiles, G.C., Barclay, D.J., Calkin, P.E., *Holocene*, Mar. 1999, 9(2), p.163-173, 36 refs.

Glacial geology, Glacier oscillation, Paleocology, Glacial deposits, Moraines, Calving, Glacier melting, Radioactive age determination, Geochronology, United States—Alaska—Prince William Sound

53-3643

**Revised chronology for aeolian activity in subarctic Fennoscandia during the Holocene.**

Käyhkö, J.A., Worsley, P., Pye, K., Clarke, M.L., *Holocene*, Mar. 1999, 9(2), p.195-205, Refs. p.204-205.

Geomorphology, Paleoclimatology, Tundra terrain, Sands, Forest lines, Landscape development, Paleocology, Eolian soils, Luminescence, Geochronology, Radioactive age determination, Finland

53-3644

**Changes in carbon and nitrogen cycling during tree-line retreat recorded in the isotopic content of lacustrine organic matter, western Taimyr Peninsula, Russia.**

Wolfe, B.B., Edwards, T.W.D., Aravena, R., *Holocene*, Mar. 1999, 9(2), p.215-222, Refs. p.221-222.

Paleocology, Forest lines, Tundra vegetation, Nutrient cycle, Quaternary deposits, Lacustrine deposits, Geochemical cycles, Organic soils, Carbon isotopes, Soil analysis, Russia—Taimyr Peninsula

53-3645

**Establishment of *Fagus sylvatica* at the stand-scale in southern Sweden.**

Björkman, L., *Holocene*, Mar. 1999, 9(2), p.237-245, Refs. p.243-245.

Paleocology, Forest lines, Subarctic landscapes, Migration, Vegetation patterns, Peat, Palynology, Quaternary deposits, Climatic factors, Geochronology, Sweden

53-3646

**Bi-polar ocean linkages: evidence from late-Holocene antarctic marine and Greenland ice-core records.**

Domack, E.W., Mayewski, P.A., *Holocene*, Mar. 1999, 9(2), p.247-251, Refs. p.250-251.

Paleoclimatology, Climatic changes, Ocean currents, Marine deposits, Paleocology, Biomass, Ice cores, Correlation, Drill core analysis, Geochronology, Greenland, Antarctica—Antarctic Peninsula

53-3647

**Comparison of present and doubled CO<sub>2</sub> climates and feedbacks simulated by three general circulation models.**

Watterson, I.G., Dix, M.R., Colman, R.A., *Journal of geophysical research*, Jan. 27, 1999, 104(D2), p.1943-1956, 42 refs.

Climatology, Climatic changes, Global warming, Surface temperature, Carbon dioxide, Sea ice distribution, Snow cover distribution, Meteorological factors, Forecasting, Models, Simulation, Correlation

53-3648

**Simulated time-dependent climate response to solar radiative forcing since 1600.**

Rind, D., Lean, J., Healy, R., *Journal of geophysical research*, Jan. 27, 1999, 104(D2), p.1973-1990, 45 refs.

Climatology, Climatic changes, Global change, Surface temperature, Temperature variations, Insolation, Solar radiation, Radiation absorption, Periodic variations, Sea ice distribution, Ice cover effect, Simulation

53-3649

**Effect of air-sea-ice interaction on winter 1996 southern ocean subpolar storm distribution.**

Yuan, X.J., Martinson, D.G., Liu, W.T., *Journal of geophysical research*, Jan. 27, 1999, 104(D2), p.1991-2007, Refs. p.2005-2007.

Climatology, Polar atmospheres, Surface temperature, Storms, Atmospheric circulation, Atmospheric pressure, Air ice water interaction, Sea ice distribution, Ice edge, Ice cover effect, Radiometry, Indian Ocean, Antarctica—Weddell Sea, Antarctica—Ross Sea

## 53-3650

**Interannual variability in net accumulation on the Greenland ice sheet: observations and implications for mass balance measurements.**

Van der Veen, C.J., Bolzan, J.F., *Journal of geophysical research*, Jan. 27, 1999, 104(D2), p.2009-2014, 16 refs.

Climatology, Polar atmospheres, Ice sheets, Glacier mass balance, Altitude, Water content, Ice cores, Seasonal variations, Sampling, Statistical analysis, Isotope analysis, Forecasting, Greenland

## 53-3651

**Intercomparison of two stratospheric analyses: temperatures relevant to polar stratospheric cloud formation.**

Pawson, S., Krüger, K., Swinbank, R., Bailey, M., O'Neill, A., *Journal of geophysical research*, Jan. 27, 1999, 104(D2), p.2041-2050, 13 refs.

Climatology, Polar atmospheres, Cloud physics, Phase transformations, Polar stratospheric clouds, Air temperature, Seasonal variations, Sounding, Statistical analysis, Forecasting

## 53-3652

**Downwelling spectral radiance observations at the SHEBA ice station: water vapor continuum measurements from 17 to 26 $\mu$ m.**

Tobin, D.C., et al, *Journal of geophysical research*, Jan. 27, 1999, 104(D2), p.2081-2092, 44 refs.

Climatology, Marine atmospheres, Polar atmospheres, Radiation balance, Infrared radiation, Radiance, Radiation absorption, Water vapor, Spectra, Radiometry, Photometry, Arctic Ocean

## 53-3653

**Monte Carlo calculations of polarized microwave radiation emerging from cloud structures.**

Roberti, L., Kummerow, C., *Journal of geophysical research*, Jan. 27, 1999, 104(D2), p.2093-2104, 25 refs.

Precipitation (meteorology), Cloud physics, Radiation balance, Scattering, Polarization (waves), Radiometry, Attenuation, Snow pellets, Falling snow, Orientation, Snow optics, Models

## 53-3654

**Lidar and numerical studies on the different evolution of vortex pair and secondary wake in young contrails.**

Sussmann, R., Gierens, K.M., *Journal of geophysical research*, Jan. 27, 1999, 104(D2), p.2131-2142, 30 refs.

Climatology, Cloud physics, Condensation trails, Fluid dynamics, Turbulent diffusion, Heterogeneous nucleation, Ice crystal growth, Ice sublimation, Supersaturation, Lidar, Mathematical models

## 53-3655

**Climatology and small-scale structure of lower stratospheric N<sub>2</sub>O based on in situ observations.**

Strahan, S.E., Loewenstein, M., Podolske, J.R., *Journal of geophysical research*, Jan. 27, 1999, 104(D2), p.2195-2208, 41 refs.

Climatology, Aerosols, Distribution, Polar atmospheres, Structural analysis, Stratosphere, Seasonal variations, Aerial surveys, Spectroscopy, Profiles, Statistical analysis

## 53-3656

**Proceedings of the Second International Conference on Concrete under Severe Conditions; CON-SEC '98; Environment and loading.**

International Conference on Concrete under Severe Conditions, 2nd, Trondheim, Norway, June 21-24, 1998, Gjörv, O.E., ed, Sakai, K., ed, Banthia, N., ed, London, E & FN Spon, 1998, 3 vols. (2208p. + index), For selected papers see 53-3657 through 53-3682.

Cold weather performance, Cold weather tests, Reinforced concretes, Concrete durability, Concrete admixtures, Freeze thaw cycles, Frost resistance, Frost action, Damage, Concrete pavements, Concrete structures

## 53-3657

**Performance of fiber-reinforced cement composites exposed to acid and deicers.**

Fujii, T., International Conference on Concrete under Severe Conditions, 2nd, Trondheim, Norway, June 21-24, 1998. Proceedings, Vol.1. Environment and loading. Edited by O.E. Gjörv, K. Sakai and N. Banthia, London, E & FN Spon, 1998, p.153-162, 15 refs.

Reinforced concretes, Concrete durability, Concrete admixtures, Adhesion, Leaching, Permeability, Degradation, Freeze thaw cycles, Cold weather performance, Cold weather tests, Protection

## 53-3658

**In-situ and laboratory evaluation of chloride penetration and freeze-thaw durability of high-performance concrete slabs.**

Gagné, G., Hénault, G., Marchand, J., International Conference on Concrete under Severe Conditions, 2nd, Trondheim, Norway, June 21-24, 1998. Proceedings, Vol.1. Environment and loading. Edited by O.E. Gjörv, K. Sakai and N. Banthia, London, E & FN Spon, 1998, p.173-182, 7 refs.

Concrete durability, Reinforced concretes, Concrete slabs, Concrete admixtures, Air entrainment, Compressive properties, Frost resistance, Freeze thaw tests, Salting, Permeability, Degradation, Cold weather tests

## 53-3659

**Long-term structural durability negated by the lack of controlled air entrainment.**

Hulshizer, A.J., International Conference on Concrete under Severe Conditions, 2nd, Trondheim, Norway, June 21-24, 1998. Proceedings, Vol.1. Environment and loading. Edited by O.E. Gjörv, K. Sakai and N. Banthia, London, E & FN Spon, 1998, p.207-216, 20 refs.

Concrete durability, Degradation, Frost resistance, Concrete admixtures, Frost action, Freeze thaw cycles, Air entrainment, Degradation, Protection, Specifications

## 53-3660

**Comparison of frost deicing salt damage mechanisms in field and laboratory conditions.**

Kaufmann, J., Studer, W., International Conference on Concrete under Severe Conditions, 2nd, Trondheim, Norway, June 21-24, 1998. Proceedings, Vol.1. Environment and loading. Edited by O.E. Gjörv, K. Sakai and N. Banthia, London, E & FN Spon, 1998, p.262-271, 7 refs.

Concrete durability, Frost action, Degradation, Frost resistance, Salting, Chemical ice prevention, Damage, Ultrasonic tests, Freeze thaw tests, Laboratory techniques

## 53-3661

**Damage mechanisms in frost deicing salt resistance tests.**

Kaufmann, J., Nordstrom, R.A., Studer, W., International Conference on Concrete under Severe Conditions, 2nd, Trondheim, Norway, June 21-24, 1998. Proceedings, Vol.1. Environment and loading. Edited by O.E. Gjörv, K. Sakai and N. Banthia, London, E & FN Spon, 1998, p.272-281, 13 refs.

Concrete durability, Salting, Damage, Deformation, Supercooling, Ice nuclei, Freezing points, Frost resistance, Freeze thaw tests, Mechanical tests, Acoustic measurement

## 53-3662

**Influence of several freeze-thaw conditions on durability of concrete.**

Nishizawa, K., Nagayama, I., Watanabe, K., International Conference on Concrete under Severe Conditions, 2nd, Trondheim, Norway, June 21-24, 1998. Proceedings, Vol.1. Environment and loading. Edited by O.E. Gjörv, K. Sakai and N. Banthia, London, E & FN Spon, 1998, p.411-420, 4 refs.

Dams, Frost resistance, Concrete aggregates, Concrete durability, Elastic properties, Freeze thaw cycles, Freeze thaw tests, Moisture transfer, Water cement ratio, Mechanical tests

## 53-3663

**Frost damage mechanism and pore structure of concrete.**

Okamoto, S., Uomoto, T., International Conference on Concrete under Severe Conditions, 2nd, Trondheim, Norway, June 21-24, 1998. Proceedings, Vol.1. Environment and loading. Edited by O.E. Gjörv, K. Sakai and N. Banthia, London, E & FN Spon, 1998, p.429-437, 9 refs.

Concrete durability, Concrete aggregates, Mortars, Frost action, Damage, Freeze thaw cycles, Freeze thaw tests, Strain tests, Porosity, Unfrozen water content

## 53-3664

**Effects of freezing rate on the strains and ice formation in concrete mortar.**

Penttala, V.E., International Conference on Concrete under Severe Conditions, 2nd, Trondheim, Norway, June 21-24, 1998. Proceedings, Vol.1. Environment and loading. Edited by O.E. Gjörv, K. Sakai and N. Banthia, London, E & FN Spon, 1998, p.478-488, 4 refs.

Concrete durability, Concrete admixtures, Mortars, Concrete freezing, Freezing rate, Ice formation, Air entrainment, Freeze thaw tests, Strain tests, Humidity

## 53-3665

**State of concrete in the dam of a hydropower plant in a cold region.**

Rozental, N.K., Klevtsov, V.A., International Conference on Concrete under Severe Conditions, 2nd, Trondheim, Norway, June 21-24, 1998. Proceedings, Vol.1. Environment and loading. Edited by O.E. Gjörv, K. Sakai and N. Banthia, London, E & FN Spon, 1998, p.528-533.

Dams, Electric power, Reinforced concretes, Concrete durability, Concrete strength, Floating ice, Damage, Frost resistance, Frost action, Freeze thaw cycles, Russia—Siberia

## 53-3666

**Reliable testing of resistance of concrete against frost attack with CIF test.**

Setzer, M.J., Auberg, R., International Conference on Concrete under Severe Conditions, 2nd, Trondheim, Norway, June 21-24, 1998. Proceedings, Vol.1. Environment and loading. Edited by O.E. Gjörv, K. Sakai and N. Banthia, London, E & FN Spon, 1998, p.574-585, 9 refs.

Concrete durability, Frost action, Frost resistance, Damage, Corrosion, Air entrainment, Freeze thaw cycles, Freeze thaw tests, Standards, Accuracy, Laboratory techniques

## 53-3667

**Freeze-deicing salt resistance of high-strength concrete.**

Stark, J., Chelouah, N., International Conference on Concrete under Severe Conditions, 2nd, Trondheim, Norway, June 21-24, 1998. Proceedings, Vol.1. Environment and loading. Edited by O.E. Gjörv, K. Sakai and N. Banthia, London, E & FN Spon, 1998, p.586-595, 8 refs.

Concrete durability, Reinforced concretes, Cement admixtures, Frost resistance, Salting, Capillarity, Water cement ratio, Hydrates, Freeze thaw cycles, Phase transformations, Chemical composition

## 53-3668

**Russian experience with marine concrete structures at the Kislaya Guba tidal power station.**

Stepanova, V.F., Rozental, N.K., Kondratova, I.L., International Conference on Concrete under Severe Conditions, 2nd, Trondheim, Norway, June 21-24, 1998. Proceedings, Vol.1. Environment and loading. Edited by O.E. Gjörv, K. Sakai and N. Banthia, London, E & FN Spon, 1998, p.596-605, 14 refs.

Dams, Hydraulic structures, Frost resistance, Subpolar regions, Concrete durability, Cement admixtures, Classifications, Freeze thaw cycles, Design criteria, Standards, Russia—Murmansk



53-3669

**Effectiveness of ultrasonic wave velocity as a method to evaluate frost damage to concrete.**

Yamashita, H., Sakai, H., Saeki, N., International Conference on Concrete under Severe Conditions, 2nd, Trømsø, Norway, June 21-24, 1998. Proceedings, Vol.1. Environment and loading. Edited by O.E. GjØrv, K. Sakai and N. Banthia, London, E & FN Spon, 1998, p.708-716, 4 refs.

Concrete durability, Concrete structures, Frost action, Freeze thaw cycles, Damage, Surface roughness, Ultrasonic tests, Sound waves, Velocity, Attenuation, Correlation

53-3670

**Effectiveness of the coating and admixing system against AAR combined with deicer or sulfates attack.**

Yang, D.B., Fang, S.X., Tang, M.S., Xu, Z.Z., Deng, M., International Conference on Concrete under Severe Conditions, 2nd, Trømsø, Norway, June 21-24, 1998. Proceedings, Vol.1. Environment and loading. Edited by O.E. GjØrv, K. Sakai and N. Banthia, London, E & FN Spon, 1998, p.717-725, 8 refs.

Concrete durability, Concrete admixtures, Coatings, Protection, Mortars, Salting, Chemical ice prevention, Corrosion, Degradation, Saturation, Chemical analysis

53-3671

**Effect of quality of concrete on the scaling deterioration due to calcium chloride.**

Shimada, H., Sakai, K., Abe, K., International Conference on Concrete under Severe Conditions, 2nd, Trømsø, Norway, June 21-24, 1998. Proceedings, Vol.2. Environment and loading. Edited by O.E. GjØrv, K. Sakai and N. Banthia, London, E & FN Spon, 1998, p.1251-1260, 7 refs.

Concrete durability, Concrete pavements, Cement admixtures, Physical properties, Porosity, Frost resistance, Salting, Degradation, Corrosion, Freeze thaw cycles, Freeze thaw tests

53-3672

**Selection of offshore production structures for the arctic environment.**

Løset, S., Gudmestad, O.T., International Conference on Concrete under Severe Conditions, 2nd, Trømsø, Norway, June 21-24, 1998. Proceedings, Vol.3. Environment and loading. Edited by O.E. GjØrv, K. Sakai and N. Banthia, London, E & FN Spon, 1998, p.1556-1565, 14 refs.

Petroleum industry, Offshore structures, Oil wells, Caissons, Stability, Protection, Icebergs, Ice loads, Design criteria, Structural analysis, Surface properties, Russia, Barents Sea

53-3673

**Creep of heat-cured high-performance concrete subjected to freezing or elevated temperature.**

Persson, B.S.M., International Conference on Concrete under Severe Conditions, 2nd, Trømsø, Norway, June 21-24, 1998. Proceedings, Vol.3. Environment and loading. Edited by O.E. GjØrv, K. Sakai and N. Banthia, London, E & FN Spon, 1998, p.1616-1626, 11 refs.

Concrete durability, Concrete strength, Concrete freezing, Reinforced concretes, Concrete curing, Chemical composition, Creep, Mathematical models, Loading, Rheology, Low temperature tests

53-3674

**Current status of durability design for concrete structures in Japan.**

Sugiyama, T., Tsuji, Y., Kuroi, T., International Conference on Concrete under Severe Conditions, 2nd, Trømsø, Norway, June 21-24, 1998. Proceedings, Vol.3. Environment and loading. Edited by O.E. GjØrv, K. Sakai and N. Banthia, London, E & FN Spon, 1998, p.1675-1683, 4 refs.

Concrete durability, Indexes (ratios), Concrete structures, Frost resistance, Frost action, Freeze thaw tests, Specifications, Design, Cold weather performance

53-3675

**Influence of sub-zero temperature on fracture properties of plain and synthetic fiber reinforced concretes.**

Dubey, A., Banthia, N., International Conference on Concrete under Severe Conditions, 2nd, Trømsø, Norway, June 21-24, 1998. Proceedings, Vol.3. Environment and loading. Edited by O.E. GjØrv, K. Sakai and N. Banthia, London, E & FN Spon, 1998, p.1798-1808, 24 refs.

Concrete durability, Reinforced concretes, Concrete admixtures, Polymers, Chemical composition, Mechanical properties, Mechanical tests, Loading, Cracking (fracturing), Nucleation, Low temperature tests

53-3676

**Freezing behavior and strength development of concrete containing antifreezer under freezing conditions.**

Hama, Y., Kamada, E., International Conference on Concrete under Severe Conditions, 2nd, Trømsø, Norway, June 21-24, 1998. Proceedings, Vol.3. Environment and loading. Edited by O.E. GjØrv, K. Sakai and N. Banthia, London, E & FN Spon, 1998, p.1846-1854, 3 refs.

Winter concreting, Concrete durability, Concrete strength, Concrete admixtures, Concrete freezing, Antifreezes, Saturation, Unfrozen water content, Frost resistance, Electrical measurement, Porosity

53-3677

**Effects of antifreezing admixture and aggregate quality on concrete under cold environment.**

Hosokawa, Y., International Conference on Concrete under Severe Conditions, 2nd, Trømsø, Norway, June 21-24, 1998. Proceedings, Vol.3. Environment and loading. Edited by O.E. GjØrv, K. Sakai and N. Banthia, London, E & FN Spon, 1998, p.1874-1883, 8 refs.

Concrete durability, Winter concreting, Concrete strength, Concrete curing, Frost action, Frost resistance, Antifreezes, Concrete admixtures, Concrete aggregates, Freeze thaw tests, Mechanical tests

53-3678

**Durability, strength development and cost effectiveness of concretes containing up to 85% fly ash.**

Johnston, C.D., International Conference on Concrete under Severe Conditions, 2nd, Trømsø, Norway, June 21-24, 1998. Proceedings, Vol.3. Environment and loading. Edited by O.E. GjØrv, K. Sakai and N. Banthia, London, E & FN Spon, 1998, p.1932-1941, 6 refs.

Concrete durability, Bridges, Concrete strength, Concrete aggregates, Cement admixtures, Salinity, Permeability, Chemical composition, Frost resistance, Freeze thaw cycles, Mechanical tests, Cost analysis

53-3679

**Modern methods of accelerating the hardening of concrete at below-zero temperature.**

Krylov, B.A., Zvezdov, A.I., International Conference on Concrete under Severe Conditions, 2nd, Trømsø, Norway, June 21-24, 1998. Proceedings, Vol.3. Environment and loading. Edited by O.E. GjØrv, K. Sakai and N. Banthia, London, E & FN Spon, 1998, p.1952-1962, 5 refs.

Concrete durability, Winter concreting, Concrete placing, Concrete hardening, Concrete heating, Frost action, Frost resistance, Electric heating

53-3680

**Effect of silica fume addition on the frost-salt scaling resistance of aged concrete.**

Matala, S.P., International Conference on Concrete under Severe Conditions, 2nd, Trømsø, Norway, June 21-24, 1998. Proceedings, Vol.3. Environment and loading. Edited by O.E. GjØrv, K. Sakai and N. Banthia, London, E & FN Spon, 1998, p.1989-1998, 8 refs.

Concrete durability, Concrete admixtures, Chemical composition, Concrete curing, Frost resistance, Frost action, Degradation, Salinity, Porosity, Temperature measurement

53-3681

**Durability of self-compacting and low heat high performance concrete.**

Sakata, K., Ayano, T., International Conference on Concrete under Severe Conditions, 2nd, Trømsø, Norway, June 21-24, 1998. Proceedings, Vol.3. Environment and loading. Edited by O.E. GjØrv, K. Sakai and N. Banthia, London, E & FN Spon, 1998, p.2057-2064, 4 refs.

Concrete durability, Reinforced concretes, Mechanical properties, Viscosity, Rheology, Compaction, Compressive properties, Freeze thaw tests, Frost resistance, Mechanical tests

53-3682

**Measurement of chloride flow along highway.**

Tang, L., Utgenannt, P., International Conference on Concrete under Severe Conditions, 2nd, Trømsø, Norway, June 21-24, 1998. Proceedings, Vol.3. Environment and loading. Edited by O.E. GjØrv, K. Sakai and N. Banthia, London, E & FN Spon, 1998, p.2113-2122, 1 ref.

Roads, Environmental tests, Winter maintenance, Salting, Antifreezes, Salinity, Runoff, Ion diffusion, Sampling, Samplers, Performance, Sweden

53-3683

**CRREL Ice Jam Database.**

White, K.D., Eames, H.J., CR 99-02, U.S. Army Cold Regions Research and Engineering Laboratory Report, Feb. 1999, 17p., ADA-362 147, 38 refs.

Ice jams, Flooding, River ice, Data processing, History, United States

This report provides information on the CRREL Ice Jam Database and its potential use for analyzing ice-related flooding problems. Rivers in the northern United States are subject to ice jams that cause flooding; block hydropower and water supply intakes; delay or stop navigation; damage riverine structures such as locks, dams, bridges, dikes, levees, and wingwalls; and decrease downstream discharge. The lack of readily available information on historical ice events hinders rapid, effective response to ice jam flooding and other ice-related damage. The CRREL Ice Jam Database was developed to provide a centralized record of ice events.

53-3684

**Effect of dissolved NaCl on freezing curves of kaolinite, montmorillonite, and sand pastes.**

Grant, S.A., Boitnott, G.E., Tice, A.R., SR 99-02, U.S. Army Cold Regions Research and Engineering Laboratory. Special report, Jan. 1999, 28p., ADA-360 406, 34 refs.

Soil freezing, Unfrozen water content, Capillarity, Nuclear magnetic resonance, Analysis (mathematics), Thermodynamics, Liquid phases, Freezing points, Solid phases

The authors developed a chemical-thermodynamic procedure for calculating the capillary pressures of aqueous NaCl solutions in a porous medium at temperatures below 0°C by extending the treatment by Brun et al. (1977). Ice in the porous medium was assumed to be a pure phase with thermophysical properties identical to bulk hexagonal ice. The thermophysical properties (and the attendant derivative and integral properties) of the electrolyte solutions were calculated with the Pitzer model as parameterized by Archer (1992). Experiments were conducted to test this procedure. Pastes of kaolinite clay, montmorillonite, and quartz sand were prepared by washing repeatedly with aqueous solutions of 0.1-, 0.01- and 0.001-mol/kg NaCl. The molar unfrozen water contents of these pastes were measured by pulsed nuclear magnetic resonance (NMR) in the temperature range -0.14°C to -66.6°C. The relationships between ice-solution capillary pressures and specific solution volumes for frozen pastes of each mineral were plotted for all initial solution molalities. While some systemic errors were evident, these plots indicated that the capillary pressure-volume relationships were consistent for pastes of the three minerals and, as expected from theory, unaffected by initial equilibrating solution molality.

53-3685

**CRREL South Pole Tunneling System.**

Walsh, M.R., CR 99-01, U.S. Army Cold Regions Research and Engineering Laboratory Report, Jan. 1999, 22p., ADA-362 137, 12 refs.

Tunneling (excavation), Snow tunnels, Design, Cold weather operation, Cold weather construction, Equipment, Machinery, Cold weather tests, Antarctica—Amundsen-Scott Station

Facilities operations in a polar ice cap environment present many challenges. Coping with the extreme cold temperatures, associated wind chills, darkness during the long winter months, and blowing and drifting snow all hamper installation, maintenance and repair. For over 40 years, the concept of using tunnels for utilities and personnel has been tried with mixed results. In 1991, the U.S. Army Cold Regions Research and Engineering Laboratory initiated a project to design, develop, fabricate, test, build, and deploy a system for the machining of unlined tunnels at the Amundsen-Scott South

Pole Station. The tunneling system as configured during the Jan. 1996 deployment was capable of operating at a maximum sustained production rate (>4 hr) of 1.5 m/hr for a 2x3x16-m tunnel. The maximum operating depth was approximately 16 m from surface to the tunnel floor. The maximum length tunneled during one shift was 13 m, and the maximum one-day progress was 21.3 m. The system is described in this report, along with suggestions to improve the current technology.

## 53-3686

**Mapping the boundary between continuous and discontinuous permafrost in Alaska.**

England, A.W., *U.S. Geological Survey. Water Resources Division. Report*, Aug. 29, 1995, 25p., PB98-115819, Refs. p.22-25.

Continuous permafrost, Discontinuous permafrost, Brightness, Temperature distribution, Soil water, Frozen ground, Mathematical models, Dielectric properties, Tundra soils, Radiometry, Mapping, Surface temperature, United States—Alaska

## 53-3687

**Anti-icing study: controlled chemical treatments.**

Alger, R.G., Adams, E.E., Beckwith, E.P., *U.S. Strategic Highway Research Program. Report*, Apr. 1994, SHRP-H-683, 145p., PB94-182540, 2 refs.

Chemical ice prevention, Road icing, Road maintenance, Computer applications, Pavements, Safety

## 53-3688

**Survey of anti-icing practice in Virginia.**

Roosevelt, D.S., *U.S. Federal Highway Administration. Virginia Division. Report*, Nov. 1997, FHWA/VTRC-98-R19, 17p., PB98-123201, 4 refs.

Ice removal, Snow removal, Road maintenance, Cold weather operation, Surveys, United States—Virginia

## 53-3689

**Cost-effective microwave sensing of highway road conditions.**

Kubichek, R.F., Yoakum-Stover, S., *U.S. Federal Highway Administration. Transportation Research Board. IDEA program*, Apr. 1998, TRB/NCHRP-ID031, 18p., PB98-141187, 12 refs.

Remote sensing, Roads, Road icing, Pavements, Microwaves, Slush, Snow accumulation, Accuracy, Antennas, Cost analysis

## 53-3690

**Global warming and marine carbon cycle feedbacks on future atmospheric CO<sub>2</sub>.**

Joos, F., Plattner, G.K., Stocker, T.F., Marchal, O., Schmittner, A., *Science*, Apr. 16, 1999, 284(5413), p.464-467, 31 refs.

Global warming, Carbon dioxide, Sea water, Atmospheric composition, Air water interactions, North Atlantic Ocean

## 53-3691

**Palynology of a 250-m core from Lake Biwa: a 430,000-year record of glacial-interglacial vegetation change in Japan.**

Miyoshi, N., Fujiki, T., Morita, Y., *Review of palaeobotany and palynology*, Feb. 1999, 104(3-4), p.267-283, 24 refs.

Pleistocene, Palynology, Vegetation patterns, Paleoclimatology, Drill core analysis, Japan—Biwa, Lake

## 53-3692

**Changes in meridional temperature and salinity gradients in the North Atlantic Ocean (30°-72°N) during the last interglacial period.**

Cortijo, E., Lehman, S., Keigwin, L., Chapman, M., Paillard, D., Labeyrie, L., *Paleoceanography*, Feb. 1999, 14(1), p.23-33, 40 refs.

Isotope analysis, Drill core analysis, Oxygen isotopes, Sea water, Surface temperature, Water temperature, Salinity, Temperature gradients, Insolation, Paleoclimatology, Ice volume, Plankton, Ocean bottom, Oceanography, North Atlantic Ocean

## 53-3693

**Paleoclimatic significance of eolian carbonates supplied to the Japan Sea during the last glacial maximum.**

Oba, T., Pedersen, T.F., *Paleoceanography*, Feb. 1999, 14(1), p.34-41, 75 refs.

Paleoclimatology, Bottom sediment, Plankton, Carbon dioxide, Air water interactions, Radioactive age determination, Dust, Eolian soils, Drill core analysis, Japan, Sea

## 53-3694

**1.0 Myr record of Glacial North Atlantic Intermediate Water variability from ODP site 982 in the northeast Atlantic.**

Venz, K.A., Hodell, D.A., Stanton, C., Warnke, D.A., *Paleoceanography*, Feb. 1999, 14(1), p.42-52, 55 refs.

Carbon isotopes, Ocean currents, Pleistocene, Paleoclimatology, Sea ice distribution, Ice cover effect, Ice volume, Oxygen isotopes, Oceanography, North Atlantic Ocean

## 53-3695

**Biogeochemistry of antarctic sea ice: a case study on platelet ice layers at Drescher Inlet, Weddell Sea.**

Günther, S., Gleitz, M., Dieckmann, G.S., *Marine ecology progress series*, Feb. 11, 1999, Vol.177, p.1-13, 65 refs.

Sea ice, Geochemistry, Nutrient cycle, Biomass, Marine biology, Ecosystems, Algae, Chlorophylls, Ice water interface, Antarctica—Weddell Sea

## 53-3696

**Determination of arctic ice algal production with a new *in situ* incubation technique.**

Mock, T., Gradinger, R., *Marine ecology progress series*, Feb. 11, 1999, Vol.177, p.15-26, Refs. p.24-26.

Algae, Chlorophylls, Biomass, Nutrient cycle, Sea ice, Marine biology, Growth, Brines, Ice temperature, Acclimatization, Barents Sea, Greenland Sea, Antarctica

## 53-3697

**Younger Dryas (Loch Lomond Stadial) jökulhlaup deposit, Fort Augustus, Scotland.**

Russell, A.J., Marren, P.M., *Boreas*, Dec. 1998, 27(4), p.231-242, 45 refs.

Geomorphology, Flooding, Lake bursts, Ice dams, Glacial lakes, Pleistocene, Glacial hydrology, Meltwater, United Kingdom—Scotland

## 53-3698

**800-year long, radiocarbon-dated varve chronology from south-eastern Sweden.**

Wohlfarth, B., Björck, S., Possnert, G., Holmquist, B., *Boreas*, Dec. 1998, 27(4), p.243-257, 27 refs.

Glacial deposits, Radioactive age determination, Correlation, Ice dams, Glacial lakes, Fossils, Clays, Sweden

## 53-3699

**Comparative study of striations and basal till clast fabrics, Malpeque-Bedouque region, Prince Edward Island, Canada.**

Catto, N.R., *Boreas*, Dec. 1998, 27(4), p.259-274, 76 refs.

Glacial till, Striations, Glacial deposits, Glacier flow, Bedrock, Glacial geology, Canada—Prince Edward Island

## 53-3700

**New data from the Holsteinian interglacial site Öje, central Sweden.**

García Ambrosiani, K., Robertsson, A.M., *Boreas*, Dec. 1998, 27(4), p.289-295, 34 refs.

Fossils, Pollen, Stratigraphy, Palynology, Sediments, Paleobotany, Paleoclimatology, Sweden

## 53-3701

**Active ice-sheet deglaciation and ice-dammed lakes in the northern Cairngorm Mountains, Scotland.**

Brazier, V., Kirkbride, M.P., Gordon, J.E., *Boreas*, Dec. 1998, 27(4), p.297-310, 52 refs.

Geomorphology, Paleoclimatology, Glacial geology, Meltwater, Ice dams, Glacial lakes, Glacial deposits, Lacustrine deposits, Mountain glaciers, United Kingdom—Scotland

## 53-3702

**Modelling northern hemisphere ice volume over the last 3 Ma.**

Berger, A., Li, X.S., Loutre, M.F., *Quaternary science reviews*, Jan. 1999, 18(1), p.1-11, 55 refs.

Paleoclimatology, Models, Carbon dioxide, Ice volume, Ice cover, Climatic changes, Oxygen isotopes, Ice air interface, Insolation, Spectra

## 53-3703

**Comparison of the lichenometric and Schmidt hammer dating techniques based on data from the proglacial areas of some Icelandic glaciers.**

Evans, D.J.A., Archer, S., Wilson, D.J.H., *Quaternary science reviews*, Jan. 1999, 18(1), p.13-41, 40 refs.

Lichens, Glacial geology, Geomorphology, Age determination, Precipitation (meteorology), Climatic factors, Moraines, Outwash, Rock glaciers, Iceland

## 53-3704

**Ribbed moraine formation.**

Hättestrand, C., Kleman, J., *Quaternary science reviews*, Jan. 1999, 18(1), p.43-61, 99 refs.

Moraines, Glacial till, Pressure ridges, Glacier flow, Geomorphology, Glacial geology, Sweden

## 53-3705

**Modern and last local glacial maximum snowlines in the Central Andes of Peru, Bolivia, and Northern Chile.**

Klein, A.G., Seltzer, G.O., Isacks, B.L., *Quaternary science reviews*, Jan. 1999, 18(1), p.63-84, Refs. p.82-84.

Snow line, Paleoclimatology, Mapping, Isotherms, Glacier mass balance, Pleistocene, Mountain glaciers, LANDSAT, Andes, Peru, Bolivia, Chile

## 53-3706

**Holocene glacier and climate fluctuations on Franz Josef Land, Arctic Russia, 80°N.**

Lubinski, D.J., Forman, S.L., Miller, G.H., *Quaternary science reviews*, Jan. 1999, 18(1), p.85-108, Refs. p.105-108.

Climatic changes, Paleoclimatology, Glacier surveys, Temperature effects, Air temperature, Radioactive age determination, Glacier oscillation, Moraines, Russia—Franz Josef Land

## 53-3707

**East Asian monsoon variation during the last 130,000 years: evidence from the Loess Plateau of central China and Lake Biwa of Japan.**

Xiao, J.L., et al., *Quaternary science reviews*, Jan. 1999, 18(1), p.147-157, 35 refs.

Loess, Paleoclimatology, Eolian soils, Sediments, Lacustrine deposits, Dust, China—Loess Plateau, Japan—Biwa, Lake

## 53-3708

**Space at the Service of Our Environment; Proceedings of the 3rd ERS Symposium.**

ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997, Guyenne, T.D., ed, Danesy, D., ed, Noordwijk, European Space Agency, 1997, 3 vols. (1,917p.), ESA SP-414, Refs. passim. For selected papers see 53-3709 through 53-3762.

DLC QE33.2.A7 E785 1997 Vol.1, Vol.2, Vol.3  
Spaceborne photography, Synthetic aperture radar, Radiometry, Sensor mapping, Geophysical surveys, Image processing, Remote sensing, Polar atmospheres, Sea ice

53-3709

**Detecting soil thawing in Siberia with ERS scatterometer and SAR.**

Boehnke, K., Wismann, V., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.1, Noordwijk, European Space Agency, 1997, p.35-40, ESA SP-414, 7 refs.

DLC QE33.2.A7 E785 1997 Vol.1

Geocryology, Geophysical surveys, Arctic landscapes, Ground thawing, Detection, Altitude, Spaceborne photography, Synthetic aperture radar, Radiometry, Seasonal variations, Models, Russia—Siberia

53-3710

**Merging of elevations from SAR interferometry, satellite altimetry, GPS and laser altimetry in Greenland.**

Nielsen, C.S., Forsberg, R., Ekholm, S., Mohr, J.J., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.1, Noordwijk, European Space Agency, 1997, p.415-420, ESA SP-414, 9 refs.

DLC QE33.2.A7 E785 1997 Vol.1

Glacier surveys, Topographic surveys, Spaceborne photography, Synthetic aperture radar, Lasers, Sensor mapping, Height finding, Correlation, Resolution, Greenland

53-3711

**Investigation of ERS SAR data of the tandem mission for planning and monitoring of Siberian pipeline tracks.**

Streck, C., Wegmüller, U., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.1, Noordwijk, European Space Agency, 1997, p.441-447, ESA SP-414, 4 refs.

DLC QE33.2.A7 E785 1997 Vol.1

Gas pipelines, Arctic landscapes, Taiga, Freeze thaw cycles, Active layer, Surface structure, Deformation, Geophysical surveys, LANDSAT, Spaceborne photography, Synthetic aperture radar, Radiometry, Sensor mapping, Russia—Siberia

53-3712

**SAR ERS imagery for the study of relationships between tectonics and volcanism: examples in Iceland and Anatolia.**

Chorowicz, J., et al, ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.1, Noordwijk, European Space Agency, 1997, p.463-467, ESA SP-414, 4 refs.

DLC QE33.2.A7 E785 1997 Vol.1

Spaceborne photography, Geophysical surveys, Geomorphology, Subpolar regions, Tectonics, Volcanoes, Sensor mapping, Synthetic aperture radar, Correlation, Iceland

53-3713

**ERS-tandem-interferometric observation of volcanic activities in Iceland.**

Thiel, K.H., Wu, X.Q., Hartl, P., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.1, Noordwijk, European Space Agency, 1997, p.475-480, ESA SP-414, 5 refs.

DLC QE33.2.A7 E785 1997 Vol.1

Geophysical surveys, Subpolar regions, Volcanoes, Sensor mapping, Magma, Glacier melting, Geothermal thawing, Synthetic aperture radar, Spaceborne photography, Iceland—Vatnajökull

53-3714

**Flood mapping from phase decorrelation of tandem ERS data: Ob' River, Siberia.**

Smith, L.C., Alsdorf, D.E., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.1, Noordwijk, European Space Agency, 1997, p.537-539, ESA SP-414, 4 refs.

DLC QE33.2.A7 E785 1997 Vol.1

Geophysical surveys, Floodplains, Lakes, Subpolar regions, Spaceborne photography, Synthetic aperture radar, Sensor mapping, Wind factors, Backscattering, Image processing, Resolution, Russia—Siberia

53-3715

**Recent interdisciplinary research in the neovolcanic zone of Iceland using SAR data.**

Münzer, U., Jónsson, S., Einarsson, P., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.1, Noordwijk, European Space Agency, 1997, p.549-553, ESA SP-414, 10 refs.

DLC QE33.2.A7 E785 1997 Vol.1

Geophysical surveys, Volcanoes, Glacier surfaces, Deformation, Glacier melting, Geothermal thawing, Subpolar regions, Synthetic aperture radar, Spaceborne photography, Lake bursts, Iceland—Vatnajökull

53-3716

**Ozone profile retrieval from GOME satellite data II: validation and applications.**

Eichmann, K.U., et al, ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.755-758, ESA SP-414, 7 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Climatology, Atmospheric composition, Polar atmospheres, Ozone, Remote sensing, Sounding, Radiance, Backscattering, Profiles

53-3717

**Survey of tropical cirrus particle size and shape using ATSR-2 visible/near-infrared data.**

Watts, P.D., Baran, A.J., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.773-778, ESA SP-414, 9 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Climatology, Cloud physics, Ice crystal optics, Radiometry, Ice crystal size, Particle size distribution, Light scattering, Cloud height indicators, Probes

53-3718

**Comparison of microwave backscatter measurements with observed roughness of the snow surface in East Queen Maud Land, Antarctica.**

Furukawa, T., Young, N.W., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.803-807, ESA SP-414, 6 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Geophysical surveys, Glacier surveys, Glacier surfaces, Snow optics, Radiometry, Backscattering, Surface roughness, Anisotropy, Topographic effects, Microrelief, Correlation, Antarctica—Queen Maud Land

53-3719

**Validation of energy balance estimates from snow covered areas of the Antarctic Peninsula based on ERS-PRI images.**

Schneider, C., Wunderle, S., Gossmann, H., Saurer, H., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.809-814, ESA SP-414, 11 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Glacier surveys, Snow hydrology, Glacier surfaces, Synthetic aperture radar, Spaceborne photography, Radiance, Heat balance, Snowmelt, Snow cover structure, Seasonal variations, Models, Antarctica—Antarctic Peninsula

53-3720

**Ice discharge from north and northeast Greenland using ERS data.**

Rignot, E., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.815-818, ESA SP-414, 9 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Glacier surveys, Geophysical surveys, Ice sheets, Glacier thickness, Glacial hydrology, Glacier melting, Spaceborne photography, Radar echoes, Glacier mass balance, Calving, Greenland

53-3721

**Velocities of Pine Island and Thwaites glaciers, West Antarctica, from ERS-1 SAR images.**

Lucchitta, B.K., Rosanova, C.E., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.819-824, ESA SP-414, 20 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Glacier surveys, Glacier flow, Spaceborne photography, Synthetic aperture radar, Velocity measurement, Seasonal variations, Antarctica—West Antarctica

53-3722

**Five years of AMI-Wind sea ice backscatter grids on a CD-ROM.**

Gohin, F., Maroni, C., Cavané, A., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.825-829, ESA SP-414, 15 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Oceanography, Sea ice distribution, Ice surveys, Spaceborne photography, Backscattering, Seasonal variations, Data processing, Computer applications, Computer programs, Imaging, Antarctica—Weddell Sea, Arctic Ocean

53-3723

**Characteristic snow and ice properties of a Norwegian ice cap determined from complex ERS SAR.**

Kelly, R.E.J., Engeset, R., Kennett, M., Barrett, E.C., Theakstone, W., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.831-836, ESA SP-414, 13 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Glacier surveys, Glacier surfaces, Glacier mass balance, Snow cover structure, Snow line, Synthetic aperture radar, Sensor mapping, Spaceborne photography, Seasonal variations, Norway

53-3724

**Topography estimation in W. Antarctica directly from level 2 radar altimeter data.**

Stenoien, M., Bentley, C.R., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.837-842, ESA SP-414, 9 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Glacier surveys, Topographic surveys, Ice sheets, Height finding, Slope orientation, Radar echoes, Models, Simulation, Accuracy, Topographic effects, Antarctica—West Antarctica

53-3725

**Digital elevation model of the Greenland ice sheet and validation with airborne laser altimeter data.**

Bamber, J.L., Ekholm, S., Krabill, W.B., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.843-847, ESA SP-414, 7 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Glacier surveys, Ice sheets, Surface roughness, Topographic effects, Slope orientation, Geodetic surveys, Lasers, Height finding, Models, Correlation, Accuracy, Greenland

53-3726

**Antarctic ice sheet dynamics derived from ERS-1 precise topography.**

Rémy, F., Legrésy, B., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.849-852, ESA SP-414, 10 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Glacier surveys, Ice sheets, Glacier flow, Glacier mass balance, Spacecraft, Topographic surveys, Radar echoes, Sensor mapping, Topographic maps, Rheology, Antarctica

53-3727

**Derivation of glacial catchments of the Antarctic Peninsula by means of interferometric techniques.**

Wunderle, S., Saurer, H., Gofmann, H., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.853-856, ESA SP-414, 8 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Glacier surveys, Ice sheets, Glacier oscillation, Glacier flow, Velocity measurement, Synthetic aperture radar, Spacecraft, Image processing, Antarctica—Antarctic Peninsula

53-3728

**Monitoring snow properties on Greenland with ERS scatterometer and SAR.**

Wisnann, V., Boehnke, K., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.857-861, ESA SP-414, 9 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Glacier surveys, Snow surveys, Snow cover structure, Snow hydrology, Snowmelt, Metamorphism (snow), Sensor mapping, Radiometry, Synthetic aperture radar, Radar echoes, Backscattering, Greenland

53-3729

**Ice velocity at the ice front of the Filchner-Ronne Ice Shelf, Antarctica, as observed with ERS interferometry.**

Rignot, E., MacAyeal, D.R., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.863-866, ESA SP-414, 4 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Glacier surveys, Spaceborne photography, Synthetic aperture radar, Ice shelves, Glacier flow, Velocity measurement, Glacier thickness, Surface properties, Ice deformation, Image processing, Models, Correlation, Antarctica—Ronne Ice Shelf, Antarctica—Filchner Ice Shelf

53-3730

**Satellite data synergies for monitoring arctic ice masses.**

Bingham, A.W., Rees, W.G., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.867-870, ESA SP-414, 12 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Glacier surveys, Glacier mass balance, Glacier oscillation, Snow line, Sensor mapping, Height finding, Seasonal variations, Spaceborne photography, Synthetic aperture radar, Norway—Svalbard

53-3731

**Multi-source snow cover monitoring in eastern Switzerland.**

Piesbergen, J., Holecz, F., Haefner, H., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.871-875, ESA SP-414, 10 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Snow surveys, Snow cover distribution, Mountains, Sensor mapping, LANDSAT, Spaceborne photography, Synthetic aperture radar, Backscattering, Snow line, Image processing, Switzerland

53-3732

**SAR data exploitation for monitoring antarctic ice sheets and glaciers.**

Müller, U., Sievers, J., Walter, H., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.877-879, ESA SP-414, 1 ref.

DLC QE33.2.A7 E785 1997 Vol.2

Glacier surveys, Ice shelves, Glacier flow, Glacier mass balance, Tidal currents, Sensor mapping, Spaceborne photography, Synthetic aperture radar, Antarctica

53-3733

**ERS SAR retrieval of ice cover parameters from some oil and gas fields on the Russian arctic shelf.**

Melent'ev, V.V., et al, ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.881-885, ESA SP-414.

DLC QE33.2.A7 E785 1997 Vol.2

Ice surveys, Sea ice, Surface structure, Ice shelves, Sensor mapping, Gas pipelines, Subpolar regions, Spaceborne photography, Synthetic aperture radar, Economic development, Russia—Kara Sea, Barents Sea

53-3734

**Antarctic ice sheet snow properties derived from ERS altimeter data.**

Legresy, B., Remy, F., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.887-890, ESA SP-414, 10 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Glacier surveys, Ice sheets, Glacier mass balance, Snow cover structure, Surface roughness, Radar echoes, Backscattering, Radiometry, Height finding, Data processing, Antarctica

53-3735

**ATSR data and hydrodynamic models to investigate physical processes in Lake Balkal, Siberia.**

Le Core, H., Llewellyn-Jones, D., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.891-894, ESA SP-414, 5 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Remote sensing, Spaceborne photography, Hydrodynamics, Lake ice, Ice detection, Surface structure, Ice cover thickness, Snow cover, Albedo, Brightness, Image processing, Resolution, Russia—Baykal, Lake

53-3736

**Detecting changes in ice movement in the antarctic ice sheet by SAR interferometry.**

Frolich, R.M., Doake, C.S.M., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.895-898, ESA SP-414, 10 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Glacier surveys, Ice sheets, Glacier flow, Glacier oscillation, Shear flow, Detection, Velocity measurement, Spaceborne photography, Synthetic aperture radar, Image processing, Antarctica

53-3737

**Comparison of ERS altimeter and GPS heights on the Amery Ice Shelf, East Antarctica.**

Phillips, H.A., Hyland, G., Morgan, P., Coleman, R., Young, N., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.899-904, ESA SP-414, 9 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Geophysical surveys, Glacier surveys, Ice shelves, Topographic surveys, Height finding, Radar echoes, Data processing, Profiles, Accuracy, Antarctica—Amery Ice Shelf

53-3738

**ICEWATCH-real-time sea ice monitoring of the Northern Sea Route using satellite radar technology.**

Johannessen, O.M., et al, ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.907-916, ESA SP-414, 4 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Oceanography, Subpolar regions, Ice surveys, Sea ice distribution, Marine transportation, Ice navigation, Ice reporting, Route surveys, Spaceborne photography, Synthetic aperture radar, Classifications, Sensor mapping, Barents Sea, Russia—Kara Sea

53-3739

**Observation of sea-ice and ice-free structures in the Bransfield Strait and southern Drake Passage with ERS-1/SAR.**

Capdevila, J., Corbera, J., Calvet, J., Puigdefabregas, J., Arnau, P., Garcia, M.A., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.917-921, ESA SP-414, 5 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Oceanography, Sea ice distribution, Surface structure, Spaceborne photography, Synthetic aperture radar, Ice deformation, Image processing, Backscattering, Air ice water interaction, Antarctica—Bransfield Strait, Drake Passage

53-3740

**Sea ice displacement measured by ERS-1 SAR interferometry.**

Dammert, P.B.G., Leppäranta, M., Askne, J., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.923-930, ESA SP-414, 17 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Oceanography, Sea ice distribution, Ice surveys, Ice mechanics, Ice deformation, Pressure ridges, Topographic features, Spaceborne photography, Synthetic aperture radar, Sensor mapping, Baltic Sea

53-3741

**Floe sizes in the east antarctic sea ice zone estimated using combined SAR and field data.**

Lytle, V.L., Massom, R., Worby, A.P., Allison, I., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.931-936, ESA SP-414, 11 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Oceanography, Sea ice distribution, Ice floes, Classifications, Spaceborne photography, Synthetic aperture radar, Image processing, Backscattering, Antarctica—East Antarctica

53-3742

**Study of the temporal nature of arctic leads during spring using ERS-1 SAR.**

Onstott, R.G., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.937-941, ESA SP-414, 2 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Oceanography, Sea ice distribution, Pack ice, Ice cover thickness, Ice openings, Ice edge, Detection, Spaceborne photography, Synthetic aperture radar, Beaufort Sea

53-3743

**Estimation of wind, wave and ice parameters at the ice boundary by using active microwave systems of the ERS satellites.**

Lehner, S., Schulz-St., J., Bamler, R., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.943-948, ESA SP-414, 11 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Oceanography, Sea ice distribution, Spaceborne photography, Synthetic aperture radar, Ice edge, Ice cover thickness, Air ice water interaction, Ocean waves, Spectra, Image processing, Greenland

53-3744

**Mesoscale sea ice dynamics in the Weddell Sea.**

Thomas, M., Roth, R., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.949-953, ESA SP-414, 6 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Oceanography, Sea ice distribution, Ice surveys, Drift, Spaceborne photography, Synthetic aperture radar, Image processing, Statistical analysis, Antarctica—Weddell Sea

53-3745

**Measuring changes of iceberg attitudes by SAR interferometry.**

Thomas, M., Steffens, M., Roth, R., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.955-958, ESA SP-414, 2 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Oceanography, Sea ice distribution, Icebergs, Orientation, Mechanical properties, Spaceborne photography, Synthetic aperture radar, Image processing

53-3746

**Use of ocean wave imaging to detect the marginal ice zone in ERS-SAR images.**

Schmidt, R., Heygster, G., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.959-962, ESA SP-414, 6 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Oceanography, Sea ice distribution, Ice edge, Ocean waves, Wave propagation, Ice water interface, Spaceborne photography, Synthetic aperture radar, Image processing, Spectra, Antarctica—Bellingshausen Sea

53-3747

**Regional characteristics of sea level variation in the southern ocean with relation to antarctic sea ice.**

Chen, G., Ezraty, R., He, M.X., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.963-966, ESA SP-414, 4 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Oceanography, Sea level, Sea ice distribution, Ice water interface, Ice cover effect, Heat flux, Remote sensing, Radar echoes, Height finding, Statistical analysis, Antarctica—Ross Sea, Antarctica—Weddell Sea

53-3748

**Radar ice motion interferometry.**

Goldstein, R., Werner, C., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.969-972, ESA SP-414, 4 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Glacier surveys, Ice sheets, Spaceborne photography, Radar echoes, Glacier flow, Image processing, Data processing, Filters, Greenland

53-3749

**Interferometric estimation of ice sheet motion and topography.**

Joughin, I., Kwok, R., Fahnestock, M., Winebrenner, D., Tulaczyk, S., Gogineni, P., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.973-977, ESA SP-414, 7 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Glacier surveys, Ice sheets, Glacier flow, Velocity measurement, Spaceborne photography, Radar echoes, Topographic surveys, Image processing, Data processing, Greenland

53-3750

**Interferometric study of the ice stream in interior northeast Greenland.**

Fahnestock, M., Joughin, I., Kwok, R., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.979-982, ESA SP-414, 8 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Glaciology, Glacier surveys, Geophysical surveys, Ice sheets, Glacier flow, Sensor mapping, Spaceborne photography, Synthetic aperture radar, Image processing, Greenland

53-3751

**Interferometric SAR for observation of glacier motion and firn penetration.**

Winebrenner, D.P., Joughin, I.R., Fahnestock, M.A., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.983-987, ESA SP-414, 7 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Glaciology, Ice sheets, Firn stratification, Glacier flow, Spaceborne photography, Synthetic aperture radar, Topographic surveys, Height finding, Image processing, Backscattering, Models, Greenland

53-3752

**ERS tandem study of glacier dynamics in NE-Greenland.**

Mohr, J.J., Madsen, S.N., Reeh, N., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.989-993, ESA SP-414, 8 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Glaciology, Ice sheets, Glacier flow, Velocity measurement, Spaceborne photography, Synthetic aperture radar, Image processing, Topographic features, Data processing, Greenland

53-3753

**Dynamic behavior of the Bering Glacier-Bagley Icefield system during a surge, and other measurements of Alaskan glaciers with ERS SAR imagery.**

Lingle, C.S., Fatland, D.R., Voronina, V.A., Ahlén, K., Troshina, E.N., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.995-1000, ESA SP-414, 14 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Glaciology, Glacier surveys, Mountain glaciers, Glacier surges, Velocity measurement, Snow line, Sensor mapping, Spaceborne photography, Synthetic aperture radar, Image processing, United States—Alaska

53-3754

**Experiments at CCRS using ERS tandem mode data.**

Gray, A.L., Mattar, K.E., Geudtner, D., Vachon, P.W., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.1001-1006, ESA SP-414, 10 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Geophysical surveys, Sensor mapping, Arctic landscapes, Mountain glaciers, Glacier flow, Spaceborne photography, Synthetic aperture radar, Image processing, Topographic features, Accuracy, Canada—Saskatchewan, Canada—Northwest Territories—Bathurst Island

53-3755

**Applications of time series of microwave backscatter over the antarctic region.**

Young, N.W., Hyland, G., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.1007-1014, ESA SP-414, 6 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Geophysical surveys, Snow surveys, Glacier surveys, Spaceborne photography, Backscattering, Icebergs, Drift, Snow cover distribution, Snow cover effect, Image processing, Antarctica—Amery Ice Shelf

53-3756

**ERS satellite microwave radar observations of antarctic sea-ice dynamics.**

Drinkwater, M.R., Liu, X., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.1109-1114, ESA SP-414, 6 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Oceanography, Sea ice distribution, Ice formation, Polynyas, Pack ice, Drift, Radar tracking, Air ice water interaction, Spaceborne photography, Synthetic aperture radar, Antarctica—Weddell Sea

53-3757

**Significant ice retreat in the region Patagonia-Antarctic Peninsula observed by ERS SAR.**

Rott, H., Skvarca, P., Rack, W., Stuefer, M., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.2, Noordwijk, European Space Agency, 1997, p.1115-1120, ESA SP-414, 7 refs.

DLC QE33.2.A7 E785 1997 Vol.2

Glacier surveys, Spaceborne photography, Synthetic aperture radar, Glacier flow, Glacier ablation, Ice edge, Seasonal variations, Antarctica—Antarctic Peninsula, Argentina—Patagonia

53-3758

**Ocean and ice features detection using the ERS SAR browse images.**

Dokken, S.T., Laur, H., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.3, Noordwijk, European Space Agency, 1997, p.1397-1402, ESA SP-414, 6 refs.

DLC QE33.2.A7 E785 1997 Vol.3

Geophysical surveys, Spaceborne photography, Synthetic aperture radar, Sea ice distribution, Ice detection, Image processing, Resolution, Computer programs, Computer applications

53-3759

**Propagation of features in the southern ocean, using ATSR and altimetry.**

Hughes, C.W., Jones, M.S., Carnochan, S., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.3, Noordwijk, European Space Agency, 1997, p.1505-1508, ESA SP-414, 11 refs.

DLC QE33.2.A7 E785 1997 Vol.3

Oceanography, Subpolar regions, Ocean currents, Wave propagation, Spectra, Surface temperature, Spacecraft, Remote sensing, Height finding, Sensor mapping, Pacific Ocean, Drake Passage

53-3760

**Polar marine gravity fields from ERS-1.**

Laxon, S.W., McAldoo, D.C., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.3, Noordwijk, European Space Agency, 1997, p.1547-1552, ESA SP-414, 9 refs.

DLC QE33.2.A7 E785 1997 Vol.3

Geophysical surveys, Marine geology, Tectonics, Ocean bottom, Geodetic surveys, Spacecraft, Radar echoes, Gravity, Sensor mapping, Ice cover effect, Data processing, Antarctica, Arctic Ocean

53-3761

**ERS scatterometer observations of katabatic winds over a polynya.**

Marshall, G.J., Turner, J., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.3, Noordwijk, European Space Agency, 1997, p.1591-1596, ESA SP-414, 16 refs.

DLC QE33.2.A7 E785 1997 Vol.3

Climatology, Polar atmospheres, Atmospheric circulation, Turbulent boundary layer, Wind velocity, Wind direction, Polynyas, Spaceborne photography, Synthetic aperture radar, Backscattering, Air ice water interaction, Antarctica—Ross Sea

53-3762

Use of ERS scatterometer data to investigate the surface circulation of antarctic mesocyclones.

Turner, J., Marshall, G., ERS Symposium on Space at the Service of Our Environment, 3rd, Florence, Italy, Mar. 14-21, 1997. Proceedings, Vol.3, Noordwijk, European Space Agency, 1997, p.1597-1602, ESA SP-414, 12 refs.

DLC QE33.2.A7 E785 1997 Vol.3

Climatology, Polar atmospheres, Atmospheric circulation, Turbulent boundary layer, Spaceborne photography, Radar echoes, Wind direction, Wind velocity, Models, Antarctica

53-3763

Proceedings.

International Workshop on Rational Evaluation of Ice Forces on Structures, Mombetsu, Japan, Feb. 2-4, 1999, Narita, S., ed, Mombetsu, Hokkaido, Japan, Ship Research Institute, Ministry of Transport, 1999, 335p., Refs. passim. For individual papers see 53-3764 through 53-3788.

Ice solid interface, Sea ice, Offshore structures, Ice loads, Ice cover strength, Ice pressure

53-3764

Overview of ice forces on offshore structures.

Sodhi, D.S., MP 5329, International Workshop on Rational Evaluation of Ice Forces on Structures, Mombetsu, Japan, Feb. 2-4, 1999. Proceedings, Mombetsu, Japan, Ship Research Institute, Ministry of Transport, 1999, p.7-9, Abstract only.

Offshore structures, Ice solid interface, Ice loads, Ice edge, Ice creep, Sea ice

53-3765

Field survey of pressure ridges in offshore Sakhalin.

Yashima, N., Tabuchi, H., International Workshop on Rational Evaluation of Ice Forces on Structures, Mombetsu, Japan, Feb. 2-4, 1999. Proceedings, Mombetsu, Japan, Ship Research Institute, Ministry of Transport, 1999, p.11-20, 1 ref. Includes discussion.

Pressure ridges, Sea ice, Ice cover strength, Compressive properties, Ice floes, Pack ice, Russia—Sakhalin Island, Okhotsk Sea

53-3766

Review of first-year ridge geometries and properties in Sakhalin region.

Frederking, R., Timco, G.W., Kamesaki, K., Tada, H., International Workshop on Rational Evaluation of Ice Forces on Structures, Mombetsu, Japan, Feb. 2-4, 1999. Proceedings, Mombetsu, Japan, Ship Research Institute, Ministry of Transport, 1999, p.21-33, 14 refs.

Sea ice, Pressure ridges, Porosity, Compressive properties, Ice temperature, Ice salinity, Ice physics, Russia—Sakhalin Island, Okhotsk Sea, Beaufort Sea

53-3767

Laboratory measurements of ridging and rafting forces.

Tuhkuri, J., Lensu, M., International Workshop on Rational Evaluation of Ice Forces on Structures, Mombetsu, Japan, Feb. 2-4, 1999. Proceedings, Mombetsu, Japan, Ship Research Institute, Ministry of Transport, 1999, p.34-50, 25 refs. Includes discussion.

Ice rafting, Pressure ridges, Ice mechanics, Ice loads, Ice models, Ice cover strength, Ice floes, Ice deformation, Sea ice

53-3768

LOLEIF Project.

Schwarz, J., International Workshop on Rational Evaluation of Ice Forces on Structures, Mombetsu, Japan, Feb. 2-4, 1999. Proceedings, Mombetsu, Japan, Ship Research Institute, Ministry of Transport, 1999, p.51-63, 8 refs.

Ice loads, Ice models, Ice forecasting, Ice mechanics, Sea ice, Bothnia, Gulf

53-3769

Study on ice loads acting on marine structures—interim report of JOIA project.

Kato, K., et al, International Workshop on Rational Evaluation of Ice Forces on Structures, Mombetsu, Japan, Feb. 2-4, 1999. Proceedings, Mombetsu, Japan, Ship Research Institute, Ministry of Transport, 1999, p.64-79, 20 refs.

Ice loads, Ice solid interface, Earthquakes, Offshore structures, Sea ice, Japan—Hokkaido, Russia—Sakhalin Island

53-3770

Design ice forces for offshore structures.

Nevel, D., International Workshop on Rational Evaluation of Ice Forces on Structures, Mombetsu, Japan, Feb. 2-4, 1999. Proceedings, Mombetsu, Japan, Ship Research Institute, Ministry of Transport, 1999, p.80-87, 4 refs.

Ice loads, Offshore structures, Ice solid interface, Design, Analysis (mathematics), Sea ice

53-3771

Comparison of ice load calculation algorithms for first-year ridges.

Timco, G.W., Frederking, R., Kamesaki, K., Tada, H., International Workshop on Rational Evaluation of Ice Forces on Structures, Mombetsu, Japan, Feb. 2-4, 1999. Proceedings, Mombetsu, Japan, Ship Research Institute, Ministry of Transport, 1999, p.88-102, 23 refs.

Pressure ridges, Sea ice, Analysis (mathematics), Ice loads, Ice solid interface, Offshore structures

53-3772

Analysis of the contact between level ice and a structure.

Riska, K., Tuhkuri, J., International Workshop on Rational Evaluation of Ice Forces on Structures, Mombetsu, Japan, Feb. 2-4, 1999. Proceedings, Mombetsu, Japan, Ship Research Institute, Ministry of Transport, 1999, p.103-120, 42 refs.

Ice solid interface, Ice loads, Sea ice, Ice pressure, Ice models

53-3773

Aseismatic design of offshore structures in frozen seas.

Kobayashi, H., Mito, M., Kawaguchi, H., International Workshop on Rational Evaluation of Ice Forces on Structures, Mombetsu, Japan, Feb. 2-4, 1999. Proceedings, Mombetsu, Japan, Ship Research Institute, Ministry of Transport, 1999, p.121-134, 3 refs.

Offshore structures, Design, Sea ice, Ice solid interface, Earthquakes, Design criteria, Ice conditions, Russia—Sakhalin Island

53-3774

Experimental study on dynamic interaction between ice floes and offshore structures caused by seismic motion.

Sato, K., Kagami, T., Nakanishi M., Yashima, N., Adachi, H., International Workshop on Rational Evaluation of Ice Forces on Structures, Mombetsu, Japan, Feb. 2-4, 1999. Proceedings, Mombetsu, Japan, Ship Research Institute, Ministry of Transport, 1999, p.135-150, 5 refs.

Ice floes, Ice loads, Ice solid interface, Offshore structures, Sea ice, Ice models, Earthquakes, Beaufort Sea, United States—Alaska—Cook Inlet, China—Bohai Bay

53-3775

Stability of gravity offshore structure based on sand seabed subjected to ice load.

Hyodo, M., Kusakabe, S., Kamesaki, K., Yamauchi, Y., International Workshop on Rational Evaluation of Ice Forces on Structures, Mombetsu, Japan, Feb. 2-4, 1999. Proceedings, Mombetsu, Japan, Ship Research Institute, Ministry of Transport, 1999, p.151-164, 3 refs.

Ice loads, Offshore structures, Sands, Ocean bottom, Penetration tests, Stress strain diagrams, Sea ice, Beaufort Sea

53-3776

Impact ice load on pile structures.

Hayakawa, T., Kawai, K., Hanada, M., Saeki, H., International Workshop on Rational Evaluation of Ice Forces on Structures, Mombetsu, Japan, Feb. 2-4, 1999. Proceedings, Mombetsu, Japan, Ship Research Institute, Ministry of Transport, 1999, p.165-172, 5 refs.

Ice loads, Ice deformation, Ice solid interface, Pile structures, Impact tests, Sea ice, Okhotsk Sea

53-3777

Impact loads on fixed offshore structures.

Astaf'ev, V.N., Polomoshnov, A.M., Surkov, G.A., International Workshop on Rational Evaluation of Ice Forces on Structures, Mombetsu, Japan, Feb. 2-4, 1999. Proceedings, Mombetsu, Japan, Ship Research Institute, Ministry of Transport, 1999, p.173-178, 3 refs. Includes discussion.

Ice solid interface, Offshore structures, Impact, Ice floes, Sea ice

53-3778

Ice loads from ridges for offshore Sakhalin conditions.

Bekker, A.T., Komarova, O.A., Riazanov, A.V., Ermakov, V.S., International Workshop on Rational Evaluation of Ice Forces on Structures, Mombetsu, Japan, Feb. 2-4, 1999. Proceedings, Mombetsu, Japan, Ship Research Institute, Ministry of Transport, 1999, p.179-185, 9 refs.

Pressure ridges, Sea ice, Ice loads, Ice solid interface, Offshore structures, Ice models, Russia—Sakhalin Island, Okhotsk Sea

53-3779

Empirical formula for estimating ice loads acting on conical structures.

Ishikawa, S., Kawasaki, T., Yano, S., Kato, K., Kamesaki, K., International Workshop on Rational Evaluation of Ice Forces on Structures, Mombetsu, Japan, Feb. 2-4, 1999. Proceedings, Mombetsu, Japan, Ship Research Institute, Ministry of Transport, 1999, p.186-203, 7 refs. Includes discussion.

Ice loads, Ice solid interface, Ice models, Mathematical models, Velocity, Sea ice

53-3780

Ice forces on a conical structure interacting with a partially consolidated rubble field.

Izumiyama, K., Takimoto, T., Uto, S., International Workshop on Rational Evaluation of Ice Forces on Structures, Mombetsu, Japan, Feb. 2-4, 1999. Proceedings, Mombetsu, Japan, Ship Research Institute, Ministry of Transport, 1999, p.204-214, 3 refs.

Ice loads, Ice solid interface, Ice cover thickness, Sea ice, Ice pileup, Offshore structures, Russia—Sakhalin Island

53-3781

Calculation of ice pile-up in front of a large conical structure.

Izumiyama, K., International Workshop on Rational Evaluation of Ice Forces on Structures, Mombetsu, Japan, Feb. 2-4, 1999. Proceedings, Mombetsu, Japan, Ship Research Institute, Ministry of Transport, 1999, p.215-223, 7 refs.

Ice solid interface, Analysis (mathematics), Ice loads, Sea ice, Ice pileup

53-3782

Probability characteristics of ice loads and actions on offshore structures.

Bekker, A.T., International Workshop on Rational Evaluation of Ice Forces on Structures, Mombetsu, Japan, Feb. 2-4, 1999. Proceedings, Mombetsu, Japan, Ship Research Institute, Ministry of Transport, 1999, p.224-239, 10 refs.

Sea ice, Ice loads, Ice solid interface, Ice floes, Offshore structures, Mathematical models, Ice models, Velocity, Ice deformation, Okhotsk Sea



53-3783

**Behavior of ice sheet strain area and ice failure modes according to indentation velocity in field indentation tests.**

Sakai, M., Narita, K., Matsushita, H., Takeuchi, T., Saeki, H., International Workshop on Rational Evaluation of Ice Forces on Structures, Mombetsu, Japan, Feb. 2-4, 1999. Proceedings, Mombetsu, Japan, Ship Research Institute, Ministry of Transport, 1999, p.240-248, 4 refs.

Ice loads, Sea ice, Ice solid interface, Offshore structures, Ice cover thickness, Ice edge, Ice deformation, Japan—Hokkaido

53-3784

**Ductile-to-brittle transition speed during ice indentation tests.**

Sodhi, D.S., Takeuchi, T., Nakazawa, N., Akagawa, S., Saeki, H., MP 5330, International Workshop on Rational Evaluation of Ice Forces on Structures, Mombetsu, Japan, Feb. 2-4, 1999. Proceedings, Mombetsu, Japan, Ship Research Institute, Ministry of Transport, 1999, p.249-263, 27 refs.

Ice cover strength, Ice creep, Ice deformation, Ice pressure, Ice cover thickness, Ice mechanics, Japan—Hokkaido

As part of a five-year program involving laboratory and field tests in Japan, the authors conducted medium-scale indentation tests on sea ice in the harbor of Lake Notoro, Hokkaido, by pushing a segmented indenter against the edge of a floating ice sheet. Measurements on each 10-cm wide segment included forces in three directions and the moment about a horizontal line parallel to the indenter face. During the tests in 1998, the authors also installed four tactile sensors on the face of the segmented indenter and measured interfacial pressure during indentation tests at three speeds. They present the results from the load cells and the tactile sensors. They obtained data on the actual contact area and the magnitude of interfacial pressures from the tactile sensors. The authors observed both a "line-like" contact during high-speed (3- and 30-mm/s) indentation tests, and a gradually enlarging contact area attributable to creep deformation of the ice during low-speed (0.3-mm/s) indentation tests. Using the results of a brittle flaking model from the literature, the authors estimate the apparent fracture toughness of the ice from the data on interfacial pressure and the width of the contact area. Taking creep and fracture properties into account, they present a theoretical model to estimate the speed at which the transition from ductile to brittle fracture of ice takes place during ice-structure interaction.

53-3785

**Medium-scale field ice indentation test (MSFIT)—results of 1996-1998 winter tests.**

Nakazawa, N., et al, International Workshop on Rational Evaluation of Ice Forces on Structures, Mombetsu, Japan, Feb. 2-4, 1999. Proceedings, Mombetsu, Japan, Ship Research Institute, Ministry of Transport, 1999, p.264-279, 4 refs.

Sea ice, Ice loads, Ice solid interface, Ice pressure, Ice cover thickness, Ice cover strength, Ice models, Japan—Hokkaido, Okhotsk Sea

53-3786

**Strength characteristics of the first-year sea ice at Notoro Lagoon.**

Matsushita, H., et al, International Workshop on Rational Evaluation of Ice Forces on Structures, Mombetsu, Japan, Feb. 2-4, 1999. Proceedings, Mombetsu, Japan, Ship Research Institute, Ministry of Transport, 1999, p.280-292, 3 refs. Includes discussion.

Sea ice, Ice solid interface, Ice cover strength, Offshore structures, Ice mechanics, Compressive properties, Ice loads, Shear strength, Japan—Hokkaido

53-3787

**On the comparison of the assumptions of Kry model with MSFIT data.**

Takeuchi, T., et al, International Workshop on Rational Evaluation of Ice Forces on Structures, Mombetsu, Japan, Feb. 2-4, 1999. Proceedings, Mombetsu, Japan, Ship Research Institute, Ministry of Transport, 1999, p.293-300, 2 refs.

Sea ice, Ice cover strength, Ice solid interface, Ice pressure, Ice models, Ice cover thickness, Compressive properties, Okhotsk Sea

53-3788

**Characteristics for non-simultaneous and simultaneous failures.**

Kamesaki, K., Yamauchi, Y., Tsukuda, H., International Workshop on Rational Evaluation of Ice Forces on Structures, Mombetsu, Japan, Feb. 2-4, 1999. Proceedings, Mombetsu, Japan, Ship Research Institute, Ministry of Transport, 1999, p.301-313, 13 refs. Includes discussion.

Ice loads, Ice solid interface, Ice models, Ice pressure, Velocity

53-3789

**Influence of soil structure and stress history on the soil-water characteristics of a compacted till.** Vanapalli, S.K., Fredlund, D.G., Pufahl, D.E., *Géotechnique*, Apr. 1999, 49(2), p.143-159, With French summary. 26 refs.

Clay soils, Glacial till, Soil structure, Soil water migration, Soil pressure, Soil compaction, Soil strength, Soil tests, Engineering geology

53-3790

**Undrained shear strength of a glacial clay over-consolidated by desiccation.**

Mesri, G., Ali, S., *Géotechnique*, Apr. 1999, 49(2), p.181-198, With French summary. 74 refs.

Clay soils, Glacial till, Glacial deposits, Outwash, Soil water migration, Soil pressure, Soil strength, Shear strength, Soil tests, Engineering geology, United States—Massachusetts

53-3791

**Anomalous water roundup.**

Burton, R.A., *U.S. Office of Naval Research. Branch Office London, England. ONR London report*, July 11, 1969, ONRL-R-33-69, 23p., 33 refs.

Anomalous water, Water structure, Molecular structure

53-3792

**Numerical study of freezing and thawing of bulk materials during rail transportation.**

Oosthuizen, P.H., Rush, C.K., Kingston, Ontario, Queen's University, Department of Mechanical Engineering, 1975, 21p. + figs., 6 refs.

Railroad cars, Coal, Frozen cargo, Frost forecasting, Frost protection, Thermal insulation, Artificial thawing, Mathematical models

53-3793

**Urban snow removal in Canada.**

Marsters, G.F., Arabackyj, W., Kingston, Ontario, Queen's University, Department of Mechanical Engineering, 1971, 25p. + append., 3 refs.

Snow removal, Urban planning, Streets, Road maintenance, Cost analysis, Canada

53-3794

**Phase composition of a partially frozen soil.**

Jame, Y.W., Norum, D.I., Saskatoon, University of Saskatchewan, Department of Agricultural Engineering, [1973], 10p. + figs., 13 refs.

Soil freezing, Frozen ground thermodynamics, Frozen ground temperature, Freezing rate, Soil water, Unfrozen water content, Ice water interface, Phase transformations

53-3795

**Boundary layer evaluation of anti-icing fluids for commuter aircraft.**

Louchez, P.R., Laforte, J.L., Bouchard, G., *Transport Canada. Transportation Development Centre, Montreal. Publication*, Dec. 1994, TP 11811E, 35p., MIC-98-07484, With French summary. 10 refs.

Aircraft icing, Chemical ice prevention, Liquid solid interfaces, Air flow, Safety, Cold weather tests, Wind tunnels

53-3796

**Examination of the role of fluid freeze point buffers.**

Dawson, P., D'Avirro, J., *Transport Canada. Transportation Development Centre, Montreal. Publication*, Nov. 1997, TP 13129E, 43p. + appends., MIC-99-00564, With French summary.

Aircraft icing, Chemical ice prevention, Ice removal, Antifreezes, Frozen liquids, Freezing points, Safety

53-3797

**Aircraft ground de/anti-icing fluid holdover time field testing program for the 1996/97 winter.**

D'Avirro, J., Peters, A., Hanna, M., Dawson, P., Chaput, M., *Transport Canada. Transportation Development Centre, Montreal. Publication*, Oct. 1997, TP 13131E, 233p. + appends., MIC-99-00554, With French summary. 6 refs.

Aircraft icing, Chemical ice prevention, Ice removal, Ice detection, Safety, Cold weather tests, Environmental tests

53-3798

**Aircraft ground de/anti-icing fluid holdover time field testing program for the 1995-1996 winter.**

D'Avirro, J., *Transport Canada. Transportation Development Centre, Montreal. Publication*, Nov. 1996, TP 12896E, 170p. + appends., MIC-99-00096, With French summary.

Aircraft icing, Chemical ice prevention, Ice removal, Ice detection, Safety, Cold weather tests, Environmental tests

53-3799

**Aircraft ground de/anti-icing fluid holdover time laboratory test program: freezing drizzle and freezing rain.**

Laforte, J.L., Bernardin, S., Dubuisson, C., *Transport Canada. Transportation Development Centre, Montreal. Publication*, May 1997, TP 13036E, 60p. + append., MIC-99-00103, With French summary.

Aircraft icing, Ice accretion, Chemical ice prevention, Ice storms, Cloud chambers, Cold weather tests, Environmental tests, Safety

53-3800

**Dynamic physical properties of de/anti-icing fluids.**

Boluk, Y., *Transport Canada. Transportation Development Centre, Montreal. Publication*, Nov. 1997, TP 13133E, 42p., MIC-99-00104, With French summary. 8 refs.

Aircraft icing, Chemical ice prevention, Antifreezes, Liquid solid interfaces, Ice detection, Cold weather tests, Safety

53-3801

**Aircraft tire braking friction under winter conditions: laboratory testing.**

Comfort, G., Cowper, B., Gong, S.Y., *Transport Canada. Transportation Development Centre, Montreal. Publication*, June 1996, TP 12584E, Var. p., MIC-98-06208, With French summary. 7 refs.

Runways, Pavements, Road icing, Aircraft icing, Chemical ice prevention, Salting, Sanding, Tires, Rubber ice friction, Skid resistance, Traction, Cold chambers, Cold weather tests, Environmental tests

53-3802

**Calibration of the Arctic Marine Transportation Simulation Model.**

Lapp, D.J., Keinonen, A., King, D.H., *Transport Canada. Transportation Development Centre, Montreal. Publication*, Mar. 1997, TP 12989E, Var. p., MIC-99-00017, With French summary. 9 refs.

Icebreakers, Tanker ships, Ice breaking, Ice navigation, Ice routing, Ice solid interface, Metal ice friction, Ice conditions, Ice loads, Computerized simulation

53-3803

**Seasonal change in the optical properties of the permanent ice cover on Lake Bonney, Antarctica: consequences for lake productivity and phytoplankton dynamics.**

Fritsen, C.H., Priscu, J.C., *Limnology and oceanography*, Mar. 1999, 44(2), p.447-454, 35 refs.

Frozen lakes, Lake ice, Ice optics, Ice heat flux, Ice cover effect, Algae, Plankton, Plant physiology, Plant ecology, Light effects, Photosynthesis, Biomass, Limnology, Antarctica—Bonney, Lake

53-3804

**4-day wave and transport of UARS tracers in the austral polar vortex.**

Manney, G.L., Orsolini, Y.J., Pumphrey, H.C., Roche, A.E., *Journal of the atmospheric sciences*, Dec. 1, 1998, 55(23), p.3456-3470, 25 refs.

Polar atmospheres, Stratosphere, Atmospheric circulation, Atmospheric composition, Ozone

53-3805

**Studies of HBr uptake on ice films at 188 K.**

Chu, L.T., Chu, L., *Journal of physical chemistry A*, Jan. 21, 1999, 103(3), p.384-395, 53 refs.

Polar atmospheres, Atmospheric composition, Polar stratospheric clouds, Cloud physics, Ozone, Ice nuclei, Ice surface, Ice vapor interface, Ice sublimation, Ice composition

53-3806

**Asian summer monsoon instability during the past 60,000 years: magnetic susceptibility and pedogenic evidence from the western Chinese Loess Plateau.**

Fang, X.M., et al, *Earth and planetary science letters*, May 15, 1999, 168(3-4), p.219-232, 50 refs.

Loess, Eolian soils, Quaternary deposits, Soil formation, Soil composition, Remanent magnetism, Stratigraphy, Soil dating, Soil air interface, Atmospheric circulation, Global change, Paleoclimatology, China—Loess Plateau

53-3807

**Cryosphere applications of NSCAT data.**

Long, D.G., Drinkwater, M.R., *IEEE transactions on geoscience and remote sensing*, May 1999, 37(3)pt.II, p.1671-1684, 72 refs.

Sea ice distribution, Ice cover, Mapping, Remote sensing, Ice sheets, Ice shelves, Backscattering, Synthetic aperture radar, Spaceborne photography, Image processing, Greenland, Antarctica

53-3808

**Construction and evaluation of 12.5-km grid NSCAT backscatter maps over Arctic sea ice.**

Ezraty, R., Cavanié, A., *IEEE transactions on geoscience and remote sensing*, May 1999, 37(3)pt.II, p.1685-1697, 11 refs.

Sea ice distribution, Backscattering, Synthetic aperture radar, Spaceborne photography, Ice edge, Image processing, Mapping, Arctic Ocean, Russia—Kara Sea, Russia—Novaya Zemlya

53-3809

**Information fusion for estimation of summer MIZ ice concentration from SAR imagery.**

Haverkamp, D., Tsatsoulis, C., *IEEE transactions on geoscience and remote sensing*, May 1999, 37(3)pt.I, p.1278-1291, 23 refs.

Sea ice distribution, Synthetic aperture radar, Remote sensing, Data processing, Ice floes, Classifications, Backscattering, Accuracy, Image processing, Ice edge, Beaufort Sea, Arctic Ocean

53-3810

**HUT snow emission model and its applicability to snow water equivalent retrieval.**

Pulliainen, J.T., Grandell, J., Hallikainen, M.T., *IEEE transactions on geoscience and remote sensing*, May 1999, 37(3)pt.I, p.1378-1390, 25 refs.

Remote sensing, Radiometry, Microwaves, Snow water equivalent, Mathematical models, Accuracy, Snow density, Brightness, Finland, Switzerland

53-3811

**Information states in radar imagery of sea ice.**

Kerman, B.R., *IEEE transactions on geoscience and remote sensing*, May 1999, 37(3)pt.I, p.1435-1446, 24 refs.

Sea ice, Synthetic aperture radar, Ice structure, Radar photography, Classifications, Analysis (mathematics), Beaufort Sea, Arctic Ocean

53-3812

**Wintertime dynamics of the Terra Nova Bay polynya.**

Van Woert, M.L., *Journal of geophysical research*, Apr. 15, 1999, 104(C4), p.7753-7769, 76 refs.

Sea ice distribution, Ice conditions, Polynyas, Ice heat flux, Air ice water interaction, Wind factors, Mathematical models, Antarctica—Terra Nova Bay, Antarctica—Ross Ice Shelf

53-3813

**Heat budget of snow-covered sea ice at North Pole 4.**

Jordan, R.E., Andreas, E.L., Makshtas, A.P., MP 5331, *Journal of geophysical research*, Apr. 15, 1999, 104(C4), p.7785-7806, Refs. p.7804-7806.

Drift stations, Sea ice, Snow ice interface, Snow air interface, Snow cover effect, Ice heat flux, Snow heat flux, Surface temperature, Snow temperature, Ice temperature, Ice models, Computerized simulation, Mathematical models, North Pole, Arctic Ocean

The Russian drifting station North Pole 4 (NP-4) was within 5° latitude of the North Pole from Apr. 1956 to Apr. 1957. The authors use a wide-ranging set of snow and meteorological data collected at 3-hourly intervals on NP-4 during this period to investigate energy and mass transfer in the snow, sea ice, and atmospheric surface layer in the central Arctic. SNTHERM, a one-dimensional energy and mass balance model, synthesizes these diverse NP-4 data and thereby yields energetically consistent time series of the components of the surface heat budget. To parameterize the sensible heat flux during extremely stable stratification, the authors replace the usual log-linear stability function with the "Dutch" formulation and introduce a windless coefficient in the bulk parameterization. This coefficient provides sensible heat transfer at the surface, even when the mean wind speed is near zero, and thereby prevents the surface temperature from falling to unrealistically low values, a common modeling problem when the stratification is very stable. Several other modifications to SNTHERM introduce procedures for creating a realistic snowpack that has continuously variable density and is subject to erosion and wind packing. The NP-4 data provide for two distinct simulations: one on 2-year ice and one on multiyear ice. They validate the modeling by comparing simulated and observed temperatures at various depths in the snow and sea ice. Simulations for both sites show the same tendencies. During the summer, the shortwave radiation is the main term in the surface heat budget. Shortwave radiation also penetrates into the snow and causes a subsurface temperature maximum that both the data and the model capture. During the winter, the net longwave balance is the main term in the surface heat budget. The snow and sea ice cool in response to longwave losses, but the flux of sensible heat from the air to the surface mitigates these losses and is thus nearly a mirror image of the emitted longwave flux.

53-3814

**Modification of NO, PO, and NO/PO during flow across the Bering and Chukchi shelves: implications for use as Arctic water mass tracers.**

Cooper, L.W., Cota, G.F., Pomeroy, L.R., Grebmeier, J.M., Whitley, T.E., *Journal of geophysical research*, Apr. 15, 1999, 104(C4), p.7827-7836, 30 refs.

Ocean currents, Water transport, Sea water, Water chemistry, Nutrient cycle, Geochemical cycles, Salinity, Bering Sea, Chukchi Sea, Arctic Ocean

53-3815

**Comparison of laboratory data with a viscous two-layer model of wave propagation in grease ice.**

Newyear, K., Martin, S., *Journal of geophysical research*, Apr. 15, 1999, 104(C4), p.7837-7840, 14 refs.

Frazil ice, Ice water interface, Ice cover effect, Ocean waves, Wave propagation, Viscosity

53-3816

**Siberian-type Quaternary floodplain sedimentation: the example of the Yenisei River.**

IAmsskikh, A.F., IAmsskikh, A.A., Brown, A.G., *Fluvial Processes and Environmental Change*. Edited by A.G. Brown and T.A. Quine. British Geomorphological Research Group symposia series, Chichester, UK, John Wiley & Sons, Ltd., 1999, p.241-252, 23 refs.

DLC GB1201.2.F59 1999

Floodplains, Alluvium, Terraces, Quaternary deposits, Soil dating, Geomorphology, Paleoclimatology, Russia—Siberia

53-3817

**Long-term episodic changes in magnitudes and frequencies of floods in the Upper Mississippi River Valley.**

Knox, J.C., *Fluvial Processes and Environmental Change*. Edited by A.G. Brown and T.A. Quine. British Geomorphological Research Group symposia series, Chichester, UK, John Wiley & Sons, Ltd., 1999, p.255-282, 54 refs.

DLC GB1201.2.F59 1999

Floods, Floodplains, Alluvium, Quaternary deposits, Water erosion, Soil dating, Geomorphology, Paleoclimatology, United States—Mississippi River

53-3818

**Environmental change and sediment yield from glacierised basins: the role of fluvial processes and sediment storage.**

Warburton, J., *Fluvial Processes and Environmental Change*. Edited by A.G. Brown and T.A. Quine. British Geomorphological Research Group symposia series, Chichester, UK, John Wiley & Sons, Ltd., 1999, p.363-384, 53 refs.

DLC GB1201.2.F59 1999

Glaciation, Glacial erosion, Glacial rivers, Meltwater, Lake bursts, Floods, Sediment transport, Alluvium, Outwash, Floodplains, Geomorphology, Paleoclimatology

53-3819

**Impact of recent climate change on river flow and glaciofluvial suspended sediment loads in South Iceland.**

Lawler, D.M., Wright, L.J., *Fluvial Processes and Environmental Change*. Edited by A.G. Brown and T.A. Quine. British Geomorphological Research Group symposia series, Chichester, UK, John Wiley & Sons, Ltd., 1999, p.385-407, Refs. p.404-407.

DLC GB1201.2.F59 1999

Glacial erosion, Subglacial drainage, Glacial rivers, Outwash, River flow, Suspended sediments, Alluvium, Sediment transport, Climatic changes, Iceland

53-3820

**Global topography of Mars and implications for surface evolution.**

Smith, D.E., et al, *Science*, May 28, 1999, 284(5419), p.1495-1503, 67 refs.

Mars (planet), Planetary environments, Topographic surveys, Radio echo soundings, Height finding, Spaceborne photography, Geomorphology

53-3821

**Temperatures on Europa from Galileo photopolarimeter-radiometer: nighttime thermal anomalies.**

Spencer, J.R., Tamppari, L.K., Martin, T.Z., Travis, L.D., *Science*, May 28, 1999, 284(5419), p.1514-1516, 34 refs.

Satellites (natural), Extraterrestrial ice, Ice detection, Ice temperature, Ice heat flux, Surface temperature, Albedo, Radiometry, Diurnal variations, Spaceborne photography

53-3822

**Arctic Radiation and Turbulence Interaction Study (ARTIST).**

Hartmann, J., et al, *Berichte zur Polarforschung*, 1999, No.305, 81p., 18 refs.

Sea ice distribution, Ice conditions, Ice cover effect, Ice heat flux, Air ice water interaction, Polar atmospheres, Marine atmospheres, Cloud cover, Atmospheric circulation, Turbulent exchange, Atmospheric boundary layer, Radiation balance, Norway—Svalbard, Arctic Ocean

53-3823

**Late Quaternary paleoenvironment along the northern Barents and Kara seas continental margin. A multi parameter analysis. [Spätquartäre Paläoumweltbedingungen am nördlichen Kontinentalrand der Barents- und Kara-See. Eine Multi-Parameter-Analyse]**

Knies, J., *Berichte zur Polarforschung*, 1999, No.304, 159p., In German and English. Refs. p.118-138.

Glaciation, Glacier oscillation, Ice sheets, Glacial meteorology, Marine geology, Marine deposits, Bottom sediment, Quaternary deposits, Drill core analysis, Stratigraphy, Paleoecology, Global change, Paleoclimatology, Barents Sea, Russia—Kara Sea

53-3824

**Polar stratospheric clouds: lidar-observations, characterization of formation and development. [Polare stratosphärische Wolken: Lidar-Beobachtungen, Charakterisierung von Entstehung und Entwicklung]**

Biele, J., *Berichte zur Polarforschung*, 1999, No.303, 194p., In German with English summary. Refs. p.180-194.

Polar atmospheres, Atmospheric composition, Polar stratospheric clouds, Cloud physics, Ice nuclei, Ozone, Lidar, Norway—Spitsbergen, Greenland

53-3825

**Geology of the Bunger Hills-Deman Glacier region, East Antarctica.**

Sheraton, J.W., Tingey, R.J., Oliver, R.L., Black, L.P., *Australian Geological Survey Organisation. AGSO bulletin*, 1995, No.244, 124p. + map, Refs. p.82-87.

DLC QE340.A39 No.244

Geological surveys, Geological maps, Geologic structures, Earth crust, Tectonics, Lithology, Geochemistry, Continental drift, Geochronology, Antarctica—Bunger Hills, Antarctica—Denman Glacier

53-3826

**Geosynthetics '99 Conference proceedings.**

Geosynthetics '99, Boston, MA, Apr. 28-30, 1999, Roseville, MN, Industrial Fabrics Association International, 1999, 2 vols.(1,144p. + indexes), Refs. passim. For selected papers see 53-3827 through 53-3833.

Geotextiles, Thaw weakening, Soil trafficability, Soil stabilization, Subgrade soils, Subgrade preparation, Subgrade maintenance

53-3827

**Monotonic loading of geogrid-reinforced finite depth granular material.**

Walters, D.L., Raymond, G.P., *Geosynthetics '99*, Boston, MA, Apr. 28-30, 1999. Conference proceedings. Vol.1, Roseville, MN, Industrial Fabrics Association International, 1999, p.265-278, 8 refs.

Railroad tracks, Cranes (hoists), Footings, Subgrade soils, Thaw weakening, Subgrade preparation, Subgrade maintenance, Geotextiles, Soil stabilization, Bearing tests, Soil trafficability

53-3828

**Testing and installation of a geosynthetic clay liner capping system at high elevation—a case study at the Summitville Mine.**

Reimer, D.S., Comer, A.I., Wienecke, C.J., Brewer, W.E., Frobels, R.K., *Geosynthetics '99*, Boston, MA, Apr. 28-30, 1999. Conference proceedings. Vol.1, Roseville, MN, Industrial Fabrics Association International, 1999, p.307-319.

Mining, Tailings, Leaching, Seepage, Soil pollution, Land reclamation, Geotextiles, Clay soils, Earth fills, Waterproofing, Cold weather operation, Freeze thaw tests, United States—Colorado

53-3829

**Geotextiles to stabilize thawing, low-bearing-capacity soils: a comparison of two design methods for use by the US Army.**

Henry, K.S., Holtz, R.D., MP 5332, *Geosynthetics '99*, Boston, MA, Apr. 28-30, 1999. Conference proceedings. Vol.1, Roseville, MN, Industrial Fabrics Association International, 1999, p.427-440, 16 refs. Subgrade soils, Ground thawing, Thaw weakening, Bearing tests, Soil trafficability, Aggregates, Geotextiles, Soil stabilization, Subgrade preparation, Subgrade maintenance, Road maintenance

Thawing fine-grained soils are often saturated and have extremely low bearing capacity. Geotextiles reinforce unsurfaced roads on weak, saturated soils and therefore are good candidates for stabilization of thawing soils. To stabilize the soil, a geotextile is placed on it, then the geotextile is covered with aggregate. Design involves selection of aggregate thickness and geotextile. The US Army uses one of two commonly used design techniques for geotextile reinforcement of low-volume roads. The other method, which offers potential to reduce aggregate thickness over the geotextile by accounting for the tensile properties of the geotextile, was compared with the Army method. Although it offers considerable aggregate savings over the current method, it may be unconservative with respect to stresses estimated at the subgrade surface. Future work should consider adopting a method that provides realistic estimates of stresses at the subgrade as well as aggregate savings through accounting for the tensile properties of geotextiles.

53-3830

**Repeated loading of reinforced finite depth granular material.**

Walters, D.L., Raymond, G.P., *Geosynthetics '99*, Boston, MA, Apr. 28-30, 1999. Conference proceedings. Vol.2, Roseville, MN, Industrial Fabrics Association International, 1999, p.697-709, 10 refs. Railroad tracks, Subgrade soils, Thaw weakening, Settlement (structural), Geotextiles, Soil stabilization, Subgrade preparation, Subgrade maintenance, Soil trafficability

53-3831

**Effectiveness of geosynthetics for roadway construction in cold regions: results of a multi-use test section.**

Hayden, S.A., Humphrey, D.N., Christopher, B.R., Henry, K.S., Fettes, C., MP 5333, *Geosynthetics '99*, Boston, MA, Apr. 28-30, 1999. Conference proceedings. Vol.2, Roseville, MN, Industrial Fabrics Association International, 1999, p.847-862, 6 refs. Subgrade soils, Soil freezing, Frost resistance, Frost protection, Geotextiles, Composite materials, Soil stabilization, Drainage, Cold weather tests, Subgrade maintenance, Road maintenance, United States—Maine

The Maine Department of Transportation has reconstructed a 3.0 km portion of U.S. Route 1A within the towns of Frankfort and Winterport, ME. This roadway is plagued with poor subgrade soils (A-6) and has been historically known for its poor pavement performance. The reconstruction project is providing an excellent opportunity to evaluate the effectiveness of alternative pavement sections incorporating varying geosynthetics in differing applications under northern climatic conditions. Multiple test sections encompassing the entire length of the project have been constructed using different combinations of geosynthetics including: single and multiple layers of geogrids as reinforcements with and without separation layers; high strength woven geotextile as reinforcement; woven and nonwoven geotextiles as separation/stabilization layers; and, geocomposites to provide horizontal drainage and act as a capillary barrier. A control section with no geosynthetics was also constructed. Each test section is instrumented. Along with an overview of the project, this interim paper presents the reinforcement and drainage data collected during installation and after the first year of monitoring.

53-3832

**Initial evaluation of geotextiles for wastewater filtration at temporary base camps.**

Martel, C.J., Pelton, D.K., Henry, K.S., MP 5334, *Geosynthetics '99*, Boston, MA, Apr. 28-30, 1999. Conference proceedings. Vol.2, Roseville, MN, Industrial Fabrics Association International, 1999, p.1005-1016, 14 refs.

Military facilities, Water treatment, Waste disposal, Sewage disposal, Sanitary engineering, Geotextiles, Filters, Cost analysis, Bosnia

The Army has identified a need for a deployable wastewater treatment system for use at temporary base camps such as those in Bosnia. This study evaluated a new concept for wastewater treatment that features the use of disposable geotextiles for filtration of wastewater. The advantage of this concept is that it eliminates the need for large settling tanks and sludge dewatering operations. Cost estimates indicate that geotextile filtration of wastewater is approximately one-third the cost of conventional treatment. In this bench scale study, up to 70% of the total suspended solids (TSS) and 40%

of the biochemical oxygen demand from raw wastewater (sewage) were removed, demonstrating that nonwoven geotextiles are very good filters. The hydraulic capacity varied from 646 L/m<sup>2</sup> to 3138 L/m<sup>2</sup> depending on the TSS concentration. Approximately one-half of the hydraulic capacity was restored by cleaning. Calculations indicate that the graywater (sewage minus water from latrines) produced by a 550 soldier unit would require 116 m<sup>2</sup> of geotextile per day, which would mean several manual filter changes each day. The alternative is to automate the filter change as it becomes clogged.

53-3833

**Unprotected PP liner for storage of paper mill black liquor in cold region.**

Bombardier, L., Jetté, D., Piché, M., Rollin, A., *Geosynthetics '99*, Boston, MA, Apr. 28-30, 1999. Conference proceedings. Vol.2, Roseville, MN, Industrial Fabrics Association International, 1999, p.1083-1095, 10 refs.

Waste disposal, Geotextiles, Synthetic materials, Polymers, Linings, Waterproofing, Cold weather performance

53-3834

**Marine evidence for the last glacial advance across eastern Hudson Strait, eastern Canadian Arctic.**

Jennings, A.E., Manley, W.F., MacLean, B., Andrews, J.T., *Journal of Quaternary science*, Nov.-Dec. 1998, 13(6), p.501-514, 48 refs.

Marine geology, Marine deposits, Bottom sediment, Glaciation, Ice sheets, Glacial geology, Glacier oscillation, Glacial deposits, Quaternary deposits, Geochronology, Stratigraphy, Global change, Paleoclimatology, Canada—Hudson Strait, Labrador Sea

53-3835

**Replicability and variability of the recent macrofossil and proxy-climate record from raised bogs: field stratigraphy and macrofossil data from Bolton Fell Moss and Walton Moss, Cumbria, England.**

Barber, K., Dumayne-Peaty, L., Hughes, P., Mauquoy, D., Scaife, R., *Journal of Quaternary science*, Nov.-Dec. 1998, 13(6), p.515-528, 50 refs.

Peat, Swamps, Lacustrine deposits, Paleobotany, Plant ecology, Fossils, Palynology, Soil dating, Core samplers, Climatic changes, Paleoclimatology, United Kingdom—England

53-3836

**Distinction between the Storegga tsunami and the Holocene marine transgression in coastal basin deposits of western Norway.**

Bondevik, S., Svendsen, J.I., Mangerud, J., *Journal of Quaternary science*, Nov.-Dec. 1998, 13(6), p.529-537, 28 refs.

Marine geology, Shore erosion, Marine deposits, Sea level, Bottom sediment, Lacustrine deposits, Quaternary deposits, Earthquakes, Floods, Soil dating, Geochronology, Stratigraphy, Norway

53-3837

**Relic permafrost structures in the Gobi of Mongolia: age and significance.**

Owen, L.A., et al, *Journal of Quaternary science*, Nov.-Dec. 1998, 13(6), p.539-547, 17 refs.

Permafrost distribution, Permafrost indicators, Periglacial processes, Ice wedges, Cryoturbation, Alluvium, Soil dating, Stratigraphy, Paleoclimatology, Mongolia

53-3838

**Evidence for Heinrich event 1 in the British Isles.**

McCabe, M., Knight, J., McCarron, S., *Journal of Quaternary science*, Nov.-Dec. 1998, 13(6), p.549-568, 80 refs.

Ice sheets, Glaciation, Glacial geology, Glacier flow, Glacial erosion, Glacial deposits, Moraines, Marine geology, Marine deposits, Ice rafting, Bottom sediment, Sea level, Stratigraphy, Geochronology, Global change, Paleoclimatology, Irish Sea, North Atlantic Ocean

53-3839

**Thermal structure of the arctic summer mesosphere.**

Lübken, F.J., *Journal of geophysical research*, Apr. 27, 1999, 104(D8), p.9135-9149, 24 refs.

Polar atmospheres, Atmospheric composition, Atmospheric physics, Atmospheric density, Aerosols, Ice nuclei, Condensation nuclei, Cloud physics, Clouds (meteorology), Air temperature, Temperature gradients, Thermal regime

53-3840

**Atmospheric moisture transport across the southern ocean via satellite observations.**

Slonaker, R.L., Van Woert, M.L., *Journal of geophysical research*, Apr. 27, 1999, 104(D8), p.9229-9249, 44 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Humidity, Moisture transfer, Precipitation (meteorology), Hydrologic cycle, Ice sheets, Glacial meteorology, Glacier alimentation, Glacier mass balance, Global change, Sea level, Antarctica

53-3841

**Lower stratospheric radiative heating rates and sensitivities calculated from antarctic balloon observations.**

Hicke, J., Tuck, A., Vömel, H., *Journal of geophysical research*, Apr. 27, 1999, 104(D8), p.9293-9308, 35 refs.

Polar atmospheres, Stratosphere, Atmospheric circulation, Atmospheric composition, Atmospheric pressure, Air temperature, Humidity, Water vapor, Ozone, Cloud cover, Polar stratospheric clouds, Heat flux, Radiation balance, Balloons, Sounding, Antarctica—McMurdo Station

53-3842

**Tropospheric clouds and lower stratospheric heating rates: results from late winter in the Southern Hemisphere.**

Hicke, J., Tuck, A., *Journal of geophysical research*, Apr. 27, 1999, 104(D8), p.9309-9324, 33 refs.

Polar atmospheres, Stratosphere, Atmospheric circulation, Cloud cover, Polar stratospheric clouds, Sea ice distribution, Ice edge, Ice cover effect, Albedo, Heat flux, Radiation balance, Radiometry, Spaceborne photography, Computerized simulation, Antarctica

53-3843

**Retrieval of aerosol surface area and volume densities from extinction measurements: application to POAM II and SAGE II.**

Steele, H.M., Lumpe, J.D., Turco, R.P., Bevilacqua, R.M., Massie, S.T., *Journal of geophysical research*, Apr. 27, 1999, 104(D8), p.9325-9336, 48 refs.

Polar atmospheres, Stratosphere, Atmospheric circulation, Atmospheric composition, Ozone, Aerosols, Polar stratospheric clouds, Photochemical reactions, Spaceborne photography, Mathematical models

53-3844

**Role of vegetation and soil in the Holocene megathermal climate over China.**

Wang, H.J., *Journal of geophysical research*, Apr. 27, 1999, 104(D8), p.9361-9367, 31 refs.

Atmospheric circulation, Precipitation (meteorology), Vegetation patterns, Vegetation factors, Plant ecology, Paleobotany, Soil patterns, Soil air interface, Paleoclimatology, Global warming, Computerized simulation, China

53-3845

**Mineral dust aerosol cycle during the last glacial maximum.**

Reader, M.C., Fung, I., McFarlane, N., *Journal of geophysical research*, Apr. 27, 1999, 104(D8), p.9381-9398, 43 refs.

Atmospheric circulation, Aerosols, Dust, Eolian soils, Loess, Soil air interface, Ice cores, Ice dating, Soil dating, Paleoclimatology, Global change, Mathematical models, Computerized simulation, Greenland, Antarctica

53-3846

**Impact of thermomechanical ice sheet coupling on a model of the 100 kyr ice age cycle.**

Tarasov, L., Peltier, W.R., *Journal of geophysical research*, Apr. 27, 1999, 104(D8), p.9517-9545, 63 refs.

Glaciation, Ice sheets, Glacier oscillation, Glacier heat balance, Glacier mass balance, Glacial meteorology, Ice age theory, Global change, Paleoclimatology, Ice models, Mathematical models, Computerized simulation

53-3847

**Growing season energy and CO<sub>2</sub> exchange at a subarctic boreal woodland.**

Lafleur, P.M., *Journal of geophysical research*, Apr. 27, 1999, 104(D8), p.9571-9580, 44 refs.

Forest tundra, Tundra climate, Tundra vegetation, Tundra soils, Plant ecology, Forest ecosystems, Soil air interface, Nutrient cycle, Geochemical cycles, Atmospheric circulation, Atmospheric composition, Carbon dioxide, Canada—Manitoba—Churchill

53-3848

**Freezing effects on water and solute redistribution in unsaturated soils.**

Hofmann, L.L., Fargo, North Dakota State University, 1990, 104p., M.S. thesis. 47 refs.

Soil freezing, Freezing front, Soil water migration, Frozen ground thermodynamics, Frozen ground chemistry

53-3849

**Urban snowmelt processes: modelling and observation.**

Semädeni-Davies, A.F., Lund, Sweden, University, Lund Institute of Technology, Department of Water Resources Engineering, 1999, 52p. + appends., LUTVDG/(TVVR-1026)/(1999), Ph.D. thesis. With Swedish summary. Refs. p.45-52.

Snow hydrology, Snow heat flux, Snow melting, Snowmelt, Snow removal, Runoff forecasting, Drains, Drainage, Urban planning, Municipal engineering, Sweden

53-3850

**Ice of Lake Erie around South Bass Island 1936-1964.**

Langlois, T.H., Langlois, M.H., Ohio State University, Franz Theodore Stone Laboratory. Contribution, No.14 and Ohio State University. Center for Lake Erie Area Research. Ohio Sea Grant Program. Technical report, No.165, Columbus, Ohio State University, College of Biological Sciences, 1985, 172p., Refs. p.117-123. Posthumous publication edited by J.L. Forsyth.

Lake ice, Ice conditions, Ice formation, Freezeup, Ice melting, Ice breakup, Erie, Lake

53-3851

**Lichens: lichenometric dating of diachronous surfaces.**

McCarroll, D., *Earth surface processes and landforms*, Winter 1995, 20(9), Technical and software bulletin, 1995, No.4, p.829-831, 4 refs. Description of software to accompany earlier paper by D. McCarroll, for which see 48-3009.

Avalanches, Avalanche deposits, Lichens, Soil dating, Age determination, Computer programs, Norway

53-3852

**Variability of Fram Strait ice flux and North Atlantic Oscillation.**

Kwok, R., Rothrock, D.A., *Journal of geophysical research*, Mar. 15, 1999, 104(C3), p.5177-5189, 18 refs.

