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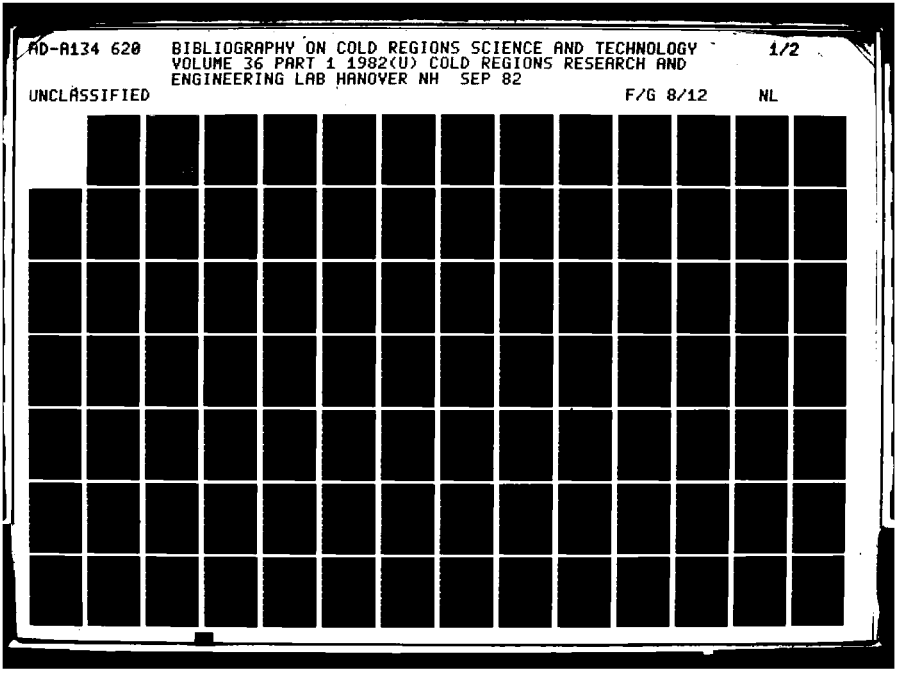

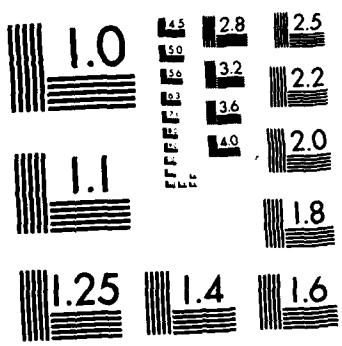

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VOLUME 36, PART 1, 1982

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BIBLIOGRAPHY ON COLD REGIONS SCIENCE AND TECHNOLOGY
Volume 36, 1982

INTRODUCTION

The *Bibliography on Cold Regions Science and Technology* was first published in 1951 and is a continuing publication of the Cold Regions Bibliography Project in the Science and Technology Division of the Library of Congress. It is sponsored by and prepared for the Cold Regions Research and Engineering Laboratory (formerly Snow, Ice and Permafrost Research Establishment) of the U.S. Army Corps of Engineers. Volumes 1-15 were issued as the *Bibliography on Snow, Ice and Permafrost,* SIPRE Report 12. Beginning with volume 16 the designation was changed to CRREL Report 12. With volume 20 the title was changed to *Bibliography on Snow, Ice and Frozen Ground, with Abstracts,* and with volume 23 the current title was adopted.

The present volume contains material accessioned between October 1981 and September 1982. It contains the full citation of 4268 items, in many cases with abstracts. Pt. 2 is an index section divided into author and subject indexes. In the author index principal and joint personal and corporate authors are listed along with the title, date, pagination, and language of the document and the accession number. The subject index is composed of three basic elements: 1) terms taken from a controlled vocabulary based on the *Thesaurus of Engineering and Scientific Terms* (LEX-EJC), 2) free terms added as needed, 3) geographic names, generally entered under countries. The terms are listed in a single alphabetical arrangement, along with title (original, translated, abridged, expanded, or supplied), principal author, date, pagination, and language of pertinent documents, and their accession numbers.

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Geza T. Thuronyi, Head
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36-1
Ground freezing. The 2nd International Symposium on Ground Freezing. Preprints.
International Symposium on Ground Freezing, 2nd, *Trondheim*, Norway, June 24-26, 1980, Trondheim, University, Norwegian Institute of Technology, 1980. 1101p., Refs. passim. For individual papers see 36-2 through 36-92.
Soil freezing, Frozen ground mechanics, Frozen ground thermodynamics, Permafrost physics, Earthwork, Frost action, Meetings.

36-2
State-of-the-art report: ground freezing: mechanical properties, processes and design.
Jessberger, H.L., *International Symposium on Ground* Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.1-33, Refs. p.30-33.
Soil freezing, Frozen ground mechanics, Frozen ground strength, *Soil structure*, Geocryology, Frozen ground physics, Tensile properties, Compressive properties, Soil creep, Design.

36-3
Strain rate, temperature, and sample size effects on compression and tensile properties of frozen sand.
Bragg, R.A., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.34-47, 9 refs.
Andersland, O.B.
Frozen sand, Strain tests, Temperature effects, Compressive properties, Tensile properties.

36-4
Stress-strain and volumetric behavior of frozen soil.
Lade, P.V., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.48-64, 12 refs.
Jessberger, H.L., Diekmann, N.
Frozen ground strength, Frozen sand, Stress strain diagrams, Triaxial tests, Pressure, Volume.

36-5
Mechanical properties of frozen coarse-grained soils.
Tsytovich, N.A., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.65-74, 13 refs.
Kronik, IA.A., Gavrilov, A.N., Vorob'ev, E.A.
Frozen ground mechanics, Frozen ground strength, Geocryology, Compressive properties, Temperature effects, Stresses.

36-6
Effect of freezing process on the selected properties *of frost-susceptible soils.*
Skarżyńska, K.M., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.75-84, 9 refs.
Frozen ground strength, Soil freezing, Soil structure, Soil texture, Compressive properties, Frost heave, Soil water, Experimentation, Volume.

36-7
Geotechnical exploration related to artificial ground freezing.
Porturas, F.A., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.85-94, 10 refs.
Rheology, Soil freezing, Artificial freezing, Soil stabilization, Frozen ground strength, Soil water, Loads (forces), Structures, Engineering.

36-8
Kinetic nature of the long term strength of frozen soils.
Fish, A.M., MP 1450, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.95-108, 23 refs.
Frozen ground strength, Soil creep, Stresses, Soil texture, Triaxial tests, Rheology, Temperature effects, Analysis (mathematics).
Temperature dependencies of the failure activation energy of frozen soils in the temperature range from -0.55 to -20C were studied. The analysis was based upon experimental data on the long-term failure of six frozen soils: Manchester and Ottawa sands, Suffield and Bat-Bayoss clays, Hanover silt and Kelovey sandy loam. The failure activation energy was expressed as a function of the rheological parameters of the long-term strength equation in the form of the sum of two components: an initial value that is independent of failure stress and a stress-dependent increment of the activation energy. The analysis showed that the initial value of the failure activation energy varied between the limits of 10.4 and 19.4 kcal/mole, the variation of stress-dependent increments was between 0.3 and 6.6 kcal/mole, and the sum varied from 12.9 to 19.7 kcal/mole. The smaller initial and sum values of the activation energy refer to the clay soils and the greater values to the sandy soils.

36-9
Strength of frozen silt as a function of ice content and dry unit weight.
Sayles, F.H., et al, MP 1451, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.109-119, 12 refs.
Carbee, D.L.
Frozen ground strength, Ground water, Water content, Stress strain diagrams, Compressive properties, Ground ice, Loads (forces), Grain size.
A total of 45 unconfined compression tests were conducted on frozen specimens of remolded, saturated Fairbanks silt at dry unit weights ranging from 993 to 1490 kilograms per cubic meter with total water contents ranging from 0.28 to 0.58. The rate of strain was 0.005/s. Using the criterion that the ice matrix in the soil fractures at the first point of significant yield shown in the stress-strain curve, which occurs at less than 0.01 strain in this study, the "ice matrix strength" is shown to be nearly proportional to the volumetric ice content of the soil for these tests. The strength at 0.2 strain appears to be nearly independent of the dry unit weight and water content of the soil

36-10
Strength and deformability of clays while pressing through them the rigid plates and subsequent freezing.
Sadovskiĭ, A.V., *et al, International Symposium on* Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.120-131, 1 ref
Tikhomirov, S.M.
Clays, Soil freezing, Deformation, Frozen ground mechanics, Frozen ground strength, Plates, Pressure, Soil structure, Water content, Strain tests.

36-11
Strength of frozen partially saturated sand-clay mixtures.
Demars, K.R., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.132-143, 11 refs.
Vanover, E.A.
Clay soils, Sands, Frozen ground strength, Saturation, Compressive properties, Unfrozen water content, Soil freezing, Tests, Density (mass/volume).

36-12
Laboratory determination of strength properties of frozen salt marine clay.
Aas, G., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.144-156, 3 refs.
Clays, Soil freezing, Stress strain diagrams, Tunnels, Frozen ground strength, Shear stress, Soil creep, Deformation, Salinity, Tests, Compressive properties, Time factor.

36-13
Adfreeze strength and creep of frozen soils measured by model pile tests.
Parameswaran, V.R., International Symposium on *Ground Freezing*, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.157-164, 3 refs.
Sands, Soil freezing, Frozen ground strength, Soil creep, Piles, Bearing strength, Static loads, Shear strength, Tests.

36-14
Strength of frozen fine-grained soils at warm temperatures.
Phukan, A., International Symposium on Ground *Freezing*, 2nd, *Trondheim*, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.165-179, 17 refs.
Frozen ground strength, Fines, Grain size, Ground ice, Stress strain diagrams, Discontinuous permafrost, *Compressive properties, Excavation, Temperature effects.*

36-15
Thermal stability in uplifted marine deposits at Jakobshavn, Greenland.
Foged, N., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.180-189, 7 refs.
Baek-Madsen, C.
Marine deposits, Thermal properties, Frozen ground settling, Freezing points, Permafrost depth, Salinity, Ions, Muskeg.

36-16
Creep of frozen soil, a preliminary physical interpretation.
Pusch, R., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.190-201, 8 refs.
Frozen ground strength, Soil creep, Ice crystals, Ice creep, Strain tests, Stress concentration, Cracking (fracturing), Soil water, Rheology.

36-17
Description of creep behavior of frozen soil using constant strain rate compression tests.
Diekmann, N., et al, International Symposium on *Ground Freezing*, 2nd, *Trondheim*, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.202-211, 4 refs.
Ebel, W.
Frozen ground compression, Soil creep, Rheology, Stress strain diagrams, Static loads, Time factor, Models, Compressive properties, Tests.

36-18
Uniaxial creep tests on a morainic material from Switzerland.
Herzog, P., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.212-22[illegible] 8 refs.
Hofer, A.
Moraines, Soil creep, Frozen ground strength, Static loads, Strains, Rheology.

36-19
Creep behavior of frozen sand under cyclic loading conditions.
Li, J.C., et al, I[illegible]rnational Symposium on Ground Freezing, 2nd, T[illegible]m, Norway, June 24-26, 1980. Preprints, Trondh[illegible] University, Norwegian Institute of Technology, 1980, p.223-234, 7 refs.
Andersland, O.B.
Frozen ground strength, Sands, Rheology, Soil creep, Static loads, Dynamic loads, Loads (forces), Stresses, Foundations, Vibration.

36-20
***Poisson's ratio of sandy frozen soil, under long term* stress, by creep tests.**
Akagawa, S., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.235-246, 7 refs.
Frozen ground mechanics, Soil creep, Stress strain diagrams, Compressive properties, Rheology, Engineering, Deformation, Saturation, Tests.

36-21
Creep of frozen shafts: a semi-analytical model.
Winter, H., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.247-261, 5 refs.
Frozen ground mechanics, Shafts (excavations), Stresses, Rheology, Soil creep, Static loads, Temperature variations, Models.

36-22
Deformation properties of frozen soils.
Finborud, I., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.262-271, 5 refs.
Berggren, A.L.
Frozen ground mechanics, Deformation, Rheology, Soil creep, Sands, Clay soils, Triaxial tests, Artificial freezing, Permafrost physics.

36-23
Bearing behavior of frozen soil.
Eckardt, H., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.272-284, 4 refs.
Frozen ground strength, Bearing strength, Static loads, Rheology, Stresses, Compressive properties, Tensile properties, Soil creep, Mathematical models.

36-24
Mechanism for predicting the effect of cyclic freeze-thaw on soil behavior.
Alkire, B.D., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.285-296, 8 refs.
Frozen ground mechanics, Freeze thaw cycles, Stresses, Loads (forces), Triaxial tests, Stress strain diagrams, Temperature effects.

36-25
Strength of a frozen ore in shear.
Udd, J.E., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.297-308, 9 refs.
Pakalnis, V., Jr.
Frozen rocks, Frozen ground strength, Grain size, Shear stress, Mines (excavations), Minerals.

36-26
Strength reductions due to the thawing of frozen ores.
Udd, J.E., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.309-324, 5 refs.
Yap, S.M.
Frozen rocks, Frozen ground strength, Ground thawing, Permafrost thermal properties, Mines (excavations), Compressive properties, Shear strength, Temperature effects.

36-27
Overconsolidation effects of ground freezing.
Chamberlain, E.J., MP 1452, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.325-337, 10 refs.
Soil freezing, Clay soils, Freeze thaw tests, Frozen ground settling, Frozen ground strength, Frozen ground mechanics, Soil water migration, Water content, Stresses, Density (mass/volume), Soil structure, Overconsolidation.
Settlement of clay soils after freezing and thawing is the result of the suction forces that draw pore water to the freezing front. These suction forces cause an increase in the effective stress on the clay beneath the freezing front, and thus cause an overconsolidation of the clay. As these suction forces often exceed 1 atmosphere, their direct measurement is not easy. The volume changes resulting from the freezing and thawing of clays are related to the plastic limit and have been observed in the laboratory to be as high as 25%. If provisions are not made to account for these volume changes in a ground freezing project, considerable damage to structures can occur from settlement and the resulting stresses.

36-28
Research of the behavior of non-cohesive soils when treated by artificial freezing.
De Beer, E., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.338-353.
Buttiens, E., Maertens, J.
Soil freezing, Artificial freezing, Ground thawing, Soil creep, Frozen ground mechanics, Bearing strength, Freeze thaw tests, Grain size, Soil temperature, Frost heave, Settlement (structural).

36-29
Ground freezing: thermal properties, modelling of processes and thermal design.
Frivik, P.E., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.354-373, 45 refs.
Soil freezing, Unfrozen water content, Artificial freezing, Thermal conductivity, Frozen ground thermodynamics, Thermodynamics, Mathematical models, Design.

36-30
Cryoscopic method for measuring the unfrozen water content in soils.
Chistotinov, L.V., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.374-382, 2 refs.
Soil water, Unfrozen water content, Frozen ground physics, Phase transformations, Temperature effects, Freeze thaw tests, Low temperature tests, Geocryology.

36-31
Measurement of unfrozen water content by time domain reflectometry.
Smith, M.W., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.383-399, 18 refs.
Patterson, D.E.
Unfrozen water content, Soil water, Frozen ground physics, Soil freezing, Dielectric properties, Geocryology, Temperature effects, Freeze thaw tests.

36-32
Unfrozen water contents of submarine permafrost determined by nuclear magnetic resonance.
Tice, A.R., et al, MP 1412, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.400-412, 10 refs.
Anderson, D.M., Sterrett, K.F.
Subsea permafrost, Unfrozen water content, Melting points, Nuclear magnetic resonance, Temperature effects, Temperature measurement, Drill core analysis.
Prior work resulted in the development of techniques to measure the unfrozen water contents in frozen soils by nuclear magnetic resonance (NMR). It has been demonstrated that NMR is a promising new method for the determination of phase composition (the measurement of unfrozen water content as a function of temperature) which circumvents many of the limitations inherent in the adiabatic and isothermal calorimetric techniques. The NMR technique makes it possible, in a non-destructive, non-intrusive way, to explore hysteresis by determining both cooling and warming curves. Corrections are made for dissolved paramagnetic impurities which have the effect of increasing the signal intensity at decreasing temperatures. The results demonstrate that NMR techniques can be effectively utilized both at and below the melting point of ice in frozen soils and that accurate melting points (freezing point depressions) can be determined.

36-33
Thermal properties of the typical soils both in thawed and frozen states.
Yu, Y., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.413-426, 3 refs.
Tao, Z., Fu, S.
Frozen ground thermodynamics, Permafrost thermal properties, Phase transformations, Heat capacity, Ground thawing, Specific heat, Thermal conductivity, Thermal diffusion, Latent heat.

36-34
Thermal properties of soils and rock materials.
Johansen, Ö., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.427-453, 14 refs.
Frivik, P.E.
Frozen ground thermodynamics, Frozen rocks, Thermal conductivity, Heat capacity, Unfrozen water content, Temperature effects, Specific heat.

36-35
Numerical determination of thermal characteristics of freezing-thawing soil.
Pavlov, A.R., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.454-461, 5 refs.
Permiakov, P.P.
Frozen ground thermodynamics, Freeze thaw tests, Thermal conductivity, Analysis (mathematics), Specific heat, Soil aggregates.

36-36
Influence of cyclic freezing-thawing on heat and mass transfer characteristics of the clay soil.
Efimov, S.S., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.462-469, 7 refs.
Kozhevnikov, N.N., Kurilko, A.S., Nikitina, L.M., Stepanov, A.V.
Clay soils, Freeze thaw cycles, Heat transfer, Mass transfer, Thermal conductivity, Thermal diffusion.

36-37
Thermal modeling of freezing soil systems.
Jumikis, A.R., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.470-483, 23 refs.
Soil freezing, Artificial freezing, Thermal properties, Thermal conductivity, Pipes (tubes), Mathematical models, Temperature effects.

36-38
Influence of temperature field on properties of twolayered foundation.
Sinitsyn, A.P., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.484-492, 9 refs.
Frozen ground physics, Temperature effects, Wave propagation, Foundations, Thermal conductivity, Seismic velocity.

36-39
Temperature regime and mechanical characteristics of the body of the crushed rock.
Pavilonskii, V.M., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.493-501, 4 refs.
Zakharov, M.N., Klimov, V.I.
Frozen rocks, Thermal regime, Soil stabilization, Thermal conductivity, Boundary layer, Tensile properties, Phase transformations, Mathematical models, Stefan problem, Water content, Heat transfer, Grain size.

36-40
Heat and mass flow associated with a freezing front.
Holden, J.T., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.502-514, 21 refs.
Jones, R.H., Dudek, S.J-M.
Soil freezing, Heat transfer, Mass transfer, Soil water migration, Frost heave, Porous materials, Mathematical models, Frost penetration, Temperature variations.

36-41
Step function model of ice segregation.
Outcalt, S.I., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.515-524, 4 refs.
Frost penetration, Soil freezing, Frost heave, Ice lenses, Ice formation, Stefan problem, Ground ice, Mathematical models, Surface temperature, Water table.

36-42
Engineering-physical bases of temperature regime regulation of ground massives in northern construction.
Mel'nikov, P.I., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.525-534, 6 refs.
Makarov, V.I., Plotnikov, A.A.
Permafrost thermal properties, Foundations, Subsurface structures, Engineering, Soil freezing, Frozen ground temperature, Permafrost beneath structures, Stresses.

36-43
Analysis of the temperature field of the artificial frozen wall of the deep shaft.
Zhu, L., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.535-544, 3 refs.
Artificial freezing, Shafts (excavations), Walls, Frozen ground temperature, Frost penetration, Drilling, Mathematical models, Computer applications.

36-44
Thermal calculations in the design of frozen soil structures.
Muzás, F., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.545-555, 1 ref.
Frozen ground thermodynamics, Soil structure, Soil freezing, Artificial freezing, Freezing points, Design, Temperature measurement.

36-45
Thermal design of artificial soil freezing systems.
Frivik, P.E., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.556-567, 19 refs.
Thorbergsen, E.
Soil freezing, Artificial freezing, Thermal regime, Refrigeration, Frozen ground thermodynamics, Design, Computer applications, Pipes (tubes), Seepage.