Sea ice distribution, Ice volume, Drift, Air ice water interaction, Atmospheric circulation, Atmospheric pressure, Ocean currents, Salinity, Statistical analysis, Fram Strait

53-3853

**Mass, heat, and salt transport in the southeastern Pacific: a Circumpolar Current inverse model.**

Gille, S.T., *Journal of geophysical research*, Mar. 15, 1999, 104(C3), p.5191-5209, 45 refs.

Atmospheric circulation, Air water interactions, Ocean currents, Sea water, Water transport, Water temperature, Salinity, Heat flux, Heat balance, Computerized simulation

53-3854

**Influence of melting icebergs on distribution, characteristics and transport of marine particles in an East Greenland fjord.**

Azetsu-Scott, K., Syvitski, J.P.M., *Journal of geophysical research*, Mar. 15, 1999, 104(C3), p.5321-5328, 46 refs.

Glacial geology, Marine geology, Glacial till, Glacial deposits, Sediment transport, Calving, Icebergs, Ice rafting, Ice melting, Meltwater, Suspended sediments, Marine deposits, Bottom sediment, Greenland

53-3855

**Sea-ice impact on long-term particle flux in the Greenland Sea's Is Odden-Nordbukta region, 1985-1996.**

Ramseier, R.O., Garrity, C., Bauerfeind, E., Peinert, R., *Journal of geophysical research*, Mar. 15, 1999, 104(C3), p.5329-5343, 53 refs.

Sea ice distribution, Ice conditions, Ice edge, Ice cover effect, Marine biology, Nutrient cycle, Geochemical cycles, Suspended sediments, Marine deposits, Bottom sediment, Greenland Sea

53-3856

**Particle fluxes during austral spring and summer in the southern Ross Sea, Antarctica.**

Asper, V.L., Smith, W.O., Jr., *Journal of geophysical research*, Mar. 15, 1999, 104(C3), p.5345-5359, 41 refs.

Marine biology, Plankton, Algae, Biomass, Nutrient cycle, Suspended sediments, Antarctica—Ross Sea

53-3857

**Physical and chemical characteristics of aerosols at Spitsbergen in the spring of 1996.**

Staebler, R.M., et al, *Journal of geophysical research*, Mar. 20, 1999, 104(D5), p.5515-5529, 30 refs.

Polar atmospheres, Atmospheric circulation, Atmospheric composition, Aerosols, Air pollution, Ozone, Norway—Spitsbergen

53-3858

**Three-dimensional representations of hexagonal ice crystals and hail particles of elliptical cross sections.**

Wang, P.K., *Journal of the atmospheric sciences*, Apr. 15, 1999, 56(8), p.1089-1093, 6 refs.

Ice crystal structure, Hailstone structure, Mathematical models

53-3859

**Turbulence structure in an ice-covered, sand-bed river.**

Sukhodolov, A., Thiele, M., Bungartz, H., Engelhardt, C., *Water resources research*, Mar. 1999, 35(3), p.889-894, 12 refs.

Icebound rivers, River ice, Ice cover effect, Ice water interface, River flow, Turbulence, Mathematical models

53-3860

**Subglacial electrical phenomena.**

Blake, E.W., Clarke, G.K.C., *Journal of geophysical research*, Apr. 10, 1999, 104(B4), p.7481-7495, 58 refs.

Glacial hydrology, Subglacial drainage, Glacier beds, Subglacial observations, Electromagnetic prospecting, Electrical logging, Bottom topography, Water pressure, Water flow, Flow rate, Canada—Yukon Territory

53-3861

**Characterization of the basal hydraulic system of a surge-type glacier: Trapridge Glacier, 1989-1992.**

Stone, D.B., Vancouver, University of British Columbia, 1993, 210p., University Microfilms order No.80866, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Feb 1994, 54(8), p.4050.

Glacial hydrology, Subglacial drainage, Glacier flow, Glacier friction, Glacier heat balance, Glacier surges, Glacier beds, Basal sliding, Meltwater, Water pressure, Water flow

53-3862

**Oxygen isotopic studies of ice, snow and water samples near the Indian stations in Antarctica.**

Bhattacharya, S.K., Nijampurkar, V.N., *Geological Society of India. Journal*, Mar. 1998, 51(3), p.399-404, 13 refs.

DLC QE1.G3354 V51 Jan-June 1998

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Atmospheric composition, Scavenging, Snow composition, Ice composition, Meltwater, Hydrogeochemistry, Oxygen isotopes, Isotope analysis, Ice cores, Paleoclimatology, Antarctica—Dakshin Gangotri Station, Antarctica—Maitri Station

53-3863

**Snow survey bulletin & water supply forecast, March 1, 1999, Yukon Territory.**

Canada. Indian and Northern Affairs. Water Resources Division, Whitehorse, 1999, 27p.

Snow surveys, Runoff forecasting, Snow depth, Snow water equivalent, Stream flow, Canada—Yukon Territory

53-3864

**Snow survey bulletin & water supply forecast, April 1, 1999, Yukon Territory.**

Canada. Indian and Northern Affairs. Water Resources Division, Whitehorse, 1999, 27p.

Snow surveys, Runoff forecasting, Snow depth, Snow water equivalent, Stream flow, Canada—Yukon Territory

53-3865

**Assessment of LTPP friction data.**

Titus-Glover, L., Tayabji, S.D., *U.S. Federal Highway Administration. Office of Infrastructure Research and Development. Report*, Mar. 1999, FHWA-RD-99-037, 202p., PB99-150161, 46 refs.

Pavements, Skid resistance, Tires, Traction, Road icing, Salting, Sanding, Rubber ice friction, Cold weather performance, Road maintenance

53-3866

**Surface and 700 hPa atmospheric circulation patterns for the Great Lakes basin and eastern North America and relationship to atmospheric teleconnections.**

Rohli, R.V., et al, *Journal of great lakes research*, 1999, 25(1), p.45-60, 45 refs.

Atmospheric circulation, Atmospheric pressure, Atmospheric disturbances, Air water interactions, Synoptic meteorology, Long range forecasting, Global warming, Statistical analysis, Great Lakes

53-3867

**Concentrations of polychlorinated biphenyls in the water column of the Laurentian Great Lakes: spring 1993.**

Anderson, D.J., Bloem, T.B., Blankenbaker, R.K., Stanko, T.A., *Journal of great lakes research*, 1999, 25(1), p.160-170, 32 refs.

Lake water, Water pollution, Water chemistry, Suspended sediments, Chemical analysis, Statistical analysis, Great Lakes

53-3868

**Fifth International Conference on the Bearing Capacity of Roads and Airfields, Trondheim, July 6-8, 1998. Papers.**

Baltzer, S., Zhang, W., Ullidtz, P., Macdonald, R., Lund, J.L., *Danish Road Institute. Report*, 1998, No.86, 43p., Refs. passim. Consists of three papers by the authors of this report, on the Danish Road Testing Machine for measuring the bearing strength of pavements and subgrades, presented at the conference. For other papers from the same conference see 52-5378 through 52-5401.

Pavements, Subgrade soils, Soil strength, Soil trafficability, Bearing strength, Impact tests, Strain tests, Test equipment, Road maintenance

53-3869

**Baltic Sea ice field campaign 17-24 March 1997: data report.**

Grönvall, H., et al, *Finnish Institute of Marine Research (Merentutkimuslaitos). Report series. Meri (the sea)*, 1998, No.33, Integrated Use of New Microwave Satellite Data for Improved Sea Ice Observations. IMSI report, No.2, p.3-47, 7 refs. Ice surveys, Sea ice distribution, Ice conditions, Ice sampling, Weather stations, Meteorological data, Radiometry, Synthetic aperture radar, Spaceborne photography, Bothnia, Gulf

53-3870

**Dissemination of test products to selected users in the Baltic Sea area: report on activities in the winter of 1997.**

Seinä, H., Grönvall, H., Nizovsky, M., Vainio, J., *Finnish Institute of Marine Research (Merentutkimuslaitos). Report series. Meri (the sea)*, 1998, No.33, Integrated Use of New Microwave Satellite Data for Improved Sea Ice Observations. IMSI report, No.3, p.49-68, 2 refs.

Ice surveys, Sea ice distribution, Ice conditions, Drift, Ice reporting, Ice forecasting, Synthetic aperture radar, Spaceborne photography, Data transmission, Computer programs, Baltic Sea

53-3871

**Coupled 3D hydrodynamic and ecosystem model FinEst.**

Tamsalu, R., ed, *Finnish Institute of Marine Research (Merentutkimuslaitos). Report series. Meri (the sea)*, 1998, No.35, 166p., 83 refs.

Marine atmospheres, Marine biology, Air water interactions, Ocean currents, Water transport, Marine deposits, Bottom sediment, Suspended sediments, Algae, Plankton, Bacteria, Biomass, Nutrient cycle, Mathematical models, Computer programs, Riga, Gulf, Finland, Gulf

53-3872

**Blade heating system of arctic wind turbine; design, development and implementation. [Arktisen tuulivoimalaitoksen lapalämmitysjärjestelmän suunnittelu, kehitys ja toteutus]**

Marjaniemi, M., Peltola, E., *Finland. Technical Research Centre. VTT publications (Valtion teknillinen tutkimuskeskus. VTT julkaisuja)*, 1998, No.830, 55p., In Finnish with English summary. 14 refs.

Wind power generation, Propellers, Ice accretion, Ice loads, Electric heating, Defrosting, Artificial melting, Ice prevention, Ice removal, Computerized simulation

53-3873

**Effects of icing on the aerodynamics and loads of a wind turbine. [Jäätymisen vaikutuksia tuulivoimalan aerodynamiikkaan ja kuormituksiin]**

Antikainen, P., *Finland. Technical Research Centre. VTT research notes (Valtion teknillinen tutkimuskeskus. VTT tiedotteita)*, 1998, No.1909, 39p., In Finnish with English summary. 7 refs.

Wind power generation, Propellers, Ice accretion, Ice loads, Ice air interface, Wind pressure, Air flow, Computerized simulation

53-3874

**Marine science in the Arctic: a strategy.**

Aagaard, K., et al, Fairbanks, AK, Arctic Research Consortium of the United States (ARCUS), 1999, 71p., Refs. p.55-71. Report to the U.S. National Science Foundation.

Research projects, International cooperation, Regional planning, Polar atmospheres, Marine atmospheres, Marine biology, Air ice water interaction, Environmental protection, Global warming, Paleoclimatology

53-3875

**Revision of MMS Offshore Continental Shelf Oil-Weathering Model: evaluation.**

Reed, M., et al, *U.S. Department of the Interior. Minerals Management Service. Alaska Outer Continental Shelf Region. Anchorage. OCS study*, Aug. 1998, MMS 98-0058, 134p., PB99-134033, Refs. p.50-55, 127-134.

Oil spills, Water pollution, Ice cover effect, Weathering, Environmental impact, Computerized simulation

53-3876

**Annual report 1998.**

Canada. National Energy Board. Environmental Studies Research Funds, Calgary, Alberta, Feb. 1999, 14p., With French version separately paged. Includes list of 135 ESRF reports published since 1983.

Research projects, Organizations, Regional planning, Exploration, Economic development, Environmental impact, Cost analysis, Canada

53-3877

**Ice in stream pools in California's central Sierra Nevada: spatial and temporal variability and reduction in trout habitat availability.**

Berg, N.H., *North American journal of fisheries management*, 1994, Vol.14, p.372-384, 13 refs.

Streams, Ponds, River ice, Ice formation, Ice cover thickness, Ice cover effect, Animals, Ecology, Ecosystems, United States—California—Sierra Nevada

53-3878

**Observations on ice conditions and bottom organisms in the West Gallatin River, Montana.**

Brown, C.J.D., Clothier, W.D., Alvord, W., *Montana Academy of Sciences. Proceedings*, 1953, Vol.13, p.21-27, 3 refs.

River ice, Ice formation, Ice conditions, Bottom ice, Ice cover effect, Ecology, Ecosystems, United States—Montana

53-3879

**Need for investigating fish conditions in winter.**

Hubbs, C.L., Trautman, M.B., *American Fisheries Society. Transactions*, 1935, Vol.63, p.51-56.

River ice, Lake ice, Ice conditions, Ice cover effect, Ecology, Ecosystems, Animals, Environmental protection, Cold weather operation

53-3880

**Observations on a remarkable exudation of ice from the stems of vegetables, and on a singular protrusion of icy columns from certain kinds of earth during frosty weather.**

LeConte, J., *London, Edinburgh and Dublin philosophical magazine and journal of science. 3rd series*, May 1850, 36(244), p.329-342, Refs. passim.

Plant tissues, Vegetation factors, Ice formation, Ice accretion, Ice structure, Capillarity

53-3881

**Heat balance and unfrozen water content during the removal of snow cover at Oberurgel, 1980 meters above sea level. [Wärmehaushalt und freier Wassergehalt beim abbau der Schneedecke (Oberurgel, 1980 m Seehöhe)]**

Ambach, W., *Carinthia II. Sonderheft*, [1964], No.24, Internationale Tagung für Alpine Meteorologie (International Meeting on Alpine Meteorology, 8th, Villach, Austria, Sep. 9-12, 1964), p.267-269, In German with English summary. 3 refs.

Glacial hydrology, Glacier heat balance, Snow ice interface, Snow water content, Snow melting, Snowmelt, Austria

53-3882

**Radioactivity measurements to determine the firm reserve of an alpine glacier. [Radioaktivitätsmessungen zur Bestimmung der Firnrücklagen eines Alpengletschers]**

Ambach, W., Eisner, H., *Naturwissenschaften*, 1965, 52(7), p.154-155, In German. 4 refs.

Mountain glaciers, Glacier alimentation, Firm stratification, Glacier ice, Ice sampling, Ice composition, Fallout, Ice dating, Austria

53-3883

**In the Greenland ice wilderness. [In der grönländischen Eiswüste]**

Ambach, W., *Osterreichischer Alpenverein. Jahrbuch (Austrian Alpine Club. Yearbook)*, 1963, Vol.88, p.101-105, In German.

Glacier surveys, Ice sheets, Expeditions, Greenland

53-3884

**Arctic Centre's research strategy 1999-2003.**

Hukkinen, J., ed, Forbes, B., ed, Horn, F., ed, Kuhry, P., ed, Langlais, R., ed, *Arktisen keskuksen tiedotteita (University of Lapland, Rovaniemi, Finland. Arctic Centre. Reports)*, 1999, No.29, 30p.

Research projects, Organizations, Education, Regional planning, Finland

53-3885

**Snowmelt sensitivity to radiation in the urban environment.**

Semädeni-Davies, A., Bengtsson, L., *Hydrological sciences journal*, Feb. 1998, 43(1), p.67-89, With French summary. 28 refs.

Snow hydrology, Snow heat flux, Snow melting, Snowmelt, Urban planning, Municipal engineering, Mathematical models, Sweden

53-3886

**Characteristics of energy and water budgets over wet sedge and tussock tundra ecosystems at North Slope in Alaska.**

Harazono, Y., Yoshimoto, M., Mano, M., Vourlitis, G.L., Oechel, W.C., *Hydrological processes*, Oct.-Nov. 1998, 12(13-14), BAHC-LUCC Joint Inter-Core Project Symposium on Interactions between the Hydrological Cycle and Land Use/Cover, Kyoto, Japan, Nov. 4-7, 1996, p.2163-2183, 34 refs.

Tundra climate, Tundra vegetation, Vegetation patterns, Plant physiology, Evapotranspiration, Soil air interface, Atmospheric circulation, Heat flux, Heat balance, Water balance, Hydrologic cycle, Geochemical cycles, Nutrient cycle, Global warming, United States—Alaska—North Slope

53-3887

**Study of the sensitivity of a regional model in response to land cover change over northern China.**

Wei, H.L., Fu, C.B., *Hydrological processes*, Oct.-Nov. 1998, 12(13-14), BAHC-LUCC Joint Inter-Core Project Symposium on Interactions between the Hydrological Cycle and Land Use/Cover, Kyoto, Japan, Nov. 4-7, 1996, p.2249-2265, 15 refs.

Steppes, Deserts, Meadow soils, Desert soils, Vegetation patterns, Soil erosion, Desiccation, Heat flux, Heat balance, Water balance, Hydrologic cycle, Climatic changes, Computerized simulation, China

53-3888

**Regularities of natural cycles, predictions of climate and surface conditions.**

Berry, B.L., *Hydrological processes*, Oct.-Nov. 1998, 12(13-14), BAHC-LUCC Joint Inter-Core Project Symposium on Interactions between the Hydrological Cycle and Land Use/Cover, Kyoto, Japan, Nov. 4-7, 1996, p.2267-2278, 21 refs.

Ice age theory, Glaciation, Global change, Paleoclimatology, Geochronology, Mathematical models, Computerized simulation

53-3889

**Regional hydrological effects of grassland degradation in the Loess Plateau of China.**

Wang, Q.X., Takahashi, H., *Hydrological processes*, Oct.-Nov. 1998, 12(13-14), BAHC-LUCC Joint Inter-Core Project Symposium on Interactions between the Hydrological Cycle and Land Use/Cover, Kyoto, Japan, Nov. 4-7, 1996, p.2279-2288, 19 refs.

Loess, Eolian soils, Steppes, Meadow soils, Soil erosion, Vegetation patterns, Evapotranspiration, Heat balance, Water balance, Hydrologic cycle, Desiccation, Climatic changes, Mathematical models, China—Loess Plateau

53-3890

**Fish ecology in arctic North America.**

American Fisheries Society Symposium, 19th, Fairbanks, AK, May 19-21, 1992, Reynolds, J.B., ed, Bethesda, MD, American Fisheries Society, 1997, 345p., Refs. passim. For selected papers see 53-3890 through 53-3898.

DLC QL637.F54 1992

Marine biology, Animals, Ecology, Ecosystems, Ice cover effect, Physiological effects, Cold tolerance, Cold weather survival

53-3891

**Canadian perspective on issues in arctic fisheries management and research.**

Reist, J.D., American Fisheries Society Symposium, 19th, Fairbanks, AK, May 19-21, 1992. Fish ecology in arctic North America. Edited by J.B. Reynolds, Bethesda, MD, American Fisheries Society, 1997, p.4-12, 3 refs.

DLC QL637.F54 1992

Ecology, Marine biology, Ecosystems, Environmental protection, Animals, Natural resources, Economic development, Regional planning, Canada

53-3892

**Review of fish ecology in arctic North America.**

Power, G., American Fisheries Society Symposium, 19th, Fairbanks, AK, May 19-21, 1992. Fish ecology in arctic North America. Edited by J.B. Reynolds, Bethesda, MD, American Fisheries Society, 1997, p.13-39, Refs. p.33-39.

DLC QL637.F54 1992

Animals, Marine biology, Ecology, Ecosystems, Cryobiology, Limnology, Ice cover effect, Light effects, Physiological effects, Acclimatization, Antifreezes, Cold tolerance, Cold weather survival

53-3893

**Review of the physical oceanography of the northeastern Chukchi Sea.**

Weingartner, T.J., American Fisheries Society Symposium, 19th, Fairbanks, AK, May 19-21, 1992. Fish ecology in arctic North America. Edited by J.B. Reynolds, Bethesda, MD, American Fisheries Society, 1997, p.40-59, 45 refs.

DLC QL637.F54 1992

Ocean currents, Water transport, Water temperature, Salinity, Wind factors, Bottom topography, Sea ice distribution, Ice edge, Ecology, Marine biology, Chukchi Sea

53-3894

**Effects of low temperatures and starvation on resistance to stress in presmolt coho salmon.**

Moles, A., Korn, S., Rice, S., American Fisheries Society Symposium, 19th, Fairbanks, AK, May 19-21, 1992. Fish ecology in arctic North America. Edited by J.B. Reynolds, Bethesda, MD, American Fisheries Society, 1997, p.148-154, 32 refs.

DLC QL637.F54 1992

Animals, Marine biology, Ecology, Physiological effects, Cold tolerance, Cold weather survival

53-3895

**Population dynamics of broad whitefish in the Prudhoe Bay region, Alaska.**

Galloway, B.J., Fechhelm, R.G., Griffiths, W.B., Cole, J.G., American Fisheries Society Symposium, 19th, Fairbanks, AK, May 19-21, 1992. Fish ecology in arctic North America. Edited by J.B. Reynolds, Bethesda, MD, American Fisheries Society, 1997, p.194-207, 31 refs.

DLC QL637.F54 1992

Offshore drilling, Offshore structures, Artificial islands, Embankments, Earth fills, Environmental impact, Deltas, Marine biology, Animals, Ecosystems, Ecology, United States—Alaska—Prudhoe Bay

53-3896

**Experimental introduction of arctic grayling to a rehabilitated gravel extraction site, North Slope, Alaska.**

Hemming, C.R., American Fisheries Society Symposium, 19th, Fairbanks, AK, May 19-21, 1992. Fish ecology in arctic North America. Edited by J.B. Reynolds, Bethesda, MD, American Fisheries Society, 1997, p.208-213, 9 refs.

DLC QL637.F54 1992

Mining, Pits (excavations), Tundra, Streams, Land reclamation, Ice cover effect, Animals, Ecology, Ecosystems, Cold weather survival, United States—Alaska—North Slope

53-3897

**Use of a stress index to estimate temperature and salinity stress in arctic ciscoes.**

Bryan, J.D., Fechhelm, R.G., American Fisheries Society Symposium, 19th, Fairbanks, AK, May 19-21, 1992. Fish ecology in arctic North America. Edited by J.B. Reynolds, Bethesda, MD, American Fisheries Society, 1997, p.262-273, 41 refs.

DLC QL637.F54 1992

Marine biology, Animals, Ecosystems, Ecology, Salinity, Physiological effects, Cold tolerance, Cold weather survival

53-3898

**Synthesis in applied fish ecology: twenty years of studies on effects of causeway development on fish populations in the Prudhoe Bay region, Alaska.**

Wilson, W.J., Galloway, B.J., American Fisheries Society Symposium, 19th, Fairbanks, AK, May 19-21, 1992. Fish ecology in arctic North America. Edited by J.B. Reynolds, Bethesda, MD, American Fisheries Society, 1997, p.326-339, 25 refs.

DLC QL637.F54 1992

Offshore drilling, Offshore structures, Artificial islands, Embankments, Earth fills, Environmental impact, Deltas, Marine biology, Animals, Ecosystems, Ecology, United States—Alaska—Prudhoe Bay

53-3899

**Structure of ice multilayers on metals.**

Witek, H., Buch, V., *Journal of chemical physics*, Feb. 8, 1999, 110(6), p.3168-3175, 26 refs.

Ice models, Ice structure, Ice surface, Ice dielectrics, Ice relaxation, Polarization (charge separation)

53-3900

**Isotopic composition of diatom-bound nitrogen in southern ocean sediments.**

Sigman, D.M., Altabet, M.A., Francois, R., McCorkle, D.C., Gaillard, J.F., *Paleoceanography*, Apr. 1999, 14(2), p.118-134, 70 refs.

Marine deposits, Bottom sediment, Marine biology, Biomass, Nutrient cycle, Algae, Plankton, Fossils, Isotope analysis, Paleocology, Air water interactions, Atmospheric circulation, Atmospheric composition, Paleoclimatology, Global change, Antarctica

53-3901

**Late Quaternary variations in sea surface temperatures and their relationship to orbital forcing recorded in the southern ocean (Atlantic sector).**

Brathauer, U., Abelmann, A., *Paleoceanography*, Apr. 1999, 14(2), p.135-148, 74 refs.

Glaciation, Air ice water interaction, Atmospheric circulation, Ocean currents, Water transport, Water temperature, Surface temperature, Ice age theory, Global change, Paleoclimatology, Antarctica



- 53-3902**  
**Similar glacial and Holocene deep water circulation inferred from southeast Pacific foraminiferal carbon isotope composition.**  
 Matsumoto, K., Lynch-Stieglitz, J., *Paleoceanography*, Apr. 1999, 14(2), p.149-163, 90 refs.  
 Marine deposits, Bottom sediment, Glaciation, Paleocology, Carbon isotopes, Isotope analysis, Ocean currents, Water transport, Global change, Paleoclimatology, Pacific Ocean
- 53-3903**  
**Surface and deep ocean variability in the northern Sargasso Sea during marine isotope stage 3.**  
 Keigwin, L.D., Boyle, E.A., *Paleoceanography*, Apr. 1999, 14(2), p.164-170, 42 refs.  
 Marine deposits, Bottom sediment, Drill core analysis, Isotope analysis, Glaciation, Air water interactions, Atmospheric circulation, Ocean currents, Water transport, Water temperature, Salinity, Surface temperature, Global change, Paleoclimatology, North Atlantic Ocean
- 53-3904**  
**Diffuse spectral reflectance as a proxy for percent carbonate content in North Atlantic sediments.**  
 Ortiz, J., Mix, A., Harris, S., O'Connell, S., *Paleoceanography*, Apr. 1999, 14(2), p.171-186, 59 refs.  
 Glaciation, Marine deposits, Bottom sediment, Drill core analysis, Ice age theory, Global change, Atmospheric circulation, Ocean currents, Air water interactions, Paleoclimatology, North Atlantic Ocean
- 53-3905**  
**U and Th isotope constraints on the duration of Heinrich events H0-H4 in the southeastern Labrador Sea.**  
 Veiga-Pires, C.C., Hillaire-Marcel, C., *Paleoceanography*, Apr. 1999, 14(2), p.187-199, 60 refs.  
 Glaciation, Glacial deposits, Ice rafting, Marine deposits, Bottom sediment, Ice age theory, Global change, Paleoclimatology, Labrador Sea
- 53-3906**  
**Role of oceanic forcing in mid-Holocene Northern Hemisphere climatic change.**  
 Kerwin, M.W., Overpeck, J.T., Webb, R.S., DeVernal, A., Rind, D.H., Healy, R.J., *Paleoceanography*, Apr. 1999, 14(2), p.200-210, 77 refs.  
 Air ice water interaction, Polar atmospheres, Marine atmospheres, Atmospheric circulation, Ocean currents, Paleobotany, Forest lines, Water temperature, Surface temperature, Global change, Paleoclimatology, Computerized simulation, North Atlantic Ocean, Arctic Ocean
- 53-3907**  
**Mid-Wisconsin Laurentide Ice Sheet growth and decay: implications for Heinrich events 3 and 4.**  
 Kirby, M.E., Andrews, J.T., *Paleoceanography*, Apr. 1999, 14(2), p.211-223, 82 refs.  
 Glaciation, Ice sheets, Glacier oscillation, Glacial deposits, Ice rafting, Marine deposits, Bottom sediment, Global change, Paleoclimatology, Labrador Sea
- 53-3908**  
**High-resolution  $U^{K_{37}}$  temperature reconstructions in the South China Sea over the past 220 kyr.**  
 Pelejero, C., Grimalt, J.O., Heilig, S., Kienast, M., Wang, L.J., *Paleoceanography*, Apr. 1999, 14(2), p.224-231, 45 refs.  
 Marine deposits, Bottom sediment, Drill core analysis, Atmospheric circulation, Ocean currents, Water temperature, Surface temperature, Isotope analysis, Global change, Paleoclimatology, South China Sea
- 53-3909**  
**36 kyr geochemical record from the Sea of Japan of organic matter flux variations and changes in intermediate water oxygen concentrations.**  
 Crusius, J., Pedersen, T.F., Calvert, S.E., Cowie, G.L., Oba, T., *Paleoceanography*, Apr. 1999, 14(2), p.248-259, 50 refs.  
 Marine deposits, Bottom sediment, Sea water, Water chemistry, Salinity, Oxygen, Aeration, Nutrient cycle, Geochemical cycles, Ocean currents, Global change, Paleoclimatology, Japan, Sea
- 53-3910**  
**Protection of living space from floods, mudflows and avalanches. Proceedings. [Internationales Symposion. Schutz des Lebensraumes vor Hochwasser, Muren und Lawinen. Tagungspublikation]**  
 International Congress Interpraevent 1996, Garmisch-Partenkirchen, Germany, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, 5 vols., In German, English or French with summaries in German or English. Refs. passim. For individual papers see 51-251 through 51-254 and 53-3911 through 53-3942.  
 DLC QC981.8.C5165 1996
- Avalanche modeling, Avalanche mechanics, Avalanche tracks, Avalanche forecasting, Avalanche engineering, Mudflows, Slope protection, Soil conservation, Global warming, Flood forecasting
- 53-3911**  
**History of torrent and avalanche control in Bavaria. [Hundert Jahre Wildbachverbauung in Bayern—Bilanz und Ausblick]**  
 Göttle, A., Internationales Symposion (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany, Tagungspublikation. Vol.1, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.1-26, In German with English summary. 15 refs.  
 DLC QC981.8.C5165 1996 Vol.1
- Flood control, Channel stabilization, Hydraulic structures, Soil erosion, Soil conservation, Soil stabilization, Slope protection, Avalanche engineering, History, Germany
- 53-3912**  
**New development of torrent control in Japan.**  
 Kobashi, S., Internationales Symposion (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany, Tagungspublikation. Vol.1, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.27-37, With German summary. 6 refs.  
 DLC QC981.8.C5165 1996 Vol.1
- Earthquakes, Volcanoes, Landslides, Mudflows, Accidents, Soil erosion, Soil conservation, Soil stabilization, Slope protection, Flood control, Japan
- 53-3913**  
**Does the alpine climate change during the next decades.**  
 Schaller, E., Keuler, K., Knoche, R., Münzenberg-St. Denis, A., Internationales Symposion (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany, Tagungspublikation. Vol.1, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.43-53, With German summary. 8 refs.  
 DLC QC981.8.C5165 1996 Vol.1
- Global warming, Climatic changes, Atmospheric circulation, Air temperature, Precipitation (meteorology), Computerized simulation, Statistical analysis, Alps
- 53-3914**  
**Mesoscale Alpine Programme (MAP): an international research initiative in Alpine meteorology.**  
 Volkert, H., et al, Internationales Symposion (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany, Tagungspublikation. Vol.1, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.55-63, With German summary. 7 refs.  
 DLC QC981.8.C5165 1996 Vol.1
- Precipitation (meteorology), Weather forecasting, Flood forecasting, Meteorological data, Data processing, Computerized simulation, Alps
- 53-3915**  
**Glacial discharge as affected by climate change.**  
 Braun, L.N., Escher-Vetter, H., Internationales Symposion (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany, Tagungspublikation. Vol.1, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.65-74, With German summary. 15 refs.  
 DLC QC981.8.C5165 1996 Vol.1
- Glacier surveys, Glacier oscillation, Glacier mass balance, Glacial hydrology, Meltwater, Runoff forecasting, Flood forecasting, Global warming, Climatic changes, Switzerland, Austria
- 53-3916**  
**Regional downscaling—a powerful tool for climate impact research. [Regional Downscaling—Werkzeug der Klimawirkungsforschung]**  
 Rickli, R., Salvisberg, E., Wanner, H., Internationales Symposion (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany, Tagungspublikation. Vol.1, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.75-82, In German with English summary. 7 refs.  
 DLC QC981.8.C5165 1996 Vol.1
- Atmospheric circulation, Global warming, Computerized simulation, Flood forecasting
- 53-3917**  
**Does the recent development of the climate allow a verification of anthropogenic influences. [Gestartet die rezente Klimaentwicklung eine Verifizierung anthropogener Einflüsse]**  
 Schwarzl, S., Internationales Symposion (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany, Tagungspublikation. Vol.1, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.83-95, In German with English summary. 13 refs.  
 DLC QC981.8.C5165 1996 Vol.1
- Atmospheric circulation, Atmospheric composition, Air pollution, Global warming, Human factors, Computerized simulation
- 53-3918**  
**Influence of forests on floods from small pre-alpine catchments. [Einfluss des Waldes auf Hochwasser aus kleinen voralpinen Einzugsgebieten]**  
 Burch, H., Forster, F., Schleppl, P., Stadler, D., Internationales Symposion (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany, Tagungspublikation. Vol.1, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.159-169, In German with English summary. 7 refs.  
 DLC QC981.8.C5165 1996 Vol.1
- Forest land, Forest canopy, Vegetation factors, Precipitation (meteorology), Interception, Evapotranspiration, Water retention, Water balance, Snowmelt, Runoff forecasting, Flood forecasting, Switzerland
- 53-3919**  
**Mapping of the protective functions of the mountain's forest.**  
 Berger, F., Internationales Symposion (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany, Tagungspublikation. Vol.1, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.171-180, With French summary. 17 refs.  
 DLC QC981.8.C5165 1996 Vol.1
- Forest strips, Forest land, Revegetation, Protective vegetation, Snow hedges, Slope protection, Avalanche forecasting, Avalanche engineering, Mapping, Computer applications, France

53-3920

Investigations of debris flow activity in the Matteredal, Valais, Switzerland. [Untersuchungen zur Murgangaktivität im Matteredal, Wallis, Schweiz] Dikau, R., Gärtner, H., Holl, B., Kienholz, H., Mani, P., Zimmermann, M., Internationales Symposium (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany. Tagungspublikation. Vol.1, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.397-408, In German with English summary. 8 refs.  
DLC QC981.8.C5I65 1996 Vol.1  
Snowmelt, Permafrost indicators, Solifluction, Mudflows, Floods, Flood forecasting, Switzerland

53-3921

Spatial-temporal variations of the permafrost distribution in the Sulden Valley (Ortler Mountains) and its effects on the hazard potential of erosional processes. [Auswirkungen des zeitlich-räumlichen Wandels der Permafrostverteilung im Suldental (Ortlergebiet) auf das Gefährdungspotential durch Erosionsprozesse] Stötter, J., Maukisch, M., Simstich, J., Belitz, K., Internationales Symposium (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany. Tagungspublikation. Vol.1, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.447-457, In German with English summary. 29 refs.  
DLC QC981.8.C5I65 1996 Vol.1  
Discontinuous permafrost, Permafrost distribution, Ground thawing, Periglacial processes, Rock glaciers, Mudflows, Mass movements (geology), Global warming, Climatic changes, Italy—Ortles Mountains

53-3922

Review of avalanche run-out calculation models and evaluation for the application in hazard-zone mapping. [Übersicht über die Lawinenberechnungsmodelle und Bewertung hinsichtlich des Einsatzes in der Gefahrenzonenplanung] Kleemayr, K., Internationales Symposium (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany. Tagungspublikation. Vol.2, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.3-18, In German with English summary. 44 refs.  
DLC QC981.8.C5I65 1996 Vol.2  
Avalanche modeling, Avalanche mechanics, Avalanche tracks, Avalanche forecasting, Computerized simulation

53-3923

Gasdynamic avalanche simulation model. [Ein gasdynamisches Lawinensimulationsmodell] Brandstätter, W., Hagen, G., Hufnagl, H., Schaffhauser, H., Internationales Symposium (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany. Tagungspublikation. Vol.2, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.19-30, In German with English summary. 9 refs.  
DLC QC981.8.C5I65 1996 Vol.2  
Avalanche modeling, Avalanche mechanics, Avalanche forecasting, Computerized simulation

53-3924

Avalanche simulation based on gasdynamics. [Ein gasdynamisches Lawinensimulationsmodell—Modellentwicklung auf Grundlage der Simulationssoftware FIRE der AVL] Brandstätter, W., Sampl, P., Internationales Symposium (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany. Tagungspublikation. Vol.2, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.31-51, In German with English summary. 10 refs.  
DLC QC981.8.C5I65 1996 Vol.2  
Avalanche modeling, Avalanche mechanics, Avalanche forecasting, Turbulent flow, Computerized simulation

53-3925

Gasdynamic avalanche simulation model—actual operation and further development. [Ein gasdynamisches Lawinensimulationsmodell—derzeitige Handhabung und Weiterentwicklung] Schaffhauser, H., Internationales Symposium (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany. Tagungspublikation. Vol.2, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.53-65, In German with English summary. 7 refs.  
DLC QC981.8.C5I65 1996 Vol.2  
Avalanche modeling, Avalanche mechanics, Avalanche tracks, Avalanche forecasting, Turbulent flow, Computerized simulation, Austria

53-3926

Gasdynamic avalanche simulation model—verification of this avalanche simulation model by comparison with the catastrophic avalanches of the year 1984. [Ein gasdynamisches Lawinensimulationsmodell—Verifizierung des Lawinensimulationsmodells anhand von Katastrophenlawinen des Lawinenwinters 1984] Hufnagl, H., Internationales Symposium (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany. Tagungspublikation. Vol.2, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.67-79, In German with English summary. 6 refs.  
DLC QC981.8.C5I65 1996 Vol.2  
Avalanches, Avalanche modeling, Avalanche mechanics, Avalanche forecasting, Computerized simulation, Austria

53-3927

Estimation of avalanche hazard of mountain territories. Severskii, I.V., Blagoveshchenskii, V.P., Internationales Symposium (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany. Tagungspublikation. Vol.2, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.91-101, With German summary. 10 refs.  
DLC QC981.8.C5I65 1996 Vol.2  
Snow cover stability, Avalanche formation, Avalanche tracks, Avalanche forecasting, Statistical analysis, Kazakhstan

53-3928

Approach to documentation and evaluation of structural patterns in mountain forests as a basis for understanding avalanche formation. [Konzept zur Erfassung und Bewertung von Strukturen im Bergwaldbereich als Grundlage für das Verständnis der Lawinengesehe] Maukisch, M., et al, Internationales Symposium (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany. Tagungspublikation. Vol.2, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.103-112, In German with English summary. 6 refs.  
DLC QC981.8.C5I65 1996 Vol.2  
Forest land, Terrain identification, Avalanche formation, Avalanche forecasting, Data processing, Computerized simulation

53-3929

GIS-based analysis of the relationship between forest avalanches and topography. [GIS-Analyse des Zusammenhanges zwischen Waldlawinen und Topographie] Stempel, K., et al, Internationales Symposium (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany. Tagungspublikation. Vol.2, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.113-124, In German with English summary. 11 refs.  
DLC QC981.8.C5I65 1996 Vol.2  
Forest land, Terrain identification, Avalanche formation, Avalanche modeling, Avalanche forecasting, Data processing, Computerized simulation

53-3930

Method for avalanche load determination. Epifanov, V.P., Internationales Symposium (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany. Tagungspublikation. Vol.2, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.125-136, With German summary. 11 refs. in Russian.  
DLC QC981.8.C5I65 1996 Vol.2  
Avalanche modeling, Avalanche mechanics, Snow loads, Impact tests

53-3931

Calculation of snow avalanche parameters. Blagoveshchenskii, V.P., Internationales Symposium (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany. Tagungspublikation. Vol.2, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.137-146, With German summary. 14 refs.  
DLC QC981.8.C5I65 1996 Vol.2  
Avalanche modeling, Avalanche mechanics, Avalanche tracks, Avalanche forecasting, Mathematical models, Statistical analysis

53-3932

Similarity of avalanche experiments by light particles. Nohguchi, Y., et al, Internationales Symposium (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany. Tagungspublikation. Vol.2, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.147-156, 5 refs.  
DLC QC981.8.C5I65 1996 Vol.2  
Avalanche modeling, Avalanche mechanics, Environmental tests

53-3933

Stake of avalanche trials. [L'enjeu des procès d'avalanches] Lambert, R., Internationales Symposium (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany. Tagungspublikation. Vol.2, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.157-166, In French with English summary. 1 ref.  
DLC QC981.8.C5I65 1996 Vol.2  
Avalanches, Avalanche forecasting, Accidents, Safety, Legislation, France

53-3934

Present morphological development of the slopes intensively exploited by skiers: case study of the northern Pilsko slope, Polish western Carpathians. Lajczak, A., Internationales Symposium (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany. Tagungspublikation. Vol.2, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.191-202, With German summary. 15 refs.  
DLC QC981.8.C5I65 1996 Vol.2  
Snow cover distribution, Snow stabilization, Skis, Human factors, Grazing, Slope processes, Soil erosion, Slope protection, Soil conservation, Regional planning, Poland

53-3935

Avalanche hazard risk mapping in Russia. Losev, K.S., Internationales Symposium (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany. Tagungspublikation. Vol.3, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.29-36, With German summary. 5 refs. in Russian.  
DLC QC981.8.C5I65 1996 Vol.3  
Avalanche tracks, Avalanche deposits, Avalanche forecasting, Mapping, Regional planning, Russia

53-3936

**Hazard Index maps for snow avalanches—application of computer-based simulation models.** [Gefahrenhinweiskarte für Lawinen—Einsatz von EDV-gestützten Simulationsmodellen]

Hegg, C., Buri, H., Ryter, U., Kienholz, H., Internationales Symposium (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany. Tagungspublikation. Vol.3, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.37-46, In German with English summary. 5 refs.

DLC QC981.8.C5I65 1996 Vol.3

Avalanche modeling, Avalanche forecasting, Slope processes, Slope stability, Mapping, Computerized simulation, Switzerland

53-3937

**Hazard maps: decisive parameters and criteria for definition of intensity degree.** [Gefahrenkarten: Massgebliche Parameter und Kriterien zur Festlegung von Intensitätsstufen]

Kienholz, H., Internationales Symposium (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany. Tagungspublikation. Vol.3, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.47-58, In German with English summary. 6 refs.

DLC QC981.8.C5I65 1996 Vol.3

Avalanche forecasting, Flood forecasting, Mapping, Regional planning, Switzerland

53-3938

**Reconstitution rain-on-snow events in the western Swiss Prealps, 1740-1918.** [Reconstitution d'événements de pluie sur neige dans la vallée des Ormonts (Préalpes vaudoises, Suisse) 1740-1918]

Schoeneich, P., Internationales Symposium (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany. Tagungspublikation. Vol.4, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.165-174, In French with English summary. 5 refs.

DLC QC981.8.C5I65 1996 Vol.4

Rain, Snow hydrology, Snowmelt, Floods, Accidents, History, Flood forecasting, Switzerland

53-3939

**Protective structure project in environmentally sensitive areas: Turtmann Valley in the Wallis Canton, Switzerland, as an example.** [Verbaunungsprojekte in landschaftlich empfindlichen Gebieten, dargestellt an Beispielen des Turtmanns (Kt. Wallis, Schweiz)]

Wyer, M., Brigger, A., Internationales Symposium (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany. Tagungspublikation. Vol.4, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.187-197, In German with English summary. 2 refs.

DLC QC981.8.C5I65 1996 Vol.4

Avalanche engineering, Snow fences, Snow stabilization, Earthwork, Slope protection, Switzerland

53-3940

**Traditional strategies against avalanches.** [Stratégies traditionnelles face au danger d'avalanches]

Busset, M.C., Schoeneich, P., Internationales Symposium (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany. Tagungspublikation. Vol.4, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.255-264, In French with English summary. 5 refs.

DLC QC981.8.C5I65 1996 Vol.4

Avalanches, Avalanche engineering, Safety, History, Switzerland

53-3941

**Alpine seed mixtures for recultivation in high mountain areas.** [Einsatz standortgerechter Alpin-Saatgutmischungen für Begrünungen im Gebirge]

Krautzer, B., Internationales Symposium (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany. Tagungspublikation. Vol.5, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.145-154, In German with English summary. 10 refs.

DLC QC981.8.C5I65 1996 Vol.5

Mountain soils, Soil conservation, Land reclamation, Grasses, Introduced plants, Revegetation, Protective vegetation, Plant ecology, Austria

53-3942

**Road corridor stabilization in the Himalayas.**

Kern, J., Krähenbühl, J., Internationales Symposium (International Congress) Interpraevent 1996, Garmisch-Partenkirchen, Germany. Tagungspublikation. Vol.5, Klagenfurt, Austria, Internationale Forschungsgesellschaft, Interpraevent, 1996, p.197-206, With German summary. 3 refs.

DLC QC981.8.C5I65 1996 Vol.5

Highway planning, Road maintenance, Protective vegetation, Soil conservation, Soil stabilization, Slope protection, Landslide control, Channel stabilization, Flood control, Nepal, Bhutan

53-3943

**Geologic studies in Alaska by the U.S. Geological Survey, 1996.**

Gray, J.E., ed, Riehle, J.R., ed, *U.S. Geological Survey. Professional paper*, 1998, No.1595, 200p., Refs. passim. For selected papers see 53-3944 through 53-3951.

Geological surveys, Exploration, Geochemistry, Minerals, Gold, Natural resources, United States—Alaska

53-3944

**Role of glaciers and glacial deposits in the Kenai River watershed and the implications for aquatic habitat.**

Dorava, J.M., Scott, K.M., *U.S. Geological Survey. Professional paper*, 1998, No.1595, Geologic studies in Alaska by the U.S. Geological Survey, 1996. Edited by J.E. Gray and J.R. Riehle, p.3-8, 14 refs. Glacial hydrology, Meltwater, Glacial rivers, Glacial lakes, Glacial deposits, Ecosystems, Ecology, Animals, United States—Alaska—Kenai River

53-3945

**Reconnaissance study of the chemistry of natural waters draining chromite-bearing ultramafic complexes in Alaska.**

Taylor, C.D., Meier, A.L., D'Angelo, W.M., *U.S. Geological Survey. Professional paper*, 1998, No.1595, Geologic studies in Alaska by the U.S. Geological Survey, 1996. Edited by J.E. Gray and J.R. Riehle, p.9-16, 28 refs. Mining, Tailings, Minerals, Ground water, Springs (water), Water pollution, Water chemistry, Hydrogeochemistry, United States—Alaska

53-3946

**Age, isotopic, and geochemical studies of the Fortyeven Creek Au-As-Sb-W prospect and vicinity, southwestern Alaska.**

Gray, J.E., Gent, C.A., Snee, L.W., Theodorakos, P.M., *U.S. Geological Survey. Professional paper*, 1998, No.1595, Geologic studies in Alaska by the U.S. Geological Survey, 1996. Edited by J.E. Gray and J.R. Riehle, p.17-29, 47 refs.

Geological surveys, Exploration, Minerals, Gold, Natural resources, Geochemistry, Hydrogeochemistry, United States—Alaska

53-3947

**Geology and gold resources of the Stuyahok area, Holy Cross quadrangle, southwestern Alaska.**

Miller, M.L., Bundtzen, T.K., Keith, W.J., *U.S. Geological Survey. Professional paper*, 1998, No.1595, Geologic studies in Alaska by the U.S. Geological Survey, 1996. Edited by J.E. Gray and J.R. Riehle, p.31-49, 24 refs.

Geological surveys, Exploration, Minerals, Gold, Natural resources, Geochemistry, United States—Alaska—Stuyahok

53-3948

**Petrology, geochemistry, age, and significance of two foliated intrusions in the Fairbanks district, Alaska.**

Newberry, R.J., Bundtzen, T.K., Mortensen, J.K., Weber, F.R., *U.S. Geological Survey. Professional paper*, 1998, No.1595, Geologic studies in Alaska by the U.S. Geological Survey, 1996. Edited by J.E. Gray and J.R. Riehle, p.117-129, 44 refs. Geological surveys, Exploration, Geochemistry, Lithology, Geochronology, Minerals, Gold, United States—Alaska—Fairbanks

53-3949

**New <sup>40</sup>Ar/<sup>39</sup>Ar dates for intrusions and mineral prospects in the eastern Yukon-Tanana terrane, Alaska—regional patterns and significance.**

Newberry, R.J., Layer, P.W., Burleigh, R.E., Solie, D.N., *U.S. Geological Survey. Professional paper*, 1998, No.1595, Geologic studies in Alaska by the U.S. Geological Survey, 1996. Edited by J.E. Gray and J.R. Riehle, p.131-159, 71 refs. Geological surveys, Exploration, Geochemistry, Lithology, Geologic structures, Minerals, Gold, Natural resources, Geochronology, Radioactive age determination, Soil dating, United States—Alaska

53-3950

**U.S. Geological Survey reports on Alaska released in 1996.**

Galloway, J.P., Toussaint, S., *U.S. Geological Survey. Professional paper*, 1998, No.1595, Geologic studies in Alaska by the U.S. Geological Survey, 1996. Edited by J.E. Gray and J.R. Riehle, p.193-196, 101 citations.

Bibliographies, Research projects, Geological surveys, Exploration, United States—Alaska

53-3951

**Reports about Alaska in non-USGS publications released in 1996 that include USGS authors.**

Galloway, J.P., Toussaint, S., *U.S. Geological Survey. Professional paper*, 1998, No.1595, Geologic studies in Alaska by the U.S. Geological Survey, 1996. Edited by J.E. Gray and J.R. Riehle, p.197-200, 87 citations.

Bibliographies, Research projects, Geological surveys, Exploration, United States—Alaska

53-3952

**Slabs and wind.** [Plaques et vent]

Duclos, A., *Neige et avalanches*, Mar. 1999, No.85, p.2-5,32, In French with English summary. Wind factors, Wind erosion, Snow erosion, Snowdrifts, Snow cover stability, Avalanche formation, Snow slides, Avalanche forecasting

53-3953

**Judgement about a mortal avalanche accident on a ski run.** [Avalanche à Val Thorens: déclenchement sans faute]

Sarraz-Bournet, P., *Neige et avalanches*, Mar. 1999, No.85, p.6-7,32, In French with English summary. Avalanches, Accidents, Avalanche triggering, Avalanche forecasting, Safety, Legislation, France

53-3954

**Ski injuries in 1998.** [Accidentologie du ski—hiver 1997-1998]

Laporte, J.D., Binet, M.H., *Neige et avalanches*, Mar. 1999, No.85, p.8-12,32, In French with English summary. Skis, Accidents, Safety, France

53-3955

**Realization, use and limit of the CLPA.** [Réalisation, usage et limites de la Carte de Localisation Probable des Avalanches]

Borrel, G., *Neige et avalanches*, Mar. 1999, No.85, p.13-18,32, In French with English summary. Snow cover stability, Terrain identification, Aerial surveys, Mapping, Avalanche forecasting, Data processing, France

53-3956

**Question about stability.** [Stabilité en question]

Duclos, A., *Neige et avalanches*, Mar. 1999, No.85, p.19,32, In French with English summary. Snow cover stability, Avalanche triggering, Blasting

53-3957

**Avalanche dog handler education: which dog to choose.** [Formation maître chien d'avalanches: quel chien choisir]

Stinglhamber, X., *Neige et avalanches*, Mar. 1999, No.85, p.22-23,32, In French with English summary. Avalanches, Accidents, Rescue operations, Animals

53-3958

**ANENA's training courses 1998.** [Formations 1998]

Chavasse, B., *Neige et avalanches*, Mar. 1999, No.85, p.24-26,32, In French with English summary. Avalanches, Avalanche triggering, Blasting, Safety, Rescue operations, Animals, Education, France

53-3959

**Hours of work and rest of Canadian ice navigators on board foreign-registered vessels in arctic waters.**

Buck, L., Brooks, J., Webb, R., *Transport Canada. Transportation Development Centre, Montreal. Publication*, Mar. 1998, TP 13207E, 42p. + appends., With French summary. 25 refs.

Ice navigation, Human factors, Labor factors, Health, Safety

53-3960

**Investigation of transient hydrodynamic phenomena in ship-ice ramming.**

Phillips, L.D., Tanaka, H., *Transport Canada. Transportation Development Centre, Montreal. Publication*, Nov. 1997, TP 12954E, 86p. + appends., MIC-99-00013, With French summary. 23 refs.

Icebreakers, Ice breaking, Ice solid interface, Ice navigation, Ice loads, Ice pressure, Metal ice friction, Structural analysis, Hydrodynamics, Impact tests, Mathematical models, Computer programs

53-3961

**Protocol for the characterization of explosives-contaminated sites.**

Thiboutot, S., et al, MP 5335, *Canada. Defence Research Establishment Valcartier, Quebec. Report*, Apr. 1998, DREV-R-9721, 73p., With French summary. 75 refs.

Military facilities, Site surveys, Explosives, Soil pollution, Soil tests, Soil analysis, Chemical analysis, Ground water, Water pollution, Health, Canada

Many activities of the Canadian Forces, such as firing, demolition procedures and destruction of obsolete ammunition by open burning and open detonation may lead to the dispersion of energetic compounds in the environment. These compounds are being closely examined due to their highly specific physical, chemical and toxicological properties. In Canada, limited effort has been devoted to examine this particular environmental threat. In this context, R&D was dedicated towards the establishment of a protocol that will allow reliable and safe characterization of sites potentially contaminated with explosives. This protocol was based on Defence Research Establishment Valcartier research efforts and expertise in the chemistry of energetic materials, on the current existing literature, on the experience gained in practical field sampling and on collaborative work with BRI and CRREL. The protocol detailed in the present report covers all aspects related to surface and subsurface sampling, extraction, analysis, field-screening methods and environmental fate related with these specific contaminants. Furthermore, safety procedures are described that take into account the explosive and toxic nature of these compounds. This protocol will serve as a reference guide for future sampling campaigns on sites that are potentially contaminated with explosives.

53-3962

**Development of laboratory test procedures to replace field anti-icing fluid tests (snow equivalence tests).**

Bernardin, S., Dubuisson, C., Laforte, J.L., *Transport Canada. Transportation Development Centre, Montreal. Publication*, Nov. 1997, TP 13141E, 109p., MIC-98-07480, With French summary.

Aircraft icing, Ice accretion, Icing rate, Ice forecasting, Snowstorms, Snowfall, Chemical ice prevention, Safety, Environmental tests

53-3963

**Fluid behaviour simulation: modelling of water diffusion in ground aircraft de/anti-icing fluids for numerical prediction of laboratory holdover time.**

Louchez, P.R., Zouzou, A., Liu, L., Sasseville, R., *Transport Canada. Transportation Development Centre, Montreal. Publication*, Oct. 1997, TP 13113E, 44p. + append., MIC-99-00105, With French summary. 17 refs.

Aircraft icing, Ice accretion, Ice detection, Chemical ice prevention, Ice removal, Icing rate, Ice forecasting, Safety, Environmental tests, Mathematical models

53-3964

**Antarctic automatic weather station data for the calendar year 1996.**

Keller, L.M., Weidner, G.A., Stearns, C.R., Whitaker, M.T., Holmes, R.E., Madison, University of Wisconsin, Space Science and Engineering Center, 1999, 47p.

Polar atmospheres, Marine atmospheres, Weather stations, Meteorological data, Data processing, Data transmission, Air temperature, Atmospheric pressure, Wind velocity, Wind direction, Antarctica

53-3965

**Influences of solar-terrestrial events on atmospheric environment over Syowa Station, Antarctica: a preliminary analysis of radiosonde observations.**

Watanabe, T., NIPR Symposium on Upper Atmosphere Physics. Proceedings. No.9, Tokyo, National Institute of Polar Research, Feb. 1996, p.42-55, 9 refs.

Solar activity, Polar atmospheres, Atmospheric circulation, Atmospheric composition, Ozone, Air temperature, Statistical analysis, Antarctica—Showa Station

53-3966

**ENSO events and interannual variations of winter sea-ice in the Greenland, the Kara and the Barents Seas.**

Wu, B.Y., Gao, D.Y., Huang, R.H., *Chinese science bulletin*, Aug. 1997, 42(16), p.1382-1385, 5 refs.

Atmospheric circulation, Ocean currents, Air ice water interaction, Sea ice distribution, Ice conditions, Drift, Ice cover effect, Greenland Sea, Barents Sea, Russia—Kara Sea

53-3967

**Impurity effects in the premelting of ice.**

Wettlaufer, J.S., *Physical review letters*, Mar. 22, 1999, 82(12), p.2516-2519, 22 refs.

Ice melting, Doped ice, Impurities, Superheated ice, Ice surface, Films, Interfacial tension, Phase transformations, Ice models, Mathematical models

53-3968

**Changes in photosynthetic carbon assimilation in antarctic sea-ice diatoms during spring bloom: variation in synthesis of lipid classes.**

Palmisano, A.C., Lizotte, M.P., Smith, G.A., Nichols, P.D., White, D.C., Sullivan, C.W., *Journal of experimental marine biology and ecology*, 1988, Vol.116, p.1-13, 31 refs.

Sea ice, Ice water interface, Ice cover effect, Marine biology, Algae, Plant ecology, Plant physiology, Photosynthesis, Nutrient cycle, Biomass, Antarctica—McMurdo Sound

53-3969

**System and method for detection of frazil ice on underwater grating.**

Yankielun, N.E., MP 5336, *U.S. Patent Office. Patent*, May 4, 1999, 8 col., USP-5,900,820, 13 refs. Water intakes, Frazil ice, Ice accretion, Ice loads, Ice detection, Monitors, Telemetering equipment

A system for detecting accretion of frazil ice on underwater gratings includes a housing for disposition beneath a water surface and spaced from but proximate an underwater intake grating. A pair of parallel electrically conductive bars are mounted side-by-side in the housing and extend therefrom. The bars are in communication with an electromagnetic wave generator in the housing. A coaxial transmission line is connected at a first end to the housing and in communication with the pair of bars for extension from the housing upwardly above the water surface. A monitoring station is disposed above the water surface for receiving signals from the bars, the monitoring station having a second end of the transmission line fixed thereto. The wave generator propagates electromagnetic waves to the bars for further travel to distal ends of the bars, and back to the

housing and thence to the monitoring station. The monitoring station is adapted to compute wave round trip travel time in the bars and to compute changes in the round trip travel time, from which is determined absence, presence, and build-up of frazil ice on the bars, thereby providing an indication of same on the grating.

53-3970

**Vertical penetration of floating ice sheets.**

Sodhi, D.S., MP 5337, *International journal of solids and structures*, Nov. 1998, 35(31-32), p.4275-4294, 29 refs.

Ice cover strength, Bearing strength, Ice elasticity, Ice loads, Ice creep, Ice deformation, Ice cracks, Ice breaking, Penetration tests, Strain tests

Existing failure criteria for the bearing capacity of floating ice sheets predict the load for the occurrence of the first radial crack or a circumferential crack, when the maximum stress obtained from an elastic analysis in the ice equals the tensile strength. From full-scale and small-scale tests, the ultimate load to cause complete penetration of a floating ice sheet is much higher than that to cause the first radial crack. This can be attributed to wedging action during deformation of a radially cracked ice sheet. The author presents three approaches taken to determine the ice penetration force: plastic limit analysis, small-scale experiments and full-scale measurements in the field. Small-scale experiments were conducted with freshwater ice in a laboratory basin to understand the wedging action during the vertical loading of floating ice sheets. Results of the following experiments are presented: beams with fixed ends, paired cantilever beams arranged free-end to free-end and loaded together, beams with an apparatus inserted between the free ends of paired cantilever beams to measure the in-plane force during vertical loading, and vertical downward loading of floating ice sheets with fixed and free boundaries. Analysis of the data from the beam tests reveals that the wedging action results in the development of wedging pressure in the top or bottom third of the ice thickness, and this results in a resisting moment that counters the deformation of a cracked ice sheet. An ice sheet attached to the basin wall inhibits the propagation of radial cracks because of the wedging action, whereas an ice sheet free at the edges from the surrounding ice sheet fails by the propagation of radial cracks all the way to the ice sheet's free boundary. The difference between the two breakthrough loads of the free and the fixed ice sheets can be attributed to wedging action. The results of the beam tests are used in the results of plastic limit analysis to predict the breakthrough loads of floating ice sheets, which are in agreement with loads measured during full-scale and small-scale experiments.

53-3971

**Ice-core records of global climate and environment changes.**

Delmas, R.J., *Indian Academy of Sciences. Proceedings. Earth and planetary sciences*, Dec. 1998, 107(4), p.307-319, 82 refs.

Ice sheets, Ice cores, Glacial meteorology, Polar atmospheres, Marine atmospheres, Atmospheric circulation, Atmospheric composition, Air pollution, Ice composition, Global change, Paleoclimatology, Greenland, Antarctica

53-3972

**Closure for analysis of boundary layer turbulence correlations.**

Treviño, G., Andreas, E.L., MP 5338, Conference on Boundary Layers and Turbulence, 13th, Dallas, TX, Jan. 10-15, 1999. Preprint volume, Boston, American Meteorological Society, 1999, p.609-611, 7 refs.

Atmospheric boundary layer, Turbulent boundary layer, Turbulence, Mathematical models, Statistical analysis

53-3973

**Greenland ice sheet—a model for its culmination and decay during and after the last glacial maximum.**

Funder, S., Hansen, L., *Geological Society of Denmark. Bulletin*, 1996, 42(2), p.137-152, With Danish summary. 75 refs.

Ice sheets, Glaciation, Glacial geology, Glacial deposits, Glacier oscillation, Glacier melting, Calving, Marine geology, Marine deposits, Bottom sediment, Drill core analysis, Sea level, Isostasy, Geochronology, Global change, Paleoclimatology, Greenland

53-3974

Engineering-geocryological monitoring of the Yamsveysk gas condensate field in northern West Siberia. [Opyt provedeniia inzhenerno-geokriologicheskogo monitoringa na Iamsovefskom gazokondensatnom mestorozhdenii na severe Zapadnoi Sibiri]

Buldovich, S.N., Garagulia, L.S., Ospennikov, E.N., *Geokologiya; inzhenernaia geologiya, gidrogeologiya, geokriologiya*, Nov.-Dec 1998, No.6, p.33-40, In Russian. 3 refs.

Engineering geology, Geocryology, Natural gas, Gas wells, Active layer, Frost heave, Permafrost bases, Piles, Cold weather construction, Russia—Siberia

53-3975

Development of floodplain taliks in the Kolyma River valley and fluvial water temperature. [Razvitiie poimennykh talikov v doline r. Kolyma i temperatura rechnykh vod]

Mikhaïlov, V.M., *Geokologiya; inzhenernaia geologiya, gidrogeologiya, geokriologiya*, Nov.-Dec 1998, No.6, p.100-110, In Russian. 17 refs.

Taliks, Floodplains, River basins, Valleys, Rivers, Water temperature, Stream flow, Convection, Heat transfer, Russia—Kolyma River

53-3976

Identification of phase equilibrium parameters of freezing soil. [Opredeleniie parametrov fazovogo ravnovesiia promerzaiushchego grunta]

Kononov, A.A., *Geokologiya; inzhenernaia geologiya, gidrogeologiya, geokriologiya*, Nov.-Dec 1995, No.6, p.50-64, In Russian. 16 refs.

Soil freezing, Phase transformations, Ground thawing, Freezing points, Loams, Sands, Soil water, Analysis (mathematics), Salinity, Soil temperature, Freeze thaw cycles

53-3977

Typification of taliks in Yamal. [Tipizatsiia talikov IAmala]

Fotiev, S.M., *Geokologiya; inzhenernaia geologiya, gidrogeologiya, geokriologiya*, Nov.-Dec 1995, No.6, p.65-73, In Russian. 4 refs.

Taliks, Classifications, Geocryology, Russia—Yamal Peninsula

53-3978

Using a method of artificially freezing soil during construction of urban engineering networks in saturated sands. [Primeneniie metoda iskusstvennogo zamorazhivaniia gruntov pri stroitel'stve gorodskikh inzhenernykh setei v vodonasyshchennykh peskakh]

Gevorkian, S.G., *Geokologiya; inzhenernaia geologiya, gidrogeologiya, geokriologiya*, Nov.-Dec 1995, No.6, p.102-111, In Russian. 14 refs.

Artificial freezing, Soil freezing, Sands, Air temperature, Stefan problem, Polymers, Concrete admixtures, Precast concretes, Countermeasures, Heat transfer, Subsurface structures, Cold weather construction, Construction materials, Russia—Yamal Peninsula

53-3979

Correlation of stratigraphic events of Upper Pleistocene in central and peripheral parts of the last glaciation.

Satkūnas, J., ed, Robertsson, A.M., ed, Abstract volume and excursion guide. International Workshop, Vilnius, Lithuania, Oct. 3-6, 1996, Vilnius, Geological Society of Lithuania, Nov. 1996, 88p., Refs. passim. Abstracts and papers.

DLC QE697.C725 1996

Pleistocene, Paleoclimatology, Stratigraphy, Palynology, Correlation, Glaciation, Lithuania, Sweden, United Kingdom—England, Latvia, Estonia, Denmark, Finland

53-3980

Thermal processes and ice formation in rivers. Matoušek, V., Papers and Studies, No.180, Prague, Water Research Institute, 1990, 146p., 73 refs. DLC GB1398.2.M374 1990

River ice, Hydrothermal processes, Ice formation, Frazil ice, Streams, Thermal regime, Stream flow, Mathematical models, Heat transfer, Ice cover, Freezeup, Ice crossings, Air ice water interaction, Czech Republic

53-3981

Procedure for determining performance of thin polymer overlays on Alberta bridge decks. Carter, P.D., In-Place Performance of Polymer Concrete Overlays. ACI publication. Edited by S.L. Marusin, Farmington Hills, MI, American Concrete Institute, 1997, p.107-121, SP-169, 4 refs. DLC TE220.3.I5 1997

Bridges, Concrete pavements, Concrete durability, Polymers, Protective coatings, Corrosion, Waterproofing, Weatherproofing, Freeze thaw tests, Frost resistance, Cold weather performance, Canada—Alberta

53-3982

Premixed epoxy polymer concrete bridge deck overlays.

Dimmick, F.E., Sr., In-Place Performance of Polymer Concrete Overlays. ACI publication. Edited by S.L. Marusin, Farmington Hills, MI, American Concrete Institute, 1997, p.146-171, 5 refs. DLC TE220.3.I5 1997

Bridges, Concrete pavements, Concrete durability, Concrete admixtures, Polymers, Protective coatings, Freeze thaw tests, Frost protection, Weatherproofing

53-3983

Abrasion characteristics of MMA resin mortar overlaid on a pavement in a cold environment. Omata, F., Kawakami, M., Kagaya, M., Tokuda, H., In-Place Performance of Polymer Concrete Overlays. ACI publication. Edited by S.L. Marusin, Farmington Hills, MI, American Concrete Institute, 1997, p.180-198, 5 refs. DLC TE220.3.I5 1997

Concrete pavements, Concrete admixtures, Protective coatings, Concrete durability, Resins, Polymers, Abrasion, Hardness tests, Cold weather tests, Road maintenance, Japan

53-3984

Role of catchment hydrology in the characterization of water quality in glacial/boreal lakes. Thierfelder, T., *Journal of hydrology*, Mar. 8, 1999, 216(1-2), p.1-16, 61 refs.

Watersheds, Glacial lakes, Lake water, Water chemistry, Hydrogeochemistry, Drainage, Statistical analysis

53-3985

Groundwater monitoring and isotope investigation of contaminated wastewater from an open pit mining lake.

Eccarius, B., *Environmental geosciences*, 1998, 5(4), p.156-161, 13 refs.

Coal, Mining, Pits (excavations), Water pollution, Soil pollution, Waste disposal, Ground water, Hydrogeology, Hydrogeochemistry, Land reclamation, Germany

53-3986

Structural effects in low temperature radioluminescence of aqueous ionic systems.

Wypych, M., Kroh, J., *Radiation physics and chemistry*, May 11, 1999, 54(6), p.567-574, 26 refs.

Ice spectroscopy, Ice composition, Doped ice, Impurities, Molecular structure, Molecular energy levels, Frozen liquids, Ionization, Low temperature research

53-3987

Surface radiation measurements from polar stations.

Liu, Q., Konig-Langlo, G., Simmer, C., *Physics and chemistry of the earth*, 1998, 23(5/6), p.593-598, 8 refs.

Polar atmospheres, Solar radiation, Insolation, Radiation balance, Albedo, Radiation measurement, Norway—Spitsbergen, Antarctica—Neumayer Station

53-3988

Snow modelling in the Hadley Centre GCM.

Essery, R., *Physics and chemistry of the earth*, 1998, 23(5/6), p.655-659, 32 refs.

Snow cover distribution, Snow line, Snow heat flux, Snow cover effect, Snow air interface, Albedo, Cloud cover, Forest canopy, Atmospheric circulation, Global warming, Computerized simulation

53-3989

Energy balance model of seasonal snow evolution.

Fernández, A., *Physics and chemistry of the earth*, 1998, 23(5/6), p.661-666, 4 refs.

Snow hydrology, Snow water content, Snow melting, Snowmelt, Snow heat flux, Snow surface temperature, Snow air interface, Albedo, Mathematical models, Runoff forecasting

53-3990

Transport of air pollutants from the boundary layer to the free troposphere over complex terrain.

Lehning, M., Richner, H., Kok, G.L., *Physics and chemistry of the earth*, 1998, 23(5/6), p.667-672, 15 refs.

Atmospheric boundary layer, Atmospheric circulation, Atmospheric composition, Air pollution, Ozone, Switzerland, Hong Kong

53-3991

WMO statement on the status of the global climate in 1998. Geneva, Switzerland, World Meteorological Organization, 1999, 11p., WMO-No.896.

Atmospheric circulation, Atmospheric disturbances, Global warming, Storms, Floods, Accidents, Cost analysis

53-3992

Properties of frozen ground and simulation of soil freezing mechanism. [Toketsu jiban to tojo ni kansuru kenkyu]

Takano, M., Inoue, M., Nakagawa, S., *Nippon kokan gihō (Japan Steel Pipe Corporation technical report)*, 1979, No.83, p.351-362, In Japanese with English summary. 23 refs.

Foundations, Permafrost beneath structures, Subgrade soils, Soil freezing, Soil water migration, Freezing front, Frost heave, Permafrost heat transfer, Frozen ground thermodynamics, Frozen ground compression, Frozen ground strength, Mathematical models

53-3993

Envisioning the northern dimension: toward an Arctic of regions.

Joint Seminar and Workshop of the Barents Regional Council and the Northern Forum, Rovaniemi, Finland, Oct. 15-16, 1998, Hukkinen, J., ed, Heininen, L., ed, Lange, M.A., ed, Langlais, R., ed, *University of Lapland, Rovaniemi, Finland. Arctic Centre. Reports*, 1999, No.28, 112p.

Regional planning, International cooperation, Economic development, Environmental protection

53-3994

European North in the 1990s: a region of multifunctional and conflicting interests. [Euroopan pohjoinen 1990-luvulla: monilutoteisten ja ristiriitaisten intressien alue]

Heininen, L., *Arktiisen keskuksen tiedotteita (University of Lapland, Rovaniemi, Finland. Arctic Centre. Reports)*, 1999, No.30, 407p. + maps, In Finnish with extended English summary p.373-407. Refs. p.336-372.

Regional planning, International cooperation, Economic development, Environmental protection

53-3995

Modernization of the pilotage certification process in the Laurentian pilotage region.

Friend, R.G., McKnight, D.A., Vachon, S., *Transport Canada. Transportation Development Centre, Montreal. Publication*, Jan. 1998, TP 13145E, 125p. + appends., MIC-99-03001, With French summary. 38 refs.

Ships, Navigation, Safety, Education, Environment simulation, Legislation, Standards, Canada

53-3996

**Simulations of quasi-statically deforming granular materials: applications to the modelling of broken-ice fields.**

Corriveau, D., Montreal, Quebec, McGill University, 1997, 110p., National Library of Canada, Ottawa, Canadian theses MQ-29586, M.Eng. thesis. With French summary. 55 refs.

Ice floes, Ice cover strength, Ice elasticity, Ice plasticity, Ice pressure, Ice friction, Ice loads, Ice deformation, Ice breaking, Ice models, Ice forecasting, Strain tests, Stress strain diagrams, Computerized simulation, Mathematical models

53-3997

**Modelling sea ice as a granular material, with applications to climate variability.**

Tremblay, L.B., Montreal, Quebec, McGill University, 1996, 102p., National Library of Canada, Ottawa, Canadian theses NQ-30406, Ph.D. thesis. With French summary. 76 refs.

Air ice water interaction, Atmospheric circulation, Ocean currents, Ice heat flux, Sea ice distribution, Ice conditions, Ice cover thickness, Drift, Ice friction, Ice deformation, Ice models, Paleoclimatology, Computerized simulation, Mathematical models

53-3998

**Theoretical and numerical study of thin film and ice accretion dynamics on aircraft wing surfaces.**

Tsao, J.C., Ames, Iowa State University, 1998, 131p., University Microfilms order No.9841091, Ph.D. thesis. Refs. *passim*.

Aircraft icing, Ice accretion, Glaze, Ice loads, Ice air interface, Supercooled clouds, Cloud droplets, Water films, Surface roughness, Air flow, Viscous flow, Turbulent flow, Mathematical models

53-3999

**Nonlinear aircraft simulation of ice contaminated tailplane stall.**

Hiltner, D.W., Columbus, Ohio State University, 1998, 233p., University Microfilms order No.9900844, Ph.D. thesis. 28 refs.

Aircraft icing, Ice accretion, Ice loads, Ice air interface, Air flow, Computerized simulation, Mathematical models

53-4000

**Two-dimensional numerical modelling of river ice dynamics.**

Lu, S.N., Potsdam, NY, Clarkson University, 1998, 213p., University Microfilms order No.9901314, Ph.D. thesis. 99 refs.

River ice, Ice breakup, Ice jams, Ice friction, Ice deformation, Ice models, Ice forecasting, Ice water interface, River flow, Hydrodynamics, Mathematical models

53-4001

**Sea ice and climate sensitivity.**

Kravtsov, S.V., Tallahassee, Florida State University, 1998, 259p., University Microfilms order No.9905414, Ph.D. thesis. Refs. p.241-257.

Sea ice distribution, Air ice water interaction, Ice heat flux, Ice models, Ice cover effect, Ocean currents, Water transport, Water temperature, Salinity, Atmospheric circulation, Heat balance, Hydrologic cycle, Global change, Paleoclimatology, Computerized simulation

53-4002

**Modeling the thickness distribution of arctic sea ice.**

Lipscom, W.H., Seattle, University of Washington, 1998, 155p., University Microfilms order No.9907929, Ph.D. thesis. Refs. p.145-152.

Sea ice distribution, Ice cover thickness, Ice conditions, Pressure ridges, Ice openings, Drift, Albedo, Ice heat flux, Air ice water interaction, Ice models, Atmospheric circulation, Ocean currents, Global change, Computerized simulation, Mathematical models

53-4003

**X-ray topography of freshwater ice.**

Hu, X.H., Hanover, NH, Dartmouth College, Thayer School of Engineering, 1998, 123p., University Microfilms order No.9908247, Ph.D. thesis. Refs. p.113-123.

Ice crystal structure, Ice crystal optics, Ice microstructure, Ice strength, Ice plasticity, Ice creep, Ice deformation, Ice cracks, Plastic flow, Stress strain diagrams, Dislocations (materials), X ray analysis, Mathematical models

53-4004

**Unsupervised image segmentation: a data investigation model and SAR sea ice applications.**

Koh, L.K., Lawrence, University of Kansas, 1998, 586p. + appends., University Microfilms order No.9905475, Ph.D. thesis. Refs. p.519-586.

Ice surveys, Sea ice distribution, Ice conditions, Ice cover thickness, Ice detection, Ice reporting, Terrain identification, Synthetic aperture radar, Spaceborne photography, Image processing, Computer programs

53-4005

**Simulation of the European ice sheet through the last glacial cycle and prediction of future glaciation.**

Boulton, G.S., Payne, A., *Svensk Kärnbränslehantering AB (Swedish Nuclear Fuel and Waste Management Company)*. Technical report, Dec. 1992, SKB-TR-93-14, 138p. + append., DE94-616529, Refs. p.131-136.

Ice models, Mathematical models, Computerized simulation, Ice cover, Subglacial observations, Climatic changes, Ice water interface, Ice forecasting, Glaciation, Sweden

53-4006

**Predicting the cold resistance of structures and efficiency of equipment in the North. [Prognozirovanie khladostoičnosti konstruksii i rabotospobnosti tekhniki na Severi]**

Kuz'min, V.R., Ishkov, A.M., Moscow, Mashinostroenie, 1996, 303p., In Russian. 417 refs.

Cold weather operation, Forecasting, Cold weather performance, Construction equipment, Plastic deformation, Metals, Cracking (fracturing), Temperature effects, Loads (forces), Low temperature tests, Analysis (mathematics), Fatigue (materials)

53-4007

**Rapid thinning of parts of the southern Greenland ice sheet.**

Krabill, W., et al, *Science*, Mar. 5, 1999, 283(5407), p.1522-1524, 10 refs.

Ice creep, Ice sheets, Ice cover thickness, Aerial surveys, Greenland

53-4008

**Macrobenthic structure and carbon demand at the continental margin off East Greenland. [Struktur und Kohlenstoffbedarf des Makrobenthos am Kontinentalhang Ostgrönlands]**

Seiler, D., *Berichte zur Polarforschung*, 1999, No.307, 96p., In German with English summary. Refs. p.70-81.

Ecosystems, Biomass, Marine biology, Sea ice, Ice cover effect, Nutrient cycle, Bottom sediment, Greenland

53-4009

**Annealing and sublimation of noble gas and water ice films.**

White, B.E., Jr., Hessinger, J., Pohl, R.O., *Journal of low temperature physics*, May 1998, 111(3/4), International Conference on Cryocrystals and Quantum Crystals, 2nd, Polanica Zdrój, Poland, Sep. 7-12, 1997. Proceedings, p.233-246, 25 refs.

DLC QC278.J68 Vol.111 1998

Ice crystal structure, Amorphous ice, Ice sublimation, Ice vapor interface, Vapor pressure, Water films, Low temperature research, Cryogenics

53-4010

**Structural safety evaluation of Gerber Arch Dam.**

Barrie, R.E., International Conference on Hydropower, San Francisco, CA, July 25-28, 1995. Proceedings. Waterpower'95, Vol.3. Edited by J.J. Cassidy, New York, American Society of Civil Engineers, 1995, p.2147-2156, 4 refs.

DLC TK1081.W36 Vol.3 1995  
Dams, Concrete durability, Concrete strength, Frost action, Frost resistance, United States—Oregon—Gerber Dam

53-4011

**Pneumatic conveying of ice particles through mine-shaft pipelines.**

Sheer, T.J., *Powder technology*, Dec. 1995, 85(3), p.203-219, 53 refs.

DLC TP156.P3P63 Vols. 84-85 1995

Mine shafts, Ice thermal properties, Ice refrigeration, Cooling systems, Pipelines, Pipe flow

53-4012

**Real time forecast of snowcover development and meltwater release. First results of the Project SNOW-D. [Echtzeitvorhersage der Schneedeckentwicklung und der Wasserabgabe aus der Schneedecke. Erste Ergebnisse aus dem Projekt SNOW-D]**

Rachner, M., Matthäus, H., Schneider, G., *Deutsche gewässerkundliche Mitteilungen*, June 1997, 41(3), p.98-106, In German with English summary. 36 refs.

DLC GB651.D4 Vol.41 1997

Snow water equivalent, Forecasting, Snowmelt, Snow cover distribution, Simulation, Meltwater, Germany

53-4013

**How do Großwetterlagen become flood-producing weather situations in Bavaria? [Was macht eine Großwetterlage zur Hochwasserlage in Bayern?]**

Kästner, W., *Deutsche gewässerkundliche Mitteilungen*, June 1997, 41(3), p.107-112, In German with English summary. 14 refs.

DLC GB651.D4 Vol.41 1997

Synoptic meteorology, Flood forecasting, Snow cover effect, Snowmelt, Floods, Topographic effects, Frozen ground, Germany

53-4014

**Radiation budget and surface temperature of snowcover in forests and on open landscapes. [Strahlungshaushalt und Oberflächentemperatur einer Schneedecke im Wald und im Freiland]**

Guttenberger, J., *Deutsche gewässerkundliche Mitteilungen*, Dec. 1997, 41(6), p.248-252, In German with English summary. 11 refs.

DLC GB651.D4 Vol.41 1997

Radiation balance, Snow cover effect, Surface temperature, Forest land, Albedo, Air temperature, Snow depth, Snow air interface, Germany

53-4015

**Use of a one-dimensional snow cover model to analyze measured snow depth and snow temperature data from southern Finland.**

Koivusalo, H.J., Burges, S.J., *U.S. Bureau of Reclamation, Washington, D.C. Office of Water Research Report*, Mar. 1996, 109p., PB96-187851, 36 refs. Also published as Washington University, Seattle, Department of Civil Engineering report no. Water Resources SER/TR-150.

Models, Snow cover, Snow depth, Snow temperature, Measurement, Mass transfer, Snow ice interface, Finland

53-4016

**Hydrometeorological regime of the Kara, Laptev, and East-Siberian Seas.**

Pavlov, V.K., et al, *University of Washington, Seattle. Applied Physics Laboratory. Technical memorandum*, Jan. 1996, APL-UW-TM-1-96, 179p., ADA-304 976, 86 refs.

Ocean currents, Water pollution, Radioactive wastes, Sea water, Tidal currents, Water flow, Russia—Kara Sea, Russia—Laptev Sea, Arctic Ocean, Russia—East Siberian Sea



- 53-4017**  
Water quality effects of snow storage areas. Merii, J.M., Carlson, R.F., Behr-Andres, C., *Alaska. Department of Transportation and Public Facilities. Juneau, Engineering and Operations Standards. Report*, Apr. 1996, INE/TRC-95.06, 64p., PB96-183728, 7 refs.  
Meltwater, Water pollution, Snowmelt, Infrared spectroscopy, Water storage, Snow water content, Sampling, United States—Alaska
- 53-4018**  
Optimal routing of ice reconnaissance aircraft. Sposato, J.J., Monterey, CA, Naval Postgraduate School, Sep. 1995, 57p., ADA-306 482, M.S. thesis. 15 refs.  
Aircraft, Aerial surveys, Ice reporting, Ice conditions, Ice surveys, North Atlantic Ocean
- 53-4019**  
Nonsorted patterned ground on mountains in the northern highlands of Scotland. Ballantyne, C.K., *Biuletyn peryglacjalny*, 1986, No.30, p.15-34, 42 refs.  
DLC QE1.B55 1986 No.30-31  
Patterned ground, Regolith, Hummocks, Frost action, United Kingdom—Scotland
- 53-4020**  
Late Pleistocene permafrost phenomena in the European part of the USSR and their significance for paleoclimatic reconstructions. Berdnikov, V.V., *Biuletyn peryglacjalny*, 1986, No.30, p.35-43, 13 refs.  
DLC QE1.B55 1986 No.30-31  
Pleistocene, Paleoclimatology, Wedges, Permafrost distribution
- 53-4021**  
Pleistocene periglacial structures in the Ebro terrace at Saragossa. [Pleistozäne periglazialstrukturen in den ebroterrassen bei Zaragoza] Borsche, K.U., *Biuletyn peryglacjalny*, 1986, No.30, p.45-56, In German with English summary. 35 refs.  
DLC QE1.B55 1986 No.30-31  
Pleistocene, Periglacial processes, Geomorphology, Geocryology, Cryoturbation, Spain—Ebro River, Spain—Saragossa
- 53-4022**  
Propositions for the legend of a map showing the distribution of fossil periglacial phenomena as evidence for permafrost at the maximum of the last glaciation. Karte, J., Liedtke, H., *Biuletyn peryglacjalny*, 1986, No.30, p.61-66.  
DLC QE1.B55 1986 No.30-31  
Periglacial processes, Permafrost distribution, Maps, Mapping, Paleoclimatology, Glaciation, Fossil ice
- 53-4023**  
Frequency of relic frost-fissure structures and prediction of polygon pattern: a quantitative approach. Maizels, J.K., *Biuletyn peryglacjalny*, 1986, No.30, p.67-89, Refs. p.87-89.  
DLC QE1.B55 1986 No.30-31  
Patterned ground, Ice wedges, Paleoclimatology, Polygonal topography, Permafrost distribution, Air temperature, United Kingdom—Scotland
- 53-4024**  
Dowoo—a new type of earth mounds in continental permafrost domain (central Mongolia). Nowaczyk, B., *Biuletyn peryglacjalny*, 1986, No.30, p.111-123, 33 refs.  
DLC QE1.B55 1986 No.30-31  
Permafrost distribution, Pingos, Geomorphology, Geocryology, Permafrost origin, Mongolia
- 53-4025**  
Soil pattern of central Bathurst Island, Queen Elizabeth Island, Canada. Walton, G.F., Tedrow, J.C.F., *Biuletyn peryglacjalny*, 1986, No.30, p.127-139, 22 refs.  
DLC QE1.B55 1986 No.30-31  
Desert soils, Soil patterns, Tundra soils, Soil classification, Soil formation, Canada—Northwest Territories—Bathurst Island
- 53-4026**  
Intensity versus duration of bedrock weathering under periglacial conditions in high Arctic Canada. Watts, S.H., *Biuletyn peryglacjalny*, 1986, No.30, p.141-152, Refs. p.150-152.  
DLC QE1.B55 1986 No.30-31  
Bedrock, Weathering, Periglacial processes, Glacier ice, Fracturing, Porosity, Microstructure, Lithology, Geomorphology, Canada—Northwest Territories—Ellesmere Island, Canada—Northwest Territories—Somerset Island
- 53-4027**  
Early Vistulian permafrost occurrence in northwest Poland. Kozarski, S., *Biuletyn peryglacjalny*, 1986, No.31, p.163-170, 33 refs.  
DLC QE1.B55 1986 No.30-31  
Periglacial processes, Permafrost distribution, Fossil ice, Ice wedges, Geomorphology, Geocryology, Paleoclimatology, Poland
- 53-4028**  
Kurums. Romanovskii, N.N., Turin, A.I., *Biuletyn peryglacjalny*, 1986, No.31, p.249-259, 38 refs.  
DLC QE1.B55 1986 No.30-31  
Rock streams, Periglacial processes, Geocryology, Russia—Siberia, Russia—Far East
- 53-4029**  
Role of the Vistulian and Holocene in the transformation of the relief of Poland. Starkel, L., *Biuletyn peryglacjalny*, 1986, No.31, p.261-273, Refs. p.270-273.  
DLC QE1.B55 1986 No.30-31  
Periglacial processes, Topographic features, Slopes, Geomorphology, Paleoclimatology, Glacial geology, Poland
- 53-4030**  
Factors affecting polar desert soil development in the High Arctic. Tedrow, J.C.F., *Biuletyn peryglacjalny*, 1986, No.31, p.275-282, 32 refs.  
DLC QE1.B55 1986 No.30-31  
Desert soils, Soil formation, Frost action, Soil patterns, Tundra soils, Meadow soils, Soil classification, Canada—Northwest Territories—Bathurst Island, Canada—Northwest Territories—Prince Patrick Island
- 53-4031**  
Effect of relief on the type of periglacial slope deposits in the Łódź. [L'influence du relief sur le caractère des dépôts de versant periglaciaire dans la région de Łódź] Turkowska, K., Wiczorkowska, J., *Biuletyn peryglacjalny*, 1986, No.31, p.293-309, In French. 47 refs.  
DLC QE1.B55 1986 No.30-31  
Periglacial processes, Slope processes, Topographic features, Sands, Stratigraphy, Poland—Łódź
- 53-4032**  
History of hydraulic engineering in the Swiss Alps. [Histoire de l'aménagement des eaux dans les Alpes suisses] Vischer, D.L., Raemy, F., *Gas, Wasser, Abwasser (Gaz, eau, eau usée)*, Dec. 1998, 78(12), p.978-985, In French with German and English summaries. 9 refs.  
History, Water supply, Channels (waterways), Water pipelines, Hydraulic structures, Irrigation, Transportation, Switzerland
- 53-4033**  
Distribution of permafrost in Finland. Seppälä, M., *Geological Society of Finland. Bulletin*, 1997, No.69, Part 1-2, p.87-96, 34 refs.  
Permafrost surveys, Permafrost distribution, Periglacial processes, Frost mounds, Permafrost indicators, Permafrost thickness, Vegetation patterns, Finland
- 53-4034**  
Introduction to the periglacial environment in Finland. Seppälä, M., *Geological Society of Finland. Bulletin*, 1997, No.69, Part 1-2, p.73-86, 46 refs.  
Periglacial processes, Frost action, Patterned ground, Permafrost indicators, Frost penetration, Freezing indexes, Degree days, Finland
- 53-4035**  
Freezing point depression conditioned by crystal size and shape. [Über die durch anomale Kristallgestalt sowie durch Limitierung der Kristallgröße bedingte Gefrierpunktniedrigung] Kuhn, W., *Helvetica chimica acta*, 1956, 39(4), p.1071-1086, In German. Refs. passim.  
Polymers, Frozen liquids, Solidification, Phase transformations, Solid phases, Freezing points, Crystal growth
- 53-4036**  
On the temperature or concentration fields produced inside an infinite or finite domain by moving surfaces at which the temperature or concentration are given as functions of time. Grinberg, G.A., *Journal of applied mathematics and mechanics*, Dec. 1969(Pub. June 70), 33(6), p.1021-1029, Translated from Prikladnaia matematika i mekhanika, Vol.33, No.6, Dec. 1969, p.1051-1060. 8 refs.  
Heat transfer, Conduction, Phase transformations, Liquid phases, Thawing rate, Mathematical models
- 53-4037**  
Snow survey bulletin & water supply forecast, May 1, 1999, Yukon Territory. Canada. Indian and Northern Affairs. Water Resources Division, Whitehorse, 1999, 27p.  
Snow surveys, Runoff forecasting, Snow depth, Snow water equivalent, Stream flow, Canada—Yukon Territory
- 53-4038**  
Physics of englacial and subglacial meltwater drainage—theory and observations. Röthlisberger, H., *Universität Salzburg. Institut für Geographie. Salzburger geographische Materialien*, 1998, Vol.28, International Symposium on Glacier Caves and Cryokarst in Polar and High Mountain Regions, Rudolfshtätte, Salzburg, Austria, Sep. 1-7, 1996, p.13-23, 22 refs.  
Glacial hydrology, Subglacial caves, Subglacial drainage, Meltwater, Water pressure, Water flow, Water erosion
- 53-4039**  
Field sampling and selecting on-site analytical methods for explosives in water. Crockett, A.B., Craig, H.D., Jenkins, T.F., MP 5339, *U.S. Environmental Protection Agency. Office of Research and Development. Office of Solid Waste and Emergency Response. Federal Facilities Forum. Issue paper*, May 19, 1999, EPA/600/S-99/002, 48p., Refs. p.41-48.  
Military facilities, Site surveys, Explosives, Waste disposal, Water pollution, Soil pollution, Wells, Ground water, Hydrogeochemistry, Water chemistry, Chemical analysis
- 53-4040**  
Using infrared thermography for condition assessment of buried district heating piping systems. Phetteplace, G., MP 5340, International Symposium on District Heating and Cooling, 7th, Lund, Sweden, May 18-20, 1999. Proceedings, 1999, p.1-11, 13 refs.  
Utilities, Heating, Heat transmission, Heat pipes, Heat loss, Underground pipelines, Soil temperature, Infrared photography  
Infrared thermography has been used successfully for many years to find problem areas on buried district heating systems. While such information is useful for locating areas of major failures, for planning purposes some quantification of the results from an infrared survey of major portions of a district heating system would be advantageous. Some recent progress has been made toward this end by two International Energy Agency District Heating projects in which the US Army Cold Regions Research and Engineering Laboratory (CRREL) has participated with colleagues from the Nordic countries. The objective of these projects was to develop a method that would allow quantification of heat losses from the temperature

profile of the ground's surface above the buried heat distribution pipeline. Basically, the method uses the integral of the temperature distribution at the ground's surface along with climatological and system data to arrive at an empirical estimate of the heat loss. Using this method, CRREL has conducted infrared surveys of two facilities. Results have been good, and the facilities have been provided with both heat loss estimates and prioritized replacement lists. This paper describes the "TX method," as it is called, and its use. Sample results from the surveys done to date will also be presented.

**53-4041****Problems with surface layer similarity theory in the Arctic.**

Guest, P.S., Andreas, E.L., Fairall, C.W., Persson, P.O.G., MP 5341, Conference on Polar Meteorology and Oceanography, 5th, Dallas, TX, Jan. 10-15, 1999. Preprint volume, Boston, American Meteorological Society, 1999, p.132-135.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Atmospheric boundary layer, Air ice water interaction, Ice heat flux, Turbulent exchange, Cloud cover, Heat balance

**53-4042****Observations of large thermal transitions during the arctic night from a suite of sensors at SHEBA.**

Persson, P.O.G., Uttal, T., Intrieri, J., Fairall, C.W., Andreas, E.L., Guest, P.S., MP 5342, Conference on Polar Meteorology and Oceanography, 5th, Dallas, TX, Jan. 10-15, 1999. Preprint volume, Boston, American Meteorological Society, 1999, p.306-309, 8 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Drift stations, Cloud cover, Air ice water interaction, Snow ice interface, Snow heat flux, Ice heat flux, Heat balance

**53-4043****Intercomparison of downward longwave flux measurements during the first two months of SHEBA.**

Russell, C.A., et al, MP 5343, Conference on Polar Meteorology and Oceanography, 5th, Dallas, TX, Jan. 10-15, 1999. Preprint volume, Boston, American Meteorological Society, 1999, p.314-318, 2 refs. Drift stations, Polar atmospheres, Radiation balance, Infrared radiation, Radiation measurement, Radiation measuring instruments, Radomes, Ice removal, Defrosting

**53-4044****Surface energy budget during the onset of the melt season on the arctic icepack during SHEBA.**

Persson, P.O.G., Andreas, E.L., Fairall, C.W., Guest, P.S., Ruffieux, D.R., MP 5344, Conference on Polar Meteorology and Oceanography, 5th, Dallas, TX, Jan. 10-15, 1999. Preprint volume, Boston, American Meteorological Society, 1999, p.321-326, 15 refs.

Polar atmospheres, Air ice water interaction, Snow ice interface, Ice heat flux, Ice melting, Ice breakup, Radiation balance

**53-4045****Surface energy budget and atmospheric effects of a freezing lead at SHEBA.**

Pinto, J.O., et al, MP 5345, Conference on Polar Meteorology and Oceanography, 5th, Dallas, TX, Jan. 10-15, 1999. Preprint volume, Boston, American Meteorological Society, 1999, p.397-400, 5 refs.

Polar atmospheres, Air ice water interaction, Snow ice interface, Albedo, Ice heat flux, Ice openings, Sea water freezing, Heat balance

**53-4046****Surface temperature measurements at SHEBA.**

Claffey, K.J., Andreas, E.L., Perovich, D.K., Fairall, C.W., Guest, P.S., Persson, P.O.G., MP 5346, Conference on Polar Meteorology and Oceanography, 5th, Dallas, TX, Jan. 10-15, 1999. Preprint volume, Boston, American Meteorological Society, 1999, p.327-332, 4 refs.

Polar atmospheres, Air temperature, Surface temperature, Snow ice interface, Snow surface temperature, Ice heat flux, Temperature measurement, Thermistors, Hygrometers, Radiation measuring instruments

**53-4047****Role of surface-layer turbulent interactions in the longwave flux/surface temperature feedback during SHEBA.**

Fairall, C.W., Persson, P.O.G., Andreas, E.L., Guest, P.S., MP 5347, Conference on Polar Meteorology and Oceanography, 5th, Dallas, TX, Jan. 10-15, 1999. Preprint volume, Boston, American Meteorological Society, 1999, p.421-424, 2 refs.

Polar atmospheres, Atmospheric circulation, Atmospheric boundary layer, Air ice water interaction, Cloud cover, Albedo, Ice heat flux, Turbulent exchange, Heat balance

**53-4048****Effects of sea spray on tropical cyclone intensity.**

Andreas, E.L., Emanuel, K.A., MP 5348, Conference on Hurricanes and Tropical Meteorology, 23rd, Dallas, TX, Jan. 10-15, 1999. Preprint volume, Boston, American Meteorological Society, 1999, p.22-25, 21 refs.

Marine atmospheres, Atmospheric circulation, Air water interactions, Sea spray, Evaporation, Heat transfer, Moisture transfer, Turbulent exchange, Atmospheric disturbances, Storms

**53-4049****Effect of turbulence on fluidelastic instability in tube bundles: a nonlinear analysis.**

Rzentkowski, G., Lever, J.H., MP 5349, *Journal of fluids and structures*, July 1998, 12(5), p.561-590, 25 refs.

Pipes (tubes), Heat pipes, Pipe flow, Turbulent flow, Fluid flow, Fluid dynamics, Mathematical models

This paper is concerned with the behavior of a tube bundle subjected to combined fluidelastic and turbulence excitation. Here, the authors formulate the fluidelastic forces based on a simplified, nonlinear model for a single flexible tube surrounded by rigid neighbors and constrained to move transverse to the mean flow. They use a flat power spectral density function to express the turbulence excitation. The resulting system they first examine heuristically, based on a superposition of both excitation mechanisms. They then assess the merits of this approach via direct numerical integration of the equation of motion. Lastly, they perform a nonlinear investigation into the sensitivity of the fluidelastic stability boundary on variations in the random field of turbulence and generate a stability map. The analysis shows that the fluidelastic stability boundary defined by an unstable bifurcation may be reduced by turbulence; for long-term operation, the threshold reduction may approach the size of a hysteresis region. This effect increases with turbulence intensity and decreases with unstable-limit-cycle amplitude. For a stable bifurcation, the fluidelastic stability boundary is virtually unaffected by turbulence. In the latter case, the effect of turbulence is through practical stability definitions made using amplitude-response curves.

**53-4050****Laboratory tests of a time-domain reflectometry system for frazil ice detection.**

Yankielun, N.E., Gagnon, J.J., MP 5350, *Canadian journal of civil engineering*, Apr. 1999, 26(2), p.168-176, With French summary. 18 refs.

Water intakes, Frazil ice, Ice accretion, Ice loads, Icing rate, Ice electrical properties, Ice dielectrics, Ice detection, Monitors, Telemetering equipment

A prototype, electromagnetic-based frazil ice detection system (patent pending) has been developed and tested under simulated frazil ice accretion conditions in an environmentally controlled flume. The system employs a time-domain reflectometer (TDR) and specially designed transmission line sensor to monitor the accretion of frazil ice by measuring the propagation time along the sensor when it is submerged. Changes in the round-trip travel time of the TDR pulse result from a decrease in the localized bulk dielectric constant as frazil ice accretes and displaces water around the sensor. Two frazil detection sensor configurations were tested, a parallel transmission line probe and a semicylindrical mesh coaxial probe. During 2 h long experiments, the TDR clearly indicated a decreasing probe propagation time as frazil ice continued to accrete. This is indicative of the decreasing bulk dielectric constant of the frazil ice and water mix. Continuous real-time data from the TDR were recorded. From these data, an estimate of volumetric ice fraction was calculated using a simple linear dielectric mixing equation. Volumetric ice fractions estimates for both probe configurations were calculated to increase from approximately 0.02 to 0.18 during the test. The system shows promise for detection and measurement of frazil ice growth and accretion in freshwater bodies.

**53-4051****Hydrology in a changing environment.**

Wheater, H., ed, Kirby, C., ed, British Hydrological Society International Conference, Exeter, UK, July 1998. Proceedings, Vol.1, Chichester, UK, John Wiley & Sons, Ltd., 1998, 592p., Refs. passim. For selected papers see 53-4052 through 53-4058.

DLC GB652.B75 1998 Vol.1

Hydrologic cycle, Watersheds, Models, Snowmelt, Runoff

**53-4052****Adaptation of TOPMODEL to snow and glacier melt data on a French alpine catchment: first results.**

Durot, K., Saulnier, G.M., Obled, C., British Hydrological Society International Conference, Exeter, UK, July 1998. Proceedings, Vol.1. Hydrology in a changing environment. Edited by H. Wheater and C. Kirby and Theme 1: Global hydrological processes, Chichester, UK, John Wiley & Sons, Ltd., 1998, p.21-31, 15 refs.

DLC GB652.B75 1998 Vol.1

Flood forecasting, Snowmelt, Models, Computerized simulation, Runoff forecasting, Watersheds, France—Alps

**53-4053****Integrating atmospheric and vegetation succession data in a macroscale hydrological model.**

Kite, G., British Hydrological Society International Conference, Exeter, UK, July 1998. Proceedings, Vol.1. Hydrology in a changing environment. Edited by H. Wheater and C. Kirby and Theme 1: Global hydrological processes, Chichester, UK, John Wiley & Sons, Ltd., 1998, p.43-52, 29 refs.

DLC GB652.B75 1998 Vol.1

Hydrologic cycle, Models, Watersheds, Vegetation factors, Stream flow, Ground water, Snow cover effect, Runoff, Canada

**53-4054****Parameterization of cryologic processes for large-scale atmospheric models.**

Shmakin, A.B., British Hydrological Society International Conference, Exeter, UK, July 1998. Proceedings, Vol.1. Hydrology in a changing environment. Edited by H. Wheater and C. Kirby and Theme 1: Global hydrological processes, Chichester, UK, John Wiley & Sons, Ltd., 1998, p.117-124, 16 refs.

DLC GB652.B75 1998 Vol.1

Snow cover, Albedo, Mathematical models, Heat flux, Snow melting, Frozen ground, Soil freezing, Climate, Russia

**53-4055****Effects of global warming on runoff in mountain basins representing different climate zones.**

Rango, A., Martinec, J., British Hydrological Society International Conference, Exeter, UK, July 1998. Proceedings, Vol.1. Hydrology in a changing environment. Edited by H. Wheater and C. Kirby and Theme 1: Global hydrological processes, Chichester, UK, John Wiley & Sons, Ltd., 1998, p.133-139, 8 refs.

DLC GB652.B75 1998 Vol.1

Global warming, Snowmelt, Runoff, Snow accumulation, River basins, Climatic changes, Snow water equivalent, Climatic factors, North America

**53-4056****Long-term fluctuation of glacier runoff in Central Asia.**

Kononov, V., British Hydrological Society International Conference, Exeter, UK, July 1998. Proceedings, Vol.1. Hydrology in a changing environment. Edited by H. Wheater and C. Kirby and Theme 1: Global hydrological processes, Chichester, UK, John Wiley & Sons, Ltd., 1998, p.141-146, 3 refs.

DLC GB652.B75 1998 Vol.1

Mountain glaciers, Glacier mass balance, Runoff, Glacier melting, Glacier oscillation, Glacier ablation, Glacial rivers, CIS—Central Asia, Pamirs

53-4057

**Classification of rivers to assess low flow impacts on water quality.**

Vladimirov, A.M., Lobanova, H.V., British Hydrological Society International Conference, Exeter, UK, July 1998. Proceedings, Vol.1. Hydrology in a changing environment. Edited by H. Wheeler and C. Kirby and Theme 2: Ecological and hydrological interactions, Chichester, UK, John Wiley & Sons, Ltd., 1998, p.329-334, 5 refs.

DLC GB652.B75 1998 Vol.1

Rivers, Water pollution, River flow, Classifications, Freezeup, Runoff, Water level, Russia

53-4058

**Long-term effects of forest mosaic management on storm and snowmelt flow, Quebec.**

Plamondon, A.P., Lévesque, D., Ma, Y., Prévost, M., British Hydrological Society International Conference, Exeter, UK, July 1998. Proceedings, Vol.1. Hydrology in a changing environment. Edited by H. Wheeler and C. Kirby and Theme 2: Ecological and hydrological interactions, Chichester, UK, John Wiley & Sons, Ltd., 1998, p.503-515, 47 refs.

DLC GB652.B75 1998 Vol.1

Forestry, Snowmelt, Rain, Hydrography, Canada—Quebec

53-4059

**Glacier Bay, Alaska, from the ground, air and space.**

Hall, D.K., Greenbelt, MD, NASA, 1996, n.p., 13-minute VHS videotape.

Glacier oscillation, Glacier surveys, Remote sensing, Spaceborne photography, Vegetation patterns, Climatology, Education, United States—Alaska—Glacier Bay

53-4060

**Snow and snow avalanches.**

Anisimov, M.I., U.S. Forest Service. Wasatch National Forest. Alta Avalanche Study Center. Translation, Apr. 1963, No.1, 64p., For Russian original see 14-17288.

Avalanche mechanics, Avalanche formation, Avalanche protection, Avalanche forecasting, Countermeasures, Avalanche wind, Snow cover, Snow density, Snow crust, Snowdrifts, Snow recrystallization, Snow cover stability, Snow slides, Russia—Kirovsk, Russia—Khibiny Mountains

53-4061

Evolutionary geocryological processes in the arctic regions and problems of global changes of the environment and climate in permafrost areas; Abstracts of papers from the anniversary annual meeting, April 24-28, 1995. [Evolutsionnye geokriologicheskie protsessy v arkticheskikh regionakh i problemy global'nykh izmenenii' prirodnoy sredy i klimata na territorii kriolitozony; Tezisy dokladov IUbileynogo godichnogo sobraniya 24-28 aprilya 1995 g.]

Russian Academy of Sciences. Scientific Council on Earth Cryology, Pushchino, Russian Academy of Sciences, 1995, 157p., 114 abstracts. In Russian with English titles; some with full text in Russian and English.

Geocryology, Global change, Climatic changes, Global warming, Pleistocene, Paleoclimatology, Climatic factors, Hydrates, Alasay, Tundra, Ecosystems, Hydrocarbons, Carbon dioxide, Permafrost beneath roads, Permafrost beneath structures, Engineering geology, Frozen ground, Russia

53-4062

**Paleoclimatology; reconstructing climates of the Quaternary; Second edition.**

Bradley, R.S., International geophysics series, Vol.68, San Diego, CA, Harcourt Academic Press, 1999, 613p., Refs. p.513-594. For first edition see 39-2885.

Paleoclimatology, Climate, Climatic changes, Ice cores, Radioactive age determination, Geomagnetism, Age determination, Isotope analysis, Oxygen isotopes, Marine deposits, Bottom sediment, Ocean currents, Pollen, Palynology, Models, Loess, Periglacial processes, Mountain glaciers, Glacier oscillation, Glaciation, Lakes, Water level, Fossils, Atmospheric circulation, Antarctica, Greenland, Africa, Europe, Colombia, United States—Florida, Amazonia

53-4063

**Under ice; Waldo Lyon and the development of the arctic submarine.**

Leary, W.M., Texas A & M University military history series, Vol.62, College Station, TX, Texas A & M University Press, 1999, 303p., Refs. p.287-291.

DLC V857.S.L43 1999

Military operation, Submarines, Icebreakers, Ice navigation, History, Military research, Subglacial navigation

53-4064

**New generation ramsonde having multiple sensors.**

Abe, O., Japan. National Research Institute for Earth Science and Disaster Prevention. Report, Mar. 1999, No.59, p.11-18, With Japanese summary. 15 refs.

Snow survey tools, Snow cover stability, Snow strength, Snow stratigraphy, Snow electrical properties, Snow density, Snow water content, Avalanche forecasting

53-4065

**Study on the dynamics of an artificial avalanche in the Tianshan Mountains, China. [Chugoku Tensan sanmyaku ni okeru jinko nadare no dorigakuteki kenkyu]**

Abe, O., et al, Japan. National Research Institute for Earth Science and Disaster Prevention. Report, Mar. 1999, No.59, p.19-30, In Japanese with English summary. 21 refs.

Avalanche triggering, Avalanche modeling, Avalanche mechanics, Avalanche deposits, Snow loads, Impact tests, China—Tian Shan

53-4066

**Ground dsaster caused by the Kushiro-oki earthquake on 15 January 1993. [1993-nen ichigatsu no Kushiro-oki jishin ni yotte shojita jiban saigai to sono tokuchou]**

Inokuchi, T., Japan. National Research Institute for Earth Science and Disaster Prevention. Report, Mar. 1999, No.59, p.31-56, In Japanese with English summary. 20 refs.

Earthquakes, Landslides, Accidents, Slope stability, Frozen ground strength, Japan—Hokkaido

53-4067

**Multiple linear regression for lake ice and lake temperature characteristics.**

Gao, S.B., Stefan, H.G., Journal of cold regions engineering, June 1999, 13(2), p.59-77, 16 refs.

Lake ice, Lake water, Water temperature, Ice water interface, Freezeup, Ice conditions, Ice cover thickness, Ice breakup, Ice forecasting, Statistical analysis, Mathematical models

53-4068

**Numerical study of ice jam dynamics in upper Niagara River.**

Lu, S.N., Shen, H.T., Crissman, R.D., Journal of cold regions engineering, June 1999, 13(2), p.78-102, 15 refs.

River ice, Ice jams, Ice water interface, Ice cover effect, Ice friction, River flow, Ice forecasting, Flood forecasting, Mathematical models, Niagara River

53-4069

**Underground leakage into freezing ground.**

Han, S.J., Goodings, D.J., Torrents, A., Zeinali, M., Journal of cold regions engineering, June 1999, 13(2), p.103-112, 10 refs.

Underground storage, Waste disposal, Leakage, Soil pollution, Soil freezing, Frozen ground chemistry, Soil water migration

53-4070

**Calcium magnesium acetate at lower-production cost: production of CMA delcer from cheese whey.**

Yang, S.T., Huang, Y.L., Jin, Z.W., Huang, Y., Zhu, H., Qin, W., U.S. Federal Highway Administration. Research, Development, and Technology Turner-Fairbank Highway Research Center, McLean, VA. Report, Apr. 1999, FHWA-RD-98-174, 108p., PB99-148991, Refs. p.101-108.

Road icing, Chemical ice prevention, Biomass, Waste disposal, Microbiology, Bacteria, Fungi, Road maintenance, Cost analysis

53-4071

**Hydrologic data for the Matanuska River watershed, southcentral Alaska.**

Maurer, M.A., Alaska Department of Natural Resources. Division of Geological and Geophysical Surveys. Public-data file, July 1998, No.98-41, 14p., 6 refs.

Glacial rivers, Watersheds, Drainage, Stream flow, Water reserves, Water chemistry, Hydrogeochemistry, United States—Alaska—Matanuska River

53-4072

**Survey of nonglycol and reduced glycol aircraft deicing methods.**

Cornish, J., Eyre, F., U.S. Federal Aviation Administration. Office of Aviation Research, Washington, D.C. Report, Apr. 1999, DOT/FAA/AR-99/18, 36p. + append., 3 refs.

Aircraft icing, Ice removal, Snow removal, Chemical ice prevention, Defrosting, Artificial melting

53-4073

**Frost dynamics in high alpine rock walls with the Jungfrauoch-Aletsch region as an example. [Frostdynamik in hochalpinen Felswänden am Beispiel der Region Jungfrauoch-Aletsch]**

Wegmann, M., Zürich. Eidgenössische Technische Hochschule. Versuchsanstalt für Wasserbau, Hydrologie und Glaziologie. Mitteilungen, 1998, No.161, 144p., In German with English summary. Refs. p.129-141.

Permafrost samplers, Permafrost heat transfer, Frozen rock strength, Frozen ground thermodynamics, Frost action, Frost shattering, Periglacial processes; Switzerland

53-4074

**Dimensions and topographic setting of antarctic subglacial lakes and implications for large-scale water storage beneath continental ice sheets.**

Dowdeswell, J.A., Siegert, M.J., Geological Society of America. Bulletin, Feb. 1999, 111(2), p.254-263, 26 refs.

Ice sheets, Glacier beds, Glacial hydrology, Subglacial drainage, Glacial lakes, Subglacial observations, Bottom topography, Water storage, Radio echo soundings, Antarctica—East Antarctica

53-4075

**Importance of mechanical disaggregation in chemical weathering in a cold alpine environment, San Juan Mountains, Colorado.**

Hoch, A.R., Reddy, M.M., Drever, J.I., Geological Society of America. Bulletin, Feb. 1999, 111(2), p.304-314, 49 refs.

Mountain soils, Weathering, Frozen ground chemistry, Snowmelt, Seepage, Soil chemistry, Mineralogy, Geochemical cycles, United States—Colorado—San Juan Mountains

53-4076

Synoptic classification of severe snowstorms over Austria.  
Spreitzhofer, G., *Meteorologische Zeitschrift*, Feb. 1999, 8(1), p.3-15, With German summary. 24 refs. Snowstorms, Snowfall, Atmospheric circulation, Atmospheric disturbances, Synoptic meteorology, Weather forecasting, Austria

53-4077

Climate changes indicated by trends in snow cover duration and surface albedo in Estonia.  
Tooming, H., Kadaja, J., *Meteorologische Zeitschrift*, Feb. 1999, 8(1), p.16-21, With German summary. 6 refs.  
Snow cover distribution, Snow air interface, Snow cover effect, Snow heat flux, Albedo, Climatic changes, Estonia

53-4078

Paraglacial and postglacial debris flows on a Little Ice Age terminal moraine: Jamapa Glacier, Pico de Orizaba (Mexico).  
Palacios, D., Parrilla, G., Zamorano, J.J., *Geomorphology*, May 1999, 28(1-2), p.95-118, 48 refs.  
Volcanoes, Mountain glaciers, Glacial geology, Glacier oscillation, Glacial deposits, Moraines, Outwash, Mudflows, Mass movements (geology), Permafrost indicators, Periglacial processes, Lichens, Soil dating, Paleoclimatology, Mexico—Pico de Orizaba

53-4079

Deicing agents and anti-icing agents for aircraft. [Enteisungsmittel bzw. Vereisungsschutzmittel für Flugzeuge]  
Schrimpf, H., Krebs, H., Liebold, G., Frey, G., *European Patent Office. Patent*, Mar. 23, 1990, 8p., EP 0 360 183 A2.  
Chemical ice prevention, Ice removal, Aircraft icing, Cold weather performance

53-4080

Pneumatic vehicle tires. [Pneumatischer Fahrzeugreifen]  
Hausmann, B., *European Patent Office. Patent*, Jan. 20, 1993, 7p., EP 0 524 164 A1.  
Tires, Traction, Cold weather performance, Chemical composition, Rubber snow friction, Rubber ice friction, Skid resistance

53-4081

Spiral wire rope anchor, particularly for anchoring rock slide and avalanche protection systems. [Spiraldrahtseilanker, insbesondere zur Verankerung von Steinschlag- und Lawinenschutzsystemen]  
Popp, X., Loepfe, T., *European Patent Office. Patent*, Aug. 25, 1993, 5p., EP 0 557 241 A1.  
Anchors, Avalanche protection, Countermeasures, Equipment, Design

53-4082

Behaviour of groundwater in the slope failure area of the Gamahara torrent. [Gamahara-zawa gentobu hokaichi fukin no chikaisui no kyodo ni tsuite]  
Marui, H., Watanabe, N., Satou, K., Yoshikawa, M., Nagumo, M., Toyama, Y., *Niigata University. Research Institute for Hazards in Snowy Areas. Annual report*, 1998 (Pub. 1999), No.20, p.1-9, In Japanese with English summary. 7 refs.  
Snowmelt, Ground water, Water table, Slope stability, Slope processes, Mudflows, Japan

53-4083

1997 Hachimantai debris flow and the geological, geotechnical and geochemical backgrounds. [1997-nen Hachimantai dosekiryo to chishitsu, doshitsu oyobi ni suisuitsu]  
Marui, H., Watanabe, N., *Niigata University. Research Institute for Hazards in Snowy Areas. Annual report*, 1998 (Pub. 1999), No.20, p.10-24, In Japanese with English summary. 11 refs.  
Mudflows, Landslides, Snowmelt, Ground water, Water chemistry, Hydrogeology, Hydrogeochemistry, Slope stability, Japan

53-4084

Hazard mapping method for dangerous torrent threatened by debris flow—on the basis of discussion at the international workshop on hazard mapping in Salzburg, Austria. [Dosekiryo kiken keiryu ni okeru kiken kuiki settei shuho ni tsuite—Osutoria de no kokusai wakushoppo no giron chushin toshite]  
Marui, H., Kaibori, M., Kimura, M., *Niigata University. Research Institute for Hazards in Snowy Areas. Annual report*, 1998 (Pub. 1999), No.20, p.25-36, In Japanese with English summary. 5 refs.  
Meetings, Mudflows, Landslides, Floods, Avalanches, Flood forecasting, Avalanche forecasting, Mapping, Austria

53-4085

Landslide investigation and prevention practice in Nepal.  
Tiwari, B., Marui, H., *Niigata University. Research Institute for Hazards in Snowy Areas. Annual report*, 1998 (Pub. 1999), No.20, p.37-55, 16 refs.  
Landslides, Mudflows, Floods, Slope stability, Flood forecasting, Landslide control, Flood control, Nepal

53-4086

Analysis of spatial characteristics for groundwater flow in Okimi landslide area. [Okimi tsuchi suberi ryuiki ni okeru chikasui ryushutsu tokusei no kaiseiki]  
Luo, X.L., Marui, H., Sato, O., Watanabe, N., *Niigata University. Research Institute for Hazards in Snowy Areas. Annual report*, 1998 (Pub. 1999), No.20, p.62-80, In Japanese with English summary. 19 refs.  
Snowmelt, Runoff forecasting, Ground water, Water flow, Landslides, Mudflows, Flood forecasting, Japan

53-4087

Analysis of pH value of soils affected by acid snow and rain. [Sansai-setsu, -u ni yoru dojo no pH bunpu no kento]  
Yamamoto, M., Taguchi, Y., Aoyama, K., *Niigata University. Research Institute for Hazards in Snowy Areas. Annual report*, 1998 (Pub. 1999), No.20, p.111-116, In Japanese. 12 refs.  
Air pollution, Precipitation (meteorology), Snowfall, Scavenging, Snow composition, Snow impurities, Soil pollution, Soil chemistry, Soil tests, Japan

53-4088

Overview of the issues on earthquake disaster mitigation in snow season considering with public consensus on disaster prevention. [Junin no bosai ishiki o koryo shita sekisetsuki jishin no sogoteki na bosai taisaku no ikkosatsu]  
Kimura, T., Aoyama, K., *Niigata University. Research Institute for Hazards in Snowy Areas. Annual report*, 1998 (Pub. 1999), No.20, p.117-128, In Japanese. 44 refs.  
Earthquakes, Snow cover effect, Cold weather operation, Rescue operations, Regional planning, Japan

53-4089

Result of the questionnaire survey on the countermeasures for earthquake disaster mitigation in snow season. [Jishin bosai ni kansuru anketo chosa shukai kekka]  
Kimura, T., Aoyama, K., *Niigata University. Research Institute for Hazards in Snowy Areas. Annual report*, 1998 (Pub. 1999), No.20, p.129-136, In Japanese.  
Earthquakes, Snow cover effect, Cold weather operation, Rescue operations, Regional planning, Japan

53-4090

Structure of the ice pillar in the cold room. [Teionshitsu ni dekita hyochu no kesho kozo]  
Takeuchi, Y., Maeda, N., Nagasaki, T., Yamada, H., Wang, X., Sato, M., *Niigata University. Research Institute for Hazards in Snowy Areas. Annual report*, 1998 (Pub. 1999), No.20, p.137-142, In Japanese with English summary. 3 refs.  
Cold chambers, Artificial ice, Icicles, Ice structure, Ice growth, Ice crystal structure

53-4091

Satellite image atlas of glaciers of the world. Glaciers of South America.  
Williams, R.S., Jr., ed, Ferrigno, J.G., ed, *U.S. Geological Survey. Professional paper*, 1998, No.1386-I, 206p., Refs. passim. For individual papers see 53-4092 through 53-4097.  
Glacier surveys, Mountain glaciers, Alpine glaciation, Cirque glaciers, Volcanoes, Glacier oscillation, Glacial meteorology, Glacier mass balance, Glacier melting, Snow line, Aerial surveys, Mapping, Spaceborne photography, South America

53-4092

Glaciers of Venezuela.  
Schubert, C., *U.S. Geological Survey. Professional paper*, 1998, No.1386-I-1, Satellite image atlas of glaciers of the world. Glaciers of South America. Edited by R.S. Williams, Jr., and J.G. Ferrigno, p.11-110, 21 refs.  
Glacier surveys, Mountain glaciers, Cirque glaciers, Glacier oscillation, Alpine glaciation, Glacier melting, Mapping, Spaceborne photography, Venezuela

53-4093

Glaciers of Colombia.  
Hoyos-Patiño, F., *U.S. Geological Survey. Professional paper*, 1998, No.1386-I-2, Satellite image atlas of glaciers of the world. Glaciers of South America. Edited by R.S. Williams, Jr., and J.G. Ferrigno, p.111-130, 55 refs.  
Glacier surveys, Mountain glaciers, Volcanoes, Alpine glaciation, Glacier oscillation, Glacier melting, Moraines, Snow line, Aerial surveys, Mapping, Spaceborne photography, Colombia

53-4094

Glaciers of Ecuador.  
Jordan, E., Hastenrath, S.L., *U.S. Geological Survey. Professional paper*, 1998, No.1386-I-3, Satellite image atlas of glaciers of the world. Glaciers of South America. Edited by R.S. Williams, Jr., and J.G. Ferrigno, p.131-150, 22 refs.  
Glacier surveys, Mountain glaciers, Alpine glaciation, Volcanoes, Glacier oscillation, Glacier mass balance, Glacier melting, Snow line, Aerial surveys, Mapping, Spaceborne photography, Ecuador

53-4095

Glaciers of Peru.  
Morales Arnao, B., Hastenrath, S.L., *U.S. Geological Survey. Professional paper*, 1998, No.1386-I-4, Satellite image atlas of glaciers of the world. Glaciers of South America. Edited by R.S. Williams, Jr., and J.G. Ferrigno, p.151-179, 76 refs. Includes "Cordillera Blanca on LANDSAT imagery" and "Quelccaya Ice Cap" by S.L. Hastenrath.  
Glacier surveys, Mountain glaciers, Alpine glaciation, Glacier oscillation, Glacial meteorology, Glacier mass balance, Glacial lakes, Lake bursts, Floods, Avalanches, Mudflows, Flood control, Aerial surveys, Mapping, Spaceborne photography, Peru

53-4096

Glaciers of Bolivia.  
Jordan, E., *U.S. Geological Survey. Professional paper*, 1998, No.1386-I-5, Satellite image atlas of glaciers of the world. Glaciers of South America. Edited by R.S. Williams, Jr., and J.G. Ferrigno, p.181-1108, 34 refs.  
Glacier surveys, Mountain glaciers, Alpine glaciation, Glacier oscillation, Glacial meteorology, Glacier mass balance, Snow line, Aerial surveys, Mapping, Spaceborne photography, Bolivia

53-4097

Glaciers of Chile and Argentina.  
Lliboutry, L., Corte, A.E., *U.S. Geological Survey. Professional paper*, 1998, No.1386-I-6, Satellite image atlas of glaciers of the world. Glaciers of South America. Edited by R.S. Williams, Jr., and J.G. Ferrigno, p.1109-1206, 106 refs. Includes "Rock glaciers" by A.E. Corte, with 52 refs.  
Glacier surveys, Mountain glaciers, Alpine glaciation, Cirque glaciers, Volcanoes, Rock glaciers, Glacier oscillation, Glacial meteorology, Glacier mass balance, Glacier surges, Snow line, Paleoclimatology, Aerial surveys, Mapping, Spaceborne photography, Chile, Argentina

53-4098

**Response of West Pacific marginal seas to global climate change.**

Sarnthein, M., ed, Wang, P.X., ed, *Marine geology*, Mar. 15, 1999, 156(1-4), International Geological Congress, 30th, Beijing, China, Aug. 8-9, 1996. Selected papers. Special issue, 308p., Refs. passim. For individual papers see 53-4099 through 53-4111.

Marine geology, Marine biology, Marine deposits, Bottom sediment, Drill core analysis, Atmospheric circulation, Ocean currents, Air water interactions, Sea level, Paleocology, Global change, Paleoclimatology, South China Sea

53-4099

**Preface: Response of West Pacific marginal seas to global climatic change.**

Sarnthein, M., Wang, P.X., *Marine geology*, Mar. 15, 1999, 156(1-4), International Geological Congress, 30th, Beijing, China, Aug. 8-9, 1996. Selected papers. Special issue: Response of West Pacific marginal seas to global climate change. Edited by M. Sarnthein and P.X. Wang, p.1-3, 5 refs.

Marine geology, Sea level, Ocean currents, Atmospheric circulation, Paleoclimatology, Global change, South China Sea

53-4100

**Response of Western Pacific marginal seas to glacial cycles: paleoceanographic and sedimentological features.**

Wang, P.X., *Marine geology*, Mar. 15, 1999, 156(1-4), International Geological Congress, 30th, Beijing, China, Aug. 8-9, 1996. Selected papers. Special issue: Response of West Pacific marginal seas to global climate change. Edited by M. Sarnthein and P.X. Wang, p.5-39, Refs. p.35-39.

Glaciation, Glacial meteorology, Marine geology, Marine atmospheres, Atmospheric circulation, Air water interactions, Ocean currents, Marine deposits, Quaternary deposits, Bottom sediment, Drill core analysis, Geochemical cycles, Global change, Paleoclimatology, South China Sea

53-4101

**Modern distribution patterns of planktonic foraminifera in the South China Sea and western Pacific: a new transfer technique to estimate regional sea-surface temperatures.**

Pflaumann, U., Jian, Z.M., *Marine geology*, Mar. 15, 1999, 156(1-4), International Geological Congress, 30th, Beijing, China, Aug. 8-9, 1996. Selected papers. Special issue: Response of West Pacific marginal seas to global climate change. Edited by M. Sarnthein and P.X. Wang, p.41-83, 76 refs.

Marine geology, Marine biology, Marine deposits, Bottom sediment, Atmospheric circulation, Ocean currents, Sea level, Water temperature, Surface temperature, Drill core analysis, Paleocology, Global change, Paleoclimatology, South China Sea

53-4102

**Late Quaternary planktonic foraminifer faunal record of rapid climatic changes from the South China Sea.**

Chen, M.T., Wang, C.H., Huang, C.Y., Wang, P.X., Wang, L.J., Sarnthein, M., *Marine geology*, Mar. 15, 1999, 156(1-4), International Geological Congress, 30th, Beijing, China, Aug. 8-9, 1996. Selected papers. Special issue: Response of West Pacific marginal seas to global climate change. Edited by M. Sarnthein and P.X. Wang, p.85-108, 56 refs.

Marine geology, Marine biology, Marine deposits, Bottom sediment, Quaternary deposits, Drill core analysis, Atmospheric circulation, Ocean currents, Air water interactions, Paleocology, Global change, Paleoclimatology, South China Sea

53-4103

**Molecular biomarker record of sea surface temperature and climatic change in the South China Sea during the last 140,000 years.**

Pelejero, C., Grimalt, J.O., Sarnthein, M., Wang, L.J., Flores, J.A., *Marine geology*, Mar. 15, 1999, 156(1-4), International Geological Congress, 30th, Beijing, China, Aug. 8-9, 1996. Selected papers. Special issue: Response of West Pacific marginal seas to global climate change. Edited by M. Sarnthein and P.X. Wang, p.109-121, 47 refs.

Marine geology, Marine biology, Marine deposits, Bottom sediment, Sea level, Atmospheric circulation, Ocean currents, Water temperature, Surface temperature, Drill core analysis, Paleocology, Global change, Paleoclimatology, South China Sea

53-4104

**Quantitative composition of benthic foraminiferal assemblages as a proxy indicator for organic carbon flux rates in the South China Sea.**

Kuhnt, W., Hess, S., Jian, Z.M., *Marine geology*, Mar. 15, 1999, 156(1-4), International Geological Congress, 30th, Beijing, China, Aug. 8-9, 1996. Selected papers. Special issue: Response of West Pacific marginal seas to global climate change. Edited by M. Sarnthein and P.X. Wang, p.123-157, 46 refs.

Marine geology, Marine biology, Marine deposits, Bottom sediment, Drill core analysis, Nutrient cycle, Geochemical cycles, Biomass, Air water interactions, Paleocology, Global change, Paleoclimatology, South China Sea

53-4105

**Benthic foraminiferal paleoceanography of the South China Sea over the last 40,000 years.**

Jian, Z.M., et al, *Marine geology*, Mar. 15, 1999, 156(1-4), International Geological Congress, 30th, Beijing, China, Aug. 8-9, 1996. Selected papers. Special issue: Response of West Pacific marginal seas to global climate change. Edited by M. Sarnthein and P.X. Wang, p.159-186, 75 refs.

Marine geology, Marine biology, Marine deposits, Bottom sediment, Drill core analysis, Paleocology, Biomass, Nutrient cycle, Geochemical cycles, Global change, Paleoclimatology, South China Sea

53-4106

**Allochthonous ostracods in the South China Sea and their significance in indicating downslope sediment contamination.**

Zhou, B.C., Zhao, Q.H., *Marine geology*, Mar. 15, 1999, 156(1-4), International Geological Congress, 30th, Beijing, China, Aug. 8-9, 1996. Selected papers. Special issue: Response of West Pacific marginal seas to global climate change. Edited by M. Sarnthein and P.X. Wang, p.187-195, 34 refs.

Marine geology, Marine biology, Marine deposits, Bottom sediment, Sediment transport, Drill core analysis, Biomass, Paleocology, Global change, Paleoclimatology, South China Sea

53-4107

**Late Pleistocene nutrients and sea surface productivity in the South China Sea: a record of teleconnections with northern hemisphere events.**

Lin, H.L., Lai, C.T., Ting, H.C., Wang, L.J., Sarnthein, M., Hung, J.J., *Marine geology*, Mar. 15, 1999, 156(1-4), International Geological Congress, 30th, Beijing, China, Aug. 8-9, 1996. Selected papers. Special issue: Response of West Pacific marginal seas to global climate change. Edited by M. Sarnthein and P.X. Wang, p.197-210, 53 refs.

Marine geology, Marine biology, Marine atmospheres, Glacial meteorology, Atmospheric circulation, Air water interactions, Marine deposits, Bottom sediment, Drill core analysis, Biomass, Nutrient cycle, Geochemical cycles, Paleocology, Global change, Paleoclimatology, South China Sea

53-4108

**Pollen distribution in hemipelagic surface sediments of the South China Sea and its relation to modern vegetation distribution.**

Sun, X.J., Li, X., Beug, H.J., *Marine geology*, Mar. 15, 1999, 156(1-4), International Geological Congress, 30th, Beijing, China, Aug. 8-9, 1996. Selected papers. Special issue: Response of West Pacific marginal seas to global climate change. Edited by M. Sarnthein and P.X. Wang, p.211-226, 31 refs.

Marine geology, Marine deposits, Bottom sediment, Sediment transport, Atmospheric circulation, Ocean currents, Palynology, Vegetation patterns, Plant ecology, Paleobotany, Global change, Paleoclimatology, South China Sea

53-4109

**Pollen record of the last 37 ka in deep sea core 17940 from the northern slope of the South China Sea.**

Sun, X.J., Li, X., *Marine geology*, Mar. 15, 1999, 156(1-4), International Geological Congress, 30th, Beijing, China, Aug. 8-9, 1996. Selected papers. Special issue: Response of West Pacific marginal seas to global climate change. Edited by M. Sarnthein and P.X. Wang, p.227-244, 34 refs.

Marine geology, Marine deposits, Bottom sediment, Atmospheric circulation, Drill core analysis, Palynology, Vegetation patterns, Plant ecology, Paleobotany, Global change, Paleoclimatology, South China Sea

53-4110

**East Asian monsoon climate during the Late Pleistocene: high-resolution sediment records from the South China Sea.**

Wang, L.J., et al, *Marine geology*, Mar. 15, 1999, 156(1-4), International Geological Congress, 30th, Beijing, China, Aug. 8-9, 1996. Selected papers. Special issue: Response of West Pacific marginal seas to global climate change. Edited by M. Sarnthein and P.X. Wang, p.245-284, Refs. p.279-284.

Marine geology, Marine deposits, Bottom sediment, Marine atmospheres, Atmospheric circulation, Ocean currents, Air water interactions, Sea level, Drill core analysis, Paleocology, Global change, Paleoclimatology, South China Sea

53-4111

**Surface-water evolution of the eastern East China Sea during the last 36,000 years.**

Xu, X.D., Oda, M., *Marine geology*, Mar. 15, 1999, 156(1-4), International Geological Congress, 30th, Beijing, China, Aug. 8-9, 1996. Selected papers. Special issue: Response of West Pacific marginal seas to global climate change. Edited by M. Sarnthein and P.X. Wang, p.285-304, 45 refs.

Marine geology, Marine biology, Marine deposits, Bottom sediment, Drill core analysis, Ocean currents, Water temperature, Salinity, Paleocology, Global change, Paleoclimatology, East China Sea

53-4112

**Procedure and set-up for preparation of winter grit. [Verfahren und Anlage zur Aufbereitung von für den Winterdienst eingesetztem Streugut]**

Peier, U., Gloor, R., Axt, W., Weber, H., *European Patent Office. Patent*, Jan. 25, 1989, 5p. + fig., EP 0 300 297 A1, In German.

Sanding, Road maintenance, Traction, Skid resistance, Winter maintenance, Design, Equipment

53-4113

**Procedures for steering road vehicles with front- and rear-wheel steering. [Verfahren zum Lenken eines Strassenfahrzeugs mit Vorder- und Hinterradlenkung]**

Ackermann, J., *European Patent Office. Patent*, Mar. 11, 1992, 18p., EP 0 474 130 A2.

Mathematical models, Motor vehicles, Cold weather performance, Data processing, Skid resistance, Computer applications

53-4114

International Arctic Buoy Program data report, 1 January 1994-31 December 1994.

Rigor, I.G., Heiberg, A., *University of Washington, Seattle. Applied Physics Laboratory. Technical Memorandum*, Dec. 1995, APL-UW-TM6-95, 200p. + appends., ADA-304 423.

Drift stations, Polar atmospheres, Marine meteorology, Air water interactions, Sea ice distribution, Ice reporting, Drift, Ocean currents, Atmospheric pressure, Air temperature, Surface temperature, Meteorological data, Data processing, Data transmission, Arctic Ocean

53-4115

EPOCA-95 cruise report.

King, S.E., Carroll, J., Johnson, D.R., *U.S. Naval Research Laboratory. Memorandum report*, Feb. 13, 1996, NRL/MR/6616-96-7813, 51p., ADA-305 375. Oceanographic surveys, Ocean currents, Water transport, Radioactive wastes, Waste disposal, Water pollution, Russia—Kara Sea, Arctic Ocean

53-4116

1993-94-95 Kara Sea field experiments and analysis. 1995 progress report to ONR Arctic Nuclear Waste Assessment Program.

Phillips, G.W., et al, *U.S. Naval Research Laboratory. Memorandum report*, Jan. 14, 1996, NRL/MR/6616-96-7811, 91p., ADA-305 284, 7 refs.

Radioactive wastes, Waste disposal, Water pollution, Ocean currents, Sediment transport, Alluvium, Suspended sediments, Bottom sediment, Russia—Kara Sea, Russia—Siberia, Arctic Ocean

53-4117

Variations of ice cover and thermohaline structure in the Arctic-GIN Sea basin. Analysis of model results for the 1986-1990 period.

Allard, R.A., Piacsek, S.A., *U.S. Naval Research Laboratory. Memorandum report*, Jan. 26, 1996, NRL/MR/7322-95-7684, 39p., ADA-304 887, 21 refs.

Sea ice distribution, Ice conditions, Ice edge, Drift, Air ice water interaction, Ice water interface, Ice heat flux, Heat balance, Atmospheric circulation, Ocean currents, Water temperature, Salinity, Ice models, Computerized simulation, Arctic Ocean, Barents Sea, Greenland Sea, Norwegian Sea

53-4118

Distribution of the radiation balance components on variously oriented and sloped surfaces in the Transylvanian plain.

Fărcaș, I., Mocrei, I., *Revue roumaine de géographie*, 1997, No.41, p.107-110 + map, With French summary. 7 refs.

DLC GB276.R8R4 T.41 1997

Radiation balance, Slopes, Slope orientation, Albedo, Solar radiation, Brightness, Snow cover effect, Romania

53-4119

Thermal regime tendencies of winters in Bucharest—a climate variability index.

Tuinea, P., Becheanu, V., Săraru, L., *Revue roumaine de géographie*, 1997, No.41, p.111-119, With French summary. 6 refs.

DLC GB276.R8R4 T.41 1997

Thermal regime, Climatic changes, Snow cover effect, Climate, Air temperature, Romania—Bucharest

53-4120

How similar are snow-cover patterns from year to year? [Wie ähnlich sind Ausaperungsmuster von Jahr zu Jahr?]

Kirnbauer, R., Blöschl, G., *Deutsche gewässerkundliche Mitteilungen*, Dec. 1993, 37(5/6), p.113-121, In German with English summary. 20 refs.

DLC GB651.D4 Vols.37-38 1993-94

Snow cover distribution, Ablation, Slope orientation, Altitude, Topographic effects, Snow water equivalent, Watersheds, Austria—Alps

53-4121

Major flood events in the Main River basin and their associated effective precipitation and snowmelt values. [Bedeutende Hochwasserereignisse im Maingebiet und das ihnen zugrundeliegende Niederschlagsangebot aus Regen und Schneeschmelze] Guttenberger, J., *Deutsche gewässerkundliche Mitteilungen*, Dec. 1994, 38(6), p.178-191, In German with English summary. 12 refs.

DLC GB651.D4 Vols.37-38 1993-94

Floods, Precipitation (meteorology), Snowmelt, Rain, Altitude, Snow water equivalent, Rivers, River basins, Snow depth, Topographic effects, Germany

53-4122

Arctic research of the United States, Vol.6. Fall 1992.

Myers, C.E., ed, Cate, D.W., ed, Valliere, D.R., ed, MP 5351, Washington, D.C., 1992, 91p. Organizations, Research projects, Regional planning, Health, Human factors, Economic development, United States—Alaska

53-4123

Arctic research of the United States, Vol.2. Fall 1988.

Brown, J., ed, Cate, D., ed, Valliere, D., ed, MP 5352, Washington, D.C., 1988, 102p. Organizations, Research projects, Meetings

53-4124

Participation of aeolian transport in the sedimentation of Pyrzyce ice dammed lake varves (west Pomerania). [Udział transportu eolicznego w sedymentacji warwiotwórstwa pyrzyckiego (Pomorze Zachodnie)]

Karczewski, A., Paluszkiwicz, R., *Badania fizjograficzne nad Polską zachodnią. Ser. A geografia fizyczna*, 1996, Vol.47, p.25-30, In Polish with English summary. 7 refs.

DLC GB276.P6B32 Vol.47 1996

Eolian soils, Sedimentation, Ice dams, Glacial lakes, Lacustrine deposits, Glacial geology, Sands, Grain size, Particle size distribution, Poland

53-4125

Wysoka Mountain as a probable limit of the pomeranian phase in the Zabin region of the Drawskie lakeland. [Góra Wysoka, jako prawdopodobna granica fazy pomorskiej, w rejonie Zabina na Pojezierzu Drawskim]

Kłysz, P., *Badania fizjograficzne nad Polską zachodnią. Ser. A geografia fizyczna*, 1996, Vol.47, p.31-41, In Polish with English summary. 25 refs.

DLC GB276.P6B32 Vol.47 1996

Geomorphology, Paleoclimatology, Glacial geology, Moraines, Mountains, Glacial deposits, Grain size, Particle size distribution, Abrasion, Glacial till, Ice cover, Poland—Wysoka Mountain

53-4126

Lithogenesis of a rhythmically stratified sedimentary series at Okunica near Pyrzyce (west Pomerania). [Litogeneza serii osadowej rytmicznie warstwowanej w Okunicy pod Pyrzycami (Pomorze Zachodnie)]

Paluszkiwicz, R., *Badania fizjograficzne nad Polską zachodnią. Ser. A geografia fizyczna*, 1996, Vol.47, p.69-77, In Polish with English summary. 7 refs.

DLC GB276.P6B32 Vol.47 1996

Lacustrine deposits, Glacial lakes, Ice dams, Paleoclimatology, Geomorphology, Lithology, Grain size, Particle size distribution, Poland

53-4127

Impact of man-made processes on the river flow, with special attention paid to extreme phenomena: the case of the Kiełbaska and Widawka river catchments. [Wpływ procesów antropogenicznych na wielkość odpływu rzeczny z szczególnym uwzględnieniem zjawisk ekstremalnych na przykładzie zlewni Kiełbaski i Widawki]

Wrzesiński, D., *Badania fizjograficzne nad Polską zachodnią. Ser. A geografia fizyczna*, 1996, Vol.47, p.127-141, In Polish with English summary. 10 refs.

DLC GB276.P6B32 Vol.47 1996

River flow, Runoff, Flooding, Snowmelt, Mining, Precipitation (meteorology), Environmental impact, Poland—Kiełbaska River, Poland—Widawka River

53-4128

Ventifacts and frost fissures in the foreland of the Poznań phase of the last glaciation—the Poznań till plain. [Eololiptolity i struktury po klinach zmarzlinowych w strefie przedpola fazy poznańskiej ostatniego zlodowacenia na Wysoczyźnie Poznańskiej]

Antczak-Górka, B., *Badania fizjograficzne nad Polską zachodnią. Ser. A geografia fizyczna*, 1995, Vol.46, p.7-17, In Polish with English summary. 27 refs.

DLC GB276.P6B32 Vol.46 1995

Paleoclimatology, Periglacial processes, Geomorphology, Eolian soils, Sands, Abrasion, Glaciation, Particle size distribution, Epigenesis, Frost shattering, Geocryology, Patterned ground, Poland

53-4129

Characteristics and diagnostic features of vistulian basal lodgement till as indicators of dynamics of depositional environment of the last glaciation in the Great Poland lowland. [Właściwości i cechy diagnostyczne bazalnych glin morenowych wistulianu, jako wyraz dynamiki środowiska depozycyjnego ostatniego lądolodu na Nizinie Wielkopolskiej]

Górska, M., *Badania fizjograficzne nad Polską zachodnią. Ser. A geografia fizyczna*, 1995, Vol.46, p.29-62, In Polish with English summary. 84 refs.

DLC GB276.P6B32 Vol.46 1995

Paleoclimatology, Glacial till, Geocryology, Glacial geology, Tectonics, Clay soils, Poland

53-4130

Lithofacies analysis and loess sequences in the contact zone with glacial deposits of the last glaciation pomeranian phase at Stare Objezierze, West Pomerania. [Analiza litofacyjna i litostratygrafia osadów lessowych w strefie kontaktu z osadami glacialnymi fazy pomorskiej ostatniego zlodowacenia w Starym Objezierzu, Pomorze Zachodnie]

Issmer, K., *Badania fizjograficzne nad Polską zachodnią. Ser. A geografia fizyczna*, 1995, Vol.46, p.63-84, In Polish with English summary. 30 refs.

DLC GB276.P6B32 Vol.46 1995

Loess, Glacial deposits, Glacial till, Paleoclimatology, Glaciation, Particle size distribution, Permafrost origin, Poland

53-4131

Petrographic studies of morainic deposits in the Drawskie Lakeland. [Badania petrograficzne osadów morenowych na Pojezierzu Drawskim]

Kłysz, P., *Badania fizjograficzne nad Polską zachodnią. Ser. A geografia fizyczna*, 1995, Vol.46, p.85-94, In Polish with English summary. 25 refs.

DLC GB276.P6B32 Vol.46 1995

Glacial till, Subglacial observations, Moraines, Lithology, Stratigraphy, Poland

53-4132

Varves in the vicinity of Strzyżno near Kluczewo as an example of sedimentation conditions in the littoral zone of proglacial basin. [Warwidy kołb Strzyżna pod Kluczewem jako przykład warunków sedymentacji osadów strefy litoralnej basenu proglacialnego]

Paluszkiwicz, R., *Badania fizjograficzne nad Polską zachodnią. Ser. A geografia fizyczna*, 1995, Vol.46, p.127-137, In Polish with English summary. 7 refs.

DLC GB276.P6B32 Vol.46 1995

Sedimentation, Pleistocene, Moraines, Grain size, Particle size distribution, Glacial lakes, Glacial deposits, Glacial geology, Poland

53-4133

Study of glacial and cryo-nival relief in the Romanian Carpathians—prospects and results. [La recherche du relief glaciaire et cryo-nival dans les Carpates roumaines—Résultats et perspectives]

Niculescu, G., *Revue roumaine de géographie*, 1994, No.4, p.11-20, In French with English summary. 56 refs.

DLC GB276.R8R4 T.38 1994

Nival relief, Geomorphology, Glacial geology, Pleistocene, Mountain glaciers, Valleys, Paleoclimatology, Romania—Carpathian Mountains



53-4134

Processes, formations and quaternary morphoclimatic stages on the hilly regions of Romania.

Mac, I., *Revue roumaine de géographie*, 1994, No.4, p.21-31, With French summary. 14 refs.

DLC GB276.R8R4 T.38 1994

Geomorphology, Paleoclimatology, Geochronology, Terraces, Glacial geology, Quaternary deposits, Romania

53-4135

Aspects of the glacial relief in the southern Gramplains of Scotland.

Florea, M., *Revue roumaine de géographie*, 1994, No.4, p.123-127, With French summary. 7 refs.

DLC GB276.R8R4 T.38 1994

Glacial geology, Geomorphology, Periglacial processes, Topographic features, Watersheds, United Kingdom—Scotland

53-4136

Late Quaternary glaciation and postglacial stratigraphy of the Northern Pacific margin of Canada.

Barrie, J.V., Conway, K.W., *Quaternary research*, Mar. 1999, 51(2), p.113-123, 39 refs.

Glaciation, Glacial geology, Glacial deposits, Glacier oscillation, Marine geology, Marine deposits, Bottom sediment, Quaternary deposits, Isostasy, Sea level, Stratigraphy, Paleoclimatology, Canada—British Columbia—Queen Charlotte Islands, United States—Alaska

53-4137

Late-glacial to early Holocene climate changes from a central Appalachian pollen and macrofossil record.

Kneller, M., Peteet, D., *Quaternary research*, Mar. 1999, 51(2), p.133-147, Refs. p.145-147.

Vegetation patterns, Plant ecology, Paleobotany, Palynology, Lacustrine deposits, Quaternary deposits, Fossils, Global change, Paleoclimatology, United States—Virginia—Appalachian Mountains

53-4138

Quaternary moraines vs catastrophic rock avalanches in the Karakoram Himalaya, northern Pakistan.

Hewitt, K., *Quaternary research*, May 1999, 51(3), p.220-237, 41 refs.

Alpine glaciation, Glacial geology, Glacial deposits, Moraines, Talus, Landslides, Avalanche deposits, Quaternary deposits, Pakistan—Karakoram Mountains

53-4139

Fluctuations of outlet and valley glaciers in the southern Andes (Argentina) during the past 13,000 years.

Wenzens, G., *Quaternary research*, May 1999, 51(3), p.238-247, 35 refs.

Alpine glaciation, Mountain glaciers, Glacial geology, Glacial deposits, Glacier oscillation, Lacustrine deposits, Quaternary deposits, Soil dating, Geochronology, Paleoclimatology, Argentina—Andes

53-4140

Effects of climate change on soils in glacial deposits, Wind River Basin, Wyoming.

Hall, R.D., *Quaternary research*, May 1999, 51(3), p.248-261, 35 refs.

Alpine glaciation, Glacial geology, Glacial deposits, Glacial till, Quaternary deposits, Wind erosion, Cryoturbation, Soil formation, Frost weathering, Outwash, Moraines, Soil dating, Paleoclimatology, United States—Wyoming—Wind River Basin

53-4141

Parameterisation of atmospheric boundary layer processes in a regional climate model of the Arctic. [Parameterisierung atmosphärischer Grenzschichtprozesse in einem regionalen Klimamodell der Arktis]

Abegg, C., *Berichte zur Polarforschung*, 1999, No.311, 120p., In German with English summary. Refs. p.108-112.

Polar atmospheres, Atmospheric circulation, Atmospheric boundary layer, Turbulent exchange, Heat flux, Humidity, Moisture transfer, Mathematical models, Computerized simulation, Canada—Northwest Territories—Norman Wells, Russia—Noril'sk

53-4142

Variability of the arctic ozone layer: analysis and interpretation of ground-based millimeter wave measurements. [Variabilität der arktischen Ozonschicht: Analyse und Interpretation bodengebundener Millimeterwellenmessungen]

Sinnhuber, B.M., *Berichte zur Polarforschung*, 1999, No.309, 186p., In German with English summary. Refs. p.169-186.

Polar atmospheres, Atmospheric circulation, Atmospheric composition, Ozone, Radiometry, Radiation measuring instruments, Meteorological instruments, Mathematical models, Computerized simulation, Norway—Spitsbergen

53-4143

ARCTIC '98: the Expedition ARK-XIV/1a of RV *Polarstern* in 1998.

Jokat, W., ed, *Berichte zur Polarforschung*, 1999, No.308, 159p., 40 refs.

Oceanographic surveys, Ice conditions, Ice cover thickness, Ice navigation, Icebreakers, Marine geology, Seismic surveys, Marine deposits, Bottom sediment, Bottom topography, Ice sampling, Snow samplers, Core samplers, Arctic Ocean, Russia—Laptev Sea

53-4144

Reconstruction of sea-ice drift and terrigenous sediment supply in the Late Quaternary: heavy-mineral associations in sediments of the Laptev-Sea continental margin and the central Arctic Ocean. [Rekonstruktion von Meer eisdrift und terrigenem Sedimenteintrag im Spätquartär: Schwermminerassoziationen in Sedimenten des Laptev-See-Kontinentalrandes und des zentralen Arktischen Ozeans]

Behrends, M., *Berichte zur Polarforschung*, 1999, No.310, 167p., In German with English summary. Refs. p.118-131.

Marine geology, Marine deposits, Bottom sediment, Drift, Ice rafting, Glaciation, Sediment transport, Core samplers, Paleoclimatology, Arctic Ocean, Russia—Laptev Sea

53-4145

Proceedings of the First Workshop on the Baltic Sea Ice Climate.

Leppäranta, M., ed, Haapala, J., ed, Workshop on the Baltic Sea Ice Climate, 1st, Tvärminne, Finland, Aug. 24-26, 1993, *Helsinki. University. Department of Geophysics. Report series in geophysics*, 1993, No.27, 249p., Refs. passim. For individual papers see 53-4146 through 53-4148.

DLC GB2533.B35W67 1993

Sea ice, Sea ice distribution, Ice models, Ice cover effect, Air ice water interaction, Baltic Sea

53-4146

Baltic Sea ice climate: an introduction.

Leppäranta, M., *Helsinki. University. Department of Geophysics. Report series in geophysics*, 1993, No.27, Workshop on the Baltic Sea Ice Climate, 1st, Tvärminne, Finland, Aug. 24-26, 1993. Proceedings. Edited by M. Leppäranta and J. Haapala, p.5-16, 21 refs.

DLC GB2533.B35W67 1993

Sea ice distribution, Freezeup, Ice models, Ice breakup, Ice cover thickness, Ice water interface, Climatology, Marine meteorology, Baltic Sea

53-4147

Hydrodynamical and ecological modelling in the Baltic Sea.

Tamsalu, R., *Helsinki. University. Department of Geophysics. Report series in geophysics*, 1993, No.27, Workshop on the Baltic Sea Ice Climate, 1st, Tvärminne, Finland, Aug. 24-26, 1993. Proceedings. Edited by M. Leppäranta and J. Haapala, p.17-31, 18 refs.

DLC GB2533.B35W67 1993

Hydrodynamics, Mathematical models, Marine biology, Ecosystems, Plankton, Baltic Sea, Finland, Gulf, Bothnia, Gulf

53-4148

On the role of the sea ice in the redistribution of fresh water and energy in the Baltic Sea.

Omstedt, A., *Helsinki. University. Department of Geophysics. Report series in geophysics*, 1993, No.27, Workshop on the Baltic Sea Ice Climate, 1st, Tvärminne, Finland, Aug. 24-26, 1993. Proceedings. Edited by M. Leppäranta and J. Haapala, p.33-40, 10 refs.

DLC GB2533.B35W67 1993

Sea ice, Ice cover effect, Analysis (mathematics), Heat flux, Advection, Air ice water interaction, Ice melting, Salinity, Seasonal variations, Baltic Sea, Finland, Gulf, Bothnia, Gulf

53-4149

Physically based models of the atmosphere.

Kaurola, J., *Helsinki. University. Department of Geophysics. Report series in geophysics*, 1993, No.27, Workshop on the Baltic Sea Ice Climate, 1st, Tvärminne, Finland, Aug. 24-26, 1993. Proceedings. Edited by M. Leppäranta and J. Haapala, p.41-53, 14 refs.

DLC GB2533.B35W67 1993

Models, Atmospheric circulation, Climatology, Sea ice, Weather forecasting, Data processing, Air ice water interaction, Baltic Sea

53-4150

Hydrothermodynamic model of the short-term ice forecast in the Gulf of Finland eastern part.

Kliachkin, S.V., *Helsinki. University. Department of Geophysics. Report series in geophysics*, 1993, No.27, Workshop on the Baltic Sea Ice Climate, 1st, Tvärminne, Finland, Aug. 24-26, 1993. Proceedings. Edited by M. Leppäranta and J. Haapala, p.55-72, 9 refs.

DLC GB2533.B35W67 1993

Ice forecasting, Sea ice distribution, Hydrodynamics, Thermodynamics, Ice edge, Ice models, Mathematical models, Baltic Sea, Finland, Gulf

53-4151

Some results of the WMO project "Climate of the Baltic Sea basin".

Mietus, M., *Helsinki. University. Department of Geophysics. Report series in geophysics*, 1993, No.27, Workshop on the Baltic Sea Ice Climate, 1st, Tvärminne, Finland, Aug. 24-26, 1993. Proceedings. Edited by M. Leppäranta and J. Haapala, p.73-85.

DLC GB2533.B35W67 1993

Marine meteorology, Air temperature, Air water interactions, Wind velocity, Atmospheric circulation, Atmospheric pressure, Snow cover, Precipitation (meteorology), Baltic Sea

53-4152

Ice time series of the Baltic Sea.

Seinä, A., *Helsinki. University. Department of Geophysics. Report series in geophysics*, 1993, No.27, Workshop on the Baltic Sea Ice Climate, 1st, Tvärminne, Finland, Aug. 24-26, 1993. Proceedings. Edited by M. Leppäranta and J. Haapala, p.87-90, 9 refs.

DLC GB2533.B35W67 1993

Sea ice distribution, Ice forecasting, Ice air interface, Ice cover thickness, Ice breakup, Baltic Sea, Finland, Gulf, Bothnia, Gulf

53-4153

Tallinn time series of break-up as climate indicator.

Tarand, A., *Helsinki University. Department of Geophysics. Report series in geophysics*, 1993, No.27, Workshop on the Baltic Sea Ice Climate, 1st, Tvärminne, Finland, Aug. 24-26, 1993. Proceedings. Edited by M. Leppäranta and J. Haapala, p.91-93, 2 refs.

DLC GB2533.B35W67 1993

Sea ice, Ice air interface, Ice breakup, History, Ice navigation, Climatology, Baltic Sea, Finland, Gulf

53-4154

Data programme for Baltic Sea ice climate modeling.

Haapala, J., Leppäranta, M., Omstedt, A., *Helsinki University. Department of Geophysics. Report series in geophysics*, 1993, No.27, Workshop on the Baltic Sea Ice Climate, 1st, Tvärminne, Finland, Aug. 24-26, 1993. Proceedings. Edited by M. Leppäranta and J. Haapala, p.95-107, 38 refs.

DLC GB2533.B35W67 1993

Models, Sea ice, Climatology, Air ice water interaction, Solar radiation, Hydrography, Baltic Sea

53-4155

Long time ice variabilities and conditions in the Kurschiu Gulf.

Dubra, J., *Helsinki University. Department of Geophysics. Report series in geophysics*, 1993, No.27, Workshop on the Baltic Sea Ice Climate, 1st, Tvärminne, Finland, Aug. 24-26, 1993. Proceedings. Edited by M. Leppäranta and J. Haapala, p.109-122, 5 refs.

DLC GB2533.B35W67 1993

Sea ice distribution, Ice cover thickness, Ice air interface, Ice cracks, Baltic Sea, Lithuania—Klaipeda

53-4156

General outline of ice conditions in the Puck Bay.

Szeffler, K., *Helsinki University. Department of Geophysics. Report series in geophysics*, 1993, No.27, Workshop on the Baltic Sea Ice Climate, 1st, Tvärminne, Finland, Aug. 24-26, 1993. Proceedings. Edited by M. Leppäranta and J. Haapala, p.123-139, 11 refs.

DLC GB2533.B35W67 1993

Sea ice, Ice cover thickness, Freezepup, Ice pileup, Pressure ridges, Ice breakup, Hummocks, Ice air interface, Baltic Sea, Poland—Gdańsk, Gulf, Poland—Puck Bay

53-4157

On the seasonal sea surface temperature variations in the Gulf of Finland.

Haapala, J., Alenius, P., *Helsinki University. Department of Geophysics. Report series in geophysics*, 1993, No.27, Workshop on the Baltic Sea Ice Climate, 1st, Tvärminne, Finland, Aug. 24-26, 1993. Proceedings. Edited by M. Leppäranta and J. Haapala, p.141-148, 14 refs.

DLC GB2533.B35W67 1993

Sea water, Water temperature, Surface temperature, Seasonal variations, Baltic Sea, Finland, Gulf

53-4158

Role of the sea ice in the year-to-year water temperature variability in the bottom layer of the Gulf of Riga.

Zakharchenko, E., *Helsinki University. Department of Geophysics. Report series in geophysics*, 1993, No.27, Workshop on the Baltic Sea Ice Climate, 1st, Tvärminne, Finland, Aug. 24-26, 1993. Proceedings. Edited by M. Leppäranta and J. Haapala, p.149-156, 6 refs.

DLC GB2533.B35W67 1993

Sea ice, Ice cover effect, Sea water, Water temperature, Ice water interface, Temperature variations, Baltic Sea, Riga, Gulf

53-4159

Statistical method for long-range forecast of the Baltic Sea iciness.

Meshcherskaia, A.V., Margasova, V.G., Beliankina, I.G., *Helsinki University. Department of Geophysics. Report series in geophysics*, 1993, No.27, Workshop on the Baltic Sea Ice Climate, 1st, Tvärminne, Finland, Aug. 24-26, 1993. Proceedings. Edited by M. Leppäranta and J. Haapala, p.157-166, 5 refs.

DLC GB2533.B35W67 1993

Sea ice distribution, Ice forecasting, Long range forecasting, Statistical analysis, Accuracy, Baltic Sea

53-4160

Baltic Sea ice as growth habitat for phytoplankton.

Kuosa, H., *Helsinki University. Department of Geophysics. Report series in geophysics*, 1993, No.27, Workshop on the Baltic Sea Ice Climate, 1st, Tvärminne, Finland, Aug. 24-26, 1993. Proceedings. Edited by M. Leppäranta and J. Haapala, p.167-173, 1 ref.

DLC GB2533.B35W67 1993

Plankton, Marine biology, Microbiology, Brines, Sea ice, Algae, Frazil ice, Photosynthesis, Chlorophylls, Subglacial observations, Baltic Sea, Antarctica

53-4161

Multispectral remote diagnostics of ice cover parameters of inland waterbodies.

Kondrat'ev, K.I.A., Melent'ev, V.V., *Helsinki University. Department of Geophysics. Report series in geophysics*, 1993, No.27, Workshop on the Baltic Sea Ice Climate, 1st, Tvärminne, Finland, Aug. 24-26, 1993. Proceedings. Edited by M. Leppäranta and J. Haapala, p.175-187.

DLC GB2533.B35W67 1993

Remote sensing, Sea ice, Ice cover, Frazil ice, Impurities, Snow impurities, Air ice water interaction, Environmental impact, Pollution, Measurement, Microwaves, Radiometry, Snow cover, Baltic Sea, Finland, Gulf, Russia—Ladoga, Lake, Russia—Onega Lake

53-4162

Method of integrated assessment of secondary technogenic impact of harmful matter contained in ice cover on marine environment.

Donchenko, V.K., *Helsinki University. Department of Geophysics. Report series in geophysics*, 1993, No.27, Workshop on the Baltic Sea Ice Climate, 1st, Tvärminne, Finland, Aug. 24-26, 1993. Proceedings. Edited by M. Leppäranta and J. Haapala, p.189-205, 9 refs.

DLC GB2533.B35W67 1993

Environmental impact, Pollution, Air water interactions, Ecosystems, Metals, Sea ice, Ice cover, Ice growth, Ice melting, Snow ice interface, Snow melting, Analysis (mathematics), Baltic Sea

53-4163

Nansen International Environmental and Remote Sensing Centre and its scientific activity.

Kondrat'ev, K.I.A., Donchenko, V.K., Johannessen, O.M., Pettersson, L.H., Bobylev, L.P., *Helsinki University. Department of Geophysics. Report series in geophysics*, 1993, No.27, Workshop on the Baltic Sea Ice Climate, 1st, Tvärminne, Finland, Aug. 24-26, 1993. Proceedings. Edited by M. Leppäranta and J. Haapala, p.207-212.

DLC GB2533.B35W67 1993

Ecology, Environmental protection, Organizations, Research projects, International cooperation, Baltic Sea, Finland, Gulf, Russia—Ladoga, Lake, Russia—St. Petersburg

53-4164

St.-Petersburg flood-defending dam influence upon the ice regime of the Neva estuary and the Gulf of Finland eastern part.

Drabkin, V.V., *Helsinki University. Department of Geophysics. Report series in geophysics*, 1993, No.27, Workshop on the Baltic Sea Ice Climate, 1st, Tvärminne, Finland, Aug. 24-26, 1993. Proceedings. Edited by M. Leppäranta and J. Haapala, p.213-232, 15 refs.

DLC GB2533.B35W67 1993

Dams, Design criteria, Flooding, Drift, Ice floes, Hummocks, River ice, Ice cover thickness, Fast ice, Ice conditions, Ice melting, Baltic Sea, Finland, Gulf, Russia—Neva River

53-4165

Rafted ice in the mass balance of the Baltic ice cover.

Lensu, M., *Helsinki University. Department of Geophysics. Report series in geophysics*, 1993, No.27, Workshop on the Baltic Sea Ice Climate, 1st, Tvärminne, Finland, Aug. 24-26, 1993. Proceedings. Edited by M. Leppäranta and J. Haapala, p.233-235, 7 refs.

DLC GB2533.B35W67 1993

Sea ice, Ice cover, Ice rafting, Mass balance, Ice models, Mathematical models, Ice cover thickness, Baltic Sea

53-4166

Evaluation of avalanche warning systems.

Crilly, J.D., Decker, R., *Utah Department of Transportation. Research Division. Report*, June 1997, No.UT-96.05, 81p., 16 refs.

DLC QC929.A8C75 1997

Computer applications, Safety, Avalanche protection, Roads, United States—Washington, Canada—British Columbia

53-4167

Effect of the freezing rate on the frost resistance of concrete.

Fagerlund, G., *Nordic concrete research*, Feb. 1992, No.11, p.20-36, 17 refs.

DLC TA439.N62 No.11 1992

Frost resistance, Freezing rate, Cooling rate, Freeze thaw cycles, Freeze thaw tests, Ice lenses, Saturation, Concretes, Concrete strength, Concrete freezing, Air entrainment

53-4168

Modeling the structure of ice as a problem in global minimization.

Hermans, J., *IMA Volumes in Mathematics and its Applications*, Vol.94. Large-scale optimization with applications, pt.III: molecular structure and optimization. Edited by L.T. Biegler, T.F. Coleman, A.R. Conn and F.N. Santosa, New York, Springer-Verlag, 1997, p.69-71, 7 refs.

DLC QA402.5.L356 1997 Pt.3

Ice structure, Ice models, Ice crystal structure, Molecular structure

53-4169

Abrasion of concrete by ice in arctic sea structures.

Huovinen, S., *Nordic concrete research*, Dec. 1989, No.8, p.103-115, 2 refs.

DLC TA439.N62 No.8 1989

Abrasion, Ice solid interface, Sea ice, Offshore structures, Sea water, Damage, Concrete strength, Flexural strength, Tensile properties, Water cement ratio, Compressive properties, Mathematical models, Bothnia, Gulf

53-4170

Behaviour of concrete in severe frost action.

Leivo, M.T., *Nordic concrete research*, Dec. 1989, No.8, p.142-158, 14 refs.

DLC TA439.N62 No.8 1989

Concrete durability, Concrete freezing, Concrete strength, Laboratory techniques, Frost resistance, Offshore structures, Water cement ratio, Ice lenses, Air entrainment, Concretes, Freeze thaw tests, Capillary ice

53-4171

**Luminescence dating of the last Weichselian Glaciation advance in East Greenland.**

Hansen, L., Funder, S., Murray, A.S., Mejdahl, V., *Quaternary science reviews (Quaternary geochronology)*, Feb. 1999, 18(2), p.179-190, 34 refs. Glaciation, Glacial geology, Glacier oscillation, Glacial deposits, Ice rafting, Marine geology, Marine deposits, Bottom sediment, Stratigraphy, Soil dating, Geochronology, Paleoclimatology, Greenland—Scoresby Sund

53-4172

**Luminescence dating of Holocene geomorphic activity on Ammassalik Island, SE Greenland.**

Christiansen, H.H., Murray, A.S., Mejdahl, V., Humlum, O., *Quaternary science reviews (Quaternary geochronology)*, Feb. 1999, 18(2), p.191-205, 33 refs. Geological surveys, Periglacial processes, Nivation, Avalanche tracks, Avalanche deposits, Eolian soils, Beaches, Terraces, Marine geology, Sea level, Geomorphology, Soil dating, Paleoclimatology, Greenland—Ammassalik Island

53-4173

**IRSL from fine-grained glacial sediment.**

Gemmell, A.M.D., *Quaternary science reviews (Quaternary geochronology)*, Feb. 1999, 18(2), p.207-215, 30 refs.

Alpine glaciation, Glacial geology, Glacial deposits, Alluvium, Outwash, Glacial till, Lacustrine deposits, Quaternary deposits, Soil dating, Italy—Alps

53-4174

**Upper Pleistocene loess stratigraphy in Southern Germany.**

Frechen, M., *Quaternary science reviews (Quaternary geochronology)*, Feb. 1999, 18(2), p.243-269, Refs. p.267-269.

Loess, Eolian soils, Periglacial processes, Quaternary deposits, Stratigraphy, Soil profiles, Soil dating, Paleoclimatology, Germany

53-4175

**Snow cover on the Szrenica Mountain during 1960-1990. [Pokrywa śnieżna na szrenicy w latach 1960-1990 i klasyfikacja śnieżności zimą]**

Piasecki, J., *Wrocław. Uniwersytet. Acta Universitatis Wratislaviensis. Prace instytutu geograficznego. Ser. C meteorologia i klimatologia, II*, 1995, No.1705, Klimat dolnego Śląska (Climate of Lower Śląsk), p.23-57, In Polish with English summary. 18 refs.

DLC QC989.S55K55 1996

Snow depth, Snow cover, Statistical analysis, Snow compaction, Classifications, Poland—Szrenica Mountain

53-4176

**Snow cover acidification in the Kleśnica Valley in the Śnieżnik Kłodzki Massif. [Zakwaszenie pokrywy śnieżnej w dolinie Kleśnicy w Masywie Śnieżnika Kłodzkiego]**

Kulicki, A., Piasecki, J., Sobik, M., *Wrocław. Uniwersytet. Acta Universitatis Wratislaviensis. Prace instytutu geograficznego. Ser. C meteorologia i klimatologia, II*, 1995, No.1705, Klimat dolnego Śląska (Climate of Lower Śląsk), p.107-116, In Polish with English summary. 3 refs.

DLC QC989.S55K55 1996

Snow cover, Chemical properties, Snow impurities, Air pollution, Ablation, Precipitation (meteorology), Poland—Kleśnica River

53-4177

**Climatic research in the Kleśnica Valley in the Śnieżnik Kłodzki Massif (the report on the programme). [Badania klimatyczne w dolinie Kleśnicy w Masywie Śnieżnika Kłodzkiego (komunikat o programie)]**

Piasecki, J., *Wrocław. Uniwersytet. Acta Universitatis Wratislaviensis. Prace instytutu geograficznego. Ser. C meteorologia i klimatologia, II*, 1995, No.1705, Klimat dolnego Śląska (Climate of Lower Śląsk), p.117-122, In Polish with English summary. 4 refs.

DLC QC989.S55K55 1996

Air temperature, Humidity, Snow cover, Microclimatology, Sodar, Topographic effects, Caves, Poland—Kleśnica Valley

53-4178

**Contemporary changes in ice conditions in chosen ports in the mouth of the Oder River. [Współczesne zmiany warunków lodowych w wybranych portach ujścia Odry]**

Girjatowicz, J.P., Chabior, M., Kowalewska, H., *Uniwersytet Szczeciński. Rozprawy i studia*, 1994, No.152, Współczesne zmiany klimatyczne. Klimat Polski i regionu morza Bałtyckiego na tle zmian globalnych (Climate in Poland and in the region of the Baltic Sea versus global changes), p.143-157, In Polish with English summary. 26 refs.

DLC QC989.P7W76 1994

River ice, Ice cover thickness, Ice conditions, Statistical analysis, Poland—Oder River

53-4179

**Tendencies and periodicity of the changes in maximum annual extent of ice cover in the Baltic Sea (1720-1992). [Tendencje i wahanía okresowe zlodzenia Bałtyku (1720-1992)]**

Koźuchowski, K., *Uniwersytet Szczeciński. Rozprawy i studia*, 1994, No.152, Współczesne zmiany klimatyczne. Klimat Polski i regionu morza Bałtyckiego na tle zmian globalnych (Climate in Poland and in the region of the Baltic Sea versus global changes), p.159-169, In Polish with English summary. 16 refs.

DLC QC989.P7W76 1994

Sea ice distribution, Ice cover, Statistical analysis, Ice air interface, Atmospheric circulation, Baltic Sea

53-4180

**CRYSYS—use of the cryospheric system to monitor global change in Canada: overview and progress.**

Goodison, B.E., et al, *Canadian journal of remote sensing*, Mar. 1999, 25(1), p.3-11, With French summary. 50 refs.

Glacier surveys, Ice surveys, Snow surveys, Permafrost surveys, Global change, Research projects, Data processing, Education, Regional planning

53-4181

**Characteristics of large winter leads over the Arctic Basin from 85.5 GHz DMSP SSM/I and NOAA/AVHRR imagery.**

Agnew, T.A., Le, H., Shokr, M.E., *Canadian journal of remote sensing*, Mar. 1999, 25(1), p.12-20, With French summary. 18 refs.

Ice surveys, Sea ice distribution, Ice conditions, Drift, Ice openings, Polynyas, Ice heat flux, Sea water freezing, Air ice water interaction, Spaceborne photography, Radiometry, Image processing

53-4182

**Analysis of multi-temporal ERS-1 SAR data of subarctic tundra and forest in the northern Hudson Bay Lowland and implications for climate studies.**

Duguay, C.R., Rouse, W.R., Lafleur, P.M., Boudreau, L.D., Crevier, Y., Pultz, T.J., *Canadian journal of remote sensing*, Mar. 1999, 25(1), p.21-33, With French summary. 28 refs.

Forest tundra, Tundra climate, Vegetation patterns, Soil temperature, Lake ice, Ice conditions, Heat balance, Water balance, Climatic changes, Spaceborne photography, Synthetic aperture radar, Backscattering, Canada—Manitoba—Churchill

53-4183

**Detection of permafrost features using SPOT panchromatic imagery, Foshelm Peninsula, Ellesmere Island, N.W.T.**

Lewkowicz, A.G., Duguay, C.R., *Canadian journal of remote sensing*, Mar. 1999, 25(1), p.34-44, With French summary. 32 refs.

Permafrost surveys, Permafrost distribution, Permafrost indicators, Ice wedges, Patterned ground, Polygonal topography, Active layer, Thermokarst, Landslides, Terrain identification, Spaceborne photography, Canada—Northwest Territories—Ellesmere Island

53-4184

**Interferometry for DEM and terrain displacement: effects of inhomogeneous propagation.**

Mattar, K.E., Gray, A.L., Geudtner, D., Vachon, P.W., *Canadian journal of remote sensing*, Mar. 1999, 25(1), p.60-69, With French summary. 25 refs.

Terrain identification, Topographic surveys, Height finding, Mapping, Atmospheric attenuation, Synthetic aperture radar, Spaceborne photography, Image processing, Canada—Northwest Territories—Bathurst Island

53-4185

**Interactive algorithm for derivation of sea ice classifications and concentrations from SAR images.**

Shokr, M.E., Jessup, R., Ramsay, B., *Canadian journal of remote sensing*, Mar. 1999, 25(1), p.70-79, With French summary. 21 refs.

Sea ice distribution, Ice surveys, Ice detection, Ice conditions, Ice reporting, Synthetic aperture radar, Backscattering, Spaceborne photography, Computer programs, Image processing, Canada—Saint Lawrence, Gulf, Labrador Sea

53-4186

**Hierarchical image classification and extraction of forest species composition and crown closure from airborne multispectral images.**

Gerylo, G., Hall, R.J., Franklin, S.E., Roberts, A., Milton, E.J., *Canadian journal of remote sensing*, Sep. 1998, 24(3), p.219-232, With French summary. 44 refs.

Taiga, Forest ecosystems, Forest canopy, Vegetation patterns, Plant ecology, Aerial surveys, Terrain identification, Mapping, Image processing, Canada—Alberta

53-4187

**Terrain mapping in an arctic environment from a RADARSAT image: preliminary results.**

Simms, E.L., Bell, T., *Canadian journal of remote sensing*, Sep. 1998, 24(3), p.298-306, With French summary. 17 refs.

Alpine glaciation, Glacial geology, Glacial deposits, Glacial till, Alluvium, Lacustrine deposits, Geomorphology, Topographic surveys, Terrain identification, Mapping, Synthetic aperture radar, Spaceborne photography, Image processing, Canada—Labrador—Torngat Mountains

53-4188

**Regional perspectives on 20th-century environmental change: introduction and examples from northern Canada.**

Jacobs, J.D., Bell, T.J., *Canadian geographer*, 42(4), Winter 1998, p.314-318, 34 refs.

Atmospheric circulation, Ocean currents, Climatic changes, Paleoclimatology, Global warming, Environmental impact, Canada

53-4189

**Landscape and climate change in the central Canadian Rockies during the 20th century.**

Luckman, B.H., *Canadian geographer*, 42(4), Winter 1998, p.319-336, With French summary. 80 refs.

Mountain glaciers, Glacier oscillation, Glacier mass balance, Forest lines, Vegetation patterns, Forest fires, Climatic changes, Global warming, Canada—Rocky Mountains

53-4190

**Recent environmental change in the southwestern Canadian plains.**

Sauchyn, D.J., Beaudoin, A.B., *Canadian geographer*, 42(4), Winter 1998, p.337-353, With French summary. 118 refs.

Plains, Vegetation patterns, Revegetation, Plant ecology, Paleobotany, Desiccation, Precipitation (meteorology), Climatic changes, Global warming, Canada—Alberta, Canada—Saskatchewan

53-4191

**Regional patterns of temperature and precipitation for Newfoundland and Labrador during the past century.**

Banfield, C.E., Jacobs, J.D., *Canadian geographer*, 42(4), Winter 1998, p.354-364, With French summary. 21 refs.

Marine atmospheres, Atmospheric circulation, Precipitation (meteorology), Air temperature, Surface temperature, Snowfall, Sea ice distribution, Climatic changes, Canada—Newfoundland, Canada—Labrador

53-4192

**Potential impacts of global sea-level rise on Canadian coasts.**

Shaw, J., Taylor, R.B., Solomon, S., Christian, H.A., Forbes, D.L., *Canadian geographer*, 42(4), Winter 1998, p.365-379, With French summary. 66 refs.

Sea level, Marine geology, Shore erosion, Paleoclimatology, Global change, Global warming, Canada

53-4193

**Assessment of the regional impacts and opportunities from climate change in Canada.**

Chiotti, Q., *Canadian geographer*, 42(4), Winter 1998, p.380-393, With French summary. 53 refs.

Climatic changes, Global warming, Environmental impact, Cost analysis, Regional planning, Canada

53-4194

**Paleoglaciological studies in the Ala-Archa National Park, Kyrgyzstan, northwestern Tian-Shan Mountains, and using multitextural analysis as a sedimentological tool for solving stratigraphical problems.**

Heuberger, H., Sgibnev, V.V., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1998, 34(2), p.95-123, With German and Russian summaries. 38 refs.

Mountain glaciers, Alpine glaciation, Glacial geology, Geological surveys, Glacier surveys, Glacier oscillation, Glacial deposits, Moraines, Outwash, Snow line, Rock glaciers, Soil texture, Soil dating, Stratigraphy, Paleoclimatology, Kyrgyzstan

53-4195

**Observations of glacial deposits reaching down to low levels in the Japanese Alps, Honshu, Japan.**

Lundqvist, J., Heuberger, H., Horie, S., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1998, 34(2), p.125-129, With German summary. 13 refs.

Alpine glaciation, Cirque glaciers, Glacial geology, Glacial deposits, Pleistocene, Geochronology, Paleoclimatology, Japan

53-4196

**Recession of the equatorial Puncak Jaya glaciers (-1825 to 1995), Irian Jaya (Western New Guinea), Indonesia.**

Quarles van Ufford, A., Sedgwick, P., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1998, 34(2), p.131-140, With German summary. 22 refs.

Mountain glaciers, Glacier surveys, Glacier oscillation, Glacier thickness, Glacier mass balance, Glacier melting, Snow line, Indonesia—Irian Jaya

53-4197

**Extent of glacier retreat in the Rieserferner Mountains of the Italian Tirol in relation to the high stand of 1850. [Der Ablauf des Gletscherrückzuges in der Rieserfernergruppe (Tirol) im Anschluß an den Hochstand um 1850]**

Damm, B., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1998, 34(2), p.141-159, In German with English summary. 34 refs.

Alpine glaciation, Mountain glaciers, Glacier surveys, Glacier oscillation, Glacier mass balance, Glacier melting, Italy

53-4198

**Change of height and volume of the Pasterze Glacier in the period 1964-1981. [Höhen- und Volumensänderung der Pasterze im Zeitraum 1964-1981]**

Tintor, W., Wakonigg, H., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1998, 34(2), p.161-166, In German with English summary. 21 refs.

Glacier surveys, Glacier oscillation, Glacier mass balance, Glacier melting, Ice volume, Austria

53-4199

**Efficiency of current photogrammetric methods for a digital glacier inventory. [Leistungsfähigkeit aktueller Photogrammetrischer Auswertemethoden zum Aufbau eines digitalen Gletscherkatasters]**

Würländer, R., Eder, K., *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1998, 34(2), p.167-185, In German with English summary. 21 refs.

Glacier surveys, Mountain glaciers, Glacier oscillation, Glacier surfaces, Topographic surveys, Photogrammetric surveys, Mapping, Austria

53-4200

**Block and debris deposits in the high Drakensberg, Lesotho, southern Africa: implications for high altitude slope processes.**

Grab, S., *Geografiska annaler*, 1999, 81A(1), p.1-16, 67 refs.

Geological surveys, Rock streams, Talus, Quaternary deposits, Slope processes, Periglacial processes, Nivation, Solifluction, Geomorphology, Paleoclimatology, South Africa—Lesotho

53-4201

**Moraine formation at an advancing temperate glacier: Brigsdalsbreen, western Norway.**

Winkler, S., Nesje, A., *Geografiska annaler*, 1999, 81A(1), p.17-30, 60 refs.

Alpine glaciation, Mountain glaciers, Glacial geology, Glacial erosion, Glacial deposits, Moraines, Glacier oscillation, Glacier flow, Glacier tongues, Icefalls, Norway

53-4202

**Snow-push processes in pronival (protalus) rampart formation: geomorphological evidence from Smørbotn, Romsdalsalpane, southern Norway.**

Shakesby, R.A., Matthews, J.A., McEwen, L.J., Berrisford, M.S., *Geografiska annaler*, 1999, 81A(1), p.31-45, 49 refs.

Snow slides, Snow erosion, Snow creep, Nivation, Talus, Avalanche erosion, Avalanche deposits, Sediment transport, Landforms, Geomorphology, Norway

53-4203

**Soil chronosequence from neoglacial moraines in western Norway.**

Evans, D.J.A., *Geografiska annaler*, 1999, 81A(1), p.47-62, 27 refs.

Alpine glaciation, Glacial geology, Glacial deposits, Glacial till, Moraines, Mountain soils, Podsol, Soil formation, Soil profiles, Soil dating, Geochronology, Paleoclimatology, Norway

53-4204

**Early Holocene tree growth at a high elevation site in the northernmost Scandes of Sweden (Lapland): a palaeobiogeographical case study based on megafossil evidence.**

Kullman, L., *Geografiska annaler*, 1999, 81A(1), p.63-74, 76 refs.

Forest lines, Trees (plants), Fossils, Vegetation patterns, Paleobotany, Plant ecology, Phenology, Global change, Paleoclimatology, Sweden

53-4205

**Climatic and anthropogenic influences on radial growth of Scots pine at Hanvedsmossen, a raised peat bog, in south central Sweden.**

Linderholm, H.W., *Geografiska annaler*, 1999, 81A(1), p.75-86, 59 refs.

Peat, Swamps, Drainage, Trees (plants), Plant ecology, Phenology, Paleobotany, Air temperature, Precipitation (meteorology), Climatic changes, Paleoclimatology, Statistical analysis, Sweden

53-4206

**Influence of topography on snowpatch distribution in southern Iceland: a new hypothesis for glacier formation? A comment.**

Etienne, S., *Geografiska annaler*, 1999, 81A(1), p.101-104, 10 refs. Includes reply. For paper under discussion see 51-2202.

Snow accumulation, Snow cover distribution, Topographic effects, Cirque glaciers, Glacier formation, Iceland

53-4207

**Adsorption and desorption of HCl on ice.**

Isakson, M.J., Sitz, G.O., *Journal of physical chemistry A*, Apr. 1, 1999, 103(13), p.2044-2049, 29 refs.

Polar atmospheres, Atmospheric composition, Polar stratospheric clouds, Cloud physics, Ice vapor interface, Adsorption, Aerosols, Ice nuclei, Heterogeneous nucleation, Ozone

53-4208

**Theoretical investigation of the reaction of ClONO<sub>2</sub> with H<sub>2</sub>O on water clusters.**

Xu, S.C., Zhao, X.S., *Journal of physical chemistry A*, Apr. 1, 1999, 103(13), p.2100-2106, 42 refs.

Water structure, Molecular structure, Molecular energy levels, Hydrogen bonds, Ice vapor interface, Heterogeneous nucleation, Ice nuclei, Polar stratospheric clouds, Ozone

53-4209

**Phase transitions in emulsified HNO<sub>3</sub>/H<sub>2</sub>O and HNO<sub>3</sub>/H<sub>2</sub>SO<sub>4</sub>/H<sub>2</sub>O solutions.**

Chang, H.Y.A., Koop, T., Molina, L.T., Molina, M.J., *Journal of physical chemistry A*, Apr. 15, 1999, 103(15), p.2673-2679, 38 refs.

Polar atmospheres, Atmospheric composition, Aerosols, Polar stratospheric clouds, Cloud physics, Heterogeneous nucleation, Freezing nuclei, Liquid solid interfaces, Phase transformations, Ozone

53-4210

**Small charged water clusters: cations.**

Novakovskaia, I.U.V., Stepanov, N.F., *Journal of physical chemistry A*, Apr. 29, 1999, 103(17), p.3285-3288, 35 refs.

Water structure, Molecular structure, Molecular energy levels, Hydrogen bonds, Amorphous ice, Doped ice, Ice electrical properties, Proton transport, Ionization

53-4211

**Interaction of H<sub>2</sub> with water ice by neutron scattering: rotation and translation.**

Chen, Z., Strauss, H.L., Loong, C.K., *Journal of chemical physics*, Apr. 15, 1999, 110(15), p.7354-7358, 23 refs.

Ice crystal structure, Deuterium oxide ice, Ice spectroscopy, Molecular structure, Molecular energy levels, Neutron scattering

53-4212

**Oceanography of the Ross Sea, Antarctica.**

Spezie, G., ed, Manzella, G.M.R., ed, Milan, Italy, Springer-Verlag, 1999, 286p., Refs. passim. Presented at the International Conference on the Oceanography of the Ross Sea, Lercio, Italy, Mar. 1997. For individual papers see 53-4213 through 53-4230. DLC GC245.3.O34 1999

Oceanographic surveys, Ocean currents, Water transport, Sea water, Water temperature, Salinity, Ice shelves, Sea ice, Ice cover effect, Ice water interface, Polynyas, Bottom sediment, Suspended sediments, Antarctica—Ross Sea

53-4213

**Thermohaline data and ocean circulation on the Ross Sea continental shelf.**

Jacobs, S.S., Giulivi, C.F., Oceanography of the Ross Sea, Antarctica. Edited by G. Spezie and G.M.R. Manzella, Milan, Italy, Springer-Verlag, 1999, p.3-16, 48 refs.

DLC GC245.3.O34 1999

Oceanographic surveys, Sea water, Water temperature, Salinity, Ocean currents, Water transport, Sea ice distribution, Ice shelves, Ice water interface, Polynyas, Antarctica—Ross Sea

53-4214

**Mapping the thickness of pancake ice using ocean wave dispersion in SAR imagery.**

Wadhams, P., Parmiggiani, F., De Carolis, G., Tadross, M., *Oceanography of the Ross Sea, Antarctica*. Edited by G. Spezie and G.M.R. Manzella, Milan, Italy, Springer-Verlag, 1999, p.17-34, 20 refs.  
DLC GC245.3.O34 1999

Ice surveys, Sea ice distribution, Ice cover thickness, Frazil ice, Sea water freezing, Ice water interface, Ocean waves, Wave propagation, Synthetic aperture radar, Spaceborne photography, Mathematical models, Antarctica

53-4215

**Observations of the dynamics of the Antarctic Circumpolar Current in the Pacific sector of the southern ocean.**

Zambianchi, E., Budillon, G., Falco, P., Spezie, G., *Oceanography of the Ross Sea, Antarctica*. Edited by G. Spezie and G.M.R. Manzella, Milan, Italy, Springer-Verlag, 1999, p.37-50, 33 refs.  
DLC GC245.3.O34 1999

Oceanographic surveys, Ocean currents, Water transport, Air water interactions, Wind factors, Ocean bottom, Bottom topography, Topographic effects, Antarctica

53-4216

**Altimeter data analysis of the Antarctic Circumpolar Current.**

Simone, A., Zoffoli, S., Iudicone, D., Santoleri, R., Marullo, S., *Oceanography of the Ross Sea, Antarctica*. Edited by G. Spezie and G.M.R. Manzella, Milan, Italy, Springer-Verlag, 1999, p.51-65, 20 refs.  
DLC GC245.3.O34 1999

Oceanographic surveys, Ocean currents, Sea level, Height finding, Spaceborne photography, Statistical analysis, Antarctica

53-4217

**Upper ocean thermal structure and fronts between New Zealand and the Ross Sea (austral summer 1994-1995 and 1995-1996).**

Russo, A., Artegiani, A., Budillon, G., Paschini, E., Spezie, G., *Oceanography of the Ross Sea, Antarctica*. Edited by G. Spezie and G.M.R. Manzella, Milan, Italy, Springer-Verlag, 1999, p.67-75, 4 refs.  
DLC GC245.3.O34 1999

Oceanographic surveys, Ocean currents, Water transport, Sea water, Water temperature, Surface temperature, Antarctica

53-4218

**Large-scale thermohaline structure of the Ross Gyre.**

Guretskii, V.V., *Oceanography of the Ross Sea, Antarctica*. Edited by G. Spezie and G.M.R. Manzella, Milan, Italy, Springer-Verlag, 1999, p.77-100, 32 refs.  
DLC GC245.3.O34 1999

Oceanographic surveys, Ocean currents, Water transport, Sea water, Water temperature, Salinity, Antarctica—Ross Sea

53-4219

**Temporal variability of currents in the Ross Sea (Antarctica).**

Picco, P., Amici, L., Meloni, R., Langone, L., Ravaoli, M., *Oceanography of the Ross Sea, Antarctica*. Edited by G. Spezie and G.M.R. Manzella, Milan, Italy, Springer-Verlag, 1999, p.103-117, 16 refs.  
DLC GC245.3.O34 1999

Oceanographic surveys, Ocean currents, Tidal currents, Water transport, Sea water freezing, Ice melting, Water temperature, Salinity, Ice shelves, Ice water interface, Ice cover effect, Antarctica—Ross Sea

53-4220

**Reconstructing the general circulation of the Ross Sea (Antarctica) using a robust diagnostic model.**

Bergamasco, A., Carniel, S., Valeri, L.C., *Oceanography of the Ross Sea, Antarctica*. Edited by G. Spezie and G.M.R. Manzella, Milan, Italy, Springer-Verlag, 1999, p.119-134, 6 refs.  
DLC GC245.3.O34 1999

Oceanographic surveys, Ocean currents, Water transport, Sea water, Water temperature, Salinity, Ice shelves, Ice water interface, Ice cover effect, Wind factors, Computerized simulation, Antarctica—Ross Sea

53-4221

**Wind and boundary driven circulation model of the Ross Sea.**

Commodari, V., Pierini, S., *Oceanography of the Ross Sea, Antarctica*. Edited by G. Spezie and G.M.R. Manzella, Milan, Italy, Springer-Verlag, 1999, p.135-144, 13 refs.  
DLC GC245.3.O34 1999

Oceanographic surveys, Ocean currents, Water transport, Air water interactions, Wind factors, Computerized simulation, Antarctica—Ross Sea

53-4222

**Wintertime expansion and contraction of the Terra Nova Bay polynya.**

Van Woert, M.L., *Oceanography of the Ross Sea, Antarctica*. Edited by G. Spezie and G.M.R. Manzella, Milan, Italy, Springer-Verlag, 1999, p.145-164, 46 refs.  
DLC GC245.3.O34 1999

Sea ice distribution, Ice conditions, Polynyas, Air ice water interaction, Sea water freezing, Ice heat flux, Ice formation, Ocean currents, Water transport, Salinity, Wind factors, Mathematical models, Antarctica—Terra Nova Bay

53-4223

**Current, temperature and salinity observations in the Terra Nova Bay polynya area.**

Manzella, G.M.R., Meloni, R., Picco, P., *Oceanography of the Ross Sea, Antarctica*. Edited by G. Spezie and G.M.R. Manzella, Milan, Italy, Springer-Verlag, 1999, p.165-173, 10 refs.  
DLC GC245.3.O34 1999

Oceanographic surveys, Ocean currents, Water transport, Sea water, Water temperature, Salinity, Air ice water interaction, Sea ice distribution, Ice conditions, Polynyas, Antarctica—Terra Nova Bay

53-4224

**Particle fluxes at the edge of the Ross Ice Shelf: the role of physical forcing.**

Accornero, A., Bergamasco, A., Monaco, A., Tucci, S., *Oceanography of the Ross Sea, Antarctica*. Edited by G. Spezie and G.M.R. Manzella, Milan, Italy, Springer-Verlag, 1999, p.177-195, 56 refs.  
DLC GC245.3.O34 1999

Oceanographic surveys, Sea water, Suspended sediments, Bottom sediment, Marine deposits, Ice shelves, Ice cover effect, Ice edge, Ice water interface, Sedimentation, Biomass, Nutrient cycle, Antarctica—Ross Ice Shelf

53-4225

**Actual sedimentation on the antarctic continental shelf (southern part of the Ross Sea).**

Tucci, S., Ferrari, M., Capello, M., *Oceanography of the Ross Sea, Antarctica*. Edited by G. Spezie and G.M.R. Manzella, Milan, Italy, Springer-Verlag, 1999, p.197-207, 16 refs.  
DLC GC245.3.O34 1999

Oceanographic surveys, Sea water, Water temperature, Salinity, Suspended sediments, Sedimentation, Bottom sediment, Marine deposits, Ice shelves, Ice water interface, Ice cover effect, Antarctica—Ross Sea

53-4226

**Particle fluxes and sediment characteristics at three selected sites in the Ross Sea (Antarctica).**

Ravaoli, M., Frignani, M., Gambi, M.C., Labbrozzi, L., Langone, L., *Oceanography of the Ross Sea, Antarctica*. Edited by G. Spezie and G.M.R. Manzella, Milan, Italy, Springer-Verlag, 1999, p.209-222, 28 refs.  
DLC GC245.3.O34 1999

Oceanographic surveys, Marine geology, Marine deposits, Bottom sediment, Sediment transport, Sedimentation, Nutrient cycle, Biomass, Core samplers, Soil dating, Antarctica—Ross Sea

53-4227

**General characteristics of density-turbidity currents in the Ross Sea (Antarctica).**

Cordero, S.G., Salusti, E., *Oceanography of the Ross Sea, Antarctica*. Edited by G. Spezie and G.M.R. Manzella, Milan, Italy, Springer-Verlag, 1999, p.223-232, 26 refs.  
DLC GC245.3.O34 1999

Ocean currents, Bottom sediment, Suspended sediments, Sediment transport, Bottom topography, Topographic effects, Turbidity, Turbulent flow, Mathematical models, Antarctica—Ross Sea

53-4228

**Vertical distribution and biochemical composition of pico- and microparticulate organic matter in the Ross Sea (Antarctica).**

Fabiano, M., Danovaro, R., Povero, P., *Oceanography of the Ross Sea, Antarctica*. Edited by G. Spezie and G.M.R. Manzella, Milan, Italy, Springer-Verlag, 1999, p.233-246, 32 refs.  
DLC GC245.3.O34 1999

Oceanographic surveys, Sea water, Water chemistry, Suspended sediments, Plankton, Bacteria, Marine biology, Biomass, Nutrient cycle, Antarctica—Ross Sea

53-4229

**On the heat energy fluxes in the non-stationary surface boundary layer at Hells Gate, Terra Nova Bay (Antarctica).**

Ferrarese, S., et al., *Oceanography of the Ross Sea, Antarctica*. Edited by G. Spezie and G.M.R. Manzella, Milan, Italy, Springer-Verlag, 1999, p.249-264, 14 refs.  
DLC GC245.3.O34 1999

Polar atmospheres, Atmospheric boundary layer, Wind velocity, Air temperature, Anemometers, Ice shelves, Ice air interface, Ice heat flux, Glacial meteorology, Mathematical models, Antarctica—Hells Gate

53-4230

**Meteorological conditions during snowfall at Terra Nova Bay (Antarctica).**

Pellegrini, A., Della Vedova, A.M., Grigioni, P., De Silvestri, L., *Oceanography of the Ross Sea, Antarctica*. Edited by G. Spezie and G.M.R. Manzella, Milan, Italy, Springer-Verlag, 1999, p.265-286, 30 refs.  
DLC GC245.3.O34 1999

Polar atmospheres, Atmospheric circulation, Precipitation (meteorology), Snowfall, Blowing snow, Snow accumulation, Snow ice interface, Humidity, Wind velocity, Wind direction, Weather stations, Antarctica—Terra Nova Bay

53-4231

**Cold weather concreting.**

Korhonen, C., MP 5353, *Military engineer*, Aug.-Sep. 1998, 90(593), p.47-48.

Winter concreting, Concrete admixtures, Water cement ratio, Freezing points, Concrete curing, Frost protection

- 53-4232**  
Operational forecast of ice inflow to reservoir W/ ocałewek on Vistula River. [Operacyjna prognoza dopływu lodu do zbiornika W/ ocałewek na Wiśle] Dobrowolski, A., Zelaziński, J., *Instytut meteorologii i gospodarki wodnej. Wiadomości*, 1994, 17(1), p.75-82, In Polish with Russian and English table of contents. 4 refs.  
DLC QC869.4.P63W56 Vol.17 1994  
River ice, Reservoirs, Ice forecasting, Analysis (mathematics), Ice jams, Poland—Vistula River
- 53-4233**  
Water expulsion during soil freezing described by a mathematical model called  $M_1$ . Nakano, Y., MP 5354, *Cold regions science and technology*, 1999, Vol.29, p.9-30, 46 refs.  
Soil freezing, Mathematical models, Freezing front, Water transport, Soil water, Saturation  
It has been shown empirically that when a freezing front advances through a saturated and unfrozen soil, soil water may either be attracted to the freezing front or expelled, depending upon soil type, applied confining pressure, and rate of freezing. In this work, the problem of water expulsion is studied analytically based on a mathematical model called  $M_1$ . The condition of water expulsion is found to depend on the properties of a given soil, given thermal and hydraulic conditions. The theoretical predictions are compared with data of Kanto loam and the agreement between them is found to be satisfactory.
- 53-4234**  
Pollen analysis and  $^{14}\text{C}$  age of moss remains in a permafrost core recovered from the active rock glacier Murtèl-Corvatsch, Swiss Alps: geomorphological and glaciological implications. Haeblerli, W., et al, *Journal of glaciology*, 1999, 45(149), p.1-8, 41 refs.  
Palynology, Pollen, Radioactive age determination, Rock glaciers, Mosses, Drill core analysis, Permafrost dating, Geomorphology, Paleoclimatology, Switzerland—Alps
- 53-4235**  
Correlations between glacier properties: finding appropriate parameters for global glacier monitoring. Diurgerov, M.B., Bahr, D.B., *Journal of glaciology*, 1999, 45(149), p.9-16, 42 refs.  
Correlation, Glacier mass balance, Glacier surveys, Glacier oscillation, Data processing
- 53-4236**  
Characteristic mass-balance scaling with valley glacier size. Bahr, D.B., Diurgerov, M.B., *Journal of glaciology*, 1999, 45(149), p.17-21, 16 refs.  
Glacier mass balance, Glacier ablation, Glacier alimentation, Cirque glaciers, Analysis (mathematics), Mountain glaciers, Volume
- 53-4237**  
Air clathrate crystals from the GRIP deep ice core, Greenland: a number-, size- and shape-distribution study. Pauer, F., Kipfstuhl, S., Kuhs, W.F., Shoji, H., *Journal of glaciology*, 1999, 45(149), p.22-30, 27 refs.  
Clathrates, Ice cores, Oxygen isotopes, Statistical analysis, Bubbles, Ice air interface, Greenland
- 53-4238**  
Coupling between a glacier and a soft bed: I. A relation between effective pressure and local shear stress determined from till elasticity. Iverson, N.R., Baker, R.W., Hooke, R.L., Hanson, B., Jansson, P., *Journal of glaciology*, 1999, 45(149), p.31-40, 50 refs.  
Glacier beds, Shear stress, Glacial till, Water pressure, Elastic properties, Measuring instruments, Subglacial observations, Canada—Yukon Territory—Trapridge Glacier, Sweden—Storglaciären
- 53-4239**  
Coupling between a glacier and a soft bed: II. Model results. Iverson, N.R., *Journal of glaciology*, 1999, 45(149), p.41-53, 50 refs.  
Glacier beds, Shear stress, Glacial till, Glacier flow, Rheology, Glacier surfaces, Basal sliding, Water pressure, Mathematical models, Sweden—Storglaciären, Antarctica—West Antarctica
- 53-4240**  
Investigation of the debris-rich basal ice from Worthington Glacier, Alaska, U.S.A. Hart, J.K., Waller, R.I., *Journal of glaciology*, 1999, 45(149), p.54-62, 53 refs.  
Mountain glaciers, Bubbles, Glacier ice, Ice composition, Subglacial observations, Moraines, Glacial deposits, Deformation, United States—Alaska—Worthington Glacier
- 53-4241**  
Faceted crystal formation in the northeast Greenland low-accumulation region. Steffen, K., Abdalati, W., Sherjal, I., *Journal of glaciology*, 1999, 45(149), p.63-68, 28 refs.  
Snow stratigraphy, Snow crust, Snow samplers, Snow crystal growth, Snow accumulation, Temperature gradients, Greenland
- 53-4242**  
Debris entrainment and transfer in polythermal valley glaciers. Hambrey, M.J., Bennett, M.R., Dowdeswell, J.A., Glasser, N.F., Huddart, D., *Journal of glaciology*, 1999, 45(149), p.69-86, 66 refs.  
Mountain glaciers, Sediment transport, Glacier beds, Glacier surveys, Stratification, Subglacial observations, Glacier surfaces, Glacial geology, Norway—Svalbard
- 53-4243**  
Controls on the major-ion chemistry of the Dokriani glacier meltwaters, Ganga basin, Garhwal Himalaya, India. Hasnain, S.I., Thayyen, R.J., *Journal of glaciology*, 1999, 45(149), p.87-92, 25 refs.  
Meltwater, Glacier melting, Ions, Glacier ice, Ice composition, Water chemistry, Rain, Weathering, Glacial hydrology, India—Garhwal Himalaya
- 53-4244**  
Flow of Glacier Moreno, Argentina, from repeat-pass Shuttle Imaging Radar images: comparison of the phase correlation method with radar interferometry. Michel, R., Rignot, E., *Journal of glaciology*, 1999, 45(149), p.93-100, 23 refs.  
Glacier flow, Radar photography, Spaceborne photography, Glacier surveys, Glacier surfaces, Velocity measurement, Accuracy, Image processing, Photointerpretation, Topographic features, Ice volume, Argentina—Moreno Glacier
- 53-4245**  
Distributed temperature-index ice- and snowmelt model including potential direct solar radiation. Hock, R., *Journal of glaciology*, 1999, 45(149), p.101-111, 46 refs.  
Mathematical models, Snowmelt, Meltwater, Solar radiation, Glacier ablation, Degree days, Air temperature, Temperature effects, Diurnal variations, Sweden—Storglaciären
- 53-4246**  
Mass-balance studies on Siachen Glacier in the Nubra valley, Karakoram Himalaya, India. Bhutiyani, M.R., *Journal of glaciology*, 1999, 45(149), p.112-118, 18 refs.  
Glacier mass balance, Mountain glaciers, Glacial hydrology, Glacier ablation, Meltwater, Accuracy, India—Karakoram Mountains, India—Himalaya Mountains
- 53-4247**  
Seismic detection of transient changes beneath Black Rapids Glacier, Alaska, U.S.A.: I. Techniques and observations. Nolan, M., Echelmeyer, K., *Journal of glaciology*, 1999, 45(149), p.119-131, 30 refs.  
Glacier beds, Glacier oscillation, Seismic reflection, Subglacial drainage, Seismic surveys, Mountain glaciers, Glacial lakes, United States—Alaska—Black Rapids Glacier
- 53-4248**  
Seismic detection of transient changes beneath Black Rapids Glacier, Alaska, U.S.A.: II. Basal morphology and processes. Nolan, M., Echelmeyer, K., *Journal of glaciology*, 1999, 45(149), p.132-146, 58 refs.  
Mountain glaciers, Seismic reflection, Glacial hydrology, Glacier beds, Glacial till, Water pressure, Shear strength, Saturation, United States—Alaska—Black Rapids Glacier
- 53-4249**  
Conditions for bubble elongation in cold ice-sheet ice. Alley, R.B., Fitzpatrick, J.J., *Journal of glaciology*, 1999, 45(149), p.147-153, 40 refs.  
Bubbles, Ice sheets, Ice deformation, Vapor transfer, Self diffusion, Vapor diffusion, Analysis (mathematics), Antarctica—Taylor Dome
- 53-4250**  
Reliability analysis for design of stake networks to measure glacier surface velocity. Chadwell, C.D., *Journal of glaciology*, 1999, 45(149), p.154-164, 38 refs.  
Glacier surfaces, Velocity measurement, Statistical analysis, Accuracy, Analysis (mathematics), Geodetic surveys, Peru—Andes, China—Qinghai-Tibetan Plateau
- 53-4251**  
Surface and bed topography of Trapridge Glacier, Yukon Territory, Canada: digital elevation models and derived hydraulic geometry. Flowers, G.E., Clarke, G.K.C., *Journal of glaciology*, 1999, 45(149), p.165-174, 32 refs.  
Glacier surfaces, Glacier beds, Topographic features, Ice models, Data processing, Glacier thickness, Radar echoes, Glacial hydrology, Height finding, Canada—Yukon Territory—Trapridge Glacier
- 53-4252**  
Late Neogene Sirius Group strata in Reedy Valley, Antarctica: a multiple-resolution record of climate, ice-sheet and sea-level events. Wilson, G.S., Harwood, D.M., Askin, R.A., Levy, R.H., *Journal of glaciology*, 1998, 44(148), p.437-447, 54 refs.  
Glacial geology, Stratigraphy, Paleoclimatology, Glacial deposits, Paleocology, Fossils, Paleobotany, Antarctica—Reedy Glacier
- 53-4253**  
Stress and velocity fields in glaciers: Part I. finite-difference schemes for higher-order glacier models. Colinge, J., Blatter, H., *Journal of glaciology*, 1998, 44(148), p.448-456, 21 refs. For part 2 see 53-4254.  
Mathematical models, Glacier beds, Glacier flow, Glacier oscillation
- 53-4254**  
Stress and velocity fields in glaciers: Part II. sliding and basal stress distribution. Blatter, H., Clarke, G.K.C., Colinge, J., *Journal of glaciology*, 1998, 44(148), p.457-466, 21 refs. For part 1 see 53-4253.  
Glacier beds, Glacier flow, Glacier oscillation, Mathematical models, Shear stress, Mountain glaciers, Canada—Yukon Territory—Trapridge Glacier, Switzerland—Haut Glacier d'Arolla
- 53-4255**  
Diffusion of isotopes in the annual layers of ice sheets. Nye, J.F., *Journal of glaciology*, 1998, 44(148), p.467-468, 8 refs.  
Mathematical models, Ice sheets, Oxygen isotopes, Layers, Unfrozen water content, Diffusion, Self diffusion, Glacial hydrology, Glacier ice, Ice composition, Ice dating, Antarctica, Greenland



53-4256

**Hinge-line migration of Petermann Gletscher, north Greenland, detected using satellite-radar interferometry.**

Rignot, E., *Journal of glaciology*, 1998, 44(148), p.469-476, 30 refs.

Glacier tongues, Glacier oscillation, Glacier flow, Mapping, Remote sensing, Synthetic aperture radar, Spaceborne photography, Glacier mass balance, Greenland—Petermann Gletscher

53-4257

**Depth-hoar growth rates near a rocky outcrop.**

Arons, E.M., Colbeck, S.C., Gray, J.M.N.T., MP 5355, *Journal of glaciology*, 1998, 44(148), p.477-484, 15 refs.

Depth hoar, Ice crystal growth, Rocks, Mathematical models, Seasonal variations, Snow cover, Snow density, Snow thermal properties, Soil temperature, Thermal conductivity, Snow depth

Observations of slab-avalanche releases in alpine terrain have led to the hypothesis that rocky outcrops can influence the spatial distributions of temperature and heat flow in dry alpine snow covers and thus control the local distribution of depth hoar. The authors investigate the effects of terrain on crystal growth by using a two-dimensional finite-element model of heat flow coupled with a model of crystal growth from vapor. The model is used to examine the influence of snow properties, terrain geometry and snow depth on this phenomenon. The effect is stronger in the early winter than in the late winter, because the rock has then had time to cool. In all cases, it was found that depth-hoar growth occurs preferentially over the rock. This suggests that snow-pit investigations made over soil can be misleading if rocky outcrops are present.

53-4258

**Modelling the evolution of subglacial tunnels due to varying water input.**

Cutler, P.M., *Journal of glaciology*, 1998, 44(148), p.485-497, 48 refs.

Subglacial observations, Ice tunnels, Ice water interface, Mathematical models, Ice models, Water pressure, Glacier ablation, Water level, Glacial hydrology, Subglacial drainage, Sweden—Storglaciären

53-4259

**Snow-transport model for complex terrain.**

Liston, G.E., Sturm, M., MP 5356, *Journal of glaciology*, 1998, 44(148), p.498-516, Refs. p.514-515.

Mathematical models, Snow depth, Snow cover distribution, Shear stress, Sublimation, Tundra terrain, Snow water equivalent, Wind factors, Blowing snow, Computerized simulation, Snowdrifts, Snow erosion, Wind erosion, United States—Alaska—Brooks Range

As part of the winter environment in middle- and high-latitude regions, the interactions between wind, vegetation, topography and snowfall produce snow covers of non-uniform depth and snow water-equivalent distribution. A physically based numerical snow-transport model is developed and used to simulate this three-dimensional snow-depth evolution over topographically variable terrain. The mass-transport model includes processes related to vegetation snow-holding capacity, topographic modification of wind speeds, snow-cover shear strength, wind-induced surface-shear stress, snow transport resulting from saltation and suspension, snow accumulation and erosion, and sublimation of the blowing and drifting snow. The model simulates the cold-season evolution of snow-depth distribution when forced with inputs of vegetation type and topography, and atmospheric forcings of air temperature, humidity, wind speed and direction, and precipitation. Model outputs include the spatial and temporal evolution of snow depth resulting from variations in precipitation, saltation and suspension transport, and sublimation. Using 4 years of snow-depth distribution observations from the foothills north of the Brooks Range in Arctic Alaska, the model is found to simulate closely the observed snow-depth distribution patterns and the interannual variability.

53-4260

**Estimation of hydraulic properties of subglacial till from ploughmeter measurements.**

Fischer, U.H., Iverson, N.R., Hanson, B., Hooke, R.L., Jansson, P., *Journal of glaciology*, 1998, 44(148), p.517-522, 29 refs.

Glacial till, Subglacial observations, Water pressure, Hydraulics, Water flow, Glacier beds, Glacial hydrology, Subglacial drainage, Sweden—Storglaciären

53-4261

**Accumulation and hoar effects on microwave emission in the Greenland ice-sheet dry-snow zones.**

Abdalati, W., Steffen, K., *Journal of glaciology*, 1998, 44(148), p.523-531, 37 refs.

Ice sheets, Hoarfrost, Microwaves, Snow accumulation, Snow cover effect, Firm, Snow ice interface, Brightness, Radiometry, Radiation balance, Snow optics, Greenland

53-4262

**Analysis of the 1993-95 Bering Glacier (Alaska) surge using differential SAR interferometry.**

Fatland, D.R., Lingle, C.S., *Journal of glaciology*, 1998, 44(148), p.532-546, 30 refs.

Glacier surges, Synthetic aperture radar, Mountain glaciers, Remote sensing, Glacier surveys, Spaceborne photography, Image processing, United States—Alaska—Bering Glacier, United States—Alaska—Bagley Icefield

53-4263

**Glaciohydraulic supercooling: a freeze-on mechanism to create stratified, debris-rich basal ice: I. field evidence.**

Lawson, D.E., Strasser, J.C., Evenson, E.B., Alley, R.B., Larson, G.J., Arcone, S.A., MP 5357, *Journal of glaciology*, 1998, 44(148), p.547-562, 62 refs.

Glacial hydrology, Supercooling, Glacier beds, Frazil ice, Glacial deposits, Ice growth, Subglacial observations, Subglacial drainage, Glacial till, Sediment transport, United States—Alaska—Matanuska Glacier

Debris-laden ice accretes to the base of Matanuska Glacier, AK, USA, from water that supercools while flowing in a distributed drainage system up the adverse slope of an overdeepening. Frazil ice grows in the water column and forms aggregates, while other ice grows on the glacier sole or on substrate materials. Sediment is trapped by this growing ice, forming stratified debris-laden basal ice. Growth rates of >0.1 m/a of debris-rich basal ice are possible. The large sediment fluxes that this mechanism allows may have implications for interpretation of the widespread deposits from ice that flowed through other overdeepenings, including Heinrich events and the till sheets south of the Laurentian Great Lakes.

53-4264

**Glaciohydraulic supercooling: a freeze-on mechanism to create stratified, debris-rich basal ice: II. theory.**

Alley, R.B., Lawson, D.E., Evenson, E.B., Strasser, J.C., Larson, G.J., MP 5358, *Journal of glaciology*, 1998, 44(148), p.563-569, 48 refs.

Glacial hydrology, Supercooling, Glacier beds, Subglacial observations, Subglacial drainage, Mathematical models, Regelation, Glacier ice, Ice accretion, Glacial till, Sediment transport, United States—Alaska—Matanuska Glacier

Simple theory supports field observations that subglacial water flow out of overdeepenings can cause accretion of layered, debris-bearing ice to the bases of glaciers. The large meltwater flux into a temperate glacier at the onset of summer melting can cause rapid water flow through expanded basal cavities or other flow paths. If that flow ascends a sufficiently steep slope out of an overdeepening, the water will supercool as the pressure-melting point rises, and basal-ice accretion will occur. Diurnal, occasional or annual fluctuations in water discharge will cause variations in accretion rate, debris content of accreted ice or subsequent diagenesis, producing layers. Under appropriate conditions, net accretion of debris-bearing basal ice will allow debris fluxes that are significant in the glacier sediment budget.

53-4265

**Elevation and volume changes on the Harding Icefield, Alaska.**

Adalgeirsdóttir, G., Echelmeyer, K.A., Harrison, W.D., *Journal of glaciology*, 1998, 44(148), p.570-582, 31 refs.

Glacier surveys, Height finding, Glacier mass balance, Ice volume, Profiles, Airborne radar, Glacier thickness, Topographic surveys, United States—Alaska—Harding Icefield

53-4266

**Errors in daily ablation measurements in northern Greenland, 1993-94, and their implications for glacier climate studies.**

Braithwaite, R.J., Konzelmann, T., Marty, C., Olesen, O.B., *Journal of glaciology*, 1998, 44(148), p.583-588, 24 refs.

Glacier ablation, Climatic factors, Glacial meteorology, Accuracy, Degree days, Measurement, Glacier heat balance, Glacier mass balance, Greenland—Kronprins Christian Land, Greenland—Hans Tausen Ice Cap

53-4267

**Ice-stream surface texture, sticky spots, waves and breathers: the coupled flow of ice, till and water.**

Hindmarsh, R.C.A., *Journal of glaciology*, 1998, 44(148), p.589-614, 67 refs.

Glacial till, Water flow, Water pressure, Ice water interface, Ice sheets, Glacier flow, Analysis (mathematics), Stream flow, Subglacial drainage, Mathematical models, Glacier friction, Basal sliding, Antarctica—Siple Coast

53-4268

**Measurement of temperature in a margin of Ice Stream B, Antarctica: Implications for margin migration and lateral drag.**

Harrison, W.D., Echelmeyer, K.A., Larsen, C.F., *Journal of glaciology*, 1998, 44(148), p.615-624, 27 refs.