36-46
Brine substitute liquids for soil freezing at very low temperatures.
Porcellinis, P. de, et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.568-580, 3 refs.
Rojo, J.L.
Soil freezing, Frozen ground strength, Frozen liquids, Viscosity, Temperature effects, Heat transfer, Brines, Thermal properties, Hydraulics, Low temperature tests.

36-47
Frost action in soils, state of the art.
Loch, J.P.G., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.581-596, Refs, p.593-596.
Frost heave, Frost action, Soil freezing, Ice lenses, Mass transfer, Water films, Soil water migration, Heat transfer, Tests, Analysis (mathematics).

36-48
Pressure distribution and effective stress in frozen soils.
Groenevelt, P.H., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.597-610, 3 refs.
Kay, B.D.
Frozen ground physics, Soil pressure, Loads (forces), Frost heave, Stresses, Volume, Ice lenses, Analysis (mathematics).

36-49
Irreversible thermodynamic treatment of frost heave.
Förland, T., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.611-617, 3 refs.
Ratkje, S.K.
Frost heave, Mass transfer, Heat transfer, Frozen ground thermodynamics, Ice lenses, Temperature factors, Analysis (mathematics).

36-50
Thermorheological principles of heaving.
Grechishchev, S.E., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.618-625, 17 refs.
Frost heave, Rheology, Frozen ground thermodynamics, Ice solid interface, Water films, Soil freezing, Geocryology, Analysis (mathematics).

36-51
Location of segregated ice in frost susceptible soil.
Penner, E., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.626-639, 4 refs.
Goodrich, L.E.
Soil freezing, Ice formation, Ice lenses, Temperature gradients, Soil pressure, Phase transformations, X ray analysis, Particle size distribution.

36-52
Freezing point depression in moist soil.
Kinoshita, S., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.640-646, 4 refs.
Ishizaki, T.
Freezing points, Frost heave, Soil water, Water content, Soil pressure, Latent heat

36-53
Pore water migration studies at a freezing boundary.
Chistotinov, L.V., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.647-655, 3 refs.
Soil freezing, Freezing points, Soil water migration, Phase transformations, Water content, Temperature effects, Experimentation.

36-54
Numerical solutions for rigid-ice model of secondary frost heave.
O'Neill, K., et al, MP 1454, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.656-669, 10 refs.
Miller, R.D.
Frost heave, Ground ice, Soil freezing, Ice formation, Ice lenses, Analysis (mathematics), Temperature effects.

36-55
Thermodynamic method in the study of frost heave amount in natural soil.
Gao, M., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.670-679, 4 refs.
Ding, D.
Frost heave, Frozen ground thermodynamics, Soil water, Water content, Stefan problem, Soil temperature, Soil pressure.

36-56
Salt treatment effects on frost heave performance.
Yong, R.N., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.680-691, 6 refs.
Serag-Eldin, N.
Frost heave, Salting, Antifreezes, Soil freezing, Soil water, Water content, Density (mass/volume), Ground ice.

36-57
Some characteristics of water saturated gravel during freezing and its applications.
Chen, X., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.692-701, 6 refs.
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Gravel, Freezing, Water content, Water pressure, Soil water migration, Frost heave, Frost penetration.

36-58
Pressure in the zone of ground freezing.
Pietrzyk, K., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.702-712, 7 refs.
Soil freezing, Soil pressure, Grain size, Frost heave, Perosity, Unfrozen water content.

36-59
Upper limit of heaving pressure derived by pore water pressure measurements of partially frozen soil.
Takashi, T., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.713-724, 18 refs.
Ohrai, T., Yamamoto, H., Okamoto, J.
Soil freezing, Frost heave, Soil pressure, Soil water, Water pressure, Frozen ground temperature, Grain size, Ice lenses, Time factor.

36-60
Horizontal frost heave thrust acted on buttress constructions.
Tong, C., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.725-734, 2 refs.
Shen, Z.
Frost heave, Soil water, Water content, Structures, Loads (forces), Temperature effects, Frost penetration, Soil freezing.

36-61
Frost heaving and hydraulic conductivity.
Johnson, B.D., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.735-747, 16 refs.
Kettle, R.J.
Frost heave, Soil freezing, Frost resistance, Compressive properties, Frozen ground strength, Soil water, Soil cement, Clays.

36-62
Developments and applications of frost susceptibility testing.
Jones, R.H., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.748-759, 20 refs.
Soil freezing, Freezing indexes, Frost heave, Frost resistance, Surface temperature, Tests, Artificial freezing, Air temperature, Forecasting.

36-63
Frost heave tests on tills with an apparatus for constant heat flow.
Fredén, S., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.760-771.
Stenberg, L.
Frost heave, Frost resistance, Soil pressure, Glacial deposits, Heat flux, Measuring instruments, Loads (forces).

36-64
Frost susceptibility of soils: influence of the thermal variables and the depth to the water table.
Gorlé, D., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980 Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.772-783, 18 refs.
Soil freezing, Frost resistance, Frost heave, Temperature gradients, Water table, Soil water, Tests.

36-65
Frost heave studies by natural freezing.
Stenberg, L., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980 Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.784-794, 4 refs.
Frost heave, Soil freezing, Frost resistance, Frost indexes, Frost penetration, Soil water, Soil temperature, Heat flux.

36-66
Attempts of a new formulation on the criterion of ground frost heaving.
Pietrzyk, K., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980 Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.795-806, 4 refs
Frost heave, Soil freezing, Soil composition, Unfrozen water content, Porosity, Particle size distribution.

36-67
Determination of frost susceptibility for grounds using a direct testing method.
Vlad, N.V., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980 Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.807-814, 3 refs.
Soil freezing, Frost resistance, Roadbeds, Temperature effects, Tests.

36-68
Influence of mineral composition on frost susceptibility of soils.
Brandl, H., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.815-823, 3 refs.
Frost resistance, Soil freezing, Soil composition, Mineralogy, Freeze thaw tests.

36-69
Heaving conditions by freezing of soils.
Saetersdal, R., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980 Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.824-836, 41 refs.
Soil freezing, Frost heave, Soil pressure, Frost resistance, Ground thawing.

36-70
Engineering practice in artificial ground freezing—the state of the art.
Jones, J.S., Jr., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980 Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.837-856, Refs, p.852-856
Soil freezing, Artificial freezing, Engineering, Tunneling (excavation), Earthwork, Soil stabilization.

36-71
Artificial freezing and cooling of soils at the construction.
Sadovskii, A.V., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.857-862, 5 refs.
Dorman, I.A.
Soil freezing, Artificial freezing, Engineering, Earthwork, Soil stabilization.

36-72
Engineering quality assurance for construction ground freezing.
Shuster, J.A., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980 Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.863-879
Soil freezing, Artificial freezing, Construction, Soil stabilization, Engineering, Ground water, Water temperature.

36-73
Design of circular cylindrical walls of frozen soil.
Muzás, F., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980 Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.880-888, 1 ref
Soil freezing, Artificial freezing, Soil stabilization, Walls, Soil strength, Design, Soil temperature, Elastic properties, Plastic properties, Analysis (mathematics).

36-74
Ground freezing for the construction of the three-lane Milchbuck road tunnel in Zurich, Switzerland.
Aerni, K., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.889-895.
Mettler, K.
Soil freezing, Artificial freezing, Tunneling (excavation), Frozen ground settling, Frost heave, Settlement (structural).

36-75
Early experiences with ground freezing in Norway.
Brendeng, E., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.896-906, 6 refs.
Soil freezing, Artificial freezing, Soil stabilization, Tunneling (excavation), Frozen ground temperature.

36-76
Driving of metro tunnels with the aid of ground freezing at Helsinki.
Vuorela, M., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.907-915.
Eronen, T.
Soil freezing, Artificial freezing, Tunneling (excavation), Soil stabilization, Ground water, Water pressure, Drilling, Temperature effects.

36-77
Duisburg method of metro-construction, a successful application of the gap-freezing-method.
Weiler, A., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.916-927, 15 refs.
Vagt, J.
Soil freezing, Artificial freezing, Ground water, Tunneling (excavation), Water flow, Water level.

36-78
Ground freezing—application of the mixed method brine-liquid nitrogen.
Gallavresi, F., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.928-939.
Soil freezing, Artificial freezing, Soil stabilization, Excavation, Pipe laying, Liquid cooling, Soil temperature, Sewage.

36-79
Artificial ground freezing in shield work.
Kiriyama, S., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.940-951.
Ishikawa, Y., Kushida, Y.
Soil freezing, Artificial freezing, Excavation, Walls, Earthwork, Engineering, Soil temperature.

36-80
Sublimation and sublimation control in the CRREL tunnel.
Johansen, N.I., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.952-968, 3 refs.
Chalich, P.C., Wellen, E.W.
Permafrost preservation, Tunnels, Ice sublimation, Countermeasures, Humidity, Tests.

36-81
Ground freezing techniques used for tunneling in Oslo city centre.
Jösang, T., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.969-979, 2 refs.
Soil freezing, Artificial freezing, Tunneling (excavation), Soil strength, Soil stabilization, Ground water, Water content, Temperature effects, Loads (forces).

36-82
Sinking deep mine shafts by the freezing method.
Vialov, S.S., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.980-988, 3 refs.
Soil freezing, Artificial freezing, Shaft sinking, Mine shafts, Shafts (excavations), Design.

36-83
New concept for sinking freeze shafts into great depths.
Hegemann, J., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.989-1000.
Soil freezing, Soil stabilization, Shaft sinking, Shafts (excavations), Drilling.

36-84
Selected problems of the freezing process in rock formations and the control of this process in the Polish copper fields.
Garus, B., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.1001-1013.
Matuszyk, J., Nowakowski, P., Plesniak, I.
Soil freezing, Shaft sinking, Frozen rocks, Mine shafts, Geologic processes, Soil stabilization.

36-85
Compromise cone—a useful form of isotopic yield surface for freeze shaft design.
Klein, J., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.1014-1024, 5 refs.
Soil freezing, Shaft sinking, Mine shafts, Soil strength, Shafts (excavations), Soil stabilization, Analysis (mathematics).

36-86
Model tank test using artificial ground freezing method.
Akiyama, T., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.1025-1036, 2 refs.
Iguro, M.
Soil freezing, Artificial freezing, Shafts (excavations), Storage tanks, Concrete placing, Design, Tests.

36-87
Model tank test to estimate the additional earth pressure due to freezing of the soil.
Takagi, S., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.1037-1048, 2 refs.
Tanaka, M.
Soil freezing, Soil pressure, Frozen ground mechanics, Soil temperature, Loads (forces), Experimentation.

36-88
Frost action of the soil surrounding a LNG inground storage tank.
Goto, S., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.1049-1059, 4 refs.
Ryokai, K.
Soil freezing, Frost action, Storage tanks, Underground storage, Frost heave, Shafts (excavations), Soil strength, Temperature effects.

36-89
On the perennially frozen ground under a cold storage.
Kinoshita, S., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.1060-1067, 3 refs.
Fukuda, M., Inoue, M., Takeda, K.
Frozen ground physics, Permafrost beneath structures, Density (mass/volume), Soil structure, Ground water, Water content, Particle size distribution, Frost heave, Ice lenses.

36-90
Design considerations for large-diameter pipelines in cold regions.
Williams, P.J., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.1068-1075, 14 refs.
Gas pipelines, Frost heave, Frozen ground settling, Heat transfer, Soil water, Water flow.

36-91
Stabilization of a highway embankment in a permafrost area.
Ersoy, T., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.1076-1088, 7 refs.
Haist, G.
Permafrost beneath roads, Soil stabilization, Slope stability, Embankments, Thermal regime, Road maintenance, Thermal insulation, Peat, Cracking (fracturing).

36-92
Remedial measures for slope instability in thawing permafrost.
Pufahl, D.E., et al, International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Preprints, Trondheim, University, Norwegian Institute of Technology, 1980, p.1089-1101, 26 refs.
Morgenstern, N.R.
Permafrost thermal properties, Slope stability, Landslide control, Mass transfer, Ground thawing, Thermal insulation.

36-93
Accumulation of plastic litter on beaches of Amchitka Island, Alaska.
Merrell, T.R., Jr., *Marine environmental research*, July 1980, 3(3), p.171-184, 25 refs.
Waste disposal, Environmental impact, Water pollution, Beaches, Oceans, United States—Alaska—Amchitka Island.

36-94
Beaufort delineation logs hefty oil, gas flows. *Oil and gas journal*, Aug. 17, 1981, 79(33), p.64-65.
Artificial islands, Exploration, Offshore drilling, Beaufort Sea.

36-95
Proceedings.
International Conference on Evolution of Planetary Atmospheres and Climatology of the Earth, Nice, 1978, Toulouse, France, Centre National d'Etudes Spatiales, 1979, 574p., In French and English. For selected papers see F-25166, I-25161 through I-25165, and J-25166, or 36-96 through 36-99.
DLC QC980.I565 1978
Climatic changes, Paleoclimatology, Ice sheets, Meetings.
The conference, organized and sponsored by the Centre National d'Etudes Spatiales, met in Nice on Oct. 16-20, 1978 with scientists from all over the world in attendance. It was divided into sessions under four themes: Formation and evolution of planetary atmospheres (7 papers presented); Long-term climatic changes: experimental data (11) and modeling (13); Short-term climatic changes: experimental data (15), modeling (6); and the influence of mankind's activities on climate (5).

36-96
Climatic changes in Antarctica during the last 30,000 years.
Lorius, C., et al, International Conference on Evolution of Planetary Atmospheres and Climatology of the Earth, Nice, 1978, Toulouse, France, Centre National d'Etudes Spatiales, 1979, p.71-82, In English with French summary. 21 refs.
Merlivat, L., Jouzel, J., Pourchet, M.
DLC QC980.I565 1978
Ice cores, Oxygen isotopes, Climatic changes.
Changes in the O-18 profile from a 905 m deep ice core recovered from Dome C show significant climatic events. Some of these events were apparently also recorded in deep sea cores in the 10,000-16,000 years BP range. This allows for the use of some reference dates for the Dome C record and a calculation of the rate of snow accumulation. A simple ice flow model may be used for preliminary dating of the Dome C core using a constant and a variable rate of snow accumulation. The estimated age at the bottom of the core is about 33,000 years BP. Using a relationship determined in the same area between the present mean isotopic composition of the surface snow and the mean annual surface temperature leads to a tentative estimate of about 7 C for the surface temperature change between the coldest part of the ice age and the present climate. This change occurred from about 15,000 to 10,000 years BP. (Auth. mod.)

36-97
Crystal size and gas content of ice: two indicators of the climatic evolution of polar ice sheets.
Raynaud, D., et al, International Conference on Evolution of Planetary Atmospheres and Climatology of the Earth, Nice, 1978, Toulouse, France, Centre National d'Etudes Spatiales, 1979, p.83-94, In English with French summary. 20 refs.
Duval, P., Lebel, B., Lorius, C.
DLC QC980.I565 1978
Ice sheets, Ice crystal size, Gas inclusions, Climatic changes.
The crystal size of ice cores from Dome C is shown to be a tool in paleoclimatology. The variations in crystal size with climate

cannot be explained directly by temperature effects. The reduction in the rate of crystal growth for the Wisconsin/Würm ice may be due to the effect of micro-particles or initial c-axis orientations on the migration rate of grain boundaries. The total gas content of polar ice depends on the altitude and temperature of the ice formation site. Taking into account the present empirical relationships between isotopic content and temperature of the snow at the deposit site, a theoretical model is discussed which enables us to separate along the isotopic records the effects of changes in climate from those linked to elevation changes. Results of the model applied to the Camp Century (Greenland) and Byrd (Antarctica) profiles are discussed for the change between late Wisconsin and Holocene. (Auth.)

36-98

Can we measure the CO2 content of ancient atmospheres by analyzing gas inclusions of polar ice caps.
Klinger, J., et al, International Conference on Evolution of Planetary Atmospheres and Climatology of the Earth, Nice, 1978, Toulouse, France, Centre National d'Etudes Spatiales, 1979, p.95-106, In English with French summary. 16 refs.
Ocampo, J.
DLC QC980.1565 1978
Atmospheric composition, Carbon dioxide, Ice sheets, Gas inclusions, Mathematical models.
A first attempt is made to explain the high values of CO2 concentrations found by several authors in gas inclusions of polar ice. In the light of the CO2 absorption model proposed here we demonstrate the relative importance of variations in temperature and in partial pressure. If the present model holds it seems possible to find variations in partial pressure of CO2 to a depth of 1,000 m in historic ice sheets. Data from Byrd Station ice sheet was used in the analysis as was data reported from several locations of the antarctic ice sheet. (Auth. mod.)

36-99

Cause of glacial to interglacial climatic change.
Broecker, W.S., International Conference on Evolution of Planetary Atmospheres and Climatology of the Earth, Nice, 1978, Toulouse, France, Centre National d'Etudes Spatiales, 1979, p.165-190, 18 refs.
DLC QC980.1565 1978
Climatic changes, Ice age theory, Paleoclimatology.
The author cites the evidence of the 1970's which indicates that changes in the earth's orbital geometry cause the succession of Quaternary ice ages. He disputes that orbital geometry is the primary cause for the successive ice ages and discusses the evidence from the point of view that it may be only an indicator of a primary cycle having a different origin. The two views are compared.

36-100

Recent variations in snow accumulation in Antarctica. [Variations récentes de l'accumulation de la neige sur la calotte antarctique],
Lambert, G., et al, International Conference on Evolution of Planetary Atmospheres and Climatology of the Earth, Nice, 1978, Toulouse, France, Centre National d'Etudes Spatiales, 1979, p.387-397, In French with English summary. 17 refs.
Petit, J.R., Pourchet, M., Sanak, J., Lorius, C.
DLC QC980.1565 1978
Snow accumulation, Icebergs, Calving, Periodic variations, Radioactivity.
The snow accumulation at the surface of the Antarctic continent is practically balanced by iceberg calving. Therefore the mass and heat budgets are in equilibrium. However it may be pointed out that, owing to the time-lag of the system, a possible change in the accumulation would not be immediately balanced. A significant excess of accumulation would produce in the subantarctic atmosphere an energy supplement whose effect would be to increase over this accumulation. Such accumulation variations are therefore expected to be observed during several successive years. An experimental study using stratigraphic analyses and radioactive tracers (Lead 210 and fission products) has been performed in a large part of the Antarctic continent. The results show that 30% variations of the accumulation rate can be observed for decades.

36-101

Structure of West Antarctica from geophysical studies.
Jankowski, E.J., et al, *Nature*, May 7, 1981, 291(5810), International Conference on Evolution of Planetary Atmospheres and Climatology of the Earth, Nice, 1978, Toulouse, France, Centre National d'Etudes Spatiales, 1979, p.17-21, 37 refs.
Drewry, D.J.
DLC QC980.1565 1978
Geophysical surveys, Topographic features, Geologic structures, Ice sheets, Antarctica—West Antarctica.
The subglacial topographical and geological configurations of West Antarctica and the boundary zone between East and West Antarctica are poorly known, yet they are crucial to our understanding of the tectonic evolution of the Pacific-proto Atlantic margin of Gondwanaland. Preliminary results are presented of simultaneous airborne radio echo and magnetic sounding of one million sq km of West Antarctica including detailed maps of ice sheet and bedrock surfaces. Magnetic, radio echo and other available geophysical data suggest interpretations of sub-glacial geology. (Auth.)

36-102

Automatic gauging of the snow cover. [Schneedecke automatisch erfasst],
Schädler, B., et al, *Wasser, Energie, Luft*, Jan. 1981, No.1/2, p.15-16, In German with French and English summaries. 3 refs.
Koch, F.
Snow water equivalent, Measuring instruments, Gamma irradiation.

36-103

Road salt movement into two Toronto streams.
Scott, W.S., *American Society of Civil Engineers. Environmental Engineering Division. Journal*, June 1980, 106(EE3), p.547-560, 12 refs.
Salting, Roads, Water pollution, Streams, Environmental impact, Chemical ice prevention.

36-104

Relict glacier ice and its role in the structure of Quaternary mantle and the relief of permafrost regions. [Reliktovye gletchernye l'dy i ikh rol' v stroenii Chetvertichnogo pokrova i rel'efa oblasti mnogoletnei merzloty],
Kaplianskaia, F.A., et al, *Leningrad. Vsesoiuznyi geologicheskii institut. Trudy*, 1978, Vol.297, p.65-76, In Russian. 25 refs.
Tarnogradskii, V.D.
Glacier ice, Ground ice, Periglacial processes, Quaternary deposits, Thermokarst, Geomorphology, Permafrost structure, Permafrost distribution, Moraines.