Ice temperature, Temperature measurement, Shear stress, Crevasses, Stream flow, Ice sheets, Glacier flow, Glacier friction, Antarctica—West Antarctica

53-4269

**Modeling the signature of a transponder in altimeter return data and determination of the reflection surface of the ice cap near the GRIP camp, Greenland.**

Haardeng-Pedersen, G., Keller, K., Tscherning, C.C., Gundestrup, N., *Journal of glaciology*, 1998, 44(148), p.625-633, 10 refs.

Mathematical models, Ice surface, Radar echoes, Measurement, Topographic features, Spaceborne photography, Reflection, Snow surface, Ice sheets, Glacier surveys, Glacier surfaces, Glacier thickness, Height finding, Greenland

53-4270

**Ring-shear studies of till deformation: Coulomb-plastic behavior and distributed strain in glacier beds.**

Iverson, N.R., Hooyer, T.S., Baker, R.W., *Journal of glaciology*, 1998, 44(148), p.634-642, 59 refs.

Glacier beds, Glacial till, Shear strain, Deformation, Strain measuring instruments, Porosity, Shear strength, Subglacial observations, Glacier flow, Glacier friction, Sweden—Storglaciären, United States—Michigan, Lake

53-4271

**Migration of the Siple Dome ice divide, West Antarctica.**

Nereson, N.A., Raymond, C.F., Waddington, E.D., Jacobell, R.W., *Journal of glaciology*, 1998, 44(148), p.643-652, 30 refs.

Radio echo soundings, Basal sliding, Glacier flow, Ice models, Mathematical models, Glacier oscillation, Glacier thickness, Ice sheets, Antarctica—West Antarctica

53-4272

**Thickening of the western part of the Greenland ice sheet.**

Thomas, R.H., Csathó, B.M., Gogineni, S., Jezek, K.C., Kuivinen, K., *Journal of glaciology*, 1998, 44(148), p.653-658, 14 refs.

Ice sheets, Ice cover thickness, Accuracy, Mass balance, Snow accumulation, Analysis (mathematics), Glacier thickness, Glacier mass balance, Greenland

53-4273

**Improved coherent radar depth sounder.**  
Gogineni, S., Chuah, T., Allen, C., Jezek, K.C., Moore, R.K., *Journal of glaciology*, 1998, 44(148), p.659-669, Refs. p.668-669.  
Sensors, Electronic equipment, Radio echo soundings, Design, Performance, Remote sensing, Ice sheets, Glacier mass balance, Ice cover thickness, Antennas, Glacier surveys, Glacier thickness, Greenland—Petermann Gletscher

53-4274

**Horizontal shear rate of ice initially exhibiting vertical compression fabrics.**  
Li, J., Jacka, T.H., *Journal of glaciology*, 1998, 44(148), p.670-672, 6 refs.  
Shear strain, Compressive properties, Ice deformation, Ice creep, Strain tests

53-4275

**Technique for improving core quality in intermediate-depth ice drilling.**  
Morgan, V., Elcheikh, A., Brand, R., *Journal of glaciology*, 1998, 44(148), p.672-673, 5 refs.  
Ice cores, Coring, Ice coring drills, Design, Performance

53-4276

**Rapid method of measuring snow-surface profiles.**  
Rees, W.G., *Journal of glaciology*, 1998, 44(148), p.674-675.  
Snow surface, Profiles, Image processing, Computer programs, Computer applications, Photography

53-4277

**Northern Forested Wetlands: ecology and management.**  
Trettin, C.C., ed, Jurgensen, M.F., ed, Grigal, D.F., ed, Gale, M.R., ed, Jeglum, J.K., ed, Boca Raton, FL, CRC Press, Inc., 1996, 486p., Refs. passim.  
Papers presented at the International Symposium on the Ecology and Management of Northern Forested Wetlands, Traverse City, MI, USA and Cochrane, Ontario, Canada, Aug. 24-31, 1994. For individual papers see 53-4278 through 53-4310.  
DLC SD410.9.N67 1996  
Wetlands, Trees (plants), Forestry, Forest ecosystems, Peat, Swamps, Drainage, Ground water, Environmental impact

53-4278

**Forested northern wetlands of North America.**  
Dahl, T.E., Zoltai, S.C., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.3-17, 39 refs.  
DLC SD410.9.N67 1996  
Wetlands, Trees (plants), Forestry, Forest ecosystems, Environmental impact, North America

53-4279

**Status and trends of forested wetlands in the Northern United States.**  
Frayer, W.E., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.19-26, 10 refs.  
DLC SD410.9.N67 1996  
Wetlands, Trees (plants), Forest ecosystems, Environmental impact, United States

53-4280

**Forested mires as renewable resource—toward a sustainable forestry practice.**  
Päivänen, J., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.27-44, Refs. p.40-44.  
DLC SD410.9.N67 1996  
Wetlands, Forestry, Trees (plants), Drainage, Fennoscandinavia, Russia, United Kingdom, United States, Canada—Alberta, Canada—Ontario, Canada—Quebec

53-4281

**Policy for conservation of the functions and values of forested wetlands.**  
Rubec, C.D.A., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.45-59, 19 refs.  
DLC SD410.9.N67 1996  
Wetlands, Trees (plants), Forestry, Environmental protection, Environmental impact, Legislation, Peat, Carbon dioxide, Global warming, Canada

53-4282

**Comparison of wetland mapping using SPOT satellite imagery and National Wetland Inventory data for a watershed in northern Michigan.**  
Forgette, T.A., Shuey, J.A., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.61-70, 12 refs.  
DLC SD410.9.N67 1996  
Wetlands, Spaceborne photography, Mapping, Watersheds, Data processing, Computer programs, Image processing, Accuracy, United States—Michigan

53-4283

**Stand structure, dynamics, and diversity of virgin forests on northern peatlands.**  
Norokorpi, Y., Lähde, E., Laiho, O., Saksa, T., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.73-87, 30 refs.  
DLC SD410.9.N67 1996  
Trees (plants), Wetlands, Peat, Forest land, Forest ecosystems, Finland

53-4284

**Relationships between groundwater characteristics, vegetation, and peatland type in the Hiawatha National Forest, Michigan.**  
Kudray, G.M., Gale, M.R., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.89-96, 21 refs.  
DLC SD410.9.N67 1996  
Wetlands, Forest ecosystems, Ground water, Swamps, Vegetation, Water chemistry, United States—Michigan—Hiawatha National Forest

53-4285

**Late Holocene paleoecological reconstruction of a coastal peat bog along the St. Lawrence maritime estuary, Quebec.**  
Garneau, M., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.97-107, 29 refs.  
DLC SD410.9.N67 1996  
Paleoecology, Wetlands, Peat, Radioactive age determination, Pollen, Palynology, Clays, Paleoclimatology, Paleobotany, Canada—Quebec—Saint Lawrence River

53-4286

**Changes in species diversity in peatlands drained for forestry.**  
Vasander, H., Laiho, R., Laine, J., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.109-119, 40 refs.  
DLC SD410.9.N67 1996  
Wetlands, Peat, Biomass, Mosses, Vegetation, Forest ecosystems, Drainage, Finland, Russia—Karelia

53-4287

**Undergrowth as a regeneration potential on Finnish peatlands.**  
Laiho, O., Lähde, E., Norokorpi, Y., Saksa, T., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.121-131, Refs. p.128-131.  
DLC SD410.9.N67 1996

Wetlands, Peat, Forest ecosystems, Trees (plants), Drainage, Finland

53-4288

**Plant reintroduction on a harvested peat bog.**  
Quinty, F., Rochefort, L., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.133-145, 21 refs.  
DLC SD410.9.N67 1996  
Introduced plants, Windbreaks, Topography, Peat, Wetlands, Mosses, Plants (botany), Swamps, Environmental impact, Canada—Quebec

53-4289

**Ground-penetrating radar study of peat landforms in the discontinuous permafrost zone near Fort Simpson, Northwest Territories, Canada.**  
Kettles, I.M., Robinson, S.D., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.147-160, 23 refs.  
DLC SD410.9.N67 1996  
Discontinuous permafrost, Peat, Wetlands, Permafrost distribution, Swamps, Landforms, Clay soils, Lakes, Sediments, Radio echo soundings, Canada—Northwest Territories—Fort Simpson

53-4290

**Hydrological processes of natural, northern forested wetlands.**  
Verry, E.S., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.163-188, Refs. p.185-188.  
DLC SD410.9.N67 1996  
Wetlands, Trees (plants), Hydrology, Evapotranspiration, Stream flow, Water balance, Water table, Nutrient cycle, Hydrography, Peat, Swamps, Frost penetration, Snow cover effect, Vegetation, Forest ecosystems, United States—Minnesota

53-4291

**Hydrology of drained forested wetlands.**  
Vomperskii, S.E., Sirin, A.A., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.189-211, Refs. p.205-211.  
DLC SD410.9.N67 1996

Hydrology, Wetlands, Forest ecosystems, Water table, Ground water, Trees (plants), Runoff, Drainage, Peat, Swamps, Watersheds

53-4292

**Hydrological-chemical interactions in headwater forest wetlands.**  
Hill, A.R., Devito, K.J., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.213-230, 38 refs.  
DLC SD410.9.N67 1996  
Wetlands, Hydrology, Trees (plants), Hydrogeochemistry, Swamps, Ground water, Water table, Peat, Canada—Ontario

53-4293

**Application of modeling methods to study water budgets in forested peatlands.**

Ruseckas, J., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.231-237, 3 refs.

DLC SD410.9.N67 1996

Wetlands, Peat, Trees (plants), Forest ecosystems, Mathematical models, Transpiration, Soil water, Hydrologic cycle, Biomass, Ground water

53-4294

**Water table fluctuations following clearcutting and thinning on Wally Creek wetlands.**

Roy, V., Jeglum, J.K., Plamondon, A.P., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.239-251, 21 refs.

DLC SD410.9.N67 1996

Wetlands, Water table, Trees (plants), Environmental impact, Forestry, Forest land, Canada—Ontario—Wally Creek

53-4295

**Effects of engineered drainage on water tables and peat subsidence in an Alberta treed fen.**

Hillman, G.R., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.253-272, 18 refs.

DLC SD410.9.N67 1996

Drainage, Water table, Peat, Wetlands, Ground water, Environmental impact, Forest land, Vegetation, Surface drainage, Hydrography, Forest ecosystems, Canada—Alberta

53-4296

**Wetland effects on hydrological and water quality characteristics of a mid-Michigan river system.**

Tompkins, T.M., Whipps, W.W., Manor, L.J., Wiley, M.J., Radcliffe, C.W., Majewski, D.M., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.273-285, 40 refs.

DLC SD410.9.N67 1996

Wetlands, Hydrology, Hydrogeochemistry, Stream flow, Water chemistry, Watersheds, United States—Michigan

53-4297

**Relationships between groundwater level and temperature in peat.**

Hökkä, H., Penttilä, T., Siipola, M., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.287-296, 12 refs.

DLC SD410.9.N67 1996

Peat, Ground water, Soil temperature, Forest land, Drainage, Air temperature, Thermal conductivity, Soil air interface, Wetlands, Finland

53-4298

**Factors affecting sediment accumulation in sedimentation ponds.**

Joensuu, S., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.297-311, 35 refs.

DLC SD410.9.N67 1996

Ponds, Sedimentation, Drainage, Runoff forecasting, Forestry, Trenching, Soil erosion, Statistical analysis, Wetlands, Finland

53-4299

**Dynamics of peat accumulation by mires of northern Eurasia during the last 3000 years.**

Klimanov, V.A., Sirin, A.A., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.313-324, 19 refs.

DLC SD410.9.N67 1996

Peat, Wetlands, Paleoclimatology, Pleistocene, Climatic changes, Carbon dioxide, Eurasia

53-4300

**Effect of peatland forestry on fluxes of carbon dioxide, methane, and nitrous oxide.**

Nykänen, H., Silvola, J., Alm, J., Martikainen, P.J., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.325-339, Refs. p.335-339. DLC SD410.9.N67 1996

Forestry, Peat, Carbon dioxide, Greenhouse effect, Drainage, Environmental impact, Water table, Wetlands, Swamps, Finland

53-4301

**Nutrient removals associated with harvesting peatland black spruce forest.**

Teng, Y.X., Foster, N.W., Hazlett, P., Morrison, I.K., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.341-352, 32 refs. DLC SD410.9.N67 1996

Forestry, Peat, Wetlands, Biomass, Trees (plants), Litter, Canada—Ontario

53-4302

**Effects and fate of inorganic nitrogen inputs to oligotrophic peat soils.**

Williams, B.L., Silcock, D.J., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.353-365, 52 refs.

DLC SD410.9.N67 1996

Wetlands, Peat, Biomass, Soil microbiology, Plants (botany), Nutrient cycle, Swamps, United Kingdom—Scotland

53-4303

**Forest Management impacts on undrained peatlands in North America.**

Grigal, D.F., Brooks, K.N., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.369-386, Refs. p.383-386. DLC SD410.9.N67 1996

Forestry, Wetlands, Peat, Forest soils, Biomass, Geochemistry, Stream flow, Water chemistry, Trees (plants), Decomposition, Hydrology, North America

53-4304

**Peatland forestry in Finland: problems and possibilities from the nutritional point of view.**

Kaunisto, S., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.387-401, Refs. p.397-401. DLC SD410.9.N67 1996

Forestry, Peat, Wetlands, Drainage, Environmental impact, Nutrient cycle, Agriculture, Finland

53-4305

**Forestry Best Management Practices for wetlands in Minnesota.**

Phillips, M.J., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.403-409, 10 refs.

DLC SD410.9.N67 1996

Forestry, Wetlands, Manuals, United States—Minnesota

53-4306

**Effects of forest management on wetland functions in a sub-boreal swamp.**

Trettin, C.C., Jurgensen, M.F., McLaughlin, J.W., Gale, M.R., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.411-428, Refs. p.425-428. DLC SD410.9.N67 1996

Forestry, Wetlands, Swamps, Soil chemistry, Forest soils, Water chemistry, Forest ecosystems, Vegetation, Trees (plants), Decomposition, Hydrology, Environmental impact, Great Lakes

53-4307

**Mound characteristics affect growth and survival of Norway spruce seedlings.**

Åkerström, L., Hånell, B., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.429-435, 37 refs.

DLC SD410.9.N67 1996

Trees (plants), Forestry, Wetlands, Peat, Forest soils, Soil chemistry, Roots, Sweden

53-4308

**Greenhouse impact of a mire after drainage for forestry.**

Laine, J., Minkinen, K., Sinisalo, J., Savolainen, I., Martikainen, P.J., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.437-447, 32 refs.

DLC SD410.9.N67 1996

Greenhouse effect, Swamps, Drainage, Forestry, Wetlands, Peat, Trees (plants), Forest ecosystems, Finland, Sweden, Norway

53-4309

**Response of stand growth and water table level to maintenance of ditch networks within forest drainage areas.**

Ahti, E., Päivänen, J., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.449-457, 5 refs. DLC SD410.9.N67 1996

Wetlands, Trees (plants), Water table, Trenching, Water level, Ground water, Forestry, Finland

53-4310

**Comparative growth of peatland, upland, and a superior black spruce stand in Ontario.**

Payandeh, B., Haavisto, V.F., Papadopol, P., Northern forested wetlands: ecology and management. Edited by C.C. Trettin, M.F. Jurgensen, D.F. Grigal, M.R. Gale and J.K. Jeglum, Boca Raton, FL, CRC Press, Inc., 1996, p.459-468, 13 refs. DLC SD410.9.N67 1996

Forestry, Trees (plants), Wetlands, Peat, Plant ecology, Growth, Canada—Ontario—Lydia Lake

53-4311

**Hydrocarbon gases associated with permafrost in the Mackenzie Delta, Northwest Territories, Canada.**

Collett, T.S., Dallimore, S.R., *Applied geochemistry*, July 1999, 14(5), p.607-620, 31 refs. Permafrost surveys, Permafrost structure, Frozen ground chemistry, Geochemistry, Natural gas, Hydrates, Exploration, Well logging, Geothermy, Canada—Northwest Territories—Mackenzie Delta

53-4312

**Deicer-freeze-thaw resistance characteristics of portland cement concrete for Wisconsin pavements.**

Cramer, S.M., *Wisconsin Department of Transportation, Madison. Division of Highways. Report*, Dec. 1995, WI-06-95, 13p. + append., PB98-134653, 13 refs.

Concrete pavements, Concrete durability, Frost resistance, Frost protection, Freeze thaw tests, Water cement ratio, Road maintenance, United States—Wisconsin

53-4313

**Physical mechanisms of glaze ice scallop formations on swept wings.**

Vargas, M., Reshotko, E., *U.S. National Aeronautics and Space Administration. Technical memorandum*, Jan. 1998, NASA/TM-1998-206616, 31p., N19980017180, 12 refs. Presented at the 36th Aerospace Sciences, Reno, NV, Jan. 12-15, 1998, sponsored by the American Institute of Aeronautics and Astronautics (AIAA).

Aircraft icing, Ice accretion, Ice loads, Glaze, Ice air interface, Air flow

53-4314

**Blueprint for action. The President's action plan for recovery from the January 1998 ice storm. Maine, New Hampshire, New York and Vermont. U.S. Federal Emergency Management Agency, Washington, D.C., Feb. 1998, 31p. + appends., PB98-143290.**

Ice storms, Accidents, Cost analysis, Rescue operations, Cold weather operation, Regional planning, United States—Maine, United States—New Hampshire, United States—New York, United States—Vermont

53-4315

**Time series analyses of climatological records from Auke Bay, Alaska.**

Wing, B.L., Pella, J.J., *U.S. National Oceanic and Atmospheric Administration. National Marine Fisheries Service. Alaska Fisheries Science Center. Technical memorandum*, June 1998, NOAA-TM-NMFS-AFSC-91, 90p., PB98-149206, 35 refs.

Weather stations, Meteorological data, Air temperature, Surface temperature, Precipitation (meteorology), Snowfall, Freezup, Ice breakup, Marine meteorology, Statistical analysis, United States—Alaska—Auke Bay

53-4316

**Storage and preservation of soil samples for volatile compound analysis.**

Hewitt, A.D., SR 99-05, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, May 1999, 21p., ADA-363 601, 22 refs.

Cold storage, Soil tests, Soil analysis, Chemical analysis, Soil pollution, Soil chemistry, Preserving, Storage

Traditionally, soil samples obtained for characterizing or monitoring sites for volatile organic compounds (VOCs) have been transported off site before initiating the preparation steps necessary for analysis. In the most recent regulatory guidance, only a two-day holding period at 4±2°C is recommended before a sample should be preserved, so as to allow storage up to 14 days prior to instrumental analysis. The transportation and storage of soil samples were evaluated for (1) covered core barrel liners, (2) En Core samplers and (3) empty volatile organic analysis (VOA) vials under different conditions. Core barrel liners covered with either of two formulations of Teflon sheeting or aluminum foil failed to prevent rapid losses of VOCs. En Core samplers and otherwise empty VOA vials were suitable transportation and storage chambers for samples. These chambers not only meet the initial requirement to retain VOCs for two days when held at 4±2°C for transportation purposes, but frequently showed no significant loss of VOCs after placing in a freezer and storing at -12±3°C for an additional 12 days.

53-4317

**Effects of temperature and substrate quality on element mineralization in six arctic soils.**

Nadelhoffer, K.J., Giblin, A.E., Shaver, G.R., Laundre, J.A., *Ecology*, Feb. 1991, 72(1), p.242-253, 37 refs.

Tundra vegetation, Vegetation patterns, Plant ecology, Tundra soils, Soil microbiology, Nutrient cycle, United States—Alaska—North Slope

53-4318

**Production: biomass relationships and element cycling in contrasting arctic vegetation types.**

Shaver, G.R., Chapin, F.S., III, *Ecological monographs*, Feb. 1991, 61(1), p.1-31, Refs. p.21-23.

Tundra vegetation, Vegetation patterns, Plant ecology, Growth, Nutrient cycle, Biomass, United States—Alaska—Toolik Lake

53-4319

**Chronology of vegetation and paleoclimatic stages of northwestern Russia during the Late Glacial and Holocene.**

Arslanov, Kh.A., et al, *Radiocarbon*, 1999, 41(1), p.25-45, 17 refs.

Peat, Lacustrine deposits, Palynology, Paleobotany, Plant ecology, Vegetation patterns, Soil dating, Paleoclimatology, Russia—Novgorod, Russia—St. Petersburg, Russia—Karelia

53-4320

**Fuzzy clustering approach in unsupervised sea-ice classification.**

Eom, K.B., *Neurocomputing*, 1999, Vol.25, p.149-166, 27 refs.

Ice surveys, Sea ice distribution, Ice conditions, Ice detection, Radio echo soundings, Spaceborne photography, Image processing, Data processing

53-4321

**Snow loads on gable roofs—discussion and closure.**

Tobiasson, W., MP 5359, *Journal of structural engineering*, Apr. 1999, 125(4), p.470-472, 1 ref. For paper under discussion see 52-2526.

Roofs, Snow depth, Snow loads

53-4322

**Influence of snowfall and melt timing on tree growth in subarctic Eurasia.**

Vaganov, E.A., Hughes, M.K., Kirdianov, A.V., Schweingruber, F.H., Silkin, P.P., *Nature*, July 8, 1999, 400(6740), p.149-151, 24 refs.

Snowfall, Snow melting, Snow cover effect, Phenology, Trees (plants), Plant ecology, Plant physiology, Growth, Climatic changes, Russia

53-4323

**Distortion of isochronous layers in ice revealed by ground-penetrating radar.**

Vaughan, D.G., Corr, H.F.J., Doake, C.S.M., Waddington, E.D., *Nature*, Mar. 25, 1999, 398(6725), p.323-326, 27 refs.

Ice sheets, Glacier flow, Snow ice interface, Snow stratigraphy, Firm stratification, Glacier ice, Ice structure, Radio echo soundings, Electromagnetic prospecting, Antarctica—Fletcher Ice Rise

53-4324

**Topography of the lunar poles from radar interferometry: a survey of cold trap locations.**

Margot, J.L., Campbell, D.B., Jurgens, R.F., Slade, M.A., *Science*, June 4, 1999, 284(5420), p.1658-1660, 26 refs.

Moon, Topographic surveys, Extraterrestrial ice, Ice detection

53-4325

**Abstracts.**

International Symposium on Okhotsk Sea and Sea Ice, 14th, Mombetsu, Hokkaido, Japan, Jan. 31-Feb. 4, 1999, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1999, 258p., In English and Japanese. Refs. passim. For selected papers see 53-4326 through 53-4353. Includes abstracts only of the International Workshop on Rational Evaluation of Ice Forces on Structures, for full papers of which see 53-3763 through 53-3788.

Ice surveys, Sea ice distribution, Ice conditions, Ice cover thickness, Ice cover effect, Ice water interface, Ice friction, Ice pileup, Ice loads, Offshore structures, Okhotsk Sea

53-4326

**Primary production and seasonal sea ice in Saroma-ko Lagoon.**

Kato, C., Hattori, H., Saito, H., International Symposium on Okhotsk Sea and Sea Ice, 14th, Mombetsu, Hokkaido, Japan, Jan. 31-Feb. 4, 1999. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1999, p.10-12, 2 refs.

Ice conditions, Ice cover effect, Marine biology, Algae, Plankton, Biomass, Japan—Hokkaido

53-4327

**Initial incorporation of phytoplankton to the sea ice in Saroma-ko Lagoon, Hokkaido, Japan.**

Niimura, Y., Ishimaru, T., Taguchi, S., International Symposium on Okhotsk Sea and Sea Ice, 14th, Mombetsu, Hokkaido, Japan, Jan. 31-Feb. 4, 1999. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1999, p.13-19, 26 refs.

Sea ice, Ice composition, Ice water interface, Ice cover effect, Marine biology, Cryobiology, Biomass, Algae, Plankton, Ecology, Japan—Hokkaido

53-4328

**Parametrization of ice categories in a coupled ice-ocean model. [Kaihyo kategori no parameterizashon ga kaihyo no seicho, missetsudo ni kangaeru eikyo ni kansuru kenkyu]**

Shinkai, H., Ikeda, M., Watanabe, T., International Symposium on Okhotsk Sea and Sea Ice, 14th, Mombetsu, Hokkaido, Japan, Jan. 31-Feb. 4, 1999.

Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1999, p.47-52, In Japanese with English summary. 5 refs.

Sea ice distribution, Ice cover thickness, Ice conditions, Sea water freezing, Ice formation, Ice growth, Ice heat flux, Air ice water interaction, Ice models, Mathematical models

53-4329

**Interannual variations of sea ice types and relationships with air temperature in the Sea of Okhotsk during 1988-1997.**

Tateyama, K., Enomoto, H., Shirasaki, K., Nishio, F., International Symposium on Okhotsk Sea and Sea Ice, 14th, Mombetsu, Hokkaido, Japan, Jan. 31-Feb. 4, 1999. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1999, p.53-57, 6 refs.

Ice surveys, Sea ice distribution, Ice detection, Ice conditions, Ice edge, Air temperature, Climatic changes, Radiometry, Spaceborne photography, Okhotsk Sea

53-4330

**Sea ice observations in the Sea of Okhotsk and the Tatarskiy Strait by NOAA imagery example-1. [NOAA gazo ni yoru Ohotsuku-kai to Mamiya kaikyo no kaihyo kansoku rei-1]**

Ishida, K., Seko, F., International Symposium on Okhotsk Sea and Sea Ice, 14th, Mombetsu, Hokkaido, Japan, Jan. 31-Feb. 4, 1999. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1999, p.58-66, In Japanese with English summary and captions. 13 refs.

Ice surveys, Sea ice distribution, Ice conditions, Drift, Polynyas, Radiometry, Spaceborne photography, Russia—Tatar Strait

53-4331

**Long-term sea ice monitoring in the Sea of Okhotsk and polar regions. [Ohotsuku-kai oyobi zenkyu no kaihyo menseki hendo ni tsuite]**

Iwao, T., Taguchi, H., International Symposium on Okhotsk Sea and Sea Ice, 14th, Mombetsu, Hokkaido, Japan, Jan. 31-Feb. 4, 1999. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1999, p.67-70, In Japanese with English summary and captions.

Ice surveys, Sea ice distribution, Ice conditions, Ice edge, Global change, Spaceborne photography, Okhotsk Sea

53-4332

**Preliminary study on sea ice observation using a ship-borne laser altimeter.**

Uto, S., Shimoda, H., Oka, S., International Symposium on Okhotsk Sea and Sea Ice, 14th, Mombetsu, Hokkaido, Japan, Jan. 31-Feb. 4, 1999. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1999, p.72-77, 6 refs.

Ice surveys, Ships, Ice navigation, Sea ice, Ice cover thickness, Ice surface, Pressure ridges, Snow ice interface, Height finding, Lidar, Okhotsk Sea, Japan—Hokkaido

## 53-4333

**Strategy for evaluating the role of seasonal sea-ice formation in the ventilation of the abyssal Japan/East Sea: using dissolved noble gas concentration anomalies.**

Postlethwaite, C.F., Shirasawa, K., Jenkins, W.J., International Symposium on Okhotsk Sea and Sea Ice, 14th, Mombetsu, Hokkaido, Japan, Jan. 31-Feb. 4, 1999. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1999, p.78-83, 14 refs.

Sea water freezing, Ice formation, Ice heat flux, Ice water interface, Ice cover effect, Water temperature, Salinity, Aeration, Ocean currents, Water transport, Global change, Japan, Sea

## 53-4334

**Measurements of under-ice currents and turbulent fluxes of momentum and heat in the North Water (NOW) polynya region.**

Shirasawa, K., Kobinata, K., Takatsuka, T., Kawamura, T., International Symposium on Okhotsk Sea and Sea Ice, 14th, Mombetsu, Hokkaido, Japan, Jan. 31-Feb. 4, 1999. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1999, p.85-89.

Oceanographic surveys, Ice water interface, Ice cover effect, Polynyas, Ocean currents, Water transport, Water temperature, Salinity, Baffin Bay

## 53-4335

**Measurements of under-ice turbulent fluxes and oceanic boundary layer processes in the Baltic Sea—BALTEX/BASIS 1998 experiment.**

Shirasawa, K., Kobinata, K., Takatsuka, T., Kawamura, T., International Symposium on Okhotsk Sea and Sea Ice, 14th, Mombetsu, Hokkaido, Japan, Jan. 31-Feb. 4, 1999. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1999, p.90-94.

Fast ice, Ice water interface, Ice heat flux, Oceanographic surveys, Ocean currents, Water transport, Water temperature, Salinity, Baltic Sea

## 53-4336

**Sea ice as a storage and transportation agent of sedimentary matter in the Baltic Sea—some implications.**

Granskog, M., International Symposium on Okhotsk Sea and Sea Ice, 14th, Mombetsu, Hokkaido, Japan, Jan. 31-Feb. 4, 1999. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1999, p.95-99, 10 refs.

Ice composition, Impurities, Ice rafting, Suspended sediments, Sediment transport, Ice water interface, Water pollution, Baltic Sea

## 53-4337

**Lagrangian simulation of mesoscale ice dynamics.**

Shen, H.T., Wang, Z.L., Wu, H.D., International Symposium on Okhotsk Sea and Sea Ice, 14th, Mombetsu, Hokkaido, Japan, Jan. 31-Feb. 4, 1999.

Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1999, p.100-105, 18 refs.

Sea ice distribution, Ice conditions, Ice cover thickness, Ice edge, Drift, Ice forecasting, Ice models, Mathematical models, Computerized simulation, China—Bohai Sea

## 53-4338

**Growth of a pancake ice cover in a wave field.**

Shen, H.H., Leonard, G.H., Ackley, S.F., MP 5360, International Symposium on Okhotsk Sea and Sea Ice, 14th, Mombetsu, Hokkaido, Japan, Jan. 31-Feb. 4, 1999. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1999, p.106-111, 7 refs.

Sea water freezing, Frazil ice, Ice formation, Ice growth, Ice water interface, Ice cover effect, Ocean waves, Air temperature, Water temperature, Air ice water interaction

Experimental results of pancake ice growth and the associated wave field evolution are presented. From these results, a conceptual theory that describes natural growth of pancake ice in a wave field is suggested. Three experiments were conducted in two laboratory wave tanks in Jan. 1995, 1996 and Feb. 1997. In these experiments, various wave conditions, some with wind and current, were generated. The observed parameters were the ice cover and the wave amplitude

evolutions. It is found that ice cover morphology is sensitively dependent on both the wave spectrum and the air and water temperatures.

## 53-4339

**Investigation of diamond dust crystals at various locations. [Daiyamondo dasuto no kenkyu]**

Ohtake, T., International Symposium on Okhotsk Sea and Sea Ice, 14th, Mombetsu, Hokkaido, Japan, Jan. 31-Feb. 4, 1999. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1999, p.112-114, In Japanese with English summary. 16 refs.

Ice fog, Ice crystal growth, Ice nuclei, Ice crystal replicas

## 53-4340

**Preliminary simulation study of a cargo vessel along the NSR. [Hyokai koko shimyureshon—Hokkyokukai koro ni okeru shikeisan]**

Ozeki, T., Kitagawa, H., International Symposium on Okhotsk Sea and Sea Ice, 14th, Mombetsu, Hokkaido, Japan, Jan. 31-Feb. 4, 1999. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1999, p.115-122, In Japanese with English summary. 3 refs.

Ice conditions, Ice navigation, Ice routing, Route surveys, Ships, Icebreakers, Computerized simulation, Northern Sea Route

## 53-4341

**Application of GIS to study on Northern Sea Route. [Hyokkokukai koro chosa ni okeru GIS no katsuyou]**

Yamauchi, Y., Kamesaki, K., Shiraki, A., International Symposium on Okhotsk Sea and Sea Ice, 14th, Mombetsu, Hokkaido, Japan, Jan. 31-Feb. 4, 1999. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1999, p.123-129, In Japanese with English summary. 3 refs.

Ice surveys, Sea ice distribution, Ice cover thickness, Ice conditions, Route surveys, Ice navigation, Ice routing, Data processing, Northern Sea Route

## 53-4342

**Method for selecting subsea pipeline route under ice conditions (for the Sakhalin offshore case).**

Polomoshnov, A.M., Astaf'ev, V.N., Surkov, G.A., International Symposium on Okhotsk Sea and Sea Ice, 14th, Mombetsu, Hokkaido, Japan, Jan. 31-Feb. 4, 1999. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1999, p.130-136, 13 refs.

Underground pipelines, Pipe laying, Route surveys, Ocean bottom, Bottom topography, Ice scoring, Pressure ridges, Hummocks, Grounded ice, Russia—Sakhalin Island, Okhotsk Sea

## 53-4343

**Application of oil recovery equipment in cold waters. [Kison no yukaishu, shori gijutsu no kanrei kaikai e no tekiyo]**

Fujii, S., Ueda, K., Yamanouchi, H., Maeda, T., International Symposium on Okhotsk Sea and Sea Ice, 14th, Mombetsu, Hokkaido, Japan, Jan. 31-Feb. 4, 1999. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1999, p.137-142, In Japanese with English summary.

Oil spills, Oil recovery, Water pollution, Interfacial tension, Viscosity

## 53-4344

**Preparedness for oil spills in pack ice. [Ryuhyo iki abura osen no kanosei to taisaku ni tsuite]**

Narita, S., Yamaguchi, H., Arita, M., Tamura, K., International Symposium on Okhotsk Sea and Sea Ice, 14th, Mombetsu, Hokkaido, Japan, Jan. 31-Feb. 4, 1999. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1999, p.143-148, In Japanese with English summary. 16 refs.

Oil spills, Water pollution, Ice water interface, Ice cover effect, Oil recovery, Environmental protection, Okhotsk Sea

## 53-4345

**Friction-wear characteristics of paint coating films at frozen sea. [Tomaku no masatsu, mamoto kusei]**

Kitamura, S., et al, International Symposium on Okhotsk Sea and Sea Ice, 14th, Mombetsu, Hokkaido, Japan, Jan. 31-Feb. 4, 1999. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1999, p.149-155, In Japanese with English summary. 6 refs.

Offshore structures, Ships, Protective coatings, Ice solid interface, Ice friction, Abrasion, Hardness tests

## 53-4346

**Design methods for the facility preventing from overtopping of ice floes. [Eppyo boshi shisetsu ni sayo suru hyo kaju no hyoka to shisekkel]**

Ishikawa, H., Kawai, K., Sato, M., Hayakawa, T., Watanabe, Y., Saeki, H., International Symposium on Okhotsk Sea and Sea Ice, 14th, Mombetsu, Hokkaido, Japan, Jan. 31-Feb. 4, 1999. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1999, p.156-161, In Japanese with English summary. 2 refs.

Ports, Offshore structures, Ice push, Ice pileup, Ice loads, Ice control, Ocean waves, Impact tests

## 53-4347

**Experimental study on the fluid resistance of ice jam. [Aisujamu kaisei-ji no fuhyo bangun ni sayo suru ryutairyoku]**

Makita, S., Kawai, T., Hara, F., Enoki, K., Saeki, H., International Symposium on Okhotsk Sea and Sea Ice, 14th, Mombetsu, Hokkaido, Japan, Jan. 31-Feb. 4, 1999. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1999, p.162-167, In Japanese with English summary. 2 refs.

Ice jams, Ice floes, Ice water interface, Ice friction, Ice pileup, Ice loads, Ice booms

## 53-4348

**Movement of ice floes at the edge of ice sheets in Saroma Lagoon. [Saroma-ko nai keppyoiban hyoenbu ni okeru ryunyu ryuhyo no undo ni kansuru kenkyu]**

Makita, S., Oshima, K., Kawai, T., Hara, F., Enoki, K., Saeki, H., International Symposium on Okhotsk Sea and Sea Ice, 14th, Mombetsu, Hokkaido, Japan, Jan. 31-Feb. 4, 1999. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1999, p.168-175, In Japanese with English summary. 5 refs.

Ports, Ice floes, Drift, Ice friction, Ice pileup, Ice loads, Ice booms, Ice control, Japan—Hokkaido

## 53-4349

**Stability of armor stones on doubly placed submerged breakwater due to ice floes in wave field and behavior of ice floes near the breakwaters. [Niju sentei kinbo no ryuhyo no undo to sentei zairyo no antei]**

Ishikawa, H., Kitamura, T., Sato, M., Hayakawa, T., Watanabe, Y., Saeki, H., International Symposium on Okhotsk Sea and Sea Ice, 14th, Mombetsu, Hokkaido, Japan, Jan. 31-Feb. 4, 1999. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1999, p.176-182, In Japanese with English summary. 4 refs.

Ports, Offshore structures, Artificial islands, Embankments, Rock fills, Ice floes, Drift, Ice pileup, Ice loads, Ice friction, Ice control

## 53-4350

**Concentration and quantity of methane surfacing from a lake bottom and contained in bubbles within ice over lakes.**

Toukairin, A., Fukuda, M., International Symposium on Okhotsk Sea and Sea Ice, 14th, Mombetsu, Hokkaido, Japan, Jan. 31-Feb. 4, 1999. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1999, p.219-224.

Wetlands, Frozen lakes, Lacustrine deposits, Bottom sediment, Lake ice, Ice composition, Bubbles, Ice cover effect, Ice air interface, Nutrient cycle, Geochemical cycles, Japan—Hokkaido

## 53-4351

**Tidal transformation of Okhotsk Sea waters in the Friza and Ekaterina Straits.**

Bobkov, A.A., Foux, V.R., International Symposium on Okhotsk Sea and Sea Ice, 14th, Mombetsu, Hokkaido, Japan, Jan. 31-Feb. 4, 1999. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1999, p.225-230, 3 refs.

Oceanographic surveys, Tidal currents, Sea water, Water transport, Water temperature, Okhotsk Sea, Russia—Kurul Islands

## 53-4352

**Laser optoacoustic diagnostics of sea ice.**

Maksimov, A.O., International Symposium on Okhotsk Sea and Sea Ice, 14th, Mombetsu, Hokkaido, Japan, Jan. 31-Feb. 4, 1999. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1999, p.234-239, 12 refs.

Ice cover thickness, Ice detection, Ice water interface, Ice optics, Ice acoustics, Lasers, Lidar, Soundings, Underwater acoustics, Wave propagation, Mathematical models

## 53-4353

**Level and ice jams in the Amur Liman.**

IAkunin, L.P., International Symposium on Okhotsk Sea and Sea Ice, 14th, Mombetsu, Hokkaido, Japan, Jan. 31-Feb. 4, 1999. Abstracts, Mombetsu, Okhotsk Sea and Cold Ocean Research Association, 1999, p.240-241, 1 ref.

Estuaries, River ice, Ice breakup, Ice jams, Ice cover effect, Ice water interface, River flow, Water level, Russia—Amur River, Russia—Tatar Strait

## 53-4354

**Persistence of the Cassubian Littoral meltwater channels. [Przetrvanie pradoliny Pobrzeża Kaszubskiego]**

Rachocki, A., *Uniwersytet Gdański. Zeszyty naukowe geografii*, 1992, No.18, p.97-118, In Polish with English summary. 16 refs.

DLC G1.D13 18th 1992

Paleoclimatology, Pleistocene, Terraces, Geomorphology, Glacial geology, Glaciation, Glacier melting, Theories, Stream flow, Runoff, Glacial rivers, Valleys, Poland—Łeba River

## 53-4355

**On soil-moisture studies in the Elbląg Delta Plain during the thaw period. [Z badań nad wilgotnością gleby na Zułwach Elbląskich w okresie roztopowym]**

Bogdanowicz, R., *Uniwersytet Gdański. Zeszyty naukowe geografii*, 1992, No.18, p.119-131, In Polish with English summary. 12 refs.

DLC G1.D13 18th 1992

Deltas, Plains, Water table, Ground thawing, Soil water, Water content, Snow cover effect, Snowmelt, Soil profiles, Snow depth, Vegetation factors, Poland

## 53-4356

**Changes in the Triglav Glacier in the 1955-1994 period in the light of climatic indicators. [Spremembe na Triglavskem ledeniku 1955-1994 v luči klimatskih pokazateljev]**

Gams, I., *Geografski zbornik. Acta geographica*, 1994, No.34, p.81-117, In English and Slovenian. 31 refs.

DLC G1.G3148 34 1994

Glacier oscillation, Glacier ablation, Mountain glaciers, Insolation, Temperature effects, Precipitation (meteorology), Snow cover effect, Glacier mass balance, Climatic factors, Glacier beds, Bedrock, Slovenia

## 53-4357

**Energy budget approach to urban snow deposit melt.**

Sundin, E., Andreasson, P., Viklander, M., *Nordic hydrology*, 1999, 30(1), p.39-56, 29 refs.

Snow disposal, Snow melting, Forecasting, Mathematical models, Snowmelt, Latent heat, Heat transfer, Snow air interface, Degree days, Runoff, Sweden

## 53-4358

**Wind-induced precipitation undercatch of the Hellmann gauges.**

Yang, D.Q., et al, *Nordic hydrology*, 1999, 30(1), p.57-80, 42 refs.

Precipitation gages, Accuracy, Performance, Precipitation (meteorology), Rain, Snowfall, Wind velocity, Air temperature, Russia, Finland, Germany, Croatia

## 53-4359

**Arctic snow cover information for hydrological investigations at various scales.**

Woo, M.K., *Nordic hydrology*, 1998, 29(4/5), Northern Research Basins Symposium/Workshop, 11th, Prudhoe Bay to Fairbanks, AK, Aug. 18-22, 1997. Selected papers, p.245-266, Refs. p.263-266.

Snow cover distribution, Hydrologic cycle, Precipitation gages, Accuracy, Data processing, Snow surveys, Snow survey tools, Remote sensing, Snow samplers, Snowfall, Snow cover effect, Snowdrifts, Snow hydrology, Snow water equivalent, Models, Slopes, Canada

## 53-4360

**Fluxes of water and energy from three high latitude tundra sites in Svalbard.**

Harding, R.J., Lloyd, C.R., *Nordic hydrology*, 1998, 29(4/5), Northern Research Basins Symposium/Workshop, 11th, Prudhoe Bay to Fairbanks, AK, Aug. 18-22, 1997. Selected papers, p.267-284, 18 refs.

Tundra, Rain, Evaporation, Heat flux, Snow depth, Snowmelt, Latent heat, Solar radiation, Albedo, Air temperature, Norway—Svalbard

## 53-4361

**Modelling snowmelt induced waste water inflows. Semádeni-Davies, A., *Nordic hydrology*, 1998, 29(4/5), Northern Research Basins Symposium/Workshop, 11th, Prudhoe Bay to Fairbanks, AK, Aug. 18-22, 1997. Selected papers, p.285-302, 29 refs.**

Models, Snowmelt, Snow cover, Waste treatment, Snow water equivalent, Drainage, Seepage, Snow hydrology, Snow impurities, Sweden

## 53-4362

**Evapotranspiration from a wetland complex on the arctic coastal plain of Alaska.**

Mendez, J., Hinzman, L.D., Kane, D.L., *Nordic hydrology*, 1998, 29(4/5), Northern Research Basins Symposium/Workshop, 11th, Prudhoe Bay to Fairbanks, AK, Aug. 18-22, 1997. Selected papers, p.303-330, Refs. p.327-329.

Wetlands, Evapotranspiration, Heat flux, Latent heat, Watersheds, Tundra, Ponds, Data processing, Mathematical models, Water balance, Statistical analysis, Evaporation, United States—Alaska—Prudhoe Bay

## 53-4363

**Snowmelt hydrology of two subarctic slopes, southern Yukon, Canada.**

Carey, S.K., Woo, M.K., *Nordic hydrology*, 1998, 29(4/5), Northern Research Basins Symposium/Workshop, 11th, Prudhoe Bay to Fairbanks, AK, Aug. 18-22, 1997. Selected papers, p.331-346, 20 refs.

Snow hydrology, Snowmelt, Slope processes, Snow melting, Soil water, Runoff, Soil temperature, Snow cover effect, Isotherms, Seepage, Canada—Yukon Territory—Whitehorse, United States—Alaska—North Slope

## 53-4364

**Contributions of snow to the annual water balance in Moshiri Watershed, northern Hokkaido, Japan.**

Ishikawa, N., Nakabayashi, H., Ishii, Y., Kodama, Y., *Nordic hydrology*, 1998, 29(4/5), Northern Research Basins Symposium/Workshop, 11th, Prudhoe Bay to Fairbanks, AK, Aug. 18-22, 1997. Selected papers, p.347-360, 15 refs.

Watersheds, Heat balance, Heat flux, Solar radiation, Water balance, Snow melting, Snow depth, Snow surface, Forest land, Climatic factors, Forecasting, Snow cover effect, Snowmelt, Japan—Hokkaido

## 53-4365

**Application of georadar for snow cover surveying.**

Sand, K., Bruland, O., *Nordic hydrology*, 1998, 29(4/5), Northern Research Basins Symposium/Workshop, 11th, Prudhoe Bay to Fairbanks, AK, Aug. 18-22, 1997. Selected papers, p.361-370, 11 refs.

Snow cover distribution, Snow surveys, Snow water equivalent, Data processing, Radar echoes, Snow depth, Snow density, Snow courses, Norway

## 53-4366

**Effects of frozen soils on groundwater recharge and discharge in granitic rock terrane of the Canadian Shield.**

Thorne, G.A., Laporte, J., Clarke, D., *Nordic hydrology*, 1998, 29(4/5), Northern Research Basins Symposium/Workshop, 11th, Prudhoe Bay to Fairbanks, AK, Aug. 18-22, 1997. Selected papers, p.371-384, 11 refs.

Ground water, Seepage, Wetlands, Frozen ground temperature, Frozen ground thermodynamics, Bedrock, Subsurface drainage, Frozen ground mechanics

## 53-4367

**Subpermafrost groundwater modelling in Ny-Ålesund, Svalbard.**

Booij, M., Leijnse, A., Haldorsen, S., Heim, M., Rueslåtten, H., *Nordic hydrology*, 1998, 29(4/5), Northern Research Basins Symposium/Workshop, 11th, Prudhoe Bay to Fairbanks, AK, Aug. 18-22, 1997. Selected papers, p.385-396, 14 refs.

Computerized simulation, Models, Subpermafrost ground water, Mapping, Permafrost thickness, Bedrock, Glacial geology, Water flow, Heat transfer, Norway—Svalbard

## 53-4368

**Sediment bound contaminants in a remote northern delta.**

Milburn, D., Prowse, T.D., *Nordic hydrology*, 1998, 29(4/5), Northern Research Basins Symposium/Workshop, 11th, Prudhoe Bay to Fairbanks, AK, Aug. 18-22, 1997. Selected papers, p.397-414, Refs. p.411-414.

Deltas, Alluvium, Sediment transport, River ice, Water pollution, Ice cover effect, Channels (waterways), Freezeup, Ice breakup, Soil pollution, Canada—Northwest Territories—Slave River Delta

## 53-4369

**Earth dams with concrete and reinforced-concrete core walls.**

IAgin, V.P., Davydov, I.A., Mik, V.V., Leimann, T.V., *Hydrotechnical construction*, Feb. 1998(Pub. Aug.98), 32(2), p.70-75, Translated from *Gidrotekhnicheskoe stroitel'stvo*. 11 refs.

Earth dams, Walls, Reinforced concretes, Cold weather performance, Design

## 53-4370

**Theoretical basis of designing concrete dams with consideration of construction operations.**

Erakhtin, B.M., *Hydrotechnical construction*, Feb. 1998(Pub. Aug.98), 32(2), p.82-88, Translated from *Gidrotekhnicheskoe stroitel'stvo*. 6 refs.

Design, Design criteria, Dams, Concrete structures, Winter concreting, Cold weather construction

## 53-4371

**Clay minerals in the sediments of Lake Baikal: a useful climate proxy.**

Yurelich, R., Melles, M., Sarata, B., Grobe, H., *Journal of sedimentary research A*, May 1999, 69(3), p.588-596, 40 refs.

Lacustrine deposits, Bottom sediment, Clay minerals, Soil dating, Stratigraphy, Drill core analysis, Paleoclimatology, Russia—Baykal, Lake

## 53-4372

**Compositional variations and provenance of Triassic sandstones from the Barents Shelf.**

Mørk, M.B.E., *Journal of sedimentary research A*, May 1999, 69(3), p.690-710, Refs. p.704-706.

Marine geology, Marine deposits, Bottom sediment, Mineralogy, Sea level, Geological surveys, Stratigraphy, Geochronology, Barents Sea



53-4373

Newly discovered cap carbonate above Varanger-age glacial deposits in Newfoundland, Canada.

Myrow, P.M., Kaufman, A.J., *Journal of sedimentary research A*, May 1999, 69(3), p.784-793, 74 refs.

Glacial geology, Glacial deposits, Marine geology, Marine deposits, Bottom sediment, Glaciation, Sea level, Tectonics, Continental drift, Geochronology, Canada—Newfoundland—Avalon Peninsula

53-4374

Hartree-Fock and DFT calculations of quadrupole coupling constants in water clusters and ice.

Alfredsson, M., Hermansson, K., *Chemical physics*, Apr. 1, 1999, 242(2), p.161-175, 59 refs.

Water structure, Molecular structure, Molecular energy levels, Hydrogen bonds, High pressure ice, Ice crystal structure

53-4375

Krasnoyarsk Hydroelectric Station: 30 years in operation.

Boiarskii, V.M., Grigor'ev, I.U.A., Kolmogorov, V.V., Aleksandrovskaya, E.K., *Hydrotechnical construction*, Aug. 1997(Pub. Feb.98), 31(8), p.464-467, Translated from *Gidrotekhnicheskoe stroitel'stvo*.

Electric power, Cold weather operation, Design, Hydraulic structures, Russia—Krasnoyarsk

53-4376

Construction of the Vilyuy-3 hydroelectric station.

Tsvik, A.M., Sherman, M.M., Toloshinov, A.V., *Hydrotechnical construction*, Aug. 1997(Pub. Feb.98), 31(8), p.484-488, Translated from *Gidrotekhnicheskoe stroitel'stvo*.

Electric power, Hydraulic structures, Design, Design criteria, Cold weather performance, Cold weather construction, Russia—Vilyuy River

53-4377

Underground structures.

Kuznetsov, R.I.A., Gevirts, G.I.A., *Hydrotechnical construction*, Aug. 1997(Pub. Feb.98), 31(8), p.505-512, Translated from *Gidrotekhnicheskoe stroitel'stvo*.

Electric power, Hydraulic structures, Underground facilities, Subsurface structures, Design, Cold weather construction, Cold weather performance, Reinforced concretes, Tunnels, Russia—Kolyma River

53-4378

Experimental measurement and calculation of the thermal conductivity of clay-and-polystyrene-filled concretes.

Ivanov, V.A., Stepanov, A.V., Timofeev, A.M., *Journal of engineering physics and thermophysics*, July-Aug. 1998(Pub. Feb.99), 71(4), p.727-730, Translated from *Inzhenerno-fizicheskii zhurnal*. 9 refs.

Thermal conductivity, Cold weather performance, Mathematical models, Lightweight concretes, Thermal insulation, Polymers, Concrete admixtures, Russia—Far North

53-4379

Ozone measurements in the European Arctic during the ARCTOC 1995 campaign.

Lorenzen-Schmidt, H., et al, *Tellus*, Nov. 1998, 50B(5), p.416-429, 21 refs.

Polar atmospheres, Atmospheric composition, Ozone, Air masses, Temperature inversions, Norway—Svalbard

53-4380

Ozone and C<sub>2</sub>-C<sub>5</sub> hydrocarbon observations in the marine boundary layer between 45°S and 77°S.

Gros, V., et al, *Tellus*, Nov. 1998, 50B(5), p.430-448, Refs. p.445-448.

Ozone, Hydrocarbons, Polar atmospheres, Air pollution, Stratosphere, Air water interactions, Atmospheric composition, Atmospheric circulation, Antarctica—Ross Sea, New Zealand

53-4381

Analysis of the growth of nucleation mode particles observed in boreal forest.

Kulmala, M., Toivonen, A., Mäkelä, J.M., Laaksonen, A., *Tellus*, Nov. 1998, 50B(5), p.449-462, 31 refs.

Taiga, Forest land, Forest ecosystems, Atmospheric composition, Air pollution, Aerosols, Condensation nuclei, Finland

53-4382

Characteristics of modern atmospheric dust deposition in snow on the Penny Ice Cap, Baffin Island, Arctic Canada.

Zdanowicz, C.M., Zielinski, G.A., Wake, C.P., *Tellus*, Nov. 1998, 50B(5), p.506-520, 52 refs.

Polar atmospheres, Atmospheric circulation, Atmospheric composition, Dust, Scavenging, Snow composition, Snow ice interface, Snow impurities, Snow samplers, Ice dating, Canada—Northwest Territories—Baffin Island

53-4383

Multilingual vocabulary—snow and avalanches.

[Večjezični slovar—sneg in plazovi]

Segula, P., Ljubljana, Gorska reševalna služba pri Planinski zvezi Slovenije, 1995, 360p., In Slovenian, English, French, German, Italian and Spanish. 51 refs.

DLC GB2405.S44 1995

Dictionaries, Snow, Avalanches, Terminology

53-4384

Low-temperature chemistry of the atmosphere.

Moortgat, G.K., ed, Barnes, A.J., ed, Le Bras, G., ed, Sodeau, J.R., ed, North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I: Global environmental change, Vol.21, Berlin, Springer-Verlag, 1994, 544p., Refs. passim.

Based on lectures presented at the NATO Advanced Study Institute on Low-Temperature Chemistry of the Atmosphere, Maratea, Italy, Aug. 29-Sep. 11, 1993. For individual papers see 49-3228 through 49-3238 and 53-4385 through 53-4395.

DLC QC879.6.L69 1994

Atmospheric composition, Cloud physics, Ozone, Polar atmospheres, Polar stratospheric clouds, Aerosols, Heterogeneous nucleation, Photochemical reactions

53-4385

Atmospheric chemistry: introduction.

Wayne, R.P., Low-temperature chemistry of the atmosphere. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.21. Edited by G.K. Moortgat, A.J. Barnes, G. Le Bras, and J.R. Sodeau, Berlin, Springer-Verlag, 1994, p.1-20, 19 refs.

DLC QC879.6.L69 1994

Atmospheric composition, Air pollution, Ozone, Photochemical reactions, Planetary environments, Atmospheric physics, Global warming

53-4386

Clouds, rain and aerosols.

Warneck, P., Low-temperature chemistry of the atmosphere. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.21. Edited by G.K. Moortgat, A.J. Barnes, G. Le Bras, and J.R. Sodeau, Berlin, Springer-Verlag, 1994, p.49-68, 22 refs.

DLC QC879.6.L69 1994

Atmospheric composition, Cloud physics, Aerosols, Supersaturation, Condensation nuclei, Homogeneous nucleation, Heterogeneous nucleation, Precipitation (meteorology), Rain

53-4387

Gas phase homogeneous kinetics.

Golden, D.M., Low-temperature chemistry of the atmosphere. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.21. Edited by G.K. Moortgat, A.J. Barnes, G. Le Bras, and J.R. Sodeau, Berlin, Springer-Verlag, 1994, p.69-92, 29 refs.

DLC QC879.6.L69 1994

Atmospheric composition, Homogeneous nucleation, Molecular structure, Molecular energy levels, Phase transformations, Mathematical models

53-4388

Laboratory kinetics at low temperature.

Le Bras, G., Low-temperature chemistry of the atmosphere. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.21. Edited by G.K. Moortgat, A.J. Barnes, G. Le Bras, and J.R. Sodeau, Berlin, Springer-Verlag, 1994, p.93-110, 18 refs.

DLC QC879.6.L69 1994

Atmospheric composition, Ozone, Molecular structure, Molecular energy levels, Low temperature research

53-4389

Atmospheric photochemistry and spectroscopy.

Weaver, A., Ravishankara, A.R., Low-temperature chemistry of the atmosphere. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.21. Edited by G.K. Moortgat, A.J. Barnes, G. Le Bras, and J.R. Sodeau, Berlin, Springer-Verlag, 1994, p.111-145, 30 refs.

DLC QC879.6.L69 1994

Atmospheric composition, Photochemical reactions, Ozone, Lidar, Molecular structure, Molecular energy levels

53-4390

Aqueous solution chemistry.

Warneck, P., Low-temperature chemistry of the atmosphere. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.21. Edited by G.K. Moortgat, A.J. Barnes, G. Le Bras, and J.R. Sodeau, Berlin, Springer-Verlag, 1994, p.175-196, 27 refs.

DLC QC879.6.L69 1994

Atmospheric composition, Cloud physics, Cloud droplets, Condensation nuclei, Liquid phases, Molecular structure, Molecular energy levels

53-4391

Surface chemistry.

Chesters, M.A., Horn, A.B., Low-temperature chemistry of the atmosphere. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.21. Edited by G.K. Moortgat, A.J. Barnes, G. Le Bras, and J.R. Sodeau, Berlin, Springer-Verlag, 1994, p.219-233, 17 refs.

DLC QC879.6.L69 1994

Atmospheric composition, Ice vapor interface, Surface energy, Adsorption, Molecular structure, Molecular energy levels

53-4392

Chemistry in sulfate aerosols.

Ravishankara, A.R., Hanson, D.R., Low-temperature chemistry of the atmosphere. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.21. Edited by G.K. Moortgat, A.J. Barnes, G. Le Bras, and J.R. Sodeau, Berlin, Springer-Verlag, 1994, p.287-306, 30 refs.

DLC QC879.6.L69 1994

Atmospheric composition, Polar stratospheric clouds, Cloud physics, Aerosols, Ice nuclei, Heterogeneous nucleation, Ozone

53-4393

Cryogenic sampling techniques.

Moortgat, G.K., Griffith, D.W.T., Low-temperature chemistry of the atmosphere. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.21. Edited by G.K. Moortgat, A.J. Barnes, G. Le Bras, and J.R. Sodeau, Berlin, Springer-Verlag, 1994, p.389-419, 63 refs.

DLC QC879.6.L69 1994

Atmospheric composition, Stratosphere, Balloons, Meteorological instruments, Cryogenics, Chemical analysis

53-4394

**Global tropospheric chemistry.**

Crutzen, P.J., Low-temperature chemistry of the atmosphere. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.21. Edited by G.K. Moortgat, A.J. Barnes, G. Le Bras, and J.R. Sodeau, Berlin, Springer-Verlag, 1994, p.465-498, 55 refs.

DLC QC879.6.L69 1994

Atmospheric composition, Atmospheric circulation, Air pollution, Photochemical reactions, Ozone, Global warming

53-4395

**Modelling the chemistry and micro-physics of the cold stratosphere.**

Peter, T., Crutzen, P.J., Low-temperature chemistry of the atmosphere. North Atlantic Treaty Organization. Advanced Science Institutes. NATO ASI Series I, Vol.21. Edited by G.K. Moortgat, A.J. Barnes, G. Le Bras, and J.R. Sodeau, Berlin, Springer-Verlag, 1994, p.499-530, 45 refs.

DLC QC879.6.L69 1994

Atmospheric composition, Atmospheric circulation, Stratosphere, Polar stratospheric clouds, Cloud physics, Global warming, Mathematical models, Computerized simulation

53-4396

**Glacier hydrology and hydrochemistry.**

Sharp, M., ed, Richards, K.S., ed, Tranter, M., ed, Advances in hydrological processes, Chichester, UK, John Wiley & Sons Ltd., 1998, 342p., Refs. passim. For individual papers see 49-3708, 50-6083 through 50-6092, 51-4823, 51-4825, 51-4830, 52-5642 through 52-5643 and 53-1050.

DLC GB2404.G54 1998

Hydrology, Glaciology, Water chemistry, Drainage, Snow hydrology, Meltwater, Glacial hydrology, Runoff, Subglacial drainage, Subglacial observations, Ablation, Mountain glaciers, Boreholes

53-4397

**Risk assessment in cold environment.**

Holmér, I., *Barents*, 1998, 1(3), p.77-79,93-96, In English and Russian. 16 refs.

Human factors, Cold stress, Health, Cold weather survival, Safety, Wind chill

53-4398

**Work in the cold: a review of Russian experience in the North.**

Chashchin, V., *Barents*, 1998, 1(3), p.80-82,97-99, In English and Russian. 4 refs.

Human factors, Cold stress, Health, Cold weather survival, Safety, Labor factors, Temperature effects, Russia—Far North

53-4399

**Dual role of skeletal muscles in the cold.**

Meigal, A.IU., *Barents*, 1998, 1(3), p.82-83,100-101, In English and Russian. 8 refs.

Health, Human factors, Cold weather survival, Labor factors, Temperature effects

53-4400

**Human performance in cold.**

Rintamäki, H., *Barents*, 1998, 1(3), p.84-85,101-102, In English and Russian. 6 refs.

Health, Safety, Human factors, Labor factors, Clothing, Cold weather performance, Temperature effects

53-4401

**Heart rate variability method for estimating the response of the human organism in cold: a pilot experiment by Russian "Kardioanalizator VR" in the climatic chamber of ORIOH.**

Vlassova, E., Chernouss, S., Vinogradov, A., Rintamäki, H., *Barents*, 1998, 1(3), p.88-90,103-104, In English and Russian. 7 refs.

Health, Safety, Human factors, Cold stress, Low temperature tests, Measuring instruments, Temperature effects

53-4402

**Wind and cold have a joint effect on cooling.**

Anttonen, H., Hiltunen, E., *Barents*, 1998, 1(3), p.90-92,105-107, In English and Russian.

Health, Cold stress, Human factors, Wind chill, Labor factors, Clothing, Wind factors, Thermal insulation, Frostbite, Temperature effects

53-4403

**Fate of <sup>15</sup>N-labelled fertilizer applied to corn grown on different soil types.**

Tran, T.S., Giroux, M., *Canadian journal of soil science*, Nov. 1998, 78(4), p.597-605, With French summary. 40 refs.

Agriculture, Soil chemistry, Soil profiles, Precipitation (meteorology), Snow accumulation, Nutrient cycle, Snowmelt, Environmental impact, Leaching, Canada—Quebec

53-4404

**Comparison of porosity in a Chernozem clay loam soil under long-term conventional tillage and no-till.**

Miller, J.J., Kokko, E.G., Kozub, G.C., *Canadian journal of soil science*, Nov. 1998, 78(4), p.619-629, With French summary. 47 refs.

Agriculture, Chernozem, Porosity, Soil water, Microstructure, Loams, Freeze thaw cycles, Canada—Alberta

53-4405

**Runoff and sediment yield from snowmelt and rainfall as influenced by forage type and grazing intensity.**

Gill, S.I., Naeth, M.A., Chanasyk, D.S., Baron, V.S., *Canadian journal of soil science*, Nov. 1998, 78(4), p.699-706, With French summary. 32 refs.

Snowmelt, Runoff, Grazing, Soil erosion, Soil conservation, Rain, Sediments, Biomass, Litter, Simulation, Grasses, Canada—Alberta

53-4406

**Measurement of ice growth and melt in the Labrador pack ice.**

Belliveau, D.J., Tang, C.L., Mahon, A.M., *International journal of offshore and polar engineering*, Mar. 1999, 9(1), p.62-67, 3 refs.

Ice surveys, Ice conditions, Ice cover thickness, Thickness gages, Telemetering equipment, Data transmission, Pack ice, Canada—Labrador

53-4407

**Application of the pivot point on the FCP diagram to low-temperature fatigue of materials.**

Duan, M.L., Li, J.C.M., Li, J., *International journal of offshore and polar engineering*, Mar. 1999, 9(1), p.68-72, 18 refs. For another version see 51-5743.

Offshore structures, Steel structures, Steels, Low temperature tests, Cold stress, Fatigue (materials), Crack propagation, Mathematical models

53-4408

**Threat of the snow avalanches. [Ogroženost zaradi snežnih plazov]**

Gams, I., Naravne nesreče v Sloveniji kot naša ogroženost (Natural disasters in Slovenia as a threat), edited by I. Gams, Ljubljana, Geografski inštitut Antona Melika Znanstvenoraziskovalnega centra Slovenske akademije znanosti in umetnosti, 1983, p.75-82, In Slovenian with English summary. 3 refs.

DLC GB5011.67.N37 1983

Avalanches, Avalanche protection, Countermeasures, Avalanche forecasting, Slovenia—Alps

53-4409

**Threat of the freezing and frost. [Nevarnost pozebe in mraza]**

Zrnc, C., Turk, M., Naravne nesreče v Sloveniji kot naša ogroženost (Natural disasters in Slovenia as a threat), edited by I. Gams, Ljubljana, Geografski inštitut Antona Melika Znanstvenoraziskovalnega centra Slovenske akademije znanosti in umetnosti, 1983, p.83-93, In Slovenian with English summary. 20 refs.

DLC GB5011.67.N37 1983

Agriculture, Air temperature, Plant physiology, Frost resistance, Plant tissues, Wind factors, Advection, Evaporation, Temperature effects, Damage, Frost action, Slovenia

53-4410

**Climatic disasters, their frequency and effects in the Slovene forests. [Ujme, njihova pogostost in škoda v slovenskih gozdovih]**

Bleiweis, S., Naravne nesreče v Sloveniji kot naša ogroženost (Natural disasters in Slovenia as a threat), edited by I. Gams, Ljubljana, Geografski inštitut Antona Melika Znanstvenoraziskovalnega centra Slovenske akademije znanosti in umetnosti, 1983, p.101-106, In Slovenian with English summary. 29 refs.

DLC GB5011.67.N37 1983

Damage, Forest strips, Glaze, Snow cover effect, Wind factors, Trees (plants), Ice storms, Ice loads, Frost action, Slovenia

53-4411

**Intensive glaze frosts in Slovenia. [Zledne ujme v Sloveniji]**

Radinja, D., Naravne nesreče v Sloveniji kot naša ogroženost (Natural disasters in Slovenia as a threat), edited by I. Gams, Ljubljana, Geografski inštitut Antona Melika Znanstvenoraziskovalnega centra Slovenske akademije znanosti in umetnosti, 1983, p.107-115, In Slovenian with English summary. 26 refs.

DLC GB5011.67.N37 1983

Glaze, Damage, Ice storms, Frost action, Agriculture, Ice loads, Trees (plants), Power line icing, Topographic effects, Transmission lines, Slovenia

53-4412

**Threat of hail in Slovenia. [Ogroženost Slovenije zaradi toče]**

Kranjc, A., Naravne nesreče v Sloveniji kot naša ogroženost (Natural disasters in Slovenia as a threat), edited by I. Gams, Ljubljana, Geografski inštitut Antona Melika Znanstvenoraziskovalnega centra Slovenske akademije znanosti in umetnosti, 1983, p.116-125, In Slovenian with English summary. 4 refs.

DLC GB5011.67.N37 1983

Hail, Hailstone growth, Damage, Agriculture, Economic analysis, Slovenia

53-4413

**Glaciotectionic elements in the relief and geological structure near Łódź, Central Poland. [Elementy glacitektoniczne w budowie geologicznej i rzeźbie podbódkkiej części środkowej Polski]**

Klatkova, H., *Łódzkie Towarzystwo Naukowe. Acta geographica Łodziensia*, 1996, No.72, Przejawy glacitektoniki w Polsce środkowej (Glaciotectionic symptoms in central Poland), edited by H. Klatkova, p.7-103, In Polish with English summary. 62 refs.

DLC GB588.68.P7P78 1996

Tectonics, Geomorphology, Structural analysis, Glacial deposits, Glacial geology, Glacial till, Quaternary deposits, Topographic features, Pleistocene, Clays, Glacial erosion, Deformation, Paleoclimatology, Poland—Łódź

53-4414

**Examples of glaciotectionic structures in Celestynów near Łódź. [Przykłady struktur glacitektonicznych w Celestynowie koło Łodzi]**

Petera, J., *Łódzkie Towarzystwo Naukowe. Acta geographica Łodziensia*, 1996, No.72, Przejawy glacitektoniki w Polsce środkowej (Glaciotectionic symptoms in central Poland), edited by H. Klatkova, p.105-151, In Polish with English summary. 27 refs.

DLC GB588.68.P7P78 1996

Tectonics, Geomorphology, Glacial deposits, Glacial erosion, Glacial geology, Structural analysis, Topographic features, Deformation, Paleoclimatology, Poland—Łódź

53-4415

Remarks on the formation and deformation mechanisms of glaciotectionic structures of the Warta Hills. [Uwagi dotyczace wykształcenia i mechanizmów deformacji struktur glaciotektonicznych w Pagórkach Warciańskich]

Zabba, M., *Lodzkie Towarzystwo Naukowe. Acta geographica Lodziana*, 1996, No.72, Przejawy glaciotektoniki w Polsce środkowej (Glaciotectionic symptoms in central Poland), edited by H. Klatkova, p.153-210, In Polish with English summary. 40 refs.

DLC GB588.68.P7P78 1996

Tectonics, Geomorphology, Glacial deposits, Glacial erosion, Glacial geology, Deformation, Moraines, Structural analysis, Paleoclimatology, Quaternary deposits, Poland

53-4416

General setting for halo theory.

Tape, W., Können, G.P., *Applied optics*, Mar. 20, 1999, 38(9), p.1552-1625, 20 refs.

Ice optics, Ice crystal optics, Ice crystal structure, Atmospheric physics, Optical phenomena, Theories

53-4417

How big should hexagonal ice crystals be to produce halos?

Mishchenko, M.I., Macke, A., *Applied optics*, Mar. 20, 1999, 38(9), p.1626-1629, 37 refs.

Ice crystal structure, Ice crystal size, Ice crystal optics, Cloud physics, Atmospheric physics, Optical phenomena

53-4418

Design and production of ship engine rooms safe from fire. Project final report. [Paloturvallisuusstiedon soveltaminen laivan konehuoneen suunnitteluun ja käyttöön (PASOK). Projektin loppuraportti]

Häkkinen, P., Nurmi, T., Pyykönen, O., Varoma, M., *Helsinki University of Technology. Ship Laboratory. Report*, 1998, M-234, 132p., In Finnish. Refs. p.128-132.

Ships, Engines, Fires, Accidents, Safety, Design criteria

53-4419

Statistical summary of accidental ship groundings on shore or on the seafloor in the waters of Finland. [Tilastoyhteenveto Suomen aluevesillä tapahtuneista karilleajoista ja pohjakosketuksista]

Kaila, J., Luukkonen, J., *Helsinki University of Technology. Ship Laboratory. Report*, 1998, M-233, 47p. + appends., In Finnish. 8 refs.

Ships, Safety, Navigation, Accidents, Statistical analysis, Baltic Sea, Finland

53-4420

Strength analysis of laser welded joints in crane-hoisted bulkheads. [Nosturirakenteen pääkannattimissa toteutetun laserhitsatun limiilitoksen lujuusanalyysi]

Remes, H., Kujala, P., *Helsinki University of Technology. Ship Laboratory. Report*, 1997, M-229, 50p., In Finnish. 3 refs.

Ships, Steel structures, Supports, Joints (junctions), Welding, Lasers, Bearing strength, Strain tests

53-4421

Cruise report. M/S *Sigyn*: Swedish nuclear waste transport ship well worth seeing, from the Lovisa Nuclear Power Plant, Aug. 18, 1997. [Matkakertomus. M/S *Sigyn*: tutustuminen ruotsalaiseen ydinjätteiden kuljetusalukseen Lovissassa 18.8.1997]

Jalonen, R., Hellevara, M., *Helsinki University of Technology. Ship Laboratory. Report*, 1997, M-228, 14p. + appends., In Finnish with English and Swedish versions included as appendices. 7 refs.

Ships, Radioactive wastes, Waste disposal, Cargo, Marine transportation, Logistics

53-4422

Introduction to wave generation by ships. [Johdatus laivan aallonmuodostukseen]

Matusiak, J., *Helsinki University of Technology. Ship Laboratory. Report*, 1997, M-227, 50p., In Finnish. 24 refs.

Ships, Hydrodynamics, Ocean waves, Water waves, Wave propagation, Cavitation, Mathematical models

53-4423

Strength tests on alternative coatings for corrugated core steel sandwich panels. [Esiteivutettujen teräskerroslevyrakenteen pinnoltusvaihtoehtojen lujuuskokeet]

Kujala, P., Marttila, P., *Helsinki University of Technology. Ship Laboratory. Report*, 1997, M-225, 29p. + appends., In Finnish.

Ships, Floors, Steel structures, Protective coatings, Waterproofing, Weatherproofing, Strain tests, Hardness tests

53-4424

Ship technology at the Helsinki University of Technology: strategic planning update. [Laivateknillikka Teknillisessä korkeakoulussa: strategiasuunnitelman päivitys]

Varsta, P., Riska, K., Häkkinen, P., Matusiak, J., Kujala, P., *Helsinki University of Technology. Ship Laboratory. Report*, 1997, M-222, 18p., In Finnish.

Ships, Research projects, Organizations, Education

53-4425

Ship engines. [Laivan kuljetuskoneisto]

Häkkinen, P., *Helsinki University of Technology. Ship Laboratory. Report*, 1997, M-220, 323p., In Finnish. Numerous refs. passim.

Ships, Engines, Machinery, Propellers, Design criteria

53-4426

Freezing of soil masses as an aid to engineering construction.

Donohoe, J.F., Maishman, D., Schmall, P.C., Soil improvement for big digs, Boston, MA, Oct. 18-21, 1998. Sessions of Geo-Congress 98. Proceedings. Edited by A. Maher and D.S. Yang. Geotechnical Special Publication No.81, Reston, VA, American Society of Civil Engineers, 1998, p.149-160, 1 ref.

DLC TA710.A1S5227 1998

Soil freezing, Artificial freezing, Soil stabilization, Frozen ground strength, Shaft sinking, Tunneling (excavation), United States—Michigan—Detroit, United States—Louisiana, United States—Massachusetts—Boston

53-4427

Freeze-thaw effects on Boston blue clay.

Swan, C., Greene, C., Soil improvement for big digs, Boston, MA, Oct. 18-21, 1998. Sessions of Geo-Congress 98. Proceedings. Edited by A. Maher and D.S. Yang. Geotechnical Special Publication No.81, Reston, VA, American Society of Civil Engineers, 1998, p.161-176, 6 refs.

DLC TA710.A1S5227 1998

Railroad tunnels, Tunneling (excavation), Soil freezing, Artificial freezing, Soil stabilization, Clay soils, Freeze thaw tests, Frozen ground strength, Frost resistance, United States—Massachusetts—Boston

53-4428

Occupational health care and its development in the Barents region.

Hassi, J., *Barents*, 1998, 1(2), p.46-47,59-60, In English and Russian.

Health, Human factors, Safety, Cold weather survival, Norway, Russia, Finland, Sweden

53-4429

European river activity and climatic change during the Lateglacial and early Holocene. Palaeoclimate Research. Vol.14. ESF Project "European palaeoclimate and man". Special issue No.9, Mainz, Akademie der Wissenschaften und der Literatur, 1995, 226p., Refs. passim. Sponsored by the European Science Foundation (ESF). For individual papers see 53-4430 through 53-4444.

DLC GB1281.E93 1995

River basins, River flow, Channels (waterways), Floodplains, Alluvium, Water erosion, Sediment transport, Terraces, Soil dating, Stratigraphy, Geomorphology, Paleoclimatology

53-4430

Postglacial river activity and climate: state of the art and future prospects.

Vandenbergh, J., European river activity and climatic change during the Lateglacial and early Holocene. Edited by B. Frenzel. Palaeoclimate Research. Vol.14. ESF Project "European palaeoclimate and man". Special issue No.9, Mainz, Akademie der Wissenschaften und der Literatur, 1995, p.1-9, With German summary. 29 refs.

DLC GB1281.E93 1995

River basins, River flow, Floodplains, Alluvium, Sediment transport, Geomorphology, Paleoclimatology, Europe

53-4431

Role of rivers in palaeoclimatic reconstruction.

Vandenbergh, J., European river activity and climatic change during the Lateglacial and early Holocene. Edited by B. Frenzel. Palaeoclimate Research. Vol.14. ESF Project "European palaeoclimate and man". Special issue No.9, Mainz, Akademie der Wissenschaften und der Literatur, 1995, p.11-19, With German summary. 27 refs.

DLC GB1281.E93 1995

River basins, River flow, Alluvium, Sediment transport, Geomorphology, Paleoclimatology, Europe

53-4432

Lateglacial-Holocene sedimentation in lowland temperate environments: floodplain metamorphosis and multiple channel systems.

Brown, A.G., European river activity and climatic change during the Lateglacial and early Holocene. Edited by B. Frenzel. Palaeoclimate Research. Vol.14. ESF Project "European palaeoclimate and man". Special issue No.9, Mainz, Akademie der Wissenschaften und der Literatur, 1995, p.21-35, With French summary. 32 refs.

DLC GB1281.E93 1995

River basins, River flow, Floodplains, Alluvium, Sediment transport, Channels (waterways), Vegetation factors, Geomorphology, Stratigraphy, Paleoclimatology, United Kingdom

53-4433

Role of carbonate precipitation in the early Holocene palaeohydrology of a chalkland river valley, southern England.

Neumann, H.S., Harris, C., European river activity and climatic change during the Lateglacial and early Holocene. Edited by B. Frenzel. Palaeoclimate Research. Vol.14. ESF Project "European palaeoclimate and man". Special issue No.9, Mainz, Akademie der Wissenschaften und der Literatur, 1995, p.37-50, With German summary. 15 refs.

DLC GB1281.E93 1995

River basins, Paludification, Swamps, Alluvium, Bottom sediment, Stratigraphy, Soil dating, Paleobotany, Paleoclimatology, Paleoclimatology, United Kingdom—England

53-4434

**Lateglacial and early Holocene river activity in lowland Britain.**

Rose, J., European river activity and climatic change during the Lateglacial and early Holocene. Edited by B. Frenzel. *Palaeoclimate Research*. Vol.14. ESF Project "European palaeoclimate and man". Special issue No.9, Mainz, Akademie der Wissenschaften und der Literatur, 1995, p.51-74, With German summary. Refs. p.72-74.

DLC GB1281.E93 1995

River basins, River flow, Alluvium, Water erosion, Channels (waterways), Sediment transport, Geomorphology, Soil dating, Stratigraphy, Paleoclimatology, United Kingdom—England

53-4435

**Place of the Vistula river valley in the late Vistulian-early Holocene evolution of the European valleys.**

Starkel, L., European river activity and climatic change during the Lateglacial and early Holocene. Edited by B. Frenzel. *Palaeoclimate Research*. Vol.14. ESF Project "European palaeoclimate and man". Special issue No.9, Mainz, Akademie der Wissenschaften und der Literatur, 1995, p.75-88, With German summary. Refs. p.85-88.

DLC GB1281.E93 1995

River basins, River flow, Floodplains, Alluvium, Sediment transport, Channels (waterways), Geomorphology, Stratigraphy, Paleoclimatology, Europe

53-4436

**Lateglacial and Holocene evolution of some river valleys in Byelorussia.**

Kalicki, T., European river activity and climatic change during the Lateglacial and early Holocene. Edited by B. Frenzel. *Palaeoclimate Research*. Vol.14. ESF Project "European palaeoclimate and man". Special issue No.9, Mainz, Akademie der Wissenschaften und der Literatur, 1995, p.89-100, With German summary. 24 refs.

DLC GB1281.E93 1995

River basins, River flow, Channels (waterways), Water erosion, Alluvium, Stratigraphy, Geomorphology, Paleoclimatology, Belarus

53-4437

**Fluvial activity in Estonia in the Lateglacial and early Holocene.**

Raukas, A., Middel, A., European river activity and climatic change during the Lateglacial and early Holocene. Edited by B. Frenzel. *Palaeoclimate Research*. Vol.14. ESF Project "European palaeoclimate and man". Special issue No.9, Mainz, Akademie der Wissenschaften und der Literatur, 1995, p.101-112, With German summary. 28 refs.

DLC GB1281.E93 1995

Glaciation, Glacial lakes, Isostasy, Sea level, River basins, River flow, Channels (waterways), Alluvium, Water erosion, Geomorphology, Paleoclimatology, Estonia

53-4438

**Development of Lithuanian river valleys in the Lateglacial and Holocene.**

Dvareckas, V., European river activity and climatic change during the Lateglacial and early Holocene. Edited by B. Frenzel. *Palaeoclimate Research*. Vol.14. ESF Project "European palaeoclimate and man". Special issue No.9, Mainz, Akademie der Wissenschaften und der Literatur, 1995, p.113-121, With German summary. 8 refs.

DLC GB1281.E93 1995

Glaciation, Glacial lakes, River basins, River flow, Alluvium, Water erosion, Channels (waterways), Terraces, Floodplains, Geomorphology, Paleoclimatology, Lithuania

53-4439

**Climatic change and fluvial dynamics of the Maas during the late Weichselian and early Holocene.**

Kasse, K., Vandenberghe, J., Bohncke, S., European river activity and climatic change during the Lateglacial and early Holocene. Edited by B. Frenzel. *Palaeoclimate Research*. Vol.14. ESF Project "European palaeoclimate and man". Special issue No.9, Mainz, Akademie der Wissenschaften und der Literatur, 1995, p.123-150, With German summary. Refs. p.147-150.

DLC GB1281.E93 1995

River basins, River flow, Channels (waterways), Alluvium, Water erosion, Terraces, Floodplains, Eolian soils, Sediment transport, Geomorphology, Paleoclimatology, Netherlands

53-4440

**Late Weichselian and Holocene river channel changes of the rivers Rhine and Meuse in the Netherlands (Land van Maas en Waal).**

Berendsen, H., Hoek, W., Schorn, E., European river activity and climatic change during the Lateglacial and early Holocene. Edited by B. Frenzel. *Palaeoclimate Research*. Vol.14. ESF Project "European palaeoclimate and man". Special issue No.9, Mainz, Akademie der Wissenschaften und der Literatur, 1995, p.151-171, With German summary. Refs. p.169-171.

DLC GB1281.E93 1995

River basins, River flow, Channels (waterways), Alluvium, Water erosion, Sediment transport, Floodplains, Soil dating, Geomorphology, Paleoclimatology, Netherlands—Meuse River, Netherlands—Rhine River

53-4441

**Changes in fluvial dynamics in the central Po Plain (Italy) from late Pleistocene to early Holocene.**

Cremaschi, M., Marchetti, M., European river activity and climatic change during the Lateglacial and early Holocene. Edited by B. Frenzel. *Palaeoclimate Research*. Vol.14. ESF Project "European palaeoclimate and man". Special issue No.9, Mainz, Akademie der Wissenschaften und der Literatur, 1995, p.173-190, With French summary. 30 refs.

DLC GB1281.E93 1995

River basins, River flow, Floodplains, Channels (waterways), Alluvium, Sediment transport, Water erosion, Soil dating, Geomorphology, Paleoclimatology, Italy—Po River, Italy—Enza River, Italy—Secchia River, Italy—Reno River

53-4442

**Lateglacial and early Holocene geomorphology of the upper Seine river valley.**

Roblin-Jouve, A., European river activity and climatic change during the Lateglacial and early Holocene. Edited by B. Frenzel. *Palaeoclimate Research*. Vol.14. ESF Project "European palaeoclimate and man". Special issue No.9, Mainz, Akademie der Wissenschaften und der Literatur, 1995, p.191-203, With French summary. 14 refs.

DLC GB1281.E93 1995

River basins, River flow, Floodplains, Alluvium, Terraces, Soil dating, Geomorphology, Paleoclimatology, France—Seine River

53-4443

**River activity as a function of changing palaeoenvironmental conditions during the Lateglacial-Holocene period in Hungary.**

Gábris, G., European river activity and climatic change during the Lateglacial and early Holocene. Edited by B. Frenzel. *Palaeoclimate Research*. Vol.14. ESF Project "European palaeoclimate and man". Special issue No.9, Mainz, Akademie der Wissenschaften und der Literatur, 1995, p.205-212, With German summary. 25 refs.

DLC GB1281.E93 1995

River basins, River flow, Floodplains, Alluvium, Sediment transport, Terraces, Water erosion, Soil dating, Geomorphology, Paleoclimatology, Hungary

53-4444

**Constraints on the palaeoclimatic control of Lateglacial and early Holocene terrigenous deposits in the Czech Republic.**

Havlíček, P., European river activity and climatic change during the Lateglacial and early Holocene. Edited by B. Frenzel. *Palaeoclimate Research*. Vol.14. ESF Project "European palaeoclimate and man". Special issue No.9, Mainz, Akademie der Wissenschaften und der Literatur, 1995, p.213-222, With German summary. 18 refs.

DLC GB1281.E93 1995

River basins, River flow, Channels (waterways), Floodplains, Alluvium, Eolian soils, Water erosion, Sediment transport, Soil dating, Stratigraphy, Geomorphology, Paleoclimatology, Czech Republic

53-4445

**Estimating the risk of rainfall and snowmelt disastrous floods using physically-based models of river runoff generation.**

Kuchment, L.S., *International Association of Hydrological Sciences. IAHS publication*, 1997, No.239, Conference on Destructive Water: Water-Caused Natural Disasters, their Abatement and Control, Anaheim, CA, June 1996. Proceedings, p.95-100, 4 refs. Snow hydrology, Snowmelt, Precipitation (meteorology), River basins, Stream flow, Runoff forecasting, Flood forecasting, Statistical analysis, Russia

53-4446

**Succession on river alluvium in northern Alaska.**

Bliss, L.C., Cantlor, J.E., *American midland naturalist*, 1957, 58(2), p.452-469, 38 refs. Tundra vegetation, Plant ecology, Vegetation patterns, Revegetation, Rivers, Floodplains, Alluvium, United States—Alaska—North Slope

53-4447

**Mass balance, meteorological, ice motion, surface altitude, and runoff data at Gulkana Glacier, Alaska, 1994 balance year.**

March, R.S., *U.S. Geological Survey. Water-resources investigations report*, 1998, No.97-4251, 31p., 36 refs.

Glacier surveys, Glacier mass balance, Glacier oscillation, Glacier thickness, Glacier flow, Glacial hydrology, Glacial meteorology, Meltwater, Runoff, Stream flow, United States—Alaska—Gulkana Glacier

53-4448

**Verification of water-quality model to simulate effects of discharging treated wastewater during ice-cover conditions to the Red River of the North at Fargo, North Dakota, and Moorhead, Minnesota.**

Wesolowski, E.A., *U.S. Geological Survey. Water-resources investigations report*, 1996, No.95-4292, 20p., 3 refs.

Water treatment, Waste disposal, Sewage disposal, Stream flow, Water pollution, Water chemistry, River ice, Ice water interface, Ice cover effect, River flow, Computer programs, United States—North Dakota—Fargo, United States—Minnesota—Moorhead

53-4449

**Winter 98-99 roundup.**

Kellam, J., *Avalanche review*, Spring/Summer 1999, 17(6), p.1,4-7. Avalanches, Accidents, Avalanche forecasting, United States

53-4450

**Collapsible avalanche probe and probe-pole test.**

Toepfer, S., Morris, H., *Avalanche review*, Spring/Summer 1999, 17(6), p.8-9. Avalanches, Rescue equipment, Probes, Snow survey tools, Portable equipment

53-4451

**Weather and avalanches in Austria: a brief synopsis of the Austrian Alps.**

Höller, P., *Avalanche review*, Spring/Summer 1999, 17(6), p.10. Avalanches, Accidents, Snowfall, Meteorological data, Meteorological factors, Austria

53-4452

**European avalanches of 1998-99.**

Bachman, D., *Avalanche review*, Spring/Summer 1999, 17(6), p.11.

Avalanches, Accidents, Austria, Switzerland

53-4453

**Earth's cryosphere and global environmental change.**

Williams, R.S., Jr., Columbia Earth Institute. Distinguished Lectures on the Global Environment Series, Palisades, NY, Columbia University, Lamont-Doherty Earth Observatory, 1999, 20p., 50 refs. Prepared as a companion document for a lecture on Apr. 7, 1999.

Glaciation, Glacier oscillation, Paleoclimatology, Ice age theory, Global change

53-4454

**Miscellaneous information about glaciers.**

Williams, R.S., Jr., Ferrigno, J.G., Woods Hole, MA, U.S. Geological Survey, 1999, 7p., Unpublished list of selected publications including some web sites and some to be published.

Glaciology, Glacier surveys, Research projects, Bibliographies, Data processing

53-4455

**Clay barriers, chemical and mineralogical analyses.**

Inyang, H.I., Fang, H.Y., Choquette, M.R., Iskandar, I.K., MP 5361, *Encyclopedia of environmental analysis and remediation*, Vol.2, New York, Wiley, 1998, p.1158-1165, 12 refs.

DLC GE10.E49 1998

Waste disposal, Earth fills, Land reclamation, Linings, Clay soils, Soil analysis, Chemical analysis, Soil composition, Clay minerals, Mineralogy

53-4456

**Lab forms 6,000-mile education partnership.**

Darling, M., MP 5362, *Engineer update*, Apr. 1997, 21(4), p.4.

Research projects, Education, Organizations, Regional planning, United States—Alaska—Barrow

53-4457

**Roof moisture sensing system and method for determining presence of moisture in a roof structure.**

Yankielun, N.E., Flanders, S.N., MP 5363, *U.S. Patent Office. Patent*, Oct. 6, 1998, 6 col., USP-5,818,340, 14 refs.

Roofs, Leakage, Moisture meters, Moisture detection  
A roof moisture sensing system includes (1) a radio frequency pulse transmitter, (2) a moisture sensor disposed on a roof and (3) a radio receiver adapted to monitor resonance of the moisture sensor activated by a pulse transmitted by the pulse transmitter. The receiver is adapted to analyze the resonance of the sensor to determine the presence of moisture in the sensor. The transmitter and the receiver can be remote from the sensor and the roof.

53-4458

**Geosynthetic barriers to prevent poisoning of waterfowl.**

Henry, K.S., Stark, J.A., MP 5364, International Conference on Soil Mechanics and Foundation Engineering, 14th, Hamburg, Germany, Sep. 6-12, 1997. Proceedings, Rotterdam, A.A. Balkema, 1997, p.1819-1822, 9 refs.

Ponds, Water pollution, Bottom sediment, Explosives, Soil pollution, Land reclamation, Soil stabilization, Animals, Environmental protection, Geotextiles

The feasibility of using geosynthetics to cover contaminated pond sediments and prevent waterfowl access to them was studied. Geosynthetic barriers were placed in ponds, the water above them was vigorously stirred, and the barriers were loaded by dropping a mass onto them to determine their ability to retain sediment below them and withstand damage. The barriers reduced the amount of sediment resuspended during stir and loading tests by at least 30%, and sustained no damage. Thus, they can probably prevent waterfowl from accessing and eating toxic particles contained in the sediment below them.

53-4459

**Performance of water spread limiting and loose fill insulation: Federal Agency approved heat distribution systems.**

Phetteplace, G., Monaghan, S.K., Pedrick, G., MP 5365, International District Heating Association Annual Conference, 89th, San Antonio, TX, June 13-16, 1998. Proceedings, Washington, D.C., International District Heating Association, [1998], p.181-195, 9 refs.

Military facilities, Utilities, Heating, Heat transmission, Heat pipes, Heat loss, Underground pipelines, Pipeline insulation, Earth fills, Thermal insulation, Cost analysis, United States

The U.S. Army Cold Regions Research and Engineering Laboratory has conducted an in-depth field study of water spread limiting and loose fill insulation types of underground heat distribution systems at 20 sites throughout the U.S. This research originated with interest in the performance of Federal Agency prequalified underground heat distribution systems. The water spread limiting (WSL) system investigated has preinsulated pipe sections that are sealed on each end and uses a composite insulation with no air space between the insulation and casing. Adjacent pipe sections are joined by a coupling assembly that allows the pipe sections to expand and contract freely. The loose fill insulation (LFI) system investigated places an uninsulated pipe in formed trenches and fills the trench with a calcium carbonate powder insulation, covering it with a vapor barrier and backfilling. At each site, potential problem areas were identified using infrared imaging. The study excavated and instrumented 11 WLS installations and four LFI systems ranging from under one to 21 years of age. Estimates of heat losses based on field measurements and other observations are presented.

53-4460

**Condition assessment for buried heat distribution systems using infrared thermography.**

Phetteplace, G., Pedrick, G., Monaghan, S.K., MP 5366, International District Heating Association Annual Conference, 89th, San Antonio, TX, June 13-16, 1998. Proceedings, Washington, D.C., International District Heating Association, [1998], p.219-229, 12 refs.

Utilities, Heating, Heat transmission, Heat pipes, Heat loss, Underground pipelines, Soil temperature, Temperature measurement, Infrared photography, United States

It has been known for some time that infrared thermography could find problem areas on buried heat distribution systems, just as it has for roofs and electrical distribution systems. While such information is useful for locating areas of major failures, for planning purposes some quantification of the results from an infrared survey of major portions of a heat distribution system would be advantageous. Some recent progress has been made toward this end by two International Energy Agency District Heating projects in which the US Army Cold Regions Research and Engineering Laboratory (CRREL) has participated. The objective of these projects was to develop a method that would allow quantification of heat losses from the temperature profile of the ground's surface above the buried heat distribution pipeline. Basically, the method uses the integral of the temperature distribution at the ground's surface along with climatological and system data to arrive at an empirical estimate of the heat loss. Using this method, CRREL has conducted infrared surveys of two facilities. Results have been good, and the facilities have been provided with both heat loss estimates and prioritized replacement lists. This paper describes the "TX method," as it is called, and its use. Sample results from the surveys done to date are also presented.

53-4461

**Heat loss determination for district heating systems using surface temperature measurements.**

Phetteplace, G., MP 5367, *Technical University of Denmark, Lyngby. Department of Energy Engineering. [Report]*, Oct. 1998, ET-ES 98-13, 22p., 15 refs.

Utilities, Heating, Heat transmission, Heat pipes, Heat transfer, Heat loss, Underground pipelines, Soil temperature, Surface temperature, Temperature measurement, Infrared photography, Mathematical models, United States

It has been known for some time that surface temperature measurements via infrared thermography could find problem areas in the buried piping of district heating systems. While such information is useful for locating areas of major failures, for planning purposes some quantification of the results is needed. Some recent progress has been made towards this end by two International Energy Agency (IEA) District Heating projects. The objective of these projects was to develop a method that would allow quantification of heat losses from the temperature profile of the ground's surface above the buried heat distribution pipeline. Basically, the method uses the integral of the temperature distribution at the ground's surface along with climatological and system data to get an empirical estimate of the heat loss. The IEA projects developed and proposed several models that correlated heat loss from buried district heating pipes to the temperature distribution at the ground surface above those pipes. In each case the so called "TX" models were "empirically" determined by

fitting parameters to results obtained by detailed numerical simulations. These models were tested against field data obtained from test sites in Sweden, Denmark, Finland and the U.S. The investigators felt that within a limited range of parameter values and under appropriate conditions for the infrared measurements results could be expected to be within  $\pm 20\%$ . Using the proposed methods the US Army Cold Regions Research and Engineering Laboratory has conducted infrared surveys of two district heating systems. While in general the results of these studies have been useful, it was often necessary to extrapolate the input parameter values of the method beyond the range originally used in the simulations as well as the range defined by the experimental measurements. Thus, the confidence of the method could be improved by extending its known range of applicability. Some extensions to the original TX models were proposed. These extensions provided a form for the model that would appear to be more intuitive when basic heat transfer theory is considered. This report describes further potential improvements to the methods proposed by the earlier investigators based primarily on the heat transfer theory for buried line sources.

53-4462

**Testing of fiberglass composite bridge deck panels.**

Harik, I., et al, MP 5368, International Conference on Boundary Element Technology, 13th, 1999 (BETECH 99), incorporating Computational Methods and Testing for Engineering Integrity, Southampton, England, International Society for Boundary Elements, 1999, p.663-672, 3 refs.

Bridges, Composite materials, Plastics, Dynamic loads, Impact tests, Bearing tests, Strain tests, Design criteria

Experimental investigations are carried out on fiberglass composite bridge deck panels under a three-point bending test. A rectangular patch load, which represents the AASHTO standard HS25 truck wheel load, is applied at the center of each panel. The breadth of all panels is 36 in. The depths of the panels are 8.5 in, 9 in and 9.5 in. The span lengths of the panels are 86 in, 120 in and 144 in. The in-plane deformations and out-of-plane deflections are measured using strain gages and linear variable deflection transducers. The measured deflections of the panels under service load are compared with allowable deflection limits. The response of the panels under cyclic loading, the load at failure, and the deformability and mode of failure are reported. It is found that the fiberglass composite deck panels satisfy the allowable deflection criteria, and the factor of safety against collapse is greater than 6.5 for all panels.

53-4463

**Removing spring thaw load restrictions from low-volume roads: development of a reliable, cost-effective method.**

Kestler, M.A., Hanek, G., Truebe, M., Bolander, P., MP 5369, *Transportation research record*, 1999, No.1652, International Conference on Low-Volume Roads, 7th, Baton Rouge, LA, May 23-26, 1999, p.188-197, 15 refs.

Pavements, Thaw depth, Thaw weakening, Trafficability, Moisture meters, Moisture detection, Highway planning, Road maintenance, United States

Low-volume roads in areas of seasonal freezing are highly susceptible to damage from trafficking during spring thaw. To minimize pavement damage, many agencies and states impose load restrictions during periods in which damage is most likely to occur. However, the magnitude and duration of reduced or prohibited hauling vary widely among agencies, and an optimal balance between maximizing local economy and minimizing road damage is rarely achieved. The U.S. Department of Agriculture Forest Service and the U.S. Army Cold Regions Research and Engineering Laboratory are evaluating a quantitative technique for removing load restrictions by developing correlations between pavement stiffness and soil moisture. Laboratory tests of the moisture sensors showed them to be accurate and repeatable under adverse freeze-thaw cycling. Preliminary analysis of field data showed that permanently installed time domain reflectometry and radio frequency soil moisture sensors strategically located throughout the forest road network will provide an affordable method for quantitatively determining when to remove load restrictions. Load restriction practices are reviewed, economic ramifications on the forest industry are briefly discussed, and laboratory and field test programs conducted to monitor soil moisture and pavement stiffness are outlined. In addition, instrumentation used for the study is described, observations from one of four national forest pavement test sites are presented, and the ongoing research to develop a method to remove load restrictions is discussed.

53-4464

**Ice events in the St. Louis District.**

White, K.D., Mulherin, N.D., MP 5370, *U.S. Army Cold Regions Research and Engineering Laboratory. Ice engineering information exchange bulletin*, Feb. 1999, No.20, 4p., 10 refs.

River ice, Ice jams, Floods, Cost analysis, Data processing, United States—Missouri, United States—Illinois

53-4465

**Ice jams, winter 1996-97.**  
Peterson, E.K., Herrin, L., White, K.D., MP 5371, *U.S. Army Cold Regions Research and Engineering Laboratory. Ice engineering information exchange bulletin*, June 1998, No.18, 4p., 4 refs.  
River ice, Ice jams, Floods, Data processing, United States

53-4466

**Registration of RWR-Tetra-1 tetraploid Russian wildrye germplasm.**  
Jensen, K.B., Asay, K.H., Johnson, D.A., Horton, W.H., Palazzo, A.J., Chatterton, N.J., MP 5372, *Crop science*, 1998, Vol.38, p.1405, 5 refs.  
Grasses, Plants (botany), Introduced plants, Plant physiology, Plant tissues, Plant ecology, Agriculture

53-4467

**Proceedings. River ice management with a changing climate: dealing with extreme events.**  
Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999, Doering, J.C., ed, Winnipeg, University of Manitoba, 1999, 409p., Refs. passim.  
Organized by the Committee on River Ice Processes and the Environment (CRIPE), Canadian Geophysical Union, Hydrology Section. For individual papers see 53-4468 through 53-4498.  
River ice, Ice breakup, Ice jams, Ice forecasting, Ice control, Ice cover effect, Ice water interface, River flow, Flood forecasting, Flood control

53-4468

**Simple test for the suitability of equilibrium thickness.**  
Zufelt, J.E., MP 5373, Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. Proceedings. River ice management with a changing climate: dealing with extreme events. Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.1-14, 15 refs.  
River ice, Ice jams, Ice cover thickness, Ice cover strength, Ice cover effect, Ice friction, Ice deformation, Ice breakup, Ice forecasting, Ice water interface, River flow, Flood forecasting, Mathematical models, Computerized simulation  
Equilibrium ice thickness theory provides for a simple calculation of ice jam thickness given some basic information on river characteristics. There are several assumptions attendant with the use of equilibrium theory that may be violated by some numerical models. Highly unsteady flow situations demand the use of unsteady flow models in the determination of jam thickness. Gradually varying discharge situations, however, may find the use of equilibrium theory perfectly suitable, with minimal error in calculated jam thickness. A dimensionless parameter is proposed and demonstrated for use in determining whether simple equilibrium thickness calculations or a more complex unsteady model is required for the calculation of ice jam thickness.

53-4469

**Prediction of ice jam water levels in a multi-channel river: Fort Albany, Ontario.**  
Grover, P., Vrkljan, C., Beltaos, S., Andres, D., Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. Proceedings. River ice management with a changing climate: dealing with extreme events. Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.15-29, 5 refs.  
River ice, Ice jams, Ice breakup, Ice forecasting, Ice cover effect, Ice water interface, River flow, Flood forecasting, Statistical analysis, Computerized simulation, Canada—Ontario—Fort Albany

53-4470

**Forecasting systematic ice jam occurrence along the Yukon River, Alaska.**  
White, K.D., MP 5374, Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. Proceedings. River ice management with a changing climate: dealing with extreme events. Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.30-43, 11 refs.  
River ice, Ice breakup, Ice jams, Ice reporting, Ice forecasting, Flood forecasting, Data processing, Statistical analysis, United States—Alaska—Yukon River  
Many long northern rivers experience a single, snowmelt-driven, ice-cover breakup that progresses downstream and results in the occurrence of ice jams. For example, the ice jams that form annually on the Yukon River generally occur during May and June and progress from east (upstream) to west (downstream). In some years, the jam-

ming progresses in an orderly, systematic fashion, and in others the jam occurrence is marked by long delays. Since most development in the Yukon River basin is clustered along the river, the ice jams may cause flooding and damage to structures as well as disrupt transportation. Long-term empirical forecasts of the likelihood of spring ice-related flooding are made by the National Weather Service Alaska River Forecast Center. Combining this long-term forecast of jam likelihood with near-term forecasts of jam occurrence could improve ice jam mitigation and reduce damages. This paper presents a forecast matrix based on observed jam dates that can be used in preparing near-term forecasts of systematic ice jam occurrence along the Yukon River.

53-4471

**Boom for reducing ice management problems in the Rideau River.**  
Abdelnour, R., Gong, Y.X., Reid, B., Assaff, G., Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. Proceedings. River ice management with a changing climate: dealing with extreme events. Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.44-58, 9 refs.  
River ice, Frazil ice, Bottom ice, Ice formation, Freezeup, Ice cover thickness, Ice control, Ice booms, Flood control, Canada—Ontario—Rideau River, Canada—Ontario—Ottawa

53-4472

**Discrete element modeling of river ice at navigation structures.**  
Hopkins, M.A., Daly, S.F., MP 5375, Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. Proceedings. River ice management with a changing climate: dealing with extreme events. Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.59-69, 8 refs.  
Locks (waterways), Sluices (hydraulic engineering), Hydraulic structures, River ice, Ice loads, Ice friction, Ice navigation, Ice passing, Ice control, Bubbling, Computerized simulation  
Recent advances in discrete element modeling now allow the direct simulation of brash ice in a lock entrance approach. Ice in the lock approach interferes with the miter gate operation and delays barge transiting because separate lockages are needed to pass the accumulated ice. Discrete element simulation resolves the contact and body forces acting on thousands of individual floes at each time step to model the movement of brash ice floes. The movement of ice in the lock approach is largely affected by the opening of the upstream lock miter gates, the operation of high-flow air bubble, and the transiting of barges. All of these phenomena are included in the simulation. This allows the effectiveness of the high-flow bubble in managing ice to be assessed, and the interaction of the ice floes and the barges to be studied. Discrete element simulation promises to be an important tool for investigating ice in lock approaches and designing ice-management measures.

53-4473

**Static ice loads on wooden and steel stoplogs at Seven Sisters Generating Station.**  
Gong, Y.X., Penner, R., Comfort, G., Armstrong, T., Schellenberg, G., Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. Proceedings. River ice management with a changing climate: dealing with extreme events. Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.70-84, 6 refs.  
Dams, Hydraulic structures, Wooden structures, Steel structures, River ice, Ice loads, Ice pressure, Ice control, Strain tests, Canada—Manitoba—Winnipeg River

53-4474

**Simulating winter environments for aquatic life in the CRREL refrigerated flume.**  
White, K.D., Daly, S.F., Gagnon, J.J., MP 5376, Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. Proceedings. River ice management with a changing climate: dealing with extreme events. Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.85-96, 13 refs.  
River ice, Ice conditions, Frazil ice, Bottom ice, Ice cover effect, Physiological effects, Animals, Ecology, Cold weather survival, Environmental tests, Environment simulation  
Winter creates potentially stressful conditions for fish in northern rivers where frazil ice is produced. It has been hypothesized that the most adverse conditions are found in rivers that are partially ice covered. These rivers experience larger fluctuations in water temperature and ice conditions, including more frequent overcooling and frazil ice events. While little is known about the response of freshwater fish to frazil ice and the supercooled water associated with it, it is known that these fish do not contain the antifreeze compounds found in the blood of marine fish. Fish kills have been reported after super-

cooling events, yet no clear causal relationships have been found. Fish may be adversely affected by frazil ice accumulating in their gills, anchor ice forming on the bed, and frazil being deposited under the ice cover. Anchor ice can cover and smooth the substrate that provides both food and hiding places for the fish. Frazil ice deposition beneath an ice cover may change the hydraulics of the river, decreasing the availability of slow-moving areas in a riffle-pool stream. Traditional field methods of examining frazil effects on aquatic fish are time-consuming and expensive, and often provide only a small indigenous sample population from which to infer behavior. The CRREL refrigerated flume provides a facility capable of testing a range of riverine conditions, which will allow researchers to design careful experiments to observe ice effects on fish. This paper reports on the conditions attained in the flume during a preliminary test series with rainbow trout, including bed slope, water depth and velocity, water temperature, and the type, size, and distribution of typical substrate materials.

53-4475

**Blood chemistry and swimming activity of rainbow trout exposed to supercooling and frazil ice.**

Brown, R.S., Brodeur, J.C., Power, G., Daly, S.F., White, K.D., McKinley, R.S., MP 5377, Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. Proceedings. River ice management with a changing climate: dealing with extreme events. Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.97-110, 25 refs.

River ice, Ice conditions, Frazil ice, Bottom ice, Ice cover effect, Supercooling, Physiological effects, Animals, Ecology, Cold tolerance, Cold weather survival

Adult and juvenile rainbow trout (*Oncorhynchus mykiss*) were exposed to supercooled temperatures, frazil ice and anchor ice in a refrigerated flume at the Cold Regions Research and Engineering Laboratory (Hanover, NH). The blood chemistry of the fish was measured before and after they were exposed to a frazil ice event. Plasma chloride, sodium and potassium levels were significantly reduced in juvenile rainbow trout after 6.5 h of exposure to supercooling, frazil ice and anchor ice. Plasma lactate did not vary but plasma glucose was increased although not in a statistically significant manner. Blood parameters of adult fish varied in a similar way as in juveniles but none of the changes were statistically significant. The swimming activity of half of the adult fish (measured by electromyogram telemetry) was significantly lower while exposed to frazil and anchor ice, and none were more active. The escape response of adult rainbow trout was decreased when they were exposed to supercooled water and frazil and anchor ice. This reduction in activity and escape response may increase the likelihood of avian or mammalian predation during subsurface ice events. These sublethal effects observed during exposure to supercooling and frazil ice suggest that further research is needed to determine how such events might impair fish survival.

53-4476

**Winter design features of Goose Creek Enhancement Works, Churchill, Manitoba.**

Shumilak, B.E., Remnant, R.A., Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. Proceedings. River ice management with a changing climate: dealing with extreme events. Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.111-125, 16 refs.

River flow, Flow control, Channel stabilization, Hydraulic structures, Environmental protection, Land reclamation, Ecosystems, Animals, Ecology, River ice, Ice conditions, Ice cover effect, Ice control, Design criteria, Canada—Manitoba—Churchill

53-4477

**Ice problems of the Yellow River, China.**

Ye, S.Q., Liu, X.G., Zhu, Q.P., Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. Proceedings. River ice management with a changing climate: dealing with extreme events. Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.126-134, 13 refs.

River ice, Ice conditions, Freezeup, Ice breakup, Ice jams, Ice forecasting, Flood forecasting, China—Yellow River



53-4478

**Case study: lower Churchill River water level enhancement weir project.**

Korbaylo, B.W., Shumilak, B.E., Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. Proceedings. River ice management with a changing climate: dealing with extreme events. Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.135-149, 6 refs.

River flow, Flow control, Channel stabilization, Hydraulic structures, Flood control, River ice, Ice breakup, Ice jams, Ice control, Canada—Manitoba—Churchill

53-4479

**Manasan ice control structures.**

Wang, P.D., Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. Proceedings. River ice management with a changing climate: dealing with extreme events. Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.150-159, 3 refs.

River flow, Flow control, Hydraulic structures, Rock fills, River ice, Ice jams, Ice booms, Ice control, Flood control, Canada—Manitoba—Thompson

53-4480

**Anchor ice formation below Limestone Generating Station: a case study.**

Girling, W.C., Groeneveld, J., Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. Proceedings. River ice management with a changing climate: dealing with extreme events. Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.160-173, 3 refs.

River ice, Bottom ice, Fast ice, Ice formation, Ice growth, Ice water interface, River flow, Flow control, Channel stabilization, Dredging, Ice control, Flood control, Canada—Manitoba—Nelson River

53-4481

**Analysis of ice jam surge and ice velocity data.**

Jasek, M., Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. Proceedings. River ice management with a changing climate: dealing with extreme events. Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.174-184, 6 refs.

River ice, Ice jams, Ice breakup, Ice friction, Ice cover effect, Ice water interface, River flow, Ice forecasting, Flood forecasting, Canada—Yukon Territory—Porcupine River, Canada—Yukon Territory—Yukon River

53-4482

**Assessment of the applicability of steady flow ice jam profile models.**

Healy, D., Hicks, F.E., Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. Proceedings. River ice management with a changing climate: dealing with extreme events. Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.185-195, 8 refs.

River ice, Ice jams, Ice breakup, Ice friction, Ice cover thickness, Ice cover effect, Ice forecasting, Ice water interface, River flow, Flood forecasting, Computerized simulation

53-4483

**Numerical simulation of ice clearing and jam initiation in navigation channels.**

Sayed, M., Morse, B., Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. Proceedings. River ice management with a changing climate: dealing with extreme events. Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.196-208, 12 refs.

River ice, Ice jams, Ice breakup, Ice friction, Ice passing, Ice water interface, River flow, Ice forecasting, Mathematical models

53-4484

**Effects of freezing on the stability of a juxtaposed ice cover.**

Andres, D.D., Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. Proceedings. River ice management with a changing climate: dealing with extreme events. Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.209-222, 9 refs.

River ice, Frazil ice, Ice formation, Freezeup, Ice growth, Ice friction, Ice cover thickness, Ice cover strength, Ice forecasting, Mathematical models

53-4485

**LSPIV and numerical-model estimation of Yukon River discharge during an ice jam near Dawson.**

Jasek, M., Muste, M., Ettema, R., Kruger, A., Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. Proceedings. River ice management with a changing climate: dealing with extreme events. Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.223-235, 7 refs.

River ice, Ice jams, Ice breakup, Ice cover effect, Ice forecasting, Ice water interface, River flow, Flow measurement, Flood forecasting, Image processing, Computerized simulation, Canada—Yukon Territory—Dawson

53-4486

**Review of river-ice impacts on alluvial-channel stability.**

Ettema, R., Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. Proceedings. River ice management with a changing climate: dealing with extreme events. Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.236-250, 25 refs.

River ice, Ice cover effect, Ice water interface, River flow, Alluvium, Sediment transport, Channel stabilization, Channels (waterways), Banks (waterways), Ice erosion, Water erosion

53-4487

**Climatic effects on the changing ice-breakup regime of the Saint John River.**

Beltaos, S., Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. Proceedings. River ice management with a changing climate: dealing with extreme events. Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.251-264, 20 refs.

River ice, Ice conditions, Ice breakup, Ice jams, Ice cover effect, Floods, Climatic changes, Climatic factors, Ice forecasting, Flood forecasting, Statistical analysis, Canada—New Brunswick—Saint John River

53-4488

**Construction and maintenance of winter roads in Manitoba.**

Kuryk, D., Domaratzki, M., Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. Proceedings. River ice management with a changing climate: dealing with extreme events. Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.265-275.

Highway planning, Road maintenance, Regional planning, Ice roads, Canada—Manitoba

53-4489

**Concentration of minerals by ice in long shallow lakes.**

Sydr, M., Boutot, W., Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. Proceedings. River ice management with a changing climate: dealing with extreme events. Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.276-289, With French summary. 6 refs.

River ice, Lake ice, Reservoirs, Water supply, Water reserves, Ice cover effect, Ice water interface, Meltwater, Lake water, Water chemistry, Suspended sediments, Minerals, Hydrogeochemistry

53-4490

**Overview of ice load measurements on bridge piers.**

Johnston, M.E., Timco, G.W., Frederking, R.M.W., Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. Proceedings. River ice management with a changing climate: dealing with extreme events. Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.290-302, 20 refs.

Bridges, Piers, River ice, Ice solid interface, Ice loads, Ice pressure, Ice friction, Ice cover thickness, Ice breaking, Strain tests

53-4491

**Cazenovia Creek ice control structure: a comparison of two concepts.**

Lever, J.H., Gooch, G., MP 5378, Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. Proceedings. River ice management with a changing climate: dealing with extreme events. Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.303-317, 11 refs.

River ice, Ice breakup, Ice jams, Hydraulic structures, Piers, Spillways, Channel stabilization, Ice control, Flood control, Cost analysis, United States—New York

In 1984, CRREL conducted model tests of a structure to control breakup ice jams on Cazenovia Creek in West Seneca, NY. It consisted of a 1.8-m-high weir with 9 ice-retaining piers, an excavated pool to store ice pieces, and a prepared floodway. Although the model structure performed well, the prototype was not built because the community could not afford its portion of the project cost of \$2.1M (1986 dollars). The authors recently completed model tests of a new ice-control structure for Cazenovia Creek. It consists of nine 3-m-tall x 1.5-m-diameter cylindrical piers spaced across the main channel at the same site. It does not require a weir or excavated pool, and it uses the adjoining tree floodplain as a natural bypass channel. Consequently, it should cost substantially less than the original structure. Test results show that the new structure retains ice at least as well as the original one.

53-4492

**Is  $\phi$  a constant for broken ice rubble.**

Timco, G.W., Cornett, A.M., Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. Proceedings. River ice management with a changing climate: dealing with extreme events. Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.318-331, 9 refs.

River ice, Ice pileup, Ice cover strength, Ice loads, Ice friction, Ice pressure, Ice deformation, Ice breaking, Strain tests, Mathematical models

53-4493

**Ice boom design at Manitoba Hydro.**

Britner, R.J., Lemke, D.E., Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. Proceedings. River ice management with a changing climate: dealing with extreme events. Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.332-345, 10 refs.

River ice, Ice control, Ice booms, River flow, Flow control, Hydraulic structures, Canada—Manitoba

53-4494

**Design considerations for the use of ice as a construction platform.**

Hicks, F.E., Fayeck, A., Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. Proceedings. River ice management with a changing climate: dealing with extreme events. Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.346-360, 17 refs.

Lake ice, River ice, Ice crossings, Ice roads, Ice (construction material), Ice cover strength, Ice elasticity, Ice loads, Trafficability, Bearing strength, Design criteria, Mathematical models

53-4495

**Assessing the susceptibility of shorelines to inundation by ice: a practical approach.**

Gawne, K.D., Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. Proceedings. River ice management with a changing climate: dealing with extreme events. Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.361-376, 20 refs.

Reservoirs, Lake ice, Ice push, Ice pileup, Ice override, Ice pressure, Ice loads, Ice erosion, Shore erosion, Ice forecasting, Mathematical models

53-4496

**Laboratory studies of anchor ice growth using a digital image processing system.**

Doering, J.C., Morris, M.P., Girling, W.C., Dow, K., Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. *Proceedings. River ice management with a changing climate: dealing with extreme events.* Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.377-387, 4 refs.

River ice, Freezeup, Frazil ice, Bottom ice, Ice formation, Ice growth, Ice forecasting, Ice control, Dredging, Image processing, Environmental tests

53-4497

**River ice processes in tidal rivers: research needs.**

Morse, B., Burrell, B., St.Hilaire, A., Bergeron, N., Messier, D., Quach Thanh, T., Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. *Proceedings. River ice management with a changing climate: dealing with extreme events.* Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.388-399, 27 refs.

Estuaries, River ice, Ice conditions, Ice cover effect, Ice forecasting, Flood forecasting, Environmental impact, Climatic changes, Research projects

53-4498

**Turbulent structure of ice-covered flow and ice impact upon habitat in rivers.**

Dolgoplova, E.N., Workshop on River Ice, 10th, Winnipeg, Manitoba, June 8-11, 1999. *Proceedings. River ice management with a changing climate: dealing with extreme events.* Edited by J.C. Doering, Winnipeg, University of Manitoba, 1999, p.400-409, 24 refs.

River ice, Ice cover effect, Ice water interface, River flow, Ecosystems, Environmental impact

53-4499

**Personal-computer program for analysis and evaluation of the condition of earth dams.**

Gel'fand, R.E., *Hydrotechnical construction*, Aug. 1998(Pub. Feb.99), 32(8), p.439-445, Translated from Gidrotekhnicheskoe stroitel'stvo. 1 refs.

Computer programs, Earth dams, Monitors, Safety, Seepage, Deformation, Frost action, Thermal regime, Warning systems

53-4500

**Conditions for reliable dewatering systems based on voidless drainage in slightly permeable soils.**

Shtykov, V.I., *Hydrotechnical construction*, Aug. 1998(Pub. Feb.99), 32(8), p.459-462, Translated from Gidrotekhnicheskoe stroitel'stvo. 4 refs.

Permeability, Seepage, Design criteria, Seasonal freeze thaw, Drainage, Frozen ground, Gravel, Run-off

53-4501

**Dynamic model of the oxygen regime of a reservoir.**

Sokolov, A.G., Dmitrieva, I.L., *Hydrotechnical construction*, July 1996(Pub. Jan.97), 30(7), p.392-399, Translated from Gidrotekhnicheskoe stroitel'stvo. 6 refs.

Reservoirs, Mathematical models, Oxygen, Ice cover effect, Thermal regime, Aeration, Russia—Zagorsk, Russia—Krasnozavodsk

53-4502

**Operation and safety of hydroelectric stations seepage regime of structures at the Zagorsk pumped-storage station during temporary operation.**

Kanygin, L.E., Chernenko, V.N., Magruk, V.I., IAnovskii, A.P., *Hydrotechnical construction*, July 1996(Pub. Jan.97), 30(7), p.400-405, Translated from Gidrotekhnicheskoe stroitel'stvo. 5 refs.

Electric power, Safety, Seepage, Hydraulic structures, Walls, Foundations, Water level, Monitors, Measuring instruments, Russia—Zagorsk

53-4503

**Selection of the revetment on the upstream slope of the upper reservoir at the Zagorsk pumped-storage station and its condition after seven years' service.**

Busygina, T.V., IAnovskii, A.P., *Hydrotechnical construction*, July 1996(Pub. Jan.97), 30(7), p.406-408, Translated from Gidrotekhnicheskoe stroitel'stvo. Electric power, Hydraulic structures, Reservoirs, Design criteria, Cold weather operation, Joints (junctions), Reinforced concretes, Wood, Winter concreting, Russia—Zagorsk

53-4504

**Water transport and power network of North European Russia.**

Pravdivets, I.U.P., Beliakov, A.A., Levachev, S.N., *Hydrotechnical construction*, July 1996(Pub. Jan.97), 30(7), p.409-416, Translated from Gidrotekhnicheskoe stroitel'stvo. 13 refs.

Water transport, Electric power, Regional planning, Hydraulic structures, Rivers, River flow, Runoff, Russia—White Sea, Baltic Sea, Russia—Neva River, Russia—Ladoga, Lake

53-4505

**Problems of completing the construction of hydroelectric stations.**

Shahtanov, V.I.A., Ryzhov, V.A., IUrkevich, B.N., *Hydrotechnical construction*, July 1998(Pub. Jan.99), 32(7), p.363-367, Translated from Gidrotekhnicheskoe stroitel'stvo.

Electric power, Hydraulic structures, Regional planning, Economic analysis, Russia—Siberia, Russia—Far East, Caucasus

53-4506

**Strength and deformation characteristics of concrete of the Vilyui III hydroelectric station.**

Starshinov, S.N., *Hydrotechnical construction*, July 1998(Pub. Jan.99), 32(7), p.374-379, Translated from Gidrotekhnicheskoe stroitel'stvo. 9 refs.

Electric power, Hydraulic structures, Winter concreting, Concretes, Concrete strength, Concrete freezing, Elastic properties, Frost resistance, Deformation, Compressive properties, Russia—Vilyuy River

53-4507

**Characteristics of the thermal stress-state of concrete masses on rock foundations with a complex relief.**

Sokolov, I.B., Bondarenko, A.G., *Hydrotechnical construction*, July 1998(Pub. Jan.99), 32(7), p.380-384, Translated from Gidrotekhnicheskoe stroitel'stvo.

Dams, Foundations, Cold stress, Winter concreting, Thermal stresses, Concrete strength, Cracking (fracturing), Electric power, Hydraulic structures, Reservoirs, Russia—Yenisey River, Russia—Kirovsk, Russia—Zeya River, Russia—Bratsk

53-4508

**Seasonal variation in nutrients, pelagic primary production and grazing in a high-Arctic coastal marine ecosystem, Young Sound, Northeast Greenland.**

Rysgaard, S., Nielsen, T.G., Hansen, B.W., *Marine ecology progress series*, Apr. 15, 1999, Vol.179, p.13-25, Refs. p.22-25.

Biomass, Plankton, Marine biology, Microbiology, Nutrient cycle, Sea ice, Ice cover effect, Global warming, Hydrography, Algae, Seasonal variations, Greenland—Young Sound

53-4509

**Sources of urea in arctic seas: zooplankton metabolism.**

Conover, R.J., Gustavson, K.R., *Marine ecology progress series*, Apr. 15, 1999, Vol.179, p.41-54, 64 refs.

Plankton, Marine biology, Microbiology, Sea water, Water chemistry, Sea ice, Fast ice, Algae, Seasonal variations, Nutrient cycle, Ice cover effect, Ice melting, Freezeup, Canada—Northwest Territories—Barrow Strait

53-4510

**Sources of urea in arctic seas: seasonal fast ice?**

Conover, R.J., Mumm, N., Bruecker, P., MacKenzie, S., *Marine ecology progress series*, Apr. 15, 1999, Vol.179, p.55-69, 51 refs.

Nutrient cycle, Sea water, Water chemistry, Sea ice, Ice cover effect, Algae, Fast ice, Plankton, Chlorophylls, Ice breakup, Freezeup, Salinity, Ice composition, Canada—Northwest Territories—Resolute Passage, Antarctica

53-4511

**Foundation design aspects of the Confederation Bridge.**

Becker, D.E., Burwash, W.J., Montgomery, R.A., Liu, Y., *Canadian geotechnical journal*, Oct. 1998, 35(5), p.750-768, With French summary. 36 refs.

Bridges, Foundations, Design, Design criteria, Footings, Loads (forces), Compressive properties, Settlement (structural), Precast concretes, Cold weather construction, Ice cover effect, Canada—Northumberland Strait

53-4512

**Instrumentation and monitoring of an engineered soil cover system for mine waste rock.**

O'Kane, M., Wilson, G.W., Barbour, S.L., *Canadian geotechnical journal*, Oct. 1998, 35(5), p.828-846, With French summary. 35 refs.

Soil water, Oxygen, Mining, Monitors, Snowmelt, Measuring instruments, Thermal conductivity, Water content, Saturation, Hydraulics, Soil mechanics, Canada

53-4513

**On thermokarst genesis of the Łęczna-Wbdawa lakes. [O termokrasowej genezie jezior Łęczno-włodawskich]**

Wojtanowicz, J., *Lublin. Uniwersytet Marii Curie-Skłodowskiej. Annales. Sectio B*, 1994, Vol.49, National Conference of the Polish Geographical Society, 43rd, Lublin, Poland, 1994, p.1-18, In Polish with English summary. 47 refs.

DLC QE1.L923 Vol.49 1994

Glacial lakes, Pleistocene, Thermokarst lakes, Thermokarst development, Geomorphology, Peat, Ground ice, Permafrost, Poland—Łęczna Lake, Poland—Wbdawa Lake

53-4514

**Stratigraphy of glacial formation of the middle and upper Pleistocene in south-east Poland.**

[Stratygrafia utworów glacialnych środkowego i górnego plejstocenu Polski południowo-wschodniej] Dolecki, L., Harasimiuk, M., Wojtanowicz, J., *Lublin. Uniwersytet Marii Curie-Skłodowskiej. Annales. Sectio B*, 1994, Vol.49, National Conference of the Polish Geographical Society, 43rd, Lublin, Poland, 1994, p.19-31, In Polish with English summary. 41 refs.

DLC QE1.L923 Vol.49 1994

Pleistocene, Stratigraphy, Peat, Glacial deposits, Quaternary deposits, Correlation, Glacial geology, Poland, Ukraine

53-4515

**Changeability of eolian processes in Roctocze Upland and Sandomierz Basin during the Vistulian stage. [Zmienność procesów eolicznych na Roztoczu i w Kotlinie Sandomierskiej podczas piętra Wisły]**

Buraczyński, J., *Lublin. Uniwersytet Marii Curie-Skłodowskiej. Annales. Sectio B*, 1994, Vol.49, National Conference of the Polish Geographical Society, 43rd, Lublin, Poland, 1994, p.51-79, In Polish with English summary. 55 refs.

DLC QE1.L923 Vol.49 1994

Eolian soils, Loess, Sands, Periglacial processes, Wind factors, Sediment transport, Poland

- 53-4516**  
Erosion forms development in the region of southern Bellsund (Spitsbergen). [Rozwój form erozyjnych w rejonie Południowego Bellsundu (Spitsbergen)]  
Gawrysiak, L., Lublin. *Uniwersytet Marii Curie-Skłodowskiej. Annales. Sectio B.* 1994, Vol.49, National Conference of the Polish Geographical Society, 43rd, Lublin, Poland, 1994, p.123-136 + tables. In Polish with English summary. 12 refs.  
DLC QE1.L923 Vol.49 1994  
Geomorphology, Glacial erosion, Glacial rivers, Meltwater, Water erosion, Moraines, Terraces, Norway—Spitsbergen
- 53-4517**  
Draft of the characteristics of snow-cover in the Bieszczady Mountains. [Zarys charakterystyki pokrywy śnieżnej w Bieszczadach]  
Nowosad, M., Lublin. *Uniwersytet Marii Curie-Skłodowskiej. Annales. Sectio B.* 1994, Vol.49, National Conference of the Polish Geographical Society, 43rd, Lublin, Poland, 1994, p.197-215, In Polish with English summary. 33 refs.  
DLC QE1.L923 Vol.49 1994  
Snow cover, Snow depth, Snow water content, Snow air interface, Altitude, Poland—Bieszczady Mountains
- 53-4518**  
Soil forming conditions in the arctic region (on the basis of Spitsbergen). [Warunki kształtowania się gleb w obszarze arktycznym (na przykładzie Spitsbergenu)]  
Klimowicz, Z., Uziak, S., Lublin. *Uniwersytet Marii Curie-Skłodowskiej. Annales. Sectio B.* 1994, Vol.49, National Conference of the Polish Geographical Society, 43rd, Lublin, Poland, 1994, p.243-254, In Polish with English summary. 40 refs.  
DLC QE1.L923 Vol.49 1994  
Soil formation, Geocryology, Peat, Alluvium, Soil chemistry, Soil composition, Norway—Spitsbergen
- 53-4519**  
Reconstruction of the past fluctuations of the mass balance and thickness of an ice dome from the annual ice layers. [Rekonstrukcja zmian bilansu masy i tolschiny kupolowidnego lednika v prošlom po godovym slolam l'da]  
Nikolaev, V.I., Salamatina, A.N., Dudkina, A.V., Klemev, O.L., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï.* Oct. 1997, Vol.83, p.3-9, In Russian with English summary. 29 refs.  
DLC GB2401.M37  
Mathematical models, Glacier mass balance, Glacier oscillation, Glacier thickness, Glacier ice, Paleoclimatology, Ice models, Glacier alimentation, Russia—Severnaya Zemlya, Russia—Vavilov Ice Dome
- 53-4520**  
Dynamics of Austfonna, Svalbard: two dimensional modelling of ice motion over a deformable substrate.  
Watts, L.G., Dowdeswell, J.A., Murray, T., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï.* Oct. 1997, Vol.83, p.10-22, With Russian summary. 33 refs.  
DLC GB2401.M37  
Mathematical models, Ice models, Subglacial observations, Isotherms, Boreholes, Ice temperature, Water pressure, Glacier surfaces, Thermodynamics, Sediments, Glacial deposits, Glacier flow, Glacier beds, Norway—Nordaustlandet
- 53-4521**  
Space and time characteristics of the glacial system dynamics in the Arctic and adjacent regions. [Prostranstvenno-vremennye osobennosti dinamiki lednikovyykh sistem Arktiki i priliegaiushchikh rafonov]  
Kaluzhina, N.L., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï.* Oct. 1997, Vol.83, p.23-31, In Russian with English summary. 26 refs.  
DLC GB2401.M37  
Glacier surveys, Glacier mass balance, Statistical analysis, Glacier oscillation
- 53-4522**  
Glacier fluctuations and the circulation process changes in the polar regions of the Atlantic and in Europe. [Kolebania lednikov i izmeneniia tsirkuliatsionnykh protsessov v poliarnykh rafonakh Atlantiki i v Evrope]  
Zakharov, V.G., Khmelevskaia, L.V., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï.* Oct. 1997, Vol.83, p.32-42, In Russian with English summary. 27 refs.  
DLC GB2401.M37  
Ice air interface, Glacier surveys, Glacier oscillation, Glacier surges, Wind factors, Atmospheric circulation, Atmospheric pressure, Atmospheric disturbances, Polar atmospheres, Sea ice, Air ice water interaction, Antarctica, Norway—Spitsbergen, Greenland, North Atlantic Ocean, Norwegian Sea, Switzerland—Alps
- 53-4523**  
Interrelation between the air temperature fields and underlying surface in the Central Asia highlands as the basis of the glacial runoff under global climate changes. [Vzaimosviaz' polei' temperaturny vozdukh i podstilaishchei poverkhnosti v vysokogor'e Tsentral'noi Azii kak osnova prognoza izmeneniï lednikovogo stoka pri global'nykh potepneniakh-pokholodaniakh]  
Lebedeva, I.M., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï.* Oct. 1997, Vol.83, p.43-52, In Russian with English summary. 11 refs.  
DLC GB2401.M37  
Air temperature, Climatic changes, Global warming, Ice air interface, Glacier surfaces, Ice temperature, Surface temperature, Runoff, Glacier melting, Humidity, Temperature inversions, CIS—Central Asia, Pamir-Alay, Himalaya Mountains
- 53-4524**  
Calculation of a runoff from a glacier basin when it is insufficiently studied. [Raschet stoka s lednikovogo basseina pri nedostatochnoï izuchennosti]  
Zhuk, V.A., Kaluzhina, N.L., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï.* Oct. 1997, Vol.83, p.53-58, In Russian with English summary. 8 refs.  
DLC GB2401.M37  
Mathematical models, Runoff forecasting, Accuracy, Mountain glaciers, Moraines, Glacier surfaces, Meltwater, Glacial hydrology, Glacier ablation, Glacier melting, China—Tibet, China—Gongga, Mount
- 53-4525**  
Possible changes of some characteristics of the Pamir-Alay glacierization under the global climate warming. [Vozmozhnye izmeneniia nekotorykh kharakteristik oledeneniia Pamiro-Alaia pri global'nom potepnenii klimata]  
Ananicheva, M.D., Davidovich, N.V., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï.* Oct. 1997, Vol.83, p.59-64, In Russian with English summary. 15 refs.  
DLC GB2401.M37  
Global warming, Climatic changes, Mountain glaciers, River basins, Precipitation (meteorology), Climatic factors, Alpine glaciation, Glacier ablation, Glacier alimentation, Forecasting, Ice air interface, Air temperature, Pamir-Alay
- 53-4526**  
Change of the glacial runoff of the Hindu-Kush rivers under the global climate warming. [Izmeneniia lednikovogo stoka rek Gindukusha pri global'nom Potepnenii klimata]  
Lebedeva, I.M., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï.* Oct. 1997, Vol.83, p.65-72, In Russian with English summary. 14 refs.  
DLC GB2401.M37  
Global warming, Climatic changes, Climatic factors, Runoff, Glacial rivers, Glacier ablation, Glacier melting, Ice air interface, Mountain glaciers, Forecasting, Meltwater, Hindu Kush, Afghanistan—Kunduz River, Amu Darya River, Afghanistan—Badakhshan
- 53-4527**  
Structural features of the modern glacierization of the Mongun-Taiga massif. [Osobennosti struktury sovremennogo oledeneniia massiva Mongun-Taiga]  
Moskalenko, I.G., Seliverstov, I.U.P., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï.* Oct. 1997, Vol.83, p.73-80, In Russian with English summary. 2 refs.  
DLC GB2401.M37  
Mountain glaciers, Glacier surveys, Alpine glaciation, Altitude, Firn, Tannu Ola Mountains, Mongolia, Russia—Tuva
- 53-4528**  
Recent history of the Tuyuksu glaciers. [Nedavnii istoriia lednikov Tuluksu]  
Solomina, O.N., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï.* Oct. 1997, Vol.83, p.81-88, In Russian with English summary. 17 refs.  
DLC GB2401.M37  
Glacier surveys, Mountain glaciers, Lichens, Moraines, Alpine glaciation, Geochronology, Kazakhstan
- 53-4529**  
Manifestations of the congelative ice-formation in the Earth's cryosphere. [Proiavleniia konzheiatcionnogo l'dobrazovaniia v kriosfere Zemli]  
Golubev, V.N., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï.* Oct. 1997, Vol.83, p.89-92, In Russian with English summary. 15 refs.  
DLC GB2401.M37  
Classifications, Ice formation, Supercooling, Solifluction, Ice structure, Thermal regime
- 53-4530**  
Permafrost model for the alpine and arid regions. [Model' merzloty dlia vysokogornyykh i aridnykh rafonov]  
Krass, M.S., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï.* Oct. 1997, Vol.83, p.93-97, In Russian with English summary. 8 refs.  
DLC GB2401.M37  
Permafrost thermal properties, Thermal regime, Permafrost depth, Permafrost thickness, Ice sublimation, Evaporation, Mathematical models, Frozen ground strength, Mongolia
- 53-4531**  
Modelling of a "marine" glacier and its special zones dynamics. [Modelirovanie dinamiki "morskogo" lednika i ego osobykh zon]  
Vil'chinskii, A.V., Chugunov, V.A., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï.* Oct. 1997, Vol.83, p.98-104, In Russian with English summary. 8 refs.  
DLC GB2401.M37  
Glacier flow, Ice models, Mathematical models, Glacier ice, Glacier surfaces, Shear stress, Glacier thickness, Antarctica
- 53-4532**  
Boundary layer approximation in anisotropic ice flow modelling.  
Salamatina, A.N., Duval, P., Castelnaud, O., Malikova, D.R., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï.* Oct. 1997, Vol.83, p.105-111, With Russian summary. 29 refs.  
DLC GB2401.M37  
Anisotropy, Boundary layer, Ice models, Ice mechanics, Rheology, Ice sheets, Glacier ice, Mathematical models, Ice crystal structure, Ice deformation, Shear stress, Antarctica

53-4533

Results of the palynological studies of an ice core from the Vavilov ice dome, Severnaya Zemlya. [Rezultaty palinologicheskikh issledovaniĭ lednogo kerna s lednikovogo kupola Vavilova, Severnaya Zemlia]

Andreev, A.A., Nikolaeĭ, V.I., Bol'shiĭanov, D.I.U., Petrov, V.N., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniĭ*, Oct. 1997, Vol.83, p.112-120, In Russian with English summary. 41 refs.

DLC GB2401.M37

Ice cores, Drill core analysis, Palynology, Pollen, Quaternary deposits, Pleistocene, Accuracy, Paleobotany, Taiga, Tundra vegetation, Oxygen isotopes, Russia—Severnaya Zemlya

53-4534

Radio echo-sounding of King George Island ice cap, South Shetland Islands, Antarctica.

Macheret, I.U.I.A., Moskalievskii, M.I.U., Simoes, J.C., Ladouch, L., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniĭ*, Oct. 1997, Vol.83, p.121-128, With Russian summary. 18 refs.

DLC GB2401.M37

Radio echo soundings, Glacier thickness, Ice cover thickness, Subglacial observations, Bedrock, Antarctica—King George Island

53-4535

Short-term climate fluctuations in dynamic of glaciers. [Korotkoperiodnye kolebania klimate v dinamike lednikov]

Grigorian, S.S., Krass, M.S., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniĭ*, Oct. 1997, Vol.83, p.129-134, In Russian with English summary. 15 refs.

DLC GB2401.M37

Climatic changes, Climatic factors, Thermal regime, Shear stress, Glacier beds, Glacier surges, Glacier flow, Glacier ablation, Glacier tongues, Glacier alimentation, Glacier oscillation, Antarctica

53-4536

Global climate warming, its manifestation in the Tien Shan and reaction of the glaciers. [Global'noe poteplenie klimate, ego proiavlenie na Tian-Shane i reaktsiia lednikov]

Dikikh, A.N., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniĭ*, Oct. 1997, Vol.83, p.135-139, In Russian with English summary. 19 refs.

DLC GB2401.M37

Global warming, Global change, Climatic factors, Air temperature, Altitude, Ice air interface, Mountains, Mountain glaciers, Glacier mass balance, Glacier ablation, Kyrgyzstan—Tien Shan

53-4537

Response of the Caucasus and the Alps glaciological systems to climatic changes. [Reaktsiia gliatsiologicheskikh sistem Kavkaza i Alp na klimaticheskie izmeneniia]

Khromova, T.E., Chernova, L.P., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniĭ*, Oct. 1997, Vol.83, p.140-145, In Russian with English summary. 22 refs.

DLC GB2401.M37

Climatic changes, Global warming, Air temperature, Ice air interface, Precipitation (meteorology), Glacier oscillation, Glacier surveys, Glacier mass balance, Glacier ablation, Mountain glaciers, Caucasus, Alps

53-4538

Changes of the Elbrus glaciers during the last century. [Izmeneniia lednikov El'brusa v poslednem stoletii]

Zolotarev, E.A., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniĭ*, Oct. 1997, Vol.83, p.146-153, In Russian with English summary. 8 refs.

DLC GB2401.M37

Mountain glaciers, Glacier surveys, Glacier oscillation, Glacier tongues, Bedrock, Glacier ablation, Alpine glaciation, Height finding, Georgia—El'brus

53-4539

Interrelation between a glacier thickness and angle of its surface slope. [Vzaimosviaz' tolshchiny lednika s uglom naklona ego poverkhnosti]

Voĭtkovskii, K.F., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniĭ*, Oct. 1997, Vol.83, p.155-158, In Russian with English summary. 5 refs.

DLC GB2401.M37

Analysis (mathematics), Glacier thickness, Slope orientation, Shear strain, Shear stress, Ice creep, Glacier surfaces, Glacier flow, Viscous flow, Velocity

53-4540

Interaction of Antarctic ice sheet marginal parts with ocean and atmosphere.

Zakharov, V.G., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniĭ*, Oct. 1997, Vol.83, p.159-163, With Russian summary. 15 refs.

DLC GB2401.M37

Ice sheets, Air ice water interaction, Glacier oscillation, Glacier surges, Snow accumulation, Air masses, Atmospheric disturbances, Antarctica—East Antarctica, Antarctica—West Antarctica

53-4541

Ice-formation zonality on the Tien Shan glaciers. [Zonal'nost' l'doobrazovaniia na lednikakh Tian-Shania]

Vilesov, E.N., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniĭ*, Oct. 1997, Vol.83, p.164-168, In Russian with English summary. 10 refs.

DLC GB2401.M37

Ice formation, Glacier ice, Glacier surveys, Firn, Glacier ablation, Glacier alimentation, Snow ice, River basins, Ice air interface, Glacier melting, Alpine glaciation, Runoff, China—Tian Shan, CIS—Tien Shan

53-4542

Morpho-sedimentation indications of ancient glaciations in mountain valleys. [Morfo-sedimentatsionnye svidel'stva drevnikh oledeneniĭ v gornykh dolinakh]

Postolenko, G.A., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniĭ*, Oct. 1997, Vol.83, p.169-171, In Russian with English summary. 3 refs.

DLC GB2401.M37

Pleistocene, Geomorphology, Glacial geology, Valleys, Alpine glaciation, Outwash, Terraces, Sedimentation, Russia—Ural Mountains

53-4543

Snow-ice formations of the South Kharaulach and Northern Orulgan, Siberia. [Snezhno-lednyane obrazovaniia IUzhnogo Kharaulakha i Severnogo Orulgana]

Sedov, R.V., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniĭ*, Oct. 1997, Vol.83, p.172-176, In Russian with English summary. 2 refs.

DLC GB2401.M37

Snow ice, Mountain glaciers, Glacier surveys, Snowdrifts, Nivation, River basins, Altitude, Nival relief, Russia—Orulgan Range, Russia—Kharaulakhsy Range, Russia—Lena River, Russia—Siberia

53-4544

Determination of a specific energy for ice destruction under natural conditions. [Opredelenie udel'nof energii razrusheniia l'da v usloviakh estestvennogo zaleganiia]

Epifanov, V.P., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniĭ*, Oct. 1997, Vol.83, p.177-184, In Russian with English summary. 12 refs.

DLC GB2401.M37

Measuring instruments, Penetrometers, Stresses, Plastic deformation, Ice elasticity, Ice plasticity, Analysis (mathematics), Ice temperature, River ice

53-4545

Firn layer effect upon measurement accuracy of the polar glacier parameters by the method of the wide-angle radio echo-sounding. [Vliianie sloia firna na tochnost' izmereniia parametrov poliarnykh lednikov metodom naklonnogo radiozondirovaniia]

Babenko, A.N., Macheret, I.U.I.A., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniĭ*, Oct. 1997, Vol.83, p.185-190, In Russian with English summary. 14 refs.

DLC GB2401.M37

Radio echo soundings, Firn, Radio waves, Wave propagation, Accuracy, Glacier surfaces, Analysis (mathematics), Ice density, Glacier thickness

53-4546

Project of the GIS creation of the local type "Lawina (Avalanche)" by the example of the Baksan River valley. [Proekt sozdaniia GIS lokal'nogo tipa "Lavina" na primere doliny r. Baksan]

Volodicheva, N.A., Zolotarev, E.A., Oleĭnikov, A.D., Chirkov, V.E., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniĭ*, Oct. 1997, Vol.83, p.191-193, In Russian with English summary. 8 refs.

DLC GB2401.M37

Avalanches, Valleys, Data processing, Avalanche protection, Avalanche forecasting, Caucasus—Baksan River

53-4547

Consideration of an avalanche pressure distribution when designing protective constructions. [Uchet raspredeleniia lavinnogo davleniia pri proektirovaniĭ zashchitnykh sooruzheniĭ]

Iadrosnikov, V.I., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniĭ*, Oct. 1997, Vol.83, p.194-198, In Russian with English summary. 18 refs.

DLC GB2401.M37

Design criteria, Design, Avalanche engineering, Avalanche mechanics, Countermeasures, Avalanche protection

53-4548

Two projects of the deep drilling of the Greenland ice sheet; some results. [Dva proekta glubokogo bureniia lednikovogo shchita Grenlandii; nekotorye itogi]

Nikolaev, V.I., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniĭ*, Oct. 1997, Vol.83, p.199-209, In Russian with English summary. 58 refs.

DLC GB2401.M37

Ice sheets, Ice cores, Drill core analysis, Oxygen isotopes, Paleoclimatology, Climatic changes, Greenland—Summit

53-4549

Snow cover and glaciers in the works of Vakhushti Bagrationi. [Snezhno-lednikovyi pokrov v rabotakh tzarevicha Vakhushti (Vakhushti Bagrationi)]

Kotliakov, V.M., Gobedzhishvili, R.G., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniĭ*, Oct. 1997, Vol.83, p.217-220, In Russian with English summary. 7 refs.

DLC GB2401.M37

Snow cover distribution, Ice cover, Ice conditions, History, Georgia

53-4550

Polar Glaciological Symposium in Moscow in May 1997. [Pol'iarnyi gliatsiologicheskii simpozium v Moskve v mae 1997 goda]

Glazovskii, A.F., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniĭ*, Oct. 1997, Vol.83, p.221-223, In Russian.

DLC GB2401.M37

Meetings, Glaciology, Research projects

53-4551

International Conference "Problems of the Earth Cryology (basic and applied studies)". [Mezhdunarodnaia konferentsiia "Problemy kriologii Zemli (fundamental'nye i prikladnye issledovaniia)"] Mel'nikov, E.S., Streletskaia, I.D., Golubev, V.N., *Rossiskaia akademiia nauk. Institut geografii. Materialy glatsiologicheskikh issledovaniï*, Oct. 1997, Vol.83, p.224-226, In Russian.

DLC GB2401.M37  
Meetings, Research projects, Geocryology

53-4552

Three months in the Institute of Low Temperature Sciences, (Hokkaido University, Sapporo, Japan). [Tri mesiatca v Institute nizkotemperaturnykh issledovaniï (Universitet Khokkaido, Sapporo, IAPONiia)] Salamatin, A.N., *Rossiskaia akademiia nauk. Institut geografii. Materialy glatsiologicheskikh issledovaniï*, Oct. 1997, Vol.83, p.227-230, In Russian with English summary. 19 refs.

DLC GB2401.M37

International cooperation, Research projects, Organizations, Paleoclimatology, Drill core analysis, Computer applications, Ice cores, Antarctica—Vostok Station

53-4553

Observations on Fridtjof Glacier surge, Svalbard, in 1997. [Nabludeniia za podvizhkoï lednika Frid'of na Shpitsbergene v 1997 godu]

Zinger, E.M., Zakharov, V.G., Zhidkov, V.A., *Rossiskaia akademiia nauk. Institut geografii. Materialy glatsiologicheskikh issledovaniï*, Oct. 1997, Vol.83, p.231-233, In Russian with English summary. 4 refs.

DLC GB2401.M37

Glacier surges, Glacier oscillation, Glacier flow, Glacier surfaces, Glacier ablation, Glacier alimentation, Norway—Svalbard, Norway—Fridtjof Glacier

53-4554

Glaciological research at the Galindes Island. [Glatsiologicheskii issledovaniia na ostrove Galindes]

Govorukha, L.S., *Rossiskaia akademiia nauk. Institut geografii. Materialy glatsiologicheskikh issledovaniï*, Oct. 1997, Vol.83, p.234-235, In Russian. 1 ref.

DLC GB2401.M37

Meetings, Research projects, Glaciology

53-4555

International Meeting on Avalanche Problems.

[Mezhdunarodnoe soveshchanie po lavinam] Chernous, P.A., *Rossiskaia akademiia nauk. Institut geografii. Materialy glatsiologicheskikh issledovaniï*, Oct. 1997, Vol.83, p.235-236, In Russian.

DLC GB2401.M37

Meetings, Research projects, Avalanches

53-4556

Relationship between mountain glacier fluctuations and climatic events. [Sootnoshenie kolebanii gornyykh lednikov s klimaticheskimi sobytiiami]

Golubev, V.N., *Rossiskaia akademiia nauk. Institut geografii. Materialy glatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.3-12, In Russian with English summary. 32 refs.

DLC GB2401.M37

Mountain glaciers, Climatic factors, Glacier oscillation, Glacier ablation, Glacier flow, Air temperature, Moraines, Ice relaxation, China—Tibet, New Zealand, Caucasus Mountains, Switzerland—Alps

53-4557

Water motion inside a mountain glacier. [Dvizhenie vody v gornom lednike]

Mavliudov, B.R., *Rossiskaia akademiia nauk. Institut geografii. Materialy glatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.13-17, In Russian with English summary. 16 refs.

DLC GB2401.M37

Mountain glaciers, Subglacial drainage, Ice formation, Ice temperature, Heat transfer coefficient, Crevasses, Glacier ice, Ice water interface, Glacial hydrology

53-4558

Temperature coefficient of snow and ice melting on a glacier physical surface. [Temperaturnyï koefitsient talaniia snega i l'da na fizicheskof poverkhnosti lednikov]

Cherkasov, P.A., *Rossiskaia akademiia nauk. Institut geografii. Materialy glatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.18-23, In Russian with English summary. 23 refs.

DLC GB2401.M37

Ice melting, Snow melting, Meltwater, Mountain glaciers, Glacier ablation, Analysis (mathematics), Altitude, Slope orientation, Cloud cover, Snow water equivalent, Glacier ice, Ice temperature, Snow temperature, Albedo, Insolation

53-4559

Structural, stratigraphic and geochemical characteristics of the active layer of the Gregoriev Ice Cap, Tien Shan.

Arkhypov, S.M., Mikhailenko, V.N., Thompson, L.G., *Rossiskaia akademiia nauk. Institut geografii. Materialy glatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.24-32, With Russian summary. 7 refs.

DLC GB2401.M37

Active layer, Geochemistry, Isotope analysis, Ice cores, Drill core analysis, Oxygen isotopes, Statistical analysis, Firm, Ice composition, Russia—Tien Shan

53-4560

Recent glacierization of the Mongun-Taiga massif (Interior Asia) and oroclimatic conditions. [Sovremennoe oledenenie massiva Mongun-Taiga (Vnutrenniaia Azia) i oroklimaticheskie uslovia ego sushchestvovaniia]

Seliverstov, I.U.P., Moskalenko, I.G., Novikov, S.A., *Rossiskaia akademiia nauk. Institut geografii. Materialy glatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.33-42, In Russian with English summary. 7 refs.

DLC GB2401.M37

Mountain glaciers, Glacier surveys, Snow line, Topographic effects, Climatic factors, Alpine glaciation, Solar radiation, River basins, Glacial rivers, Russia—Altay Mountains, Russia—Sayan Mountains

53-4561

Glacier-dammed lakes in the Siberia mountains: causes and factors of origin and development.

[Glatsiogennye podprudnye ozero v gorakh Sibiri: prichiny i faktory vozniknoveniia i razvitiia]

Sheinkman, V.S., *Rossiskaia akademiia nauk. Institut geografii. Materialy glatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.43-50, In Russian with English summary. 53 refs.

DLC GB2401.M37

Glacial lakes, Pleistocene, Glacial geology, Mountain glaciers, Lake bursts, Ice dams, Icebound lakes, Russia—Siberia

53-4562

Seasonal icing and water balance of the cryolithic zone river basins. [Sezonnoe oledenenie i vodnyï balans rechnyykh basseinov kriolitozony]

Sokolov, B.L., *Rossiskaia akademiia nauk. Institut geografii. Materialy glatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.51-57, In Russian with English summary. 5 refs.

DLC GB2401.M37

River basins, Water balance, Naleds, Rivers, River flow, Seasonal freeze thaw, Subpermafrost ground water, Hydrology, Russia—Gilyuy River, Russia—Olekma River

53-4563

Estimate of icing of the Kodar and Udokan ridges by means of the landscape indication. [Otsenka nalednosti khrebtov Kodar i Udokan metodom landshaftnoï indikatsii]

Alekseev, V.R., Kirichenko, A.V., *Rossiskaia akademiia nauk. Institut geografii. Materialy glatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.58-63, In Russian with English summary. 3 refs.

DLC GB2401.M37

Naleds, Landscape types, Altitude, River basins, Valleys, Russia—Transbaikal, Russia—Udokan Range, Russia—Kodar Range, Russia—Siberia

53-4564

Rare case of the avalanche slide in the Elbrus area. [O redkom sluchae skhoda lavin c Priel'brus'e]

Oleñikov, A.D., Volodicheva, N.A., Goretskii, A.S., *Rossiskaia akademiia nauk. Institut geografii. Materialy glatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.64-70, In Russian with English summary. 7 refs.

DLC GB2401.M37

Avalanches, Avalanche deposits, Records (extremes), Precipitation (meteorology), Meteorology, Snow depth, Air temperature, Georgia—El'brus

53-4565

International Commission on Snow and Ice: historical review. [Itogi nauki i tekhnologii. Seriya "Istoricheskie obzory"]

Glazovskii, A.F., *Rossiskaia akademiia nauk. Institut geografii. Materialy glatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.73-76, In Russian.

DLC GB2401.M37

Meetings, Organizations, Research projects, International cooperation, History

53-4566

Results of the glacier fluctuation observations on the former USSR territory. [Itogi nauki i tekhnologii. Seriya "Istoricheskie obzory"]

Kotliakov, V.M., Osipova, G.B., Popovnin, V.V., Tsvetkov, D.G., *Rossiskaia akademiia nauk. Institut geografii. Materialy glatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.77-93, In Russian with English captions. 102 refs.

DLC GB2401.M37

Glacier surveys, Glacier oscillation, Glacier mass balance, Russia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan

53-4567

Centennial anniversary of the International Commission on Snow and Ice: Symposium on the glacier mass balance (Innsbruck, September 1994). [100-letnii jubilei Mezhdunarodnoï komissii snega i l'da: simpozium po balansu massy lednikov (Innsbruck, sentiabr' 1994 g.)]

Popovnin, V.V., *Rossiskaia akademiia nauk. Institut geografii. Materialy glatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.94-102, In Russian.

DLC GB2401.M37

Meetings, International cooperation, Research projects, History, Glacier mass balance

53-4568

Towards the second century of the Earth's glacier monitoring. [Vo vtoroe stoletie monitoringa lednikov Zemli]

Popovnin, V.V., Osipova, G.B., Tsvetkov, D.G., *Rossiskaia akademiia nauk. Institut geografii. Materialy glatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.103-106, In Russian.

DLC GB2401.M37

Glaciers, Glacier surveys, History, Organizations, International cooperation, Research projects, Meetings

53-4569

Monitoring of glacier fluctuations and compilation of the Earth's glaciers inventory. [Monitoring kolebanii i katalogizatsiia lednikov Zemli (global'nyi obzor)]

Popovnin, V.V., *Rossiskaia akademiia nauk. Institut geografii. Materialy glatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.107-115, In Russian with English captions.

DLC GB2401.M37

Glacier oscillation, Glacier surveys, Glacier mass balance, Mountain glaciers

53-4570

Recent publications of the World Glacier Monitoring Service: traditions and progress. [Poslednie publikatsii Vsemirnogo sluzhby monitoringa lednikov: traditsii i progress]

Kotliakov, V.M., Osipova, G.B., Popovnin, V.V., Tsvetkov, D.G., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.125-136, In Russian. 23 refs. DLC GB2401.M37

Glaciers, Organizations, Data processing, Computer applications, International cooperation, Glacier mass balance, Glacier oscillation, Accuracy

53-4571

Mass balance and fluctuations of glacier termini in the Soviet Union in 1987-1991. [Balans massy i kolebania kontsov lednikov Sovetskogo Soiuza v 1987-1991 gg.], *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.137-160, In Russian with English captions. 9 refs.

DLC GB2401.M37

Glacier mass balance, Glacier oscillation, Altitude, CIS

53-4572

Snow thickness electro-dynamics: the avalanche formation and movement. [Elektrodinamika snezhnoi toshchi: obrazovanie i dvizhenie lavin] Kazakov, N.A., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.161-164, In Russian with English summary. 15 refs.

DLC GB2401.M37

Snow cover, Avalanche formation, Avalanche mechanics, Avalanche forecasting, Ice crystals, Snow ice interface, Electromagnetic properties, Ice physics, Dielectric properties, Snow electrical properties, Electric charge

53-4573

Estimation of an avalanche risk. [Otsenka lavinogo riska] Blagoveshchenskii, V.P., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.165-167, In Russian with English summary. 4 refs.

DLC GB2401.M37

Avalanche forecasting, Avalanche protection, Analysis (mathematics), Cost analysis, Countermeasures

53-4574

Types of avalanche dangerous territories in the Altai. [Tipy lavinoopasnykh territorii Altaia] Koroleva, T.V., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.168-174, In Russian with English summary. 12 refs.

DLC GB2401.M37

Avalanches, Avalanche forecasting, Topographic features, Snowfall, Snow depth, Snow cover effect, Avalanche formation, Avalanche tracks, Age determination, Vegetation patterns, Trees (plants), Russia—Aktru River, Russia—Altay Mountains

53-4575

On the number of days with the snow cover on the Greater Caucasus. [O chisle dnei so snezhnym pokrovom na Bol'shom Kavkaze] Pogorelov, A.V., Panova, S.V., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.175-179, In Russian with English summary. 9 refs.

DLC GB2401.M37

Snow cover distribution, Altitude, Analysis (mathematics), Russia—Caucasus

53-4576

Mudflow wave motions. [Volnovye dvizhenia selevykh potokov] Bozhinskiï, A.N., Nazarov, A.N., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.180-183, In Russian with English summary. 7 refs.

DLC GB2401.M37

Mudflows, Mathematical models, Turbulent flow, Wave propagation

53-4577

Catastrophic mudflows in the Elbrus area for the two past millennia. [Katastroficheskie seli Priel'brus'ia za dva poslednikh tysacheletia] Zolotarev, E.A., Seïnova, I.B., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.184-188, In Russian with English summary. 10 refs.

DLC GB2401.M37

Mudflows, Sediments, Quaternary deposits, Moraines, Lichens, Alpine glaciation, Volcanoes, Valleys, Lake bursts, Glacial lakes, Georgia—El'brus, Russia—Baksan River

53-4578

Mudflow activity in the Varzob River basin. [Sel'evaia delatel'nost' v basseïne r. Varzob]

Tukeev, O.V., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.189-192, In Russian with English summary. 7 refs.

DLC GB2401.M37

Mudflows, River basins, Rain, Snowmelt, Altitude, Forecasting, Glaciers, Tajikistan—Varzob River

53-4579

Dynamics of the Kungur cave icing for the 25 years. [Dinamika oledeneniia Kungurskof peshchery za 25 let]

Mavliudov, B.R., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.193-198, In Russian with English summary. 9 refs.

DLC GB2401.M37

Ice caves, Air temperature, Ice air interface, Ablation, Glaciation, Climatic factors, Ice melting, Russia—Kungur Ice Cave

53-4580

Evaluation of the mountain glaciers response to the global warming (using the south-eastern Alaska as an example). [Otsenka reaktsii gornogo oledeneniia na global'noe poteplenie (na primere Tugo-vostochnof Aliaski)]

Davidovich, N.V., Ananicheva, M.D., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.199-205, In Russian with English summary. 8 refs.

DLC GB2401.M37

Mountain glaciers, Global warming, Climatic factors, Air temperature, Climatic changes, Glacier ablation, Glacial hydrology, Carbon dioxide, Forecasting, Glacier melting, Runoff, United States—Alaska

53-4581

Weather of the ablation period in the glacial zone of the Severnaya Zemlya. [Pogoda perioda abliatsii v lednikovof zone Severnof Zemli]

Gordeïchuk, O.P., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.206-207, In Russian with English summary. 1 ref.

DLC GB2401.M37

Glacier ablation, Glacier ice, Ice air interface, Thermal regime, Glacial meteorology, Russia—Severnaya Zemlya

53-4582

Bedrock of the Franz Josef Land by data of the radio-echo and magnetic sounding. [Korennoi rel'ef Zemli Frantsa-Iosifa po dannym radiolokatsionnogo i magnitnogo zondirovaniia]

Leonov, V.O., Popov, S.V., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.208-212, In Russian with English summary. 4 refs.

DLC GB2401.M37

Bedrock, Geophysical surveys, Radio echo soundings, Magnetic surveys, Ice cover thickness, Topographic features, Ice conditions, Glacier thickness, Glacier beds, Subglacial observations, Bottom topography, Russia—Franz Josef Land

53-4583

Glaciers of the Chukotka. [Ledniki Chukotki] Sedov, R.V., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.213-217, In Russian with English summary. 24 refs.

DLC GB2401.M37

Glacier surveys, Moraines, Glacier alimentation, Glacier ablation, Glacier oscillation, Glacier melting, Russia—Chukotskiy Peninsula

53-4584

Glaciers of the Taïgonos Peninsula. [Ledniki poluostrova Taïgonos]

Sedov, R.V., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.218-221, In Russian with English summary. 5 refs.

DLC GB2401.M37

Glacier surveys, River basins, Moraines, Glacier surfaces, Air temperature, Precipitation (meteorology), Cirque glaciers, Russia—Taïgonos Peninsula

53-4585

Annotated list of the Russian language literature on glaciology for 1993. [Annotirovannaia bibliografiia russkoiazynhof literatury po gliatsiologii za 1993 god]

Kotliakov, V.M., Chernova, L.P., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.223-238, In Russian. 248 refs.

DLC GB2401.M37

Glaciology, Bibliographies, Ice physics, Ice composition, Snow cover, Avalanches, Sea ice, River ice, Lake ice, Naleds, Ground ice, Glaciers, Paleoclimatology

53-4586

XI-th Glaciological Symposium, May of 1996. [XI Gliatsiologicheskif simpozium, mai 1996 g.]

Mikhaleiko, V.N., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.239-246, In Russian.

DLC GB2401.M37

Meetings, Glaciology, Research projects

53-4587

Changing glaciers: International Glaciological Conference in Norway. [Meniaïushchiesia ledniki: mezhdunarodnaia gliatsiologicheskaja konferentsiia v Norvegii]

Glazovskii, A.F., Kotliakov, V.M., Mikhaleiko, V.N., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.247-253, In Russian.

DLC GB2401.M37

Meetings, International cooperation, Glaciers, Research projects

53-4588

International conference on the fundamental studies of the Earth's cryosphere in the Arctic and Subarctic, Pushchino. [Mezhdunarodnaia konferentsiia "Fundamental'nye issledovaniia kriosfery Zemli v Arktike i Subarktike" v Pushchino]

Gotubev, V.N., Mel'nikov, E.S., Streletskaia, I.D., Frolov, A.D., Gilichinskiï, D.A., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.254-256, In Russian.

DLC GB2401.M37

Meetings, International cooperation, Research projects, Geocryology

53-4589

Working meeting and school-seminar of the Glaciological Association in 1994. [Rabochee soveshchanie i shkola-seminar Gliatsiologicheskof assotsiatsii v 1994 g.]

Bazhev, A.B., Rototava, V.N., *Rossiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1997, Vol.82, p.257-260, In Russian.

DLC GB2401.M37

Meetings, Organizations, Research projects, Glaciology



- 53-4590**  
International conference of snow avalanches. [Mezhdunarodnaya konferentsiya po snezhnym lavinam]  
Bozhinskiĭ, A.N., Chernous, P.A., *Rossiiskaia akademiia nauk. Institut geografii. Materialy glatsiologicheskikh issledovanii*, June 1997, Vol.82, p.261-262, In Russian.  
DLC GB2401.M37  
Meetings, Avalanches, International cooperation, Research projects
- 53-4591**  
Ice ages and nuclear waste isolation.  
Talbot, C.J., *Engineering geology*, Apr. 1999, 52(3-4), p.177-192, 54 refs.  
Radioactive wastes, Waste disposal, Underground storage, Engineering geology, Glaciation, Glacial geology, Glacial erosion, Ice age theory, Global warming, Europe
- 53-4592**  
On the feasibility of the acoustic halinometry of the Arctic Ocean.  
Kozubskaja, G.I., Kudriashov, V.M., Sabinin, K.D., *Acoustical physics*, Mar.-Apr. 1999, 45(2), p.217-223, Translated from *Akusticheskii zhurnal*. 10 refs.  
Sea water, Water temperature, Salinity, Ice water interface, Ice cover effect, Ice acoustics, Underwater acoustics, Sound waves, Sound transmission, Acoustic measurement, Arctic Ocean
- 53-4593**  
Winter maintenance: 3 groups provide help. *Better roads*, June 1999, 69(6), p.16-17.  
Road icing, Ice removal, Snow removal, Road maintenance
- 53-4594**  
Wyoming plows more at safe speeds. MP 5379, *Better roads*, June 1999, 69(6), p.18-19, Phone numbers are provided for S.A. Ketcham, L.D. Minsk, and L.S. Danyluk at CRREL, as contact persons.  
Snowstorms, Snow removal, Safety, Cold weather operation, Road maintenance, United States—Wyoming
- 53-4595**  
Road supervisors offer winter comments, tips. *Better roads*, June 1999, 69(6), p.20-21.  
Snowstorms, Safety, Snow removal, Cold weather operation, Highway planning, Road maintenance, United States
- 53-4596**  
How Alaska DOT handles snow and ice. *Better roads*, June 1999, 69(6), p.22-24.  
Snow removal, Sanding, Salting, Chemical ice prevention, Road maintenance, United States—Alaska
- 53-4597**  
Glaciostasy controls chemical and isotopic characteristics of tholeiites from the Reykjanes Peninsula, SW Iceland.  
Gee, M.A.M., Taylor, R.N., Thirlwall, M.F., Murton, B.J., *Earth and planetary science letters*, Dec. 15, 1998, 164(1-2), p.1-5, 19 refs.  
Glaciation, Glacier oscillation, Isostasy, Volcanoes, Magma, Lithology, Geochemistry, Isotope analysis, Tectonics, Soil dating, Geochronology, Paleoclimatology, Iceland
- 53-4598**  
Coherent deep flow variation in the Iceland and American basins during the last interglacial.  
Hall, I.R., McCave, T.N., Chapman, M.R., Shackleton, N.J., *Earth and planetary science letters*, Dec. 15, 1998, 164(1-2), p.15-21, 25 refs.  
Ocean currents, Water transport, Water temperature, Salinity, Marine geology, Marine deposits, Bottom sediment, Drill core analysis, Isotope analysis, Stratigraphy, Global change, Paleoclimatology
- 53-4599**  
Deglaciation effects on mantle melting under Iceland: results from the northern volcanic zone.  
Slater, L., Jull, M., McKenzie, D., Gronvold, K., *Earth and planetary science letters*, Dec. 15, 1998, 164(1-2), p.151-164, 23 refs.  
Glaciation, Glacier oscillation, Glacier melting, Isostasy, Earth crust, Tectonics, Volcanoes, Magma, Geochemistry, Geochronology, Paleoclimatology, Iceland
- 53-4600**  
Pleistocene subglacial volcanism in Iceland: tectonic implications.  
Bourgeois, O., Dauteuil, O., Van Vliet-Lanoë, B., *Earth and planetary science letters*, Dec. 15, 1998, 164(1-2), p.165-178, 69 refs.  
Pleistocene, Glaciation, Glacial geology, Glacier flow, Glacier beds, Volcanoes, Magma, Tectonics, Geochronology, Paleoclimatology, Iceland
- 53-4601**  
Provenance of Heinrich layers in core V28-82, northeastern Atlantic: <sup>40</sup>Ar/<sup>39</sup>Ar ages of ice-rafted hornblende, Pb isotopes in feldspar grains, and Nd-Sr-Pb isotopes in the fine sediment fraction.  
Hemming, S.R., et al, *Earth and planetary science letters*, Dec. 15, 1998, 164(1-2), p.317-333, 58 refs.  
Glaciation, Glacial geology, Glacial deposits, Ice rafting, Sediment transport, Marine geology, Marine deposits, Bottom sediment, Drill core analysis, Isotope analysis, Radioactive age determination, Paleoclimatology
- 53-4602**  
High-resolution measurements of dissolved organic carbon in the Arctic Ocean by *in situ* fiber-optic spectrometry.  
Guay, C.K., et al, *Geophysical research letters*, Apr. 15, 1999, 26(8), p.1007-1010, 28 refs.  
Oceanographic surveys, Sea water, Water chemistry, Water temperature, Salinity, Ocean currents, Water transport, Biomass, Nutrient cycle, Arctic Ocean
- 53-4603**  
Distribution and inventory of <sup>129</sup>I in the central Arctic Ocean.  
Buraglio, N., Aldahan, A.A., Possnert, G., *Geophysical research letters*, Apr. 15, 1999, 26(8), p.1011-1014, 20 refs.  
Oceanographic surveys, Sea water, Water chemistry, Water temperature, Salinity, Water transport, Ocean currents, Isotopic labeling, Arctic Ocean
- 53-4604**  
Numerical investigation of the spring Ross Sea polynya.  
Fichefet, T., Goosse, H., *Geophysical research letters*, Apr. 15, 1999, 26(8), p.1015-1018, 25 refs.  
Sea ice distribution, Ice conditions, Polynyas, Air ice water interaction, Ice heat flux, Drift, Ocean currents, Water transport, Ice models, Computerized simulation, Antarctica—Ross Sea
- 53-4605**  
Linkage between decadal climate variations in the Labrador Sea and the tropical Atlantic Ocean.  
Yang, J.Y., *Geophysical research letters*, Apr. 15, 1999, 26(8), p.1023-1026, 20 refs.  
Marine atmospheres, Atmospheric circulation, Air water interactions, Ocean currents, Sea water, Salinity, Water temperature, Surface temperature, Water transport, Global change, Labrador Sea
- 53-4606**  
Present and past climate control on fjord glaciations in Greenland: implications for IRD-deposition in the sea.  
Reeh, N., Mayer, C., Miller, H., Thomsen, H.H., Weidick, A., *Geophysical research letters*, Apr. 15, 1999, 26(8), p.1039-1042, 22 refs.  
Glaciation, Glacier oscillation, Glacial geology, Glacial erosion, Glacial deposits, Calving, Icebergs, Ice rafting, Sediment transport, Marine geology, Marine deposits, Bottom sediment, Global change, Climatic changes, Paleoclimatology, Greenland
- 53-4607**  
Possible solar influences on the dust profile of the GISP2 ice core from central Greenland.  
Ram, M., Stolz, M.R., *Geophysical research letters*, Apr. 15, 1999, 26(8), p.1043-1046, 13 refs.  
Ice sheets, Glacier ice, Ice cores, Ice composition, Dust, Solar activity, Global change, Paleoclimatology, Greenland
- 53-4608**  
Last-glacial to post-glacial <sup>10</sup>Be fluctuations in a sediment core from the Academician Ridge, Lake Balkal.  
Horiuchi, K., et al, *Geophysical research letters*, Apr. 15, 1999, 26(8), p.1047-1050, 33 refs.  
Lacustrine deposits, Bottom sediment, Drill core analysis, Isotope analysis, Soil dating, Geochronology, Global change, Paleoclimatology, Russia—Baykal, Lake
- 53-4609**  
Corrections to "Eurasian snow cover variability and Northern Hemisphere climate predictability".  
Cohen, J., Entekhabi, D., *Geophysical research letters*, Apr. 15, 1999, 26(8), p.1051, 5 refs. For original paper see 53-3248.  
Snow cover distribution, Snowfall, Atmospheric circulation, Climatic changes, Global change, Statistical analysis
- 53-4610**  
Temporal evolution of the ratio HNO<sub>2</sub>/NO<sub>x</sub> in the arctic lower stratosphere from January to March 1997.  
Schneider, J., et al, *Geophysical research letters*, Apr. 15, 1999, 26(8), p.1125-1128, 18 refs.  
Polar atmospheres, Atmospheric circulation, Atmospheric composition, Polar stratospheric clouds, Ozone
- 53-4611**  
2D microphysical model of the polar stratospheric CN layer.  
Mills, M.J., Toon, O.B., Solomon, S., *Geophysical research letters*, Apr. 15, 1999, 26(8), p.1133-1136, 24 refs.  
Polar atmospheres, Stratosphere, Atmospheric circulation, Atmospheric composition, Aerosols, Condensation nuclei, Ice nuclei, Polar stratospheric clouds, Photochemical reactions, Antarctica
- 53-4612**  
Stratospheric clouds over England.  
Hervig, M.E., *Geophysical research letters*, Apr. 15, 1999, 26(8), p.1137-1140, 17 refs.  
Polar stratospheric clouds, Clouds (meteorology), Cloud cover, Cloud physics, Aerosols, Ice nuclei, United Kingdom—England
- 53-4613**  
Comparison of observations and model simulations of NO<sub>x</sub>/NO<sub>y</sub> in the lower stratosphere.  
Gao, R.S., et al, *Geophysical research letters*, Apr. 15, 1999, 26(8), p.1153-1156, 19 refs.  
Stratosphere, Atmospheric composition, Aerosols, Condensation trails, Ozone
- 53-4614**  
Partitioning of NO<sub>x</sub> species in the summer arctic stratosphere.  
Osterman, G.B., et al, *Geophysical research letters*, Apr. 15, 1999, 26(8), p.1157-1160, 19 refs.  
Polar atmospheres, Stratosphere, Atmospheric composition, Air pollution, Aerosols, Condensation trails, Ozone
- 53-4615**  
Satellite detection of smoke aerosols over a snow/ice surface by TOMS.  
Hsu, N.C., Herman, J.R., Gleason, J.F., Torres, O., Seftor, C.J., *Geophysical research letters*, Apr. 15, 1999, 26(8), p.1165-1168, 9 refs.  
Polar atmospheres, Atmospheric circulation, Atmospheric composition, Forest fires, Carbon black, Aerosols, Air pollution, Snow optics, Ice optics, Snow cover effect, Ice cover effect, Spaceborne photography, Radiometry, Canada, Greenland

53-4616

**Homogeneous freezing of evaporating cloud droplets.**

Shaw, R.A., Lamb, D., *Geophysical research letters*, Apr. 15, 1999, 26(8), p.1181-1184, 20 refs. Cloud physics, Cloud droplets, Evaporation, Homogeneous nucleation, Nucleation rate, Freezing rate

53-4617

**Nonhydrostatic, mesobeta-scale model simulations of cloud ceiling and visibility for an east coast winter precipitation event.**

Stoelinga, M.T., Warner, T.T., *Journal of applied meteorology*, Apr. 1999, 38(4), p.385-404, 22 refs. Snowstorms, Snowfall, Snow optics, Cloud cover, Cloud height indicators, Visibility, Weather forecasting, Safety, United States

53-4618

**Carbon fixation by phytoplankton in high arctic lakes: implications of low temperature for photosynthesis.**

Markager, S., Vincent, W.F., Yang, E.P.Y., *Limnology and oceanography*, May 1999, 44(3), p.597-607, 63 refs.

Lake water, Plankton, Algae, Plant ecology, Biomass, Photosynthesis, Limnology, Canada—Northwest Territories—Queen Elizabeth Islands

53-4619

**Identification of a novel ice-nucleating bacterium of antarctic origin and its ice nucleation properties.**

Obata, H., Muryoi, N., Kawahara, H., Yamade, K., Nishikawa, J., *Cryobiology*, Mar. 1999, 38(2), p.131-139, 28 refs.

Bacteria, Cryobiology, Ice nuclei, Organic nuclei, Antarctica—Ross Island

53-4620

**On the accuracy of in situ water vapor measurements in the troposphere and lower stratosphere with the Harvard Lyman- $\alpha$  hygrometer.**

Hints, E.J., Weinstock, E.M., Anderson, J.G., May, R.D., Hurst, D.F., *Journal of geophysical research*, Apr. 20, 1999, 104(D7), p.8183-8189, 28 refs.

Atmospheric composition, Water vapor, Humidity, Moisture detection, Meteorological instruments, Hygrometers, Airborne equipment

53-4621

**Closure of the total hydrogen budget of the northern extratropical lower stratosphere.**

Hurst, D.F., et al, *Journal of geophysical research*, Apr. 20, 1999, 104(D7), p.8191-8200, 33 refs.

Atmospheric circulation, Atmospheric composition, Stratosphere, Air masses, Photochemical reactions, Hydrogen, Ozone, Water vapor, Humidity

53-4622

**Chlorine activation and ozone destruction in the northern lowermost stratosphere.**

Lelieveld, J., et al, *Journal of geophysical research*, Apr. 20, 1999, 104(D7), p.8201-8213, 63 refs.

Polar atmospheres, Stratosphere, Atmospheric circulation, Atmospheric composition, Cloud physics, Ice nuclei, Air pollution, Aerosols, Ozone

53-4623

**NO<sub>x</sub>-N<sub>2</sub>O correlation observed inside the arctic vortex in February 1997: dynamical and chemical effects.**

Kondo, Y., et al, *Journal of geophysical research*, Apr. 20, 1999, 104(D7), p.8215-8224, 38 refs.

Polar atmospheres, Stratosphere, Atmospheric circulation, Atmospheric composition, Air masses, Ice nuclei, Ozone

53-4624

**Six years of UARS Microwave Limb Sounder HNO<sub>3</sub> observations: seasonal, interhemispheric, and interannual variations in the lower stratosphere.**

Santee, M.L., Manney, G.L., Froidevaux, L., Read, W.G., Waters, J.W., *Journal of geophysical research*, Apr. 20, 1999, 104(D7), p.8225-8246, 86 refs.

Polar atmospheres, Atmospheric circulation, Atmospheric composition, Polar stratospheric clouds, Ozone, Antarctica

53-4625

**Nitrogen species in the post-Pinatubo stratosphere: model analysis utilizing UARS measurements.**

Danilin, M.Y., *Journal of geophysical research*, Apr. 20, 1999, 104(D7), p.8247-8262, 77 refs.

Stratosphere, Atmospheric circulation, Atmospheric composition, Volcanic ash, Ozone

53-4626

**Ozone profiles from GOME satellite data: algorithm description and first validation.**

Hoogen, R., Rozanov, V.V., Burrows, J.P., *Journal of geophysical research*, Apr. 20, 1999, 104(D7), p.8263-8280, 51 refs.

Atmospheric circulation, Atmospheric composition, Ozone, Data processing, Computer programs, Mathematical models

53-4627

**Reconstructed view of polar stratospheric chemistry.**

Coffey, M.T., Mankin, W.G., Hannigan, J.W., *Journal of geophysical research*, Apr. 20, 1999, 104(D7), p.8295-8316, 21 refs.

Polar atmospheres, Stratosphere, Atmospheric circulation, Atmospheric composition, Polar stratospheric clouds, Photochemical reactions, Ozone

53-4628

**Cold hardiness adaptations of codling moth, *Cydia pomonella*.**

Neven, L.G., *Cryobiology*, Feb. 1999, 38(1), p.43-50, 48 refs.

Animals, Ecology, Cryobiology, Cold tolerance, Cold weather survival

53-4629

**Ice-nucleating bacteria from the guts of two subantarctic beetles, *Hydromedion sparsutum* and *Perimylops antarcticus* (Perimylopidae).**

Worland, M.R., Block, W., *Cryobiology*, Feb. 1999, 38(1), p.60-67, 22 refs.

Animals, Bacteria, Cryobiology, Cold tolerance, Cold weather survival, Ice nuclei, Organic nuclei, South Georgia

53-4630

**Temporal changes of microbial assemblages in the ice and snow cover of a high mountain lake.**

Felip, M., Camarero, L., Catalan, J., *Limnology and oceanography*, June 1999, 44(4), p.973-987, 43 refs.

Frozen lakes, Lake ice, Snow ice interface, Ice cover effect, Snow cover effect, Microbiology, Bacteria, Algae, Ecology, Limnology, Spain—Pyrenees

53-4631

**Analysis of cold air mass temperature modification across the U.S. Great Plains as a consequence of snow depth and albedo.**

Ellis, A.W., Leathers, D.J., *Journal of applied meteorology*, June 1999, 38(6), p.696-711, 28 refs.

Snow cover distribution, Snow depth, Snow heat flux, Snow cover effect, Albedo, Snow air interface, Air masses, Air temperature, Weather forecasting, United States—Great Plains

53-4632

**Global analysis of snow depth for numerical weather prediction.**

Brasnett, B., *Journal of applied meteorology*, June 1999, 38(6), p.726-740, 31 refs.

Snow surveys, Snow cover distribution, Snow depth, Snow density, Snowfall, Weather forecasting, Statistical analysis

53-4633

**Double-pyramid structure of dendritic ice growing from supercooled water.**

Braslavsky, I., Lipson, S.G., *Journal of crystal growth*, Mar. 1999, Vol.198/199(Pt.1), International Conference on Crystal Growth, 12th, Part 1, Jerusalem, Israel, July 26-31, 1998. Edited by J.B. Mullin and Gazit, p.56-61, 26 refs.

Heavy water, Deuterium oxide ice, Dendritic ice, Ice crystal growth, Ice crystal structure

53-4634

**Eutectic freeze crystallization simultaneous formation and separation of two solid phases.**

Van der Ham, F., Witkamp, G.J., De Graauw, J., Van Rosmalen, G.M., *Journal of crystal growth*, Mar. 1999, Vol.198/199(Pt. 1), International Conference on Crystal Growth, 12th, Part 1, Jerusalem, Israel, July 26-31, 1998. Edited by J.B. Mullin and D. Gazit, p.744-748, 6 refs.

Solutions, Artificial freezing, Ice crystal growth, Liquid solid interfaces, Solidification, Solid phases, Desalting

53-4635

**X-ray topographic studies of dislocation/grain boundary interactions in ice.**

Baker, I., *U.S. Army Research Office. Report*, Oct. 18, 1996, ARO-30421.15-GS, 8p., ADA-318 455, 3 refs.

Ice crystal structure, Ice deformation, Crystal defects, Dislocations (materials), X ray analysis

53-4636

**Interaction and impact of floating bodies.**

Chwang, A.T., Landweber, L., *Iowa Institute of Hydraulic Research. Report*, July 1992, IIHR-357, 10p., ADA-254 020, 19 refs.

Ships, Offshore structures, Ice floes, Ice solid interface, Hydrodynamics, Ice loads, Ice pressure, Ice friction, Computerized simulation, Arctic Ocean

53-4637

**Alaska propylene glycol field demonstration.**

Davis, D., *U.S. Army Tank-Automotive RD&E Center (TARDEC) Mobility Technology Center, Belvoir, VA. Technical report*, Mar. 1997, No.13690, 14p. + append., ADA-323 390, 12 refs.

Motor vehicles, Military equipment, Antifreezes, Air pollution, Environmental protection, Cold weather tests, United States—Alaska—Fairbanks

53-4638

**On the glacial setting of Northern Finland.**

Aario, R., *Nordia tiedonantoja. Sarja A*, 1990, No.1, International Drumlin Symposium, Oulu, Finland, June 26-July 2, 1990. Glacial heritage of Northern Finland; Excursion Guide. Edited by R. Aario, p.3-5, 8 refs.

DLC GB581.E95 1990

Glaciation, Glacial geology, Glacial deposits, Glacial erosion, Geomorphology, Paleoclimatology, Finland

53-4639

**Weathering crust in Finnish Lapland and its influence on the composition of glacial deposits.**

Peuraniemi, V., *Nordia tiedonantoja. Sarja A*, 1990, No.1, International Drumlin Symposium, Oulu, Finland, June 26-July 2, 1990. Glacial heritage of Northern Finland; Excursion Guide. Edited by R. Aario, p.7-11, 10 refs.

DLC GB581.E95 1990

Glacial geology, Glacial deposits, Glacial till, Bedrock, Weathering, Geochemistry, Minerals, Exploration, Finland—Lapland

53-4640

**Morainic landforms in Northern Finland.**

Aario, R., *Nordia tiedonantoja. Sarja A*, 1990, No.1, International Drumlin Symposium, Oulu, Finland, June 26-July 2, 1990. Glacial heritage of Northern Finland; Excursion Guide. Edited by R. Aario, p.13-27, 25 refs.

DLC GB581.E95 1990

Glacial geology, Glacial erosion, Glacial deposits, Glacier flow, Moraines, Glacial till, Geomorphology, Finland

53-4641

**On boulder transport in drumlins, Rogan moraines and Seveti moraines.**

Peuraniemi, V., *Nordia tiedonantoja. Sarja A*, 1990, No.1, International Drumlin Symposium, Oulu, Finland, June 26-July 2, 1990. Glacial heritage of Northern Finland; Excursion Guide. Edited by R. Aario, p.29-32, 7 refs.

DLC GB581.E95 1990

Glacial geology, Glacial erosion, Glacial deposits, Glacial till, Moraines, Sediment transport, Finland

53-4642

**Area of Northern Kainuu, Kollismaa and Peräpohjola.**

Aario, R., *Nordia tiedonantoja. Sarja A*, 1990, No.1, International Drumlin Symposium, Oulu, Finland, June 26-July 2, 1990. Glacial heritage of Northern Finland; Excursion Guide. Edited by R. Aario, p.33-49, Refs. passim. List of excursion sites in the area. DLC GB581.E95 1990

Geological surveys, Topographic surveys, Glacial geology, Glacial erosion, Glacial deposits, Glacial till, Moraines, Geomorphology, Finland

53-4643

**Central Lapland.**

Aario, R., *Nordia tiedonantoja. Sarja A*, 1990, No.1, International Drumlin Symposium, Oulu, Finland, June 26-July 2, 1990. Glacial heritage of Northern Finland; Excursion Guide. Edited by R. Aario, p.49-56, Refs. passim. List of excursion sites in the area. DLC GB581.E95 1990

Geological surveys, Glacial geology, Glacial erosion, Glacial deposits, Glacial till, Moraines, Glacier flow, Geomorphology, Stratigraphy, Finland—Lapland

53-4644

**Northern ice flow area.**

Aario, R., *Nordia tiedonantoja. Sarja A*, 1990, No.1, International Drumlin Symposium, Oulu, Finland, June 26-July 2, 1990. Glacial heritage of Northern Finland; Excursion Guide. Edited by R. Aario, p.57-61, Refs. passim. List of excursion sites in the area. DLC GB581.E95 1990

Geological surveys, Glacial geology, Glacial erosion, Glacial deposits, Glacier flow, Glacial till, Moraines, Finland, Arctic Ocean

53-4645

**From glaciation to the present time.**

Heikkinen, O., *Nordia tiedonantoja. Sarja A*, 1990, No.1, International Drumlin Symposium, Oulu, Finland, June 26-July 2, 1990. Interdisciplinary focus on Northern Finland. Edited by O. Heikkinen, p.63-70, 10 refs.

DLC GB581.E95 1990

Glaciation, Glacial geology, Glacial erosion, Glacial deposits, Isostasy, Glacial lakes, Sea level, Geochronology, Paleoclimatology, Finland, Baltic Sea

53-4646

**Nature conservation in Finland and especially Lapland.**

Heikkinen, O., *Nordia tiedonantoja. Sarja A*, 1990, No.1, International Drumlin Symposium, Oulu, Finland, June 26-July 2, 1990. Interdisciplinary focus on Northern Finland. Edited by O. Heikkinen, p.71-73, 3 refs.

DLC GB581.E95 1990

Regional planning, Environmental protection, Finland—Lapland

53-4647

**Lapland War of 1944-1945.**

Heikkinen, O., *Nordia tiedonantoja. Sarja A*, 1990, No.1, International Drumlin Symposium, Oulu, Finland, June 26-July 2, 1990. Interdisciplinary focus on Northern Finland. Edited by O. Heikkinen, p.75-77, 2 refs.

DLC GB581.E95 1990

Military operation, History, Finland—Lapland

53-4648

**Lapland for tourists.**

Heikkinen, O., *Nordia tiedonantoja. Sarja A*, 1990, No.1, International Drumlin Symposium, Oulu, Finland, June 26-July 2, 1990. Interdisciplinary focus on Northern Finland. Edited by O. Heikkinen, p.79-81, 4 refs.

DLC GB581.E95 1990

Regional planning, Land development, Economic development, Finland—Lapland

53-4649

**Timber line.**

Heikkinen, O., *Nordia tiedonantoja. Sarja A*, 1990, No.1, International Drumlin Symposium, Oulu, Finland, June 26-July 2, 1990. Interdisciplinary focus on Northern Finland. Edited by O. Heikkinen, p.91-93, 8 refs.

DLC GB581.E95 1990

Forest lines, Forest tundra, Plant ecology, Vegetation patterns, Finland

53-4650

**Gold in Lapland.**

Heikkinen, O., *Nordia tiedonantoja. Sarja A*, 1990, No.1, International Drumlin Symposium, Oulu, Finland, June 26-July 2, 1990. Interdisciplinary focus on Northern Finland. Edited by O. Heikkinen, p.95-96, 5 refs.

DLC GB581.E95 1990

Exploration, Gold, Natural resources, Finland

53-4651

**On polygenetic relief in Poland. [Poligeniza rzeźby w Polsce]**

Klatkova, H., ed. *Łódzkie Towarzystwo Naukowe. Acta geographica Lodziensia*, 1996, No.71, 288p., In Polish with extensive English summaries. Refs. passim. For selected papers see 53-4652 through 53-4666.

DLC GB436.P7P65 1996

Geomorphology, Geochronology, Quaternary deposits, Paleoclimatology, Glacial deposits, Landscape development, Landforms, Periglacial processes

53-4652

**Vistulian and Holocene development of the Ozorków environs with reference to the dynamics of the substratum. [Rozwój rzeźby okolic Ozorkowa w vistulianie i holocenie z uwzględnieniem dynamiki podłoża]**

Forysiak, J., *Łódzkie Towarzystwo Naukowe. Acta geographica Lodziensia*, 1996, No.71, Poligeniza rzeźby w Polsce (On polygenetic relief in Poland). Edited by H. Klatkova, p.33-42, In Polish with English summary. 23 refs.

DLC GB436.P7P65 1996

Quaternary deposits, Eolian soils, Sands, Clays, Glacial deposits, Geomorphology, Geochronology, Substrates, Poland—Ozorków

53-4653

**Polygenesis of the relief of the central part of Polesie Lubelskie: the case of the Sosnowica region. [Poligeniza rzeźby centralnej części Polesia Lubelskiego na przykładzie okolic Sosnowicy]**

Gardziel, Z., Nowak, J., *Łódzkie Towarzystwo Naukowe. Acta geographica Lodziensia*, 1996, No.71, Poligeniza rzeźby w Polsce (On polygenetic relief in Poland). Edited by H. Klatkova, p.43-53, In Polish with English summary. 26 refs.

DLC GB436.P7P65 1996

Quaternary deposits, Glacial deposits, Pleistocene, Moraines, Geomorphology, Geochronology, Eolian soils, Glacial till, Poland—Sosnowica

53-4654

**Effect of the Warta Stage glacial processes on the Rawka river valley development. [Wpływ warciańskich procesów glacjalnych na morfogenezę doliny Rawki]**

Kobojek, E., *Łódzkie Towarzystwo Naukowe. Acta geographica Lodziensia*, 1996, No.71, Poligeniza rzeźby w Polsce (On polygenetic relief in Poland). Edited by H. Klatkova, p.67-78, In Polish with English summary. 22 refs.

DLC GB436.P7P65 1996

Valleys, Geocryology, Geomorphology, Lacustrine deposits, Grain size, Glacial till, Alluvium, Glacial deposits, Glacial rivers, Poland—Rawka River

53-4655

**Influence of cold morphogenetic cycles upon geological structure and morphology of the northern part of Polish Jura Upland. [Wpływ zimnych cykli morfogenetycznych na budowę geologiczną i rzeźbę północnej części Jury Polskiej]**

Kobojek, S., *Łódzkie Towarzystwo Naukowe. Acta geographica Lodziensia*, 1996, No.71, Poligeniza rzeźby w Polsce (On polygenetic relief in Poland). Edited by H. Klatkova, p.79-95, In Polish with English summary. 23 refs.

DLC GB436.P7P65 1996

Pleistocene, Geomorphology, Glacial geology, Geochronology, Periglacial processes, Substrates, Quaternary deposits, Eolian soils, Alluvium, Paleoclimatology, Glacial deposits, Ice wedges, Poland

53-4656

**Litho- and pedogenic features in the tills of the Warta Glaciation (Bełchatów). [Cechy lito- i pedogeny w glinach zlodowacenia warty (Bełchatów)]**

Konecka-Betley, K., Zagórski, Z., *Łódzkie Towarzystwo Naukowe. Acta geographica Lodziensia*, 1996, No.71, Poligeniza rzeźby w Polsce (On polygenetic relief in Poland). Edited by H. Klatkova, p.97-111 + 1 fold. table, In Polish with English summary. 18 refs.

DLC GB436.P7P65 1996

Soil formation, Glacial till, Cryogenic soils, Soil science, Microstructure, Poland—Bełchatów

53-4657

**Postdepositional stage in the evolution of the Domański Wierch alluvial fan at Orawa (S Poland). [Podepozycyjny etap w rozwoju stożka Domańskiego Wierchu na Orawie]**

Kukulak, J., *Łódzkie Towarzystwo Naukowe. Acta geographica Lodziensia*, 1996, No.71, Poligeniza rzeźby w Polsce (On polygenetic relief in Poland). Edited by H. Klatkova, p.121-130, In Polish with English summary. 27 refs.

DLC GB436.P7P65 1996

Paleoclimatology, Geomorphology, Geochronology, Terraces, Pleistocene, Alluvium, Tectonics, Climatic changes, Glacial erosion, Landscape development, Poland—Orawa

53-4658

**Main factors of Neogene and Quaternary morphogenetic evolution of the Silesian-Cracow region (S Poland). [Główne czynniki neogensekiej i czwartorzędowej ewolucji morfogenetycznej regionu śląsko-krakowskiego]**

Lewandowski, J., *Łódzkie Towarzystwo Naukowe. Acta geographica Lodziensia*, 1996, No.71, Poligeniza rzeźby w Polsce (On polygenetic relief in Poland). Edited by H. Klatkova, p.131-148, In Polish with English summary. 53 refs.

DLC GB436.P7P65 1996

Paleoclimatology, Pleistocene, Quaternary deposits, Tectonics, Periglacial processes, Geomorphology, Glacial geology, Alluvium, Geochronology, Poland—Silesia, Poland—Cracow

53-4659

**Frost weathering of the pre-Quaternary rocks and its influence on landscape evolution in the north-western margin of the Holy Cross Mts. [Wietrzeńie mrozowe skał przedczwartorzędowych oraz jego wpływ na rozwój rzeźby północno-zachodniego obrzeżenia Gór Świętokrzyskich]**

Lindner, L., *Łódzkie Towarzystwo Naukowe. Acta geographica Lodziensia*, 1996, No.71, Poligeniza rzeźby w Polsce (On polygenetic relief in Poland). Edited by H. Klatkova, p.149-164, In Polish with English summary. 31 refs.

DLC GB436.P7P65 1996

Frost weathering, Landscape development, Geomorphology, Ground ice, Pleistocene, Sediments, Periglacial processes, Solifluction, Rock mechanics, Frozen rocks, Poland—Holy Cross Mountains, Poland—Cracow

53-4660

**Role of buried dead ice in modelling of lake basins in present lakelands. [Rola martwego lodu w kształtowaniu mis jeziornych obecnych pojezierzy]**

Marks, L., *Łódzkie Towarzystwo Naukowe. Acta geographica Lodziensia*, 1996, No.71, Poligeniza rzeźby w Polsce (On polygenetic relief in Poland). Edited by H. Klatkova, p.181-192, In Polish with English summary. 58 refs.

DLC GB436.P7P65 1996

Landscape development, Permafrost beneath lakes, Ice melting, Glacial lakes, Lake water, Water level, Hydrology, Climatic changes, Glacial deposits, Peat, Glacier ice, Substrates, Poland

53-4661

**Influence of the relief of Warta ice sheet bedrock on the spatial disposition of the deglaciation effects and later transformations of the relief of Rawa Mazowiecka environs. [Wpływ rzeźby dolin oza lodolodu warciańskiego na przestrzenny rozkład skutków deglacjacji i późniejsze przekształcenia rzeźby w okolicach Rawy Mazowieckiej]**

Rdzany, Z., *Łódzkie Towarzystwo Naukowe. Acta geographica Lodziensia*, 1996, No.71, Poligeniza rzeźby w Polsce (On polygenetic relief in Poland). Edited by H. Klatkova, p.193-205, In Polish with English summary. 17 refs.

DLC GB436.P7P65 1996

Landscape development, Bedrock, Geomorphology, Glacial geology, Paleoclimatology, Ground ice, Meltwater, Ice melting, Poland—Rawa Mazowiecka

53-4662

**Polygenesis of Vistulian development of Wieprz drainage basin valleys (Lublin Upland and Roztocze). [Poligeniza vistuliańskiego rozwoju dolin dorzecza Wieprza (Wyżna Lubelska i Roztocze)]**

Superson, J., *Łódzkie Towarzystwo Naukowe. Acta geographica Lodziensia*, 1996, No.71, Poligeniza rzeźby w Polsce (On polygenetic relief in Poland). Edited by H. Klatkova, p.219-232, In Polish with English summary. 26 refs.

DLC GB436.P7P65 1996

Sediments, Geomorphology, Periglacial processes, Valleys, River basins, Glacial geology, Paleoclimatology, Alluvium, Loess, Poland—Wieprz River, Poland—Lublin

53-4663

**Marginal zone of the Wartian ice sheet maximum extent in the eastern part of the Vistula and Bug river interfluvium. [Strefa marginalna maksymalnego zasięgu lodolodu warciańskiego we wschodniej części międzyrzecza Wisły i Bugu]**

Terpiłowski, S., *Łódzkie Towarzystwo Naukowe. Acta geographica Lodziensia*, 1996, No.71, Poligeniza rzeźby w Polsce (On polygenetic relief in Poland). Edited by H. Klatkova, p.233-241, In Polish with English summary. 24 refs.

DLC GB436.P7P65 1996

Glacial geology, Paleoclimatology, Ice sheets, Glaciation, Rivers, Geomorphology, Landforms, Landscape development, Glacial deposits, Poland—Bug River, Poland—Vistula River

53-4664

**Examples of polygenic valleys in the Łódź Region. [Przykłady dolin poligenicznych w regionie łódzkim]**

Turkowska, K., *Łódzkie Towarzystwo Naukowe. Acta geographica Lodziensia*, 1996, No.71, Poligeniza rzeźby w Polsce (On polygenetic relief in Poland). Edited by H. Klatkova, p.243-258, In Polish with English summary. 53 refs.

DLC GB436.P7P65 1996

Valleys, Glaciation, Glacial deposits, Moraines, Landscape development, Alluvium, Periglacial processes, Paleoclimatology, Runoff, Poland—Łódź

53-4665

**Spatial and time differentiation of the development of the Łuciąża river valley. [Przestrzenne i czasowe zróżnicowanie rozwoju doliny Łuciąży]**

Wachecka-Kotkowska, L., *Łódzkie Towarzystwo Naukowe. Acta geographica Lodziensia*, 1996, No.71, Poligeniza rzeźby w Polsce (On polygenetic relief in Poland). Edited by H. Klatkova, p.259-274, In Polish with English summary. 29 refs.

DLC GB436.P7P65 1996

River basins, Watersheds, Geomorphology, Moraines, Grain size, Sediments, Periglacial processes, Alluvium, Paleoclimatology, Landscape development, Glacial geology, Glacial erosion, Glacial rivers, Poland—Łuciąża River

53-4666

**Traces of the Wartian ice sheet oscillation in the eastern part of the region between the Warta and Proсна rivers. [Ślady oscylacji lodolodu warciańskiego we wschodniej części międzyrzecza Warty i Proсна]**

Załbba, M., *Łódzkie Towarzystwo Naukowe. Acta geographica Lodziensia*, 1996, No.71, Poligeniza rzeźby w Polsce (On polygenetic relief in Poland). Edited by H. Klatkova, p.275-288, In Polish with English summary. 22 refs.

DLC GB436.P7P65 1996

Paleoclimatology, Glaciation, Valleys, Glacial erosion, Ice sheets, Sediments, Glacial deposits, Glacier oscillation, Glacial geology, Lacustrine deposits, Landforms, Poland—Warta River, Poland—Proсна River

53-4667

**Structural Design '98.**

Kujala, P., ed, *Helsinki University of Technology. Ship Laboratory. Report*, 1999, M-238, 208p., Refs. passim. Presented at a seminar held in Espoo, Finland, Mar. 26, 1998. For selected papers see 53-4668 through 53-4678.

Ships, Structural analysis, Hydrodynamics, Design criteria

53-4668

**Development of large composite applications in ship building.**

Enlund, H., *Helsinki University of Technology. Ship Laboratory. Report*, 1999, M-238, Structural Design '98. Seminar, Espoo, Finland, Mar. 26, 1998. Edited by P. Kujala, p.8-21, 3 refs.

Ships, Composite materials, Structural analysis, Design criteria

53-4669

**Tools for improved FRP-sandwich applicability.**

Holm, G., Hildebrand, M., *Helsinki University of Technology. Ship Laboratory. Report*, 1999, M-238, Structural Design '98. Seminar, Espoo, Finland, Mar. 26, 1998. Edited by P. Kujala, p.22-40, 13 refs.

Ships, Composite materials, Polymers, Plastics, Structural analysis, Strain tests, Computerized simulation, Design criteria

53-4670

**Harmonization of polar class ship rules.**

Riska, K., Daley, C., *Helsinki University of Technology. Ship Laboratory. Report*, 1999, M-238, Structural Design '98. Seminar, Espoo, Finland, Mar. 26, 1998. Edited by P. Kujala, p.41-56, 19 refs.

Ships, Ice navigation, Ice solid interface, Metal ice friction, Ice pressure, Ice loads, Standards, Design criteria

53-4671

**Modelling of irregular sea waves for the time-domain simulation of ship dynamics.**

Matusiak, J., *Helsinki University of Technology. Ship Laboratory. Report*, 1999, M-238, Structural Design '98. Seminar, Espoo, Finland, Mar. 26, 1998. Edited by P. Kujala, p.57-69, 7 refs.

Ships, Hydrodynamics, Liquid solid interfaces, Ocean waves, Water waves, Structural analysis, Design criteria, Computerized simulation, Mathematical models

53-4672

**Wave loads on fast monohulls.**

Karppinen, T., Rantanen, A., Hellevaara, M., *Helsinki University of Technology. Ship Laboratory. Report*, 1999, M-238, Structural Design '98. Seminar, Espoo, Finland, Mar. 26, 1998. Edited by P. Kujala, p.70-92, 18 refs.

Ships, Hydrodynamics, Liquid solid interfaces, Ocean waves, Water waves, Structural analysis, Design criteria, Strain tests, Environmental tests, Mathematical models

53-4673

**Predictions of design wave loads in ship structural analyses.**

Kukkanen, T., *Helsinki University of Technology. Ship Laboratory. Report*, 1999, M-238, Structural Design '98. Seminar, Espoo, Finland, Mar. 26, 1998. Edited by P. Kujala, p.93-109, 29 refs.

Ships, Hydrodynamics, Liquid solid interfaces, Ocean waves, Water waves, Structural analysis, Fatigue (materials), Design criteria, Mathematical models, Statistical analysis

53-4674

**Transport analysis of spar hull structures.**

Mikkola, T.P.J., et al, *Helsinki University of Technology. Ship Laboratory. Report*, 1999, M-238, Structural Design '98. Seminar, Espoo, Finland, Mar. 26, 1998. Edited by P. Kujala, p.110-128, 9 refs.

Offshore structures, Ships, Marine transportation, Hydrodynamics, Structural analysis, Fatigue (materials), Design criteria, Computerized simulation

53-4675

**Laser welding and ship structures.**

Kujala, P., *Helsinki University of Technology. Ship Laboratory. Report*, 1999, M-238, Structural Design '98. Seminar, Espoo, Finland, Mar. 26, 1998. Edited by P. Kujala, p.129-153, 26 refs.

Ships, Steel structures, Panels, Joints (junctions), Lasers, Welding, Structural analysis, Fatigue (materials)

53-4676

**Local strength analysis of all steel sandwich panels.**

Kujala, P., Naar, H., *Helsinki University of Technology. Ship Laboratory. Report*, 1999, M-238, Structural Design '98. Seminar, Espoo, Finland, Mar. 26, 1998. Edited by P. Kujala, p.154-174, 12 refs.

Ships, Steel structures, Panels, Structural analysis, Design criteria, Strain tests, Mathematical models, Computerized simulation

53-4677

**Active control of vibration—an alternative to ship vibration control?**

Vessonen, I., *Helsinki University of Technology. Ship Laboratory. Report*, 1999, M-238, Structural Design '98. Seminar, Espoo, Finland, Mar. 26, 1998. Edited by P. Kujala, p.175-194, 12 refs.

Ships, Engines, Propellers, Electric equipment, Damping

53-4678

**Simplified methods for hierarchical ship structural design.**

Holopainen, T., Hakala, M.K., *Helsinki University of Technology. Ship Laboratory. Report*, 1999, M-238, Structural Design '98. Seminar, Espoo, Finland, Mar. 26, 1998. Edited by P. Kujala, p.195-208, 15 refs.

Ships, Structural analysis, Standards, Design criteria, Mathematical models, Computerized simulation

53-4679

**Evaluation of the fully turbulent flow over a flat plate for a large range of Reynolds numbers.**

Schweighofer, J., *Helsinki University of Technology. Ship Laboratory. Report*, 1997, M-226, 133p., PB98-109051, 46 refs.

Ships, Hydrodynamics, Liquid solid interfaces, Boundary value problems, Water flow, Turbulent flow, Viscous flow, Friction, Mathematical models, Computer programs

53-4680

**Two-dimensional added mass and damping coefficients by the finite element method.**

Kukkanen, T., *Helsinki University of Technology. Ship Laboratory. Report*, 1997, M-223, 61p., PB98-139462, 35 refs.

Ships, Hydrodynamics, Ocean waves, Water waves, Wave propagation, Damping, Liquid solid interfaces, Boundary value problems, Unsteady flow, Mathematical models

53-4681

**Introduction to cold regions engineering** by D.R. Freitag and T. McFadden.

Sodhi, D.S., MP 5380, *Journal of cold regions engineering*, Mar. 1998, 12(1), p.29-30, For book being reviewed see 51-4767.

Cold weather construction, Engineering geology, Frozen ground strength, Frozen ground thermodynamics, Permafrost beneath roads, Permafrost beneath structures, Buildings, Water supply, Sanitary engineering

53-4682

**Ice tank tests on ridging of non-uniform ice sheets.**

Tuhkuri, J., Lensu, M., *Helsinki University of Technology. Ship Laboratory. Arctic Offshore Research Centre. Report*, 1998, M-236, 130p., PB99-141137, 47 refs.

Pressure ridges, Ice pressure, Ice friction, Ice loads, Ice deformation, Ice override, Ice pileup, Ice cover thickness, Environmental tests

53-4683

**Polar winter: a biological model for impact events and related dark/cold climatic changes.**

Cockell, C.S., Stokes, M.D., *Climatic change*, Feb. 1999, 41(2), p.151-173, Refs. p.169-173.

Ecosystems, Ecology, Cryobiology, Acclimatization, Cold weather survival, Physiological effects, Global change

53-4684

**Variations in reconstructed ice winter severity in the western Baltic from 1501-1995, and their implications for the North Atlantic Oscillation.**

Koslowski, G., Glaser, R., *Climatic change*, Feb. 1999, 41(2), p.175-191, 25 refs.

Sea ice distribution, Ice conditions, Air ice water interaction, Ocean currents, Atmospheric circulation, Climatic changes, Global change, Statistical analysis, Baltic Sea

53-4685

**Northern North American tree-ring evidence for regional temperature changes after major volcanic events.**

D'Arrigo, R.D., Jacoby, G.C., *Climatic change*, Jan. 1999, 41(1), p.1-15, 54 refs.

Volcanoes, Volcanic ash, Atmospheric circulation, Air temperature, Forest lines, Plant ecology, Phenology, Climatic changes, Global change

53-4686

**Model computations of the impact of climatic change on the windthrow risk of trees.**

Peltola, H., Kellomäki, S., Väisänen, H., *Climatic change*, Jan. 1999, 41(1), p.17-36, 50 refs.

Global warming, Frost penetration, Frozen ground strength, Ground thawing, Thaw weakening, Wind pressure, Plant ecology, Trees (plants), Roots, Damage

53-4687

**Biomass and metabolism of zooplankton in the Bransfield Strait (Antarctic Peninsula) during austral spring.**

Hernández-León, S., Torres, S., Gómez, M., Montero, I., Almeida, C., *Polar biology*, 1999, 21(4), p.214-219, 44 refs.

Marine biology, Animals, Plankton, Ecosystems, Nutrient cycle, Biomass, Antarctica—Bransfield Strait

53-4688

**Nutrient stress gradient in the bottom 5 cm of fast ice, McMurdo Sound, Antarctica.**

McMinn, A., Skerratt, J.H., Trull, T., Ashworth, C., Lizotte, M.P., *Polar biology*, 1999, 21(4), p.220-227, 47 refs.

Fast ice, Ice bottom surface, Ice water interface, Ice cover effect, Ecology, Ecosystems, Marine biology, Algae, Photosynthesis, Biomass, Nutrient cycle, Antarctica—McMurdo Sound

53-4689

**Genetic diversity in the moss *Hennediella heimii* in Miers Valley, southern Victoria Land, Antarctica.**

Dale, T.M., Skotnicki, M.L., Adam, K.D., Selkirk, P.M., *Polar biology*, 1999, 21(4), p.228-233, 29 refs.

Mosses, Vegetation patterns, Plant ecology, Plant physiology, Antarctica—Miers Valley

53-4690

**Statistical models of invertebrate distribution on Macquarie Island: a tool to assess climate change and local human impacts.**

Davies, K.F., Melbourne, B.A., *Polar biology*, 1999, 21(4), p.240-250, 52 refs.

Animals, Biogeography, Ecology, Ecosystems, Acclimatization, Human factors, Environmental impact, Climatic changes, Global warming, Statistical analysis, Macquarie Island

53-4691

**Phytoplankton biomass and primary production in the marginal ice zone of the northwestern Weddell Sea during austral summer.**

Park, M.G., Yang, S.R., Kang, S.H., Chung, K.H., Shim, J.H., *Polar biology*, 1999, 21(4), p.251-261, 45 refs.

Ice edge, Ice water interface, Ice cover effect, Marine biology, Ecosystems, Plant ecology, Ecology, Plankton, Algae, Chlorophylls, Biomass, Nutrient cycle, Antarctica—Weddell Sea

53-4692

**Development of a cirrus parameterization scheme: performance studies in HIRLAM.**

Zurovac-Jevtic, D., *Monthly weather review*, Apr. 1999, 127(4), p.470-485, 21 refs.

Clouds (meteorology), Cloud cover, Cloud physics, Homogeneous nucleation, Ice nuclei, Ice crystal growth, Unfrozen water content, Weather forecasting, Mathematical models, Computerized simulation

53-4693

**Climatology of collective lake disturbances.**

Weiss, C.C., Sousounis, P.J., *Monthly weather review*, Apr. 1999, 127(4), p.565-574, 22 refs.

Snowstorms, Lake effects, Atmospheric circulation, Atmospheric disturbances, Synoptic meteorology, Weather forecasting, Computerized simulation, Great Lakes

53-4694

**Segregation of solutes and gases in experimental freezing of dilute solutions: implications for natural glacial systems.**

Killawee, J.A., Fairchild, I.J., Tison, J.L., Janssens, L., Lorrain, R., *Geochimica et cosmochimica acta*, Dec. 1998, 62(23/24), p.3637-3655, 74 refs.

Ice formation, Regelation, Ice growth, Freezing front, Ice water interface, Ice composition, Bubbles, Gas inclusions, Meltwater, Water chemistry, Hydrogeochemistry, Geochemistry

53-4695

**Quantification of the impact of glacial erosion on the British Isles.**

Clayton, K., *Institute of British Geographers. Transactions*, 1996, 21(1), p.124-156, 43 refs.

DLC G1.I67a NS Vol.21 1996

Geological surveys, Glaciation, Glacial geology, Glacial erosion, Glacial deposits, Quaternary deposits, Sediment transport, Geochronology, Paleoclimatology, United Kingdom—England

53-4696

**East Antarctic Ice Sheet: unstable ice or unstable ideas?**

Sugden, D.E., *Institute of British Geographers. Transactions*, 1996, 21(3), p.443-454, 59 refs.

DLC G1.I67a NS Vol.21 1996

Ice sheets, Glaciation, Glacial geology, Glacier oscillation, Ice age theory, Geomorphology, Geochronology, Tectonics, Sea level, Continental drift, Global change, Paleoclimatology, Antarctica—East Antarctica

53-4697

**Secular change of the seasonal sea level variation in the Baltic Sea and secular change of the winter climate.**

Ekman, M., *Geophysica*, 1998, 34(3), p.131-140, 18 refs.

Marine atmospheres, Atmospheric circulation, Ocean currents, Air water interactions, Wind direction, Wind factors, Sea level, Climatic changes, Statistical analysis, Baltic Sea

53-4698

**Occurrence of unfrozen ground in Finland.**

Solantie, R., *Geophysica*, 1998, 34(3), p.141-157, 24 refs.

Snow cover distribution, Snow depth, Snow cover effect, Soil surveys, Forest soils, Forest land, Soil freezing, Frost penetration, Thaw depth, Degree days, Climatic changes, Statistical analysis, Finland

53-4699

**Mesoscale dynamics of freezing rain storms over eastern Canada.**

Szeto, K.K., Tremblay, A., Guan, H., Hudak, D.R., Stewart, R.E., Cao, Z., *Journal of the atmospheric sciences*, May 15, 1999, 56(10), p.1261-1281, 43 refs.