36-105

Stabilization of sandy soils for railroad construction in northwestern Siberia. [Ukreplenie peschanykh gruntov pri stroitel'stve zheleznykh dorog na severe Zapadnoi Sibiri],
Gadilev, E.O., et al, *Transportnoe stroitel'stvo*, July 1981, No.7, p.4-5, In Russian.
Stafeev, P.F., Pal'kin, IU.S.
Railroads, Permafrost beneath structures, Roadbeds, Embankments, Sands, Soil stabilization, Roads, Vegetation factors.

36-106

Improving utilities for modular buildings. [Perspektivy sovershenstvovaniia inzhenernogo oborudovaniia inventarnykh zdanii],
Kaspe, I.B., et al, *Transportnoe stroitel'stvo*, July 1981, No.7, p.17-20, In Russian. 5 refs.
Peker, IA.D.
Modular construction, Residential buildings, Heating, Microclimatology, Heat loss, Walls, Floors, Windows.

36-107

Abrasion resistant concrete for bridge piers. [Iznosostoikii beton dlia opor mostov],
Roiak, G.S., et al, *Transportnoe stroitel'stvo*, July 1981, No.7, p.22-24, In Russian.
Kharit, M.D.
Concrete structures, Bridges, Piers, Freeze thaw cycles, Concrete aggregates, Ice loads.

36-108

Combined equipment for earthwork in roadbed construction. [Kompleksnaia mekhanizatsiia rabot po planirovke zemlianogo polotna],
Nedorezov, I.A., et al, *Transportnoe stroitel'stvo*, July 1981, No.7, p.27-28, In Russian.
Roadbeds, Earthwork, Equipment, Roads, Frozen ground.

36-109

Ice pressure on individual piers. [Davlenie ledianogo pokrova na otdel'no stoiashchie opory],
Khrapatyi, N.G., *Transportnoe stroitel'stvo*, July 1981, No.7, p.44-45, In Russian.
Hydraulic structures, Bridges, Piers, Ice loads.

36-110

Studying an impact-ripper for trenching. [Issledovaniia transheinogo rykhlitelia udarnogo deistviia],
Kuz'menko, V.V., et al, *Transportnoe stroitel'stvo*, July 1981, No.7, p.46-47, In Russian. 2 refs.
Rybakov, A.P., Shirko, I.V.
Earthwork, Trenching, Equipment, Frozen ground.

36-111

Basic problems of environmental protection in pipeline construction sites. [Osnovnye zadachi prirodookhrannoi deiatel'nosti v truboprovodnom stroitel'stve],
Koval'kov, V.P., *Stroitel'stvo truboprovodov*, June 1981, No.6, p.16-17, In Russian.
Petroleum industry, Pipelines, Environmental impact, Landscape types, Permafrost distribution, Environmental protection.

36-112

Drilling technique of laying underwater pipelines. [Problemy sooruzhenia podvodnykh truboprovodov burovym sposobom], *Stroitel'stvo truboprovodov*, June 1981, No.6, p.29-30, In Russian.
Pipelines, Underwater facilities, River crossings, Swamps, Earthwork, Drilling.

36-113

Ice-bedding is an ineffective method. [Ispol'zovanie ledovogo stingera maloeffektivno],
Tanklevskii, I.A., *Stroitel'stvo truboprovodov*, June 1981, No.6, p.30-31, In Russian. For paper being discussed see 35-316.
Icebound rivers, Ice cutting, Pipe laying, River crossings, Ice (construction material), Underwater facilities, Pipelines.

36-114

Construction of compressor stations at the Urengoy-Chelyabinsk gas pipeline. [Sooruzhenie kompressornykh stantsii na gazoprovode Urengoi-Cheliabinsk],
Shirenko, G.I., et al, *Stroitel'stvo truboprovodov*, June 1981, No.6, p.33-34, In Russian.
Blashchak, L.B.
Foundations, Gas pipelines, Permafrost beneath structures, Compressors, Stations, Buildings.

36-115

High-voltage cathode protection station designed for the North. [Vysokovol'tnaia stantsiia katodnoi zashchity v severnom ispolnenii],
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Transportation, Logistics.
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Mountains, Slope processes, Snow cover distribution, Snow accumulation, Avalanches, Snow retention.

36-118

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36-119

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Slope processes, Aerial surveys, Periglacial processes, Rock streams, Stereophotography.

36-120
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Alpine landscapes, Snow cover distribution, Snow accumulation, Slope processes, Avalanche formation, Avalanche triggering, Wind factors.

36-121
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36-122
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Avalanche forecasting, Snow accumulation, Snow depth, Avalanche formation, Avalanche triggering.

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36-124
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36-126
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36-127
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Slope processes, Avalanche formation, Snow slides, Photogrammetry, Measuring instruments.

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36-133
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36-136
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36-138
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36-139
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Ice mechanics, Fast ice, Deltas, Ice temperature, Meteorological data, Monitors, Canada—Northwest Territories—Mackenzie River Delta.

36-175
Continuous crushing of ice.
Kry, P.R., et al, *Arctic Petroleum Operators Association, Calgary, Alta. Report*, July 1978, APOA 106-1, 205p., IPRT-28ME-78, 16 refs.
Lucente, R.F., Hedley, R.E.
Ice breaking, Penetration, Ice pressure, Stresses, Ice strength, Ice cover thickness, Ice loads, Tests.

36-176
Model experiments to examine the behaviour of an ice field impinging on a man-made island.
Abdelnour, R., et al, *Arctic Petroleum Operators Association, Calgary, Alta. Report*, Oct. 4, 1976, APOA 109-1, 34p. + appends., 4 refs.
Edwards, R.Y., Jr.
Ice floes, Ice pressure, Ice pileup, Slopes, Artificial islands, Forecasting, Ice models, Mathematical models.

36-177
Summary of Great Lakes weather and ice conditions, winter 1978-79.
DeWitt, B.H., et al, *U.S. National Oceanic and Atmospheric Administration. NOAA technical memorandum*, Aug. 1980, NOAA-TM-ERL GLERL-31, 135p., PB81-141053, 14 refs.
Icebound lakes, Ice formation, Ice cover, Ice breakup, Meteorological data, Winter, Ice navigation, Statistical analysis, United States—Great Lakes.

36-178
Research in sea ice mechanics.
National Research Council. Panel of Sea Ice Mechanics, Washington, D.C., National Academy Press, 1981, 80p., ADA-099 564, 164 refs.
Coon, M.D.
Sea ice, Ice mechanics, Research projects, Ice physics, Offshore structures, Ice pressure, Ice solid interface, Engineering, Design.

36-179
Ice jam problems at Oil City, Pennsylvania.
Deck, D., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, May 1981, SR 81-09, 19p., ADA-103 736, 9 refs.
Gooch, G.
Ice jams, Flood control, Ice conditions.
Oil City, Pennsylvania, is at the confluence of Oil Creek and the Allegheny River. The business district lies within the flood plain of Oil Creek, and as of the winter of 1980, 25 ice jam flooding events had occurred since the mid-1800's. An investigation was done to determine why Oil City was subject to perennial ice jams and nearly biennial ice jam floods. Ice conditions were analyzed and it was determined how and why the jams occurred. By controlling where the initial ice cover forms, Oil City's ice jam floods can be alleviated. Ice control structures will be used to encourage the early formation of ice cover and hence eliminate frazil ice. This will greatly reduce the amount of ice which currently develops in both Oil Creek and the Allegheny River.

36-180
ConnDOT uses brine to "blast" ice away. *American city and county*, Aug. 1980, 95(8), p.40.
Ice removal, Road icing, Brines, Salting, Chemical ice prevention, Mechanical ice prevention, Road maintenance.

36-181
Freezing water bonds aluminum to steel. *Design news*, July 21, 1980, 36(14), p.20.
Freezing, Water, Steels, Aluminum, Adhesion.

36-182
Some results of investigations of the "Trorun Polar Expedition, Spitsbergen—1975".
Niewiarowski, W., ed, *Torun, Poland. Uniwersytet Acta universitatis Nicolai Copernici. Geografia*, 1977, No.13, 199p., With Polish summaries. Refs passim. For selected papers see 36-183 through 36-190.
Glacial deposits, Geomorphology, Geocryology, Glacial hydrology, Geodetic surveys, Topographic surveys, Glacier surveys, Norway—Spitsbergen.

36-183
Geodetic and topographic accomplishments of the "Toruń Polar Expedition, Spitsbergen—1975".
Zapolski, R., *Toruń, Poland. Uniwersytet. Acta universitatis Nicolai Copernici. Geografia*, 1977, No.13, p.21-37, 7 refs., With Polish summary.
Geodetic surveys, Topographic surveys, Glacier oscillation, Glacial lakes, Geomorphology, Norway—Spitsbergen.

36-184
Relief and deposits of marginal zone of Irene Glacier.
Wronkowski, L., et al, *Torun, Poland. Uniwersytet Acta universitatis Nicolai Copernici. Geografia*, 1977, No.13, p.39-66, 13 refs., With Polish summary.
Olszewski, A.
Glacial deposits, Topographic features, Moraines, Hummocks, Landforms, Norway—Spitsbergen.

36-185
Geomorphological investigations of the marginal zone of Elise Glacier.
Olszewski, A., *Toruń, Poland. Uniwersytet. Acta universitatis Nicolai Copernici. Geografia*, 1977, No.13, p.67-74, 4 refs., With Polish summary.
Geomorphology, Glacial deposits, Moraines, Ice sheets, Ice growth, Norway—Spitsbergen.

36-186
Morphology and structure of outwash plains in the forefield of Elise and Irene glaciers on Oscar II Land, West Spitsbergen.
Sendobry, K., *Toruń, Poland. Uniwersytet. Acta universitatis Nicolai Copernici. Geografia*, 1977, No.13, p.75-95, 15 refs., With Polish summary.
Outwash, Plains, Glacial deposits, Structural analysis, Moraines, Particle size distribution, Norway—Spitsbergen.

36-187
Selected problems in the hydrography of the catchment basin of the Waldemar River (West Spitsbergen, Oscar II Land).
Szczepanik, W., *Toruń, Poland. Uniwersytet. Acta universitatis Nicolai Copernici. Geografia*, 1977, No.13, p.113-126, 10 refs., With Polish summary.
Glacial hydrology, Glacial rivers, Hydrography, Water temperature, Water level, Air temperature, Norway—Spitsbergen.

36-188
Hydrological investigations of moraine lakes in the forefield of Aavatsmark Glacier.
Pietrucień, C., *Toruń, Poland. Uniwersytet. Acta universitatis Nicolai Copernici. Geografia*, 1977, No.13, p.127-144, 8 refs., With Polish summary.
Glacial lakes, Hydrology, Moraines, Water level, Water temperature, Norway—Spitsbergen.

36-189
Development of thermal and salinity conditions in Hornbaek Bay under the effects of ablation on Aavatsmark Glacier.
Pietrucień, C., et al, *Toruń, Poland. Uniwersytet Acta universitatis Nicolai Copernici. Geografia*, 1977, No.13, p.145-173, 10 refs., With Polish summary.
Majewicz, A.
Glacier ablation, Thermal regime, Water temperature, Water chemistry, Salinity, Hydrology, Sea water, Norway—Spitsbergen.

36-190
Systematics of soils of the Hornsund region—West Spitsbergen.
Plichta, W., *Toruń, Poland. Uniwersytet. Acta universitatis Nicolai Copernici. Geografia*, 1977, No.13, p.175-180, 11 refs., With Polish summary.
Geocryology, Soil classification, Periglacial processes, Norway—Spitsbergen.

36-191
Salt fretting and chemical weathering in the Darwin Mountains and Dry Valleys, Victoria Land, Antarctica. [Zur Salzsprengung und chemischen Verwitterung in den Darwin Mountains und den Dry Valleys, Victoria-Land, Antarktis].
Miotke, F.-D., et al, *Polarforschung*, 1980, 50(1-2), p.45-80, In German with English summary. 22 refs.
Von Hodenberg, R.
Permafrost weathering, Frost shattering, Saline soils, Water flow, Minerals, Temperature measurement.
The paper deals with chemical weathering processes in Victoria Land, where salt occurrences and salt fretting were studied and with similar research in the Darwin Mountains where microclimatic conditions of weathering processes during the antarctic summer were investigated. Temperatures in different rocks, in soils, and in snow were recorded by thermistors, and the moisture content was determined. In summer, temperatures close to the surface of rocks and soils reach well above freezing point, ranging often from 10C to a maximum above 30C. Water infiltrates into the soil only where snow melts, it is here where for a short period of time the water necessary for chemical weathering is available. The salts present in rocks and soils were mineralogically analyzed, and water circulation within the soils and the processes of salt migration as well as salt fretting are discussed in some detail. The so-called "inner rock polygons" described here for the first time are supposed to result from thermal contraction during the winter months when temperatures drop to well below -50C. These cracks are considered to be of major importance for salt fretting and frost shattering. Darwin Mountains daily summer temperature curves from snow, rocks, and soil are presented an discussed. (Auth.)

36-192
Proceedings, Vols. 1 and 2.
International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Quebec, Canada, July 27-31, 1981. Quebec, Canada, Universite Laval, 1981, 1134p., Refs passim. For selected papers see 36-193 through 36-288 or F-25206, J-25204, and J-25205.
Offshore structures, Offshore drilling, Ice navigation, Ice strength, Ice loads, Ice pressure, Ports, Oil spills, Sea ice, Meetings.

36-193
Design criteria for nearshore and offshore structures under arctic conditions.
Brun, P., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Universite Laval, 1981, p.1-38, 42 refs.
Moe, G.
Offshore structures, Engineering, Ice conditions, Sea ice distribution, Ice loads, Design criteria, Ice navigation, Pressure ridges, Ports, Wind velocity, Ocean currents, Ocean waves.

36-194
Production system in arctic waters by using a fully integrated TSG platform.
Di Tella, V., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.39-48, 7 refs.
Sebastiani, G.
Offshore structures, Ice conditions, Ice scoring, Sea ice distribution, Steel structures, Icebergs, Design, Platforms.

36-195
Ice platforms with urethane foam cells in the neutral axis zone and their application in arctic offshore drilling.
Maclean, C., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Universite Laval, 1981, p.49-59, 2 refs.
Semotiuk, W., Strandberg, A., Masterson, D.M.
Offshore structures, Offshore drilling, Floating structures, Cellular plastics, Design criteria, Ice platforms, Buoyancy, Ice cover thickness.

36-196
Conceptual design for a mobile arctic gravity platform.
Wasilewski, B.R., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Quebec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Universite Laval, 1981, p.60-69.
Bruce, J.C.
Offshore structures, Artificial islands, Ice conditions, Ice loads, Stability, Offshore drilling, Design, Platforms.

36-197
Marine piling and boat harbor structure design for ice conditions.
Wortley, C.A., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.70-79, 5 refs.
Offshore structures, Pile structures, Ice loads, Ice conditions, Ice adhesion, Countermeasures, Ports, Artificial melting, Ice breaking, Design criteria, Bubbling.

36-198
Offshore structures on weak foundations exposed to large ice forces.
Danys, J.V., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.80-89, 7 refs.
Offshore structures, Foundations, Ice loads, Pressure, Piers.

36-199
Ice resistance equation for fixed conical structures.
Brooks, L.D., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.90-99, 1 ref.
Icebreakers, Ice pressure, Ice loads, Impact strength, Ice friction, Analysis (mathematics), Ice strength, Flexural strength, Ice cover thickness.

36-200
On the state of commercial arctic marine transportation.
Lewis, J., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.100-106, 3 refs.
Ice navigation, Marine transportation, Ice surveys.

36-201
Extension of the navigation season on the Great Lakes and St. Lawrence Seaway System.
McCallister, P., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.107-116.
Argiroff, C.
Ice navigation, Lakes, Surveys.

36-202
Marine transportation in arctic waters.
Skarborn, S., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.117-135, 10 refs.
Marine transportation, Petroleum transportation, Ice conditions, Ice strength, Cost analysis, Velocity, Seasonal variations.

36-203
Transit analysis for delivery of large barges to arctic destinations.
Takekuma, K., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.136-144, 6 refs.
Noble, P., Nawwar, A.
Marine transportation, Ships, Ice navigation, Ice conditions, Ice strength, Water supply.

36-204
Performance of icebreaker Ymer on the Swedish Arctic Expedition "Ymer 80".
Liljeström, G., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.145-155.
Lindberg, K.
Icebreakers, Ice breaking, Ice conditions, Sea ice distribution.

36-205
Correlation of under-ice roughness with satellite and airborne thermal infrared data.
LeShack, L.A., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.156-165, 14 refs.
Sea ice, Ice bottom surface, Surface roughness, Remote sensing, Infrared reconnaissance, Airborne equipment, Ice cover thickness, Correlation.

36-206
Comparison of sea ice features in the Beaufort and Bering Seas using Star and Landsat data.
Bowley, C.J., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.166-177, 7 refs.
Barnes, J.C.
Sea ice distribution, Ice conditions, Remote sensing, Aerial surveys, LANDSAT.

36-207
Ice hazard detection system—preliminary investigations.
Langham, E.J., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.178-188, 12 refs.
Glynn, J.E., Sherstone, D.A.
Ice mechanics, Drift, Velocity, Photographic techniques, River ice, Estuaries, Channels (waterways), Correlation, Analysis (mathematics), Aerial surveys.

36-208
Advances in ice mechanics.
Michel, B., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.189-204, 22 refs.
Ice mechanics, Glacier flow, Ice creep, Shear stress, Ice loads, Rheology, Floating ice.

36-209
Plastic limit analysis of ice splitting failure.
Ralston, T.D., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.205-215, 5 refs.
Ice mechanics, Ice cracks, Ice solid interface, Ice plasticity, Ice strength, Ice crystal structure, Ice floes, Compressive properties, Tensile properties, Tests.

36-210
Constant stress rate deformation modulus of ice.
Sinha, N.K., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.216-224, 10 refs.
Ice creep, Ice crystal structure, Ice deformation, Grain size, Stress strain diagrams, Loads (forces), Microstructure, Ice temperature, Salinity.

36-211
Mid-winter mechanical properties of ice in the Southern Beaufort Sea.
Frederking, R.M.W., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.225-234, 9 refs.
Timco, G.W.
Ice mechanics, Ice breaking, Loads (forces), Ice strength, Ice crystal structure, Ice temperature, Salinity, Compressive properties, Pressure ridges, Stress strain diagrams.

36-212
Statistical analysis of broken ice dimensions generated during 140' WTGB icebreaking trails.
McKindra, C.D., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.235-243, 11 refs.
Lutton, T.C.
Ice breaking, Frazil ice, Flexural strength, Statistical analysis, Ice cover thickness, Ice navigation, Ice removal, Dimensions.

36-213
Conditions in brash ice covered channels with repeated passages.
Sandkvist, J., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.244-252, 6 refs.
Ice conditions, Ice navigation, Frazil ice, Ice growth, Channels (waterways), Ice mechanics, Ice breaking, Ice cover thickness.

36-214
Dynamic ice loads and stress analysis on the propeller of the arctic ship; model test in ice.
Okamoto, H., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.253-262, 7 refs.
Nozawa, K., Kawakami, H., Yamamoto, F.
Ice navigation, Ice loads, Dynamic loads, Stresses, Propellers, Ships, Impact strength, Models, Tests.

36-215
Experimental investigation of two candidate propeller designs for ice capable vessels.
Sasajima, T., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.263-275, 9 refs.
Bulat, V., Glen, I.
Ice navigation, Propellers, Ships, Ice strength, Impact strength, Hydrodynamics, Design.

36-216
Engineering for vessel ice accretion with particular reference to the Alaskan fishing fleet.
Carlson, R.F., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.276-285, 22 refs.
Zarling, J.P., Hok, C.I.
Ship icing, Ice accretion, Countermeasures, Engineering, Ice prevention, Buoyancy, Ice forecasting, Design.

36-217
Design of wharves for winter navigation in the St. Lawrence River.
Déry, J.L., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.286-301, 3 refs.
Ice navigation, Wharves, Icing, Ice prevention, Ice-bound rivers, Ice conditions, Impact strength, Design, Climatic factors, Salinity, Floating ice, Drift, Ice cover thickness.

36-218
Ice defence for natural barrier islands during freezeup.
Vaudrey, K.D., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.302-312, 4 refs.
Potter, R.E.
Freezing, Artificial islands, Impact strength, Ice mechanics, Ice cover effect, Protection, Ice prevention, Pack ice, Ice pileup, Ice sheets, Barriers.

36-219
Field test study of "pack ice barrier".
Yamaguchi, T., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.313-322, 1 ref.
Yoshida, H., Yahima, N., Ando, M.
Pack ice, Ice prevention, Ice pileup, Offshore structures, Impact strength, Design, Shores, Barriers.

36-220
Dock floats subjected to ice.
Wortley, C.A., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.323-331
Floating structures, Docks, Ice conditions, Ice loads, Damage, Countermeasures, Tests, Ice prevention, Design.

36-221
Experimental investigation of the crushing strength of ice.
Taylor, L.P., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.332-345, 8 refs.
Ice strength, Brittleness, Fracturing, Shear strength, Compressive properties, Strain tests, Ice pressure, Experimentation, Ice cover thickness, Ice crystal structure, Ice cracks.

36-222
Uniaxial compression testing of arctic sea ice.
Wang, Y.S., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.346-355, 4 refs.
Sea ice, Compressive properties, Ice strength, Stress strain diagrams, Ice crystal structure.

36-223
Fracture toughness of sea ice—in-situ measurement and its application.
Urabe, N., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.356-365, 12 refs.
Yoshitake, A.
Ice cracks, Sea ice, Fracturing, Ice strength, Ice loads, Stresses, Grain size.

36-224
Fracture toughness of ice; crystallographic anisotropy.
Kollé, J.J., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.366-374, 16 refs.
Ice cracks, Fracturing, Ice crystal structure, Anisotropy, Strain tests, Ice elasticity, Tests.

36-225
Transverse pressure effects on an embedded ice pressure sensor.
Chen, A.C.T., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.375-384, 9 refs.
Ice pressure, Measuring instruments, Offshore structures, Sea ice, Impact strength, Stresses, Ice loads, Offshore drilling.

36-226
On the acoustic emission and deformation response of finite ice plates.
Xirouchakis, P.C., et al, MP 1455, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.385-394, 15 refs.
St. Lawrence, W.
Ice acoustics, Ice cracks, Fracturing, Flexural strength, Ice loads, Ice crystal structure, Microstructure, Ice deformation, Stresses, Strain tests, Analysis (mathematics).
In the present investigation acoustic emission methods are used to study the microfracturing activity in polycrystalline ice subjected to flexural loads. Experimental results obtained in the laboratory indicate that the acoustic emissions recorded from ice are important in describing the deformation and fracture of ice.

36-227
Mechanical properties of low density ice under cyclic axial loading.
Vinson, T.S., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.395-404, 7 refs.
Chaichanavong, T.
Ice mechanics, Ice density, Ice loads, Ice pressure, Strains, Temperature effects, Damping, Tests.

36-228
Surface wind direction anomalies along the Alaskan Beaufort Sea Coast.
Kozo, T.L., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.405-414, 9 refs.
Wind direction, Seasonal variations, Shores, Ice mechanics, Wind factors.

36-229
Influence of an ice layer on storm surge amplitudes.
Murty, T.S., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.415-422, 12 refs.
El-Sabh, M.I., Briand, J.M.
Ice cover effect, Sea level, Atmospheric pressure, Wind pressure, Storms.

36-230
Three-dimensional model of Norton Sound under ice cover.
Liu, S.K., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.433-443.
Leendertse, J.J.
Ice cover effect, Hydrodynamics, Subglacial observations, Tides, Drift, Interfaces, Mathematical models.

36-231
Risk assessment of offshore structures experience and principles.
Holand, I., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.444-461, 9 refs.
Offshore structures, Floating structures, Artificial islands, Accidents, Ocean waves, Ice loads, Ice pressure, Impact strength, Safety.

36-232
Steel selection system and reliability analysis of structures in cold regions.
Urabe, N., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.462-471, 8 refs.
Yoshitake, A.
Icebreakers, Offshore structures, Steels, Brittleness, Cracking (fracturing), Damage, Safety.

36-233
Dynamic ice-structure interaction analysis for narrow vertical structures.
Eranti, E., et al, MP 1456, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.472-479, 7 refs.
Haynes, F.D., Määttänen, M., Soong, T.T.
Ice solid interface, Ice mechanics, Ice loads, Ice pressure, Ice structure, Dynamic loads, Penetration tests, Experimentation, Fatigue (materials).
This paper describes a method of computing the ice force and response of the structure on the basis of information given for ice velocity and properties of ice and the structure. The method is a step-by-step procedure using mode shape analysis involving two basic phases. During the first phase the structure penetrates into the ice sheet until a random loading rate dependent ice strength is reached. The ice sheet then fails within an area with finite length. Both the penetration and the failed zone are assumed to depend linearly on force. The ice forces and structural responses have been computed for a test structure at the U.S. Army Cold Regions Research and Engineering Laboratory in Hanover, New Hampshire, and the results are found to be consistent with those actually measured in laboratory experiments.

36-234
Response of offshore towers to nonstationary ice forces.
Reddy, D.V., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.480-490, 19 refs.
Cheema, P.S., Arockiasamy, M.
Ice loads, Offshore structures, Towers, Dynamic loads, Analysis (mathematics).

36-235
Experiences with vibration isolated lighthouses.
Määttänen, M., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.491-501, 4 refs.
Superstructures, Offshore structures, Ice cover effect, Vibration, Ice loads, Ice pressure, Ice solid interface, Impact strength, Steels, Design criteria, Lighthouses.

36-236
Dynamic response of a jacket platform subjected to ice floe loads.
Jizu, X., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.502-516, 17 refs.
Leira, B.J.
Ice loads, Ice floes, Artificial islands, Vibration, Ice solid interface, Dynamic properties, Bottom sediment, Damping, Models, Platforms.

36-237
Ice force acting on a cylindrical pile.
Nakajima, H., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.517-525, 4 refs.
Koma, N., Inoue, M.
Ice pressure, Flexural strength, Ice loads, Piles, Ice solid interface, Grain size, Ice strength, Ice cover thickness, Tests.

36-238
Friction measurements of sea ice on some plastics and coatings.
Tabata, T., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.526-535, 1 ref.
Tushima, K.
Ice friction, Plastics, Coatings, Offshore structures, Icebreakers, Stresses, Surface roughness, Shear stress, Sea ice.

36-239
Experimental study on flexural strength and elastic modulus of sea ice.
Saeki, H., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.536-547, 5 refs.
Ozaki, A., Kubo, Y.
Sea ice, Flexural strength, Ice elasticity, Bearing strength, Stresses, Strains.

36-240
Creep of S2 ice beams and plates.
Nadreau, J.P., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.548-561, With French summary. 18 refs.
Michel, B.
Ice creep, Ice loads, Ice crystal structure, Ice deformation, Loads (forces), Strain tests, Time factor, Analysis (mathematics).

36-241
Behaviour of a reinforced ice-cover with regard to creep.
Cederwall, K., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.562-570, 3 refs.
Ice cover strength, Ice creep, Bearing strength, Ice elasticity, Tensile properties, Ice mechanics, Analysis (mathematics), Reinforcement.

36-242
Reaction of a floating ice sheet to simple loads and certain classes of vehicles and machines.
Johnson, P.R., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.571-580, 21 refs.
Floating ice, Ice loads, Bearing strength, Tensile properties, Stresses, Loads (forces), Vehicles, Ice cover thickness.

36-243
Sea ice model developed for use in a real time forecast system.
Leavitt, E., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.581-588, 7 refs.
Sykes, J., Wong, J.
Sea ice, Pack ice, Ice mechanics, Stresses, Strains, Ice forecasting, Ice models, Ice cover thickness, Ice cover strength, Velocity, Mathematical models, Offshore drilling.

36-244
Sea ice model developed for use in a real time forecast system. Part 2: Extraction of imaging radar data.
Lowry, R.T., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.589-598, 6 refs.
Sutton, J.J., Wessels, G.L., Reeves, W.C.
Sea ice, Ice models, Radar echoes, Ice mechanics, Ice conditions, Surface roughness, Remote sensing.

36-245
Large winter ice movements in the nearshore Alaskan Beaufort Sea.
Agerton, D.J., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.599-608, 13 refs.
Ice mechanics, Drift, Sea ice, Storms, Ice deformation, Loads (forces), Remote sensing, Winter.

36-246
Canadian Beaufort Sea ice characterization.
Pritchard, R.S., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.609-618, 9 refs.
Coon, M.D.
Sea ice distribution, Ice conditions, Ice cover thickness, Ice cover strength, Ice mechanics, Drift, Ice plasticity, Mathematical models.

36-247
Sea ice strains during 1979.
Colony, R., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.619-628, 6 refs.
Thorndike, A.S.
Sea ice, Ice mechanics, Ice deformation, Strains, Drift.

36-248
On measuring large scale ice forces; Hans Island 1980.
Metge, M., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.629-642, 15 refs.
Danielewicz, B., Hoare, R.
Ice pressure, Ice loads, Offshore structures, Sea ice, Ice strength, Impact strength.

36-249
Probability distributions for structure loading by multiyear ice floes.
Wheeler, J.D., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.643-652, 6 refs.
Ice floes, Ice pressure, Sea ice, Ice loads, Impact strength, Offshore structures, Distribution, Ice cover thickness.

36-250
Impact of large ice floes and icebergs on marine structures.
Cammaert, A.B., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.653-662, 5 refs.
Tsinker, G.P.
Ice floes, Ice loads, Impact strength, Icebergs, Structures, Sluices (hydraulic engineering).

36-251
Failure modes and forces of pressure ridges acting on cylindrical towers.
Rojansky, M., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.663-673, 10 refs.
Gerwick, B.C.
Pressure ridges, Sea ice, Ice pressure, Ice strength, Offshore structures, Impact strength, Ice cracks, *Strains, Ice mechanics, Flexural strength.*

36-252
Methods of determining pipeline trench depths in the Canadian Beaufort Sea.
Pilkington, G.R., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.674-687. *With French summary. 19 refs.*
Marcellus, R.W.
Ice scoring, Bottom sediment, Underground pipelines, Trenching, Ocean bottom, Hydraulic structures, Forecasting.

36-253
Model tests of sea bottom scouring.
Abdelnour, R., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.688-705, 6 refs.
Lapp, D., Haider, S., Shinde, S.B., Wright, B.
Ice scoring, Ocean bottom, Bottom sediment, Grain size, Models, Profiles.

36-254
Sea bed features in the Blaaenga area, Weddell Sea, Antarctica.
Lien, R., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.706-716, 2 refs.
Ocean bottom, Bottom sediment, Ice scoring, Side looking radar, Echo sounding, Antarctica—Weddell Sea.
Data on sea bed features in the Blaaenga area, Weddell Sea, Antarctica were gathered during two expeditions in the summer seasons 1976/77 and 1978/79, and consist of records with echo sounder and side-scan sonar. From these data we have constructed a tentative bathymetric map of the area, and the sea floor has been classified into four groups of sea bed features. The different features are described and shown on record sections. *Further, some record sections with special phenomena* such as tracks of wobbling icebergs, arresting icebergs, multikeeled icebergs, etc., are shown. Finally, the different patterns and phenomena are discussed with reference to their process of formation. (Auth. mod.)

36-255
Static penetration resistance of soils.
Chari, T.R., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.717-725, 20 refs.
Abdel-Gawad, S.M.
Ocean bottom, Bottom sediment, Penetration tests, Clays, Penetrometers, Impact strength, Soil strength, Static loads.

36-256
Dynamic and static creep testing of ice and frozen soils.
Youssef, H., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.726-734, 20 refs.
Kuhlemeyer, R.
Frozen ground mechanics, Soil creep, Ice creep, Static loads, Dynamic loads.

36-257
Review of technology for Alaskan offshore petroleum recovery.
Sackinger, W.M., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.735-754, 21 refs.
Offshore structures, Petroleum industry, Sea ice, Ice conditions, Ice breaking, Ice solid interface.

36-258
Beaufort Sea first year ice features survey—1979.
Sisodiya, R.G., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.755-764, 11 refs.
Vaudrey, K.D.
Ice surveys, Sea ice, Ice conditions, Aerial surveys, *Photographic reconnaissance.*

36-259
Multi-year pressure ridge study Queen Elizabeth Islands.
Dickins, D.F., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.765-775, 9 refs.
Wetzel, V.F.
Pressure ridges, Floating ice, Underwater ice, Echo sounding, Profiles.

36-260
Ice studies aid in the successful completion of the Norton Sound C.O.S.T. Well.
Wolfson, L., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.776-788, 13 refs.
Evans, W.M.
Offshore drilling, Ice breaking, Freezeup, Ice forecasting, Meteorological data.

36-261
Statistical techniques for the analysis of sea ice pressure ridge distribution.
Kreider, J.R., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.789-798, 13 refs.
Ehrc, M.F.
Sea ice distribution, Pressure ridges, Statistical analysis, Stereophotography, Profiles.

36-262
Summer conditions in the Prudhoe Bay area, 1953-75.
Cox, G.F.N., et al, MP 1457, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.799-808, 9 refs.
Dihn, W.S.
Sea ice distribution, Ice conditions, Radiometry, Seasonal variations, Petroleum industry, Ice breakup, Freezeup.
Long-term, site-specific statistics on the summer ice conditions in the Harrison Bay-Camden Bay area are presented in probabilistic terms. The statistics are based on twenty-three years of ice observations acquired by commercial ships and icebreakers, ice reconnaissance flights, and various satellites. Data is given on breakup and freezeup dates, the first occurrence of open water, and the number of continuous and total open water days. The impact of the summer ice conditions on petroleum activities in the study area are also briefly discussed.

36-263
Surface agitation in ice prone waters.
Andersen, P.F., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.820-829, 2 refs.
Ocean waves, Wave propagation, Ice formation, Frazil ice, Slush, Ice removal, Equipment, Ports.

36-264
Winds and waves Lancaster Sound.
LaChapelle, A., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.830-842, 4 refs.
Wind factors, Ocean waves, Offshore structures, Wind velocity, Meteorological data.

36-265
Fracture of a solid ice cover by wind-induced or ship-generated waves.
Carter, D., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.843-856. With French summary. 9 refs.
Ouellet, Y., Pay, P.
Ice cracks, Wind factors, Ocean waves, Ice breaking, Fracturing, Wave propagation, Ice cover, Analysis (mathematics), Ice cover thickness.

36-266
New model basin for the testing of ice-structure interactions.
Pratte, B.D., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.857-866, 5 refs.
Tinker, G.W.
Ice solid interface, Dynamic loads, Laboratory techniques, Tests.

36-267
Preliminary results of ice modeling in the East Greenland area.
Tucker, W.B., et al, MP 1458, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Quebec, Canada, July 27-31, 1981 Proceedings, Quebec, Canada, Universite Laval, 1981, p.867-878, 13 refs.
Hibler, W.D., III.
Ice models, Ice plasticity, Stresses, Drift, Thermodynamics, Sea ice, Buoyancy, Viscosity.
A sea ice model which employs a viscous-plastic constitutive law has been applied to the East Greenland area. The model is run on a 40-km spatial scale at 1/4 day time steps for a 60-day period, using forcing data beginning 1 October 1979. Preliminary results verify that the model predicts reasonable thicknesses and velocities well within the ice margin. Separate simulations show that thermodynamics only and free drift with thermodynamics produce inadequate results. In particular, the free drift simulation produces unrealistic ice trajectories with excessive drift toward the coast and unreasonable nearshore thicknesses. The net results of these simulations tend to verify that internal ice stress, thermodynamics, and ice import must be considered to properly model this region.

36-268
Pack ice drift and weather impact.
Zorn, R., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.879-891, 4 refs.
Valeur, H.H.
Pack ice, Drift, Wind factors, Impact strength, Meteorological charts, Remote sensing, Aerial surveys.

36-269
Development of an ice transport model for Great Lakes application.
Rumer, R.R., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.892-901, 19 refs.
Wake, A., Chich, S.-H., Crissman, R.D.
Ice mechanics, Drift, Ice conditions, Ice strength, Ice forecasting, Viscosity, Mathematical models, Computer applications.

36-270
Biologically important areas in the Arctic Ocean.
Palosuo, E., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.902-911, 20 refs.
Marine biology, Nutrient cycle, Biomass, Algae, Ice melting, Ice conditions, Environmental protection.

36-271
Pooling of oil under sea ice.
Kovacs, A., et al, MP 1459, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.912-922, 15 refs.
Morey, R.M., Cundy, D.F., Dicoff, G.
Oil spills, Sea ice, Ice bottom surface, Ice cover thickness, Profiles, Radar echoes, Echo sounding, Water pollution, Environmental impact.
Ice thickness profiles were constructed for six fast ice locations in the vicinity of Prudhoe Bay, Alaska, using a radar echo sounding system. The sounding data revealed in detail the undulating relief of the bottom of the sea ice in which oil could pool up if released under the ice. In general, ice bottom morphology was found to reflect variation of the surface snow cover thickness and ice deformation. However, at several sites the ice bottom relief could not be correlated with these factors. Slush ice accumulations of up to 0.5 m were apparently the cause of this bottom roughness. Estimates of the volume of oil that could pool up in the ice bottom relief range from 20,000 to 60,000 cu m/sq km. For undeformed fast ice with no bottom slush ice growth, the potential pooling capacity varied from about 10,000 to 35,000 cu m/sq km. The effect of slush ice relief and structure on potential under-ice oil pooling is for the most part unknown.

36-272
Movement of oil and gas spills under sea ice.
Malcolm, J.D., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.923-936, 9 refs.
Cammaert, A.B.
Oil spills, Natural gas, Gas inclusions, Ice bottom surface, Surface roughness, Water pollution, Wells, Blasting, Pack ice, Environmental impact.

36-273
Need for real world assessment of the environmental effects of oil spills in ice-infested marine environments.
Robilliard, G.A., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Quebec, Canada, July 27-31, 1981 Proceedings, Québec, Canada, Universite Laval, 1981, p.937-944, 15 refs.
Busdosh, M.
Oil spills, Hydrocarbons, Sea ice, Environmental impact, Marine biology, Water pollution, Bottom sediment, Human factors.
With the increase in the oil exploration activities in arctic regions, accompanied by the concerns of regulators and citizens over oil spills, increased effort must be placed on documenting the "real world" impact of oil spills in arctic waters. These data will provide a basis for predicting with confidence the realistic environmental effects of oil spills in ice-infested marine environments. The antarctic benthic community is generally pristine relative to hydrocarbon pollution due to man's activities. However, at Winter Quarters Bay, McMurdo Sound, there was a considerable amount of trash on the bottom, primarily from the McMurdo Station garbage dump on the sea ice above, and the fauna was extremely depauperate compared to physically similar areas nearby. The sediments from the clam bed in Winter Quarters Bay contained approximately 0.-23% petroleum hydrocarbon by dry weight of sediment. A small amount of the hydrocarbons apparently was biogenic in origin, and most of it appeared to be lubricating oil, and possibly heavy residual or Bunker C fuel. No diesel fuel was present. (Auth. mod.)

36-274
Ice action on shorelines. [L'action des glaces sur les littoraux].
Dionne, J.C., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.955-973, In French with English summary. 71 refs.
Sea ice, Drift, Ocean bottom, Bottom sediment, Ice erosion, Shoreline modification, Ice navigation.

36-275
Analysis of ice-override potential along the Beaufort Seacoast of Alaska.
Harper, J.R., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.974-984, 8 refs.
Owens, E.H.
Sea ice distribution, Ice override, Ice mechanics, Shoreline modification, Forecasting.

36-276
Sea ice piling at Fairway Rock, Bering Strait, Alaska: observations and theoretical analysis.
Kovacs, A., et al, MP 1460, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.985-1000, 15 refs.
Sodhi, D.S.
Sea ice, Ice pileup, Ice conditions, Ice formation, Pressure ridges, Remote sensing, LANDSAT, Grounded ice, Flexural strength, Floating ice, Analysis (mathematics), Offshore structures.
Information on sea ice conditions in the Bering Strait and the icefoot formation around Fairway Rock, located in the strait, is presented. Cross-sectional profiles of Fairway Rock and the relief of the icefoot are given along with theoretical analyses of the possible forces active during icefoot formation. It is shown that the ice cover most likely fails in flexure as opposed to crushing or buckling, as the former requires less force. Field observations reveal that the Fairway Rock icefoot is massive, with ridges up to 15 m high, a seaward face only 20 deg from vertical, and interior ridge slopes averaging 33 deg. The icefoot is believed to be grounded, and its width ranges from less than 10 to over 100 meters.