Ice storms, Snow pellets, Precipitation (meteorology), Fronts (meteorology), Temperature inversions, Cloud physics, Synoptic meteorology, Computerized simulation, Weather forecasting, Canada

53-4700

**Modeling of annual water and biogeochemical cycles in a forest basin.**

Nazarov, N.A., Leonov, A.V., *Water resources*, Jan.-Feb. 1999, 26(1), p.29-40, Translated from Vodnye resursy. 16 refs.

River basins, Watersheds, Forest land, Forest ecosystems, Forest soils, River flow, Stream flow, Runoff, Water pollution, Water chemistry, Hydrogeochemistry, Geochemical cycles, Nutrient cycle, Geochemical cycles, Hydrologic cycle, Water balance, Mathematical models, Computer programs, Russia—Vesela River

53-4701

**Effect of valley reservoir water level on the intensity of processes occurring on the water-bottom deposits interface.**

Brekhovskikh, V.F., Gashkina, N.A., Lomova, D.V., Shakirova, E.R., *Water resources*, Jan.-Feb. 1999, 26(1), p.48-51, Translated from Vodnye resursy. 12 refs.

Reservoirs, Water level, Water chemistry, Hydrogeochemistry, Plankton, Algae, Lacustrine deposits, Bottom sediment, Biomass, Nutrient cycle, Freezing, Ice breakup, Ice cover effect

53-4702

**Experimental studies of the structure of flow under ice.**

Debol'skaia, E.I., Dolgoplova, E.N., Reshetkov, A.B., *Water resources*, Jan.-Feb. 1999, 26(1), p.86-92, Translated from Vodnye resursy. 11 refs.

River ice, Ice cover effect, Ice water interface, River flow, Russia—Moskva River, Russia—Desna River

53-2498

**Italian Antarctic Expedition 1996-97. Earth Sciences.**

Ricci, C.A., ed, *Terra Antartica. Reports*, 1998, No.2, 121p., Refs. passim. For selected papers see 53-2499 through 53-2507.

Geophysical surveys, Geological surveys, Marine geology, Marine deposits, Bottom sediment, Glacial geology, Glaciation, Paleoclimatology, Antarctica

53-2499

**Research on Cenozoic glacial history in the area between David Basin and Mariner Glacier (Victoria Land).**

Baroni, C., Bruschi, G., *Terra Antartica. Reports*, 1998, No.2, Italian Antarctic Expedition 1996-97. Earth Sciences. Edited by C.A. Ricci, p.35-38, 14 refs.

Geological surveys, Glaciation, Glacial geology, Glacial erosion, Glacial deposits, Moraines, Lacustrine deposits, Glacier oscillation, Geomorphology, Paleoclimatology, Global change, Geochronology, Antarctica—Victoria Land

53-2500

**Seismic investigation of the bottom simulating reflectors on the South Shetland Margin.**

Lodolo, E., Tinivella, U., Pellis, G., *Terra Antartica. Reports*, 1998, No.2, Italian Antarctic Expedition 1996-97. Earth Sciences. Edited by C.A. Ricci, p.71-74, 4 refs.

Seismic surveys, Exploration, Marine geology, Marine deposits, Bottom sediment, Bottom topography, Hydrates, Antarctica—South Shetland Islands

53-2501

**Sediment Drifts of the Antarctic Offshore: Project SEDANO II.**

Rebesco, M., Camerlenghi, A., Accerboni, E., Crise, A., Laterza, R., Pudsey, C., *Terra Antartica. Reports*, 1998, No.2, Italian Antarctic Expedition 1996-97. Earth Sciences. Edited by C.A. Ricci, p.75-79, 1 ref.

Geophysical surveys, Seismic surveys, Marine geology, Marine deposits, Bottom sediment, Bottom topography, Earth crust, Continental drift, Antarctica—Antarctic Peninsula

53-2502

**Southern Chile and Antarctic Peninsula Pacific Margins: Project SCAPPAM-II.**

Polonia, A., Brancolini, G., Torelli, L., *Terra Antartica. Reports*, 1998, No.2, Italian Antarctic Expedition 1996-97. Earth Sciences. Edited by C.A. Ricci, p.81-88, 6 refs.

Geophysical surveys, Seismic surveys, Marine geology, Bottom sediment, Bottom topography, Tectonics, Earth crust, Continental drift, Geochronology, Tierra del Fuego, Drake Passage

53-2503

**Late Cenozoic stratigraphic record from the continental margin of East Antarctica.**

De Santis, L., *Terra Antartica. Reports*, 1998, No.2, Italian Antarctic Expedition 1996-97. Earth Sciences. Edited by C.A. Ricci, p.89-93, 8 refs.

Research projects, Oceanographic surveys, Marine geology, Marine deposits, Bottom sediment, Geological surveys, Glaciation, Glacial geology, Glacial deposits, Quaternary deposits, Stratigraphy, Paleoclimatology, Antarctica—East Antarctica

53-2504

**Geomorphological and glaciological investigations in the Terra Nova Bay area (Victoria Land, Antarctica).**

Libera, V., Salvatore, M.C., *Terra Antartica. Reports*, 1998, No.2, Italian Antarctic Expedition 1996-97. Earth Sciences. Edited by C.A. Ricci, p.95-97.

Research projects, Geological surveys, Geomorphology, Glacial geology, Frozen lakes, Mapping, Antarctica—Terra Nova Bay

53-2505

**Permafrost distribution and ground ice typology and their correlations with periglacial features in northern Victoria Land (Antarctica).**

Guglielmin, M., Mannucci, G., Raffi, R., *Terra Antartica. Reports*, 1998, No.2, Italian Antarctic Expedition 1996-97. Earth Sciences. Edited by C.A. Ricci, p.99-103, 7 refs.

Permafrost surveys, Permafrost distribution, Permafrost thickness, Permafrost indicators, Ground ice, Periglacial processes, Antarctica—Victoria Land

53-2506

**Italian ITASE Expedition from Terra Nova Station to Talos Dome.**

Frezzotti, M., Flora, O., Urbini, S., *Terra Antartica. Reports*, 1998, No.2, Italian Antarctic Expedition 1996-97. Earth Sciences. Edited by C.A. Ricci, p.105-108, 3 refs.

Expeditions, Traverses, Research projects, Geological surveys, Glacier surveys, Ice cores, Glacier mass balance, Paleoclimatology, Antarctica—Victoria Land

53-2507

**Geodetic network in a global reference frame.**

Capra, A., *Terra Antartica. Reports*, 1998, No.2, Italian Antarctic Expedition 1996-97. Earth Sciences. Edited by C.A. Ricci, p.109-113, 3 refs.

Geodetic surveys, Stations, Telemetry equipment, Data transmission, Telecommunication, Spacecraft, Antarctica—Victoria Land

53-2508

**Characteristics of large-scale processes in the Norwegian energy-active zone and adjacent areas. [Zakonomenosti krupnomasshtabnykh protsessov v Norvezhskof zone i prilagalushchikh raionakh]**

Alekseev, G.V., ed, Bogorodskii, P.V., ed, St. Petersburg, gidrometeoizdat, 1994, 214p., In Russian. 102 refs.

Oceanography, Air water interactions, Sea ice, Ice cover effect, Convection, Ocean currents, Enthalpy, Sea water, Water temperature, Salinity, Ice cover thickness, Snow cover effect, Snow depth, Mathematical models, Greenland Sea, Norwegian Sea

53-2509

**Vertical distribution of the main salt-forming components in Aral and Caspian sea ice.**

Tsytsarin, A.G., Skorokhod, A.I., Lisitsyna, L.V., *Water resources*, Nov.-Dec. 1998, 25(6), p.617-622, Translated from Vodnye resursy. 19 refs.

Sea ice, Ions, Ice composition, Salinity, Snow ice, Snow ice interface, Subglacial observations, Ice formation, Brines, Profiles, CIS—Aral Sea, CIS—Caspian Sea

53-2510

**Study of the dependence of phytoplankton fineness in a natural water body on the water spatio-bic index: case study of the Yenisey River.**

Shchur, L.A., Aponasenko, A.D., Lopatin, V.N., Filimonov, V.S., *Water resources*, Nov.-Dec. 1998, 25(6), p.623-627, Translated from Vodnye resursy. 18 refs.

Plankton, Water pollution, Rivers, Ecosystems, Russia—Yenisey River, Russia—Angara River

53-2511

**Response of zooplankton and zoobenthos to changes in the water quality in a sub-Arctic water body: case study of Lake Imandra.**

IAkovlev, V.A., *Water resources*, Nov.-Dec. 1998, 25(6), p.658-666, Translated from Vodnye resursy. 32 refs.

Plankton, Water pollution, Environmental impact, Wastes, Water chemistry, Bacteria, Algae, Biomass, Russia—Kola Peninsula, Russia—Imandra Lake, Russia—Belaya Guba Bay

53-2512

**Radiometric measurements in the Arctic Ocean—comparison between theory and experiment.**

[Radiometrische Messungen im arktischen Ozean—Vergleich von Theorie und Experiment] Johnsen, K.P., *Berichte zur Polarforschung*, 1998, No.297, 119p., In German with English summary. Refs. p.109-119.

Radiometry, Sea ice, Sea ice distribution, Ice cover effect, Snow cover effect, Snow depth, Air ice water interaction, Models, Analysis (mathematics), Brightness, Arctic Ocean, Russia—Kara Sea, Russia—Laptev Sea

53-2513

**Patterns and controls of CO<sub>2</sub> fluxes in wet tundra types of the Taimyr Peninsula, Siberia—the contribution of soils and mosses.**

Sommerkorn, M., *Berichte zur Polarforschung*, 1998, No.298, 219p., With German summary. Refs. p.173-187.

Carbon dioxide, Tundra, Tundra soils, Tundra vegetation, Mosses, Biomass, Bacteria, Microclimatology, Photosynthesis, Soil physics, Water table, Russia—Taimyr Peninsula, Russia—Labaz, Lake, Russia—Levinson-Lessing, Lake, Russia—Siberia

53-2514

**Preliminary study on Quaternary glacial landforms in Mt. Ma'an.**

Luo, C.D., *Chinese geographical science*, 1998, 8(1), p.91-95, 3 refs.

Alpine glaciation, Glacial geology, Glacial erosion, Moraines, Quaternary deposits, Geochronology, Paleoclimatology, China—Ma'an, Mount, China—Sichuan Province

53-2515

**Features of sea-ice cover, snow distribution and its densification in the central Arctic Ocean.**

Xiao, C.D., Qin, D.H., Ren, J.W., *Chinese geographical science*, 1997, 7(4), p.317-327, 15 refs.

Sea ice distribution, Snow ice interface, Snow cover distribution, Snow depth, Snow stratigraphy, Arctic Ocean

53-2516

**Environmental changes since Late Pleistocene in estuarine plain of Jiulong River, Fujian Province.**

Chen, W.R., Lan, D.Z., Chen, C.H., Zhu, D.K., *Chinese geographical journal*, 1997, 7(4), p.375-382, 5 refs.

Estuaries, Floodplains, Alluvium, Marine geology, Bottom sediment, Sea level, Quaternary deposits, Stratigraphy, Soil dating, Paleoclimatology, China—Fujian Province

53-2517

**Biomass and photosynthesis of vascular plants under ice.**

Liu, G.C., Cao, Y., *Chinese journal of oceanology and limnology*, 1998, 16(1), p.84-90, 13 refs.

Reservoirs, Frozen lakes, Lake ice, Ice cover effect, Grasses, Plant ecology, Plant physiology, Photosynthesis, Biomass, China

53-2518

**Preliminary study on decadal oscillation and its oscillation source of sea-ice-air system in the Northern Hemisphere.**

Gao, D.Y., Wu, B.Y., *Chinese journal of atmospheric sciences*, 1998, 22(2), p.112-119, 14 refs.

Sea ice distribution, Ice cover effect, Air ice water interaction, Atmospheric circulation, Climatic changes, Barents Sea, Russia—Kara Sea

53-2519

**Comparison of arctic sea ice variation during 1966-1991 between an ocean—sea ice model calculations and observations.**

Fang, Z.F., Yu, R.C., Jin, X.Z., *Chinese journal of atmospheric sciences*, 1998, 22(2), p.149-162, 14 refs.

Sea ice distribution, Ice conditions, Ice cover thickness, Ice cover effect, Air ice water interaction, Ice models, Ice heat flux, Atmospheric circulation, Ocean currents, Computerized simulation, Arctic Ocean, Greenland Sea, Barents Sea



53-2520

**Equipment plays key role in airport snow removal.** *Public works*, Dec. 1998, 129(13), p.22-24. Airports, Runways, Snow removal, Snow removal equipment, United States—Missouri—St. Louis, Canada—Ontario—Toronto

53-2521

**Bioventing in shallow tundra overlying permafrost.**

White, D.M., Irvine, R.L., *Journal of soil contamination*, 1998, 7(5), p.599-614, 10 refs.

Permafrost preservation, Tundra soils, Oil spills, Soil pollution, Soil microbiology, Soil chemistry, Aeration, Nutrient cycle, Land reclamation, United States—Alaska

53-2522

**Cold-climate solution.**

Jokela, J.B., Pinks, C., *Civil engineering*, Mar. 1999, 69(3), p.60-63.

Wetlands, Waste treatment, Runoff, Snowmelt, Sedimentation, Snow disposal, Water treatment, Swamps, Ponds, United States—Alaska—Anchorage

53-2523

**Fluidized-bed adsorption bioreactor for the treatment of groundwater contaminated with solvents at low concentration.**

Miyares, P.H., Teeter, C.V., Martel, C.J., SR 99-01, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, Jan. 1999, 13p., ADA-359 347, 5 refs.

Ground water, Water pollution, Soil pollution, Environmental impact, Land reclamation, Water treatment, Adsorption, Waste treatment, Soil microbiology, Bacteria, Decomposition  
Volatile organic compounds are a major source of water contamination in the U.S. They pose a threat to the environment and are a potential hazard to human health. Trichloroethylene (TCE) is the most common of these pollutants. TCE is usually remediated through pumping and treating it, using either air stripping or granular activated carbon. Bioremediation is an alternative treatment that uses microbes to convert hazardous substances into nonhazardous compounds. A fluidized bed adsorption bioreactor is examined here for the treatment of groundwater contaminated at low concentrations. This pilot study showed that the packed adsorbent bed could be loaded in approximately 36 hours at a flow rate of 120 mL/min. The remediation phase of the process took approximately 13 days. The reduction in the TCE concentration in the sorbent during each round indicated that it was being remediated by the microbiological process. Areas that need to be improved are the rate of remediation and the loading capacity of the adsorption beds. Currently, each complete cycle of loading and remediating requires 2 weeks while only mineralizing 58 mg of TCE per column.

53-2524

**Spring water temperature as a characteristic feature of karst aquifer behaviour. Examples from the central Pyrenees (NE Spain).**

Freixes, A., Monterde, M., Ramonedá, J., *Hydrogéologie*, 1998, No.1, p.31-40, With French summary, 36 refs.

Karst, Snowmelt, Springs (water), Water temperature, Hydrogeology, Spain—Pyrenees

53-2525

**Airborne DIAL remote sensing of the arctic ozone layer.**

Wirth, M., Renger, W., Ehret, G., *SPIE—The International Society for Optical Engineering. Proceedings*, 1992, Vol.1714, Lidar for Remote Sensing. Edited by R.J. Becherer and C. Werner, p.234-237. DLC QC871.L69 1992

Polar atmospheres, Atmospheric composition, Polar stratospheric clouds, Ozone, Airborne radar, Lidar

53-2526

**Climatic effects on soil organic phosphorus in the North American Great Plains identified by phosphorus-31 nuclear magnetic resonance.**

Sumann, M., Amelung, W., Haumaier, L., Zech, W., *Soil Science Society of America. Journal*, Nov.-Dec. 1998, 62(6), p.1580-1586, 34 refs.

Nuclear magnetic resonance, Climatic factors, Soil chemistry, Soil composition, Temperature effects, Spectra, Clays, Nutrient cycle, Precipitation (meteorology), Soil microbiology, North America, United States—Great Plains

53-2527

**Properties of permafrost soils on the northern Seward Peninsula, northwest Alaska.**

Höfle, C., Ping, C.L., Kimble, J.M., *Soil Science Society of America. Journal*, Nov.-Dec. 1998, 62(6), p.1629-1639, 43 refs.

Tundra soils, Permafrost, Active layer, Cryogenic structures, Soil classification, Ice wedges, Ice lenses, Tundra vegetation, Frozen ground chemistry, Cryoturbation, United States—Alaska—Seward Peninsula

53-2528

**Optical properties of canopy elements in black spruce, jack pine and aspen stands in Saskatchewan, Canada.**

Middleton, E.M., Walter-Shea, E.A., Mesarch, M.A., Chan, S.S., Rusin, R.J., *Canadian journal of remote sensing*, June 1998, 24(2), p.169-186, With French summary, 38 refs.

Optical properties, Trees (plants), Forest canopy, Forest ecosystems, Spectra, Reflectivity, Remote sensing, Distribution, Canada—Saskatchewan

53-2529

**Use of hyperspectral and biochemical data from black spruce needles to map soils at a forest site in Manitoba.**

Cwick, G.J., Aide, M.T., Bishop, M.P., *Canadian journal of remote sensing*, June 1998, 24(2), p.187-193, With French summary, 15 refs.

Soil mapping, Forest soils, Spectra, Remote sensing, Trees (plants), Soil chemistry, Reflectivity, Statistical analysis, Canada—Manitoba—Thompson

53-2530

**Origin and disposal of potentially contaminated sea ice in the Arctic Ocean.**

Darby, D.A., Bischof, J.F., *Old Dominion University, Norfolk, VA. Applied Marine Research Laboratory. Report*, May 13, 1997, N00014-95-1-1200, 12p. + figs., ADA-326 283, 23 refs.

Suspended sediments, Bottom sediment, Sediment transport, Water pollution, Impurities, Ice composition, Ice rafting, Arctic Ocean, Beaufort Sea, Russia—Laptev Sea

53-2531

**Studies of air-sea-ice interaction.**

Steele, M., *University of Washington, Seattle. Applied Physics Laboratory. Polar Science Center. Report*, May 16, 1997, N00014-90-J-1227, 3p., ADA-325 882, 7 refs.

Research projects, Air ice water interaction, Ice heat flux, Ice cover effect, Atmospheric circulation, Ocean currents, Computerized simulation, Arctic Ocean

53-2532

**Evaluation of the SCAN 16 EF ice detection system.**

Heydrick, C., Brink, R.A., St. John, B., *Pennsylvania Department of Transportation. Bureau of Construction and Materials. Report*, Apr. 1995, FHWA/PA-014-89-65, 23p. + appends., PB98-107063.

Road icing, Pavements, Ice detection, Warning systems, Data transmission, Road maintenance, Cost analysis, United States—Pennsylvania

53-2533

**FHWA-SHRP snow and ice control showcasing and implementation. Winter workshops. Participants workbook.**

Strategic Highway Research Program, Washington, D.C., *U.S. Federal Highway Administration. Report*, Mar. 1996, FHWA/SA-96/041, Var. p., PB97-183909.

Road icing, Weather forecasting, Frost forecasting, Ice forecasting, Chemical ice prevention, Salting, Snow fences, Snow removal, Snow removal equipment, Road maintenance, Manuals, United States

53-2534

**Strategies for winter highway maintenance.**

Nixon, W.A., Foster, N.S.J., *Iowa. University. Public Policy Center. Report*, 1996, DTRS92-G-0007, 68p., PB97-189211, Refs. p.31-34.

Snowstorms, Snowfall, Snow removal, Weather forecasting, Safety, Highway planning, Road maintenance

53-2535

**Radiometer measurements of snow in Sodankylä 1991-1993.**

Kurvonon, L., *Helsinki University of Technology. Laboratory of Space Technology. Report*, Sep. 1994, No.16, 98p., PB95-184966, 41 refs.

Snow surveys, Snow cover distribution, Snow water equivalent, Snow surface temperature, Forest land, Vegetation factors, Terrain identification, Radiometry, Finland—Sodankylä

53-2536

**Recycling of useful materials from freezing treatment of industrial wastewaters.**

Okamoto, A., Hamano, M., *Japan Patent Office. Patent*, May 27, 1997, n.p., No.97136079.

Water treatment, Waste disposal, Sewage disposal, Artificial freezing

53-2537

**Ice-melting composition having anti-corrosion properties.**

Wiesenfeld, A., Barbour, J.K., *U.S. Patent Office. Patent*, July 8, 1997, n.p., USP-5,645,755.

Chemical ice prevention, Snow removal, Salting, Corrosion, Road maintenance

53-2538

**Fractionation of halogenated organic matter present in rain and snow.**

Laniewski, K., Borén, H., Grimvall, A., *Chemosphere*, Jan. 1999, 38(2), p.393-409, 33 refs.

Air pollution, Precipitation (meteorology), Scavenging, Snow composition, Snow impurities, Sweden, Poland, Germany, Ireland

53-2539

**Spatial differences of chemical features of atmospheric deposition between rainy season and winter in the areas facing to the Japan Sea, Japan.**

Fukuzaki, N., et al, *Chemosphere*, Jan. 1999, 38(2), p.411-423, 32 refs.

Marine atmospheres, Atmospheric composition, Air pollution, Precipitation (meteorology), Scavenging, Snow composition, Snow impurities, Japan, Japan, Sea

53-2540

**Effect of ice build-up on the soft X-ray response of a charge coupled device (CCD).**

McCarthy, K.J., Owens, A., Spragg, J., Kirkman, I.W., *Nuclear Instruments & methods in physics research A*, Oct. 21, 1998, 416(2-3), p.293-300, 15 refs.

Spacecraft, Sensors, Electronic equipment, Ice accretion, Ice loads, Ice prevention, Defrosting

53-2541

**Vegetation-friendly de-icing composition and method for making it.**

Ossian, K.C., Steinhauer, N.J., *U.S. Patent Office. Patent*, Nov. 4, 1997, n.p., USP-5,683,619.

Road icing, Chemical ice prevention, Plant physiology, Environmental protection, Road maintenance

53-2542

**Glycol-based aircraft anti-icing fluids thickened by associative polymers containing hydrophobe-bearing macromonomers.**

Jenkins, R.D., Bassett, D.R., Lightfoot, R.H., Boluk, M.Y., *U.S. Patent Office. Patent*, Oct. 28, 1997, n.p., USP-5,681,882.

Aircraft icing, Chemical ice prevention

53-2543

**Inorganic hardened body resistant to frost damage for building materials.**

Nitta, K., *Japan Patent Office. Patent*, June 16, 1998, n.p., No.98158053.

Construction materials, Concrete admixtures, Frost resistance, Frost protection

53-4703

**Seismic stratigraphy of the central Bransfield Basin (N/W Antarctic Peninsula): interpretation of deposits and sedimentary processes in a glacio-marine environment.**

Prieto, M.J., Ercilla, G., Canals, M., De Batist, M., *Marine geology*, Apr. 1999, 157(1-2), p.47-68, 53 refs.

Glaciation, Ice sheets, Glacier oscillation, Glacial geology, Glacial erosion, Glacial deposits, Marine geology, Marine deposits, Bottom sediment, Sediment transport, Seismic surveys, Stratigraphy, Tectonics, Geochronology, Antarctica—Bransfield Strait

53-4704

**Facies architecture, seismic stratigraphy and development of a high-latitude basin: the Powell Basin (Antarctica).**

Viseras, C., Maldonado, A., *Marine geology*, Apr. 1999, 157(1-2), p.69-87, 43 refs.

Seismic surveys, Marine geology, Marine deposits, Bottom sediment, Bottom topography, Glacial geology, Glacial deposits, Sediment transport, Sea level, Tectonics, Geomorphology, Stratigraphy, Paleoclimatology, Antarctica—Antarctic Peninsula

53-4705

**Estimating lake area in an arctic landscape using linear mixture modelling with AVHRR data.**

Hope, A.S., Coulter, L.L., Stow, D.A., *International journal of remote sensing*, Mar. 10, 1999, 20(4), p.829-835, 6 refs.

Tundra terrain, Terrain identification, Lakes, Vegetation patterns, Radiometry, Spaceborne photography, Image processing, Statistical analysis, United States—Alaska—North Slope

53-4706

**Dense water formation beneath a time-dependent coastal polynya.**

Chapman, D.C., *Journal of physical oceanography*, Apr. 1999, 29(4), p.807-820, 20 refs.

Polynyas, Air ice water interaction, Wind factors, Ice water interface, Sea water, Water temperature, Salinity, Water transport, Ocean currents, Mathematical models

53-4707

**Isotope tracers in catchment hydrology.**

Kendall, C., ed, McDonnell, J.J., ed, Amsterdam, Netherlands, Elsevier Science B.V., 1998, 839p., Refs. passim. For selected papers see 53-4708 through 53-4717.

DLC GB656.2.R34 I833 1998

Watersheds, Water balance, Hydrologic cycle, Hydrogeochemistry, Runoff, Stream flow, Nutrient cycle, Geochemical cycles, Snow hydrology, Snowmelt, Isotopic labeling, Isotope analysis

53-4708

**Fundamentals of small catchment hydrology.**

Buttle, J.M., Isotope tracers in catchment hydrology. Edited by C. Kendall and J.J. McDonnell, Amsterdam, Netherlands, Elsevier Science B.V., 1998, p.1-49, Refs. p.43-49.

DLC GB656.2.R34 I833 1998

Watersheds, Snow hydrology, Snowmelt, Runoff, Stream flow, Ground water, Water balance, Isotopic labeling, Isotope analysis

53-4709

**Isotopic variations in precipitation.**

Ingraham, N.L., Isotope tracers in catchment hydrology. Edited by C. Kendall and J.J. McDonnell, Amsterdam, Netherlands, Elsevier Science B.V., 1998, p.87-118, Refs. p.116-118.

DLC GB656.2.R34 I833 1998

Precipitation (meteorology), Hydrologic cycle, Isotopic labeling, Isotope analysis

53-4710

**Isotopic fractionation in snow cover.**

Cooper, L.W., Isotope tracers in catchment hydrology. Edited by C. Kendall and J.J. McDonnell, Amsterdam, Netherlands, Elsevier Science B.V., 1998, p.119-136, Refs. p.133-136.

DLC GB656.2.R34 I833 1998

Watersheds, Snow hydrology, Snow composition, Snowmelt, Water chemistry, Hydrogeochemistry, Water balance, Isotopic labeling, Isotope analysis, United States—Alaska—Kuparuk River, United States—Alaska—Toolik Lake

53-4711

**Snow-melt dominated systems.**

Rodhe, A., Isotope tracers in catchment hydrology. Edited by C. Kendall and J.J. McDonnell, Amsterdam, Netherlands, Elsevier Science B.V., 1998, p.391-433, Refs. p.430-433.

DLC GB656.2.R34 I833 1998

Watersheds, Snow hydrology, Snowmelt, Snow composition, Stream flow, Runoff, Water balance, Hydrogeochemistry, Isotopic labeling, Isotope analysis, Sweden

53-4712

**Use of stable isotopes in evaluating sulfur biogeochemistry of forest ecosystems.**

Mitchell, M.J., Krouse, H.R., Mayer, B., Stam, A.C., Zhang, Y.M., Isotope tracers in catchment hydrology. Edited by C. Kendall and J.J. McDonnell, Amsterdam, Netherlands, Elsevier Science B.V., 1998, p.489-518, Refs. p.515-518.

DLC GB656.2.R34 I833 1998

Forest ecosystems, Pollution, Nutrient cycle, Geochemical cycles, Isotopic labeling, Isotope analysis, United States—New Hampshire—White Mountains, United States—Maine—Lead Mountain, Canada—Ontario, United States—Rocky Mountains, Germany, Norway, Sweden

53-4713

**Tracing nitrogen sources and cycling in catchments.**

Kendall, C., Isotope tracers in catchment hydrology. Edited by C. Kendall and J.J. McDonnell, Amsterdam, Netherlands, Elsevier Science B.V., 1998, p.519-576, Refs. p.569-576.

DLC GB656.2.R34 I833 1998

Watersheds, Water pollution, Nutrient cycle, Bacteria, Soil microbiology, Health, Isotopic labeling, Isotope analysis

53-4714

**Carbon cycling in terrestrial environments.**

Wang, Y., et al, Isotope tracers in catchment hydrology. Edited by C. Kendall and J.J. McDonnell, Amsterdam, Netherlands, Elsevier Science B.V., 1998, p.577-610, Refs. p.604-610.

DLC GB656.2.R34 I833 1998

Plant physiology, Photosynthesis, Biomass, Soil chemistry, Soil air interface, Nutrient cycle, Geochemical cycles, Isotopic labeling, Isotope analysis, Canada, Antarctica—Fryxell, Lake

53-4715

**Erosion, weathering, and sedimentation.**

Bierman, P.R., et al, Isotope tracers in catchment hydrology. Edited by C. Kendall and J.J. McDonnell, Amsterdam, Netherlands, Elsevier Science B.V., 1998, p.647-678, Refs. p.675-678.

DLC GB656.2.R34 I833 1998

Alluvium, Sediment transport, Sedimentation, Soil erosion, Weathering, Soil dating, Soil chemistry, Isotopic labeling, Isotope analysis

53-4716

**Modeling of isotope and hydrogeochemical responses in catchment hydrology.**

Turner, J.V., Barnes, C.J., Isotope tracers in catchment hydrology. Edited by C. Kendall and J.J. McDonnell, Amsterdam, Netherlands, Elsevier Science B.V., 1998, p.723-760, Refs. p.758-760.

DLC GB656.2.R34 I833 1998

Watersheds, Water retention, Runoff forecasting, Stream flow, Water balance, Hydrologic cycle, Isotopic labeling, Isotope analysis, Mathematical models

53-4717

**Isotopes as indicators of environmental change.**

Shanley, J.B., et al, Isotope tracers in catchment hydrology. Edited by C. Kendall and J.J. McDonnell, Amsterdam, Netherlands, Elsevier Science B.V., 1998, p.761-816, Refs. p.804-816.

DLC GB656.2.R34 I833 1998

Hydrologic cycle, Atmospheric circulation, Climatic changes, Global change, Paleoclimatology, Global warming, Radioactive age determination, Isotopic labeling, Isotope analysis

53-4718

**Advances in hydrological instrumentation.**

Goyal, V.C., ed, National Workshop on Advances in Hydrological Instrumentation, Oct. 25-26, 1994, New Delhi, India, Allied Publishers Limited, 1997, 245p., Refs. passim. For selected papers see 53-4719 through 53-4725.

DLC GB659.N28 1997

Weather stations, Meteorological instruments, Telemetering equipment, Data transmission, Hydrology

53-4719

**Advances in hydrometeorological instruments, methods of observations and future prospects.**

Kamble, V.P., Upadhaya, D.S., Sarkar, D., National Workshop on Advances in Hydrological Instrumentation, Roorkee, India, Oct. 25-26, 1994. Edited by V.C. Goyal, New Delhi, India, Allied Publishers Limited, 1997, p.8-18, 17 refs.

DLC GB659.N28 1997

Meteorological instruments, Weather observations, Weather forecasting, Meteorological data, Data transmission, Radar, Spaceborne photography, Telemetering equipment, India

53-4720

**Performance of portable automatic weather system and its sensor packages used on the Naradu Glacier, Himalayas.**

Kaul, M.N., National Workshop on Advances in Hydrological Instrumentation, Roorkee, India, Oct. 25-26, 1994. Edited by V.C. Goyal, New Delhi, India, Allied Publishers Limited, 1997, p.79-84.

DLC GB659.N28 1997

Glacial meteorology, Weather stations, Meteorological instruments, Telemetering equipment, Meteorological data, Data transmission, Snowfall, Precipitation gages, Himalaya Mountains

53-4721

**Automated snow monitoring system for the Himalayas.**

Ramasastri, K.S., National Workshop on Advances in Hydrological Instrumentation, Roorkee, India, Oct. 25-26, 1994. Edited by V.C. Goyal, New Delhi, India, Allied Publishers Limited, 1997, p.111-130, 5 refs.

DLC GB659.N28 1997

Weather stations, Snow surveys, Snow cover distribution, Snow depth, Snow density, Snow water equivalent, Snow hydrology, Snowmelt, Runoff forecasting, Himalaya Mountains

53-4722

**Telemetry system for automatic acquisition and transmission of snow and meteorological data and its application.**

Tiwari, A.K., Garg, R.K., National Workshop on Advances in Hydrological Instrumentation, Roorkee, India, Oct. 25-26, 1994. Edited by V.C. Goyal, New Delhi, India, Allied Publishers Limited, 1997, p.131-137.

DLC GB659.N28 1997

Weather stations, Meteorological instruments, Telemetering equipment, Data transmission, Snow surveys, Snow survey tools, Avalanche forecasting

53-4723

**Data acquisition systems (DAS) for hydrological measurements.**

Goyal, V.C., National Workshop on Advances in Hydrological Instrumentation, Roorkee, India, Oct. 25-26, 1994. Edited by V.C. Goyal, New Delhi, India, Allied Publishers Limited, 1997, p.138-147, 8 refs.

DLC GB659.N28 1997

Weather stations, Meteorological instruments, Telemetering equipment, Data transmission, Runoff forecasting, Flood forecasting

53-4724

**Streamflow measurements in the mountainous areas.**

Singh, P., Chowdhary, H., Ramasastri, K.S., National Workshop on Advances in Hydrological Instrumentation, Roorkee, India, Oct. 25-26, 1994. Edited by V.C. Goyal, New Delhi, India, Allied Publishers Limited, 1997, p.174-183, 7 refs.

DLC GB659.N28 1997

Glacial hydrology, Meltwater, Glacial rivers, River flow, Stream flow, Flow measurement, Runoff forecasting, Himalaya Mountains

53-4725

**Newer techniques of watershed measurements.**

Patwary, B.C., Bhunya, P.K., National Workshop on Advances in Hydrological Instrumentation, Roorkee, India, Oct. 25-26, 1994. Edited by V.C. Goyal, New Delhi, India, Allied Publishers Limited, 1997, p.230-237, 8 refs.

DLC GB659.N28 1997

Watersheds, Weather stations, Water reserves, Water balance, Meteorological instruments

53-4726

**Cenozoic erosion and the preglacial uplift of the Svalbard-Barents Sea region.**

Dimakis, P., Braathen, B.I., Faleide, J.I., Elverhøi, A., Gudlaugsson, S.T., *Tectonophysics*, Dec. 31, 1998, 300(1-4), Annual Workshop of the ILP Task Force "Origin of Sedimentary Basins", 7th, Tørshavn, Faroe Islands, Aug. 1996. Selected papers. Edited by S. Cloetingh, et al. p.311-327, 36 refs. Glaciation, Glacial geology, Glacial erosion, Glacial deposits, Sediment transport, Marine geology, Marine deposits, Bottom sediment, Bottom topography, Isostasy, Tectonics, Geochronology, Stratigraphy, Barents Sea, Norway—Svalbard

53-4727

**Gravity wave characteristics in the lower atmosphere at South Pole.**

Pfenninger, M., Liu, A.Z., Papen, G.C., Gardner, C.S., *Journal of geophysical research*, Mar. 27, 1999, 104(D6), p.5963-5984, 25 refs.

Polar atmospheres, Atmospheric circulation, Atmospheric disturbances, Atmospheric density, Air temperature, Wind (meteorology), Gravity waves, Statistical analysis, Antarctica—South Pole

53-4728

**Spatial variability of climate and past atmospheric circulation patterns from central West Antarctic glaciochemistry.**

Reusch, D.B., Mayewski, P.A., Whitlow, S.I., Pittalwala, I.I., Twickler, M.S., *Journal of geophysical research*, Mar. 27, 1999, 104(D6), p.5985-6001, 40 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Atmospheric composition, Snow composition, Snow ice interface, Glacial meteorology, Glacier ice, Ice cores, Core samplers, Ice composition, Climatic changes, Statistical analysis, Antarctica—West Antarctica

53-4729

**Bias correction of daily precipitation measurements for Greenland.**

Yang, D.Q., Ishida, S., Goodison, B.E., Gunther, T., *Journal of geophysical research*, Mar. 27, 1999, 104(D6), p.6171-6181, 49 refs.

Precipitation (meteorology), Precipitation gages, Weather stations, Meteorological data, Snowfall, Snow accumulation, Snow water equivalent, Statistical analysis, Greenland

53-4730

**Tropical aerosol in the Aleutian High.**

Harvey, V.L., Hitchman, M.H., Pierce, R.B., Fairlie, T.D., *Journal of geophysical research*, Mar. 27, 1999, 104(D6), p.6281-6290, 70 refs.

Polar atmospheres, Stratosphere, Atmospheric circulation, Atmospheric pressure, Atmospheric composition, Air pollution, Aerosols

53-4731

**Simulating the water balance of the Aral Sea with a coupled regional climate-lake model.**

Small, E.E., Sloan, L.C., Hostetler, S., Giorgi, F., *Journal of geophysical research*, Mar. 27, 1999, 104(D6), p.6583-6602, 40 refs.

Atmospheric circulation, Air water interactions, Air temperature, Water temperature, Surface temperature, Precipitation (meteorology), Evaporation, Ice conditions, Ice cover effect, Climatic changes, Water balance, Computerized simulation, CIS—Aral Sea

53-4732

**Impact of tundra ecosystems on the surface energy budget and climate of Alaska.**

Lynch, A.H., Bonan, G.B., Chapin, F.S., III, Wu, W., *Journal of geophysical research*, Mar. 27, 1999, 104(D6), p.6647-6660, 48 refs.

Tundra climate, Tundra vegetation, Tundra soils, Vegetation patterns, Vegetation factors, Soil air interface, Snow cover effect, Atmospheric circulation, Climatic changes, Heat balance, Computerized simulation, United States—Alaska

53-4733

**Modeling clouds and radiation for the November 1997 period of SHEBA using a column climate model.**

Pinto, J.O., Curry, J.A., Lynch, A.H., Persson, P.O.G., *Journal of geophysical research*, Mar. 27, 1999, 104(D6), p.6661-6678, 52 refs.

Polar atmospheres, Marine atmospheres, Atmospheric circulation, Cloud cover, Air ice water interaction, Ice heat flux, Ice cover effect, Radiation balance, Computerized simulation

53-4734

**Spatial and temporal variations in snowmelt runoff chemistry, Northwest Territories, Canada.**

Marsh, P., Pomeroy, J.W., *Water resources research*, May 1999, 35(5), p.1559-1567, 37 refs.

Snow cover distribution, Snow samplers, Snow composition, Snow hydrology, Snowmelt, Runoff, Stream flow, Water chemistry, Hydrogeochemistry, Canada—Northwest Territories

53-4735

**Simulations of snow distribution and hydrology in a mountain basin.**

Hartman, M.D., et al, *Water resources research*, May 1999, 35(5), p.1587-1603, 56 refs.

Watersheds, Snow cover distribution, Snow hydrology, Snowfall, Snow accumulation, Snow water equivalent, Snow evaporation, Snowmelt, Water balance, Hydrologic cycle, Runoff forecasting, Computerized simulation, United States—Colorado—Rocky Mountain National Park

53-4736

**Oriented lake-and-ridge assemblages of the arctic coastal plains: glacial landforms modified by thermokarst and solifluction.**

Grosval'd, M.G., Hughes, T.J., Lasca, N.P., *Polar record*, July 1999, 35(194), p.215-230, 55 refs.

Glaciation, Glacial geology, Ice sheets, Glacial erosion, Glacial deposits, Moraines, Glacial lakes, Thermokarst lakes, Periglacial processes, Solifluction, Geomorphology, Canada—Northwest Territories—Baffin Island, Canada—Northwest Territories—Mackenzie Delta, United States—Alaska, Russia—Siberia

53-4737

**Diversity and abundance of soil algae in the polar desert, Sverdrup Pass, central Ellesmere Island.**

Elster, J., Lukesová, A., Svoboda, J., Kopecky, J., Kanda, H., *Polar record*, July 1999, 35(194), p.231-254, Refs. p.252-254.

Glacial deposits, Glacial till, Moraines, Cryogenic soils, Desert soils, Soil microbiology, Algae, Bacteria, Biomass, Plant ecology, Vegetation patterns, Canada—Northwest Territories—Ellesmere Island

53-4738

**SCAR bulletin No.134, July 1999.**

Scientific Committee on Antarctic Research, *Polar record*, July 1999, 35(194), p.269-286.

Research projects, International cooperation, Antarctica

53-4739

**Seasonal inorganic nitrogen release in alpine lakes on the Colorado western slope.**

Inyan, B.J., Williams, M.W., Tonnessen, K., Turk, J.T., Campbell, D.H., *Physical geography*, Sep.-Oct. 1998, 19(5), p.406-420, 29 refs.

Air pollution, Scavenging, Snow hydrology, Snow impurities, Snow composition, Snowmelt, Lake ice, Ice cover effect, Lake water, Water pollution, Water chemistry, Hydrogeochemistry, Geochemical cycles, United States—Colorado—Rocky Mountains

53-4740

**Fatigue of all metal sandwich panels: application for cruise ship longitudinal bulkhead and decks.**

Kujala, P., Kukkanen, T., Kotisalo, K., *Helsinki University of Technology. Ship Laboratory. Report*, 1999, M-237, 52p., 34 refs.

Ships, Steel structures, Panels, Structural analysis, Fatigue (materials), Strain tests, Design criteria, Mathematical models

53-4741

**University of the Arctic: turning concept into reality. Phase 1: a development plan.**

Heal, O.W., ed, Langlais, R., ed, Snellman, O., ed, Publications in the University of the Arctic Process, No.1, Rovaniemi, Finland, University of Lapland, International Relations, 1997, 17p., Report submitted to a meeting of senior arctic officials under the Arctic Council in Ottawa, Canada, Oct. 7-9, 1997. Includes Russian version separately paged.

Research projects, Education, Regional planning, International cooperation, Organizations

53-4742

**Preprints.**

Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999, Boston, American Meteorological Society, 1999, 562p., Refs. passim. For selected papers see 53-4743 through 53-4772.

Atmospheric circulation, Air temperature, Surface temperature, Precipitation (meteorology), Climatic changes, Paleoclimatology, Global change, Global warming, Statistical analysis, Computerized simulation

53-4743

**Inter-decadal climate oscillations along the extra-tropical western coasts of the Americas: evidence from tree rings over the past four centuries.**

Villalba, R., D'Arrigo, R.D., Cook, E.R., Wiles, G.C., Jacoby, G.C., Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999. Preprints, Boston, American Meteorological Society, 1999, p.13-16, 18 refs.

Marine atmospheres, Surface temperature, Precipitation (meteorology), Plant ecology, Phenology, Climatic changes, Global change

53-4744

**Regional climate change in the southeastern US: aerosol cooling vs. greenhouse warming.**

Saxena, V.K., Yu, S.C., Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999. Preprints, Boston, American Meteorological Society, 1999, p.31-34, 14 refs.

Air temperature, Surface temperature, Air pollution, Aerosols, Heat balance, Climatic changes, Global change, Statistical analysis, United States

53-4745

Upper-air wave trains over the Pacific Ocean and wintertime cold surges in tropical-subtropical South America.

Marengo, J.A., Ambrizzi, T., Kiladis, G., Liebmann, B., Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999. Preprints, Boston, American Meteorological Society, 1999, p.43-45, 9 refs. Marine atmospheres, Atmospheric circulation, Atmospheric disturbances, Frost, Agriculture, Statistical analysis, Brazil

53-4746

Orbital forcing in paleoclimatic models.

Potemkin, V.L., Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999. Preprints, Boston, American Meteorological Society, 1999, p.46-47, 6 refs.

Ice age theory, Paleoclimatology, Global change

53-4747

Application of the Model Output Statistics (MOS) technique for forecasting minimum temperatures in the coffee growing areas of southern and south-eastern Brazil.

Kim, I.S., Marengo, J.A., Leal de Quadro, M.F., Dias, N.L., Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999. Preprints, Boston, American Meteorological Society, 1999, p.51-54, 8 refs.

Air temperature, Frost forecasting, Weather forecasting, Agriculture, Statistical analysis, Brazil

53-4748

Climate perspective of the 1997-98 Laurentian Great Lakes ice cover.

Assel, R.A., Janowiak, J.E., Norton, D.C., O'Connors, C., Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999. Preprints, Boston, American Meteorological Society, 1999, p.73-76, 3 refs.

Lake ice, Ice conditions, Climatic factors, Global warming, Statistical analysis, Great Lakes

53-4749

Effect of El Niño on the tracks of extratropical cyclones across North America.

Smith, D.R., Ledridge, M.J., Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999. Preprints, Boston, American Meteorological Society, 1999, p.77-80, 2 refs.

Atmospheric circulation, Atmospheric disturbances, Storms, Long range forecasting, Global change, Statistical analysis, United States

53-4750

Maximum and minimum temperature trends in Canada for 1895-1995 and 1946-1995.

Vincent, L.A., Zhang, X.B., Hogg, W.D., Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999. Preprints, Boston, American Meteorological Society, 1999, p.95-98, 8 refs.

Air temperature, Surface temperature, Climatic changes, Statistical analysis, Canada

53-4751

Detection of global warming using observed Northern Hemisphere snow cover and sea ice.

Vinnikov, K.I.A., et al, Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999. Preprints, Boston, American Meteorological Society, 1999, p.99-100, 11 refs.

Sea ice distribution, Snow cover distribution, Global warming, Statistical analysis, Computerized simulation

53-4752

Variability in cold surge frequency across the United States and southern Canada from a synoptic-climatology perspective.

Notaro, M., Wang, W.C., Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999. Preprints, Boston, American Meteorological Society, 1999, p.117-118.

Snowstorms, Frost, Air temperature, Synoptic meteorology, Atmospheric circulation, Atmospheric disturbances, Climatic changes, Statistical analysis, United States, Canada

53-4753

Inter-hemisphere comparison of extended winter season conditions in the stratosphere.

Zhou, S.T., Gelman, M.E., Miller, A.J., McCormack, J.P., Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999. Preprints, Boston, American Meteorological Society, 1999, p.141-142, 3 refs.

Polar atmospheres, Stratosphere, Atmospheric circulation, Ozone

53-4754

Role of solar and volcanic forcing in the Little Ice Age.

Free, M.P., Robock, A., Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999. Preprints, Boston, American Meteorological Society, 1999, p.269-272, 13 refs.

Solar radiation, Insolation, Volcanic ash, Climatic changes, Global change, Radiation balance, Computerized simulation, Statistical analysis

53-4755

Icehouse effect: a polar autumn and winter cooling trend?

Wetzel, P.J., Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999. Preprints, Boston, American Meteorological Society, 1999, p.273-276, 6 refs.

Atmospheric circulation, Atmospheric boundary layer, Air ice water interaction, Global change, Ice age theory, Computerized simulation

53-4756

Cloud effects on the near surface air temperature: temporal changes.

Sun, B.M., Groisman, P.I.A., Bradley, R.S., Keimig, F., Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999. Preprints, Boston, American Meteorological Society, 1999, p.277-281, 4 refs.

Cloud cover, Air temperature, Surface temperature, Snow air interface, Snow cover distribution, Snow cover effect, Climatic changes, Global change, Statistical analysis

53-4757

Ice core evidence for tropical climate change: the role of water vapor.

Thompson, L.G., Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999. Preprints, Boston, American Meteorological Society, 1999, p.286-289, 22 refs.

Atmospheric circulation, Atmospheric composition, Water vapor, Humidity, Precipitation (meteorology), Ice cores, Paleoclimatology, Global change, Global warming

53-4758

Long-term variability of the North Atlantic Oscillation (NAO).

Stockton, C.W., Glueck, M.F., Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999. Preprints, Boston, American Meteorological Society, 1999, p.290-293, 11 refs.

Atmospheric circulation, Atmospheric pressure, Atmospheric disturbances, Synoptic meteorology, Climatic changes, Global change, Ice cores, Paleobotany, Phenology, Paleoclimatology

53-4759

Meteorological interpretation of results from antarctic ice cores by using an AGCM under different paleoclimate boundary conditions.

Leckebusch, G.C., Speth, P., Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999. Preprints, Boston, American Meteorological Society, 1999, p.294-295, 6 refs.

Atmospheric circulation, Atmospheric composition, Aerosols, Dust, Ice cores, Ice composition, Paleoclimatology, Global change, Computerized simulation, Antarctica

53-4760

Precipitation reconstruction in the southern Canadian Cordillera.

Luckman, B.H., Watson, E., Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999. Preprints, Boston, American Meteorological Society, 1999, p.296-299, 13 refs.

Precipitation (meteorology), Air temperature, Phenology, Paleobotany, Plant ecology, Glacier oscillation, Paleoclimatology, Climatic changes, Statistical analysis, Canada—British Columbia, Canada—Alberta

53-4761

Recent, annually resolved climate as recorded in stable isotope ratios in ice cores from Greenland and Antarctica.

White, J.W.C., Steig, E.J., Cole, J., Cook, E.R., Johnsen, S.J., Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999. Preprints, Boston, American Meteorological Society, 1999, p.300-302, 5 refs.

Polar atmospheres, Air temperature, Snowfall, Ice cores, Ice composition, Isotope analysis, Climatic changes, Global change, Statistical analysis, Greenland, Antarctica

53-4762

857-year reconstruction of July temperature from Idaho tree rings.

Biondi, F., Perkins, D.L., Cayan, D.R., Berger, W.H., Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999. Preprints, Boston, American Meteorological Society, 1999, p.307-308, 9 refs.

Air temperature, Phenology, Plant ecology, Paleobotany, Paleoclimatology, Climatic changes, Statistical analysis, United States—Idaho

53-4763

2,000-year paleoclimatic record of drought in the central United States.

Woodhouse, C.A., Overpeck, J.T., Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999. Preprints, Boston, American Meteorological Society, 1999, p.309-312, 44 refs.

Plains, Precipitation (meteorology), Desiccation, Paleobotany, Phenology, Plant ecology, Climatic changes, Statistical analysis, United States

53-4764

ENSO and NAO: present and 6000 years before present as simulated by the NCAR Climate System Model (CSM).

Otto-Bliessner, B.L., Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999. Preprints, Boston, American Meteorological Society, 1999, p.313-316, 9 refs.

Atmospheric circulation, Air temperature, Precipitation (meteorology), Insolation, Air ice water interaction, Paleoclimatology, Global change, Computerized simulation

53-4765

Simulations of present and future climate using a coupled ocean-atmosphere GCM without flux adjustments.

Mitchell, J.F.B., et al, Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999. Preprints, Boston, American Meteorological Society, 1999, p.363-364, 4 refs.

Atmospheric circulation, Atmospheric composition, Air pollution, Ocean currents, Air water interactions, Global warming, Computerized simulation

53-4766

Climate simulations with the DOE Parallel Climate Model (PCM).

Washington, W.M., Weatherly, J.W., MP 5381, Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999. Preprints, Boston, American Meteorological Society, 1999, p.365-368, 11 refs.

Atmospheric circulation, Ocean currents, Air ice water interaction, Ice models, Global warming, Computerized simulation

53-4767

**Predictability and variability of North Atlantic and European climate.**

Rodwell, M.J., Rowell, D.P., Folland, C.K., Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999. Preprints, Boston, American Meteorological Society, 1999, p.395-398, 24 refs.

Marine atmospheres, Atmospheric circulation, Air water interactions, Air temperature, Water temperature, Surface temperature, Long range forecasting, Global change, Computerized simulation

53-4768

**Interannual variability of cold air outbreaks over southern and southeastern Brazil from 1979 to 1997 and sensitivity of the CPTEC/COLA GCM in predicting extreme cases.**

Cavalcanti, I.F.A., Kousky, V.E., Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999. Preprints, Boston, American Meteorological Society, 1999, p.438-441, 5 refs.

Atmospheric circulation, Atmospheric disturbances, Fronts (meteorology), Synoptic meteorology, Weather forecasting, Frost, Frost forecasting, Computerized simulation, Records (extremes), Brazil

53-4769

**Impacts and climatological assessment of the 1998 northern New York ice storm.**

DeGaetano, A.T., Vreeland, K., Wysocki, M.W., Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999. Preprints, Boston, American Meteorological Society, 1999, p.450-453, 2 refs.

Ice storms, Cost analysis, Synoptic meteorology, Fronts (meteorology), Precipitation (meteorology), Meteorological data, Statistical analysis, Records (extremes), United States—New York

53-4770

**American River flood frequencies: a climate-society interaction.**

Redmond, K.T., Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999. Preprints, Boston, American Meteorological Society, 1999, p.454-457, 10 refs.

River flow, Stream flow, Runoff forecasting, Flood control, Flood forecasting, Statistical analysis, Records (extremes), United States—California—American River

53-4771

**Relationships of precipitation and damaging floods in the United States: 1932-1996.**

Pielke, R.A., Jr., Downton, M.W., Mearns, L.O., Cofield, N., Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999. Preprints, Boston, American Meteorological Society, 1999, p.466-469, 5 refs.

Floods, Accidents, Cost analysis, Precipitation (meteorology), Runoff, Flood forecasting, Statistical analysis, Damage, United States

53-4772

**Transition from NOAA weekly to daily hemispheric snow charts.**

Robinson, D.A., Tarpley, J.D., Ramsay, B.H., Symposium on Global Change Studies, 10th, Dallas, TX, Jan. 10-15, 1999. Preprints, Boston, American Meteorological Society, 1999, p.487-490, 3 refs.

Snow surveys, Snow cover distribution, Snowfall, Mapping, Meteorological charts, Meteorological data, Statistical analysis

53-4773

**Data management for the Coordinated Eastern Arctic Experiment.**

Barry, R.G., Hanson, C.S., U.S. Office of Naval Research. *Arctic Program Report*, Sep. 30, 1992, 6p., ADA-255 648, 3 refs.

Ice surveys, Sea ice distribution, Ice conditions, Ice edge, Data processing, Polar atmospheres, Marine atmospheres, Oceanographic surveys, Arctic Ocean

53-4774

**Antarctic meteorological data, 1997. Vol.38. Meteorological data at Syowa Station and Dome Fuji Station. [Nankyoku kisho shiryō 1997 nen Showa kichi oyobi Domu Fuji kansoku kyoten]** Japanese Antarctic Research Expedition, 38th (dai-38-ji Nihon Nankyoku chiiki kansokutai), n.p., In Japanese and English. CD-ROM only.  
Polar atmospheres, Meteorological data, Weather observations, Weather stations, Synoptic meteorology, Solar radiation, Ultraviolet radiation, Radiation measurement, Ozone, Turbidity, Antarctica—Showa Station, Antarctica—Dome Fuji Station

53-4775

**1993-1994 surge of Bering Glacier, Alaska, observed with satellite synthetic aperture radar.** Roush, J.J., Fairbanks, University of Alaska, 1996, 101p., University Microfilms order No.1379805, M.S. thesis. 51 refs.  
Glacier surveys, Glacier oscillation, Glacier flow, Glacier surges, Basal sliding, Glacial lakes, Lake bursts, Synthetic aperture radar, Spaceborne photography, Image processing, United States—Alaska—Bering Glacier

53-4776

**Glacier mass balance bulletin. Bulletin No.5 (1996-1997).**

World Glacier Monitoring Service, Haeberli, W., ed, Hoelzle, M., ed, Frauenfelder, R., ed, Zurich, 1999, 96p.  
Mountain glaciers, Glacier surveys, Glacier mass balance, Glacier oscillation

53-4777

**Ice ages.** Chorlton, W., Alexandria, VA, Time-Life Books, 1983, 176p., Refs. p.170-173.  
DLC QE697.C475 1983  
Glaciation, Pleistocene, Paleocology, Paleoclimatology, Global change, Ice age theory

53-4778

**Learning to be circumpolar: experiences in arctic academic cooperation.**

Langlais, R., ed, Snellman, O., ed, Publications in the University of the Arctic Process, No.5, Rovaniemi, Finland, University of Lapland, Circumpolar Universities Association, 1998, 164p., Refs. passim.  
Research projects, Education, Regional planning, International cooperation, Organizations

53-4779

**Circumpolar networks: organizations with relevance for arctic education and research.**

Keskitalo, C., Publications in the University of the Arctic Process, No.7, Rovaniemi, Finland, University of Lapland, Circumpolar Universities Association (CUA), May 1999, 29p.  
Research projects, Education, Regional planning, International cooperation, Organizations

53-4780

**Evaluation and important properties of corrosion inhibitors used in cold environments.**

Dougherty, J.A., Ahn, Y.S., NACE International, Northern Area, Western Conference, Calgary, Alberta, Mar. 8-11, 1999, Calgary, National Association of Corrosion Engineers International, Northern Area, 1999, 18p., 3 refs.  
Crude oil, Pipelines, Pipe flow, Flow control, Surfactants, Corrosion, Cold weather performance, Low temperature tests

53-4781

**Corrosion inhibitor development for offshore gas flowlines.**

Ramachandran, S., Ward, M.B., Bartrip, K.A., Ahn, Y.S., NACE International, Northern Area, Western Conference, Calgary, Alberta, Mar. 8-11, 1999, Calgary, National Association of Corrosion Engineers International, Northern Area, 1999, 20p., 5 refs.  
Offshore structures, Gas pipelines, Pipe flow, Flow control, Surfactants, Corrosion, Low temperature tests

53-4782

**Added resistance and unsteady bow wave field of a ship in short waves.**

Kalske, S., *Acta polytechnica Scandinavica. Mechanical engineering series*, 1998, No.133, 96p., Ph.D. thesis to be defended at the Helsinki University of Technology. 54 refs.

Ships, Hydrodynamics, Liquid solid interfaces, Ocean waves, Water waves, Wave propagation, Boundary value problems, Mathematical models, Computerized simulation

53-4783

**Arctic '96: RV *Polarstern* trafficability report.**

Lensu, M., *Helsinki University of Technology. Ship Laboratory. Arctic Offshore Research Centre. Report*, 1998, M-235, 163p., 9 refs.

Icebreakers, Oceanographic ships, Ice navigation, Ice breaking, Ice conditions, Ice cover thickness, Trafficability

53-4784

**Alaska Army lands withdrawal renewal: final legislative environmental impact statement.**

Richardson, U.S. Army Alaska (USARAK), [1999], 2 vols., Refs. p.6/1-6/30. Prepared by the Center for Ecological Management of Military Lands, Colorado State University, Fort Collins, CO.

Military facilities, Military operation, Regional planning, Environmental impact, Soil pollution, Water pollution, Land reclamation, Environmental protection, Cost analysis, Legislation, United States—Alaska

53-4785

**Mechanisms for pressure-induced amorphization of ice I<sub>h</sub>.**

Tse, J.S., et al, *Nature*, Aug. 12, 1999, 400(6745), p.647-649, 24 refs.

Amorphous ice, High pressure ice, Ice density, Water structure, Molecular structure, Molecular energy levels, Hydrogen bonds, Phase transformations

53-4786

**Relative influences of atmospheric chemistry and transport on arctic ozone trends.**

Chipperfield, M.P., Jones, R.L., *Nature*, Aug. 5, 1999, 400(6744), p.551-554, 24 refs.

Polar atmospheres, Atmospheric circulation, Atmospheric composition, Polar stratospheric clouds, Ozone, Computerized simulation, Antarctica

53-4787

**Local short-range prediction of cloud images of weather radar by a hybrid neural network method.**

[Niyururu nettowaku-ho o mochi ita koukosetsu reda gazo no kyokusho tanjikan yosoku] Maeda, N., Amenomori, M., *Seppyo*, May 1999, 61(3), p.197-205, In Japanese with English summary. 5 refs.

Cloud cover, Clouds (meteorology), Precipitation (meteorology), Snowfall, Snowstorms, Weather forecasting, Radar tracking, Image processing, Computerized simulation, Japan

53-4788

**Model of layered ice-formation in unconfined water-saturated spherical glass particles. [Garasu fuuryutal naka no sojo hyosensei moderu]**

Watanabe, K., Mutou, Y., Mizoguchi, M., *Seppyo*, May 1999, 61(3), p.207-214, In Japanese with English summary and captions. 15 refs.

Soil freezing, Soil water migration, Ice lenses, Freezing front, Freezing rate

53-4789

**Physical properties of snow and ice under cosmic and planetary environment. [Uchu-wakusei kankyo ni okeru seppyo bussei]**

Arakawa, M., *Seppyo*, May 1999, 61(3), p.215-220, In Japanese. 11 refs.

Extraterrestrial ice, Satellites (natural), Planetary environments

53-4790

Development of an automatic ice fabric analyzer. Part 1: determination of c-axis orientation by a new image analysis. [Aisu faburikku jido kaiseki sochi no kaihatsu. Dai-1 ho: gazo kaiseki ni yoru ichijikusei kessho shujiku hoi sokuteiho]

Wang, Y., Azuma, N., Kamimura, S., *Seppy*, Mar. 1999, 61(2), p.115-126, In Japanese with English Summary. 8 refs.

Ice structure, Ice crystal structure, Ice crystal optics, Ice crystal replicas, Photographic techniques, Image processing, Mathematical models

53-4791

Development of an automatic ice fabric analyzer. Part 2: automatic analysis of ice fabric and texture by image-processing technique. [Aisu faburikku jido kaiseki sochi no kaihatsu. Dai-2 ho: gazo kaiseki ni yoru kessho ryukei oyobi shujiku hoi no jido kaiseki]

Wang, Y., Azuma, N., *Seppy*, Mar. 1999, 61(2), p.127-138, In Japanese with English Summary. 5 refs.

Ice structure, Ice crystal structure, Ice crystal optics, Ice crystal size, Ice crystal replicas, Photographic techniques, Image processing, Mathematical models

53-4792

Reforestation on snow avalanche site in northern Hokkaido. [Hokkaido hokubu no nadare hassei-chi ni okeru shinrin zosei]

Matsuda, K., Yajima, T., Shibuya, M., *Seppy*, Mar. 1999, 61(2), p.139-147, In Japanese with English summary. 11 refs.

Revegetation, Trees (plants), Protective vegetation, Land reclamation, Snow hedges, Snow stabilization, Snow retention, Slope protection, Avalanche engineering, Japan—Hokkaido

53-4793

Interferometric observation of salt concentration distribution in liquid phase around THF clathrate hydrate during directional growth. [Ippoko gyoko naka no THF haidoreto kinbo ni okeru ekiso enbun nodo buntu no kokansho sokutei]

Nagashima, K., Yamamoto, Y., Furukawa, Y., *Seppy*, Mar. 1999, 61(2), p.149-154, In Japanese. 16 refs.

Hydrates, Clathrates, Natural gas, Fuels, Frozen liquids, Liquid solid interfaces, Phase transformations, Crystal growth, Solidification, Salinity

53-4794

Characterization of antitank firing ranges at CFB Valcartier, WATC Wainwright and CFAD Dundurn.

Thiboutot, S., et al, MP 5382, Canada. *Defence Research Establishment Valcartier, Quebec. Report*, Oct. 1998, DREV-R-9809, 54p., ADA-356 304, With French summary. 17 refs.

Military facilities, Site surveys, Explosives, Soil pollution, Ground water, Water pollution, Soil tests, Soil analysis, Chemical analysis, Canada

Some operational activities of the Canadian Forces such as firing practice may cause the dispersion of energetic compounds in the environment. These compounds should be closely monitored due to their highly specific physical, chemical and toxicological properties. In Canada, limited effort has been spent to examine this particular environmental threat. In this context, the characterization of many firing ranges potentially contaminated with explosives has been performed during the last few years. Air-to-ground ranges and ground-to-ground ranges have been characterized and, in general, low levels of multi-contamination by explosives were found. However, antitank firing ranges sampled showed high levels of contamination by HMX, a high explosive used in many antitank rockets. This report details the characterization of five antitank ranges located at Canadian Forces Base Valcartier, Western Area Training Center Wainwright and Canadian Forces Ammunition Depot, Dundurn. The sampling and analytical methods are described and the results are presented. This work should help the Canadian Forces to pursue their operational activities, while minimizing the impacts on the environment by providing a better comprehension of the source of contamination and helping to minimize the environmental impacts in the future.

53-4795

Indentation of model scale pressure ridges with a vertical indenter.

Tuhkuri, J., Riska, K., Wilhelmson, M., Kennedy, R., McCarthy, S., *Helsinki University of Technology. Ship Laboratory. Arctic Offshore Research Centre. Report*, 1997, M-230, 63p., PB98-145162, 13 refs. Pressure ridges, Ice cover strength, Ice solid interface, Ice loads, Ice pressure, Ice friction, Ice deformation, Ice breaking, Penetration tests, Environmental tests

53-4796

Dynamics of the Ice Age Earth: a modern perspective.

Wu, P., ed, *GeoResearch Forum, Vols.3-4*, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, 637p., Refs. passim. For individual papers see 53-4797 through 53-4827.

Glaciation, Ice sheets, Glacier oscillation, Glacial geology, Ice age theory, Isostasy, Earth crust, Rheology, Geodesy, Tectonics, Global change, Sea level

53-4797

Birth and development of the concept of glacio-isostasy, and its modelling up to 1974.

Lliboutry, L., *GeoResearch Forum, Vols.3-4*. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.1-15, 63 refs.

Glaciation, Glaciology, Glacial geology, Ice age theory, Rheology, Geodesy, Earth crust, Continental drift, Tectonics, Isostasy

53-4798

Global glacial isostasy and relative sea level: implications for solid earth geophysics and climate system dynamics.

Peltier, W.R., *GeoResearch Forum, Vols.3-4*. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.17-53, 66 refs. Glaciation, Glacial geology, Ice age theory, Paleoclimatology, Rheology, Geodesy, Viscoelasticity, Earth crust, Continental drift, Tectonics, Isostasy, Sea level, Global change, Ice models, Mathematical models

53-4799

Gravitational-viscoelastic field theory.

Wolf, D., *GeoResearch Forum, Vols.3-4*. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.55-85, 58 refs. Rheology, Viscoelasticity, Earth crust, Tectonics, Geodesy, Isostasy, Mathematical models

53-4800

Load-induced viscoelastic relaxation: an elementary example.

Wolf, D., *GeoResearch Forum, Vols.3-4*. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.87-104, 36 refs. Rheology, Viscoelasticity, Earth crust, Tectonics, Geodesy, Isostasy, Mathematical models

53-4801

Significance of pre-stress advection and internal buoyancy in the flat-earth formulation.

Purcell, A., *GeoResearch Forum, Vols.3-4*. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.105-121, 20 refs. Rheology, Geodesy, Earth crust, Tectonics, Isostasy, Mathematical models

53-4802

Effects of compressibility and stratification on viscoelastic relaxation: the analytical perspective.

Vermeersen, L.L.A., Sabadini, R., *GeoResearch Forum, Vols.3-4*. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.123-134, 18 refs.

Rheology, Viscoelasticity, Earth crust, Tectonics, Geodesy, Isostasy, Mathematical models

53-4803

Initial-value approach for viscoelastic responses of the Earth's mantle.

Hanyk, L., Matyska, C., Yuen, D.A., *GeoResearch Forum, Vols.3-4*. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.135-153, 46 refs.

Rheology, Viscoelasticity, Earth crust, Tectonics, Geodesy, Isostasy, Mathematical models

53-4804

Static deformation of the outer core.

Fang, M., *GeoResearch Forum, Vols.3-4*. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.155-189, 35 refs. Earth crust, Geodesy, Rheology, Isostasy, Mathematical models

53-4805

Validity of using flat-earth finite element models in the study of postglacial rebound.

Wu, P., Johnston, P., *GeoResearch Forum, Vols.3-4*. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.191-201, 18 refs.

Glaciation, Glacial geology, Ice age theory, Earth crust, Tectonics, Geodesy, Isostasy, Computerized simulation

53-4806

Viscoelastic channel flow.

O'Keefe, K., Wu, P., *GeoResearch Forum, Vols.3-4*. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.203-216, 36 refs. Glaciation, Glacial geology, Ice age theory, Isostasy, Earth crust, Tectonics, Geodesy, Rheology, Viscoelasticity, Mathematical models

53-4807

Dynamics of the Pleistocene ice sheets.

Marshall, S.J., *GeoResearch Forum, Vols.3-4*. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.217-248, 142 refs. Pleistocene, Ice age theory, Glaciation, Ice sheets, Glacial geology, Glacier oscillation, Glacier flow, Glacier friction, Glacier beds, Basal sliding, Glacier surges, Ice rafting, Isostasy, Global change, Geochronology, Paleoclimatology, Mathematical models

53-4808

How to model the waxing and waning of ice sheets.

Lliboutry, L., *GeoResearch Forum, Vols.3-4*. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.249-269, 32 refs. Pleistocene, Ice age theory, Glaciation, Ice sheets, Ice shelves, Glacier oscillation, Glacier flow, Glacier mass balance, Glacier heat balance, Basal sliding, Global change, Paleoclimatology, Ice models, Mathematical models

53-4809

Tutorial on strategies for using isostatic adjustments in models that reconstruct ice sheets during the last deglaciation.

Hughes, T.J., *GeoResearch Forum, Vols.3-4*. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.271-321, 108 refs. Ice age theory, Glaciation, Glacial geology, Ice sheets, Glacier flow, Glacier friction, Basal sliding, Glacier oscillation, Geodesy, Earth crust, Tectonics, Isostasy, Global change, Paleoclimatology, Ice models, Mathematical models, Computerized simulation

53-4810

Inferences on mantle rheology from creep laws.

Ranalli, G., *GeoResearch Forum, Vols.3-4*. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.323-339, 76 refs. Earth crust, Rheology, Geodesy, Tectonics, Creep, Isostasy, Mathematical models



- 53-4811**  
**Plausible mantle rheology.**  
Lliboutry, L., *GeoResearch Forum*, Vols.3-4. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.341-350, 17 refs. Earth crust, Rheology, Geodesy, Tectonics, Isostasy, Glacier ice, Ice creep, Mathematical models
- 53-4812**  
**Micro-physics of post glacial rebound.**  
Karato, S.I., *GeoResearch Forum*, Vols.3-4. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.351-364, 36 refs. Earth crust, Rheology, Geodesy, Tectonics, Creep, Microstructure, Dislocations (materials), Glacial geology, Isostasy, Mathematical models
- 53-4813**  
**Postglacial rebound modelling with power-law rheology.**  
Wu, P., *GeoResearch Forum*, Vols.3-4. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.365-382, 20 refs. Glaciation, Glacial geology, Ice age theory, Earth crust, Rheology, Tectonics, Geodesy, Sea level, Isostasy, Ice models, Mathematical models
- 53-4814**  
**Recent postglacial rebound of Fennoscandia: a short review and some numerical results.**  
Ekman, M., *GeoResearch Forum*, Vols.3-4. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.383-392, 18 refs. Glaciation, Glacial geology, Marine geology, Sea level, Isostasy, Earth crust, Tectonics, Geodetic surveys, Norway, Sweden, Finland
- 53-4815**  
**Evidence of late Holocene post-glacial isostatic adjustment in coastal wetland deposits of eastern North America.**  
Donnelly, J.P., *GeoResearch Forum*, Vols.3-4. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.393-399, 30 refs. Glaciation, Glacial geology, Marine geology, Wetlands, Swamps, Bottom sediment, Isostasy, Tectonics, Global change, Sea level
- 53-4816**  
**Comparison between postglacial isostatic predictions and late Holocene sea-level field data from Mediterranean and Iranian coastal areas.**  
Pirazzoli, P.A., *GeoResearch Forum*, Vols.3-4. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.401-419, 50 refs. Glaciation, Glacial geology, Marine geology, Global change, Isostasy, Tectonics, Sea level
- 53-4817**  
**Postglacial sea level variations in the far field of the ice sheets: glacial cycle effects on present-day secular sea level change.**  
Peltier, W.R., *GeoResearch Forum*, Vols.3-4. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.421-441, 25 refs. Glaciation, Ice sheets, Ice age theory, Glacial geology, Glacier oscillation, Marine geology, Isostasy, Earth crust, Tectonics, Global change, Sea level, Computerized simulation
- 53-4818**  
**Rheological structure of the upper mantle inferred from the Holocene sea-level change along the west coast of Kyushu, Japan.**  
Okuno, J., Nakada, M., *GeoResearch Forum*, Vols.3-4. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.443-458, 35 refs. Glaciation, Glacial geology, Marine geology, Earth crust, Rheology, Tectonics, Isostasy, Global change, Sea level, Japan
- 53-4819**  
**Postglacial rebound and other influences on the Earth's secular rotation rate, from analysis of ancient eclipse records.**  
Pang, K.D., Yau, K.K., Chau, H.H., *GeoResearch Forum*, Vols.3-4. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.459-488, 109 refs. Glaciation, Ice age theory, Glacial geology, Earth crust, Rheology, Geodesy, Tectonics, Isostasy, Global change
- 53-4820**  
**Mantle layering and long-term rotational response of the Earth to glacial cycles.**  
Sabadini, R., Vermeersen, L.L.A., *GeoResearch Forum*, Vols.3-4. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.489-496, 41 refs. Glaciation, Ice age theory, Glacial geology, Earth crust, Geodesy, Tectonics, Isostasy, Global change, Computerized simulation
- 53-4821**  
**Geodetic techniques for estimating changes in polar ice.**  
Wahr, J., Han, D., *GeoResearch Forum*, Vols.3-4. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.497-508, 22 refs. Ice sheets, Glacier oscillation, Glacier mass balance, Glacial geology, Glacier surveys, Geodetic surveys, Topographic surveys, Earth crust, Tectonics, Isostasy, Global change, Sea level, Greenland, Antarctica
- 53-4822**  
**Verification of the solid earth response on changing ice loads: a geodetic project in West Greenland.**  
Dietrich, R., Scheinert, M., Korth, W., *GeoResearch Forum*, Vols.3-4. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.509-522, 19 refs. Ice sheets, Glacier surveys, Glacier oscillation, Glacier mass balance, Glacial geology, Geodetic surveys, Gravimetric prospecting, Earth crust, Tectonics, Isostasy, Global change, Sea level, Greenland
- 53-4823**  
**Secular variations in the Earth's gravitational field from analysis of SLR data.**  
Cheng, M.K., *GeoResearch Forum*, Vols.3-4. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.523-531, 27 refs. Glacial geology, Earth crust, Tectonics, Isostasy, Geodetic surveys, Gravimetric prospecting, Lidar, Spaceborne photography
- 53-4824**  
**Use of satellite laser ranging and long duration orbital changes to constrain geophysical models.**  
Klosko, S., Chao, B.F., *GeoResearch Forum*, Vols.3-4. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.533-556, 50 refs. Glacier oscillation, Glacier mass balance, Glacial geology, Earth crust, Tectonics, Isostasy, Global change, Sea level, Geodetic surveys, Gravimetric prospecting, Lidar, Spaceborne photography
- 53-4825**  
**Postglacial rebound with lateral heterogeneities: from 2D to 3D modeling.**  
Wu, P., Ni, Z., Kaufmann, G., *GeoResearch Forum*, Vols.3-4. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.557-581, 24 refs. Glaciation, Ice sheets, Glacier oscillation, Glacial geology, Ice age theory, Earth crust, Tectonics, Geodesy, Isostasy, Ice models, Computerized simulation
- 53-4826**  
**Upper mantle lateral viscosity variations and postglacial rebound: application to the Barents Sea.**  
Kaufmann, G., Wu, P., *GeoResearch Forum*, Vols.3-4. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.583-601, 24 refs. Glaciation, Ice sheets, Glacier oscillation, Glacial geology, Ice age theory, Marine geology, Earth crust, Geodesy, Tectonics, Isostasy, Global change, Sea level, Ice models, Computerized simulation, Barents Sea
- 53-4827**  
**Intraplate earthquakes and postglacial rebound in eastern Canada and northern Europe.**  
Wu, P., *GeoResearch Forum*, Vols.3-4. Dynamics of the Ice Age Earth: a modern perspective. Edited by P. Wu, Zurich, Switzerland, Trans Tech Publications Ltd., 1998, p.603-628, 56 refs. Glaciation, Ice sheets, Glacial geology, Earth crust, Tectonics, Isostasy, Earthquakes, Seismology, Computerized simulation
- 53-4828**  
**Soils and groundwater pollution and remediation: Asia, Africa, and Oceania.**  
Huang, P.M., ed, Iskandar, I.K., ed, MP 5383, Boca Raton, FL, CRC Press LLC, 1999, 386p., Refs. passim. Chapters 3 and 4, p.80-95, and 96-125, respectively, have p.82-95 and 96-114 missing, and 115-125 duplicated. Chapter 5, p.126-149, is complete but has p.126-146 duplicated in chapters 3 and 4. DLC TD878.4.A78S65 1999  
Soil pollution, Ground water, Water pollution, Waste disposal, Environmental impact, Health, Environmental protection, Land reclamation
- 53-4829**  
**Evidence of NO<sub>x</sub> production within or upon ice particles in the Greenland snowpack.**  
Honrath, R.E., Peterson, M.C., Guo, S., Dibb, J.E., Shepson, P.B., Campbell, B., *Geophysical research letters*, Mar. 15, 1999, 26(6), p.695-698, 26 refs. Snow air interface, Scavenging, Snow surface, Snow composition, Photochemical reactions, Polar atmospheres, Atmospheric composition, Greenland
- 53-4830**  
**Nitric acid adsorption on ice: surface diffusion.**  
Laird, S.K., Buttry, D.A., Sommerfeld, R.A., *Geophysical research letters*, Mar. 15, 1999, 26(6), p.699-701, 18 refs. Snow ice interface, Snow composition, Snow permeability, Ice composition, Ice surface, Adsorption, Vapor diffusion
- 53-4831**  
**Variation of the infrared spectra of nitric acid hydrates with formation conditions: impact on PSC identification.**  
Tisdale, R.T., Prenni, A.J., Iraci, L.T., Tolbert, M.A., Toon, O.B., *Geophysical research letters*, Mar. 15, 1999, 26(6), p.707-710, 14 refs. Polar atmospheres, Atmospheric composition, Polar stratospheric clouds, Cloud physics, Aerosols, Ice nuclei, Ice crystal optics, Ice spectroscopy, Infrared spectroscopy
- 53-4832**  
**Ozone and temperature profiles measured above Kiruna inside, at the edge of, and outside the arctic polar vortex in February and March 1997.**  
Kreher, K., Bodeker, G.E., Kanzawa, H., Nakane, H., Sasano, Y., *Geophysical research letters*, Mar. 15, 1999, 26(6), p.715-718, 14 refs. Polar atmospheres, Atmospheric circulation, Atmospheric composition, Air temperature, Polar stratospheric clouds, Ozone, Sweden

53-4833

Spring 1996 and 1997 ozonesonde measurements over McMurdo Station, Antarctica.

Nardi, B., Bellon, W., Oolman, L.D., Deshler, T., *Geophysical research letters*, Mar. 15, 1999, 26(6), p.723-726, 13 refs.

Polar atmospheres, Atmospheric composition, Air temperature, Ozone, Sounding, Telemetering equipment, Data transmission, Antarctica—McMurdo Station

53-4834

Potential high-latitude vegetation feedbacks on CO<sub>2</sub>-induced climate change.

Levis, S., Foley, J.A., Pollard, D., *Geophysical research letters*, Mar. 15, 1999, 26(6), p.747-750, 22 refs.

Vegetation patterns, Vegetation factors, Plant physiology, Evapotranspiration, Carbon dioxide, Atmospheric composition, Atmospheric circulation, Global warming, Computerized simulation

53-4835

Interfacial water in polar glaciers and glacier sliding at -17°C.

Cuffey, K.M., Conway, H., Hallet, B., Gades, A.M., Raymond, C.F., *Geophysical research letters*, Mar. 15, 1999, 26(6), p.751-754, 19 refs.

Glacier flow, Glacier friction, Glacier beds, Regelation, Water films, Basal sliding, Antarctica—Meserve Glacier

53-4836

Twentieth century trends in droughts in southern Switzerland.

Rebetz, M., *Geophysical research letters*, Mar. 15, 1999, 26(6), p.755-758, 19 refs.

Precipitation (meteorology), Meteorological data, Desiccation, Climatic changes, Global warming, Statistical analysis, Switzerland

53-4837

Northern Hemisphere temperatures during the past millennium: inferences, uncertainties, and limitations.

Mann, M.E., Bradley, R.S., Hughes, M.K., *Geophysical research letters*, Mar. 15, 1999, 26(6), p.759-762, 16 refs.

Air temperature, Surface temperature, Paleobotany, Forest lines, Ice cores, Paleoclimatology, Climatic changes, Global change, Statistical analysis

53-4838

Unified structure in Quaternary climate.

Gauthier, J.H., *Geophysical research letters*, Mar. 15, 1999, 26(6), p.763-766, 28 refs.

Ice age theory, Solar activity, Global change, Paleoclimatology, Statistical analysis

53-4839

Estimating present-day postglacial rebound and horizontal movements in Fennoscandia by repeated GPS campaigns in 1993 and 1997.

Pan, M., Sjöberg, L.E., *Geophysical research letters*, Mar. 15, 1999, 26(6), p.771-774, 15 refs.

Marine geology, Sea level, Tides, Geodetic surveys, Earth crust, Tectonics, Isostasy, Sweden, Finland

53-4840

Rock glaciers and springs in the "Niedere Tauern" (Styria). [Blockgletscher und Quellen in den Niederen Tauern]

Untersweg, T., Schwendt, A., *Österreichische Geologische Gesellschaft, Wien. Mitteilungen*, 1994(Pub. May 96), No.87, p.47-55, In German with English summary. 14 refs.

DLC QE1.A38 BD.87 1994

Rock glaciers, Glacial hydrology, Periglacial processes, Ground water, Springs (water), Austria—Styria

53-4841

Experimental and computational simulation of in-flight icing phenomena.

Kind, R.J., Potapczuk, M.G., Feo, A., Golia, C., Shah, A.D., *Progress in aerospace sciences*, 1998, 34(5/6), p.257-345, 154 refs.

Aircraft icing, Ice accretion, Ice detection, Ice forecasting, Supercooled clouds, Cloud droplets, Environmental tests, Wind tunnels, Design criteria, Safety

53-4842

Problems of application of homogeneous maximum flood peak method to the analysis of maximum seasonal flows. [Problemy związane ze stosowaniem genetycznych ciągów maksymalnych kulminacji w analizie maksymalnych przepływów sezonowych]

Węglarczyk, S., *Instytut meteorologii i gospodarki wodnej. Wiadomości*, 1996, 19(2), p.55-65, In Polish with Russian and English summaries. 15 refs.

DLC QC869.4.P63 W56 No.19 1996

Flood forecasting, Snowmelt, Meltwater, Rain, Poland

53-4843

Seventy-fifth anniversary of Maritime Branch of Institute of Meteorology and Water management. [Siedemdziesiąt pięć lat działalności Oddziału Morskiego Instytutu Meteorologii i Gospodarki Wodnej]

Dziadziuszko, Z., *Instytut meteorologii i gospodarki wodnej. Wiadomości*, 1996, 19(3), p.3-26, In Polish with Russian and English summaries. 10 refs.

DLC QC869.4.P63 W56 No.19 1996

Organizations, Research projects, Meteorology, Hydrology, History, Poland

53-4844

Current ecological problems of the Baltic Sea. [Sytuacja ekologiczna współczesnego Bałtyku]

Trzosińska, A., Lysiak-Pastuszek, E., *Instytut meteorologii i gospodarki wodnej. Wiadomości*, 1996, 19(3), p.27-62, In Polish with Russian and English summaries. 51 refs.

DLC QC869.4.P63 W56 No.19 1996

Water pollution, Sea water, Ecosystems, Water chemistry, Oil spills, Wastes, Ocean currents, Environmental impact, Baltic Sea

53-4845

Polish contribution to the total pollution input to the Baltic Sea. [Udział Polski w dopływie zanieczyszczeń do Morza Bałtyckiego]

Niemirycz, E., Bogacka, T., Taylor, R., *Instytut meteorologii i gospodarki wodnej. Wiadomości*, 1996, 19(3), p.63-84, In Polish with Russian and English summaries. 4 refs.

DLC QC869.4.P63 W56 No.19 1996

Water pollution, Sea water, Environmental impact, Rivers, River flow, Water chemistry, Baltic Sea

53-4846

On using geochemical data in the paleo-geographical studies of Gdańsk Bay. [Próba wykorzystania danych geochemicznych w badaniach paleo-geograficznych Zatoki Gdańskiej]

Kepińska, U., *Instytut meteorologii i gospodarki wodnej. Wiadomości*, 1996, 19(3), p.101-121, In Polish with Russian and English summaries. 37 refs.

DLC QC869.4.P63 W56 No.19 1996

Paleoclimatology, Bottom sediment, Geochemistry, Lithology, Marine geology, Poland—Gdańsk Bay

53-4847

Arctic research of the United States, Vol.13, Spring/Summer 1999.

U.S. Interagency Arctic Research Policy Committee, Myers, C.E., ed, Korsmo, F., ed, Haugh, J., ed, Cate, D.W., ed, Valliere, D.R., ed, MP 5384, Arlington, VA, U.S. National Science Foundation, Office of Polar Programs, 1999, 54p., Refs. passim. For selected papers see 53-4848 and 53-4849.

Organizations, Research projects, Regional planning, International cooperation

53-4848

Old records, new stories: ecosystem variability and subsistence hunting in the Bering Strait area.

Krupnik, I., *Arctic research of the United States*, Spring/summer 1999, Vol.13, p.15-24, 8 refs.

Research projects, Regional planning, Human factors, Ecosystems, Environmental protection, Bering Strait

53-4849

Traditional knowledge and radionuclides.

Craver, A., Cochran, P., Kruse, J., *Arctic research of the United States*, Spring/summer 1999, Vol.13, p.49-54.

Research projects, Regional planning, Pollution, Health, Ecosystems

53-4850

University of the Arctic. The feasibility study: final report. With shared voices: launching the University of the Arctic.

Young, O.R., ed, Langlais, R., ed, Snellman, O., ed, Publications in the University of the Arctic Process, No.6, Rovaniemi, Finland, University of Lapland, Circumpolar Universities Association (CUA), 1998, 67p., With Russian version p.14-24.

Research projects, Education, Regional planning, International cooperation, Organizations

53-4851

Thermal tendencies of winters in Poland as the indicator of climate variability. [Tendencje termiczne zim w Polsce jako wskaźnik oceny zmienności klimatu]

Lorenc, H., Suwalska-Bogucka, M., *Instytut meteorologii i gospodarki wodnej. Wiadomości*, 1995, 18(1), p.3-28, In Polish with Russian and English summaries. 37 refs.

DLC QC869.4.P63 W56 No.18 1995

Global warming, Climatic changes, Air temperature, Atmospheric pressure, Solar activity, Winter, Poland

53-4852

Assessment of foliar frost damage: a comparison of *in vivo* chlorophyll fluorescence with other viability tests.

Neuner, G., Buchner, O., *Journal of applied botany*, May 1999, 73(1-2), p.50-54, With German summary. 30 refs.

Plant ecology, Plant physiology, Plant tissues, Chlorophylls, Cold exposure, Cold tolerance, Frost resistance

53-4853

Sensitivity experiments performed with an energy balance atmosphere model coupled to an advection-diffusion ocean model.

Bintanja, R., *Theoretical and applied climatology*, 1997, 56(1-2), p.1-24, Refs. p.22-24.

Atmospheric circulation, Ocean currents, Air ice water interaction, Snow air interface, Ice cover effect, Snow cover effect, Radiation balance, Global change, Mathematical models, Computerized simulation

53-4854

Spatial variability in the chemical composition of the snowcover at high alpine sites.

Schöner, W., Puxbaum, H., Staudinger, M., Maupeit, F., Wagenbach, D., *Theoretical and applied climatology*, 1997, 56(1-2), p.25-32, 16 refs.

Atmospheric composition, Atmospheric circulation, Air pollution, Scavenging, Snow cover distribution, Snow composition, Snow impurities, Snow samplers, Alps

53-4855

Vertical radar reflectivity profiles in Slovenia.

Rakovec, J., *Theoretical and applied climatology*, 1997, 57(1-2), p.35-47, 32 refs.

Cloud physics, Cloud droplets, Water content, Precipitation (meteorology), Snowfall, Radar echoes, Weather forecasting, Mathematical models, Slovenia

53-4856

**Statistical study of winter lightning strikes to aircraft with electric field of the ground surface.** Tomine, K., Ogata, H., Fukawatase, K., *National Defense Academy, Yokosuka, Japan. Memoirs. Mathematics, physics, chemistry and engineering*, Mar. 1998, 37(2), p.1-9, 14 refs.  
Thunderstorms, Lightning, Cloud physics, Cloud electrification, Atmospheric electricity, Aircraft, Accidents, Weather forecasting, Statistical analysis, Japan

53-4857

**Laboratory astrophysics and space research.** Ehrenfreund, P., ed, Krafft, C., ed, Kochan, H., ed, Pirronello, V., ed, *Astrophysics and Space Science Library*, Vol.236, Dordrecht, Netherlands, Kluwer Academic Publishers, 1999, 687p., Refs. passim. For selected papers see 53-4858 through 53-4862.  
DLC QB461.L3 1999  
Cosmic dust, Planetary environments, Extraterrestrial ice, Ice composition, Ice sublimation, Molecular structure

53-4858

**Interstellar medium: a general introduction.** Spaans, M., Ehrenfreund, P., *Astrophysics and Space Science Library*, Vol.236. Laboratory astrophysics and space research. Edited by P. Ehrenfreund, C. Krafft, H. Kochan, and V. Pirronello, Dordrecht, Netherlands, Kluwer Academic Publishers, 1999, p.1-36, Refs. p.32-36.  
DLC QB461.L3 1999  
Cosmic dust, Molecular structure, Extraterrestrial ice, Ice composition, Ice sublimation

53-4859

**Laboratory astrophysics in solar system studies—an overview.** Cruikshank, D.P., *Astrophysics and Space Science Library*, Vol.236. Laboratory astrophysics and space research. Edited by P. Ehrenfreund, C. Krafft, H. Kochan, and V. Pirronello, Dordrecht, Netherlands, Kluwer Academic Publishers, 1999, p.37-67, Refs. p.60-67.  
Planetary environments, Satellites (natural), Cosmic dust, Extraterrestrial ice, Ice composition, Environment simulation

53-4860

**Ices in the interstellar medium.** Schutte, W.A., *Astrophysics and Space Science Library*, Vol.236. Laboratory astrophysics and space research. Edited by P. Ehrenfreund, C. Krafft, H. Kochan, and V. Pirronello, Dordrecht, Netherlands, Kluwer Academic Publishers, 1999, p.69-103, Refs. p.98-103.  
Cosmic dust, Extraterrestrial ice, Ice composition, Ice spectroscopy, Ice sublimation, Ice vapor interface, Molecular structure, Phase transformations

53-4861

**Water ice on comets and satellites.** Bernstein, M.P., *Astrophysics and Space Science Library*, Vol.236. Laboratory astrophysics and space research. Edited by P. Ehrenfreund, C. Krafft, H. Kochan, and V. Pirronello, Dordrecht, Netherlands, Kluwer Academic Publishers, 1999, p.105-120, Refs. p.117-120.  
Cosmic dust, Planetary environments, Satellites (natural), Extraterrestrial ice, Ice composition, Ice structure, Ice density, Ice sublimation, Molecular structure, Phase transformations

53-4862

**Simulation experiments with cometary analogous material.** Kochan, H.W., Huebner, W.F., Sears, D.W.G., *Astrophysics and Space Science Library*, Vol.236. Laboratory astrophysics and space research. Edited by P. Ehrenfreund, C. Krafft, H. Kochan, and V. Pirronello, Dordrecht, Netherlands, Kluwer Academic Publishers, 1999, p.623-665, Refs. p.658-665.  
Cosmic dust, Planetary environments, Extraterrestrial ice, Ice composition, Ice sublimation, Environment simulation

53-4863

**Chemical ozone loss in the arctic vortex in the winter 1995-96: HALOE measurements in conjunction with other observations.** Müller, R., et al, *Annales geophysicae*, Jan. 1999, 17(1), p.101-114, 56 refs.  
Polar atmospheres, Atmospheric circulation, Atmospheric composition, Ozone

53-4864

**Aspects of the freezing process in a porous material-water system. Part 1. Freezing and the properties of water and ice.** Chatterji, S., *Cement and concrete research*, Apr. 1999, 29(4), p.627-630, 19 refs.  
Concrete freezing, Concrete durability, Concrete strength, Frost action, Frost resistance, Freeze thaw tests

53-4865

**Water invasion, freezing, and thawing in cementitious materials.** Ausloos, M., Salmon, E., Vandewalle, N., *Cement and concrete research*, Feb. 1999, 29(2), p.209-213, 28 refs. Paper presented at the Materials Research Society Symposium on Advances in Materials for Cementitious Composites, Boston, MA, Dec. 1-3, 1997.  
Concrete freezing, Concrete durability, Concrete strength, Frost resistance, Freeze thaw tests

53-4866

**Can thin disk-like ice clusters be more stable than compact droplet-like ice clusters?** Tanaka, H., Yamamoto, R., Koga, K., Zeng, X.C., *Chemical physics letters*, May 7, 1999, 304(5-6), p.378-384, 16 refs.  
Water structure, Molecular structure, Molecular energy levels, Hydrogen bonds, Ice crystal structure

53-4867

**Winter temperature variability during warming and cooling periods in the conterminous United States, 1947-1992.** Yin, Z.Y., Knapp, P.A., *Theoretical and applied climatology*, 1999, 62(3-4), p.109-124, 44 refs.  
Atmospheric circulation, Air temperature, Air masses, Surface temperature, Climatic changes, Global warming, Statistical analysis, United States

53-4868

**Spatial, temporal and intensity characteristics of heavy snowfall events over Austria.** Spreitzhofer, G., *Theoretical and applied climatology*, 1999, 62(3-4), p.209-219, 33 refs.  
Snowstorms, Snowfall, Snow surveys, Snow cover distribution, Snow depth, Weather forecasting, Statistical analysis, Mathematical models, Austria

53-4869

**Solar system ices.** Schmitt, B., ed, De Bergh, C., ed, Festou, M., ed, *Astrophysics and Space Science Library*, Vol.227, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, 826p., Refs. passim. Based on reviews presented at the International Symposium on Solar System Ices, Toluence, France, Mar. 27-30, 1995. For individual papers see 53-4870 through 53-4901.  
DLC QB462.6.S654 1998  
Planetary environments, Satellites (natural), Cosmic dust, Extraterrestrial ice, Ice composition, Ice sublimation, Ice spectroscopy, Ice structure, Ice thermal properties, Atmospheric composition, Clathrates, Hydrates, Molecular structure, Phase transformations, Cryogenics

53-4870

**Physical chemistry of ices in the outer solar system.** Kargel, J.S., *Astrophysics and Space Science Library*, Vol.227. Solar system ices. Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.3-32, 53 refs.  
DLC QB462.6.S654 1998  
Satellites (natural), Planetary environments, Extraterrestrial ice, Clathrates, Hydrates, Frozen liquids, Ice composition, Ice vapor interface, Ice sublimation, Molecular structure, Cryogenics, Geologic processes

53-4871

**Thermal conductivity of solar system ices, with special reference to Martian polar caps.** Ross, R.G., Kargel, J.S., *Astrophysics and Space Science Library*, Vol.227. Solar system ices. Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.33-62, 65 refs.  
DLC QB462.6.S654 1998  
Planetary environments, Satellites (natural), Mars (planet), Extraterrestrial ice, Ice composition, Ice thermal properties, Thermal conductivity, Heat transfer, Phase transformations, Clathrates, Hydrates, Molecular structure

53-4872

**Rheology of planetary ices.** Durham, W.B., Kirby, S.H., Stern, L.A., *Astrophysics and Space Science Library*, Vol.227. Solar system ices. Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.63-78, 34 refs.  
DLC QB462.6.S654 1998  
Satellites (natural), Planetary environments, Extraterrestrial ice, High pressure ice, Clathrates, Hydrates, Ice composition, Ice strength, Ice creep, Ice deformation, Rheology, Cryogenics

53-4873

**Thermodynamic properties of high pressure ices: implications for the dynamics and internal structure of large icy satellites.** Sotin, C., Grasset, O., Beauchesne, S., *Astrophysics and Space Science Library*, Vol.227. Solar system ices. Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.79-96, 45 refs.  
DLC QB462.6.S654 1998  
Satellites (natural), Planetary environments, Extraterrestrial ice, Clathrates, Hydrates, Frozen liquids, High pressure ice, Ice composition, Ice thermal properties, Cryogenics, Phase transformations

53-4874

**Clathrate hydrates on Earth and in the solar system.** Kargel, J.S., Lunine, J.I., *Astrophysics and Space Science Library*, Vol.227. Solar system ices. Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.97-117, 66 refs.  
DLC QB462.6.S654 1998  
Clathrates, Hydrates, Permafrost, Frozen ground chemistry, Mars (planet), Extraterrestrial ice, Ice composition, Molecular structure

53-4875

**Metamorphism of solar system ices.** Eluszkiewicz, J., Leliwa-Kopystyński, J., Kossacki, K.J., *Astrophysics and Space Science Library*, Vol.227. Solar system ices. Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.119-138, 56 refs.  
DLC QB462.6.S654 1998  
Satellites (natural), Planetary environments, Extraterrestrial ice, Ice structure, Ice density, Ice sintering, Ice pressure, Ice creep, Ice deformation, Mathematical models

53-4876

**Amorphous water ice: a solar system material.** Jenniskens, P., Blake, D.F., Kouchi, A., *Astrophysics and Space Science Library*, Vol.227. Solar system ices. Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.139-155, 74 refs.  
DLC QB462.6.S654 1998  
Amorphous ice, Extraterrestrial ice, Ice sublimation, Ice thermal properties, Ice composition, Water structure, Molecular structure, Clathrates, Hydrates, Phase transformations

53-4877

**Reflectance spectroscopy of icy surfaces.**

Verbiscer, A., Helfenstein, P., *Astrophysics and Space Science Library, Vol.227. Solar system ices.* Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.157-197, Refs. p.192-197.

DLC QB462.6.S654 1998

Satellites (natural), Planetary environments, Extraterrestrial ice, Ice composition, Ice structure, Ice density, Ice spectroscopy, Ice optics, Ice detection, Photometry, Mathematical models

53-4878

**Optical properties of ices from UV to infrared.**

Schmitt, B., Quirico, E., Trotta, F., Grundy, W.M., *Astrophysics and Space Science Library, Vol.227. Solar system ices.* Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.199-240, Refs. p.235-240.

DLC QB462.6.S654 1998

Planetary environments, Satellites (natural), Extraterrestrial ice, Ice optics, Ice spectroscopy, Ice composition, Ice structure, Ice thermal properties, Ice detection, Phase transformations, Molecular structure

53-4879

**Microwave properties of ice and snow.**

Mätzler, C., *Astrophysics and Space Science Library, Vol.227. Solar system ices.* Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.241-257, 37 refs.

DLC QB462.6.S654 1998

Snow electrical properties, Ice electrical properties, Ice dielectrics, Ice structure, Ice detection, Microwaves, Backscattering, Radar echoes, Radiometry, Mathematical models

53-4880

**UV photochemistry of ices: the role of photons in the processing of ices.**

Salama, F., *Astrophysics and Space Science Library, Vol.227. Solar system ices.* Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.259-279, 70 refs.

DLC QB462.6.S654 1998

Planetary environments, Cosmic dust, Satellites (natural), Extraterrestrial ice, Ice optics, Ice structure, Ice composition, Ultraviolet radiation, Solar radiation, Radiation absorption, Photochemical reactions, Ionization, Molecular structure, Molecular energy levels

53-4881

**Chemistry of ice induced by bombardment with energetic charged particles.**

Strazzulla, G., *Astrophysics and Space Science Library, Vol.227. Solar system ices.* Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.281-301, 63 refs.

DLC QB462.6.S654 1998

Planetary environments, Satellites (natural), Cosmic dust, Extraterrestrial ice, Ice composition, Ice sublimation, Ice spectroscopy, Solar radiation, Radiation absorption, Ionization, Molecular structure, Molecular energy levels, Cryogenics

53-4882

**Sputtering and desorption from icy surfaces.**

Johnson, R.E., *Astrophysics and Space Science Library, Vol.227. Solar system ices.* Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.303-334, Refs. p.327-334.

DLC QB462.6.S654 1998

Planetary environments, Satellites (natural), Extraterrestrial ice, Ice composition, Ice spectroscopy, Ice sublimation, Solar radiation, Ionization, Molecular structure, Molecular energy levels, Cryogenics, Mathematical models

53-4883

**From interstellar dust to comets: distributed CO in comet Halley.**

Greenberg, J.M., Li, A.G., *Astrophysics and Space Science Library, Vol.227. Solar system ices.* Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.337-351, 39 refs.

DLC QB462.6.S654 1998

Cosmic dust, Planetary environments, Extraterrestrial ice, Ice sublimation, Ice composition, Ice spectroscopy, Molecular structure

53-4884

**Trapping of gases in water ice and consequences to comets and the atmospheres of the inner planets.**

Bar-Nun, A., Owen, T.C., *Astrophysics and Space Science Library, Vol.227. Solar system ices.* Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.353-366, 45 refs.

DLC QB462.6.S654 1998

Planetary environments, Extraterrestrial ice, Amorphous ice, Ice composition, Ice sublimation, Gas inclusions, Atmospheric composition, Molecular structure

53-4885

**Origin and evolution of comets, icy planets and satellites.**

Forni, O., Federico, C., Coradini, A., Magni, G., *Astrophysics and Space Science Library, Vol.227. Solar system ices.* Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.367-394, Refs. p.388-394.

DLC QB462.6.S654 1998

Planetary environments, Satellites (natural), Extraterrestrial ice, Ice composition, Ice sublimation, Phase transformations

53-4886

**Composition and physical properties of comets.**

Rickman, H., *Astrophysics and Space Science Library, Vol.227. Solar system ices.* Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.395-417, Refs. p.412-417.

DLC QB462.6.S654 1998

Planetary environments, Cosmic dust, Extraterrestrial ice, Ice composition, Ice structure, Ice sublimation, Phase transformations

53-4887

**Terrestrial snow studies from remote sensing in the solar spectrum and the thermal infrared.**

Fily, M., Leroux, C., Lenoble, J., Sergent, C., *Astrophysics and Space Science Library, Vol.227. Solar system ices.* Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.421-441, 80 refs.

DLC QB462.6.S654 1998

Snow surveys, Snow cover distribution, Snow surface temperature, Snow cover structure, Snow morphology, Snow optics, Albedo, Reflectivity, Radiometry, Spaceborne photography

53-4888

**Polar stratospheric clouds on Earth: a review of particle thermodynamics, nucleation and growth kinetics.**

Peter, T., *Astrophysics and Space Science Library, Vol.227. Solar system ices.* Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.443-475, 74 refs.

DLC QB462.6.S654 1998

Polar atmospheres, Atmospheric composition, Atmospheric circulation, Polar stratospheric clouds, Cloud physics, Cloud droplets, Aerosols, Ice nuclei, Ozone

53-4889

**Mars CO<sub>2</sub> ice polar caps.**

Forget, F., *Astrophysics and Space Science Library, Vol.227. Solar system ices.* Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.477-507, 85 refs.

DLC QB462.6.S654 1998

Mars (planet), Planetary environments, Atmospheric circulation, Atmospheric composition, Carbon dioxide, Ice sublimation, Hoarfrost, Extraterrestrial ice, Ice composition, Radiometry, Spaceborne photography

53-4890

**Introduction to icy satellite geology.**

Johnson, T.V., *Astrophysics and Space Science Library, Vol.227. Solar system ices.* Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.511-523, 29 refs.

DLC QB462.6.S654 1998

Satellites (natural), Planetary environments, Extraterrestrial ice, Geologic processes, Geomorphology, Tectonics, Spaceborne photography

53-4891

**Geodynamics of icy satellites.**

McKinnon, W.B., *Astrophysics and Space Science Library, Vol.227. Solar system ices.* Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.525-550, 60 refs.

DLC QB462.6.S654 1998

Satellites (natural), Planetary environments, Extraterrestrial ice, Ice composition, Ice thermal properties, Convection, Phase transformations, Thermodynamics, Rheology, Tectonics, Geologic processes, Geomorphology, Mathematical models

53-4892

**Geologic landforms and processes on icy satellites.**

Schenk, P.M., Moore, J.M., *Astrophysics and Space Science Library, Vol.227. Solar system ices.* Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.551-578, Refs. p.574-578.

DLC QB462.6.S654 1998

Satellites (natural), Planetary environments, Extraterrestrial ice, Ice composition, Ice thermal properties, Volcanoes, Geologic processes, Rheology, Tectonics, Geomorphology

53-4893

**Ices on the satellites of Jupiter, Saturn, and Uranus.**

Cruikshank, D.P., Brown, R.H., Calvin, W.M., Roush, T.L., Bartholomew, M.J., *Astrophysics and Space Science Library, Vol.227. Solar system ices.* Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.579-606, 76 refs.

DLC QB462.6.S654 1998

Satellites (natural), Planetary environments, Extraterrestrial ice, Ice composition, Ice spectroscopy, Ice detection

53-4894

**Ices on Io—composition and texture.**

Nash, D.B., Betts, B.H., *Astrophysics and Space Science Library, Vol.227. Solar system ices.* Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.607-637, 87 refs.

DLC QB462.6.S654 1998

Satellites (natural), Planetary environments, Extraterrestrial ice, Ice composition, Ice spectroscopy, Ice sublimation, Ice detection, Hoarfrost, Molecular structure

53-4895

**Surface-atmosphere interactions on Titan.**

Lunine, J.I., *Astrophysics and Space Science Library*, Vol.227. Solar system ices. Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.639-653, 40 refs.

DLC QB462.6.S654 1998

Satellites (natural), Planetary environments, Atmospheric composition, Ice nuclei, Extraterrestrial ice, Ice composition, Ice sublimation, Liquefied gases, Molecular structure, Photochemical reactions

53-4896

**Surface compositions of Triton, Pluto, and Charon.**

Cruikshank, D.P., Roush, T.L., Owen, T.C., Quirico, E., De Bergh, C., *Astrophysics and Space Science Library*, Vol.227. Solar system ices. Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.655-684, 91 refs.

DLC QB462.6.S654 1998

Satellites (natural), Planetary environments, Extraterrestrial ice, Ice composition, Ice sublimation, Ice spectroscopy, Molecular structure, Cryogenics, Mathematical models

53-4897

**Pluto and the Kuiper Disk.**

Stern, S.A., *Astrophysics and Space Science Library*, Vol.227. Solar system ices. Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.685-709, 81 refs.

DLC QB462.6.S654 1998

Planetary environments, Satellites (natural), Extraterrestrial ice, Ice composition, Ice sublimation, Ice spectroscopy, Molecular structure, Cryogenics

53-4898

**Rings of the outer planets.**

Dones, L., *Astrophysics and Space Science Library*, Vol.227. Solar system ices. Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.711-734, Refs. p.727-734.