36-277
Numerical model of iceberg drift.
Smith, S.D., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada, Université Laval, 1981, p.1001-1011, 1 ref.
Banke, E.G.
Icebergs, Drift, Ice mechanics, Mathematical models, Wind factors, Ocean currents.

36-278
Iceberg scour studies in medium dense sands.
Chari, T.R., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Quebec, Canada, July 27-31, 1981 Proceedings, Quebec, Canada, Universite Laval, 1981, p.1012-1019, 9 refs.
Green, H.P.
Icebergs, Drift, Ice scoring, Erosion, Ocean bottom, Sands, Underground pipelines.

36-279
Sensitivity analysis of a simple model of seasonal sea ice growth.
Miller, J.D., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981 Proceedings, Québec, Canada, Universite Laval, 1981, p.1020-1030, 18 refs.
Sea ice, Ice growth, Seasonal variations, Climatic factors, Air temperature, Wind velocity, Solar radiation, Snow density, Snow depth, Analysis (mathematics).

36-280
Studies of sea ice ridging with a ship-borne laser profilometer.
Lepparanta, M., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981 Proceedings, Québec, Canada, Universite Laval, 1981, p.1031-1037, 9 refs.
Palosuo, E.
Sea ice distribution, Pressure ridges, Lasers, Profiles, Measuring instruments, Oceanographic ships.

36-281
Chukchi Sea ice motion.
Reimer, R.W., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981 Proceedings, Québec, Canada, Universite Laval, 1981, p.1038-1046, 8 refs.
Schedvin, J.C., Pritchard, R.S.
Sea ice, Ice mechanics, Drift, Ocean currents, Ice strength, Oil spills, Water pollution, Distribution.

36-282
Numerical simulation of ice accretion using the element method.
McComber, P., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981 Proceedings, Québec, Canada, Université Laval, 1981, p.1047-1056, 9 refs.
Ice accretion, Ice growth, Supercooled clouds, Cloud droplets, Ice cover thickness, Aircraft icing, Mathematical models.

36-283
Effects of an electric field on the microstructure and mechanical properties of glaze and rime.
Laforte, J.L., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981 Proceedings, Québec, Canada, Universite Laval, 1981, p.1057-1066, 10 refs.
Luan, P.C., Druez, J.
Glaze, Ice accretion, Ice mechanics, Microstructure, Electric fields, Compressive properties, Ice adhesion, Ice density, Bubbles, Supercooled clouds, Cloud droplets, Power line icing.

36-284
Atmospheric superstructure ice accumulation measurements.
McLeod, W.R., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Québec, Canada Université Laval, 1981, p.1067-1093, 18 refs.
Glaze, Icing, Ice accretion, Offshore structures, Superstructures, Supercooled clouds, Climatic factors, Precipitation (meteorology), Sea spray.

36-285
Laboratory study of heat transfer to an ice cover from a warm water discharge.
Hill, I.K., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981 Proceedings, Québec, Canada, Universite Laval, 1981, p.1094-1103, 5 refs.
Cammaert, A.B., Miller, D.R.
Ice cover thickness, Heat transfer, Water temperature, Ice formation, Countermeasures, Thermal effects, Water flow, Velocity, Tests.

36-286
Combination of a sinking warm water discharge and air bubble curtains for ice reducing purposes.
Haggkvist, K., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Quebec, Canada, July 27-31, 1981. Proceedings, Quebec, Canada, Université Laval, 1981, p.1104-1113, 8 refs.
Bubbling, Water temperature, Ice formation, Ice prevention, Ice cover thickness, Experimentation.

36-287
Explosive demolition of floating ice sheets.
Fonstad, G.D., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Quebec, Canada, July 27-31, 1981. Proceedings, Quebec, Canada, Université Laval, 1981, p.1114-1123, 8 refs.
Gerard, R., Stimpson, B.
Ice breaking, Explosion effects, Ice jams, Ports, Ice navigation, Ice cover thickness.
Demolition of floating ice sheets is a common technique used to clear shipping lanes, construct temporary port facilities in arctic and antarctic environments and to mitigate ice jam effects on inland waterways both before and after ice jam formation. Mellor carried out a review and analysis, on the data existing to 1972, of the effects of point charges on floating ice sheets. On the basis of this analysis, Mellor made preliminary recommendations of the optimum charge size and placement depth as a function of ice thickness. In this paper a series of tests conducted to confirm Mellor's analysis and to determine the optimum spacing of charges in a row are described. The appropriate dimensionless terms are derived, and equations giving the optimum ice sheet demolition parameters are given.

36-288
Cutting ice with "high" pressure water jets.
Coveney, D.B., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Quebec, Canada, July 27-31, 1981. Proceedings, Quebec, Canada, Université Laval, 1981, p.1124-1134, 8 refs.
Ice cutting, Hydraulic jets, Ice breaking, Penetration.

36-289
Theoretical and experimental research of naled phenomena. (Teoreticheskie i eksperimental'nye issledovaniia nalednykh iavlenii).
Kotlıakov, V.M., ed. *Gliatsiologicheskie issledovaniia*, 1981, No.26, 108p. In Russian. For individual papers see 36-290 through 36-302. Refs. passim.
Alekseev, V.R., ed. Lebedeva, I.M., ed.
Naleds, Glaze, Icing, Artificial ice, Ice accretion, Ice structure, Ice volume, Ice (construction material), Glacial hydrology, Permafrost hydrology.

36-290
Theory of icings in the system of geosciences. (Uchenie o naledniakh v sisteme nauk o zemle).
Tolstikhin, N.I., *Gliatsiologicheskie issledovaniia*, 1981, No.26, p.5-7, In Russian with English summary, 10 refs.
Naleds, Glaze, Icing, Geocryology.

36-291
Problems of methodology in the study of naleds. (Voprosy metodologii izucheniia naledei).
Sokolov, B.L., *Gliatsiologicheskie issledovaniia*, 1981, No.26, p.8-15, In Russian with English summary, 14 refs.
Naleds, Ice formation, Permafrost hydrology, Ice deterioration, Ice volume, Climatic factors.

36-292
Conditions of ice formation at the solid body-water interface. (Usloviia vozniknoveniia l'da na granitse tverdogo tela i vody).
Golubev, V.N., *Gliatsiologicheskie issledovaniia*, 1981, No.26, p.16-21, In Russian with English summary, 14 refs.
Ice formation, Ice nuclei, Ice accretion, Ice water interface, Ice solid interface, Icing, Wood, Metals, Plastics.

36-293
Heat transfer during water freezing on ice bases. (Teploobmen pri namorazhivanii vody na ledianom osnovanii).
Alekseev, V.R., et al, *Gliatsiologicheskie issledovaniia*, 1981, No.26, p.22-35, In Russian with English summary, 30 refs.
Smorygin, G.I.
Naleds, Icing, Ice accretion, Artificial ice.

36-294
Study of water freezing on ice surfaces. (Issledovanie zamerzaniia vody na poverkhnosti l'da).
Kazakov, A.P., *Gliatsiologicheskie issledovaniia*, 1981, No.26, p.36-42, In Russian with English summary, 9 refs.
Naleds, Ice accretion, Permafrost hydrology, Alimentation, Freezing rate.

36-295
Theory of water droplet freezing. (Voprosy teorii kapel'nogo namorazhivaniia vody).
Smorygin, G.I., *Gliatsiologicheskie issledovaniia*, 1981, No.26, p.43-50, In Russian with English summary, 3 refs.
Artificial ice, Ice accretion, Drops (liquids), Dispersions.

36-296
Experimental studies of spray icing under laboratory conditions. (Eksperimental'nye issledovaniia bryzgovogo obledeneniia v laboratornykh usloviiakh).
Baranov, V.V., *Gliatsiologicheskie issledovaniia*, 1981, No.26, p.51-54, In Russian with English summary, 4 refs.
Icing, Artificial ice, Drops (liquids), Ice accretion, Artificial freezing, Cold chambers, Laboratory techniques, Test equipment.

36-297
Calculating pressure produced by ice growth in frost mounds. (K raschetu davleniia voznikaiushchego pri l'doobrazovanii v naledniykh bugrakh).
Pekhovich, A.I., et al, *Gliatsiologicheskie issledovaniia*, 1981, No.26, p.55-59, In Russian with English summary, 8 refs.
Razgovorova, E.L.
Frost mounds, Ice growth, Ice pressure, Frost heave.

36-298
Regularities governing structure of ice formed on solid bodies. (Zakonomernosti formirovaniia struktury naledneykh obrazovanii na tverdykh telakh).
Golubev, V.N., *Gliatsiologicheskie issledovaniia*, 1981, No.26, p.60-66, In Russian with English summary, 2 refs.
Ice solid interface, Ice formation, Ice structure, Ice crystal nuclei, Surface roughness.

36-299
Formation of artificial ice with cellular structure. (Formirovanie iskusstvennogo naledngo l'da rykhloi struktury).
Smorygin, G.I., *Gliatsiologicheskie issledovaniia*, 1981, No.26, p.67-78, In Russian with English summary, 25 refs.
Ice (construction material), Artificial ice, Ice structure, Ice density, Porosity, Thermal insulation, Drops (liquids), Dispersions, Artificial freezing.

36-300
Mechanism of naled formation on rivers. (O mekhanizme obrazovaniia naledei na rekakh).
Chizhov, A.N., *Gliatsiologicheskie issledovaniia*, 1981, No.26, p.79-86, In Russian with English summary, 6 refs.
Icebound rivers, Naleds, Ice accretion, Alimentation, Water pressure.

36-301
Permafrost screen effect on heat release and distribution of ground water pressure. (Vliianie merzlotnogo poiasa na teplootdachu i raspredelenie podpora fil'tratsionnogo potoka), *Gliatsiologicheskie issledovaniia*, 1981, No.26, p.87-93, In Russian with English summary, 9 refs.
Permafrost hydrology, Naleds, Alimentation, Suprapermafrost ground water, Permafrost beneath structures, Permafrost control.

36-302
Peculiarities of heat balance of naleds in the Pamirs and the possibility of their use to increase summer discharge of rivers. (Osobennosti teplovogo balansa naledei Pamira i vozmozhnosti ikh ispol'zovaniia dlia uvelicheniia letnego stoka rek).
Lebedeva, I.M., *Gliatsiologicheskie issledovaniia*, 1981, No.26, p.94-102, In Russian with English summary, 14 refs.
Mountains, Naleds, Glacial hydrology, Glacial rivers, Runoff, Ice melting.

36-303
How dry should compressed air be to prevent line freeze. *Power*, Aug. 1980, 124(8), p.134-135.
Ice prevention, Compressors, Pipeline freezing, Countermeasures, Pneumatic lines.

36-304
Correlation function studies for snow and ice.
Vallese, F., et al, *Journal of applied physics*, Aug. 1981, 52(8), p.4921-4925, 15 refs.
Kong, J.A.
Snow physics, Ice physics, Microwaves, Remote sensing, Ice electrical properties, Snow electrical properties, Electric fields, Correlation, Grain size, Analysis (mathematics).

36-305
Evolution of a high pressure brine spray system.
Kasinskas, M.M., *Public works*, Aug. 1980, 3(8), p.54-56.
Snow removal, Ice removal, Brines, Chemical ice prevention, Ice removal, Road icing, Winter maintenance.

36-306
City examines effects of road salting on its water supply.
Moyland, R.L., Jr., *Public works*, Aug. 1980, 3(8), p.59-60.
Road icing, Salting, Water pollution, Water supply, Streets, Chemical ice prevention.

36-307
County faces winter without fear.
Nelson, T.E., *Public works*, Aug. 1980, 3(8), p.65.
Snow removal, Ice control, Equipment, Salting, Sanding, Winter maintenance.

36-308
Snow removal equipment modifications designed to reduce overtime. *Public works*, Aug. 1980, 3(8), p.72-73.
Snow removal, Ice removal, Equipment, Modification.

36-309
Sensible salting program depends on knowing your equipment.
Bell, B., *Public works*, Aug. 1980, 3(8), p.84-86.
Salting, Chemical ice prevention, Snow removal, Ice control, Equipment.

36-310
Community expects aggressive approach to snow and ice control, gets it.
Wray, W., Jr., *Public works*, Aug. 1980, 3(8), p.86-87.
Snow removal, Ice removal, Ice control, Streets, Storage, Equipment.

36-311
Distribution of isotopes in some natural waters in the region north of Mt. Jolmo Lungma.
Tao, J., *Scientia Sinica*, Nov. 1973, 16(4), p.560-564, 8 refs.
Isotopes, Water chemistry, Glacier ice, Snow composition, Mountains, Altitude, China—Jolmo Lungma Mountain.

36-312
Basic features of the glaciers of the Mt. Jolmo Lungma region, southern part of the Tibet Autonomous Region, China.
Hsieh, T., et al, *Scientia Sinica*, Jan.-Feb. 1975, 18(1), p.106-130, 26 refs.
Mountain glaciers, Glacier mass balance, Glacial hydrology, Glacier flow, Glacier oscillation, Glacier surfaces, Ice temperature, Solar radiation, Erosion, China—Jolmo Lungma Mountain.

36-313
Closed-form analytical solution for freezing adjacent to a plane wall cooled by forced convection.
Hsu, C.F., et al, *Journal of heat transfer*, Aug. 1981, 103(3), p.596-598, 2 refs.
Sparrow, E.M.
Freezing, Walls, Convection, Turbulent flow, Liquids, Analysis (mathematics).

36-314
Test method of freezing bricks: its influence on their durability.
Ritchie, T., *Canadian Ceramic Society—Journal*, 1975, Vol.44, p.21-22, With French summary, 6 refs.
Bricks, Freezing, Strength, Damage, Tests.

36-315
Durability studies on bricks used in the Atlantic Provinces.
Davison, J.I., *Canadian Ceramic Society—Journal*, 1975, Vol.44, p.25-29, With French summary, 6 refs.
Bricks, Freeze-thaw tests, Compressive properties, Strength.

36-316
Vacuum saturation method for predictin freeze-thaw durability of stabilized materials.
Dempsey, B.J., et al. *Highway research record*, 1973, No.442, p.44-57, 12 refs.
Thompson, M.R.
Soil stabilization, Freeze thaw tests, Soil strength, Cement admixtures, Saturation, Soil water, Temperature effects.

36-317
Climatic warming effect on antarctic ice sheet is uncertain.
Bentley, C.R. *Chemical and engineering news*, Jan 26, 1981, 59(4), p.35.
Ice sheets, Ice shelves, Ice melting, Antarctica—West Antarctica.
Possible effects on the West Antarctic ice sheet resulting from a global warming trend produced by continued large-scale release of man-generated CO_2 into the atmosphere are discussed. Some of the aspects considered are the effect of the geologic structure of Antarctica on the warming trend; the fate of the large ice shelves and glaciers; and possible increase in temperature of the water abutting the ice.

36-318
Hyperbolic reflections on Beaufort Sea seismic records.
Neave, K.G., et al. *U.S. Army Cold Regions Research and Engineering Laboratory*, Mar 1981, CR 81-02, 16p., ADA-099 172, 8 refs.
Sellmann, P.V., Delaney, A.
Bottom sediment, Seismic reflection, Ocean bottom, Ice conditions, Sea ice, Beaufort Sea.
Many hyperbolic reflections have been observed on marine seismic records obtained during oil exploration in the Beaufort Sea, and on USGS seismic sub-bottom profiles from the Prudhoe Bay vicinity. A hyperbolic projection system was designed to rapidly measure seismic velocities from the curves on the records. The velocities observed were approximately the velocity of sound in water. The hyperbolic signals also showed dispersion properties similar to acoustic normal modes in shallow water. These observations indicate that the signals responsible for the hyperbolic reflections propagate as normal modes within the layer, with very limited penetration of the seabed. Determinations of the dominant frequency of these signals indicate that the penetration into the seabed has a characteristic attenuation depth (skin depth) of about 1.5 m for the sub-bottom profiles and 12 m for the marine records. It therefore appears that some hyperbolic reflections may be generated by variations in materials that occur near the seabed. There is some evidence of linearity of the anomalies, possibly related to sediment-filled or open ice gouges, or other changes in material properties at shallow depths.

36-319
Hydraulic model study of a water intake under frazil ice conditions.
Tantillo, T.J., *U.S. Army Cold Regions Research and Engineering Laboratory*, Mar 1981, CR 81-03, 11p., ADA-099 171, 8 refs.
Water intakes, Ice conditions, Frazil ice, Hydraulic structures, Ice prevention, Protection, Models, Buoyancy.
A 1:24 scale hydraulic model study of a water intake under frazil ice conditions is presented. The intake, located 9 m below the surface of the St. Lawrence River in Massena, New York, has a throughflow of 0.14 cu m/s. The model study, conducted in the refrigerated flume facility of the U.S. Army Cold Regions Research and Engineering Laboratory, investigated methods of minimizing the frazil ice blockage on the intake. Two protective structures were modeled and the relative benefits of each are presented. The additional cross-sectional area provided by the protective structures lowered the vertical velocity component of the intake water to 0.0027 m/s. At this velocity the buoyant force acting on the frazil ice particle is larger than the downward drag force, causing the particle particle to rise. The results demonstrate that under certain low flow conditions a protective structure can minimize frazil ice blockage problems.

36-320
Movement study of the trans-Alaska pipeline at selected sites.
Ueda, H.T., et al. *U.S. Army Cold Regions Research and Engineering Laboratory*, Apr. 1981, CR 81-04, 32p., ADA-101 605, 3 refs.
Gatfield, D.E., Haynes, F.D.
Pipelines, Mechanical properties, Stability, Pipeline supports, Anchors, United States—Alaska.
Eight sites along the trans-Alaska pipeline from the Denali Fault to Fairbanks were selected for pipeline and pipeline support movement studies. Four measurement surveys were conducted, starting before oil pumping operations began up to September 2, 1978, to determine the lateral and longitudinal pipe movement due to the thermal expansion of elevated sections of the pipeline, the tilt of the vertical support members (VSM's), and the changes in relative elevation of the support crossbeams. A maximum lateral and longitudinal motion of the pipe of 13.3 4 in and 2.3 16 in respectively were measured up to September 1978. Tilt data for 180 VSM's showed little change over a one-year period, with only 5 VSM's tilting more than 0.5 deg. Relative elevation measurements showed insignificant changes for two sites compared over a one year period. Comparisons of our data with as-built elevations at 8 sites shows a few large differences that cannot be readily explained. In general the pipeline and its supports, at least at the sites studied, show minimal movement and activity.

36-321
Vibrations caused by ship traffic on an ice-covered waterway.
Haynes, F.D., et al. *U.S. Army Cold Regions Research and Engineering Laboratory*, Apr. 1981, CR 81-05, 27p., ADA-101 541, 11 refs.
Maattanen, M.
Ships, Vibration, Ice breaking, Ice cover, Frozen ground, Seismology.
Vibrations have been felt on shore along the St. Marys River in Michigan during the passage of ships through ice. Vibration measurements were made on a ship, on the ice, on the shore, and on buildings along the shore. Vibration levels in 1979 were about an order of magnitude lower than levels that would cause damage to building walls. Two factors, however, could have reduced the vibration levels in 1979: a lack of ice jams and a record high snow cover which prevented the soil from freezing. Vibration levels with an ice cover are about four times those without an ice cover. Icebreaking and opening the channel can reduce vibration levels by about 50% for a ship following closely behind another ship. The dominant frequencies measured on shore were associated with propeller excitation. The dominant frequencies and magnitudes measured on the bow of a ship are an order of magnitude higher than those on the shore and are related to icebreaking by the bow. Vibration magnitudes are dependent upon the velocity of the ship, the energy expended by the ship, the cross-sectional area of the ship, weather, conditions of the ice and soil, and site-specific conditions. Further studies are needed to determine the effects of these factors and to determine the mode of energy transmission.

36-322
Periglacial phenomena and the mean annual temperature during the last glacial time in the Netherlands.
Maarleveld, G.C., *Biuletyn peryglacjalny*, 1976, No.26, p.57-78, Refs. p.75-78.
Periglacial processes, Paleoclimatology, Permafrost distribution, Pingos, Cryoturbation, Patterned ground, Frost weathering.

36-323
Distribution and drift of ice in the Greenland Sea in March-July of 1976 from satellite information. [Raspredelenie i dinamika l'dov v Grenlandskom more v marte-iiule 1976 g. po dannym sputnikovoi informatsii].
Bushuev, A.V., et al, Poleks-Sever-76, Chast' I (Polex-North-76, Part I) edited by A.F. Treshnikov, Leningrad, Gidrometeoizdat, 1979, p.115-128, In Russian, 3 refs.
Bychenkov, IU.D., Provorkin, A.V.
DLC G630.R8P64
Ice surveys, Sea ice, Drift, Ice edge, Spaceborne photography.

36-324
Composition of the silt fraction in weakly and nonpodsolized sandy soils of southern taiga subzones. [Sostav ilistoi fraktsii v neopodzolennykh i slaboopodzolennykh peschanykh pochvakh IUzhnotaezhnoi podzony].
Lialin, S.P., et al, *Moscow. Universitet. Vestnik. Seriia 17 Pochvovedenie*, Apr.-June 1981, No.2, p.28-37, In Russian with English summary. 28 refs.
Sokolova, T.A.
Taiga, Podsol, Soil composition, Soil profiles, Clay minerals.

36-325
Hydrologic and ecologic peculiarities of soils developed on varved clays. [Gidrologo-ekologicheskie osobennosti pochv na lentochnykh glinakh].
[Akimenko, V.I., *Moscow. Universitet. Vestnik. Seriia 17 Pochvovedenie*, Apr.-June 1981, No.2, p.38-46, In Russian with English summary. 10 refs.
Periglacial processes, Glacial lakes, Sedimentation, Clays, Cryogenic soils, Podsol, Paludification.

36-326
Engineering-geological peculiarities of clays in the upper cross-section of the West Siberian platform. [Inzhenerno-geologicheskie osobennosti glinistykh porod verkhnego strukturnogo etazha Zapadno-Sibirskoi plity].
Gerasimova, A.S., et al, *Inzhenernaia geologiia*, July-Aug. 1981, No.4, p.38-45, In Russian. 4 refs.
Kolomenskii, E.N., Markevich, T.N.
Cryogenic soils, Frozen fines, Clays, Ground ice, Engineering geology.

36-327
Effect of artificial thermal fields on geological environment under urban conditions. [K voprosu o vliianii iskusstvennykh teplovykh polei na geologicheskuiu sredu v usloviiakh goroda].
Zhigalin, V.D., et al, *Inzhenernaia geologiia*, July-Aug. 1981, No.4, p.63-69, In Russian. 16 refs.
Koff, G.L., Anchenko, IU.F.
Urban planning, Buildings, Underground facilities, Underground storage, Liquefied gases, Artificial freezing, Soil temperature, Freeze thaw cycles.

36-328
Reinforced concrete structures made of low-rubble concrete. [Zhelezobetonnye izdeliia iz malobutchebenochnogo betona].
Katkov, D.A., et al, *Stroitel'stvo i arkhitektura*, July 1981, No.7, p.1-34, In Russian.
Garbuzov, N.G., Isbenko, N.N., Osipova, IU.S.
Reinforced concretes, Concrete aggregates, Concrete strength, Frost resistance.

36-329
Comets in the solar system. [Komety v solnechnoi sisteme].
Vsekhsviatskii, S.K., Moscow, Znanie, 1974, 64p. (pertinent p.36-49), In Russian. 9 refs.
Extraterrestrial ice, Ice sublimation.

36-330
Dust content in mines of the Far North and Northeastern USSR. [Zapylennost' vozdukha v usloviiakh shakht Severa i Severo-Vostoka].
Kudriashov, V.V., et al, Problemy rudnichnoi aerologii i primenenie elektricheskoi energii v vosplamenitaiushchikhsia sredakh (Problems of mining aerology and the use of electric energy in combustible media) edited by N.V. Mel'nikov, Moscow, Izdevo Akademii nauk SSSR, 1974, p.136-145, In Russian. 8 refs.
Voronina, I.D.
DLC TN301.P822
Mining, Ventilation, Dust control, Permafrost.

36-331
Thermal conductivity of peat in the permafrost zone. [Teploprovodnost' torfa v zone vechnoi merzloty].
Zhuravlev, V.A., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1981, No.6, p.13-15, In Russian. 4 refs.
Peat, Thermal regime, Thermal conductivity, Freeze thaw cycles, Permafrost depth.

36-332
Effect of some admixtures on the strength and structure of heavy concretes. [Vliianie nekotorykh dobavok na prochnostnye i strukturnye svoistva tiazhelogo betona].
Samarin, IU.A., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1981, No.6, p.70-73, In Russian. 5 refs.
Concretes, Prefabrication, Concrete admixtures, Concrete strength, Freeze thaw tests.

36-333
Variations in oscillation frequencies of earth dams during the formation of frozen zones. [Izmenenie chastot sobstvennykh kolebanii plotin iz gruntovykh materialov pri obrazovanii v nikh promorozhennykh zon].
Idel'son, V.B., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1981, No.7, p.83-86, In Russian. 4 refs.
Uliashinskii, V.A.
Earth dams, Rock fills, Soil freezing, Frost heave, Freeze thaw cycles.

36-334
Physical-technical basis for using hydraulic dust control in mines at subzero temperatures. [Fiziko-tekhnicheskie osnovy gidroobespylivaniia shakht v usloviiakh otritsatel'nykh temperatur].
Kudriashov, V.V., Problemy sovremennoi rudnichnoi aerologii (Problems of modern mining aerology) edited by N.V. Mel'nikov, Moscow, Nauka, 1974, p.186-204, In Russian. 25 refs.
DLC TN301.P824
Mines (excavations), Dust control, Frozen rocks, Wettability, Solutions, Permafrost.

36-335
Relationship between mean annual values of albedo and short wave radiation balance and those of early spring. [Sviaz' srednegodovykh znachenii al'bedo i korotkovolnovogo radiatsionnogo balansa s temi zhe pokazateliami rannei vesny].
Tooming, Kh.G., *Meteorologiia i gidrologiia*, May 1981, No.5, p.48-52. In Russian with English summary. 6 refs.
Snow optics, Albedo, Snow air interface, Radiation balance, Radiation absorption, Seasonal variations.

36-336
Classical correlation method used in forecasting bora in Novaya Zemlya. [Prognoz novozemel'skoi bory s ispol'zovaniem metoda kanonicheskoi korreliatsii].
Polkhov, A.P., *Meteorologiia i gidrologiia*, May 1981, No.5, p.59-64. In Russian with English summary. 8 refs.
Atmospheric disturbances, Wind velocity, Weather forecasting, Polar regions.

36-337
Diagnostic model of ice and water circulation in the Arctic Basin. [Diagnosticheskaia model' tsirkuliatsii vod i l'dov v Arkticheskom basseine].
Ponomarev, V.I., et al, *Meteorologiia i gidrologiia*, Mar. 1981, No.3, p.68-75. In Russian. 14 refs.
Gazova, L.A.
Ocean currents, Water transport, Sea ice, Drift, Mathematical models, Arctic Ocean.

36-338
Determining the filtration coefficients of cohesive frozen soils from their kinetic specific surfaces. [Opredelenie koeffitsientov fil'tratsii sviaznykh gruntov v merzlom sostoianii cherez ikh kineticheskuiu udel'nuiu poverkhnost'].
Shtykov, V.I., *Meteorologiia i gidrologiia*, Mar. 1981, No.3, p.109-112. In Russian. 5 refs.
Frozen ground, Cohesion, Permeability.

36-339
Evaluating the applicability of various methods of determining evaporation from water surfaces of hummocky bogs. [Otsenka primenimosti razlichnykh metodov opredeleniia isparenila s vodnoi poverkhnosti v zone bugristykh bolot].
Moskvin, I.U.P., *Meteorologiia i gidrologiia*, Mar.1981, No.3, p.112-115. In Russian. 3 refs.
Swamps, Hummocks, Air water interactions, Evaporation.

36-340
Forecasting mean monthly air temperature fields over the northern hemisphere using a computerized group analog scheme. [O prognoze srednemesiachnykh polei temperatury vozdukha nad Severnym polushariem s ispol'zovaniem avtomatizirovannoi skhemy gruppovykh analogov].
Kleshchenko, L.K., et al, *Meteorologiia i gidrologiia*, Feb. 1981, No.2, p.28-39. In Russian with English summary. 18 refs.
Rankov, E.IA.
Weather forecasting, Air temperature, Long range forecasting, Synoptic meteorology, Meteorological data.

36-341
Variability of ice conditions on ship navigation routes. [Izmenchivost' ledovykh uslovii na puti plavaniia sudov].
Buzuev, A.IA., et al, *Meteorologiia i gidrologiia*, Feb. 1981, No.2, p.69-76. In Russian with English summary. 11 refs.
Fediakov, V.E.
Ice navigation, Sea ice, Drift, Ice surveys, Ice reporting.

36-342
Visibility of light signals in ice fog. [O vidimosti svetovykh signalov v usloviiakh kristallicheskogo tumana].
Pavlova, L.N., *Meteorologiia i gidrologiia*, Feb. 1981, No.2, p.108-109. In Russian. 7 refs.
Ice fog, Visibility, Light transmission.

36-343
Calculating heat flux into soil from temperature data. [Metod rascheta potoka tepla v pochvu po temperature].
Gordin, V.A., *Meteorologiia i gidrologiia*, Jan. 1981, No.1, p.54-60. In Russian with English summary. 7 refs.
Soil air interface, Surface temperature, Heat transfer, Mathematical models.

36-344
Model facilities for measuring air humidity at subzero temperatures. [Obraztsovye sredstva izmerenila vlazhnosti vozdukha pri otritsatel'nykh temperaturakh].
Usol'tsev, V.A., *Meteorologiia i gidrologiia*, Jan. 1981, No.1, p.108-113. In Russian. 14 refs.
Ice air interface, Air temperature, Humidity, Water vapor, Measuring instruments.

36-345
Forecasting monthly flood runoff distribution in the central and lower courses of the Ob' and Irtysh rivers. [Prognoz raspredeleniia stoka polovod'ia po mesiatsam v srednem i nizhnem techenii rek Obi i Irtysha].
Sapozhnikov, V.I., *Meteorologiia i gidrologiia*, Dec 1980, No.12, p.82-92. In Russian with English summary. 4 refs.
River ice, Ice jams, Floods, Water level, Forecasting.

36-346
Environmental protection in the area of the Main Administration of the Tiumen' Oil and Gas Production (Glavtyumenneftegaz). [Okhrana okruzhaiushchei sredy na predpriiatiiakh Glavtiumenneftegaza].
Belan, A.A., et al, *Neftianoe khoziaistvo*, Apr. 1981, No.4, p.59-61. In Russian.
Storozhev, V.S.
Subpolar regions, Petroleum industry, Environmental protection, Tundra, Taiga.

36-347
International exhibition "Construction under extreme conditions". [S mezhdunarodnoi vystavki "Stroitel'stvo v ekstremal'nykh usloviiakh"].
Itskovich, A., *Metrostroi*, 1981, No.2, p.29. In Russian.
Cold weather construction, Permafrost beneath structures, Earthquakes, Pipelines, Tunnels, Hydraulic structures, Construction equipment, Construction materials.

36-348
Thermal stability properties of a model of glacier flow.
Fowler, A.C., et al, *Geophysical journal*, Nov. 1980, 63(2), p.347-359. 19 refs.
Larson, D.A.
Glacier flow, Mathematical models, Thermal properties.

36-349
Thermal instability of natural convection flow over a horizontal ice cylinder encompassing a maximum density point.
Saitoh, T., et al, *Journal of heat transfer*, May 1980, 102(2), p.261-267. 19 refs.
Hirose, K.
Ice thermal properties, Heat transfer, Convection, Ice melting, Ice density.

36-350
Interferometric observation of natural convection during freezing from a vertical flat plate.
Van Buren, P.D., et al, *Journal of heat transfer*, May 1980, 102(2), 8 refs.
Viskanta, R.
Freezing, Plates, Convection, Heat transfer, Liquid solid interfaces, Solid phases, Experimentation.

36-351
Losses from the Fort Wainwright heat distribution system.
Phetteplace, G., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, June 1981, SR 81-14, 29p., ADA-103 741, 6 refs.
Willey, W., Novick, M.A.
Heat loss, Electric power, Pipelines, Steam, Thermal insulation, Computer applications, Analysis (mathematics).
This report estimates the heat losses from the heat distribution system at Fort Wainwright, Alaska. Specific data on the Fort Wainwright heat and power plant are given and a method is then developed to calculate the heat losses from buried utilidor systems, such as the one at Fort Wainwright. This method is programmed for computer execution and estimates are made for the Fort Wainwright system, where heat losses are found to be 204,500 MBtu/yr. Possible improvements to the system to reduce heat losses are examined. Of the possible combinations of additional pipe insulation investigated, the addition of 1 in. of insulation to the steam pipe only is the most economically favorable. The results also indicate that insulating only the generally larger pipes found in larger utilidors would be the most economically favorable approach. Possible reductions in heat losses due to reduced steam temperature are also given, as well as recommendations for refinement of the predictions.

36-352
Influence of snow cover to the ground temperature in the permafrost region in the northern part of the Great Xinan Mountain.
Dai, J., et al, *Journal of glaciology and cryopedology*, Feb. 1981, 3(1), p.10-18. In Chinese with English summary.
Li, E.
Permafrost thermal properties, Frozen ground temperature, Snow cover effect, Soil temperature, Seasonal variations, Statistical analysis.

36-353
On the problem of Quaternary glaciation and periglacial phenomena in mountains near Lanzhou.
Ren, B., *Journal of glaciology and cryopedology*, Feb 1981, 3(1), p.19-25. In Chinese with English summary.
Periglacial processes, Glaciation, Snow erosion, Geocryology, Frost weathering.

36-354
Periglacial landforms of the Changbai Shan.
Qiu, S., et al, *Journal of glaciology and cryopedology*, Feb. 1981, 3(1), p.26-31. In Chinese with English summary. 2 refs.
Li, F., Sui, X.
Landforms, Periglacial processes, Frost weathering, Nivation, Forest lines.

36-355
Discussion on the time of formation of permafrost on Qingzang Plateau.
Zhang, Y., et al, *Journal of glaciology and cryopedology*, Feb. 1981, 3(1), p.32-37. In Chinese with English summary. 11 refs.
Cai, S.
Permafrost origin, Permafrost dating, Mountains.

36-356
Study of the deviation coefficient of annual runoff of the rivers in northwest China.
Lai, Z., *Journal of glaciology and cryopedology*, Feb 1981, 3(1), p.38-44. In Chinese with English summary. 1 ref.
Runoff, Meltwater, Rivers, Glacier ablation, Snow melting, Glacier melting, Air temperature.

36-357
On the relation of the atmospheric water vapour and precipitation to the distribution of modern mountain glaciers in China.
Xiao, S., *Journal of glaciology and cryopedology*, Feb 1981, 3(1), p.45-52. In Chinese with English summary. 7 refs.
Mountain glaciers, Glacier alimentation, Precipitation (meteorology), Water vapor, Sounding.

36-358
Correlation between the glacial mass balance, snowline location and weather-climate conditions in the Tian Shan and Qilian Shan.
Kang, X., et al, *Journal of glaciology and cryopedology*, Feb 1981, 3(1), p.53-58. In Chinese with English summary. 2 refs.
Ding, L.
Glacier mass balance, Snow line, Climatic factors, Mountain glaciers.

36-359
Hydrogeological investigation methods and way of finding water in the permafrost region of Qilian Shan.
Cao, J., *Journal of glaciology and cryopedology*, Feb 1981, 3(1), p.59-64. In Chinese with English summary.
Ground water, Permafrost hydrology, Periglacial processes, Landforms, Ablation, Meltwater, Seasonal variations, Tests.

36-360
Present aspect on study of Antarctic ice cap.
Zhang, Q., *Journal of glaciology and cryopedology*, Feb. 1981, 3(1), p.65-77. In Chinese with English summary. 18 refs.
Ice sheets, Ice surveys, Climatology, Water supply, Sea ice, Ice shelves, Ice dating, Ice temperature.
The Antarctic ice cap is composed of continental ice sheet, ice shelves and sea ice. This paper mainly deals with their forms, thickness, temperature, density, flow, transformation, accumulation and melt, as well as the history of the continental ice sheet.

36-361
On the terminology of moraine terms and their concept and translation.
Research Group of Glaciological Sediment, *Journal of glaciology and cryopedology*, Feb. 1981, 3(1), p.78-82. In Chinese with English summary.
Moraines, Glacial deposits, Classifications.

36-362
Discussion on the study of the question of Quaternary glacier in Lu Shan by the method of accumulation area ratio.
Yao, T., *Journal of glaciology and cryopedology*, Feb. 1981, 3(1), p.82-86, In Chinese with English summary. 2 refs.
Glacier surveys, Glaciation, History.

36-363
Further application of the theory of stochastic perturbation of deterministic systems to simple climate models.
Benzi, R., et al, *Royal Meteorological Society, London. Quarterly journal*, July 1981, 107(453), p.549-559, 21 refs.
Pandolfo, J.P., Sutera, A.
Climatic changes, Mathematical models, Ice cover.
A previous paper considered the effect of stochastic perturbation on the long-term behaviour of a highly idealized energy-balanced model of zero spatial dimension. It was shown that, in the presence of stochastic perturbations, transitions between different stable equilibria, or 'climates', of the model become possible. The expected time for a stochastically perturbed model solution to leave the attractor basin of a stable equilibrium is called the 'exit time'. The 'exit time' must be considered as an important new parameter characterizing model behaviour. In order to illustrate the methodology described previously we apply these general considerations to a spatially one-dimensional Budyko-Sellers model. In fact, using two different heat capacity formulations, we test the sensitivity of such a model to stochastic perturbations. An interesting physical result, common to both versions of the model, is that if the noise level is confined below a certain value, then the solution corresponding to an 'ice-covered earth' will never be experienced. (Auth.)

36-364
Correlation between seismic microactivity, temperature and subsidence of water level at reservoirs.
Merkler, G., et al, *Journal of geophysics*, 1981, 49(3), p.198-206, 23 refs.
Bock, G., Fuchs, K.
Reservoirs, Water level, Seismology, Ice formation, Microanalysis.

36-365
Comparison of silver atom solvation in glassy and polycrystalline ices.
Ichikawa, T., et al, *Journal of chemical physics*, Sep. 1, 1981, 75(5), p.2472-2473, 6 refs.
Li, A.S.W., Kevan, L.
Ice structure, Metals, Adsorption, Ice crystal structure, Models, Silver.

36-366
Thermodynamic properties of water under pressure up to 5 kbar and between 28 and 120C. Estimations in the supercooled region down to -40C.
Minassian, L.T., et al, *Journal of chemical physics*, Sep. 15, 1981, 75(6), p.3064-3072, 19 refs.
Pruzan, P.
Supercooling, Thermodynamics, Water pressure, Water temperature, Compressive properties, Analysis (mathematics).

36-367
Iceberg towing procedures in the Atlantic. *Ocean industry*, Aug. 1981, 16(8), p.66-67.
Iceberg towing, Ice mechanics, Ice water interface.

36-368
Slope protection for artificial island.
Czerniak, M.T., et al, *Ocean industry*, Aug. 1981, 16(8), p.68-72, 7 refs.
Collins, J.I., Shak, A.T.
Artificial islands, Slope protection, Ice loads, Ice pileup, Wind direction, Ice conditions, Offshore structures, Wind factors, Design.

36-369
Cracks in concrete: Parts 1 and 2.
Kelly, J.W., *Concrete construction*, Sep. 1981, 26(9), p.725-734.
Concrete strength, Cracking (fracturing), Concrete hardening, Countermeasures, Tensile properties, Drying, Creep.

36-370
Final compaction of frost protection layers due to construction of bituminous top layers. [Nachverdichtung von Frostschutzschichten infolge Überbauung mit bituminös gebundenen Schichten],
Schulte, W., *Strasse und Autobahn*, June 1981, 32(6), p.231-238, In German. 9 refs.
Bitumens, Pavements, Frost protection, Roads.

36-371
Continental ice complexes: distinction between centres of outflow and centres of loading of the crust—example of the eastern Laurentide Ice-Sheet.
Hillaire-Marcel, C., *Zeitschrift für Geomorphologie*, June 1981, 25(2), p.225-228, 10 refs.
Land ice, Glacier flow, Glacier oscillation, Glaciation, Ice loads, Models, Tectonics.