DLC QB462.6.S654 1998

Planetary environments, Satellites (natural), Cosmic dust, Extraterrestrial ice, Ice composition, Ice sublimation

53-4899

**Ices in the giant planets.**

Podolak, M., Hubbard, W.B., *Astrophysics and Space Science Library*, Vol.227. Solar system ices. Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.735-748, 30 refs.

DLC QB462.6.S654 1998

Planetary environments, Extraterrestrial ice, Ice composition, Ice sublimation, High pressure ice, Molecular structure, Phase transformations, Cryogenics, Mathematical models

53-4900

**Atmospheric ices.**

Samuelson, R.E., *Astrophysics and Space Science Library*, Vol.227. Solar system ices. Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.749-772, 57 refs.

DLC QB462.6.S654 1998

Planetary environments, Satellites (natural), Atmospheric composition, Cloud physics, Ice nuclei, Extraterrestrial ice, Ice composition, Ice spectroscopy, Ice sublimation, Photochemical reactions, Molecular structure

53-4901

**Surface/atmosphere interactions and volatile transport (Triton, Pluto, and Io).**

Trafton, L.M., Matson, D.L., Stansberry, J.A., *Astrophysics and Space Science Library*, Vol.227. Solar system ices. Edited by B. Schmitt, C. de Bergh, and M. Festou, Dordrecht, Netherlands, Kluwer Academic Publishers, 1998, p.773-812, Refs. 807-812.

DLC QB462.6.S654 1998

Satellites (natural), Planetary environments, Atmospheric composition, Extraterrestrial ice, Ice composition, Ice sublimation, Hoarfrost, Photochemical reactions, Molecular structure, Phase transformations, Cryogenics

53-4902

**Estimation of usability of aggregate for frost resistant concretes. [Ocena przydatności kruszywa do betonów mrozoodpornych]**

Rusin, Z., *Archiwum inżynierii lądowej*, 1988, 34(1), p.123-139, In Polish with Russian and English summaries. 9 refs.

DLC TA4.A7 Vol.34 1988

Concretes, Concrete strength, Frost resistance, Concrete aggregates

53-4903

**Mid-Holocene climate in Europe: what can we infer from PMIP model-data comparisons?**

Masson, V., Cheddadi, R., Braconnot, P., Joussaume, S., Texier, D., *Climate dynamics*, Mar. 1999, 15(3), p.163-182, 66 refs.

Paleobotany, Palynology, Phenology, Atmospheric circulation, Air temperature, Surface temperature, Precipitation (meteorology), Degree days, Global change, Paleoclimatology, Computerized simulation

53-4904

**Impact of new land surface physics on the GCM simulation of climate and climate sensitivity.**

Cox, P.M., Betts, R.A., Bunton, C.B., Essery, R.L.H., Rowntree, P.R., Smith, J., *Climate dynamics*, Mar. 1999, 15(3), p.183-203, 40 refs.

Soil air interface, Snow heat flux, Snow cover effect, Radiation balance, Evapotranspiration, Atmospheric circulation, Vegetation factors, Nutrient cycle, Geochemical cycles, Carbon dioxide, Global warming, Computerized simulation, Mathematical models

53-4905

**Last Glacial Maximum climate of the former Soviet Union and Mongolia reconstructed from pollen and plant macrofossil data.**

Tarasov, P.E., et al, *Climate dynamics*, Mar. 1999, 15(3), p.227-240, Refs. p.238-240.

Paleobotany, Palynology, Vegetation patterns, Fossils, Global change, Paleoclimatology, Statistical analysis, Computerized simulation, Russia, Mongolia

53-4906

**Icy flood of 1985 on the Upper-Tisza section. [Az 1985. évi felső-tiszai jeges árvíz]**

Illés, L., *Vízügyi közlemények*, 1986, 68(4), p.549-558, In Hungarian with Russian, English and German summaries.

DLC GB726.H8 V52 1986 No.4

Rivers, River ice, Floods, Ice jams, Flood forecasting, Snow water equivalent, Temperature effects, Hungary

53-4907

**Estimate of some rheological properties of asphalt concretes under cyclic loading conditions. [Ocena wybranych reologicznych właściwości betonów asfaltowych w warunkach obciążeń cyklicznych]**

Kalabińska, M., Piąt, J., Dietrich, L., *Archiwum inżynierii lądowej*, 1989, 35(1), p.95-106, In Polish with Russian and English summaries. 5 refs.

DLC TA4.A7 Vols.35-36 1989-90

Bituminous concretes, Rheology, Loads (forces), Isotherms, Low temperature tests, Viscoelasticity

53-4908

**Numerical model for computing the soil freezing depth. [Model numeryczny obliczania głębokości zamrażania gruntu]**

Ickiewicz, I., Panek, A., *Archiwum inżynierii lądowej*, 1990, 36(1-2), p.157-166, In Polish with Russian and English summaries. 4 refs.

DLC TA4.A7 Vols.35-36 1989-90

Mathematical models, Frost penetration, Soil freezing, Enthalpy, Stefan problem, Thermal conductivity

53-4909

**Mixing of meltwater and groundwater in a forested basin.**

Bengtsson, L., Lepistö, A., Saxena, R.K., Seuna, P., *Aqua fennica*, 1991, 21(pt.1), p.3-12, With Finnish summary. 12 refs.

DLC GB727.4.A65 Vol.21 Pt.1 1991

Meltwater, Snowmelt, Ground water, Oxygen isotopes, Runoff, River basins, Forest land, Finland

53-4910

**Aluminum from two glacial tills: flows and retention mechanisms.**

Ågren, S., Jacks, G., *Aqua fennica*, 1991, 21(pt.1), p.29-37, 42 refs.

DLC GB727.4.A65 Vol.21 Pt.1 1991

Glacial till, Soil profiles, Soil water, Ions, Podsol, Water chemistry, Sweden

53-4911

**Detection and measurement of ice thickness using microprocessor-controlled resonant transducers.**

Roy, S., Izad, A., DeAnna, R., Mehregany, M., *SPIE—The International Society for Optical Engineering. Proceedings*, 1998, Vol.3329, Smart structures and materials 1998: Smart structures and integrated systems, Pt.1. Edited by M.E. Regellbrugge, p.10-20, 9 refs.

DLC TA418.9.S62 S52989 1998

Aircraft icing, Ice accretion, Ice electrical properties, Ice detection, Ice formation indicators, Thickness gages

53-4912

**Palynostratigraphy of Eemian interglacial and Early Vistulian in the South Great Polish Lowland (Wielkopolska) and Lower Silesia. [Palynostratygrafia osadów interglacjalnych eemskiego i wczesnego wistulianu w południowej Wielkopolsce i na Dolnym Śląsku]**

Kuszell, T., *Wrocław. Uniwersytet. Acta Universitatis Wratislaviensis. Prace geologiczno-mineralogiczne LX*, 1997, No.1965, 70p. + plates, In Polish with extended English summary. Refs. p.59-65.

DLC QE1.B64 No.60

Paleobotany, Paleoclimatology, Palynology, Vegetation patterns, Pollen, Lacustrine deposits, Poland

53-4913

**Snow and ice chemistry study of the Greenland ice sheet.**

Yang, Q.Z., Durham, University of New Hampshire, 1996, 145p., University Microfilms order No.DA96-27171, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, 57(4), p.2425.

Atmospheric composition, Scavenging, Snow air interface, Snow composition, Snow accumulation, Snow ice interface, Ice sheets, Glacier ice, Ice composition, Snow samplers, Ice cores, Paleoclimatology, Greenland

53-4914

**Recharge to discharge groundwater travel times in the Michigan basin and the effect of glacial ice loading.**

Hoaglund, J.R., III, East Lansing, Michigan State University, 1996, 274p., University Microfilms order No.DA97-06494, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, 57(9), p.5541.

Glaciation, Glacial geology, Ice sheets, Glacial hydrology, Meltwater, Subglacial drainage, Ground water, Glacial lakes, Isotopic labeling, Paleoclimatology, United States—Michigan, Lake

53-4915

**Scale effects on the fracture of ice.**

Adamson, R.M., Potsdam, NY, Clarkson University, 1996, 114p., University Microfilms order No.DA97-07366, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, 57(10), p.6415.

Sea ice, Ice cover strength, Ice elasticity, Ice creep, Ice deformation, Ice loads, Ice pressure, Ice cracks, Ice breaking, Stress concentration

53-4916

**Boundary detection using multisensor imagery: application to ice sheet margin detection.**

Sohn, H.G., Columbus, Ohio State University, 1996, 184p., University Microfilms order No.DA97-10660, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, 57(10), p.6136.

Glacier surveys, Ice sheets, Glacier oscillation, Glacier flow, Topographic surveys, Geodetic surveys, Synthetic aperture radar, Mapping, Spaceborne photography, Image processing

53-4917

**Infiltration into frozen soils. [Przebieg procesu infiltracji w gruntach zamrzniętych]**

Soczyńska, U., Sieklucki, L., *Przegląd geofizyczny*, 1988, 33(1), p.21-31, In Polish with English summary. 16 refs.

DLC QC851.P72 V.33 1988

Mathematical models, Permeability, Loams, Frozen ground mechanics, Freeze thaw cycles, Soil freezing, Ground thawing, Frozen ground thermodynamics, Thermal conductivity, Hydraulics, Heat capacity

53-4918

**Symptoms of discontinuous tectonics in Quaternary formations of the right bank of the Vistula valley between Płock and Włocławek. [Przejawy tektoniki nieciągłej w utworach czwartorzędowych prawego zbocza doliny Wisły między Płockiem a Włocławkiem]**

Korotaj-Kokoszczynska, M., Mizerski, W., *Przegląd geofizyczny*, 1988, 33(1), p.53-63, In Polish with English summary. 14 refs.

DLC QC851.P72 V.33 1988

Tectonics, Quaternary deposits, Glacial geology, Glacial erosion, Poland—Płock, Poland—Włocławek

53-4919

**Perspectives of development of hydrological sciences (in the light of results of work of the IAHS "Hydrology 2000" Working Group). [Perspektywy rozwoju nauk hydrologicznych (w świetle wyników pracy grupy roboczej IAHS "Hydrologia 2000")]**

Kundzewicz, Z., *Przegląd geofizyczny*, 1988, 33(3), p.227-237, In Polish with English summary.

DLC QC851.P72 V.33 1988

Hydrology, Mathematical models, Surface waters, Ground water, Sedimentation, Snow hydrology, Ice cover effect, Snow cover effect, Snow air interface, Air ice water interaction, Climatic changes, Erosion

53-4920

**Scale effects on the in-situ tensile strength and fracture of ice. Part I: Large grained freshwater ice at Spray Lakes Reservoir, Alberta.**

Dempsey, J.P., DeFranco, S.J., Adamson, R.M., Mulmule, S.V., Fracture scaling. Edited by Z.P. Bažant and Y.D.S. Rajapakse, Dordrecht, Netherlands, Kluwer Academic Publishers, 1999, p.325-345, 48 refs. Reprinted from International journal of fracture, Vol.95, 1999.

DLC TA409.F7195 1999

Lake ice, Ice structure, Ice cover strength, Ice loads, Ice pressure, Ice friction, Ice deformation, Ice cracks, Ice breaking, Stress concentration, Canada—Alberta—Spray Lakes Reservoir

53-4921

**Scale effects on the in-situ tensile strength and fracture of ice. Part II: First-year sea ice at Resolute, N.W.T.**

Dempsey, J.P., Adamson, R.M., Mulmule, S.V., Fracture scaling. Edited by Z.P. Bažant and Y.D.S. Rajapakse, Dordrecht, Netherlands, Kluwer Academic Publishers, 1999, p.347-366, Refs. p.363-366. Reprinted from International journal of fracture, Vol.95, 1999.

DLC TA409.F7195 1999

Sea ice, Ice structure, Ice cover strength, Ice loads, Ice pressure, Ice deformation, Ice cracks, Ice breaking, Stress concentration, Canada—Northwest Territories—Resolute

53-4922

**Transport, preservation and accumulation of organic carbon in the North Sea. [Transport, preservatie en accumulatie van organische koolstof in de Noordzee]**

De Haas, H., ed, *Utrecht. Universiteit. Faculteit Aardwetenschappen. Geologica Ultraiectina*, 1997, No.155, 149p., With Dutch summary. Refs. passim. For individual papers see 53-4923 through 53-4927.

DLC QE1.G1342 No.155

Sedimentation, Sediment transport, Grain size, Organic nuclei, Paleoclimatology, Greenhouse effect, Marine deposits, Bottom sediment, North Sea

53-4923

**Recent sediment accumulation in the Norwegian Channel, North Sea.**

De Haas, H., Okkels, E., Van Weering, T.C.E., *Utrecht. Universiteit. Faculteit Aardwetenschappen. Geologica Ultraiectina*, 1997, No.155, Transport, preservation and accumulation of organic carbon in the North Sea. Edited by H. de Haas, p.23-39, 36 refs.

DLC QE1.G1342 No.155

Sedimentation, Sediment transport, Grain size, Glacial erosion, Ocean currents, Radioactive isotopes, Marine deposits, Glacial deposits, North Sea

53-4924

**Recent sediment accumulation, organic carbon burial and transport in the northeastern North Sea.**

De Haas, H., Van Weering, T.C.E., *Utrecht. Universiteit. Faculteit Aardwetenschappen. Geologica Ultraiectina*, 1997, No.155, Transport, preservation and accumulation of organic carbon in the North Sea. Edited by H. de Haas, p.41-62, Refs. p.58-62.

DLC QE1.G1342 No.155

Sedimentation, Sediment transport, Hydrography, Grain size, Ocean currents, Wind factors, Bottom sediment, Suspended sediments, Organic nuclei, North Sea

53-4925

**Recent sedimentation and organic carbon burial in a shelf sea; the North Sea.**

De Haas, H., Boer, W., Van Weering, T.C.E., *Utrecht. Universiteit. Faculteit Aardwetenschappen. Geologica Ultraiectina*, 1997, No.155, Transport, preservation and accumulation of organic carbon in the North Sea. Edited by H. de Haas, p.63-83, Refs. p.79-83.

DLC QE1.G1342 No.155

Sedimentation, Organic nuclei, Sediment transport, Radioactive isotopes, Marine deposits, North Sea

53-4926

**Organic carbon preservation in the Skagerrak and Norwegian Channel (North Sea); a case of grain size and type of organic matter.**

De Haas, H., *Utrecht. Universiteit. Faculteit Aardwetenschappen. Geologica Ultraiectina*, 1997, No.155, Transport, preservation and accumulation of organic carbon in the North Sea. Edited by H. de Haas, p.85-107, Refs. p.104-107.

DLC QE1.G1342 No.155

Grain size, Sedimentation, Sediment transport, Drill core analysis, Radioactive isotopes, Bottom sediment, North Sea

53-4927

**Preservation of organic carbon in the North Sea compared to other shelf seas: a synthesis on processes and products.**

De Haas, H., *Utrecht. Universiteit. Faculteit Aardwetenschappen. Geologica Ultraiectina*, 1997, No.155, Transport, preservation and accumulation of organic carbon in the North Sea. Edited by H. de Haas, p.109-146, Refs. p.137-146.

DLC QE1.G1342 No.155

Grain size, Sedimentation, Hydrology, Paleoclimatology, Glacial deposits, Bottom sediment, Sediment transport, Greenhouse effect, Marine deposits, North Sea

53-4928

**Late glacial and Holocene lacustrine sediments of the lake Czarny Staw Gąsienicowy in the Tatra Mountains. [Późnoglacialne i holocenijskie osady z Czarnego Stawu Gąsienicowego w Tatrach]**

Baumgart-Kotarba, M., Kotarba, A., *Polska Akademia Nauk. Instytut Geografii i Przestrzennego Zagospodarowania. Dokumentacja geograficzna*, 1993, No.4-5, Z badań fizyczno-geograficznych w Tatrach (Physical geography study in the Tatra Mountains). Edited by A. Kotarba, p.9-30, In Polish with English summary. 18 refs.

DLC G23.D63 1993 Zesz.4-5

Lacustrine deposits, Sediments, Pleistocene, Grain size, Glacial deposits, Palynology, Poland—Tatra Mountains

53-4929

**Fluctuation of the forest limit in the Tatra Mountains during the last 12 000 years. [Wahania górnej granicy lasu w późnym plejstocenie i holocenie w Tatrach]**

Obidowicz, A., *Polska Akademia Nauk. Instytut Geografii i Przestrzennego Zagospodarowania. Dokumentacja geograficzna*, 1993, No.4-5, Z badań fizyczno-geograficznych w Tatrach (Physical geography study in the Tatra Mountains). Edited by A. Kotarba, p.31-43 + 3 fold. tables, In Polish with English summary. 22 refs.

DLC G23.D63 1993 Zesz.4-5

Pollen, Palynology, Forest lines, Paleoclimatology, Trees (plants), Lacustrine deposits, Spectra, Poland—Tatra Mountains

53-4930

**Young Holocene lacustrine sediments from Lake Morskie Oko in the High Tatra Mountains and their dating by use of <sup>210</sup>Pb and <sup>14</sup>C. [Młodoholocenijskie osady jeziorne Morskiego Oka w Tatrach Wysokich oraz ich datowanie radiolizotopami <sup>210</sup>Pb i <sup>14</sup>C]**

Baumgart-Kotarba, M., Kotarba, A., Wachniew, P., *Polska Akademia Nauk. Instytut Geografii i Przestrzennego Zagospodarowania. Dokumentacja geograficzna*, 1993, No.4-5, Z badań fizyczno-geograficznych w Tatrach (Physical geography study in the Tatra Mountains). Edited by A. Kotarba, p.45-61 + 2 fold. tables, In Polish with English summary. 18 refs.

DLC G23.D63 1993 Zesz.4-5

Lacustrine deposits, Radioactive isotopes, Geomorphology, Grain size, Quaternary deposits, Poland—Tatra Mountains

53-4931

**Quantitative rates of nivation in the High Tatra Mountains. [Ilościowe wskaźniki niwacji w Tatrach Wysokich]**

Rączkowska, Z., *Polska Akademia Nauk. Instytut Geografii i Przestrzennego Zagospodarowania. Dokumentacja geograficzna*, 1993, No.4-5, Z badań fizyczno-geograficznych w Tatrach (Physical geography study in the Tatra Mountains). Edited by A. Kotarba, p.63-81, In Polish with English summary. 14 refs.

DLC G23.D63 1993 Zesz.4-5

Nivation, Meltwater, Runoff, Microclimatology, Weathering, Poland—Tatra Mountains



53-4932

**Coastal ocean prediction.**

Moers, C.N.K., ed, Coastal and Estuarine Studies, Vol.56, Washington, D.C., American Geophysical Union, 1999, 523p., Refs. passim. For selected papers see 53-4933 through 53-4938.

DLC GB451.2.C57 1999

Marine atmospheres, Marine meteorology, Ocean currents, Tides, Water temperature, Air ice water interaction, Sea ice distribution, Ice conditions, Ice models, Ice forecasting, Weather forecasting

53-4933

**Introduction to coastal ocean prediction.**

Moers, C.N.K., Coastal ocean prediction. Edited by C.N.K. Moers, Washington, D.C., American Geophysical Union, 1999, p.1-5, 8 refs.

DLC GB451.2.C57 1999

Ocean environments, Ocean currents, Tides, Marine atmospheres, Regional planning, Environmental protection

53-4934

**Coastal meteorology.**

Overland, J.E., Friehe, C., Coastal ocean prediction. Edited by C.N.K. Moers, Washington, D.C., American Geophysical Union, 1999, p.7-29, Refs. p.26-29.

DLC GB451.2.C57 1999

Marine meteorology, Air water interactions, Snowstorms, Weather forecasting

53-4935

**Overview of coastal ocean models.**

Greatbatch, R.J., Mellor, G.L., Coastal ocean prediction. Edited by C.N.K. Moers, Washington, D.C., American Geophysical Union, 1999, p.31-57, Refs. p.52-57.

DLC GB451.2.C57 1999

Ocean currents, Water temperature, Salinity, Water transport, Air ice water interaction, Ice models, Computer programs

53-4936

**Temperature simulation in the NW European shelf seas.**

Elliott, A.J., Li, Z.H., Coastal ocean prediction. Edited by C.N.K. Moers, Washington, D.C., American Geophysical Union, 1999, p.175-193, 27 refs.

DLC GB451.2.C57 1999

Marine atmospheres, Atmospheric circulation, Air water interactions, Ocean currents, Tides, Surface temperature, Water temperature, Mathematical models, Computerized simulation, North Sea

53-4937

**Prediction in ice-covered shallow seas.**

Preller, R.H., Coastal ocean prediction. Edited by C.N.K. Moers, Washington, D.C., American Geophysical Union, 1999, p.405-441, Refs. p.437-441.

DLC GB451.2.C57 1999

Air ice water interaction, Sea ice distribution, Ice conditions, Ice cover thickness, Ice heat flux, Ice cover effect, Drift, Ice forecasting, Ice models, Mathematical models, Computer programs

53-4938

**Norwegian perspective.**

Guddal, J., Coastal ocean prediction. Edited by C.N.K. Moers, Washington, D.C., American Geophysical Union, 1999, p.513-519, 3 refs.

DLC GB451.2.C57 1999

Marine meteorology, Sea ice distribution, Ice conditions, Ice forecasting, Ice reporting, Weather forecasting, Data transmission, Norway

53-4939

**Assessment of snow cover effects on the dynamics of cryogenic rocks freezing. [K otsenke vlianiia snezhnogo pokrova na dinamiku promerzaniia krugennykh porod]**

Osokin, N.I., Samoilov, R.S., Sosnovskii, A.V., Zhidkov, V.A., Balaeva, V.A., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.3-11, In Russian with English summary. 40 refs.

DLC QE575.A43

Snow cover effect, Frozen rocks, Mathematical models, Soil freezing, Frost penetration, Snow depth, Snow thermal properties, Thermal conductivity

53-4940

**Effects of temperature changes near the foot of Late Pleistocene ice sheet on formation of glacial-tectonic structure (western coast of the Yamal Peninsula). [Vliianie izmenenii' temperaturnykh uslovii' u podoshvy pozdnepleistotsenovogo lednikovogo pokrova na formirovanie gliatsiologicheskikh struktur (zapadnoe poberezh'e p-ova IAmal)]**

Kaplianskaia, F.A., Tarnogradskii, V.D., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.12-17, In Russian with English summary. 27 refs.

DLC QE575.A43

Ice veins, Ice wedges, Temperature effects, Pleistocene, Cryogenic structures, Tectonics, Glacial geology, Periglacial processes, Deformation, Russia—Yamal Peninsula

53-4941

**Intensive snowfalls in the Elbrus area for the period of instrumental observations of 1951-1995. [Intensivnye snegopady v Priel'brus'e za period instrumental'nykh nabludenii' 1951-1995 gg.]**

Olehnikov, A.D., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.18-24, In Russian with English summary. 7 refs.

DLC QE575.A43

Snowfall, Snow depth, Air temperature, Forecasting, Avalanches, Snow air interface, Snowstorms, Avalanche forecasting, Georgia—Elbrus

53-4942

**Structure and chemical composition in the active layer of the Bolshoy Azau Glacier, Elbrus, in its accumulation area. [Stroenie i khimicheskii' sostav delatel'nogo sloia lednika Bol'shoi' Azau (El'brus) v oblasti pitaniia]**

Rototaeva, O.V., Khmelevskoi, I.F., Bazhev, A.B., Heintzenberg, J., Stenberg, M., Pinglot, J.F., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.25-33, In Russian with English summary. 19 refs.

DLC QE575.A43

Active layer, Ice cores, Drill core analysis, Glacier ice, Ice composition, Ions, Ice water interface, Ice air interface, Firn stratification, Glacier alimentation, Glacial hydrology, Georgia—Elbrus, Georgia—Bolshoy Azau Glacier

53-4943

**Specific feature of intra-annual distribution of the Altai rivers runoff. [Osobennosti vnutrigodovogo raspredeleniia stoka rek Altaia]**

Narozhnyi, I.U.K., Paromov, V.V., Shantykova, L.N., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.34-40, In Russian with English summary. 10 refs.

DLC QE575.A43

Rivers, Runoff, Seasonal variations, Glacial rivers, Russia—Ob' River

53-4944

**Expectations and realities of space glaciology. [Nadezhdy i real'nosti kosmicheskoi' gliatsiologii]**

Knizhnikov, I.U.F., Kravtsova, V.I., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.41-47, In Russian with English summary. 31 refs.

DLC QE575.A43

Glaciology, Remote sensing, Electromagnetic prospecting, Sea ice, Snow cover, Spacecraft, Ice cover, Ice surveys, Snow surveys, Glacier surveys

53-4945

**Stereoscopic modelling of glacier surface displacement by photographs taken at different time. [Stereoskopicheskoe modelirovanie peremeshcheniia poverkhnosti lednikovo ro razno vremennyy aereofotostimkam]**

Zolotarev, E.A., Khar'kovets, E.G., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.48-51, In Russian with English summary. 8 refs.

DLC QE575.A43

Glacier surfaces, Glacier flow, Photogrammetry, Photo-interpretation, Aerial surveys, Georgia—Elbrus

53-4946

**Present degradation of glaciation on the northern slope of the Zailiisky Alatau. [Sovremennaiia degradatsiia oledeneniia severnogo sklona Zailiiskogo Alatau]**

Vilesov, E.N., Uvarov, V.N., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.52-59, In Russian with English summary. 14 refs.

DLC QE575.A43

Glacier melting, Glacier ablation, Degradation, Glacier mass balance, Glacier surveys, Kazakhstan—Zailiyskiy Alatau

53-4947

**Some questions of the glacial ice penetrability. [Nekotorye voprosy pronitsaemosti lednikovogo l'da dlia vody]**

Mavliudov, B.R., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.60-65, In Russian with English summary. 18 refs.

DLC QE575.A43

Ice water interface, Glacier ice, Permeability, Ice temperature, Ice tunnels, Velocity, Glacial hydrology

53-4948

**Specific features of chemical composition formation of the Kabardino-Balkarian glaciers. [Osobennosti formirovaniia khimicheskogo sostava lednikov Kabardino-Balkarii]**

Kerimov, A.M., Rototaeva, O.V., Khmelevskoi, I.F., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.66-71, In Russian with English summary. 9 refs.

DLC QE575.A43

Glacier ice, Ice composition, Ions, Impurities, Ice air interface, Aerosols, Precipitation (meteorology), Glacier surveys, Snow composition, Firn, Russia—Kabardino-Balkar

53-4949

**Automated working place of an avalanche forecaster. [Avtomatizirovannoe rabochee mesto prozozista snezhnykh lavin]**

Chernous, P.A., Perlikov, A.M., Mokrov, E.G., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.72-75, In Russian with English summary. 6 refs.

DLC QE575.A43

Avalanche forecasting, Computers, Computer programs, Snow cover

53-4950

**Mathematical and physical modelling of snow-dust avalanches. [Matematicheskoe i fizicheskoe modelirovanie snezhno-pylevykh lavin]**

Eglit, M.E., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.76-79, In Russian with English summary. 40 refs.

DLC QE575.A43

Avalanche mechanics, Avalanche modeling, Mathematical models

53-4951

**Experimental study of the operation of avalanche-directing and avalanche-detaining systems. [Eksperimental'nye issledovaniia raboty lavinonapravlushchikh i lavinozaderzhivalushchikh sistem]**

IAdroshnikov, V.I., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.80-87, In Russian with English summary. 17 refs.

DLC QE575.A43

Avalanche protection, Countermeasures, Analysis (mathematics), Design, Snow cover effect, Avalanche engineering, Snow loads

53-4952

Effects of global climate change on the avalanche regime on the territory of the former Soviet Union. [Vliianie global'nogo izmeneniia klimata na lavinnyi rezhim na territorii byvshego Sovetskogo Soiuza]

Glazovskaia, T.G., Troshkina, E.S., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.88-91, In Russian with English summary. 2 refs.

DLC QE575.A43

Global change, Climatic changes, Avalanche forecasting, Snow depth, Snowfall, Air temperature, CIS

53-4953

Water-snow flows on the Putorana Plateau. [Vodosnezhnye potoki na plato Putorana]

Voitkovskii, K.F., Korol'kov, V.G., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.92-94, In Russian with English summary. 1 ref.

DLC QE575.A43

Mudflows, Meltwater, Water flow, Snowmelt, Countermeasures, Design, Russia—Siberia

53-4954

Snow patches of West Caucasus. [Snezhniki Zapadnogo Kavkaza]

Glushkova, I.A., Panova, S.V., Efremov, I.U.V., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.95-99, In Russian with English summary. 14 refs.

DLC QE575.A43

Snowdrifts, Nivation, Avalanches, Snowmelt, Air temperature, River flow, Classifications, Caucasus Mountains

53-4955

Specific features of the thermal winter regime in the Greater Caucasus. [Osobennosti termicheskogo rezhima zimnego perioda na Bol'shom Kavkaze]

Pogorelov, A.V., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.100-107, In Russian with English summary. 13 refs.

DLC QE575.A43

Thermal regime, Air temperature, Snow cover, Statistical analysis, Snow air interface, Caucasus Mountains

53-4956

Possibilities of estimation of the mudflow activity in connection with global climate change. [Vozmozhnosti otsenki izmeneniia kharaktera selevoï delatel'nosti v sviazi s global'nym izmeneniiem klimata]

Sidorova, T.L., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.108-113, In Russian with English summary. 16 refs.

DLC QE575.A43

Mudflows, Climatic changes, Global change, Snowfall, Rain

53-4957

Fluctuations of activity and prediction of glacial mudflows in the Central Caucasus in the XX-th century. [Izmeneniie aktivnosti i prognoz gliatsial'nykh seleï Tsentral'nogo Kavkaza v XX stoletii]

Seinova, I.B., Mal'neva, I.V., Kononova, N.K., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.114-120, In Russian with English summary. 9 refs.

DLC QE575.A43

Mudflows, Air temperature, Precipitation (meteorology), Glacier melting, Long range forecasting, Snowfall, Caucasus Mountains, Russia—Baksan River

53-4958

Paleohydrology of Eurasia during the last glaciation. [Paleogidrologiia Evrazii v epokhu poslednego oledeneniia]

Grosval'd, M.G., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.121-129, In Russian with English summary. 42 refs.

DLC QE575.A43

Paleoclimatology, Hydrology, Ice dams, Hydrography, Spillways, Water flow, Drainage, Glaciation

53-4959

Use of modern glacio-climatic relationship for reconstruction of past glaciation (by the example of Scandinavian glaciation during the Middle Valdaï). [Ispol'zovanie sovremennykh gliatsioklimaticheskikh svyazei dlia rekonstruktsii drevnego oledeneniia (na primere oledeneniia Skandinaviï v period Srednego Valdaia)]

Kononov, I.U.M., Ananicheva, M.D., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.130-135, In Russian with English summary. 14 refs.

DLC QE575.A43

Paleoclimatology, Glaciation, Pleistocene, Ice age theory

53-4960

Regularities of changes of snow elastic properties at its consolidation and diagnoses. [Zakonomernosti izmeneniia uprugikh svoïstv snega pri ego uplotnenii i diageneze]

Frolov, A.D., Fediukin, I.V., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.136-140, In Russian with English summary. 16 refs.

DLC QE575.A43

Snow elasticity, Diagenesis, Snow acoustics, Snow ice interface, Porosity, Analysis (mathematics), Snow strength

53-4961

Problems of interaction of nival-glacial phenomena and human activity. [Problemy vzaimodeïstviia nival'no-gliatsial'nykh iavlenii i deiatel'nosti cheloveka]

Osokin, N.I., Samoilov, R.S., Sosnovskii, A.V., Zhidkov, V.A., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.141-147, In Russian with English summary. 7 refs.

DLC QE575.A43

Nivation, Glaciation, Classifications, Environmental impact, Damage, Human factors, Regional planning, Safety

53-4962

On the water content in subpolar and temperate glaciers according to the data of measurements of radio-wave velocities. [Otsenka sodержaniia vody v subpoliarnykh i teplykh lednikakh po dannym izmerenii skorosti rasprostraneniia radiovoln]

Frolov, A.D., Macheret, I.U.I.A., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.148-154, In Russian with English summary. 33 refs.

DLC QE575.A43

Glacier ice, Radio waves, Glacial hydrology, Ice dielectrics, Analysis (mathematics), Glacier surveys, Hydrothermal processes

53-4963

Avalanche formation as a process of self organization of regulated structures. [Lavinoobrazovanie kak protsess samoorganizatsii uporiadochennykh struktur]

Kazakov, N.A., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.155-157, In Russian with English summary. 5 refs.

DLC QE575.A43

Avalanche formation, Avalanche deposits, Nivation, Avalanche forecasting, Avalanche protection, Metamorphism (snow)

53-4964

Fluctuations of four glaciers of the Pamiro-Alay by lichenometric data. [Kolebania chetyrex lednikov Pamiro-Alaia po likhenometricheskim dannym]

Solomina, O.N., Kamnianskii, G.M., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.158-164, In Russian with English summary. 14 refs.

DLC QE575.A43

Lichens, Glacier oscillation, Moraines, Age determination, Pamir-Alay, Russia—Koksa River

53-4965

Mudflow events at the territory of the USA and Canada. [Selevyie iavleniia na territorii SShA i Kanady]

Sidorova, T.L., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.165-169, In Russian with English summary. 16 refs.

DLC QE575.A43

Mudflows, Maps, Classifications, Canada, United States

53-4966

Regime of the stable snow cover in the Greater Caucasus. [Rezhim ustoičhivogo snezhnogo pokrova na Bol'shom Kavkaze]

Pogorelov, A.V., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.170-175, In Russian with English summary. 14 refs.

DLC QE575.A43

Snow cover stability, Snow depth, Snow cover distribution, Slope orientation, Altitude, Statistical analysis, Russia—Caucasus

53-4967

Concentration, spectral distribution and ice forming properties of aerosols in the region of Na'chik. [Kontsentratsiia, spektral'noe raspredeleniie i l'dobrazulushchie svoïstva aerolei v raione g. Na'chika]

Kerimov, A.N., Komalov, A.S., Stepanov, G.V., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.176-178, In Russian with English summary. 5 refs.

DLC QE575.A43

Aerosols, Ice nuclei, Ice formation, Particle size distribution, Polar atmospheres, Atmospheric composition, Russia—Na'chik

53-4968

Study of typical tributaries of Buordakh glaciers. [Issledovanie kharakternykh pritokov lednikov Buordakha]

Sedov, R.V., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.179-183, In Russian with English summary. 3 refs.

DLC QE575.A43

Mountain glaciers, Glacial rivers, River basins, Glacier surveys, Russia—Cherski Range

53-4969

Wind role in fluctuations of Chukotka glaciers. [Rol' vetra v kolebaniiakh lednikov Chukotki]

Sedov, R.V., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, Feb. 1998, No.84, p.184-186, In Russian with English summary. 6 refs.

DLC QE575.A43

Glacier oscillation, Wind factors, Wind direction, Air flow, Snow air interface, Glacier surfaces, Snow accumulation, Moraines, Russia—Chukotskiy Peninsula

53-4970

Possibility of creation of an ecoprotective screen in the lower reaches of the hydro-power-plants. [O vozmozhnosti sozdanija lednanog ekozashchitnogo ekrana v nizhnikh b'efakh gidrouzlov]

Samoilov, R.S., Sosnovskii, A.V., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Feb. 1998, No.84, p.187-190, In Russian with English summary. 5 refs.

DLC QE575.A43

Hydraulic structures, Electric power, Design, Ice cover, Artificial freezing, River ice, Environmental protection, Evaporation control

53-4971

Annotated bibliography of the Russian literature on glaciology for 1994-1995. [Annotirovannaja bibliografija russkolazychnof literatury po gliatsiologii za 1994-1995 gody]

Kotliakov, V.M., Chernova, L.P., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Feb. 1998, No.84, p.191-212, In Russian with English summary. 358 refs.

DLC QE575.A43

Bibliographies, Glaciology, Ice physics, Ice composition, Snow cover, Avalanches, Sea ice, River ice, Lake ice, Naleds, Ground ice, Glaciers, Paleoclimatology

53-4972

Airborne radio-echo survey of the ice caps on Severnaya Zemlya, April-May 1997. [Vozdushnye radiolokatsionnye issledovanija lednikovyx kupolov na Severnof Zemle, april'-maj 1997 g.]

Dowdeswell, J.A., et al, *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Feb. 1998, No.84, p.213-217, In Russian with English summary. 7 refs.

DLC QE575.A43

Airborne radar, Radio echo soundings, Glacier surveys, Ice cover, Russia—Severnaya Zemlya

53-4973

Study of Argentina glaciers by Russian glaciologists. [Izuchenie lednikov Argentiny rossiskimi gliatsiologami]

Popovnin, V.V., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Feb. 1998, No.84, p.218-223, In Russian with English summary.

DLC QE575.A43

Glacier surveys, Research projects, Glacier mass balance, Argentina

53-4974

First results of the two new projects of the deep core drilling on tropical glaciers. [Pervye rezul'taty dvukh novykh proektov glubokogo kernovogo burenija na tropicheskikh lednikakh]

Thompson, L.G., Mikhailenko, V.N., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Feb. 1998, No.84, p.224-228, In Russian with English summary. 4 refs.

DLC QE575.A43

Ice cores, Boreholes, Volcanoes, Ice temperature, Drill core analysis, Oxygen isotopes, Paleoclimatology, Mountain glaciers, Bolivia—Sajama, Bolivia—Andes, China—Tibet, Himalaya Mountains

53-4975

Glaciological problems at meetings of the Scientific Council of the Institute of Geography, RAS. [Voprosy gliatsiologii na uchenom soвете Instituta geografii RAN]

Dreĭer, N.N., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Feb. 1998, No.84, p.229, In Russian.

DLC QE575.A43

Meetings, Glaciology, Research projects, Organizations

53-4976

Meetings of the scientific seminar on glaciology in 1997. [O rabote nauchnogo seminaru po gliatsiologii v 1997 godu]

Rototaeva, O.V., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Feb. 1998, No.84, p.230, In Russian.

DLC QE575.A43

Meetings, Glaciology, Research projects

53-4977

Meeting of the working group on the arctic glaciology, IASC, and discussion on mass balance of arctic glaciers, 28-20 January 1998. [Zasedanie rabochef gruppy po arkticheskof gliatsiologii IASC i soveshchanie po balansu massy arkticheskikh lednikov, Greginog (Velikobritanija), 28-30 ianvaria 1998 g.]

Glazovskii, A.F., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovanii*, Feb. 1998, No.84, p.231-232, In Russian.

DLC QE575.A43

Meetings, Glaciology, Glacier mass balance, Research projects

53-4978

Recent studies on rapid mass movement in Japan with reference to debris hazards.

Okuda, S., *Studia geomorphologica Carpatho-Balcanica*, 1989, Vol.23, p.5-22, With Polish and Russian summaries. 27 refs.

DLC QE260.S77 Vol.23 1989

Earthquakes, Volcanoes, Avalanches, Avalanche deposits, Mass movements (geology), Slope processes, Slope stability, Landslides, Japan

53-4979

High magnitude geomorphic events in the Canadian Rocky Mountains.

Gardner, J.S., *Studia geomorphologica Carpatho-Balcanica*, 1989, Vol.23, p.39-51, With Polish and Russian summaries. 31 refs.

DLC QE260.S77 Vol.23 1989

Geomorphology, Landforms, Solifluction, Moraines, Rock glaciers, Slope processes, Glacial erosion, Snowmelt, Meltwater, Canada—Rocky Mountains

53-4980

Testing <sup>137</sup>Cs as an indicator of slope process activity in periglacial environments.

Strömquist, L., Jonasson, C., Robinson, C., *Studia geomorphologica Carpatho-Balcanica*, 1989, Vol.23, p.93-104, With Polish and Russian summaries. 13 refs.

DLC QE260.S77 Vol.23 1989

Radioactive isotopes, Slope processes, Periglacial processes, Radioactivity, Runoff, Soil chemistry, Talus, Sedimentation, Fallout, Mass movements (geology), Sweden, Norway

53-4981

On the age of debris flows in the Tatra Mountains.

Kotarba, A., *Studia geomorphologica Carpatho-Balcanica*, 1989, Vol.23, p.139-152, With Polish and Russian summaries. 16 refs.

DLC QE260.S77 Vol.23 1989

Alluvium, Talus, Geomorphology, Lichens, Age determination, Slope processes, Mass movements (geology), Rain, Precipitation (meteorology), Poland—Tatra Mountains

53-4982

Types and extent of soil degradation in Hungary.

Pinczés, Z., *Studia geomorphologica Carpatho-Balcanica*, 1989, Vol.23, p.153-162, With Polish and Russian summaries. 7 refs.

DLC QE260.S77 Vol.23 1989

Frost action, Degradation, Talus, Soil creep, Mudflows, Frozen ground, Ground thawing, Soil erosion, Raindrops, Meltwater, Hungary

53-4983

Cycles of the Ice Age—an Ice Age-theory based on the reconstruction of a Tibetan Ice Sheet. [Khod lednikovof epokhi—teorija, osnovannaja na rekonstrukcii tibetskogo lednikovogo pokrova]

Kuhle, M., *Studia geomorphologica Carpatho-Balcanica*, 1989, Vol.23, p.163-186, In Russian with English and Polish summaries. 24 refs.

DLC QE260.S77 Vol.23 1989

Ice age theory, Glaciers, Moraines, Outwash, Radiation balance, Glaciation, Ice cover, Glacial deposits, Paleoclimatology, Insolation, China—Tibet

53-4984

Contributions to permafrost research in Austria. [Beiträge zur Permafrostforschung in Österreich]

Leitner, W., ed, *Graz. Karl-Franzens-Universität. Institut für Geographie. Arbeiten*, 1996, Vol.33, 223p. + 7 fold. maps, In German with English summaries. Refs. passim. For individual papers see 53-4985 through 53-4991.

DLC GB648.47.B45 1996

Permafrost, Research projects, Rock glaciers, Glacier surfaces, Mapping, Austria

53-4985

Permafrost and rock glaciers in the eastern Austrian Alps. [Permafrost und Blockgletscher in den östlichen österreichischen Alpen]

Lieb, G.K., *Graz. Karl-Franzens-Universität. Institut für Geographie. Arbeiten*, 1996, Vol.33, Beiträge zur Permafrostforschung in Österreich (Contributions to permafrost research in Austria). Edited by W. Leitner, p.9-124 + append., In German with English summary. Refs. p.118-123.

DLC GB648.47.B45 1996

Permafrost distribution, Rock glaciers, Geomorphology, Glacier surveys, Periglacial processes, Mapping, Snow cover, Snow temperature, Discontinuous permafrost, Springs (water), Water temperature, Seismic velocity, Soil temperature, Austria—Alps

53-4986

Trend surfaces in geography: the example of the lower limits of intact rock glaciers in the Hohe Tauern range. [Trendflächen in der Geographie am Beispiel der Untergrenzen der intakten Blockgletscher in den Hohen Tauern]

Gspurning, J., *Graz. Karl-Franzens-Universität. Institut für Geographie. Arbeiten*, 1996, Vol.33, Beiträge zur Permafrostforschung in Österreich (Contributions to permafrost research in Austria). Edited by W. Leitner, p.127-139, In German with English summary. 15 refs.

DLC GB648.47.B45 1996

Rock glaciers, Glacier surveys, Mathematical models, Glacier surfaces, Austria—Hohe Tauern

53-4987

Dösen rock glacier: study maps and measurements of surface velocity. [Der Dösen Blockgletscher: Studienkarten und Bewegungsmessungen]

Kaufmann, V., *Graz. Karl-Franzens-Universität. Institut für Geographie. Arbeiten*, 1996, Vol.33, Beiträge zur Permafrostforschung in Österreich (Contributions to permafrost research in Austria). Edited by W. Leitner, p.141-162, In German with English summary. 50 refs.

DLC GB648.47.B45 1996

Rock glaciers, Maps, Glacier surfaces, Velocity measurement, Glacier flow, Glacier oscillation, Geodetic surveys, Austria—Hohe Tauern

53-4988

Complex geophysical investigations on Dösen rock glacier (Hohe Tauern range, Austria). [Komplex-geophysikalische Untersuchung auf dem Dösen Blockgletscher (Hohe Tauern, Österreich)]

Schmöllner, R., Fruhwirth, R.K., *Graz. Karl-Franzens-Universität. Institut für Geographie. Arbeiten*, 1996, Vol.33, Beiträge zur Permafrostforschung in Österreich (Contributions to permafrost research in Austria). Edited by W. Leitner, p.165-190, In German with English summary. 20 refs.

DLC GB648.47.B45 1996

Rock glaciers, Geophysical surveys, Permafrost thickness, Electromagnetic prospecting, Seismic surveys, Austria—Hohe Tauern

53-4989

Photo-maps by remotely sensed data: technical production and interpretative use by geographers. [Bildkarten aus Fernerkundungsdaten: Herstellung und geographisch-interpretative Nutzung. Mit einer Luftbildkarte des östlichen Tauernmassivs]

Seger, M., Graz. Karl-Franzens-Universität. Institut für Geographie. Arbeiten, 1996, Vol.33, Beiträge zur Permafrostforschung in Österreich (Contributions to permafrost research in Austria). Edited by W. Leitner, p.191-199, In German with English summary. 6 refs.

DLC GB648.47.B45 1996

Remote sensing, Sensor mapping, Photointerpretation, Topographic maps

53-4990

Investigations on a fossil rock-glacier in the region of Hochreichart (Niedere Tauern Range, Styria, Austria). [Untersuchungen an einem fossilen Blockgletscher im Hochreichartgebiet (Niedere Tauern, Steiermark)]

Untersweg, T., Proske, H., Graz. Karl-Franzens-Universität. Institut für Geographie. Arbeiten, 1996, Vol.33, Beiträge zur Permafrostforschung in Österreich (Contributions to permafrost research in Austria). Edited by W. Leitner, p.201-207, In German with English summary. 8 refs.

DLC GB648.47.B45 1996

Rock glaciers, Water reserves, Glacial hydrology, Springs (water), Austria—Styria

53-4991

Undercooled talus. [Unterkuhlte Schutthalden]

Wakonigg, H., Graz. Karl-Franzens-Universität. Institut für Geographie. Arbeiten, 1996, Vol.33, Beiträge zur Permafrostforschung in Österreich (Contributions to permafrost research in Austria). Edited by W. Leitner, p.209-223, In German with English summary. 36 refs.

DLC GB648.47.B45 1996

Talus, Permafrost origin, Swamps, Latent heat, Permafrost distribution, Snow melting, Ice melting, Ice air interface, Snow air interface, Austria—Alps

53-4992

International Program of the research of the Arctic Climate System. [Mezhdunarodnaia programma "Issledovaniia arkticheskoi klimaticheskoi sistemy"]

Alekseev, G.V., Problemy arktiki i antarktiki; sbornik statei, 1995, Vol.69, p.5-14, In Russian with English summary. 12 refs.

DLC G575.L422 Vol.69 1995

Meetings, Research projects, International cooperation, Organizations, Climatology, Polar atmospheres, Sea ice, Ocean currents, Models

53-4993

Sea ice in the climate system. [Morskoe l'dy v klimaticheskoi sisteme]

Zakharov, V.F., Problemy arktiki i antarktiki; sbornik statei, 1995, Vol.69, p.15-26, In Russian with English summary.

DLC G575.L422 Vol.69 1995

Sea ice distribution, Seasonal variations, Air ice water interaction, Pleistocene, Ice cover effect

53-4994

Ocean/atmosphere interaction and climate dynamic for high and mid latitudes. [Vzaimodeistvie okeana i atmosfery i dinamika klimata v vysokikh i umerennykh shirotakh]

Alekseev, G.V., Problemy arktiki i antarktiki; sbornik statei, 1995, Vol.69, p.27-37, In Russian with English summary. 7 refs.

DLC G575.L422 Vol.69 1995

Air water interactions, Polar atmospheres, Air temperature, Ice cover effect, Air ice water interaction, Mathematical models, Advection

53-4995

Climate monitoring of atmosphere for the northern polar region. [Monitoring klimata severnoi poliarnoi oblasti]

Aleksandrov, E.I., Maistrova, V.V., Problemy arktiki i antarktiki; sbornik statei, 1995, Vol.69, p.38-52, In Russian with English summary. 18 refs.

DLC G575.L422 Vol.69 1995

Polar atmospheres, Air temperature, Temperature variations, Data processing

53-4996

Peculiarities of sea ice study to provide the work on the Arctic shelf. [Osobennosti izucheniia morskikh l'dov dlia obespecheniia rabot na arkticheskoi shel'fe]

Spichkin, V.A., Mironov, E.U., Egorov, A.G., Problemy arktiki i antarktiki; sbornik statei, 1995, Vol.69, p.53-63, In Russian with English summary. 7 refs.

DLC G575.L422 Vol.69 1995

Sea ice, Ice conditions, Ice cover thickness, Seasonal variations, Hummocks

53-4997

Dynamics of arctic radiation climate. [Dinamika radiatsionnogo klimata Arktiki]

Marshunova, M.S., Radionov, V.F., Problemy arktiki i antarktiki; sbornik statei, 1995, Vol.69, p.64-73, In Russian with English summary. 7 refs.

DLC G575.L422 Vol.69 1995

Radiation balance, Cloud cover, Meteorology, Clouds (meteorology), Polar atmospheres, Albedo, Transparency, Aerosols

53-4998

Resemblance and special features of large scale phenomena in the southern and northern polar region. [Sootvetstviia i razlichia krupnomasshtabnykh geofizicheskikh iavlenii v severnoi i iuzhnoi poliarnykh oblastakh]

Besprozvannaia, A.S., Troshichev, O.A., Problemy arktiki i antarktiki; sbornik statei, 1995, Vol.69, p.74-91, In Russian with English summary. 49 refs.

DLC G575.L422 Vol.69 1995

Geophysical surveys, Solar radiation, Seasonal variations, Geomagnetism, Electric fields, Polar atmospheres, Stratosphere

53-4999

Climate changing in the Antarctica for the latest 220 thousand years according to the results of the investigations of ice core from the deep hole at the Vostok Station. [Izmenenie klimata v Antarktide za poslednie 220 tysiach let po rezul'tatam issledovanii ledianogo kerna iz glubokoi skvazhiny na stantsii Vostok]

Barkov, N.I., Lipenkov, V.I.A., Problemy arktiki i antarktiki; sbornik statei, 1995, Vol.69, p.92-107, In Russian with English summary. 31 refs.

DLC G575.L422 Vol.69 1995

Climatic changes, Boreholes, Paleoclimatology, Ice cores, Drill core analysis, Isotope analysis, Statistical analysis, Pleistocene, Air temperature, Hydrates, Oxygen isotopes, Antarctica—Vostok Station, Greenland—Summit

53-5000

Calculation of characteristics of the Yamal Peninsula river annual discharge. [Raschet kharakteristik godovogo stoka rek poluostrova Iamal]

Gopchenko, E.D., Loboda, N.S., IAgotintseva, T.V., Problemy arktiki i antarktiki; sbornik statei, 1995, Vol.69, p.108-115, In Russian with English summary. 18 refs.

DLC G575.L422 Vol.69 1995

Analysis (mathematics), Rivers, River flow, Runoff, Economic development, Natural resources, Water balance, Russia—Yamal Peninsula

53-5001

Seasonal and spatial changes of average velocities of ice drift and gradient currents in the Eastern-Greenland ice flow. [Sezonnye i prostranstvennye izmeneniia srednikh skorostei dreifa l'da i gradientnykh techenii v Vostochno-Grenlandskom ledovom potoke]

Gudkovich, Z.M., Pozdnyshyev, S.P., Problemy arktiki i antarktiki; sbornik statei, 1995, Vol.69, p.116-123, In Russian with English summary. 22 refs.

DLC G575.L422 Vol.69 1995

Seasonal variations, Drift, Velocity, Sea ice, Ocean currents, Wind velocity, Air ice water interaction, Greenland Sea

53-5002

Results of the experimental research of ice dielectric constant within 1-100 Hz frequency range. [Rezultaty eksperimental'nykh issledovanii dielektricheskoi pronitsaemosti l'da v diapozone chastoty 1-100 Gts]

Shchennikov, D.L., Problemy arktiki i antarktiki; sbornik statei, 1995, Vol.69, p.124-128, In Russian with English summary. 5 refs.

DLC G575.L422 Vol.69 1995

Ice dielectrics, Ice electrical properties, Sea ice, Analysis (mathematics)

53-5003

Possibilities of long-term forecasting of oceanographic conditions in terms of long-range communication. [Vozmozhnost' dolgosrochnogo prognozirovaniia okeanologicheskikh uslovii s uchedom dal'nikh svyazei]

IAnes, A.V., Problemy arktiki i antarktiki; sbornik statei, 1995, Vol.69, p.129-133, In Russian with English summary. 14 refs.

DLC G575.L422 Vol.69 1995

Long range forecasting, Oceanography, Sea ice distribution, Air temperature, Air ice water interaction, Mathematical models, Russia—Kara Sea, Antarctica—Mirny Station

53-5004

Frigid mistress: life and exploration in Antarctica. Doumani, G.A., Baltimore, MD, Noble House, 1999, 274p., 20 refs.

DLC G872.A46 D68 1999

Expeditions, History, Human factors, Antarctica

53-5005

Arctic and Antarctic Research Institute—the centre of the polar science of Russia. [Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut—tsentr rossiiskoi poliarnoi nauki]

Baskakov, G.A., et al, Problemy arktiki i antarktiki; sbornik statei, 1995, Vol.70, p.6-32, In Russian with English summary. 5 refs.

DLC G575.L422 Vol.70 1995

Research projects, Organizations, History, Russia

53-5006

Main scientific-applied results of the AARI activity with Hydrometeeservice. [Osnovnye nauchno-prikladnye rezul'taty deiatel'nosti AANII v sisteme Gidromet-sluzhby]

Krutsikh, B.A., Problemy arktiki i antarktiki; sbornik statei, 1995, Vol.70, p.33-44, In Russian with English summary.

DLC G575.L422 Vol.70 1995

Organizations, Research projects, History, Hydrology, Meteorology

53-5007

Modern conditions and prospects of studies in the Arctic. [Sovremennoe sostoianie i perspektivy nauchnykh issledovanii v Arktike]

Froloy, I.E., Problemy arktiki i antarktiki; sbornik statei, 1995, Vol.70, p.45-49, In Russian with English summary.

DLC G575.L422 Vol.70 1995

Research projects, History

53-5008

Arctic Institute during the Great Patriotic War (by the 50th anniversary of the V-Day of the Great Patriotic War). [Arkticheskiĭ institut v gody Velikoi Otechestvennoi voĭny (k 50-letliu Pobedy v Velikoi Otechestvennoi voĭne)]

Voevodin, V.A., *Problemy arktiki i antarktiki; sbornik statei*, 1995, Vol.70, p.50-57, In Russian with English summary.

DLC G575.L422 Vol.70 1995

Organizations, History, Military operation

53-5009

Main results of studying and forecasting the arctic sea ice. [Osnovnye itogi izucheniia i prognozirovaniia morskikh l'dov Arktiki]

Krutsikh, B.A., *Problemy arktiki i antarktiki; sbornik statei*, 1995, Vol.70, p.58-74, In Russian with English summary.

DLC G575.L422 Vol.70 1995

Sea ice, Ice forecasting, Ice conditions, History, Research projects

53-5010

Studies of dynamics and structure of the Arctic Ocean ice cover. [Issledovaniia dinamiki i stroeniia ledianogo pokrova Severnogo Ledovitogo okeana]

Gorbunov, I.U.A., Gudkovich, Z.M., Losev, S.M., *Problemy arktiki i antarktiki; sbornik statei*, 1995, Vol.70, p.75-83, In Russian with English summary. 29 refs.

DLC G575.L422 Vol.70 1995

Sea ice, Ice cover, History, Research projects, Drift, Arctic Ocean

53-5011

Main results and prospects of the southern ocean ice regime studies. [Osnovnye itogi i perspektivy issledovaniia ledovogo rezhima IUzhnogo okeana]

Koroĭkov, A.I., *Problemy arktiki i antarktiki; sbornik statei*, 1995, Vol.70, p.84-103, In Russian with English summary. 61 refs.

DLC G575.L422 Vol.70 1995

Ice conditions, Ice cover, Sea ice, History, Research projects, Drift, Antarctica

53-5012

Observations and studies of sea ice, development of the automated system for ice data. [Nabliudeniia za morskimi l'dami i ikh issledovaniia, sozdanie avtomatizirovannoi ledovo-informatsionnoi sistemy]

Bushuev, A.V., Volkov, N.A., Grishchenko, V.D., *Problemy arktiki i antarktiki; sbornik statei*, 1995, Vol.70, p.104-119, In Russian with English summary. 37 refs.

DLC G575.L422 Vol.70 1995

Ice cover, Sea ice, Data processing, History, Remote sensing, Research projects, Ice surveys, Ice reporting

53-5013

Methods and results of studies of ice, snow and water physical characteristics for the polar regions. [Metody i rezul'taty izucheniia fizicheskikh kharakteristik l'da, snega i vodnykh mass polarnykh raĭonov]

Lebedev, G.A., Gavrilov, V.P., Spitsyn, V.A., *Problemy arktiki i antarktiki; sbornik statei*, 1995, Vol.70, p.120-142, In Russian with English summary. 90 refs.

DLC G575.L422 Vol.70 1995

Research projects, History, Sea ice, Ice cover, Ice acoustics, Ice electrical properties, Remote sensing

53-5014

Results and prospects of works of the "Ship Performance in Ice" Department. [Itogi i perspektivy raboty otdela ledovykh kachestv sudov]

Likhomanov, V.A., *Problemy arktiki i antarktiki; sbornik statei*, 1995, Vol.70, p.143-149, In Russian with English summary. 1 ref.

DLC G575.L422 Vol.70 1995

History, Research projects, Ice navigation, Ships

53-5015

Oceanographic investigations in the Arctic. [Okeanograficheskie issledovaniia v Arktike]

Nikiforov, E.G., *Problemy arktiki i antarktiki; sbornik statei*, 1995, Vol.70, p.150-171, In Russian with English summary. 44 refs.

DLC G575.L422 Vol.70 1995

Oceanography, History, Research projects, Sea water, Water temperature, Oceanographic surveys

53-5016

Oceanographic investigations in the southern ocean. [Okeanograficheskie issledovaniia IUzhnogo okeana]

Antipov, N.N., Botnikov, V.N., Klepikov, A.V., *Problemy arktiki i antarktiki; sbornik statei*, 1995, Vol.70, p.172-182, In Russian with English summary. 12 refs.

DLC G575.L422 Vol.70 1995

History, Research projects, Oceanography, Oceanographic surveys, Antarctica

53-5017

Hydrochemical research of polar oceans. [Gidrokhimicheskie issledovaniia polarnykh okeanov]

Smagin, V.M., *Problemy arktiki i antarktiki; sbornik statei*, 1995, Vol.70, p.183-192, In Russian with English summary. 21 refs.

DLC G575.L422 Vol.70 1995

Hydrology, History, Research projects, Sea water, Water chemistry

53-5018

Air/ocean interaction in the polar regions.

[Vzaimodeistvie atmosfery i okeana v polarnykh raĭonakh]

Alekseev, G.V., *Problemy arktiki i antarktiki; sbornik statei*, 1995, Vol.70, p.193-202, In Russian with English summary. 34 refs.

DLC G575.L422 Vol.70 1995

Air water interactions, Heat balance, Global warming, Climatic changes, Air ice water interaction, History

53-5019

Discovery of the Lomonosov Ridge. [Otkrytie khrebra Lomonosova]

Zakharov, V.F., *Problemy arktiki i antarktiki; sbornik statei*, 1995, Vol.70, p.203-215, In Russian with English summary. 13 refs.

DLC G575.L422 Vol.70 1995

History, Drift stations, Bottom topography, Expeditions, Research projects, Arctic Ocean

53-5020

Polar meteorology: its development and prospects. [Pollarnaiia meteorologiya: stanovlenie i razvitiie]

Voskresenskiĭ, A.I., *Problemy arktiki i antarktiki; sbornik statei*, 1995, Vol.70, p.216-245, In Russian with English summary.

DLC G575.L422 Vol.70 1995

Polar atmospheres, Meteorology, History, Research projects, Environmental impact, Solar radiation, Air temperature, Atmospheric circulation, Snow cover effect, Clouds (meteorology), Ozone, Antarctica

53-5021

Macrocirculative method of long-term meteorological forecasts for the polar areas of the Earth.

[Makrotsirkullatsionnyi metod dolgosrochnykh meteorologicheskikh prognozov dlia polarnykh oblastei]

Vinogradov, N.D., Ivanov, V.V., *Problemy arktiki i antarktiki; sbornik statei*, 1995, Vol.70, p.246-254, In Russian with English summary.

DLC G575.L422 Vol.70 1995

Atmospheric circulation, Polar atmospheres, History, Research projects, Long range forecasting, Weather forecasting, Meteorology

53-5022

Polar geophysics at the AARI: the history, modern state and prospects. [Pollarnaiia geofizika v AANII: istoriia, sovremennyiĭ status i perspektivy]

Troshichev, O.A., Shirochkov, A.V., Blagoveshchenskaia, N.F., *Problemy arktiki i antarktiki; sbornik statei*, 1995, Vol.70, p.255-270, In Russian with English summary.

DLC G575.L422 Vol.70 1995

History, Research projects, Geophysical surveys, Geomagnetism, Radio waves, Monitors, Organizations, Northern Sea Route

53-5023

Geographical investigations of the polar countries. [Geograficheskie issledovaniia polarnykh stran]

Aver'ianov, V.G., *Problemy arktiki i antarktiki; sbornik statei*, 1995, Vol.70, p.271-292, In Russian with English summary. 82 refs.

DLC G575.L422 Vol.70 1995

Geography, History, Research projects, Expeditions, Antarctica

53-5024

Polar medicine: results and prospects. [Pollarnaiia meditsina: itogi i perspektivy]

Klopov, V.P., *Problemy arktiki i antarktiki; sbornik statei*, 1995, Vol.70, p.293-304, In Russian with English summary. 44 refs.

DLC G575.L422 Vol.70 1995

History, Health, Human factors, Expeditions, Cold exposure, Physiological effects, Antarctica

53-5025

Arctic and Antarctic Museum. [Muzei Arktiki i Antarktiki]

IAGodnitsyn, N.G., *Problemy arktiki i antarktiki; sbornik statei*, 1995, Vol.70, p.305-311, In Russian with English summary.

DLC G575.L422 Vol.70 1995

History, Organizations, Education

53-5026

Effective stress creep model for frozen sand.

Ji, Z.L., Winnipeg, University of Manitoba, 1996, 236p., University Microfilms order No.NN-13215, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, 57(10), p.6420.

Sands, Frozen ground strength, Frozen ground compression, Soil structure, Soil creep, Ground ice, Shear strength, Stress strain diagrams

53-5027

Submarine drainage system of the Labrador Sea: result of glacial input from the Laurentide Ice Sheet.

Klaucke, I., Montreal, McGill University, 1995, 384p., University Microfilms order No.NN-08122, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, 57(4), p.2443.

Marine geology, Ocean bottom, Bottom sediment, Bottom topography, Ocean currents, Glaciation, Ice sheets, Glacial erosion, Outwash, Glacial deposits, Ice rafting, Sediment transport, Paleoclimatology, Labrador Sea

53-5028

Experimental investigation of metamorphism-induced microstructure evolution in a "model" cohesive snow.

Edens, M.Q., Bozeman, Montana State University, 1997, 114p., University Microfilms order No.98-04843, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, 58(8), p.4308.

Snow cover structure, Microstructure, Metamorphism (snow), Ice crystal size, Ice crystal replicas, Image processing, Computer programs

## 53-5029

**Investigation of mass balance parameters on the Greenland Ice Sheet using passive microwave satellite data.**

Abdalati, W., Boulder, University of Colorado, 1996, 131p., University Microfilms order No.96-28513, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, 57(4), p.2440.  
Glacier surveys, Ice sheets, Glacier oscillation, Glacier mass balance, Glacial meteorology, Climatic changes, Radiometry, Spaceborne photography, Greenland

## 53-5030

**Role of snow cover in the climate system.**

Clark, M.P., Boulder, University of Colorado, 1998, 108p., University Microfilms order No.9838347, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, 59(6), p.2649.  
Snow air interface, Snow heat flux, Snow cover effect, Atmospheric circulation, Computerized simulation, Statistical analysis

## 53-5031

**Study of dilution-based cratering effects with application to the degradation of anti-icing films.**  
La Due, J.C., New Brunswick, NJ, Rutgers State University, 1996, 188p., University Microfilms order No.9711077, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, 57(11), p.7194.  
Aircraft icing, Ice accretion, Chemical ice prevention, Ice removal, Films, Interfacial tension, Surfactants

## 53-5032

**Characterization of seasonal backscatter change in subarctic wetlands and river ice breakup using radarsat data.**

Murphy, M.A., Ontario, Canada, University of Guelph, 1999, 196p., University Microfilms order No.MQ35918, M.S. thesis. For abstract see Masters abstracts international, 37(4), p.1169.  
River ice, Ice conditions, Ice detection, Ice breakup, Ice forecasting, Wetlands, Synthetic aperture radar, Backscattering, Spaceborne photography, Image processing, Canada—Hudson Bay

## 53-5033

**Some effects of highway de-icing on adjacent soils and vegetation.**

Squire, B.J., Calgary, Canada, University of Calgary, 1993, 154p., University Microfilms order No.MM83256, M.S. thesis. For abstract see Masters abstracts international, 32(2), p.575.  
Road icing, Salting, Chemical ice prevention, Environmental impact, Soil pollution, Plant physiology, Road maintenance, Canada

## 53-5034

**Microclimate and geomorphic responses to wildfire in a subarctic upland forest underlain by permafrost.**

Lesemann, J.E., Edmonton, University of Alberta, 1998, 136p., University Microfilms order No.MQ34389, M.S. thesis. For abstract see Masters abstracts international, 37(3), p.861.  
Forest fires, Permafrost distribution, Permafrost thickness, Permafrost heat balance, Permafrost weathering, Active layer, Thaw depth, Thermokarst, Forest tundra, Forest land, Vegetation patterns, Revegetation, Plant ecology, Soil erosion, Microclimatology, Canada—Northwest Territories—Fort Norman

## 53-5035

**Effect of detachment sliding on surface wash erosion in the continuous permafrost zone, Hot Weather Creek, Fosheim Peninsula, Ellesmere Island, Northwest Territories.**

Kokelj, S.V., Ottawa, Canada, University of Ottawa, 1998, 212p., University Microfilms order No.MQ36709, M.A. thesis. For abstract see Masters abstracts international, 37(4), p.1166.  
Permafrost hydrology, Active layer, Periglacial processes, Slope processes, Solifluction, Nivation, Snow cover effect, Vegetation patterns, Vegetation factors, Snowmelt, Surface drainage, Soil erosion, Canada—Northwest Territories—Ellesmere Island

## 53-5036

**Dependence of snow thermal and electrical conductivities on microstructure.**

Arons, E.M., Hanover, NH, Dartmouth College, 1994, 176p., University Microfilms order No.9527890, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Oct. 1995, 56(4), p.1902.  
Snow cover structure, Microstructure, Metamorphism (snow), Snow electrical properties, Snow thermal properties, Snow heat flux, Electrical resistivity, Thermal conductivity

## 53-5037

**Estimation of iceberg density in the Grand Banks of Newfoundland.**

Kelly, R., Montreal, McGill University, 1996, 133p., University Microfilms order No.MM-12122, M.E. thesis. For abstract see Masters abstracts international, 35(1), p.298.  
Icebergs, Ice conditions, Ice forecasting, Drift, Ice reporting, Statistical analysis, Canada—Newfoundland—Grand Banks

## 53-5038

**Estimation of snow depth and snow water equivalent using passive microwave radiation data.**

Tait, A.B., Boulder, University of Colorado, 1996, 147p., University Microfilms order No.96-28602, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, 57(4), p.2442. For another version see 51-2503.  
Snow surveys, Snow hydrology, Snow depth, Snow density, Depth hoar, Snow water equivalent, Radiometry, Runoff forecasting, Snowmelt, Statistical analysis

## 53-5039

**Sensitivity of Late Quaternary climates to changes in Northern Hemisphere ice sheets: experiments with a general circulation model.**

Felzer, B.S., Providence, RI, Brown University, 1996, 214p., University Microfilms order No.97-04021, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, 57(9), p.5708.  
Glaciation, Ice sheets, Glacier oscillation, Glacial meteorology, Atmospheric circulation, Ice age theory, Global change, Ice models, Paleoclimatology, Computerized simulation

## 53-5040

**New technologies in urban drainage, UDT '91.**  
International Conference on Urban Drainage and New Technologies, Dubrovnik, Yugoslavia, June 17-21, 1991, Maksimović, C., London, Elsevier Science Publishers, Ltd., 1991, 535p., Refs. passim. For selected papers see 47-1685 and 53-5041 through 53-5044.  
DLC TD653.N48 1991

Urban planning, Sanitary engineering, Water pollution, Drainage, Snowmelt, Snow removal

## 53-5041

**Migration pathways for PAHs in the urban environment.**

Sharma, M., McBeen, E., Marsalek, J., International Conference on Urban Drainage and New Technologies, Dubrovnik, Yugoslavia, June 17-21, 1991. New technologies in urban drainage, UDT '91. Edited by C. Maksimović, London, Elsevier Science Publishers, Ltd., 1991, p.217-224, 24 refs.  
DLC TD653.N48 1991  
Scavenging, Snow impurities, Snowmelt, Snow removal, Water pollution, Sanitary engineering, Urban planning, Health, Drains

## 53-5042

**Urban drainage in cold climate: problems, solutions and research needs.**

Marsalek, J., International Conference on Urban Drainage and New Technologies, Dubrovnik, Yugoslavia, June 17-21, 1991. New technologies in urban drainage, UDT '91. Edited by C. Maksimović, London, Elsevier Science Publishers, Ltd., 1991, p.299-308, 36 refs.  
DLC TD653.N48 1991  
Snow removal, Snowmelt, Water pollution, Health, Sanitary engineering, Drains, Drainage, Urban planning, Cold weather operation

## 53-5043

**Use of conceptual hydrological models for modeling urban runoff from precipitation and snowmelt.**

Thorolfsson, S.T., Killingtveit, Å., International Conference on Urban Drainage and New Technologies, Dubrovnik, Yugoslavia, June 17-21, 1991. New technologies in urban drainage, UDT '91. Edited by C. Maksimović, London, Elsevier Science Publishers, Ltd., 1991, p.317-324, 7 refs.  
DLC TD653.N48 1991

Snow hydrology, Snowfall, Snowmelt, Runoff forecasting, Drainage, Sanitary engineering, Urban planning, Norway

## 53-5044

**Chloride export in runoff from suburban areas during spring snowmelt.**

Vonk, A.M., Buttle, J.M., Taylor, C.H., International Conference on Urban Drainage and New Technologies, Dubrovnik, Yugoslavia, June 17-21, 1991. New technologies in urban drainage, UDT '91. Edited by C. Maksimović, London, Elsevier Science Publishers, Ltd., 1991, p.347-354, 12 refs.  
DLC TD653.N48 1991

Salting, Road maintenance, Snowmelt, Water pollution, Sanitary engineering, Urban planning, Canada—Ontario

## 53-5045

**Deformation of seabed soil under ice scouring and burial depth for marine pipelines.**

Yin, J.H., Yuan, J.X., Deformation and progressive failure in geomechanics. IS-NAGOYA '97. Proceedings. Edited by A. Asaoka, T. Adachi and F. Oka, Oxford, Elsevier Science, Ltd., 1997, p.443-448, 3 refs.  
DLC TA703.5.D44 1997

Icebergs, Ice scoring, Ice erosion, Ocean bottom, Bottom topography, Bottom sediment, Underground pipelines

## 53-5046

**Rockfalls, landslides, and slope failure.**

Chau, K.T., Deformation and progressive failure in geomechanics. IS-NAGOYA '97. Proceedings. Edited by A. Asaoka, T. Adachi and F. Oka, Oxford, Elsevier Science, Ltd., 1997, p.907-921, Refs. p.918-921.  
DLC TA703.5.D44 1997

Slope stability, Slope processes, Talus, Landslides, Mudflows, Avalanche formation, Avalanche mechanics, Mathematical models, Hong Kong

## 53-5047

**Design considerations for coastal projects in cold regions.**

Leidersdorf, C.B., Gadd, P.E., Vaudrey, K.D., International Conference on Coastal Engineering 1996, 25th, Orlando, FL, Sep. 2-6, 1996. Proceedings. Vol.4. Edited by B.L. Edge, New York, American Society of Civil Engineers, 1997, p.4397-4410, 20 refs.  
DLC TC203.5.C6184 1997 Vol.4

Offshore structures, Artificial islands, Ice push, Ice pileup, Ice override, Ice loads, Ice control, Concrete durability, Frost protection, Cold weather construction, Beaufort Sea, United States—Alaska

## 53-5048

**Experimental study on deformation and fracture of ice sheet by propagating water wave.**

Sakai, S., Liu, X.D., Sasamoto, M., Kanada, S., Izumiya, K., International Conference on Coastal Engineering 1996, 25th, Orlando, FL, Sep. 2-6, 1996. Proceedings. Vol.4. Edited by B.L. Edge, New York, American Society of Civil Engineers, 1997, p.4411-4417, 2 refs.  
DLC TC203.5.C6184 1997 Vol.4

Ocean waves, Wave propagation, Ice water interface, Ice cover strength, Ice elasticity, Ice deformation, Ice cracks, Ice breaking



53-5049

Observations of the falling motion of plate-like snow crystals. Part II: the free-fall patterns and velocity variations of rimed crystals.

Kajikawa, M., Okuhara, K., *Meteorological Society of Japan. Journal*, Aug. 1997, 75(4), p.811-818, With Japanese summary. 11 refs.

Falling snow, Snowflakes, Snow crystal growth, Snow crystal structure, Coalescence, Ice crystal size, Ice crystal adhesion, Velocity measurement

53-5050

Geometric model for the Beaufort/Chukchi Sea thermohaline structure.

Chu, P.C., Wang, Q.Q., Bourke, R.H., *Journal of atmospheric and oceanic technology*, June 1999, 16(6), p.613-632, 9 refs.

Oceanographic surveys, Ocean currents, Water transport, Sea water, Water temperature, Salinity, Ice water interface, Statistical analysis, Mathematical models, Chukchi Sea, Beaufort Sea

53-5051

Land surface process/radiobrightness model with coupled heat and moisture transport for prairie grassland.

Liou, Y.A., Galantowicz, J.F., England, A.W., *IEEE transactions on geoscience and remote sensing*, July 1999, 37(4), p.1848-1859, 45 refs.

Plains, Meadow soils, Soil temperature, Soil water, Soil air interface, Heat balance, Heat flux, Moisture transfer, Evapotranspiration, Radiometry, Mathematical models

53-5052

Airborne retrievals of snow and ice surface emissivity at millimeter wavelengths.

Hewison, T.J., English, S.J., *IEEE transactions on geoscience and remote sensing*, July 1999, 37(4), p.1871-1879, 27 refs.

Snow surveys, Ice surveys, Ice detection, Snow ice interface, Snow surface temperature, Ice conditions, Radiance, Radiometry, Ice optics, Snow optics, Finland

53-5053

Automated instrumentation for continuous monitoring of the dielectric properties of woody vegetation: system design, implementation, and selected *in situ* measurements.

McDonald, K.C., Zimmermann, R., Way, J., Chunn, W., *IEEE transactions on geoscience and remote sensing*, July 1999, 37(4), p.1880-1894, 51 refs.

Taiga, Trees (plants), Plant tissues, Plant physiology, Evapotranspiration, Forest canopy, Plant ecology, Moisture detection, Dielectric properties

53-5054

Seasonal comparison of HUTSCAT ranging scatterometer and ERS-1 SAR microwave signatures of boreal forest zone.

Koskinen, J.T., Pulliainen, J.T., Mäkyinen, M.P., Hallikainen, M.T., *IEEE transactions on geoscience and remote sensing*, July 1999, 37(4), p.2068-2079, 20 refs.

Taiga, Forest land, Forest canopy, Terrain identification, Snow surveys, Snow cover distribution, Snow depth, Snow density, Snow water equivalent, Synthetic aperture radar, Backscattering, Finland

53-5055

Behavior of pair of leaning arch-shells under snow and wind loads.

Molloy, S.J., Plaut, R.H., Kim, J.Y., *Journal of engineering mechanics*, June 1999, 125(6), p.663-667, 20 refs.

Portable shelters, Snow loads, Wind pressure, Structural analysis

53-5056

Climatological investigations into a more precise layout of the frost penetration areas in the State of Brandenburg. [Klimatologische Untersuchungen zur Präzisierung der Frosteinwirkungszonen im Land Brandenburg]

Kirchner, S., Plehm, T., *Straße und Autobahn*, Apr. 1999, 50(4), p.183-185, In German. 3 refs.

Freezing indexes, Degree days, Frost penetration, Frost forecasting, Weather forecasting, Road maintenance, Highway planning, Germany

53-5057

Precipitation decrease in the western Arctic, with special emphasis on Barrow and Barter Island, Alaska.

Curtis, J., Wendler, G., Stone, R., Dutton, E., *International journal of climatology*, Dec. 1998, 18(15), p.1687-1707, 27 refs.

Polar atmospheres, Atmospheric circulation, Atmospheric pressure, Cloud cover, Precipitation (meteorology), Snowfall, Air temperature, Climatic changes, Global warming, Arctic Ocean, United States—Alaska—Barter Island

53-5058

Winter temperature characteristics in central Europe.

Domonkos, P., Piotrowicz, K., *International journal of climatology*, Nov. 15, 1998, 18(13), p.1405-1417, 35 refs.

Air temperature, Surface temperature, Degree days, Freezing indexes, Frost, Frost forecasting, Weather forecasting, Climatic changes, Meteorological data, Statistical analysis, Poland, Hungary

53-5059

Protozoan bacterivory in the ice and the water column of a cold temperate lagoon.

Sime-Ngando, T., Demers, S., Juniper, S.K., *Microbial ecology*, Feb. 1999, 37(2), p.95-106, 54 refs.

Sea ice, Ice cover effect, Marine biology, Cryobiology, Bacteria, Nutrient cycle, Biomass, Ecosystems, Ecology, Japan—Hokkaido

53-5060

Thermal fracture in a biomaterial during rapid freezing.

Shi, X., Datta, A.K., Mukherjee, S., *Journal of thermal stresses*, Apr. 1999, 22(3), p.275-292, 28 refs.

Plant tissues, Artificial freezing, Freeze drying, Cryobiology, Cryogenics, Viscoelasticity, Thermal stresses, Cracking (fracturing), Thermal analysis, Mathematical models

53-5061

Activities of the wintering party at Syowa Station by the 38th Japanese Antarctic Research Expedition, 1997-1998. [Dai 38 ji Nanyoku chilki kansokutai Showa kichi etto hokoku 1997-1998]

Yamanouchi, T., *Antarctic record*, Mar. 1999, 43(1), p.58-95, In Japanese with English summary and captions. 1 ref.

Stations, Research projects, Traverses, Logistics, Cold weather operation, Expeditions, Antarctica—Showa Station, Antarctica—Dome Fuji Station

53-5062

Meteorological observations at Syowa Station and Dome Fuji Station in 1995 by the 36th Japanese Antarctic Research Expedition. [Dai 36 ji Nanyoku chilki kansokutai kisho bumon hokoku 1995]

Sato, T., Yoshimi, H., Takekawa, M., Miyauchi, S., Nakamura, T., *Antarctic record*, Mar. 1999, 43(1), p.96-161, In Japanese with English summary and captions. 21 refs.

Weather stations, Meteorological data, Atmospheric pressure, Air temperature, Humidity, Wind velocity, Wind direction, Snowstorms, Records (extremes), Ozone, Insolation, Cloud cover, Expeditions, Antarctica—Showa Station, Antarctica—Dome Fuji Station

53-5063

Deep ice coring at Dome Fuji Station, Antarctica. [Nanyoku Domu Fuji kansoku kyoten ni okeru hyosho shinso koa kussaku]

Fujii, Y., et al, *Antarctic record*, Mar. 1999, 43(1), p.162-210, In Japanese with English summary and captions. 6 refs.

Ice coring drills, Ice cores, Drilling, Coring, Antarctica—Dome Fuji Station

53-5064

Glacio-eustatic control of continental-shallow marine cyclicity from late Quaternary deposits of the southeastern Po Plain, northern Italy.

Amorosi, A., Colalongo, M.L., Fusco, F., Pasini, G., Fiorini, F., *Quaternary research*, July 1999, 52(1), p.1-13, 42 refs.

Marine geology, Marine deposits, Bottom sediment, Quaternary deposits, Drill core analysis, Stratigraphy, Palynology, Fossils, Sea level, Global change, Paleoclimatology, Italy

53-5065

Holocene glacier advances in the headwaters of Sredniaya Avacha, Kamchatka, Russia.

Savoskul, O.S., *Quaternary research*, July 1999, 52(1), p.14-26, 50 refs.

Glaciation, Glacial geology, Glacier oscillation, Glacial deposits, Moraines, Quaternary deposits, Volcanic ash, Lichens, Soil dating, Geochronology, Paleoclimatology, Russia—Kamchatka Peninsula

53-5066

High-resolution modeling of the advance of the Younger Dryas ice sheet and its climate in Scotland.

Hubbard, A., *Quaternary research*, July 1999, 52(1), p.27-43, 47 refs.

Glaciation, Ice sheets, Glacier formation, Glacier oscillation, Glacier mass balance, Ice age theory, Global change, Paleoclimatology, Ice models, Mathematical models, Computerized simulation, United Kingdom—Scotland

53-5067

Changes in sand content of loess deposits along a north-south transect of the Chinese Loess Plateau and the implications for desert variations.

Ding, Z.L., Sun, J.M., Rutter, N.W., Rokosh, D., Liu, T.S., *Quaternary research*, July 1999, 52(1), p.56-62, 23 refs.

Loess, Eolian soils, Desert soils, Sands, Soil structure, Soil dating, Desiccation, Deserts, Climatic changes, Paleoclimatology, China

53-5068

Late Weichselian marine <sup>14</sup>C reservoir ages at the western coast of Norway.

Bondevik, S., Birks, H.H., Gulliksen, S., Mangerud, J., *Quaternary research*, July 1999, 52(1), p.104-114, 43 refs.

Marine geology, Marine deposits, Bottom sediment, Quaternary deposits, Soil dating, Fossils, Palynology, Drill core analysis, Radioactive age determination, Paleoclimatology, Norway

53-5069

Observations of oblate hail using dual polarization radar and implications for hail-detection schemes.

Smyth, T.J., Blackman, T.M., Illingworth, A.J., *Royal Meteorological Society. Quarterly journal A*, Apr. 1999, 125(555), p.993-1016, 40 refs.

Thunderstorms, Hail clouds, Hailstone growth, Hailstone structure, Ice detection, Radar tracking, Weather forecasting, Mathematical models

53-5070

Electrodynamic trapping and manipulation of ice crystals.

Swanson, B.D., Bacon, N.J., Davis, E.J., Baker, M.B., *Royal Meteorological Society. Quarterly journal A*, Apr. 1999, 125(555), p.1039-1058, 46 refs.

Ice electrical properties, Ice sublimation, Ice crystal nuclei, Ice crystal growth, Ice crystal structure, Ice crystal adhesion, Ice crystal optics, Ice fog, Hoarfrost, Atmospheric physics, Mathematical models

53-5071

Effects of cloud-droplet spectra on the average surface-temperature of ice accreted on fixed cylindrical collectors.

Avila, E.E., Castellano, N.E., Saunders, C.P.R., *Royal Meteorological Society. Quarterly journal A*, Apr. 1999, 125(555), p.1059-1074, 39 refs.

Supercooled clouds, Cloud droplets, Particle size distribution, Cloud physics, Cloud electrification, Snow pellets, Hailstone growth, Ice crystal collision, Ice crystal adhesion, Ice temperature, Ice accretion, Glaze

53-5072

Deglaciation of the Svartisen area, northern Norway, and isolation of a large ice mass in front of the Fennoscandian ice sheet.

Blake, K.P., Olsen, L., *Norsk geografisk tidsskrift*, Mar. 1999, 53(1), p.1-16, 43 refs.

Ice sheets, Alpine glaciation, Glacial geology, Glacier oscillation, Glacier flow, Striations, Moraines, Glacial deposits, Marine deposits, Soil dating, Geochronology, Paleoclimatology, Norway

53-5073

Setting preferences of arctic tourists: a study of some assumptions in the recreation opportunity spectrum framework from the Svalbard Archipelago.

Kaltenborn, B.P., *Norsk geografisk tidsskrift*, Mar. 1999, 53(1), p.45-55, 35 refs.

Regional planning, Environmental impact, Environmental protection, Land development, Human factors, Norway—Svalbard

53-5074

Impact of nitric acid on ice evaporation rates.

Warshawsky, M.S., Zondlo, M.A., Tolbert, M.A., *Geophysical research letters*, Apr. 1, 1999, 26(7), p.823-826, 19 refs.

Ice vapor interface, Ice sublimation, Atmospheric composition, Polar stratospheric clouds, Cloud physics, Ice nuclei, Nucleation rate

53-5075

Northern Hemisphere summer ozone variability observed by POAM II.

Hoppel, K.W., Bowman, K.P., Bevilacqua, R.M., *Geophysical research letters*, Apr. 1, 1999, 26(7), p.827-830, 17 refs.

Atmospheric circulation, Atmospheric composition, Ozone

53-5076

Validation of ILAS Version 3.10 ozone with ozone-sonde measurements.

Sasano, Y., et al, *Geophysical research letters*, Apr. 1, 1999, 26(7), p.831-834, 13 refs.

Polar atmospheres, Atmospheric composition, Ozone, Weather stations, Spacecraft, Meteorological instruments, Meteorological data, Data processing, Statistical analysis, Norway, Sweden, Russia—Yakutsk, Antarctica—Neumayer Station, Antarctica—Showa Station

53-5077

Intercomparison of ILAS and HALOE ozone at high latitudes.

Lee, K.M., McInerney, J.M., Sasano, Y., Park, J.H., Choi, W., Russell, J.M., III, *Geophysical research letters*, Apr. 1, 1999, 26(7), p.835-838, 13 refs.

Polar atmospheres, Atmospheric composition, Ozone, Spacecraft, Meteorological instruments, Statistical analysis, Antarctica

53-5078

Vertical distribution of ClO at Ny-Ålesund during March 1997.

Ruhnke, R., et al, *Geophysical research letters*, Apr. 1, 1999, 26(7), p.839-842, 22 refs.

Polar atmospheres, Atmospheric composition, Photochemical reactions, Ozone, Norway—Spitsbergen

53-5079

Sources and transport of the deep western boundary current east of the Kerguelen Plateau.

Donohue, K.A., Hufford, G.E., McCartney, M.S., *Geophysical research letters*, Apr. 1, 1999, 26(7), p.851-854, 9 refs.

Oceanographic surveys, Sea water, Water temperature, Ocean currents, Water transport, Kerguelen Plateau

53-5080

Implication of azelaic acid in a Greenland ice core for oceanic and atmospheric changes in high latitudes.

Kawamura, K., Yokoyama, K., Fujii, Y., Watanabe, O., *Geophysical research letters*, Apr. 1, 1999, 26(7), p.871-874, 33 refs.

Polar atmospheres, Marine atmospheres, Air water interactions, Atmospheric composition, Aerosols, Geochemical cycles, Ice cores, Ice composition, Global change, Paleoclimatology, Greenland

53-5081

Convective instability in Europa's floating ice shell.

McKinnon, W.B., *Geophysical research letters*, Apr. 1, 1999, 26(7), p.951-954, 21 refs.

Satellites (natural), Planetary environments, Extraterrestrial ice, Ice thermal properties, Ice heat flux, Ice creep, Ice deformation, Convection, Rheology

53-5082

Data of project on atmospheric circulation and material cycle in the Antarctic. Part 1. Aerological sounding data at Dome Fuji Station in 1997.

Hirasawa, N., Hayashi, M., Kaneto, S., Yamanouchi, T., *Japanese Antarctic Research Expedition. JARE data reports*, Mar. 1999, No.238, 183p., 10 refs.

Polar atmospheres, Atmospheric circulation, Atmospheric pressure, Air temperature, Humidity, Wind velocity, Wind direction, Weather stations, Meteorological data, Antarctica—Dome Fuji Station

53-5083

Overview of carbonate platform sequences, cycle stratigraphy and reservoirs in greenhouse and ice-house worlds.

Read, J.F., Milankovitch sea level changes, cycles and reservoirs on carbonate platforms in greenhouse and ice-house worlds. SEPM short course notes, No.35. Edited by J.F. Read, C. Kerans, and L.J. Weber, Tulsa, OK, SEPM (Society for Sedimentary Geology), 1995, 102p., Refs. p.96-102.

DLC QE651.S.R43 1995

Ice age theory, Marine geology, Marine deposits, Bottom sediment, Sea level, Global change, Paleoclimatology, Geochemical cycles, Diagenesis, Tectonics, Sedimentation, Stratigraphy, Geochronology, Crude oil, Exploration

53-5084

Transfer function between surface sediment diatom assemblages and sea-surface temperature and salinity of the Labrador Sea.

De Sève, M.A., *Marine micropaleontology*, May 1999, 36(4), p.249-267, 49 refs.

Ocean currents, Water transport, Sea water, Water temperature, Salinity, Marine deposits, Bottom sediment, Marine biology, Paleocology, Paleoclimatology, Statistical analysis, Labrador Sea

53-5085

Hemispheric-scale quasi-decadal oscillation and its signature in northern Japan.

Xie, S.P., Noguchi, H., Matsumura, S., *Meteorological Society of Japan. Journal*, Apr. 1999, 77(2), p.573-582, With Japanese summary. 31 refs.

Marine atmospheres, Atmospheric circulation, Atmospheric pressure, Air temperature, Water temperature, Surface temperature, Air water interactions, Synoptic meteorology, Global change, Statistical analysis, Japan

53-5086

Abrupt seasonal changes of surface climate observed in northern Mongolia by an automatic weather station.

Miyazaki, S., Yasunari, T., Adyasuren, T., *Meteorological Society of Japan. Journal*, Apr. 1999, 77(2), p.583-593, With Japanese summary. 12 refs.

Atmospheric circulation, Atmospheric pressure, Weather stations, Meteorological data, Air temperature, Humidity, Precipitation (meteorology), Insolation, Climatic changes, Global warming, Statistical analysis, Mongolia

53-5087

Numerical simulation of the atmospheric effects on snow albedo with a multiple scattering radiative transfer model for the atmosphere-snow system.

Aoki, Te., Aoki, Ta., Fukabori, M., Uchiyama, A., *Meteorological Society of Japan. Journal*, Apr. 1999, 77(2), p.595-614, With Japanese summary. 66 refs.

Snow air interface, Snow optics, Albedo, Snow cover effect, Snow heat flux, Cloud cover, Aerosols, Radiation balance, Global warming, Computerized simulation

53-5088

Feasibility of establishing a snow/ice runway in the 60°E-120°E sector of the antarctic coast.

Klokov, V.D., *Australian National Antarctic Research Expeditions. ANARE research notes*, Dec. 1997, No.99, 54p., 14 refs.

Stations, Logistics, Site surveys, Aircraft landing areas, Ice runways, Snow (construction material), Snow compaction, Meteorological factors, Wind factors, Antarctica—East Antarctica

53-5089

Vertical fine structure of the biomass and composition of algal communities in arctic pack ice.

Grading, R., *Marine biology*, 1999, 133(4), p.745-754, 40 refs.

Ice cover effect, Marine biology, Cryobiology, Ecology, Ecosystems, Algae, Nutrient cycle, Biomass

53-5090

Glaciological data collected by the 38th Japanese Antarctic Research Expedition during 1997-1998.

Motoyama, H., Kawamura, Y., Kanao, M., Hirasawa, N., Kaneto, S., Yamanouchi, T., *Japanese Antarctic Research Expedition. JARE data reports*, Mar. 1999, No.239, 74p., Refs. passim.

Traverses, Snow surveys, Snow accumulation, Snow depth, Snow density, Snow temperature, Meteorological data, Expeditions, Antarctica

53-5091

Laboratory tests of oil spreading under the ice cover.

Rytkönen, J., Liukkonen, S., Riipi, T., Espoo, Finland, VTT (Valtion teknillinen tutkimuskeskus, Technical Research Centre). Manufacturing Technology, Maritime Operations and the Environment Group, 1999, p.155-164 + appends., 5 refs. Presented at the Oil Spill 98 Conference, Southampton, England, July 1998.

Oil spills, Water pollution, Ice water interface, Ice cover effect, Environmental tests

53-5092

Fluvial geochemistry of the rivers of eastern Siberia: III. Tributaries of the Lena and Anabar draining the basement terrain of the Siberian craton and the Trans-Baikal highlands.

Huh, Y.S., Edmond, J.M., *Geochimica et cosmochimica acta*, Apr. 1999, 63(7/8), p.967-987, 101 refs.

River basins, Frost shattering, Weathering, Hydrogeochemistry, Hydrogeology, Geochemistry, Geochemical cycles, Tectonics, Lithology, Earth crust, Global change, Russia—Siberia, Russia—Lena River, Russia—Anabar River

53-5093

**Glacial-interglacial environmental changes inferred from molecular and compound-specific  $\delta^{13}\text{C}$  analyses of sediments from Sacred Lake, Mt. Kenya.**

Huang, Y.S., Street-Perrott, F.A., Perrott, R.A., Metzger, P., Eglinton, G., *Geochimica et cosmochimica acta*, May 1999, 63(9), p.1383-1404, 88 refs.

Glacial lakes, Lacustrine deposits, Bottom sediment, Soil dating, Paleobotany, Forest lines, Algae, Hydrogeochemistry, Drill core analysis, Stratigraphy, Global change, Paleoclimatology, Kenya

53-5094

**Lignin biomarkers and pollen in postglacial sediments of an Alaskan lake.**

Hu, F.S., Hedges, J.I., Gordon, E.S., Brubaker, L.B., *Geochimica et cosmochimica acta*, May 1999, 63(9), p.1421-1430, 32 refs.

Lacustrine deposits, Bottom sediment, Soil microbiology, Soil dating, Hydrogeochemistry, Palynology, Paleobotany, Plant ecology, Vegetation patterns, Drill core analysis, Global change, Paleoclimatology, United States—Alaska—Wien Lake

53-5095

**Basics of offshore petroleum engineering and development of marine facilities; with emphasis on the Arctic offshore.**

Gudmestad, O.T., ed, et al, Stavanger; Moscow; St. Petersburg; Trondheim, *Neft' i Gaz*, 1999, 344p., Refs. passim.

Petroleum industry, Offshore drilling, Offshore structures, Design, Design criteria, Engineering geology, Cost analysis, Economic analysis, Gas wells, Oil wells, Environmental impact, Safety, Human factors, Well casings, Drilling, Cold weather construction, Ice loads, Ice solid interface, Petroleum transportation, Gas pipelines, Tanker ships, Ice navigation, Natural resources, Barents Sea, Russia—Kara Sea, Okhotsk Sea, Russia—Sakhalin Island

53-5096

**Science; society; environment. [Nauka; Obshchestvo; Okruzhayushchaya sreda]**

Kotliakov, V.M., Moscow, Nauka, 1997, 409p., In Russian with English summary. 742 refs.

DLC GB2404.K68 1997

History, Bibliographies, Expeditions, International cooperation, Research projects, Geography, Glaciology

53-5097

**Water input and subglacial tunnel evolution at Storglaciären, northern Sweden.**

Cutler, P.M., Minneapolis, University of Minnesota, 1996, 236p., University Microfilms order No.9709341, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Apr. 1997, 57(10), p.6137.

Glacial hydrology, Glacier alimentation, Glacier heat balance, Glacier mass balance, Ice tunnels, Meltwater, Subglacial drainage, Runoff, Computerized simulation, Sweden

53-5098

**National security and international environmental cooperation in the Arctic—the case of the Northern Sea Route.**

Østreng, W., ed, *Environment & Policy*, Vol.16, Dordrecht, Netherlands, Kluwer Academic Publishers, 1999, 367p., Notes and Refs. p.267-354. For individual papers see 53-5099 through 53-5106.

DLC UA880.N38 1999

International cooperation, Environmental protection, Military operation, Marine transportation, Environmental impact, Northern Sea Route

53-5099

**International use of the Northern Sea Route: what is the problem?**

Østreng, W., National security and international environmental cooperation in the Arctic—the case of the Northern Sea Route. *Environment & policy*, Vol.16. Edited by W. Østreng, Dordrecht, Netherlands, Kluwer Academic Publishers, 1999, p.1-19.

DLC UA880.N38 1999

Environmental impact, Environmental protection, Marine transportation, International cooperation, Human factors, Oil spills, Water pollution, Ice navigation, Ice cover effect, Northern Sea Route

53-5100

**National security and the evolving issues of arctic environment and cooperation.**

Østreng, W., National security and international environmental cooperation in the Arctic—the case of the Northern Sea Route. *Environment & policy*, Vol.16. Edited by W. Østreng, Dordrecht, Netherlands, Kluwer Academic Publishers, 1999, p.21-51.

DLC UA880.N38 1999

International cooperation, Environmental protection, Marine transportation, Ecosystems, Regional planning, Northern Sea Route

53-5101

**Russian security policy 1945-96: the role of the Arctic, the environment and the NSR.**

Vartanov, R., Roginko, A., Kolossov, V., National security and international environmental cooperation in the Arctic—the case of the Northern Sea Route. *Environment & policy*, Vol.16. Edited by W. Østreng, Dordrecht, Netherlands, Kluwer Academic Publishers, 1999, p.53-102.

DLC UA880.N38 1999

Environmental protection, Environmental impact, Economic development, Regional planning, International cooperation, Legislation, Marine transportation, Radioactive wastes, Radioactivity, Waste disposal, Natural resources, Petroleum industry, Oil spills, Northern Sea Route, Russia

53-5102

**Environment and security in arctic waters: a Canadian perspective.**

Griffiths, F., National security and international environmental cooperation in the Arctic—the case of the Northern Sea Route. *Environment & policy*, Vol.16. Edited by W. Østreng, Dordrecht, Netherlands, Kluwer Academic Publishers, 1999, p.103-133.

DLC UA880.N38 1999

Environmental impact, Environmental protection, Marine transportation, International cooperation, Legislation, Northern Sea Route, Canada, Russia

53-5103

**Norwegian security policy: the role of the Arctic, the environment and the NSR.**

Østreng, W., National security and international environmental cooperation in the Arctic—the case of the Northern Sea Route. *Environment & policy*, Vol.16. Edited by W. Østreng, Dordrecht, Netherlands, Kluwer Academic Publishers, 1999, p.135-177.

DLC UA880.N38 1999

Marine transportation, International cooperation, Military operation, History, Northern Sea Route, Barents Sea

53-5104

**Environment in the U.S. discourse on security: the case of the missing arctic waters.**

Griffiths, F., National security and international environmental cooperation in the Arctic—the case of the Northern Sea Route. *Environment & policy*, Vol.16. Edited by W. Østreng, Dordrecht, Netherlands, Kluwer Academic Publishers, 1999, p.179-203.

DLC UA880.N38 1999

International cooperation, Environmental protection, Military operation, Marine transportation, Northern Sea Route, Arctic Ocean

53-5105

**Danish security policy: the role of the Arctic, the environment and arctic navigation.**

Østreng, W., National security and international environmental cooperation in the Arctic—the case of the Northern Sea Route. *Environment & policy*, Vol.16. Edited by W. Østreng, Dordrecht, Netherlands, Kluwer Academic Publishers, 1999, p.205-237.

DLC UA880.N38 1999

History, Military operation, Navigation, Marine transportation, Environmental impact, Regional planning, International cooperation, Northern Sea Route, Greenland

53-5106

**NSR in the context of arctic environmental cooperation and national security: some concluding remarks.**

Østreng, W., National security and international environmental cooperation in the Arctic—the case of the Northern Sea Route. *Environment & policy*, Vol.16. Edited by W. Østreng, Dordrecht, Netherlands, Kluwer Academic Publishers, 1999, p.239-265.

DLC UA880.N38 1999

International cooperation, Environmental protection, Marine transportation, Northern Sea Route

53-5107

**Evaluation of long-term time-rate parameters of subglacial till.**

Ho, C.L., Vela, J.C., Clark, P.U., Jenson, J.W., Measuring and modeling time dependent soil behavior, Washington, D.C., Nov. 10-14, 1996. *Proceedings of sessions*. Edited by T.C. Sheahan and V.N. Kaliakin. *Geotechnical Special Publication No.61*, New York, American Society of Civil Engineers, 1996, p.122-136, 20 refs.

DLC TA710.5.M42 1996

Glacial deposits, Glacier beds, Glacial till, Clay soils, Frozen ground strength, Soil strength, Soil creep, Glacier flow

53-5108

**Elemental and mineral characterisation of coastal antarctic aerosols in snow using PIXE and SEM-EDAX.**

Ghermandi, G., Laj, P., Capotosto, M., Cecchi, R., Riontino, C., *Nuclear instruments & methods in physics research B*, Apr.(II), 1999, 150(1-4), International Conference on PIXE and its Analytical Applications, 8th, Lund, Sweden, June 14-18, 1998. *Proceedings*. Edited by K.G. Malmqvist, p.392-397, 11 refs.

Polar atmospheres, Atmospheric composition, Aerosols, Scavenging, Snow composition, Snow samplers, Mineralogy, Geochemical cycles, Antarctica

53-5109

**Modelling the influence of snow accumulation and snow-ice formation on the seasonal cycle of the antarctic sea-ice cover.**

Fichefet, T., Morales Maqueda, M.A., *Climate dynamics*, Apr. 1999, 15(4), p.251-268, 48 refs.

Precipitation (meteorology), Snowfall, Snow accumulation, Snow air interface, Snow ice interface, Snow cover effect, Snow ice, Sea ice, Ice conditions, Ice cover thickness, Ice volume, Ice models, Antarctica

53-5110

**Recent observations of antarctic sea-ice.**

Hanna, E., *Weather*, Mar. 1999, 54(3), p.71-87, 35 refs.

Ice surveys, Sea ice distribution, Ice conditions, Ice edge, Ice detection, Radiometry, Spaceborne photography, Antarctica

53-5111

**Odden ice tongue and Greenland Sea convection.**

Wadhams, P., *Weather*, Mar. 1999, 54(3), p.91-98, 18 refs.

Sea water freezing, Ice formation, Ice growth, Sea ice distribution, Ice edge, Drift, Ice cover effect, Ice heat flux, Air ice water interaction, Ocean currents, Water transport, Convection, Global change, Greenland Sea

53-5112

**Are North Slope surface alluvial fans pre-Holocene relicts.**Reimnitz, E., Wolf, S.C., *U.S. Geological Survey. Professional paper*, 1998, No.1605, 9p., 23 refs.

Glaciation, Glacial geology, Glacier oscillation, Glacial erosion, Glacial deposits, Outwash, Drainage, Water erosion, Alluvium, Sediment transport, Quaternary deposits, Marine geology, Coastal topographic features, Geochronology, Global change, Paleoclimatology, United States—Alaska—North Slope

53-5113

**Surficial sediments, permafrost, and geomorphic processes, Kikerk Lake and Coppermine map areas, west Kitikmeot, District of Mackenzie, Northwest Territories.**Kerr, D.E., Wolfe, S.A., Ward, B.C., Dredge, L.A., *Canada. Geological Survey. Current research. Part C*, 1996, No.1996-C, p.197-204, With French Summary. 13 refs.

DLC QE48.C2 Pt.C 1996

Geological surveys, Glacial geology, Glacial deposits, Glacial till, Moraines, Outwash, Alluvium, Marine deposits, Permafrost surveys, Ground ice, Ice wedges, Periglacial processes, Mapping, Canada—Northwest Territories—Coppermine, Canada—Northwest Territories—Kikerk Lake

53-5114

**Evaluation of the reported January 11-12, 1997, Montague, New York, 77-inch, 24-hour lake-effect snowfall. U.S. National Oceanic and Atmospheric Administration. National Weather Service. Special report**, Mar. 1997, 41p. + appends., 12 refs.

DLC QC926.44.N4 M664 1997

Lake effects, Snowstorms, Snowfall, Snow depth, Records (extremes), United States—New York

53-5115

**Geological and geophysical investigations of ground ice in glaciofluvial deposits, Slave Province, District of Mackenzie, Northwest Territories.**Wolfe, S.A., Burgess, M.M., Douma, M., Hyde, C., Robinson, S., *Canada. Geological Survey. Current research. Part C*, 1997, No.1997-C, p.39-50, With French Summary. 13 refs.

DLC QE48.C2 1997-C

Geological surveys, Permafrost surveys, Permafrost thickness, Permafrost indicators, Glacial deposits, Glacial till, Outwash, Ground ice, Fossil ice, Subsurface investigations, Electromagnetic prospecting, Canada—Northwest Territories

53-5116

**Surficial geology of the Contwoyto Lake map area (north half), District of Mackenzie, Northwest Territories.**Kerr, D.E., Wolfe, S.A., Dredge, L.A., *Canada. Geological Survey. Current research. Part C*, 1997, No.1997-C, p.51-59, With French Summary. 25 refs.

DLC QE48.C2 1997-C

Geological surveys, Glacial geology, Glacial deposits, Glacial till, Outwash, Alluvium, Permafrost surveys, Periglacial processes, Ground ice, Fossil ice, Canada—Northwest Territories—Contwoyto Lake

53-5117

**Last glacial ice flows over western Meta Incognita Peninsula, southern Baffin Island, Northwest Territories.**Hodgson, D.A., *Canada. Geological Survey. Current research. Part C*, 1997, No.1997-C, p.179-184, With French Summary. 27 refs.

DLC QE48.C2 1997-C

Glaciation, Glacial geology, Glacier oscillation, Glacier flow, Glacial deposits, Glacial till, Striations, Quaternary deposits, Marine geology, Marine deposits, Geochronology, Canada—Northwest Territories—Baffin Island

53-5118

**Surficial mapping and Quaternary stratigraphic studies in the western Abitibi greenstone belt, Timmins, Ontario.**Paulen, R.C., McClenaghan, M.B., *Canada. Geological Survey. Current research. Part C*, 1997, No.1997-C, p.191-200, With French Summary. 33 refs.

DLC QE48.C2 1997-C

Geological surveys, Glacial geology, Glacier flow, Glacial deposits, Glacial till, Lacustrine deposits, Quaternary deposits, Striations, Exploration, Geochemistry, Stratigraphy, Canada—Ontario—Timmins

53-5119

**Comparison of geochemical sample media: till and lake sediment data, central Labrador.**Klassen, R.A., Rencz, A.N., Moore, A., *Canada. Geological Survey. Current research. Part C*, 1997, No.1997-C, p.235-245, With French Summary. 26 refs.