36-372
Possible uses of freeze-purification in the reclamation of saline soils.
De Jong, E., *Canadian journal of soil science*, May 1981, 61(2), p.317-324, With French summary. 9 refs.
Saline soils, Countermeasures, Soil chemistry, Soil freezing, Salinity, Ground thawing, Meltwater, Water chemistry, Purification.

36-373
Coupled transport of water and heat in freezing soils: a field study.
Sheppard, M.I., et al, *Canadian journal of soil science*, May 1981, 61(2), p.417-430, With French summary. 23 refs.
Kay, B.D., Loch, J.P.G.
Soil freezing, Soil water migration, Heat transfer, Water transport, Ground water, Soil temperature, Seasonal variations.

36-374
Soil erosion losses from winter runoff in southern Ontario.
Van Vliet, L.J.P., et al, *Canadian journal of soil science*, May 1981, 61(2), p.451-454, With French summary. 12 refs.
Wall, G.J.
Soil erosion, Runoff, Snowmelt, Frozen ground, Models.

36-375
Impact forces of snow blocks sliding down from roof against walls. Pt. 1.
Nakamura, H., et al, *Japan. National Research Center for Disaster Prevention. Report*, Mar. 1981, No.25, p.169-189, In Japanese with English summary. 6 refs.
Abe, O., Nakamura, T.
Snow slides, Snow mechanics, Snow loads, Roofs, Impact strength, Walls, Velocity, Avalanche mechanics, Tests.

36-376
Dating material from the Ice Age. [Datering van materiaal uit Ystyd], *Scientiae*, Jan.-Mar. 1981, 22(1), p.25 and 39-40, Afrikaans and English.
Age determination, Peat, Pleistocene.

36-377
Method for measuring brash ice thickness with impulse radar.
Martinson, C.R., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, June 1981, SR 81-11, 10p., ADA-103 738, 3 refs.
Dean, A.M., Jr.
Ice floes, Ice cover thickness, Lake ice, Radar echoes.
During March 1980 a subsurface impulse radar system was successfully used on board a U.S. Coast Guard cutter to measure brash ice thickness in the Great Lakes. Manual ice thickness measurements were made in the test area to calibrate the radar data and to determine radar range settings. Radar-collected data were recorded on magnetic tape and later played back to a graphic recorder for interpretation. Most of the usable data were collected when the ship's speed was 3-4 knots.

36-378
Canada pushing for 1985 production. *Offshore*, May 1980, 40(5), p.149-159.
Artificial islands, Offshore landforms, Offshore drilling, Wells, Exploration, Cost analysis, Canada.

36-379
Technology ready for Alaskan work. *Offshore*, May 1980, 40(5), p.160-161.
Offshore drilling, Artificial islands, Ice conditions, Beaufort Sea.

36-380
Soviets plan Arctic work by 1982. *Offshore*, May 1980, 40(5), p.162-168.
Offshore drilling, Natural resources, Petroleum industry, Research projects, USSR.

36-381
Other platforms show possibilities. *Offshore*, May 1980, 40(5), p.173-177.
Offshore structures, Offshore drilling, Floating structures, Ice conditions, Concrete structures, Steel structures, Platforms.

36-382
Gravel island offers foundation. *Offshore*, May 1980, 40(5), p.189-197.
Artificial islands, Foundations, Gravel, Ice loads, Countermeasures, Sea ice, Ice mechanics, Trenching, Construction materials.

36-383
Ice island looks promising. *Offshore*, May 1980, 40(5), p.198-203.
Ice islands, Artificial islands, Refrigeration, Thermal insulation, Countermeasures, Pipelines, Grounded ice, Ice melting.

36-384
Seabed silos protect Arctic wells. *Offshore*, May 1980, 40(5), p.204-205.
Wells, Protection, Ice scoring, Caissons, Grounded ice, Ice mechanics.

36-385
Project to move gas by tankers. *Offshore*, May 1980, 40(5), p.209-211.
Natural gas, Marine transportation, Tanker ships, Ice navigation, Ice breaking, Icebreakers.

36-386
Vessels to operate in ice areas. *Offshore*, May 1980, 40(5), p.212.
Ice navigation, Ice conditions, Ships.

36-387
Pipeline to cross icy waters. *Offshore*, May 1980, 40(5), p.215-216.
Gas pipelines, Ocean bottom, Pipe laying, Sea ice, Tunnels, Ice scoring.

36-388
Research will uncover pipe problems. *Offshore*, May 1980, 40(5), p.217-218.
Pipe laying, Ice scoring, Damage, Cold weather construction, Sea ice distribution, Ocean bottom, Ice conditions, Ice solid interface, Ice cover thickness, Subsea permafrost.

36-389
Investigation of the acoustic emission and deformation response of finite ice plates.
Xirouchakis, P.C., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Apr. 1981, CR 81-06, 19p, ADA-103 731.
Chaplin, M., St. Lawrence, W.F.
Ice acoustics, Fracturing, Ice loads, Plates, Ice deformation, Ice cracks, Analysis (mathematics).
A procedure is described for monitoring the microfracturing activity in ice plates subjected to constant loads. Sample time records of freshwater ice plate deflections as well as corresponding total acoustic emission activities are presented. The linear elastic, as well as viscoelastic, response for a simply supported rectangular ice plate is given. Suggested future work using te above procedure is discussed.

36-390
Hydraulic characteristics of the Deer Creek Lake land treatment site during wastewater application.
Abele, G., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Apr. 1981, CR 81-07, 37p., 3 refs.
McKim, H.L., Caswell, D.M., Brockett, B.E.
Soil water, Waste disposal, Water treatment, Hydraulics, Drainage, Irrigation, Seepage, Land reclamation.
During the summer of 1979, wastewater was applied 10 times to the Deer Creek Lake, Ohio land treatment site. Wastewater distribution on the ground during spray application is not uniform: some locations receive less than 70% and others more than 130% of the mean amount applied. The saturated infiltration rate ranges from moderately slow (0.6 cm/hr after 1 hr) to slow (0.3 cm/hr after 12 hours). The under-drain flow rate increases approximately as the cube of time until 1 hour after the end of application and then decreases as the reciprocal of time squared. The rate and amount of drainage increases with an increase in the initial soil water content and can be predicted from soil tension measurements. It was possible to calculate the mass water budget at the end of a typical application to within 88% of the actual water applied.

36-391
Seasonal growth and uptake of nutrients by orchardgrass irrigated with wastewater.
Palazzo, A.J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, May 1981, CR 81-08, 19p., ADA-101 613, 33 refs.
Graham, J.M.
Grasses, Nutrient cycle, Growth, Waste disposal, Water treatment, Irrigation, Land reclamation, Seasonal variations.
A 2-year field study determined the seasonal growth and nutrient accumulation of a forage grass receiving 7.5 cm wk of primary treated domestic wastewater. The average N and P concentrations in the wastewater were 31.5 and 6.1 mg/l respectively. An established sward of Pennlate orchardgrass (Dactylis glomerata L.) was managed on an annual three cutting system. Grass samples were periodically taken to determine plant dry matter accumulation and uptake of N, P and K.

Changes in nutrient uptake within a harvest period were related to both changes in dry matter acccumulation and plant nutrient concentration. For maximum yields and nutrient removal, it is recommended that orchardgrass be initially harvested at the early heading stage of growth in the spring. Subsequent harvests should be performed at 5- to 6-week intervals. Average daily dry matter, N and P accumulation was greatest during the first harvest period (May in Hanover, N.H.). This would be the most appropriate time to increase the application rate, thus treating excess wastewater stored during the winter. Estimates of monthly plant removal for N and P are presented as a guide in designing land treatment systems according to the procedures given in the EPA/Corps Land Treatment Design Manual.

36-392

On the buckling force of floating ice plates.

Kerr, A.D., *U.S. Army Cold Regions Research and Engineering Laboratory*, June 1981, CR 81-09, 7p., ADA-103 733, 12 refs.

Ice loads, Plates, Floating ice, Ice cover strength, Dynamic loads, Mathematical models, Buckling.

The calculation of the largest horizontal force a relatively thin floating ice plate may exert on a structure requires the knowledge of the buckling load for this floating plate. In the published literature on the stability of continuously supported beams and plates, it is usually assumed that this buckling force corresponds to the lowest bifurcation force p(cr). However, recent studies indicate that, generally, this is not the case, and this report clarifies the situation for floating ice plates. This problem is first studied on a simple model that exhibits the buckling mechanism of a floating ice plate but is amenable to an exact nonlinear analysis. This study shows that, depending on the ratio of the rigidities of the "liquid" and "plate", the post-buckling branch may rise or drop away from the bifurcation point.

36-393

Review of thermal properties of snow, ice and sea ice.

Yen, Y.-C., *U.S. Army Cold Regions Research and Engineering Laboratory*, June 1981, CR 81-10, 27p., ADA-103 734, Refs. p.25-27.

Ice thermal properties, Sea ice, Snow density, Snow thermal properties, Ice density, Thermal properties, Compressive properties, Termal expansion.

This treatise thoroughly reviews the subjects of density, thermal expansion and compressibility of ice; snow density change attributed to destructive, constructive and melt metamorphism; and the physics of regelation and the effects on penetration rate of both the thermal properties of the wire and stress level. Heat capacity, latent heat of fusion and thermal conductivity of ice and snow over a wide range of temperatures were analyzed with regression techniques. In the case of snow, the effect of density was also evaluated. The contribution of vapor diffusion to heat transfer through snow under both natural and forced convective conditions was assessed. Expressions representing specific and latent heat of sea ice in terms of sea ice salinity and temperature were given. Theoretical models were given that can predict the thermal conductivities of fresh bubbly ice and sea ice in terms of salinity, temperature and fractional air content.

36-394

Prediction of explosively driven relative displacements in rocks.

Blouin, S., *U.S. Army Cold Regions Research and Engineering Laboratory*, June 1981, CR 81-11, 23p., ADA-101 314, 15 refs.

Rock mechanics, Explosion effects, Nuclear explosions, Soil mechanics, Forecasting.

Relative displacement data from high explosive, shallow-buried bursts in rock are combined with relative displacement data from the contained nuclear explosion MIGHTY EPIC. Analysis of these data yields a preliminary, semi-empirical technique for predicting the location, direction and magnitude of relative displacements in rock from contained explosions. This technique is used to make relative displacement predictions for the DIABLO HAWK nuclear blast.

36-395

VHF electrical properties of frozen ground near Point Barrow, Alaska.

Arcone, S.A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, June 1981, CR 81-13, 18p., ADA-103 735, 32 refs.

Delaney, A.J.

Permafrost physics, Dielectric properties, Radio waves, Frozen ground physics, Soil composition, Water content, Organic soils.

Electrical properties of frozen ground were measured using radio frequency interferometry (RFI) in the very high frequency (VHF) radiowave band. Ice-rich organic silts and sands and gravels of variable ice content were investigated during early April of both 1979 and 1980. Frequencies between 10 and 150 MHz were used with best results obtained between 40 and 100 MHz. Surface impedance and magnetic induction techniques were also used to obtain an independent measure of low frequency resistivity and to obtain a separate control on vertical inhomogeneity. Soil samples were tested for organic and water content. The dielectric constants determined for the ice-rich organic silts ranged from 4.0 to 5.5 while those for the sands and gravels were about 5.1. Dielectric loss was due to d.c. conduction and was very low for the silts but significant for the sands and gravels. The higher values for the sands and gravels were most likely due to the higher concentrations of salt that are reported to exist in the old beach ridges in this region. All the RFI measurements are believed to be indicative of only the first few meters of the ground although the radiowaves could penetrate to tens of meters.

36-396

Propagation of CO2 laser radiation through ice clouds: microphysical effects.

Sassen, K., et al, *Journal of applied meteorology*, July 1981, 20(7), p.828-834, 3 refs.

Griffin, M.

Cloud physics, Microanalysis, Lasers, Artificial ice.

36-397

Antarctic operations manual.

New Zealand. Department of Scientific and Industrial Research. Antarctic Division, Christchurch, 1981, 69p.

Manuals, Logistics, Antarctica.

The manual gives details of the roles and responsibilities of New Zealanders participating in the New Zealand Antarctic Research Programme and working in Antarctica. The scope is broad, giving information, advice, and direction on a variety of topics, including, as a sample among many others, administration of the New Zealand research program, N.Z. antarctic bases and chains-of-command, fire and electrical equipment safety, waste disposal, code of safe practice, historic monuments, wildlife conservation, personnel matters of salary, furloughs, transportation to and from Antarctica, customs, visas, and cld weather gear. A summary of basic provisions of the Antarctic Treaty is included along with a declaration to the Department of Agriculture on the use of and disposition of scientific samples.

36-398

Antarctic first aid manual.

New Zealand. Department of Scientific and Industrial Research. Antarctic Division, Christchurch, 1981, 55p., 25 refs.

Health, Cold weather survival, Manuals, Antarctica.

Although much emphasis is on the initial treatment of injuries resulting from accidents in the field, guidance is also included on important but routine medical and health safeguards such as dental health and the contents and use of field medical kits. A list is given of survival huts, their specific locations and the type and amounts of food and gear available for survival purposes. Search and rescue facilities and capabilities for Scott Base and Vanda Station are given.

36-399

Antarctic field manual.

New Zealand. Department of Scientific and Industrial Research. Antarctic Division, Christchurch, 1981, 75p.

Manuals, Radio communication, Logistics, Safety, Antarctica.

The manual gives details of logistics and planning for field activities in Antarctica. Travel and survival gear, communications, emergency rations, rescue kits, traversing or avoiding dangerous areas and many other points of conducting or participating in operations in the severe antarctic environment are discussed. The emphasis always is on safety during all operations.

36-400

Adfreeze strength of model piles in ice.

Parameswaran, V.R., *Canadian geotechnical journal*, Feb. 1981, 18(1), p.8-16, With French summary. 12 refs.

Ice solid interface, Piles, Adhesion, Shear strength, Loads (forces), Ice creep.

36-401

Growth of first-year sea ice, Eclipse Sound, Baffin Island, Canada.

Sinha, N.K., et al, *Canadian geotechnical journal*, Feb. 1981, 18(1), p.17-23, With French summary. 13 refs.

Nakawo, M.

Sea ice, Ice growth, Ice forecasting, Snow cover effect, Meteorological factors, Analysis (mathematics).

36-402

Physical theory of snow gliding.

McClung, D.M., *Canadian geotechnical journal*, Feb. 1981, 18(1), p.86-94, With French summary. 15 refs.

Snow slides, Snow mechanics, Water films, Surface roughness, Interfaces, Soils, Snow creep, Analysis (mathematics).

36-403

On the computation of parameters that model snow avalanche motion.

Bakkehöi, S., et al, *Canadian geotechnical journal*, Feb. 1981, 18(1), p.121-130, With French summary. 23 refs.

Cheng, T., Domaas, U., Lied, K., Perla, R., Schieldrop, B.

Avalanche mechanics, Velocity, Friction, Avalanche tracks, Mathematical models.

36-404

Measurement of unfrozen water content by time domain reflectometry: results from laboratory tests.

Patterson, D.E., et al, *Canadian geotechnical journal*, Feb. 1981, 18(1), p.131-144, With French summary. 28 refs.

Smith, M.W.

Unfrozen water content, Frozen ground, Soil water, Dielectric properties, Temperature effects, Experimentation.

36-405

Simple shear creep tests on frozen soils.

Weaver, J.S., et al, *Canadian geotechnical journal*, May 1981, 18(2), p.217-229, With French summary. 23 refs.

Morgenstern, N.R.

Frozen ground mechanics, Soil creep, Shear strain, Shear stress, Ice solid interface, Piles, Adhesion, Permafrost physics, Ice creep, Ice density, Rheology, Plates.

36-406

Third Canadian Geotechnical Colloquium: ice forces on wide structures.

Kry, P.R., *Canadian geotechnical journal*, 1980, Vol.17, p.97-113, With French summary. 38 refs.

Ice pressure, Ice loads, Offshore structures, Artificial islands, Ice mechanics, Stresses, Ice pileup, Meetings, Analysis (mathematics).

36-407

Fabric installation to minimize reflection cracking on taxiways at Thule airbase, Greenland.

Eaton, R.A., et al, *U.S. Army cold Regions Research and Engineering Laboratory*, May 1981, SR 81-10, 26p., ADA-103 737, 2 refs.

Godfrey, R.

Runways, Cracking (fracturing), Countermeasures, Bitumens, Concrete durability, Concrete strength, Fabrics.

In August 1978 two types of fabrics were placed on sections of taxiways 1 and 3 of Thule AB, Greenland, to study the ability of fabrics with an AC 2.5 overlay to minimize reflection cracking in severe climates. Both fabrics should retain durability and mechanical strength under Thule's arctic conditions.

36-408

Glaciological work in Svalbard in 1977.

Liestöl, O., *Oslo. Norsk polarinstitutt. Arbok*, 1977 (Pub. 1978), p.271-277.

Glaciology, Glacier surveys, Glacier mass balance, Glacier oscillation, Norway—Svalbard.

36-409

Sea ice conditions and drift of Nimbus-6 buoys in 1977.

Vinje, T.E., *Oslo. Norsk polarinstitutt. Arbok*, 1977 (Pub. 1978), p.283-292, 6 refs.

Sea ice distribution, Ice conditions, Drift stations, Mapping.

36-410

Glaciological work in 1978.

Liestöl, O., *Oslo. Norsk polarinstitutt. Arbok*, 1978 (Pub. 1979), p.43-51.

Glaciology, Glacier mass balance, Glacial hydrology, Glacier oscillation, Research projects, Glacier ablation, Meteorological data, Statistical analysis, Norway.

36-411

Sea ice conditions and drift of NIMBUS-6 buoys in 1978.

Vinje, T.E., *Oslo. Norsk polarinstitutt. Arbok*, 1978 (Pub. 1979), p.57-66, 6 refs.

Sea ice distribution, Ice conditions, Drift stations, Seasonal variations, Remote sensing, Infrared photography.

36-412

Lichens from Jan Mayen collected by the Danish Jan Mayen Expedition 1972.

Hansen, E.S., et al, *Oslo. Norsk polarinstitutt. Arbok*, 1978 (Pub. 1979), p.81-88, 11 refs.

Vestergaard, K.

Lichens, Classifications, Greenland.

36-413

Glaciological work in 1979.

Liestöl, O., *Oslo. Norsk polarinstitutt. Arbok*, 1979 (Pub. 1980), p.43-51.

Glaciology, Glacier mass balance, Glacier surveys, Glacier oscillation, Glacier ablation, Snow accumulation, Remote sensing, Norway.

36-414

On the extreme sea ice conditions observed in the Greenland and Barents Seas in 1979.

Vinje, T.E., *Oslo. Norsk polarinstitutt. Arbok*, 1979 (Pub. 1980), p.59-65, 9 refs.

Sea ice distribution, Ice conditions, Meteorological factors, Ocean currents, Barents Sea, Greenland Sea.

36-415
Lensoid, moss-covered "needle ice" body, St. Jonsfjorden, Spitsbergen.
Hambrey, M.J., et al. *Oslo. Norsk polarinstitutt. Arbok*, 1979 (Pub. 1980), p.71-76, 4 refs.
Swett, K.
Ground ice, Ice needles, Ice lenses, Ice surface, Mosses, Ice crystal structure, Norway—Spitsbergen.

36-416
Glacial erosion, sedimentation and microfauna in the inner part of Kongsfjorden, Spitsbergen.
Elverhöi, A., et al. *Oslo. Norsk polarinstitutt. Skrifter*, 1980, No.172, p.33-61, 40 refs.
Liestöl, O., Nagy, J.
Glacial erosion, Sedimentation, Glacial deposits, Glacier flow, Meltwater, Paleoecology, Glacier oscillation, Marine deposits, Quaternary deposits, Norway—Spitsbergen.

36-417
Surficial materials and landforms of Kluane National Park, Yukon Territory.
Rampton, V.N., *Canada. Geological Survey. Paper*, 1981, No.79-24, 37p. + 2 maps, With French summary. 43 refs.
Geological surveys, Geomorphology, Landforms, Paleoclimatology, Glaciation, Glacial erosion, Moraines, Putwash, Canada—Yukon Territory.