DLC QE48.C2 1997-C

Geological surveys, Exploration, Glacial deposits, Glacial till, Lacustrine deposits, Geochemistry, Minerals, Natural resources, Canada—Labrador

53-5120

**Ground ice volumes determined from shallow cores from western Fosheim Peninsula, Ellesmere Island, Northwest Territories.**Hodgson, D.A., Nixon, F.M., *Canada. Geological Survey. Bulletin*, 1998, No.507, 178p., MIC-98-04388, With French summary. 37 refs.

Permafrost surveys, Permafrost thickness, Permafrost structure, Ground ice, Fossil ice, Ice wedges, Marine deposits, Quaternary deposits, Soil classification, Well logging, Core samplers, Canada—Northwest Territories—Ellesmere Island

53-5121

**Cold regions engineering: putting research into practice; Proceedings.**

International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999, Zufelt, J.E., ed, MP 5385, Reston, VA, American Society of Civil Engineers (ASCE), 1999, 901p., Refs. passim. For individual papers see 53-5122 through 53-5203.

DLC TA713.C635 1999

Cold weather construction, Stations, Utilities, Buildings, Foundations, Road maintenance, Pavements, Permafrost beneath structures, Permafrost preservation, Frozen ground strength, Subgrade soils, Soil freezing, Frost heave, Thaw weakening, Soil stabilization, Frost protection, River ice, Ice loads, Ice control, Power line icing

This proceedings is a compilation of the technical papers presented at the Tenth International Conference on Cold Regions Engineering held in Lincoln, NH on Aug. 16-19, 1999. Nine topic areas discuss the application of cold regions research in over 80 papers. The South Pole Redevelopment Project section discusses the design and construction involved in the modernization and upgrade of facilities at the U.S. Amundsen-Scott South Pole Station. Design and construction problems in frozen ground and permafrost are addressed in the Frozen Ground Engineering section. The Environmental Engineering in Cold Regions section addresses water and wastewater systems, bioremediation, and contaminant analysis in cold regions. The use of satellite and airborne imagery for detection of oil spills and environmental degradation are discussed in the Remote Sensing Applications in Cold Regions section. The Cold Regions Transportation Issues section covers the solutions to problems effecting pavements, railroads, airfields, and snow-covered roads. The River Ice, Hydrology, and Hydraulics section addresses snowmelt, runoff, ice control, and modeling of ice-covered rivers. Structural and foundation problems are addressed in the Construction in Cold Regions section. The Atmospheric Icing section covers tree and power line damage due to freezing rain and ice storms. Finally, the Snow and Ice Engineering section looks at sea ice forces on structures and the effects of ice on riprap. The papers presented in this proceedings should provide a state-of-the-art look at cold regions engineering research and its application to realworld problems.

53-5122

**South Pole Station Redevelopment Project.**

Rand, J., Brier, F., MP 5386, International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.1-10, 9 refs.

Stations, Site surveys, Cold weather construction, Buildings, Human factors engineering, Safety, Cost analysis, Antarctica—Amundsen-Scott Station

The National Science Foundation Office of Polar Programs, the lead agency for the U.S. Antarctic Program, has completed the design and started construction of a replacement station at the geographic South Pole, Antarctica. This paper provides a historical review of the concept development, design process and project management procedures for the South Pole Redevelopment Project.

53-5123

**Master plan for the South Pole Redevelopment Project.**

Ferraro, J.J., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.11-22, 1 ref.

Stations, Site surveys, Buildings, Cold weather construction, Antarctica—Amundsen-Scott Station

53-5124

**Environmental review in planning and design modernization of the Amundsen-Scott South Pole Station.**

Jatko, J.A., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.23-33, 4 refs.

Stations, Site surveys, Cold weather construction, Environmental impact, Environmental protection, Antarctica—Amundsen-Scott Station

53-5125

**Fire code compliance and life safety for the new South Pole Station.**

Janneck, T.W., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.34-44, 3 refs.

Stations, Buildings, Cold weather construction, Building codes, Fires, Warning systems, Safety, Countermeasures, Antarctica—Amundsen-Scott Station

53-5126

**Construction of the new South Pole Station.**

Marty, J.W., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.45-56, 9 refs.

Stations, Site surveys, Buildings, Cold weather construction, Logistics, Human factors engineering, Labor factors, Antarctica—Amundsen-Scott Station

53-5127

**Snowdrift design guidance for the new South Pole Station.**

Waechter, B.F., Williams, C.J., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.57-68, 6 refs.

Snowdrifts, Snow accumulation, Snow erosion, Snow loads, Stations, Buildings, Design criteria, Cold weather construction, Computerized simulation, Antarctica—Amundsen-Scott Station

## 53-5128

**Elevated station design for the South Pole Redevelopment Project at Amundsen-Scott South Pole Station.**

Brooks, W.D., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.69-81, 9 refs.

Snowdrifts, Snow accumulation, Snow loads, Snow erosion, Stations, Buildings, Supports, Cold weather construction, Design criteria, Antarctica—Amundsen-Scott Station

## 53-5129

**Foundation design for the elevated station at Amundsen-Scott South Pole Station.**

Berry, D.L., Braun, F.T., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.82-93, 2 refs.

Snowdrifts, Snow accumulation, Snow compression, Settlement (structural), Stations, Buildings, Foundations, Supports, Cold weather construction, Design criteria, Antarctica—Amundsen-Scott Station

## 53-5130

**Construction of unlined tunnels for icecap stations.**

Walsh, M.R., MP 5387, International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.94-105, 12 refs.

Snow tunnels, Ice tunnels, Tunneling (excavation), Snow removal equipment, Ice cutting, Machinery, Construction equipment, Utilities, Antarctica—Amundsen-Scott Station

Facilities operations in a polar icecap environment present many unique challenges. Coping with the extreme cold temperatures, the darkness during the long winter months, and blowing and drifting snow all hamper installation, maintenance and repair operations. For over 40 years, the concept of using tunnels for utilities and personnel in polar environments has been tried with mixed results. In 1991, the U.S. Army Cold Regions Research and Engineering Laboratory initiated a project to develop, fabricate, test, build and deploy a system for the machining of unlined tunnels at the Amundsen-Scott South Pole Station. A system based on a modified tracked excavator was deployed to Antarctica in Jan. 1996 for testing. The system was modified and redeployed the following summer to create a subsurface utility. A 120 m long, 2-m by 3-m tunnel was machined into the firm at the station over the course of 10 days. The tunnel, at a maximum depth of 16 m, is currently being used for the main station's wastewater discharge line. At a near-constant -40°, the well-lit tunnel, secure from the elements, has already proven its worth during routine and emergency maintenance operations during the harsh polar winters since 1996. Further tunnels have been planned as part of the new U.S. South Pole Station.

## 53-5131

**Comparison of delivery scenarios for a long antarctic traverse.**

Blaisdell, G.L., MP 5388, International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.106-117, 4 refs.

Logistics, Route surveys, Traverses, Snow roads, Tracked vehicles, Tractors, Cost analysis, Antarctica—McMurdo Station, Antarctica—Amundsen-Scott Station

A recently completed interdisciplinary study assessed the feasibility of a 1600 km oversnow trail connecting McMurdo Station to Amundsen-Scott South Pole Station. Aircraft (specialized ski-wheel Hercules or airdrop) are currently the only means of delivering large volumes of materials to the South Pole. In addition to personnel and their needs (food, scientific equipment, etc.), more than 1.1M liters of fuel are needed annually and 1.1M kg of construction supplies for station modernization are required annually for the next 8 years. This airlift seriously taxes the current US Antarctic Program's air resources during the 100-day South Pole flight season and constitutes a significant expense. Preliminary calculations suggested that a oversnow transportation system could provide considerable life-cycle cost savings. Results are reported elsewhere of the field study to determine feasible candidate routes and what driving conditions are likely to be encountered. This paper describes a) the process of determining the appropriate vehicle(s) for such a long, unsupported traverse, b) comparison of the two best candidate routes, and c) cal-

culations of roundtrip travel time, consumed fuel and deliverable payload. The latter statistics are compared to the current air delivery system and show the traverse to be twice as efficient, if speed of delivery isn't required.

## 53-5132

**South Pole Station new power plant case study.**

Ostberg, E., Posma, R., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.118-129, 6 refs.

Utilities, Electric power, Electric equipment, Heat recovery, Diesel engines, Fuels, Cold weather performance, Cost analysis, Antarctica—Amundsen-Scott Station

## 53-5133

**South Pole fuel storage: general arrangement issues.**

Kumin, J.P., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.130-139, 1 ref.

Logistics, Fuels, Oil storage, Storage tanks, Cold weather construction, Antarctica—Amundsen-Scott Station

## 53-5134

**Fuel storage system replacement, U.S. South Pole Station.**

Armstrong, R.S., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.140-147.

Utilities, Fuels, Oil storage, Storage tanks, Pipes (tubes), Pumps, Cold weather performance, Antarctica—Amundsen-Scott Station

## 53-5135

**Renewable energy field tests at the South Pole.**

Norton, G., Linton, E., Rand, J., Williams, C., MP 5389, International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.148-159.

Utilities, Wind power generation, Solar radiation, Electric power, Electric equipment, Wind pressure, Cold weather tests, Cost analysis, Antarctica—Amundsen-Scott Station

The U.S. operates the Amundsen-Scott South Pole Station for scientific research. Due to the high costs, logistical constraints and environmental risks of transporting large quantities of diesel fuel to the antarctic interior, the National Science Foundation has supported practical investigations into the use of wind and solar energy to reduce the amount of fuel needed to meet the power requirements of the station. Following an introduction to the South Pole operating environment, this paper provides summaries of two recent field test projects. These projects evaluated the technical feasibility of deploying commercially available renewable energy hardware at the Pole, as a prelude to considering larger scale installations. One set of tests, performed by Northern Power Systems, involved installation and operation of a wind turbine at the Pole. The second project, carried out by the U.S. Army Cold Regions Research and Engineering Laboratory, included an operational evaluation of photovoltaic panels mounted on one of the structures of the Amundsen-Scott Station.

## 53-5136

**Retrospective on early analysis and simulation of freeze and thaw dynamics.**

Paynter, H.M., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.160-172, 17 refs.

Soil freezing, Frozen ground thermodynamics, Freezing front, Frost penetration, Thaw depth, Stefan problem, Mathematical models, Computerized simulation

## 53-5137

**Creep behavior of frozen and unfrozen soils—a comparison.**

Ladanyi, B., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.173-186, 29 refs.

Clay soils, Soil freezing, Frozen ground thermodynamics, Frozen ground compression, Frozen ground strength, Soil tests, Soil strength, Soil creep, Strain tests, Mathematical models

## 53-5138

**Growth condition of ice lenses and applications.**

Nakano, Y., MP 5390, International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.187-198, 40 refs.

Subgrade soils, Soil freezing, Frozen ground thermodynamics, Frozen ground strength, Freezing front, Soil water migration, Frost penetration, Ice lenses, Frost resistance, Frost protection, Thermal insulation, Soil stabilization, Mathematical models

As the 1990s arrived, there were many models of ice segregation, but they all suffered from the common fault of little or no experimental verification. Research efforts became focused on experimental evaluation of multiple hypotheses used in these models and significant progress was made toward quantitative understanding of ice segregation in the past decade. As knowledge advanced, research results became more mathematically oriented and less accessible to engineers. The objective of this paper is to present the current knowledge of ice lens growth with minimum number of equations and to explore practical ways to mitigate ice lens formation.

## 53-5139

**New simple frost model, validated and easy to use.**

Hermansson, A., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.199-210, 12 refs.

Soil freezing, Frozen ground thermodynamics, Freezing front, Frost penetration, Frost heave, Subgrade soils, Soil tests, Freeze thaw tests, Freezing rate, Thawing rate, Road maintenance, Computer programs

## 53-5140

**Study of frozen cloddy soils properties as a road embankment material in permafrost regions.**

Grechishchev, S.E., et al, International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.211-221, 7 refs.

Embankments, Subgrade soils, Permafrost beneath roads, Permafrost preservation, Frozen ground thermodynamics, Frozen ground strength, Ground thawing, Thaw weakening, Road maintenance, Mathematical models

## 53-5141

**Pile design in saline permafrost at Longyearbyen.**

Instanes, A., Instanes, D., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.222-231, 8 refs.

Buildings, Permafrost beneath structures, Saline soils, Frozen ground strength, Piles, Foundations, Pile load tests, Cold weather construction, Norway—Spitsbergen

53-5142

**Evaluation of helical piers in frozen ground.**

Liu, H., Zubeck, H., Baginski, S.J., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.232-242, 8 refs.

Piers, Foundations, Anchors, Frozen ground strength, Frozen ground compression, Soil creep, Design criteria, Mathematical models

53-5143

**Permafrost prethawing in farming, mining, and civil engineering.**

Nidowicz, B., Osterkamp, T.E., Shur, I.U.L., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.243-254, 14 refs.

Permafrost beneath structures, Permafrost beneath roads, Permafrost control, Ground thawing, Artificial thawing, Soil stabilization, Cold weather construction

53-5144

**Design and construction of water storage tanks on warm permafrost in rural Alaska.**

Schubert, D.H., Reitz, D.D., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.255-266, 10 refs.

Utilities, Water supply, Water storage, Storage tanks, Permafrost beneath structures, Permafrost preservation, Permafrost control, Soil freezing, Artificial freezing, Soil stabilization, Cost analysis, United States—Alaska

53-5145

**Mitigation options to reduce thaw instability hazard at the Denali Park Mile Post 45 landslide.**

Vinson, T.S., Thrall, F.G., Pfeiffer, T.J., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.267-278, 18 refs.

Permafrost beneath roads, Permafrost preservation, Slope stability, Frozen ground strength, Frozen ground settling, Thaw weakening, Soil stabilization, Landslides, Landslide control, Road maintenance, United States—Alaska—Denali National Park

53-5146

**Deformations of buildings in the cryolithozone.**

Grebenets, V.I., Il'ichev, V.A., Kerimov, A.G.O., Sadovskii, S.N., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.279-284, 6 refs.

Permafrost beneath structures, Foundations, Permafrost preservation, Soil freezing, Artificial freezing, Soil stabilization, Russia

53-5147

**Design and construction of arctic water distribution systems in rural Alaska.**

Reitz, D.D., Schubert, D.H., Wagner, D.J., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.285-296, 5 refs.

Utilities, Water supply, Water treatment, Water pipelines, Sanitary engineering, Sewage disposal, Cold weather construction, Cost analysis, United States—Alaska

53-5148

**Water and wastewater systems in rural Alaska: status, needs and trends.**

Schubert, D.H., Reitz, D.D., Wagner, D.J., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.297-308, 9 refs.

Utilities, Water supply, Water treatment, Water pipelines, Sanitary engineering, Sewage disposal, Health, Cold weather operation, Cost analysis, United States—Alaska

53-5149

**Effect of dissolved solids on freeze-thaw conditioning.**

Martel, C.J., MP 5391, International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.309-316, 9 refs.

Sludges, Water treatment, Waste treatment, Sewage disposal, Sanitary engineering, Artificial freezing, Freeze drying, Ice crystal growth, Ice crystal structure

The purpose of this study was to investigate the effect of dissolved solids on the size of aggregated particles produced by freeze-thaw conditioning of alum sludge. The dissolved solids content was varied by adding 0-2000 mg/L NaCl to samples of alum sludge. The effect of the dissolved solids was observed by taking photographs of thin sections of each frozen sample and measuring the resulting aggregated particle sizes. The results of this study indicate that a relatively small amount of dissolved solids (500 mg/L NaCl or less) will cause ice crystal growth to change from columnar to dendritic. As a result, the mean aggregated particle size was reduced by approximately 50%. These results explain why the aggregated particles from alum sludge are large and easier to dewater than those produced from wastewater sludge. Generally, alum sludge contains very little dissolved-solids, so crystal growth is columnar. Conversely, wastewater sludges usually contain a significant amount of dissolved solids so that crystal growth becomes dendritic. Thin sections photographed between cross polarizers reveal that most of the aggregated particles were trapped within individual ice crystals and not at the crystal boundaries.

53-5150

**Sewage sludge management at Eielson AFB, Alaska.**

Stankoff, R., White, D.M., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.317-328, 18 refs.

Military facilities, Utilities, Sanitary engineering, Water treatment, Waste treatment, Sludges, Sewage disposal, Earth fills, Cold weather operation, Cost analysis, United States—Alaska—Eielson Air Force Base

53-5151

**Radio frequency heating system for enhanced bioremediation: pilot test results, Fort Wainwright, Alaska.**

Marley, M.C., et al, International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.329-340, 20 refs.

Military facilities, Oil spills, Soil pollution, Waste disposal, Soil microbiology, Soil temperature, Radio waves, Radiant heating, Land reclamation, United States—Alaska—Fort Wainwright

53-5152

**Tanker rollover and potential consequences from burning fuels on arctic tundra.**

Filler, D.M., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.341-351, 10 refs.

Tank trucks, Accidents, Oil spills, Tundra soils, Soil pollution, Water pollution, Waste disposal, Fires, Land reclamation, United States—Alaska—North Slope

53-5153

**Contaminant analysis in tundra by pyrolysis-GC/FID.**

Garland, D.S., White, D.M., Woolard, C.R., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.352-362, 6 refs.

Oil spills, Tundra soils, Soil pollution, Frozen ground chemistry, Soil chemistry, Soil analysis, Chemical analysis, United States—Alaska—North Slope

53-5154

**Remote sensing and GIS for oil contamination of frozen terrain application.**

Marchand, Y., Rees, W.G., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.363-373, 20 refs.

Oil spills, Soil pollution, Tundra soils, Forest soils, Permafrost preservation, Frozen ground chemistry, Terrain identification, Spaceborne photography

53-5155

**Oil spill detection in the Norwegian Sea using spaceborne SAR imagery.**

Litovchenko, K., Ivanov, A.I.U., Ermakov, S.A., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.374-383, 14 refs.

Oil spills, Water pollution, Radar tracking, Synthetic aperture radar, Spaceborne photography, Image processing, Norwegian Sea

53-5156

**Airborne images in the cryolithozone monitoring.**

Mudrov, I.U.V., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.384-393, 4 refs.

Tundra soils, Forest soils, Soil pollution, Soil erosion, Thermokarst, Human factors, Environmental impact, Permafrost preservation, Land reclamation, Terrain identification, Aerial surveys, Spaceborne photography, Image processing, Russia

53-5157

**Constructability of polymer-modified asphalt aggregate mixtures in Alaska.**

Zubeck, H., Raad, L., Saboundjian, S., Minassian, G., Ryer, J., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.394-405, 5 refs.

Pavements, Bitumens, Polymers, Concrete admixtures, Concrete aggregates, Cold weather tests, Road maintenance, United States—Alaska

53-5158

**Polymer-modified asphalts in cold regions-user survey.**

Zubeck, H., Raad, L., Ryer, J., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.406-415, 1 ref.

Pavements, Bitumens, Polymers, Cold stress, Cold weather tests, Road maintenance



- 53-5159**  
**Fighting frost problems in New York State pavements.**  
Burnett, R.A., Dwyer, D.F., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.416-427, 13 refs.  
Pavements, Subgrade soils, Frost penetration, Frost action, Frost heave, Frost resistance, Frost protection, Road maintenance, Cost analysis, United States—New York
- 53-5160**  
**Field trial of tire shreds as insulation for paved roads.**  
Lawrence, B.K., Humphrey, D.N., Chen, L.H., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.428-439, 8 refs.  
Pavements, Subgrade soils, Tires, Waste disposal, Thermal insulation, Frost penetration, Frost protection, Road maintenance, United States—Maine
- 53-5161**  
**Rehabilitation of Route 15 in Big Squaw, Maine.**  
Dunn, P., Jr., Colson, S., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.440-451, 3 refs.  
Pavements, Subgrade soils, Aggregates, Gravel, Geotextiles, Soil stabilization, Subgrade maintenance, Road maintenance, Bearing tests, Trafficability, Cost analysis, United States—Maine
- 53-5162**  
**SERUL: a unique research facility for low volume roads in frost conditions.**  
Doré, G., LeBel, L., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.452-460, 3 refs.  
Research projects, Laboratories, Pavements, Frost action, Frost protection, Road maintenance, Environmental tests, Cold weather tests, Canada—Quebec
- 53-5163**  
**Reducing damage to low volume asphalt-surfaced roads, and improving local economies: update on variable tire pressure project.**  
Kestler, M.A., Nam, S.I., MP 5392, International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.461-471, 13 refs.  
Pavements, Thaw weakening, Tires, Highway planning, Road maintenance, Cold weather operation, Environmental tests, Computerized simulation  
Spring thaw adversely affects both pavement life and local economies throughout the northern United States and Canada. Each year significant damage is done to bituminous-surfaced low volume roads from trafficking during thaw-weakened periods. To prevent higher maintenance and reconstruction costs, many road agencies impose load restrictions limiting loads or closing low volume roads to trucks during these damage-susceptible periods. Companies whose livelihood depends on trucking can suffer economic losses while waiting for thawing roads to recover, and for load restriction signs to be removed. A group of concerned federal agencies, departments of transportation, and private companies throughout the United States and Canada has organized an effort to verify computer simulations that suggest using reduced tire pressures on thaw-weakened asphalt-surfaced low volume roads can reduce pavement damage. Full-scale tests using a heavy vehicle simulator are underway at the U.S. Army Cold Regions Research and Engineering Laboratory in Hanover, NH, in which a variety of tire pressures are being applied to several pavement test sections subjected to thawing. In addition to reducing road maintenance costs and extending pavement life, the pooled-fund test program discussed in this paper has the potential to affect current guidelines that restrict hauling, thereby extending the haul season in the springtime.
- 53-5164**  
**Large aircraft operations at small airports: when can heavier-than-design aircraft use thin frozen pavements.**  
Kestler, M.A., Cortez, E.R., Berg, R.L., MP 5393, International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.472-486, 13 refs.  
Runways, Pavements, Subgrade soils, Soil freezing, Freezing indexes, Frost penetration, Frost resistance, Thaw depth, Frozen ground strength, Bearing tests, Trafficability, Computerized simulation, United States—North Dakota—Williston  
In response to a request by airport officials in Williston, ND, to allow heavier-than-design aircraft to operate at Sloulin Field on frozen runway pavements during winter months, the Federal Aviation Association contacted the U.S. Army Cold Regions Research and Engineering Laboratory, and a research project was implemented. Instrumentation was installed at Sloulin Field during Oct. 1992, and subsurface temperature, soil moisture content, and pavement stiffness were monitored for the following four years. Using these data, the development of a simple index (based upon frost or thaw depths, freeze-thaw cycles, and other environmental factors) that can be used to roughly estimate pavement strength was investigated. Additionally, a thaw prediction model was developed. The computer program provides recommendations on whether a plane can land on the runway or park on the apron during the ensuing five days without causing unacceptable pavement damage. Although the frozen pavement at Sloulin Field can support heavier-than-design aircraft, it still may not be able to support the level of increase that some pavements could because the pavement modulus is so variable spatially and the subsurface structure at Sloulin Field tends to be quite dry (lowering the potential increase in modulus upon freezing). Consequently, the heavier-than-design aircraft considered in this study refers to aircraft in the 74,000-80,000 lb range with characteristics similar to those of the BAE 146-100. This report outlines the background, describes the test program and provides simple guidelines for (and limitations on) computer program use. Investigations leading to the development of a lookup table based on easy-to-measure environmental parameters will be discussed separately. The prediction model is site-specific to Sloulin Field. However, techniques similar to those used provide a valuable tool from which other site-specific or general models can be readily developed.
- 53-5165**  
**Roughness wavelengths induced by frost heave.**  
Lenngren, C.A., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.487-498, 4 refs.  
Runways, Pavements, Frost heave, Surface roughness, Lidar, Sweden
- 53-5166**  
**Ice/frost heave prevention system aided by heat pipe for railway tunnel.**  
Fujii, T., Kajiyama, H., Iikura, S., Okada, K., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.499-509, 4 refs.  
Railroad tunnels, Linings, Icicles, Ice prevention, Frost heave, Frost protection, Thermal insulation, Heat pipes, Heat transfer, Mathematical models, Japan
- 53-5167**  
**Concept of ensuring the serviceability of the roadbed of the Berkakit-Tommot-Yakutsk Railway on sections of very icy permafrost.**  
Kondrat'ev, V.G., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.510-518, 14 refs.  
Railroads, Roadbeds, Embankments, Subgrade soils, Ground ice, Thaw weakening, Permafrost beneath roads, Permafrost preservation, Snowsheds, Frost protection, Soil stabilization, Subgrade maintenance, Road maintenance, Russia—Yakutia, Baykal Amur Railroad
- 53-5168**  
**Finite element analysis of a wheel rolling in snow.**  
Shoop, S.A., Haehnel, R.B., Kestler, K., Stebbings, K., Alger, R., MP 5394, International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.519-530, 13 refs.  
Vehicle wheels, Tires, Traction, Rubber snow friction, Snow density, Snow hardness, Snow strength, Snow deformation, Environmental tests, Computerized simulation  
A three-dimensional model of a wheel moving through snow was generated using commercial finite element software (ABAQUS). Because of the large deformation of the snow relative to the tire, a rigid wheel was used to simplify computations. The snow was modeled as both an elastic-plastic material and as a crushable foam material. Models of uniaxial compression and plate sinkage tests in snow were used to explore the snow material model and match measured and observed snow deformation to model results. These constitutive models were then applied to the three-dimensional tire-snow model. New Arbitrary Lagrangian-Eulerian adaptive meshing formulations were also evaluated for improvements in handling the large deformations encountered in tire-snow interactions. Modeled snow deformation is compared to sinkage, displacement, and changes in snow densities. The modeled reaction forces on the wheel are compared with tire forces measured using the CRREL Instrumented Vehicle.
- 53-5169**  
**Putting snow research into practice for better snowmobile trails and ski slopes.**  
Wuori, A.F., Alger, R., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.531-537, 9 refs.  
Snow vehicles, Snow roads, Snow compaction, Snow stabilization, Snow strength, Snow density, Snow hardness
- 53-5170**  
**Distributed Snow Process Model for use with HEC-HMS.**  
Daly, S.F., Ochs, E.S., Brooks, P.F., Pangburn, T., Davis, E.M., MP 5395, International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.538-549, 6 refs.  
Watersheds, Snow hydrology, Snow water equivalent, Snowmelt, Runoff forecasting, Computer programs  
The Distributed Snow Process Model (DSPM) is a new approach to estimating runoff from snowmelt. The DSPM estimates the snowmelt in an area defined by a Standard Hydrologic Grid (SHG) using the SSARR\_grid snow process model. A watershed can contain many separate SHG cells, depending on the size of the watershed and the size of the SHG selected. The SSARR\_grid snow process model evaluates the snowmelt in each grid cell on the basis of the snow condition, elevation, temperature, and precipitation for that grid cell and the watershed properties. The snow conditions in each grid cell—snow melt, snow water equivalent, liquid water content, cold content, antecedent temperature index, and the antecedent melt index—are stored each time step in a gridded HEC-DSS database. The DSPM is a stand-alone program that provides input data to the Hydrologic Engineering Center's Hydrologic Modeling System through the gridded database. Sample results are included to demonstrate the type and range of output available from the DSPM.
- 53-5171**  
**Diurnal variation in dissolved oxygen measurements during late winter ice-covered period, Sleeper's River, Vermont.**  
White, K.D., Melloh, R.A., MP 5396, International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.550-560, 22 refs.  
River ice, Ice cover effect, Ice water interface, Oxygen, Aeration, Water chemistry, Photosynthesis, Plant physiology, Plant ecology, Microbiology, Biomass, Diurnal variations, United States—Vermont  
Dissolved oxygen, a critical element in riverine systems, is required to support aquatic life and maintain good water quality. Previous research has documented the occurrence of oxygen depressions in ice-covered rivers that coincide with ice cover formation. These oxygen sags have been attributed to lack of reaeration because of the ice cover, oxidation of organic material, and inputs of oxygen-depleted groundwater. Diurnal variations in dissolved oxygen are

key to understanding the oxygen balance processes of a stream, and previous studies provide only limited data in this regard. The present study incorporates continuous, high-temporal-resolution sub-ice water quality data and photosynthetically active radiation data for a gaged site in the Sleeper's River Research Watershed, VT. The first winter's observations, collected during late winter through spring breakup, are presented here. These data describe in detail the in-stream water quality environment during spring breakup and reveal a pronounced diurnal cycling of dissolved oxygen in the period just prior to breakup that appears to be the result of biological processes.

### 53-5172

#### Breakup on the upper St. John River.

Zufelt, J.E., MP 5397, International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.561-575, 5 refs.

River ice, Ice breakup, Ice jams, Ice forecasting, Flood forecasting, Warning systems, United States—Maine—Saint John River

The Upper St. John River flows through primarily uninhabited forestlands in northwest Maine. Its dynamic ice breakup results in annual ice jams and flooding at many locations along this reach of the river. Dickey, ME, is the most upstream community on the St. John River and, therefore, does not receive warning from upstream communities that an ice run has begun or that there is potential of damaging ice jams and flooding. In Apr. 1991, a severe ice run and jam at Dickey caught residents unprepared, with many residents being stranded as ice and water surrounded their homes, destroying the only bridge across the St. John River for 100 km. The communities downstream receive some warning that an ice run or jam has occurred in Dickey and is on its way downstream, although the warning time may be minimal. A properly placed sensor upstream of Dickey could give an early warning to residents that breakup has begun and ice jamming might occur. This paper describes experiments to track the ice breakup along the St. John River upstream of Dickey and how this information might be used to provide early warning of ice runs or jams at Dickey and communities downstream.

### 53-5173

#### Kuparuk River submersible bridges and roadways.

Christopherson, A.B., Braun, K.W., Thieman, D.S., Carn, S.L., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.576-587, 5 refs.

River crossings, Floodplains, Bridges, River ice, Ice breakup, Ice control, Flood control, United States—Alaska—Kuparuk River

### 53-5174

#### Loose-bed issues in river-ice hydraulics.

Ettema, R., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.588-599, 11 refs.

River ice, Ice cover effect, Ice water interface, River flow, Water erosion, Alluvium, Suspended sediments, Bottom sediment, Sediment transport, Flow control, Channel stabilization, Mathematical models

### 53-5175

#### Abutment scour at small, severely contracted bridges.

Niezgodna, S.L., Johnson, P.A., MP 5398, International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.600-611, 13 refs.

River flow, Floodplains, Bridges, Piers, Foundations, Water erosion, Computer programs

Abutment scour at small, severely contracted bridges is not specifically addressed in current scour guidelines. Many of the abutments at these bridges are vertical and set along the main channel banks. The long roadway approach section and narrow bridge opening force floodplain waters to re-enter the main channel at the bridge, causing a severe contraction in flow area that results in both contraction and local scour. Current scour guidelines assume that contraction and local scour processes are independent and are determined separately and summed for a total scour depth. Because of the severe contraction in flow area, independent scour processes cannot be assumed. Thus, the practice of assuming independence may result in significant over-estimations of scour depth at severely contracted bridges. In this study, a relatively new scour model, ABCOUR, is tested to determine its ability to provide more realistic scour estimates at severely contracted bridges by accounting for flow non-uniformity in

a single total scour equation. The program format is also examined to determine its applicability to a wide range of environments. The results showed that scour depth predictions at prototype bridges were excellent, and that program applicability to a variety of environmental conditions was promising.

### 53-5176

#### Modeling river ice using discrete particle simulation.

Daly, S.F., Hopkins, M.A., MP 5399, International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.612-622, 13 refs.

River ice, Ice jams, Ice water interface, River flow, Hydraulic structures, Piers, Flow control, Ice control, Ice models, Mathematical models

Recent advances in discrete element modeling now allow the direct simulation of river ice dynamics. By resolving the contact and body forces acting on thousands of individual floes at each time step, the initiation, grounding, and formation of river ice jams can be simulated and studied. The attendant water flow is modeled using a coupled unsteady hydraulic model, with feedback provided between floes and water by water drag and blockage of the channel flow area by ice. The regimes of water flow that are modeled include open-channel flow area by ice. The regimes of water flow that are modeled include open-channel flow with no ice, flow under moving or stationary ice, and high-Reynolds-number porous flow through grounded and floating ice masses. The use of variable channel geometry, which allows realistic channel sections to be modeled, is described here. Results are presented for a simulation of the arrest of a large ice run by an ice-control structure consisting of nine evenly spaced, cylindrical piers. Discrete element simulation promises to be an important tool in the design and implementation of ice-control measures.

### 53-5177

#### Soo Locks ice problems and possible solutions.

Tuthill, A.M., MP 5400, International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.623-630, 3 refs.

Locks (waterways), River ice, Ice navigation, Ice control, Ice passing, Bubbling, United States—Michigan—St. Marys River

The Soo Locks at Sault Ste. Marie, MI allow passage of deep draft vessels from Lake Superior to the lower Great Lakes and St. Lawrence River system. Although the locks are closed to winter-long navigation, operators face serious ice problems following the reopening of the locks in early spring. Broken lake ice pushed ahead of downbound ships can make it difficult or impossible for the vessels to enter the locks. Existing solutions such as locking the ice separately through the main lock or an adjacent smaller lock result in delays and increased costs to the navigation industry. A physical model study at the Cold Regions Research and Engineering Laboratory will examine a range of alternatives aimed at improving ice passage at the Soo Locks. This paper describes the ice problems at the Soo as well as the objectives of the physical model study.

### 53-5178

#### Low-cost ice control structures for small rivers.

Lever, J.H., Gooch, G.E., MP 5401, International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.631-640, 17 refs.

River ice, Freezeup, Ice breakup, Ice jams, Ice control, Flood control, Hydraulic structures, Cost analysis

Control of ice jams on small rivers must balance the competing requirements of low cost and reliable performance. Using a refrigerated hydraulic laboratory, the authors have developed three new low-cost structures that should meet these requirements. One is a seasonally installed "tension weir" that creates a small pool to promote early ice-cover formation and consequently reduces freezeup ice jams downstream. It performed well during four seasons of field trials. The other two structures, consisting of a few large elements spaced across a river adjacent to a natural floodplain, control breakup ice jams. A breakup structure consisting of four massive sloped blocks has performed well since its construction in Hardwick, VT, in 1994. Based on model tests, a similar structure consisting of cylindrical piers should provide greater ice-restraining capacity, albeit at higher cost.

### 53-5179

#### Effects of holes drilled in a river ice cover on the heat transfer at the ice/water interface.

Haehnel, R.B., Clark, C.H., Daly, S.F., MP 5402, International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.641-652, 11 refs.

River ice, Ice jams, Ice cutting, Ice drills, Ice water interface, Ice heat flux, Heat transfer, Artificial melting, Ice breaking, Ice control, Flood control, Mathematical models, United States—Wisconsin—Oconto River

Drilling holes in a river ice cover has been used on the Oconto River to reduce ice jam flooding in the city of Oconto, WI, since the spring of 1988. Though this technique appears to have been successful at preventing ice jam flooding, it is not clear what physical processes are responsible for its success. This study explores the effects of the holes on enhancing the turbulent heat transfer at the ice/water interface, thereby advancing the deterioration of the ice cover. The heat transfer coefficient between a flat ice sheet (with and without holes) and flowing water was measured in the refrigerated flume facility at CRREL. The results show no change in the bulk Nusselt number due to the presence of the holes in the ice sheet. However, the local Nusselt number (measured in the vicinity of the holes) was initially much higher than the bulk number, but decays with time as local melting streamlines the hole. This local modification of the heat transfer has the effect of accelerating the melting of the ice in the region surrounding the hole, streamlining the hole. This work suggests that the reduction in ice volume caused by this effect is negligible in comparison to the total ice volume in the river, and likely has no effect on reducing ice jam potential.

### 53-5180

#### From Antarctica to Mars.

Thulin, F.A., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.653-664, 3 refs.

Mars (planet), Stations, Buildings, Steel structures, Masonry, Human factors engineering, Cold weather construction, Cold weather survival, Antarctica

### 53-5181

#### Measurement of the pore size distribution of geomaterials using conductometric phase transition porosimetry.

Gunnink, B.W., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.665-676, 9 refs.

Soil structure, Cellular concretes, Porous materials, Porosity, Capillarity, Supercooling, Liquid solid interfaces, Interstitial ice, Freezing points, Phase transformations

### 53-5182

#### Effects of low temperature on concrete strength.

Korhonen, C.J., Orchino, S.A., MP 5403, International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.677-683, 7 refs.

Concrete freezing, Winter concreting, Concrete curing, Concrete hardening, Concrete strength, Temperature effects, Low temperature tests, Frost resistance, Frost protection

Temperature affects the way concrete gains strength. High temperatures tend to accelerate early age strengths but decrease later strengths, while low temperatures retard early age strengths and increase later strengths. It is well known that freezing concrete at an early age can result in permanent damage. What is not well known or appreciated is that concrete can benefit from the cold. Cold weather often results in concrete of superior strength, compared to concrete cast during warm weather, and if fresh concrete is frozen at an early age, it can recover full potential strength when thawed. The problems as well as the opportunities of low temperature concreting are discussed.

53-5183

**Frost heave problems inside a nuclear power plant.**

Korhonen, C.J., Hughes, J., MP 5404, International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.684-691, 1 ref.

Nuclear power, Floors, Concrete slabs, Frost heave, Ice lenses, Thermal insulation, Artificial freezing, Artificial thawing, Drainage, Drains, Pumps, Frost protection

The ice condenser floors of a nuclear power plant had heaved upward and were binding against steam-vent doors. By drilling wells into the floors, insulating them, and thawing the ice beneath them, a large amount of water was pumped from the insulation beneath the floors. As a result, they dropped and created needed floor-to-door clearance. Although the partially dewatered floors are heaving again, they should not rise enough to become the problems they once were. In addition, the wells are in place for periodic dewatering should the need arise.

53-5184

**Rain-on-snow surcharge for roof design.**

O'Rourke, M., Downey, C., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.692-703, 10 refs.

Roofs, Rain, Snow loads, Building codes, Statistical analysis

53-5185

**Strengthening of structures of a mine in the north.**

Grebenets, V.I., Kerimov, A.G.O., Titkov, S.N., Shilov, S., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.704-709, 2 refs.

Mining, Buildings, Foundations, Permafrost beneath structures, Permafrost control, Thaw weakening, Frozen ground settling, Settlement (structural), Frost protection, Cold weather construction, Russia—Noril'sk

53-5186

**Rigid insulation to reduce foundation embedment.**

Recker, K.L., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.710-716, 4 refs.

Liquefied gases, Storage tanks, Foundations, Settlement (structural), Subgrade soils, Earth fills, Thermal insulation, Frost protection, Soil stabilization, United States—Maine

53-5187

**Installation and evaluation of driven steel pipe piles in Alaska soils.**

Merrill, K.S., Korri, K., Miner, R.F., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.717-730, 8 refs.

Piles, Steel structures, Pipes (tubes), Foundations, Permafrost beneath structures, Soil strength, Frozen ground strength, Pile driving, Pile load tests, United States—Alaska

53-5188

**Helical piling foundations in Juneau, Alaska.**

Johnston, R.J., Swanston, D.N., Baxandall, F.W., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.731-736, 5 refs.

Residential buildings, Piles, Foundations, Anchors, Permafrost beneath structures, Permafrost control, Frozen ground strength, Cold weather construction, United States—Alaska—Juneau

53-5189

**Development of design and construction techniques for deep foundations of large bridges: the Russian experience.**

Likverman, A.I., Seliverstov, V.A., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.737-746, 6 refs.

Bridges, Piers, Foundations, Building codes, Frost protection, River ice, Ice control, Cold weather construction, Russia

53-5190

**Specific features of design and analysis of cable-stayed bridge over River Ob in western Siberia (Russia).**

Surovtsev, V.P., Baraboshin, O.V., Odintsov, V.V., Seliverstov, V.A., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.747-756, 6 refs.

Bridges, Cables (ropes), Steel structures, Frost resistance, Building codes, Cold weather construction, Russia—Ob' River, Russia—Surgut

53-5191

**Ice storms, trees and power lines.**

Jones, K.F., MP 5405, International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.757-767, 9 refs.

Ice storms, Power line icing, Ice accretion, Ice loads, Ice forecasting, Trees (plants), Mathematical models, United States

Ice storms can cause prolonged outages in the supply of electric power to residents and industry. As the authors have become more dependent on electric power for lighting, heat, water, and communications, disruptions in the power supply have more severe consequences. This paper reviews a simple ice accretion model for forecasting ice loads in freezing-rain storms. Then, starting from information on the distribution of branch and twig diameters, the relative weights of ice on trees and on wires are compared. Finally, the areas of severe ice storms that have occurred in the southeastern United States are used to show the frequency of ice storms of large and small extents in that region. Utilities can use this kind of information to evaluate their ability to respond to damaging ice storms.

53-5192

**Tree damage to electric utility infrastructure assessing and managing the risk from storms.**

Simpson, P.O., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.768-778, 10 refs.

Utilities, Ice storms, Snowstorms, Trees (plants), Ice loads, Snow loads, Wind pressure, Vegetation factors, Damage, Cost analysis

53-5193

**Reliability analysis of electric distribution systems.**

Chouinard, L.E., Fortier, D., Taras, A., Iordanescu, M., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.779-789, 5 refs.

Utilities, Ice storms, Power line supports, Power line icing, Ice accretion, Ice loads, Wind pressure, Statistical analysis, Canada—Quebec

53-5194

**Ice and the wire systems of a transmission line.**

White, H.B., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.790-798, 6 refs.

Ice storms, Supercooled clouds, Power line icing, Ice accretion, Ice loads, Design criteria

53-5195

**Galloping of ice covered wires of a transmission line.**

White, H.B., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.799-804, 8 refs.

Power line icing, Ice accretion, Ice loads, Wind pressure, Damping

53-5196

**Innovative airborne inventory and inspection technology for electric power line condition assessments in remote areas and cold climates.**

Ostendorp, M., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.805-811, 2 refs.

Utilities, Power lines, Power line supports, Power line icing, Damage, Aerial surveys

53-5197

**Extreme event loading and cascading failure risk assessment for electric power lines.**

Ostendorp, M., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.812-823, 4 refs.

Power line icing, Power line supports, Ice loads, Wind pressure, Structural analysis, Statistical analysis, Mathematical models, Design criteria

53-5198

**Ice effects on riprap: model tests.**

Sodhi, D.S., Donnelly, C.J., MP 5406, International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.824-837, 9 refs.

River ice, Bank protection (waterways), Rock fills, Ice erosion, Ice push, Ice pileup, Ice override, Ice loads, Ice pressure, Ice friction, Ice control, Channel stabilization, Environmental tests

The authors conducted 50 model tests to simulate the ice action on a riprap-protected bank and to determine the riprap damage caused during the interaction. The tests were conducted with the model riprap banks in different orientations relative to the direction of ice motion, at three different slopes, with two mixes of riprap stones, and with model ice sheets of different thicknesses. Because the tests used two model riprap banks with different stone sizes in the experiment setup, data for two ratios of ice thickness to median stone size were obtained from each test. The data on riprap damage is presented in tabular and graphical forms. The authors give plots of cumulative probability and a damage parameter for riprap failure with respect to the ratio of ice thickness to median stone size. The results indicate that riprap failure takes place when ice thickness is equal to, or thicker than, the median stone size. Accepting some (15%) probability of riprap failure, the authors find that the median stone size needs to be 2-3 times the ice thickness to protect a bank from an ice action.

53-5199

**Analysis of ice forces on small conical structures.**

Braun, K.W., Liu, H., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.838-849, 7 refs.

Offshore structures, Ice solid interface, Ice cover strength, Ice loads, Ice pressure, Ice friction, Ice deformation, Ice breaking, Computer programs

53-5200

**First two platforms with suction pile foundations subjected to sea ice forces in the Bohai Sea.**

Liu, L.M., Ding, H.Y., Qi, L., Wang, J.Y., Xu, J.Z., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.850-857, 2 refs.

Offshore structures, Ice loads, Ice pressure, Ice friction, Ice control, Design criteria, China—Bohai Sea

53-5201

**Analyses of ice-induced vibration and estimation of soil softening under vibration of a suction foundation platform.**

Qi, L., Ding, H.Y., Du, X.Z., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.858-866, 10 refs.

Offshore structures, Foundations, Ice solid interface, Ice loads, Ice pressure, Ice friction, Bottom sediment, Soil strength, Soil creep, Dynamic loads, Design criteria, Mathematical models, China—Bohai Sea

53-5202

**Generalized integral laws of frost heaving soils: their development and use in design of structures and aerodromes.**

Golli, O.R., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.867-881, 10 refs.

Foundations, Subgrade soils, Permafrost beneath structures, Permafrost control, Permafrost preservation, Soil freezing, Frozen ground strength, Frozen ground compression, Frost heave, Frost resistance, Mathematical models, Cold weather construction

53-5203

**Structural analysis: Kachemak River culverts.**

Christopherson, A.B., Liu, H., Sawhill, J., International Conference on Cold Regions Engineering, 10th, Lincoln, NH, Aug. 16-19, 1999. Proceedings. Putting research into practice. Edited by J.E. Zufelt, Reston, VA, American Society of Civil Engineers (ASCE), 1999, p.882-893, 2 refs.

Road maintenance, Earth fills, Pipes (tubes), Drains, Culverts, Thaw weakening, Settlement (structural), Cold weather construction, Structural analysis, Computerized simulation, United States—Alaska—North Slope

53-5204

**Innocents on the ice: a memoir of Antarctic exploration, 1957.**

Behrendt, J.C., Niwot, CO, University Press of Colorado, 1998, 428p.

DLC G850.B44 1998

Expeditions, History, Antarctica

53-5205

**Atlas of antarctic sea ice and icebergs.**

Romanov, A.A., Fair Lawn, NJ, Backbone Publishing Company, 1999, 175p., 48 refs.

Sea ice, Icebergs, Maps, Sea ice distribution, Ice navigation, Classifications, Polynyas, Ice floes, Drift, Ice cover thickness, Icebreakers, Marine transportation, Fast ice, Ice cover strength, Ship icing, Pressure ridges, Antarctica

53-5206

**Electric and elastic properties of frozen earth materials. [Elektricheskie i uprugie svoystva merzlykh porod i d'ov]**

Frolov, A.D., Pushchino, ONTI PNTs RAN, 1998, 514p., In Russian with summary, title page, and table of contents in English. 300 refs.

Ice elasticity, Ice electrical properties, Cryogenic structures, Phase transformations, Liquid phases, Ice acoustics, Elastic properties, Snow elasticity, Snow electrical properties, Electrical properties, Frozen rocks, Frozen ground physics, Frozen ground mechanics, Electromagnetic properties, Wave propagation, Snow acoustics, Acoustics

53-5207

**Hoodoo '97 Expedition: probing the ice cap of Hoodoo Mountain volcano, Iskut River region, British Columbia.**

Russell, J.K., Stasiuk, M.V., Hickson, C.J., Maxwell, M., Edwards, B.R., Canada. *Geological Survey. Current research. Part A*, 1998, No.1998-A, p.49-54, With French Summary. 23 refs.

DLC QE48.C2 1998 Pts A+B  
Volcanoes, Mountain glaciers, Cirque glaciers, Glacier surveys, Glacier thickness, Topographic surveys, Subglacial observations, Bottom topography, Radio echo soundings, Electromagnetic prospecting, Volcanic ash, Ice dating, Flood forecasting, Canada—British Columbia—Coast Mountains

53-5208

**Ice cap of Hoodoo Mountain volcano, northwestern British Columbia: estimates of shape and thickness from surface radar surveys.**

Russell, J.K., et al, Canada. *Geological Survey. Current research. Part A*, 1998, No.1998-A, p.55-63, With French Summary. 28 refs.

DLC QE48.C2 1998 Pts A+B  
Volcanoes, Mountain glaciers, Cirque glaciers, Glacier surveys, Glacier thickness, Ice volume, Topographic surveys, Subglacial observations, Bottom topography, Radio echo soundings, Electromagnetic prospecting, Canada—British Columbia—Coast Mountains

53-5209

**Global Positioning System survey of ground-penetrating radar traverses of the ice cap, Hoodoo Mountain, British Columbia.**

Nicholls, J., Page, T., Schmok, J., Russell, J.K., Stasiuk, M.V., Canada. *Geological Survey. Current research. Part A*, 1998, No.1998-A, p.65-68, With French Summary.

DLC QE48.C2 1998 Pts A+B  
Volcanoes, Mountain glaciers, Cirque glaciers, Glacier surveys, Geodetic surveys, Topographic surveys, Radio echo soundings, Electromagnetic prospecting, Canada—British Columbia—Coast Mountains

53-5210

**Evidence of catastrophic rock avalanche potential and past failures, east face of Mount Livingstone and Windsor Ridge, Alberta.**

Jackson, L.E., Jr., Lebel, D., Canada. *Geological Survey. Current research. Part A*, 1998, No.1998-A, p.225-231, With French Summary. 12 refs.

DLC QE48.C2 1998 Pts A+B  
Slope stability, Landslides, Mass movements (geology), Avalanche forecasting, Canada—Alberta—Rocky Mountains

53-5211

**Analysis of the thermal field to determine constraints on gas hydrate stability in Yukon Territory and western Northwest Territories.**

Smith, S.L., Canada. *Geological Survey. Current research. Part B*, 1998, No.1998-B, p.235-241, With French Summary. 27 refs.

DLC QE48.C2 1998 Pts A+B  
Natural gas, Hydrates, Exploration, Permafrost surveys, Permafrost depth, Permafrost thickness, Permafrost thermal properties, Well logging, Canada—Yukon Territory, Canada—Northwest Territories

53-5212

**Infrared thermography for condition assessment of buried district heating piping.**

Phetepplace, G., MP 5407, American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). *Transactions*, 1999, 105(pt.2), 6p., 13 refs.

Utilities, Heating, Heat transmission, Heat pipes, Underground pipelines, Heat loss, Soil temperature, Infrared photography

Infrared thermography has been used successfully for many years to find problem areas on buried district heating systems. While such information is useful for locating areas of major failures, for planning purposes some quantification of the results from an infrared survey of major portions of a district heating system would be advantageous. Some recent progress has been made toward this end by two International Energy Agency District Heating projects in which the U.S. Army Cold Regions Research and Engineering Laboratory (CRREL) has participated with colleagues from the Nordic countries. The objective of these projects was to develop a method

that would allow quantification of heat losses from the temperature profile of the ground's surface above the buried heat distribution pipeline. Basically, the method uses the integral of the temperature distribution at the ground's surface along with climatological and system data to arrive at an empirical estimate of the heat loss. Using this method, CRREL has conducted infrared surveys of two facilities. Results have been good, and the facilities have been provided with both heat loss estimates and prioritized replacement lists. This paper describes the "TX method," as it is called, and its use. Sample results from the surveys done to date will also be presented.

53-5213

**Ice events in the Susquehanna River Basin.**

White, K.D., MP 5408, U.S. Army Cold Regions Research and Engineering Laboratory. *Ice engineering information exchange bulletin*, Apr. 1999, No.21, 6p., 10 refs.

River basins, River ice, Ice jams, Ice forecasting, Floods, Flood forecasting, Cost analysis, Data processing, Statistical analysis, United States—Susquehanna River

53-5214

**Promoting late-fall establishment of tall fescue with artificial soil covers to minimize soil erosion.**

Palazzo, A.J., MP 5409, *Environmental geochemistry and health*, 1994, 16(1), p.3-7, 13 refs.

Grasses, Protective vegetation, Revegetation, Covering, Soil erosion, Soil conservation, Soil stabilization, Land reclamation

Frequently, turfgrass seedings have been sown in the late fall, which usually results in a poor vegetative stand and the possibility of soil erosion the following spring. This study evaluates the effects of a spun-bonded polyester soil cover placed over a late-fall seeding on subsequent seedling growth and overwintering. Clemfine, Mustang, Rebel and Rebel II cultivars of tall fescue (*Festuca arundinacea* Schreb.) were sown on a silt loam soil in late fall (17 Oct. in 1989 and 19 Oct. in 1990) and allowed to grow with and without a soil cover until June. In the spring the temperature under the soil cover was greater than 2°C warmer than the uncovered soil from mid-Apr. through May. Over the winter, leaf and root weights showed no detrimental effects from being under the cover. Individual cultivars grown under the cover produced 2 to 11 times greater leaf yields and 38 to 270% better stand establishment than those sown on the exposed soil. However, plant winter injury was observed under the soil cover in small soil depressions which accumulated water originating from thawing. All cultivars had similar amounts of growth under the cover. However, leaf yields for Rebel were 30-55% less than the other cultivars when grown under the cover and this was probably related to a low seed germination rate. The covers also promoted weed growth, which comprised from 34-65% of total leaf weights and was found to be negatively correlated ( $r = -0.66$ ) to the yields of the sown grass. The soil cover was found to be beneficial to improving the success of seedling establishment of late seedings of tall fescue in cold areas.

53-5215

**High strain rate impact response of polycarbonate backed composite laminates.**

Vaidya, U.K., Hosur, M.V., Haque, A., Kulkarni, M., Mayer, A., Dutta, P.K., MP 5410, International Conference on Advanced Composites, Hurghada, Egypt, Dec. 15-18, 1998. ICAC 98, [1998], p.3-16, 8 refs.

Aircraft, Windows, Composite materials, Plastics, Polymers, Resins, Impact tests, Impact strength, Stress strain diagrams

Impact damage is of critical concern in aircraft structures using laminated carbon epoxy composites. Polycarbonate sheeting offers high impact resistance and is used in windshields and canopies. In the current study a hybrid construction of carbon epoxy composite laminate backed by polycarbonate sheeting has been investigated for its low velocity and high strain rate impact response. An instrumented drop weight impact tester has been used to investigate the low velocity impact response on 36 ply composite-polycarbonate samples. A compression Split Hopkinson Pressure Bar with 0.75" incident and transmission bars "with" and "without" dynamic recovery technique has been adopted in conducting the high strain rate experiments on 8, 16, 24, 32 and 48 ply-polycarbonate samples. In the absence of the dynamic recovery mechanism (referred to as the momentum trap gap), the specimen is subjected to multiple reflected stress waves. In the dynamic recovery technique, the sample is subjected to a controlled single compressive pulse, providing a better understanding of the damage evolution mechanisms. Between two configurations considered, with respect to the side facing the incident bar, in the first, the polycarbonate sheeting faced the incident bar, while in the second, the carbon/epoxy laminate faced the same. Damage evolution using both test configurations was investigated. The strain rates were varied from 108 to 544 per second.

## 53-5216

**Rapid stabilization of thawing soils for enhanced vehicle mobility: a field demonstration project.**

Kestler, M.A., Shoop, S.A., Henry, K.S., Stark, J.A., Affleck, R.T., CR 99-03, *U.S. Army Cold Regions Research and Engineering Laboratory Report*, Feb. 1999, 73p., ADA-364 193, 20 refs.

Soil stabilization, Ground thawing, Military operation, Roads, Trafficability, Geotextiles, Soil trafficability, Tires, Vehicles

Thawing soil presents a formidable challenge for vehicle operations cross-country and on unsurfaced roads. To mitigate the problem, a variety of stabilization techniques were evaluated for their suitability for rapid employment to enhance military vehicle operations. A combination of mechanical stabilization methods including several lightweight fills, geosynthetics, and tire and wood mats, were constructed and tested during the annual training exercises of the 229th Engineers of the Wisconsin National Guard during the difficult conditions of spring thaw. The techniques were evaluated for their expediency, ease of construction, trafficability, and durability. In general, chunkwood was an excellent replacement for gravel fill in forested area; tree slash (or other vegetation) was effective but labor intensive; wood mats and pallets were effective and reasonably durable; tire mats were extremely rugged and effective. A loader or crane was needed to place the large wood mats, tire mats, and fascines. Geocomposite materials (Geonet) were quickly installed and could withstand limited traffic (50 passes) without additional cover material. Geosynthetics reduced the amount of cover material and enhanced placement, effectiveness and removal when used under other materials to spread the load and keep them from sinking into the mud. All materials were damaged during the severe motion of a tank cornering except the large, smooth wood mats, but these were slippery on slopes. Results are summarized in a decision matrix for choosing the best technique depending on site conditions, material and equipment availability and utilization criteria.

## 53-5217

**Investigation of the Roosevelt Road Transmitter Site, Fort Richardson, Alaska, using ground-penetrating radar.**

Hunter, L.E., Delaney, A.J., Lawson, D.E., CR 99-04, *U.S. Army Cold Regions Research and Engineering Laboratory Report*, Mar. 1999, 16p., ADA-364 131, 10 refs.

Geophysical surveys, Mapping, Radar echoes, United States—Alaska—Fort Richardson

The Roosevelt Road Transmitter Site is the location of a decommissioned bunker on Fort Richardson, near Anchorage, AK. The site was used from World War II to the Korean War as part of an Alaskan communications network. The bunker and support buildings were vandalized following its decommissioning in the mid-1960s, resulting in PCB contamination of the bunker and soils around the above-ground transmitter annex. CRREL conducted a ground-penetrating radar (GPR) investigation of the site in June 1996, at the request of the Directorate of Public Works on Fort Richardson. Nine transect lines were established, each being profiled with 100- and 400-MHz antennas. Both antennas systems defined the extent of the bunker and identified the presence of buried utilities. The 100-MHz antenna provided large-scale resolution of the bunker, limits of site excavation, and large stratigraphic horizons in the undisturbed sediments. The 400-MHz antenna provided finer resolution that allowed identification of steel reinforcement in the bunker ceiling, utility walls and floor, and the walls of the inner and outer bunker. High amplitude resonance and hyperbolas in the record characterize the response from the Transmitter Annex foundation, buried pipes, and utilities. The GPR survey shows its utility for detecting the extent of abandoned underground structures and identifying the extent of original ground excavations.

## 53-5218

**Existence of traveling wave solutions to the problem of soil freezing described by a model called  $M_1$ .**

Nakano, Y., CR 99-05, *U.S. Army Cold Regions Research and Engineering Laboratory Report*, Apr. 1999, 33p., ADA-365 516, 47 refs.

Soil freezing, Mathematical models, Frost heave, Soil water migration

The scientific study of soil freezing began in the early 1900s and an accurate mathematical description of the freezing process has been sought for nearly 80 years. Despite numerous publications on the subject, there is as yet no clear consensus on the mathematical model of soil freezing. In this report a mathematical model called  $M_1$  is presented. The existence of traveling wave solutions to the problem is shown. For a given fine-grained soil, such solutions are shown to exhibit three distinct behaviors depending on given thermal and hydraulic conditions. When a frost front ( $0^\circ\text{C}$  isotherm) advances, water is either attracted to the front or expelled from it. Under certain conditions an ice layer containing hardly any soil particles grows. The report describes how the traveling wave solutions have been used for the empirical verification of  $M_1$ .

## 53-5219

**Ice jams in river confluences.**

Ettema, R., Muste, M., Kruger, A., CR 99-06, *U.S. Army Cold Regions Research and Engineering Laboratory Report*, May 1999, 61p., ADA-365 480, 43 refs.

Ice jams, River ice, Ice models, Hydraulics, River flow, Grounded ice, Ice cover, United States—Mississippi River, United States—Missouri River

Two laboratory models of confluences are corroborated with observations interpreted from field observations of ice jams in the vicinity of confluences. One model was used to identify the processes whereby ice can jam in confluences and to determine how selected parameters (e.g., confluence angle) influence them. The confluences of primary interest were those formed by channels whose beds are at about the same level. The second model was used to examine ice jam formation in the confluence of the Mississippi and Missouri Rivers. Three relatively complex processes were found to lead to ice jams: the merging of ice runs, hydrodynamic pressure from a confluent flow impacting an ice run from the second confluent channel, and ice congestion at a confluence bar. The latter process is a significant factor triggering ice jams at the confluence of the Mississippi and Missouri Rivers. Also, three simple processes account for many ice jams at river confluences: ice blocked by an ice cover in the confluence, large ice pieces arching at the confluence, and ice entering a region of sluggish flow. The main practical contributions of the study are formulations for estimating the maximum rate of ice conveyance through channel confluences, and the confirmation of the efficacy of a series of bendway weirs to mitigate ice jam formation at the confluence of the Mississippi and Missouri Rivers. The bendway weirs have additional benefits, such as greatly reducing the amount of ice accumulating in the approach to the Chain-of-Rocks Canal, which is located at the confluence exit.

## 53-5220

**Frost inhibition on turfgrass.**

Palazzo, A.J., Cary, T.J., Hardy, S.E., Nagle, J.A., SR 99-04, *U.S. Army Cold Regions Research and Engineering Laboratory Special report*, Apr. 1999, 4p., ADA-362 232, 5 refs.

Frost resistance, Frost protection, Grasses, Cold tolerance

Frost is a common problem for golf courses in the early morning hours in the spring and fall. Walking on frosted turf turns it a dark bluish color initially and kills the leaf tissue, eventually causing an unsightly appearance. The objective of this study was to conduct a series of experiments to evaluate the effectiveness of a recently introduced frost-inhibition product called FROST-B-GONE (FBG) in preventing the formation of frost and subsequent damage to turfgrass. The material was studied at concentrations of 0, 5, 10, 15 and 20% and applied at a rate of 1629 L/ha. The results of these experiments showed that the FBG compound was effective in preventing frost on a bentgrass turf used for greens. Application of FBG at concentrations of 10, 15 and 20% six hours before frosting conditions was consistently effective in reducing the occurrence of frost on bentgrass leaf surfaces. FBG also had a residual frost-inhibition effect when the sod was frosted a second time without re-treatment. The frost-producing technique developed in these experiments proved successful with herbaceous plants and may be used to prepare plants for cold-tolerance or satellite-identification studies.

## 53-5221

**Radiative characteristics in a Japanese forested drainage basin during snowmelt.**

Nakabayashi, H., Ishikawa, N., Kodama, Y., *Hydrological processes*, Feb. 15, 1999, 13(2), p.157-167, 13 refs.

Snow hydrology, Snowmelt, Snow heat flux, Albedo, Radiation balance, Forest land, Forest canopy, Run-off forecasting, Japan

## 53-5222

**Fractal dimensions of suspended solids in streams: comparison of sampling and analysis techniques.**

De Boer, D.H., Stone, M., *Hydrological processes*, Feb. 15, 1999, 13(2), p.239-254, 22 refs.

Snow hydrology, Snowmelt, Stream flow, Suspended sediments, Alluvium, Sediment transport, Particle size distribution, Statistical analysis, Canada—Ontario

## 53-5223

**Modelling the risk of snow damage to forests under short-term snow loading.**

Päätaalo, M.L., Peltola, H., Kellomäki, S., *Forest ecology and management*, Apr. 12, 1999, 116(1-3), p.51-70, 60 refs.

Trees (plants), Plant ecology, Snow loads, Wind pressure, Statistical analysis

## 53-5224

**Thermographic evaluation of window structures for antarctic environment.**

Dutta, P.K., MP 5411, *SPIE—The International Society for Optical Engineering. Proceedings*, 1999, Vol.3585, Nondestructive Evaluation of Aging Materials and Composites III, Newport Beach, CA, Mar. 3-5, 1999, p.73-83, 2 refs.

Buildings, Windows, Composite materials, Plastics, Polymers, Thermal insulation, Weatherproofing, Frost protection, Cold weather construction, Frost resistance, Low temperature tests, Thermal analysis, Thermal stresses, Antarctica—Amundsen-Scott Station

This study evaluates the performance of three different prototype commercial windows at extremely low temperature by exposing them to an environment similar to the condition in the US South Pole Station building in Antarctica. While the interior of the building will have a temperature of  $24^\circ\text{C}$ , the outside temperature will vary from  $-70^\circ\text{C}$  to about  $-5^\circ\text{C}$  on a sunny day. The differential expansion or contraction of the component materials may produce unacceptably high stresses, which may cause either the failure of the components, or degradation of performance over time. This investigation was an effort to assess such degradation, if any. Simultaneous evaluation tests were performed on four windows, two from one manufacturer, and one each from two other manufacturers.

## 53-5225

**Structure and mechanical behavior of ice.**

Schulson, E.M., *JOM: Minerals, Metals & Materials Society. Journal*, Feb. 1999, 51(2), p.21-27, 80 refs.

Ice structure, Ice crystal structure, Ice strength, Ice deformation, Ice cracks, Ice breaking

## 53-5226

**Simple procedure for ion chromatographic determination of anions and cations at trace levels in ice core samples.**

Jauhainen, T., Moore, J., Perämäki, P., Derome, J., Derome, K., *Analytica chimica acta*, 1999, Vol.389, p.21-29, 18 refs.

Ice cores, Core samplers, Ice composition, Impurities, Ion density (concentration), Chemical analysis

## 53-5227

**Wintertime convection and frontal interleaving in the southern ocean.**

Toole, J.M., Cambridge, Massachusetts Institute of Technology/Woods Hole Oceanographic Institution, 1980, 326p., PB80-197601, Ph.D. thesis. Refs. p.315-325. Also published as Woods Hole Oceanographic Institution report WHOI-80-25.

Polar atmospheres, Marine atmospheres, Air water interactions, Ice cover effect, Ocean currents, Water transport, Water temperature, Salinity, Heat flux, Mathematical models

## 53-5228

**Activity of soil microarthropods beneath snowpack in alpine tundra and subalpine forest.**

Addington, R.N., Seastedt, T.R., *Pedobiologia*, Jan. 1999, 43(1), p.47-53, 25 refs.

Alpine tundra, Forest tundra, Forest ecosystems, Soil microbiology, Soil temperature, Snow cover effect, Ecology, Cryobiology, Cold tolerance, United States—Colorado—Front Range

## 53-5229

**Platinum-group elements (Rh, Pt, Pd) and Au distribution in snow samples from the Kola Peninsula, NW Russia.**

Gregurek, D., Melcher, F., Niskavaara, H., Pavlov, V.A., Reimann, C., Stumpf, E.F., *Atmospheric environment*, Sep. 1999, 33(20), p.3281-3290, 25 refs.

Polar atmospheres, Atmospheric circulation, Atmospheric composition, Air pollution, Scavenging, Snow samplers, Snow composition, Snow impurities, Mineralogy, Chemical analysis, Russia—Kola Peninsula

## 53-5230

**Patterns of precipitation and pollutant deposition in the western Sudete Mountains, Poland.**

Dore, A.J., Sobik, M., Migala, K., *Atmospheric environment*, Sep. 1999, 33(20), p.3301-3312, 20 refs.

Atmospheric circulation, Atmospheric composition, Air pollution, Precipitation (meteorology), Scavenging, Snow composition, Snow impurities, Poland—Sudete Mountains



**53-5231**  
**Influence of ground water on surface water conditions in a glacial flood plain of the Swiss Alps.**  
 Ward, J.V., Malard, F., Tockner, K., Uehlinger, U., *Hydrological processes*, Feb. 28, 1999, 13(3), Special issue: Groundwater dominated rivers, p.277-293, 47 refs.  
 Glacial hydrology, Meltwater, Subglacial drainage, Ground water, Stream flow, Floodplains, Alluvium, Ecosystems, Ecology, Switzerland—Alps

**53-5232**  
**Groundwater and fish—insights from northern North America.**  
 Power, G., Brown, R.S., Imhof, J.G., *Hydrological processes*, Feb. 28, 1999, 13(3), Special issue: Groundwater dominated rivers, p.401-422, Refs. p.419-422.  
 River ice, Ice conditions, Ice cover effect, Ground water, Animals, Ecosystems, Ecology, North America

**53-5233**  
**Radar interferometry and its application to changes in the Earth's surface.**  
 Massonnet, D., Feigl, K.L., *Reviews of geophysics*, Nov. 1998, 36(4), p.441-500, Refs. p.495-500.  
 Synthetic aperture radar, Radio echo soundings, Spaceborne photography, Image processing, Geodetic surveys, Topographic surveys, Terrain identification, Glacier surveys, Glacier flow

**53-5234**  
**Thermal plasma and neutral gas in Saturn's magnetosphere.**  
 Richardson, J.D., *Reviews of geophysics*, Nov. 1998, 36(4), p.501-524, 62 refs.  
 Planetary environments, Atmospheric composition, Satellites (natural), Extraterrestrial ice, Ice sublimation, Ionization

**53-5235**  
**Postglacial variations in the level of the sea: implications for climate dynamics and solid-earth geophysics.**  
 Peltier, W.R., *Reviews of geophysics*, Nov. 1998, 36(4), p.603-689, Refs. p.685-689.  
 Ice age theory, Pleistocene, Glaciation, Glacial geology, Glacier oscillation, Global change, Paleoclimatology, Earth crust, Geodesy, Isostasy, Marine geology, Sea level, Rheology, Ice models, Mathematical models, Computerized simulation

**53-5236**  
**Similarity solutions in a class of thawing processes.**  
 Fasano, A., Primicerio, M., Tarzia, D., *Mathematical models & methods in applied sciences*, Feb. 1999, 9(1), p.1-10, 13 refs.  
 Thawing rate, Phase transformations, Liquid solid interfaces, Ground thawing, Stefan problem, Mathematical models

**53-5237**  
**Coupled transport of heat and mass. Theory and applications.**  
 Ratkje, S.K., Hafskjold, B., Entropy and entropy generation: fundamentals and applications. Edited by J.S. Shiner. Understanding chemical reactivity, Vol.18, Dordrecht, Kluwer Academic Publishers, 1996, p.197-219, 35 refs.  
 DLC QC318.E57 E56 1996  
 Phase transformations, Liquid solid interfaces, Molecular energy levels, Heat transfer, Mass transfer, Thermodynamics, Mathematical models

**53-5238**  
**Correlation of index tests with rock durability.**  
 Lienhart, D.A., Fisher, H.H., Robinson, E.F., River, coastal and shore protection: erosion control using riprap and armourstone. Edited by C.R. Thorne, et al., Chichester, England, John Wiley & Sons, Ltd., 1995, p.502-509, 4 refs. Includes discussion and closure.  
 DLC TC337.R57 1995  
 Bank protection (waterways), Rock fills, Frost weathering, Rock properties, Rock mechanics

**53-5239**  
**Proceedings.**  
 International Congress on Environmental Geotechnics, 1st, Edmonton, Alberta, July 11-15, 1994, Carrier, W.D., III, ed, Richmond, British Columbia, BiTech Publishers Ltd., 1994, 1014p., In English and French. Refs. passim. For selected papers see 53-5240 through 53-5243.  
 DLC TD171.9.I52 1994  
 Mining, Waste disposal, Permafrost control, Permafrost preservation, Soil stabilization, Land reclamation

**53-5240**  
**Geotechnical aspects of environmental violations in cryollitic zone.**  
 Grebenets, V.I., Lolaev, A.B., Fedoseev, D.B., Savchenko, V.A., International Congress on Environmental Geotechnics, 1st, Edmonton, Alberta, July 11-15, 1994. Proceedings. Edited by W.D. Carrier, III, Richmond, British Columbia, BiTech Publishers, Ltd., 1994, p.247-254, 3 refs.  
 DLC TD171.9.I52 1994  
 Mining, Environmental protection, Permafrost preservation, Permafrost control, Soil stabilization, Russia—Noril'sk

**53-5241**  
**Use of geomembranes as vertical barrier liners for containment on the North Slope of Alaska.**  
 Hansen, P.G., Crotty, G.R., International Congress on Environmental Geotechnics, 1st, Edmonton, Alberta, July 11-15, 1994. Proceedings. Edited by W.D. Carrier, III, Richmond, British Columbia, BiTech Publishers, Ltd., 1994, p.255-260.  
 DLC TD171.9.I52 1994  
 Drilling, Trenching, Frozen ground strength, Permafrost control, Permafrost preservation, Geotextiles, Thermal insulation, Soil stabilization, United States—Alaska—North Slope

**53-5242**  
**Using glacial till as liner material for a waste disposal.**  
 Sjöholm, M., Strandberg, T., International Congress on Environmental Geotechnics, 1st, Edmonton, Alberta, July 11-15, 1994. Proceedings. Edited by W.D. Carrier, III, Richmond, British Columbia, BiTech Publishers, Ltd., 1994, p.367-371, 5 refs.  
 DLC TD171.9.I52 1994  
 Glacial till, Clay soils, Earth fills, Permeability, Linings, Waste disposal, Soil stabilization, Finland

**53-5243**  
**Geoenvironmental design of a uranium mill tailings facility in northern Saskatchewan.**  
 Mittal, H.K., Holl, N., Donald, S., International Congress on Environmental Geotechnics, 1st, Edmonton, Alberta, July 11-15, 1994. Proceedings. Edited by W.D. Carrier, III, Richmond, British Columbia, BiTech Publishers, Ltd., 1994, p.887-893.  
 DLC TD171.9.I52 1994  
 Mining, Tailings, Waste disposal, Land reclamation, Soil pollution, Permafrost control, Permafrost preservation, Canada—Saskatchewan

**53-5244**  
**Geological aspects of the deep disposal of radioactive waste.**  
 McEwen, T.J., NATO Advanced Research Workshop on Defence Nuclear Waste Disposal in Russia: implications for the environment, Krasnoyarsk, Russia, June 24-28, 1996. Proceedings. ASI Series 1: Disarmament technologies. Vol.18. Edited by M.J. Stenhouse and V.I. Kirko, Dordrecht, Kluwer Academic Publishers, 1998, p.99-120, 24 refs.  
 DLC TD897.85.D44 1998  
 Radioactive wastes, Waste disposal, Ground water, Geology, Hydrogeology, Rock mechanics, Permafrost, Tectonics, Glacial hydrology, Safety

**53-5245**  
**Evaluation of the safe disposal of radioactive waste and spent fuel in the vicinity of Bashmachnaya Bay on the Novaya Zemlya Archipelago.**  
 Mel'nikov, N.N., Konukim, V.P., Komlev, V.N., NATO Advanced Research Workshop on Defence Nuclear Waste Disposal in Russia: implications for the environment, Krasnoyarsk, Russia, June 24-28, 1996. Proceedings. ASI Series 1: Disarmament technologies. Vol.18. Edited by M.J. Stenhouse and V.I. Kirko, Dordrecht, Kluwer Academic Publishers, 1998, p.309-315, 5 refs.  
 DLC TD897.85.D44 1998  
 Radioactive wastes, Waste disposal, Permafrost, Frozen rocks, Fuels, Military operation, Ships, Geocryology, Russia—Novaya Zemlya

**53-5246**  
**Proceedings.**  
 International Water Resources Engineering Conference, Memphis, TN, Aug. 3-7, 1998, Reston, VA, American Society of Civil Engineers (ASCE), 1998, 1920p. (2 vols.), Refs. passim. For selected papers see 52-6737, 52-6738, and 53-5247 through 53-5253.  
 DLC TC5.I696 1998  
 Floods, Flood forecasting, Flood control, Snowstorms, Snowfall, Snow hydrology, Snowmelt, Run-off forecasting, Bridges, Water erosion

**53-5247**  
**Scour measurements at contracted highway crossings in Minnesota, 1997.**  
 Mueller, D.S., Hitchcock, H.A., International Water Resources Engineering Conference, Memphis, TN, Aug. 3-7, 1998. Proceedings. Vol.1, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.210-215, 6 refs.  
 DLC TC5.I696 1998  
 Snowstorms, Snowfall, Snowmelt, Floodplains, Floods, Water erosion, Bridges, Road maintenance, United States—Minnesota

**53-5248**  
**Restoration of boreal lowland rivers in Finland: problems and approaches with respect to conservation and flood protection.**  
 Järvelä, J., Jormola, J., International Water Resources Engineering Conference, Memphis, TN, Aug. 3-7, 1998. Proceedings. Vol.1, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.696-701, 5 refs.  
 DLC TC5.I696 1998  
 Forest ecosystems, Forest land, Soil conservation, Flood control, Land reclamation, Finland

**53-5249**  
**Perspectives on the 1997 flooding: Red River of the North.**  
 James, L.D., Korom, S.F., Galloway, G., International Water Resources Engineering Conference, Memphis, TN, Aug. 3-7, 1998. Proceedings. Vol.1, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.756-761.  
 DLC TC5.I696 1998  
 Snowfall, Snowstorms, Snowmelt, Floods, Accidents, Rescue operations, Cost analysis, United States—North Dakota—Grand Forks

**53-5250**  
**1997 Red River floods: what went wrong?**  
 Pielke, R.A., Jr., International Water Resources Engineering Conference, Memphis, TN, Aug. 3-7, 1998. Proceedings. Vol.1, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.762-767, 14 refs.  
 DLC TC5.I696 1998  
 Snowfall, Snowstorms, Snowmelt, Floods, Accidents, Flood forecasting, Flood control, Rescue operations, United States—North Dakota, United States—Minnesota



- 53-5251**  
Development of simple snow density model for wide area.  
Kazama, S., International Water Resources Engineering Conference, Memphis, TN, Aug. 3-7, 1998. Proceedings. Vol.2, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.1230-1235, 5 refs. DLC TC5.I696 1998  
Snow hydrology, Snow depth, Snow heat flux, Snow density, Snow water equivalent, Snowmelt, Runoff forecasting, Mathematical models, Japan
- 53-5252**  
Coincident frequency in snowmelt runoff modeling.  
Van Mullem, J.A., International Water Resources Engineering Conference, Memphis, TN, Aug. 3-7, 1998. Proceedings. Vol.2, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.1303-1308, 6 refs.  
DLC TC5.I696 1998  
Snow hydrology, Snow cover distribution, Snow depth, Snow water equivalent, Snowmelt, Degree days, Runoff forecasting, Statistical analysis, Computerized simulation, United States—Montana
- 53-5253**  
Selection of an appropriate hydrologic analysis method to simulate a watershed response: Ashland Creek case study.  
Mohammadi, A., Magura, L.M., Fuller, R.B., International Water Resources Engineering Conference, Memphis, TN, Aug. 3-7, 1998. Proceedings. Vol.2, Reston, VA, American Society of Civil Engineers (ASCE), 1998, p.1309-1314, 7 refs.  
DLC TC5.I696 1998  
Snow hydrology, Rain, Snowmelt, Floods, Accidents, Flood forecasting, Computerized simulation, United States—Oregon—Ashland
- 53-5254**  
Arctic Ocean Buoy Program, data report, 1 January 1980-31 December 1980.  
Thorndike, A.S., Colony, R., University of Washington, Seattle, Polar Science Center, 1981, 127p., 6 refs.  
Polar atmospheres, Marine meteorology, Drift stations, Drift, Air temperature, Surface temperature, Atmospheric pressure, Data transmission, Data processing
- 53-5255**  
Measurement and control of ice adhesion to aluminum 6061 alloy.  
Archer, P., Gupta, V., *Journal of the mechanics and physics of solids*, 1998, 46(10), p.1745-1771, 31 refs.  
Metals, Ice solid interface, Ice adhesion, Ice strength, Ice loads, Protective coatings, Ice prevention, Ice removal, Ice breaking
- 53-5256**  
New predictions on the sticking of HCl to ice at hyperthermal energies.  
Al-Halabi, A., Kleyn, A.W., Kroes, G.J., *Chemical physics letters*, July 9, 1999, Vol.307, p.505-510, 34 refs.  
Ice crystal structure, Ice crystal collision, Ice crystal adhesion, Ice composition, Molecular energy levels, Adsorption, Ozone
- 53-5257**  
Examination of the distribution of snow on sea-ice.  
Iacozza, J., Barber, D.G., *Atmosphere-ocean*, 1999, 37(1), p.21-51, With French summary. 32 refs.  
Air ice water interaction, Sea ice, Snow ice interface, Snow cover distribution, Snow depth, Snow heat flux, Snow hydrology, Snow optics, Snow cover effect, Photosynthesis
- 53-5258**  
Simulation of ground-water flow at Anchorage, Alaska, 1955-83.  
Patrick, L.D., Brabets, T.P., Glass, R.L., *U.S. Geological Society. Water-resources investigations report*, 1989, No.88-4139, 41p., 12 refs.  
Hydrogeology, Ground water, Water table, Water flow, Wells, Water reserves, Water supply, Computerized simulation, United States—Alaska—Anchorage
- 53-5259**  
Solar and terrestrial radiation interaction between arctic sea ice and clouds. [Solare und terrestrische Strahlungswechselwirkung zwischen arktischen Eisflächen und Wolken]  
Freese, D., *Berichte zur Polarforschung*, 1999, No.312, 116p., In German with English summary. Refs. p.98-102.  
Sea ice, Solar radiation, Boundary layer, Backscattering, Cloud physics, Atmospheric physics, Polar atmospheres, Ice air interface, Heat balance, Mathematical models, Norway—Svalbard
- 53-5260**  
Paleoecological evidence of climate change and historical patterns of planktonic diatom diversity inferred from the Lake Baikal (Russia) sediment record.  
Edlund, M.B., Ann Arbor, University of Michigan, 1998, 166p., University Microfilms order No.9840528, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, 59(7), Jan. 1999, p.3311.  
Lacustrine deposits, Bottom sediment, Drill core analysis, Plankton, Algae, Fossils, Biomass, Paleoecology, Climatic changes, Global change, Paleoclimatology, Russia—Baykal, Lake
- 53-5261**  
Glacial geology and study of the mercury content in till, central British Columbia. [Géologie glaciaire et étude du contenu mercure dans le till, partie centrale de la Colombie-Britannique]  
Plouffe, A., Montréal, Université, 1997, 238p., University Microfilms order No. NQ35627, Ph.D. thesis. In French with English summary. For abstract see Dissertation abstracts international, Sec. B, Aug. 1999, 60(2), p.545.  
Geological surveys, Glaciation, Glacial geology, Glacier oscillation, Glacier flow, Glacial erosion, Glacial deposits, Glacial till, Quaternary deposits, Sediment transport, Geochemistry, Mineralogy, Soil dating, Geochronology, Paleoclimatology, Canada—British Columbia
- 53-5262**  
Single-maximum-advance hypothesis of continental glaciation restricted to the late Wisconsinan, southwestern Alberta.  
Little, E.C., London, University of Western Ontario, 1995, 350p., University Microfilms order No. MM03271, M.S. thesis. For abstract see Masters abstracts international, June 1996, 34(3), p.1125.  
Glaciation, Ice sheets, Geological surveys, Glacial geology, Glacial deposits, Glacier oscillation, Geomorphology, Stratigraphy, Geochronology, Paleoclimatology, Canada—Alberta—Waterton Lakes National Park
- 53-5263**  
Estimation of climate change effects on streamflows, stream temperatures and fish thermal habitat.  
Mohseni, O., Minneapolis, University of Minnesota, 1999, 286p., University Microfilms order No.9918172, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, 60(2), Aug. 1999, p.753.  
Snow hydrology, Snowmelt, Runoff forecasting, Stream flow, Snow cover effect, Water temperature, Animals, Ecosystems, Ecology, Global warming
- 53-5264**  
Paleoclimatic significance of insoluble microparticle records from Canadian Arctic and Greenland ice cores.  
Zdanowicz, C.M., Durham, University of New Hampshire, 1999, 182p., University Microfilms order No.9926037, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, 60(4), Oct. 1999, p.1508.  
Polar atmospheres, Atmospheric circulation, Atmospheric composition, Aerosols, Dust, Volcanic ash, Ice cores, Ice composition, Drill core analysis, Global change, Paleoclimatology, Greenland, Canada—Northwest Territories—Baffin Island
- 53-5265**  
Study of atmospheric icing formation and forces.  
Yoon, B.M., Iowa City, University of Iowa, 1991, 236p., University Microfilms order No.9137014, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, 52(7), Jan. 1992, p.3783.  
Power line icing, Ice accretion, Ice loads, Wind pressure
- 53-5266**  
Fermentation kinetics and process development in the production of deicers (calcium magnesium acetate and calcium magnesium propionate) from lactose of whey.  
Fu, W.G., Manhattan, Kansas State University, 1998, 262p., University Microfilms order No.9914205, Ph.D. thesis. Refs. passim.  
Road icing, Chemical ice prevention, Biomass, Waste disposal, Microbiology, Bacteria, Fungi, Road maintenance, Cost analysis, Computer programs
- 53-5267**  
Postglacial depositional history of the Laptev Sea: mineralogy and sedimentology. [Die postglaziale Sedimentationsgeschichte der Laptewsee: schwermineralogische und sedimentpetrographische Untersuchungen]  
Peregovich, B., *Berichte zur Polarforschung*, 1999, No.316, 85p., In German with English and Russian summaries. Refs. p.73-83.  
Sediment transport, Marine deposits, Sea ice, Sedimentation, Minerals, Shore erosion, Russia—Laptev Sea
- 53-5268**  
Russian-German cooperation SYSTEM LAPTEV SEA 2000: the Lena Delta 1998 expedition.  
Rachold, V., ed, Grigor'ev, M.N., ed, *Berichte zur Polarforschung*, 1999, No.315, Expeditions in Siberia in 1998. Edited by V. Rachold, p.1-259, Refs. passim.  
Expeditions, Climatic changes, Greenhouse effect, Geochronology, Seasonal variations, Ecosystems, Permafrost, Soil microbiology, Carbon dioxide, Subsea permafrost, Active layer, Sedimentation, Deltas, Paleoclimatology, Ground ice, Russia—Laptev Sea, Russia—Lena Delta
- 53-5269**  
EURASIAN ICE SHEETS: expedition to the lake Lyadhej-To (Polar Urals), July-August 1998.  
Hermichen, W.D., Wischer, F., *Berichte zur Polarforschung*, 1999, No.315, Expeditions in Siberia in 1998. Edited by V. Rachold, p.261-268, 4 refs.  
Expeditions, Glacial lakes, Lacustrine deposits, Mapping, Lake water, Water chemistry, Core samplers, Geomorphology, Glacial geology, Russia—Ural Mountains
- 53-5270**  
Persistent organic compounds in the Barents Sea: Canada-Russia collaboration on arctic pollutants.  
Skibo, D.N., Nassichuk, W.W., *Canada. Geological Survey. Current research. Part B*, 1994, No.1994-B, p.1-9, With French summary. 39 refs.  
DLC QE48.C2 Pt.B 1994  
Water pollution, Environmental impact, Sea water, Water chemistry, Suspended sediments, Bottom sediment, Barents Sea
- 53-5271**  
Geophysical studies of massive ground ice, Foshelm Peninsula, Ellesmere Island, Northwest Territories.  
Robinson, S.D., *Canada. Geological Survey. Current research. Part B*, 1994, No.1994-B, p.11-18, With French Summary. 28 refs.  
DLC QE48.C2 Pt.B 1994  
Permafrost surveys, Permafrost distribution, Permafrost thickness, Ground ice, Ice detection, Electromagnetic prospecting, Gravimetric prospecting, Subsurface investigations, Canada—Northwest Territories—Ellesmere Island

53-5272

**Active layer monitoring in natural environments, Mackenzie Valley, Northwest Territories.**

Nixon, F.M., Taylor, A.E., *Canada. Geological Survey. Current research. Part B*, 1994, No.1994-B, p.27-34, With French Summary. 32 refs.

DLC QE48.C2 Pt.B 1994

Permafrost surveys, Permafrost thickness, Permafrost thermal properties, Frozen ground temperature, Permafrost hydrology, Permafrost forecasting, Active layer, Thaw depth, Thermokarst, Canada—Northwest Territories—Mackenzie River

53-5273

**Paleolimnology and global change on the southern Canadian prairies.**

Vance, R.E., Last, W.M., *Canada. Geological Survey. Current research. Part B*, 1994, No.1994-B, p.49-58, With French Summary. 24 refs.

DLC QE48.C2 Pt.B 1994

Plains, Limnology, Lakes, Lake water, Water chemistry, Water level, Lacustrine deposits, Vegetation patterns, Paleobotany, Soil dating, Paleoclimatology, Climatic changes, Global warming, Canada

53-5274

**Ice flow and late glacial lakes of the Fraser Glaciation, central British Columbia.**

Plouffe, A., *Canada. Geological Survey. Current research. Part A*, 1997, No.1997-A, p.133-143, With French Summary. 37 refs.

DLC QE48.C2 1997-A, 1997-B

Geological surveys, Glacial geology, Glaciation, Glacier oscillation, Glacial deposits, Glacial till, Glacier flow, Striations, Glacial lakes, Lacustrine deposits, Geochronology, Paleoclimatology, Canada—British Columbia

53-5275

**Quaternary geology and terrain inventory, Eastern Cordillera NATMAP Project. Report 4: investigation of continental and montane advances in the Beaver Mines map area, southwestern Alberta.**

Holme, P.J., *Canada. Geological Survey. Current research. Part A*, 1997, No.1997-A, p.177-182, With French Summary. 15 refs.

DLC QE48.C2 1997-A, 1997-B

Geological surveys, Pleistocene, Ice sheets, Alpine glaciation, Glacier oscillation, Glacial geology, Glacial deposits, Glacial till, Outwash, Quaternary deposits, Stratigraphy, Paleoclimatology, Canada—Alberta—Waterton Lakes National Park

53-5276

**Quaternary geology of the Nass River region, British Columbia.**

McCuaig, S.J., *Canada. Geological Survey. Current research. Part A*, 1997, No.1997-A, p.183-189, With French Summary. 13 refs.

DLC QE48.C2 1997-A, 1997-B

Geological surveys, Glaciation, Glacial geology, Glacier flow, Glacial deposits, Glacial till, Marine deposits, Lacustrine deposits, Quaternary deposits, Stratigraphy, Canada—British Columbia—Nass River

53-5277

**Proceedings. Comparison between Oyashio region and Bering Sea ecosystems.**

International Symposium on the Subarctic Fisheries Oceanography, Hakodate, Hokkaido, Japan, Jan. 29-30, 1998, Ohtani, K., ed, Miyake, H., ed, Sakurai, Y., ed, Tyler, A.V., ed, *Hokkaido University, Hakodate. Faculty of Fisheries. Memoirs*, Sep. 1998, 45(1), 130p., Refs. passim. For selected papers see 53-5278 through 53-5287.

Oceanographic surveys, Ocean currents, Water transport, Water temperature, Salinity, Marine biology, Ecosystems, Ecology, Plankton, Algae, Nutrient cycle, Biomass, Bering Sea, Okhotsk Sea, Japan—Hokkaido

53-5278

**Bering Sea ecosystem: current and proposed programs addressing lower trophic level responses to climatic change.**

Alexander, V., *Hokkaido University, Hakodate. Faculty of Fisheries. Memoirs*, Sep. 1998, 45(1), International Symposium on the Subarctic Fisheries Oceanography, Hakodate, Hokkaido, Japan, Jan. 29-30, 1998. Proceedings. Comparison between Oyashio region and Bering Sea ecosystems. Edited by K. Ohtani, H. Miyake, Y. Sakurai, and A.V. Tyler, p.4-10, 16 refs.

Research projects, Oceanographic surveys, Climatic changes, Ocean currents, Water transport, Marine biology, Ecosystems, Ecology, Nutrient cycle, Biomass, Bering Sea

53-5279

**Coastal Oyashio Multidisciplinary and Advanced Study (COMPAS) program using new ocean color remote sensing and intensive ship observations.**

Sasaoka, K., Saitoh, S., Ban, S., Kudoh, I., Miyake, H., *Hokkaido University, Hakodate. Faculty of Fisheries. Memoirs*, Sep. 1998, 45(1), International Symposium on the Subarctic Fisheries Oceanography, Hakodate, Hokkaido, Japan, Jan. 29-30, 1998. Proceedings. Comparison between Oyashio region and Bering Sea ecosystems. Edited by K. Ohtani, H. Miyake, Y. Sakurai, and A.V. Tyler, p.11-17, 6 refs.

Oceanographic surveys, Ocean currents, Water transport, Water temperature, Surface temperature, Marine biology, Plankton, Algae, Chlorophylls, Biomass, Radiometry, Spaceborne photography, Bering Sea, Okhotsk Sea, Japan—Hokkaido

53-5280

**Satellite and ship observations of coastal upwelling in the St. Lawrence Island Polynya (SLIP) area in summer, 1994 and 1995.**

Saitoh, S., Eslinger, D.L., Sasaki, H., Shiga, N., Odate, T., Miyoi, T., *Hokkaido University, Hakodate. Faculty of Fisheries. Memoirs*, Sep. 1998, 45(1), International Symposium on the Subarctic Fisheries Oceanography, Hakodate, Hokkaido, Japan, Jan. 29-30, 1998. Proceedings. Comparison between Oyashio region and Bering Sea ecosystems. Edited by K. Ohtani, H. Miyake, Y. Sakurai, and A.V. Tyler, p.18-23, 7 refs.

Oceanographic surveys, Polynyas, Wind factors, Upwelling, Marine biology, Plankton, Algae, Chlorophylls, Biomass, Radiometry, Spaceborne photography, Bering Sea

53-5281

**Tidal current in the Bering Sea: shelf-deep basin exchange.**

Kowalik, Z., *Hokkaido University, Hakodate. Faculty of Fisheries. Memoirs*, Sep. 1998, 45(1), International Symposium on the Subarctic Fisheries Oceanography, Hakodate, Hokkaido, Japan, Jan. 29-30, 1998. Proceedings. Comparison between Oyashio region and Bering Sea ecosystems. Edited by K. Ohtani, H. Miyake, Y. Sakurai, and A.V. Tyler, p.24-29, 15 refs.

Ocean currents, Tidal currents, Water transport, Diurnal variations, Nutrient cycle, Biomass, Bering Sea

53-5282

**Fluctuations of nutrients and primary production structure during winter and spring in Funka Bay.**

Iinuma, T., Imai, K., Odate, T., Maita, Y., *Hokkaido University, Hakodate. Faculty of Fisheries. Memoirs*, Sep. 1998, 45(1), International Symposium on the Subarctic Fisheries Oceanography, Hakodate, Hokkaido, Japan, Jan. 29-30, 1998. Proceedings. Comparison between Oyashio region and Bering Sea ecosystems. Edited by K. Ohtani, H. Miyake, Y. Sakurai, and A.V. Tyler, p.30-35, 10 refs. Funka (Japanese for Volcano) is the popular name for Uchiura Bay in Hokkaido.

Oceanographic surveys, Ocean currents, Water transport, Marine biology, Plankton, Algae, Chlorophylls, Nutrient cycle, Biomass, Japan—Hokkaido, Okhotsk Sea

53-5283

**Short-time variation in low trophic level productivity and hydrographic conditions in Funka Bay.**

Miyake, H., Yanada, M., Nishi, T., Hoshizawa, K., *Hokkaido University, Hakodate. Faculty of Fisheries. Memoirs*, Sep. 1998, 45(1), International Symposium on the Subarctic Fisheries Oceanography, Hakodate, Hokkaido, Japan, Jan. 29-30, 1998. Proceedings. Comparison between Oyashio region and Bering Sea ecosystems. Edited by K. Ohtani, H. Miyake, Y. Sakurai, and A.V. Tyler, p.36-41, 13 refs.

Oceanographic surveys, Ocean currents, Water transport, Water temperature, Salinity, Marine biology, Suspended sediments, Plankton, Algae, Nutrient cycle, Biomass, Okhotsk Sea, Japan—Hokkaido

53-5284

**Succession of the calanoid copepod community in Funka Bay during spring phytoplankton bloom.**

Ban, S., Miyagawa, Y., Okuda, Y., Shiga, N., *Hokkaido University, Hakodate. Faculty of Fisheries. Memoirs*, Sep. 1998, 45(1), International Symposium on the Subarctic Fisheries Oceanography, Hakodate, Hokkaido, Japan, Jan. 29-30, 1998. Proceedings. Comparison between Oyashio region and Bering Sea ecosystems. Edited by K. Ohtani, H. Miyake, Y. Sakurai, and A.V. Tyler, p.42-47, 10 refs.

Oceanographic surveys, Ocean currents, Water transport, Water temperature, Salinity, Marine biology, Plankton, Algae, Biomass, Okhotsk Sea, Japan—Hokkaido

53-5285

**Interannual variation and vertical distribution of appendicularians in the south of St. Lawrence Island, northern Bering Sea shelf, in summer.**

Shiga, N., Takagi, S., Nishiuchi, K., *Hokkaido University, Hakodate. Faculty of Fisheries. Memoirs*, Sep. 1998, 45(1), International Symposium on the Subarctic Fisheries Oceanography, Hakodate, Hokkaido, Japan, Jan. 29-30, 1998. Proceedings. Comparison between Oyashio region and Bering Sea ecosystems. Edited by K. Ohtani, H. Miyake, Y. Sakurai, and A.V. Tyler, p.48-51, 10 refs.

Oceanographic surveys, Polynyas, Water temperature, Salinity, Marine biology, Ecology, Plankton, Biomass, Bering Sea

53-5286

**Temporal changes in distribution of walleye pollock eggs south of Hokkaido, Japan.**

Kono, T., Watanabe, K., Yabuki, K., Hamatsu, T., *Hokkaido University, Hakodate. Faculty of Fisheries. Memoirs*, Sep. 1998, 45(1), International Symposium on the Subarctic Fisheries Oceanography, Hakodate, Hokkaido, Japan, Jan. 29-30, 1998. Proceedings. Comparison between Oyashio region and Bering Sea ecosystems. Edited by K. Ohtani, H. Miyake, Y. Sakurai, and A.V. Tyler, p.52-55, 9 refs.

Oceanographic surveys, Ocean currents, Water transport, Water temperature, Salinity, Marine biology, Ecology, Okhotsk Sea, Japan—Hokkaido

53-5287

**Numerical simulations of the transport process of walleye pollock eggs into Funka Bay.**

Shimizu, M., Isoda, Y., *Hokkaido University, Hakodate. Faculty of Fisheries. Memoirs*, Sep. 1998, 45(1), International Symposium on the Subarctic Fisheries Oceanography, Hakodate, Hokkaido, Japan, Jan. 29-30, 1998. Proceedings. Comparison between Oyashio region and Bering Sea ecosystems. Edited by K. Ohtani, H. Miyake, Y. Sakurai, and A.V. Tyler, p.56-59, 7 refs.

Ocean currents, Water transport, Air water interactions, Wind factors, Wind direction, Marine biology, Ecology, Okhotsk Sea, Japan—Hokkaido

53-5288

Vistula glaciation in the Bramka region in the western part of the Mazury Lakeland. [Zlodowacenie Wisły w rejonie Bramki w zachodniej części Pojezierza Mazurskiego]

Roman, M., *Kwartalnik geologiczny*, 1990, 34(2), p.325-337, In Polish with Russian and English summaries. 28 refs.

DLC QE1.W26 Vol.34 1990

Glaciation, Quaternary deposits, Paleoclimatology, Outwash, Glacier tongues, Glacial lakes, Glacial deposits, Poland

53-5289

Question of the age and glaciers extent during the Last Glaciation (Vistulian) in the Polish Tatra Mts. [Problem wieku i zasięgu lodowców ostatniego zlodowacenia (Vistulian) w Tatrach Polskich]

Lindner, L., Dzierżek, J., Nitychoruk, J., *Kwartalnik geologiczny*, 1990, 34(2), p.339-353, In Polish with Russian and English summaries. 58 refs.

DLC QE1.W26 Vol.34 1990

Alpine glaciation, Mountain glaciers, Paleoclimatology, Glacial deposits, Age determination, Poland—Tatra Mountains

53-5290

Glaciers.

Knight, P.G., Cheltenham, England, Stanley Thornes (Publishers) Ltd., 1999, 261p., Refs. p.227-256.

Glaciology, Glacier oscillation, Glacier mass balance, Glacial hydrology, Glacial meteorology, Glacier flow, Glacier ice, Firn, Ice cores, Ice temperature, Ice composition, Global change

53-5291

Inventory of surging glaciers of the Pamirs. [Katalog pul'sirulushchikh lednikov Pamira]

Osipova, G.B., Tsvetkov, D.G., Shchetinnikov, A.S., Rudak, M.S., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1998, No.85, p.137-147, In Russian with English summary. Refs. p.134-136.

DLC QE575.A43

Glacier surges, Glacier surveys, Mountain glaciers, Classifications, Pamirs, CIS—Central Asia

53-5292

Vostok Lake, Antarctica (glaciological, biological, planetary aspects). [Ozero Vostok, Antarktida (gliatsiologicheskii, biologicheskii, planetologicheskii aspekty)]

Zotikov, I.A., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1998, No.85, p.137-147, In Russian with English summary. 33 refs.

DLC QE575.A43

Glacial lakes, Subglacial observations, Subglacial drainage, Radio echo soundings, Ice sheets, Geothermal thawing, Antarctica—Vostok Station

53-5293

On connection of density of surface ice layer in Antarctica with wind velocity. [O svyazi plotnosti poverkhnostnogo sloia snega v Antarktide so skorost'iu vetra]

Lipencov, V.I.A., Ekalkin, A.A., Barkov, N.I., Pourchet, M., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1998, No.85, p.148-158, In Russian with English summary. 44 refs.

DLC QE575.A43

Snow density, Snow air interface, Wind velocity, Air temperature, Statistical analysis, Wind factors, Antarctica

53-5294

Numerical model of the dynamics of ice sheet along fixed pipe of flow taking into account effects of isostasy and interaction with sea. [Chislennaiia model' dinamiki lednikovogo pokrova vdol' fiksirovannoi trubki toka s uchetom izostazii i vzaimodeistvia s morem]

Malikova, D.R., Salamatin, A.N., Duval, P., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1998, No.85, p.159-165, In Russian with English summary. 20 refs.

DLC QE575.A43

Mathematical models, Ice water interface, Isostasy, Ice sheets, Glacier flow, Sea level, Antarctica—Mirny Station, Antarctica—East Antarctica

53-5295

Satellite topographic monitoring of glaciological landscapes of high latitude Arctic. [Sputnikovyï topograficheskii monitoring lednikovyx landshaftov vysokoshirotnoi Arktiki]

Sharov, A.I., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1998, No.85, p.166-177, In Russian with English summary. 13 refs.

DLC QE575.A43

Spaceborne photography, Topographic surveys, Glacier surveys, Remote sensing, Topographic maps, Geodetic surveys, Sea level, Radiometry, Ice cover thickness, Image processing, Russia—Franz Josef Land

53-5296

Modelling of flow of outlet glaciers on Vilchek Land, Franz Josef Land. [Modelirovanie tekhnika vyvodnykh lednikov Zemli Vil'cheka, Zemlia Frantsa-Iosifa]

Vil'chinskii, A.V., Chugunov, V.A., Glazovskii, A.F., Macheret, I.U.I.A., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1998, No.85, p.178-186, In Russian with English summary. 16 refs.

DLC QE575.A43

Mathematical models, Glacier mass balance, Glacier surveys, Glacier flow, Basal sliding, Bedrock, Ice water interface, Russia—Franz Josef Land

53-5297

Peculiarities of the dynamics of subpolar glaciers as a result of climate changes. [Osobennosti dinamiki subpolarnykh lednikov pri izmeneniiakh klimata]

Glazovskii, A.F., Krass, M.S., Macheret, I.U.I.A., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1998, No.85, p.187-195, In Russian with English summary. 21 refs.

DLC QE575.A43

Climatic changes, Climatic factors, Glacier surges, Thermal regime, Heat flux, Ice thermal properties, Mathematical models, Glacier melting, Norway—Spitsbergen

53-5298

Present-day fluctuations of Vavilov ice dome on Severnaya Zemlya. [Sovremennye kolebania lednikovogo kupola Vavilova na Severnoi Zemle]

Golubev, V.N., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1998, No.85, p.196-204, In Russian with English summary. 30 refs.

DLC QE575.A43

Glacier oscillation, Glacier alimentation, Glacier flow, Glacier melting, Glacier ablation, Russia—Severnaya Zemlya, Russia—Vavilov Ice Dome

53-5299

Last deglaciation of Barents Kara shelf, the role of gravitational collapses and surges. [Posledniaia deglatsiatsiia Barentsevo-Karskogo shel'fa: rol' gravitatsionnykh kollapsov i serdzhel]

Grosval'd, M.G., Krass, M.S., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1998, No.85, p.205-218, In Russian with English summary. 57 refs.

DLC QE575.A43

Ocean bottom, Paleoclimatology, Moraines, Ice cover, Thermal regime, Temperature effects, Marine geology, Glacial geology, Barents Sea, Russia—Kara Sea

53-5300

New data on the present day and ancient glaciation of Taimir and Severnaya Zemlya areas. [Novye dannye o sovremennom i drevnem oledeneniï Taimyro-Severozemel'skoi oblasti]

Bol'shianov, D.I.U., Savatiugin, L.M., Shneider, G.V., Molodkov, A.N., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1998, No.85, p.219-222, In Russian with English summary. 12 refs.

DLC QE575.A43

Pleistocene, Glacier surveys, Glaciation, Landscape development, Russia—Taymyr Peninsula, Russia—Severnaya Zemlya

53-5301

Experience of inventory of surging glaciers of the Pamirs. [Opyt katalogizatsii pul'sirulushchikh lednikov Pamira]

Osipova, G.B., Tsvetkov, D.G., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1998, No.85, p.223-232, In Russian with English summary. 20 refs.

DLC QE575.A43

Glacier surges, Glacier surveys, Classifications, Mountain glaciers, Spaceborne photography, Pamirs, CIS—Central Asia

53-5302

Geophysical and paleoclimatic implications of the stacked temperature profile from the deep borehole at Vostok station (Antarctica).

Salamatin, A.N., Vostretsov, R.N., Petit, J.R., Lipencov, V.I.A., Barkov, N.I., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1998, No.85, p.233-240, In English and Russian. 11 refs.

DLC QE575.A43

Paleoclimatology, Geophysical surveys, Boreholes, Ice cores, Ice cover thickness, Ice dating, Ice sheets, Heat flux, Isotope analysis, Antarctica—Vostok Station

53-5303

Glaciological Symposium in Dubna in May, 1998. [Gliatsiologicheskii simpozium v Dubne v mae 1998 goda]

Glazovskii, A.F., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1998, No.85, p.241-246, In Russian.

DLC QE575.A43

Glaciology, Meetings, International cooperation

53-5304

Subglacial lake in the area of the Vostok station (Antarctica) as a subject of complex investigations at the end of XX-beginning of XXI centuries: review of the International meeting in St. Petersburg, March 24-26, 1998. [Podlednoe ozero v rafone stantsii Vostok (Antarktida) kak ob'ekt kompleksnykh issledovaniï v kontse XX-nachale XXI vekov: obzor mezhdunarodnogo soveshchaniia v Sankt-Peterburge, 24-26 marta 1998 g.]

Verkulich, S.R., Danilov, A.I., Kotliakov, V.M., Lukin, V.V., *Rossiiskaia akademiia nauk. Institut geografii. Materialy gliatsiologicheskikh issledovaniï*, June 1998, No.85, p.247-250, In Russian. 4 refs.

DLC QE575.A43

Glacial lakes, Subglacial observations, Meetings, International cooperation, Antarctica—Vostok Station