36-418
Sedimentology of the Eocene Taglu delta, Beaufort-Mackenzie basin: example of a river-dominant delta.
Dixon, J., *Canada. Geological survey. Paper*, 1981, No.80-11, 11p., With French summary. 28 refs.
Deltas, Rivers, Sedimentation, Stratigraphy, Drill core analysis, Canada—Northwest Territories—Taglu Delta.

36-419
Creep behavior of frozen sand, final report; Part 1.
Martin, T., et al, U.S. Army Research Office, Contract No. DAAG29-77-C-0016, Cambridge, Massachusetts Institute of Technology, June 1981, 237p., Refs. p.232-237.
Ting, J.M., Ladd, C.C.
Frozen ground mechanics, Sands, Rheology, Shear strength, Shear strain, Ice creep, Creep, Temperature effects, Unfrozen water content, Tests.

36-420
Numerical simulation of ice floes in waves.
Squire, V.A., *Scott Polar Research Institute. Technical report*, 1981, No.81-1, 57p., Refs. p.55-57.
Ice floes, Ice mechanics, Ocean waves, Ice pressure, Mathematical models.

36-421
Climate impact of increasing atmospheric carbon dioxide.
Hansen, J., et al, *Science*, Aug. 28, 1981, 213(4511), p.956-966, Numerous refs.
Atmospheric composition, Carbon dioxide, Climatic changes, Temperature variations, Ice sheets, Ice melting, Models, Antarctica—West Antarctica.
The global temperature rose by 0.2C between the middle 1960's and 1980, yielding a warming of 0.4C in the past century. This temperature increase is consistent with the calculated greenhouse effect due to measured increases of atmospheric carbon dioxide. Variations of volcanic aerosols and possibly solar luminosity appear to be primary causes of observed fluctuations about the mean trend of increasing temperature. It is shown that the anthropogenic carbon dioxide warming should emerge from the noise level of natural climate variability by the end of the century, and there is a high probability of warming in the 1980's. Potential effects on climate in the 21st century include the creation of drought-prone regions in North America and central Asia as part of a shifting of climatic zones, erosion of the West Antarctic ice sheet with a consequent worldwide rise in sea level, and opening of the fabled Northwest Passage. (Auth.)

36-422
Snowpack structure at Mt Hutt, Canterbury, in 1979.
Weir, P.L., et al, *New Zealand journal of science*, 1981, 24(1), p.95-102, 19 refs.
Owens, I.F.
Snow cover structure, Snow strength, New Zealand—Hutt, Mount.

36-423
Influence of an ice layer on the propagation of long waves.
Murty, T.S., et al, *Marine geodesy*, 1979, 2(2), p.99-125, 22 refs.
Polavarapu, R.J.
Ice cover effect, Earthquakes, Wave propagation, Sea level.
Present knowledge on the influence of an ice layer on oceanic wave motion is reviewed. Whereas it is clear that short period wind waves are definitely damped by an ice layer, the extent of the influence of an ice cover on long waves is not clear. The observational as well as the theoretical evidence on the influence of ice cover, on the amplitudes of storm surges, and on the propagation of tides and tsunamis is not clear enough to draw any definite conclusions. (Auth.)

36-424
All-Union conference on changes induced by human activities and vegetation protection in swamps and adjacent areas, Sep.5-7, 1979, Proceedings. [Materialy].
Vsesoiuznoe soveshchanie po antropogennym izmeneniiam, okhrane rastitel'nosti bolot i prilegaiushchikh territorii, Minsk, Sep.5-7, 1979, Minsk, Nauka i tekhnika, 1981, 256p., In Russian. For selected papers see 36-425 through 36-432. Refs. passim.
Parfenov, V.I., ed.
Swamps, Peat, Cryogenic soils, Human factors, Land reclamation, Vegetation, Landscape types, Ecosystems, Aerial surveys, Spaceborne photography, Mapping, USSR—Karelia.

36-425
Changes in Karelian swamp vegetation induced by the reclamation of paluded forest lands. [Izmenenie rastitel'nosti bolot Karelii pod vliianiem lesoosushitel'noi melioratsii].
Medvedeva, V.M., Antropogennye izmenenia, okhrana rastitel'nosti bolot i prilegaiushchikh territorii (Changes induced by human activities and vegetation protection in swamps and adjacent areas) edited by V.I. Parfenov, Minsk, Nauka i tekhnika, 1981, p.66-69, In Russian. 4 refs.
Swamps, Forest soils, Drainage, Cryogenic soils, Environmental protection.

36-426
Possible changes in natural swamp conditions of western Siberia due to human activities. [Vozmozhnye izmeneniia prirodnykh uslovii bolot Zapadnoi Sibiri pod vliianiem khoziaistvennoi deiatel'nosti].
Novikov, S.M., et al, Antropogennye izmenenia, okhrana rastitel'nosti bolot i prilegaiushchikh territorii (Changes induced by human activities and vegetation protection in swamps and adjacent areas) edited by V.I. Parfenov, Minsk, Nauka i tekhnika, 1981, p.73-78, In Russian. 3 refs.
Romanova, E.A., Usova, L.I.
Swamps, Plant ecology, Land reclamation, Landscape types, Human factors, Petroleum industry, Environmental protection.

36-427
Changes in vegetational covers of felled areas in northern taiga during drainage and land cultivation. [Izmenenie napochvennogo pokrova severotaezhnykh vyrubok pri osushenii i lesokul'turnom osvoenii].
Varfolomeev, L.A., Antropogennye izmenenia, okhrana rastitel'nosti bolot i prilegaiushchikh territorii (Changes induced by human activities and vegetation protection in swamps and adjacent areas) edited by V.I. Parfenov, Minsk, Nauka i tekhnika, 1981, p.99-102, In Russian.
Taiga, Paludification, Forest soils, Drainage, Revegetation, Cryogenic soils, Plant ecology, Ecosystems.

36-428
Satellite monitoring of swamp ecosystems and their changes induced by human activities. [Aerokosmicheskii monitoring bolotnykh ekosistem i ikh antropogennykh modifikatsii].
Vinogradov, B.V., et al, Antropogennye izmenenia, okhrana rastitel'nosti bolot i prilegaiushchikh territorii (Changes induced by human activities and vegetation protection in swamps and adjacent areas) edited by V.I. Parfenov, Minsk, Nauka i tekhnika, 1981, p.119-124, In Russian. 14 refs.
Konstantinov, V.K.
Aerial surveys, Spaceborne photography, Swamps, Human factors, Landscape types, Vegetation, Ecosystems, Mapping, Environmental protection.

36-429
Problems of swamp protection in Karelia. [Aktual'nye voprosy okhrany bolot v Karelii].
IUdina, V.F., et al, Antropogennye izmenenia, okhrana rastitel'nosti bolot i prilegaiushchikh territorii (Changes induced by human activities and vegetation protection in swamps and adjacent areas) edited by V.I. Parfenov, Minsk, Nauka i tekhnika, 1981, p.173-176, In Russian. 15 refs.
Tokarev, P.N., Maksimova, T.A.
Swamps, Peat, Cryogenic soils, Plant ecology, Ecosystems, Landscape types, Environmental protection.

36-430
Joint analysis of swamps and adjacent areas exemplified by the forest-swamp combinations of Karelia. [Sopriazhennyi analiz bolot i prilegaiushchikh k nim territorii na primere nekotorykh lesoo-bolotnykh sochetanii Karelii].
Ilkovskaia, I.K., Antropogennye izmenenia, okhrana rastitel'nosti bolot i prilegaiushchikh territorii (Changes induced by human activities and vegetation protection in swamps and adjacent areas) edited by V.I. Parfenov, Minsk, Nauka i tekhnika, 1981, p.176-181, In Russian. 4 refs.
Forest land, Swamps, Peat, Cryogenic soils, Taiga, Vegetation, Landscape types, Plant ecology, Ecosystems, Maps.

36-431
Swamp ecosystems as preservation objects. [Bolotnye ekosistemy kak ob"ekt okhrany].
Pakal'nis, R.IU., Antropogennye izmenenia, okhrana rastitel'nosti bolot i prilegaiushchikh territorii (Changes induced by human activities and vegetation protection in swamps and adjacent areas) edited by V.I. Parfenov, Minsk, Nauka i tekhnika, 1981, p.196-198, In Russian. 4 refs.
Swamps, Landscape types, Environmental protection.

36-432
Structure, dynamics and protection of the Aapa swamps in northern Karelia. [Aapa bolota Severnoi Karelii, ikh struktura, dinamika i okhrana].
Kuznetsov, O.L., Antropogennye izmenenia, okhrana rastitel'nosti bolot i prilegaiushchikh territorii (Changes induced by human activities and vegetation protection in swamps and adjacent areas) edited by V.I. Parfenov, Minsk, Nauka i tekhnika, 1981, p.224-228, In Russian. 11 refs.
Swamps, Cryogenic soils, Soil water, Water chemistry, Peat, Plant ecology, Ecosystems.

36-433
Nitrate ion in antarctic firn as a marker for solar activity.
Zeller, E.J., et al, *Geophysical research letters*, Aug. 1981, 8(8), p.895-898, 15 refs.
Parker, B.C.
Ice composition, Firn, Ionization, Solar radiation, Antarctica—Amundsen-Scott Station, Antarctica—Vostok Station.
This paper presents the first comparison of nitrate ion concentrations in firn cores collected from South Pole (1978-79) and Vostok (1797-80) stations, covering a continuous sequence of approximately 1200 years. Firn cores were obtained using dry open hole drilling in consecutive summers. The first core was drilled to a depth of 108 m at South Pole Station. The second core was drilled at Vostok Station located near the south geomagnetic pole. (Auth. mod.)

36-434
Baltic Sea ice code of 1980. [Der Ostsee-Eiskode von 1980].
Koslowski, G., *Der Seewart*, Aug. 1981, 42(4), p.176-184, In German.
Sea ice distribution, Ice navigation, Ice conditions, Standards, Baltic Sea.

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Flow characteristics below floating covers with application to ice jams.
Gogus, M., et al, *Iowa University. Iowa Institute of Hydraulic Research. Report*, Jan. 1981, No.233, 167p., Refs. p.132-134.
Tatinclaux, J.C.
Ice floes, Ice mechanics, Drift, Velocity, Ice jams, Ice friction, Surface roughness, Flow rate, Experimentation.

36-436
Frequency and climatology of major avalanches at Rogers Pass, 1909 to 1977.
Fitzharris, B.B., *National Research Council, Canada Division of Building Research. DBR paper*, Jan 1981, No.956, 42p. + appends., With French summary. Refs. p.39-42.
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Wake, A., Chich, S.-H., Fukumori, E., Tang, G.
Lake ice, Ice mechanics, Ice strength, Ice deformation, Ice conditions, Thermodynamics, Mathematical models, Remote sensing, Airborne radar.

36-438
Pipelining gas from the Canadian High Arctic.
Kaustinen, O.M., *Oil and gas journal*, Sep. 21, 1981, 79(38), p.145-152.
Gas pipelines, Pipe laying, Ocean bottom, Ice conditions, Natural gas, Canada.

36-439
"Subsurface" oil movement off the Newfoundland south coast during 1979.
Reimer, E.M., ed. *Memorial University of Newfoundland. Centre for Cold Ocean Resources Engineering. C-CORE publication*, Apr. 1981, No.81-4, 98p.
Oil spills, Flow rate, Dynamic properties, Ocean currents, Wind direction, Water pollution, Meteorological data, Underwater tracking.

36-440
Iceberg motion: an analysis of two data sets collected at drill sites in the Labrador Sea.
Ball, P., et al, *Memorial University of Newfoundland. Centre for Cold Ocean Resources Engineering. C-CORE publication*, Apr. 1981, No.81-2, 121p., 17 refs.
Gaskill, H.S., Lopez, R.J.
Icebergs, Ice mechanics, Drift, Ice conditions, Oceanographic surveys, Models.

36-441
Regeneration after clearcutting in subalpine stands near Windigo Pass, Oregon.
Minore, D., et al, *Journal of forestry*, Sep. 1981, 79(9), p.619-621, 3 refs.
Dubrasich, M.E.
Alpine landscapes, Forestry, Revegetation, Plant ecology, Mountains.

36-442
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Lee, G.C.
Ice conditions, Ice cover strength, Ice elasticity, Ice loads, Offshore structures, Impact strength, Engineering, Ice pressure, Ice control.

36-443
Explosive cratering in frozen media.
Simpson, J.K., Kingston, Ontario, Royal Military College of Canada, Dept. of Civil Engineering, May 1981, 227p., M.E. thesis. Refs. p.191-198.
Frozen ground mechanics, Blasting, Dynamic loads, Explosion effects, Permafrost physics, Density (mass/volume).

36-444
Alaska coastal bibliography and index statewide.
Arctic Environmental Information and Data Center, Anchorage, July 1981, c250p.
Bibliographies, Sea ice, Ice, Snow, Permafrost, Ecosystems, Climate, Shores, Environments, United States—Alaska.

36-445
Gravity wind on a snow patch.
Ohata, T., et al, *Meteorological Society of Japan. Journal*, June 28, 1979, 57(3), Collected papers on sciences of atmosphere and hydrosphere, 1979, Vol.17, Paper No.14, p.254-263, With Japanese summary. 16 refs.
Higuchi, K.
Snow surface, Wind velocity, Snow cover, Wind factors.

36-446
Observations of snow crystals and delta O-18 of surface snow at Mizuho Plateau, East Antarctica.
Satow, K., et al, Collected papers on sciences of atmosphere and hydrosphere, Vol.17, Paper No.15, Collection of contributions presented at CPM Sessions, Joint IAGA IAMAP Assembly, Seattle, Washington, Aug. 22-Sep. 3, 1977, Boulder, Colorado, IAMAP, NCAR, 1979, p.55-59, 4 refs.
Higuchi, K., Kato, K.
Snow crystals, Snow surface, Ice crystal replicas, Oxygen isotopes, Water vapor, Antarctica—Mizuho Plateau.
The Japanese Antarctic Research Expedition carried out oversnow traverses from September 1974 to February 1975 in the region of Mizuho Plateau. It was found that crystals observed during this period can be classified as snow crystals and ice crystals, so called diamond dust. The frequency distribution of the size of snow crystals was observed at 1440 GMT, 3 November 1974 at I 270, since the condition of recording of the replica was best at this time. As seen in the comparison of the total mass of ice crystals with that of snow crystals as above, it can be said that the main part of snow fallen from Nov. 3 to 5, 1974 is not diamond dust, but snow crystals. Therefore, it can be concluded that the surface snow with high delta O-18 values consisted of snow crystals. (Auth.)

36-447
Convective model for the Weddell polynya.
Martinson, D.G., et al, *Journal of oceanography*, Apr. 1981, 11(4), p.466-488, 29 refs.
Killworth, P.D., Gordon, A.L.
Polynyas, Ice water interface, Water temperature, Heat flux, Antarctica—Weddell Sea.
Mechanisms are considered which may induce the large area of *open water, or polynya*, which frequently occurs within the Weddell Sea winter sea-ice. It is proposed that when surface cooling and ice formation decrease the temperature and increase the salinity of the surface water in a preconditional area, static instability with vertical mixing can occur. The upwelled warm, salty deep water can then supply enough heat to melt the ice, or prohibit its formation, even in the middle of winter. A simple two-level model is derived to test this theory and it agrees well with observations. The process is irregular due to different times of ice onset from one year to the next, and to a lesser extent from variations in surface heating and cooling. *Further, unless the freshwater input exactly balances the increased* salinity from the overturn each year, the system will either gain or lose salt yearly and eventually stabilize permanently (i.e., attain a steady-state condition). The model is insensitive to short term stochastic variations in surface heat flux or freshwater input rates, but is somewhat sensitive to longer scale variations in the net freshwater input and also to the depth of the pycnocline (i.e., preconditioning). It is suggested that upwelling may raise the pycnocline until convection can occur and the polynya form. (Auth. mod.)

36-448
Evaluation of ultraviolet spectrophotometric determination of nitrate-nitrogen in glacial snow, firn and ice.
Parker, B.C., et al, *Analyst*, Aug. 1981, 106(1265), p.898-901, 10 refs.
Thompson, W.J., Zeller, E.J.
Glacier ice, Firn, Snow composition, Ultraviolet radiation, Measurement.
The precision, accuracy and possible interferences by salts in *the ultraviolet spectrophotometric determination of nitrate*-nitrogen in snow pit and firn or ice samples were tested by the use of internal standards and by comparison with the method involving reduction by cadmium followed by diazotisation. Success in the determination of nitrate-nitrogen in snow, firn and ice by the method described here has been limited to the Antarctic polar plateau and to snow pit and firn core samples taken below the levels of contaminated surface snow. Contaminated surface snow from the South Pole produces high particulate or organic matter readings at 275 mm, interfering with the accuracy of the determination, and it is found that *ultraviolet spectrophotometry is not suitable for ice cores recovered* using organic drilling fluids unless cores are uncracked and carefully trimmed to remove all external contamination. (Auth. mod.)

36-449
Basic results of the 20th-22nd Soviet Antarctic Expedition (1974-78). [Osnovnye rezul'taty rabot Dvadtsatoĭ-Dvadtsat' vtoroĭ sovetskikh antarkticheskikh ekspeditsii (1974-1978 gg.)].
Dubrovin, L.I., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyi biuleten'*, 1981, No.102, p.5-13, In Russian.
Preobrazhenskaia, M.A.
Research projects, Antarctica.
Principal scientific results of Soviet Antarctic Expeditions 20-22 are reported. Charts provide information on participating vessels and stations, their commanding officers, personnel, and types of research by station.

36-450
Scientific work during the 23rd Soviet Antarctic Expedition. [Nauchnye issledovaniia v Dvadtsat' tret'ei sovetskoi antarkticheskoi ekspeditsii].
Sedov, O.K., *Sovetskaia antarkticheskaia ekspeditsiia Informatsionnyi biuleten'*, 1981, No.102, p.14-20, In Russian.
Research projects, Antarctica.
Research undertaken by the 23rd SEA is described. Oceanographic work was carried out primarily in the Scotia and Davis Seas by 6 ships. Brief summaries of work done in each discipline are given for both summer and winter contingents of the expedition.

36-451
Seismic studies by composite wave seismography in East Antarctica. [Seismicheskie issledovaniia metodom obmennykh voln zemletriasenii (MOVZ) v Vostochnoi Antarktide].
Bulin, N.K., *Sovetskaia antarkticheskaia ekspeditsiia Informatsionnyi biuleten'*, 1981, No.102, p.21-28, In Russian. 12 refs.
Seismic refraction, Antarctica—Novolazarevskaya Station, Antarctica—Mirnyy Station.
Data on composite refracted seismic waves (PS-type) are studied to shed light on crustal structure under Novolazarevskaya, Mirnyy and Oasis Stations. Results are presented in tables and graphs. The first trial of composite wave seismography proved the method sufficiently effective and feasible for use at fixed and portable stations. Best results are obtained at highly sensitive stations with oscillograph rates of 120-240 mm/min and duration of observations of 1-2 months.

36-452
Observations of ice dynamics from an icebound ship. [Naturnye nabliudeniia za dinamikoĭ vozdeĭstviia l'da na sudno vo vremia zhatiia].
Nazintsev, Iu.L., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyi biuleten'*, 1981, No.102, p.65-67, In Russian.
Baranov, V.V.
Sea ice, Wind factors, Ships, Pack ice, Ice mechanics, Ice plasticity, Ice pressure.
Observations of ice pressure, breakup and hummocking were made in the Weddell Sea by the *Kapitan Gotskiy* icebound in drifting pack ice. The chronology of the icefield effect on the ship is outlined. The principal reason for the pressure was a 25 m/s wind. The fact that compression of the initial ice cover occurred primarily by ice suction rather than by hummocking indicates that the ice had marked plastic features. Interaction of the ship with ice on windward and lee sides differed, on the leeward side no suction was noted and the ice field was intersected with a row of crevasses extending from the side of the vessel.

36-453
Core drilling on the Ross Ice Shelf. [Kernovoe burenie na shel'fovom lednike Rossa].
Zotikov, I.A., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyi biuleten'*, 1981, No.102, p.68-74, In Russian. 1 ref.
Zagorodnov, V.S., Raikovskii, R.V., Morev, V.A.
Ice shelves, Ice cores, Stresses, Antarctica—Ross Ice Shelf.
Core drilling through the Ross Ice Shelf was carried out in 1978 to determine whether the lower surface of the central part of the glacier is melting or freezing. Work was done at the American field station J-9 through 400 m of ice to water more than 200 m deep. Calculations are discussed by which the relative stresses of an ice profile averaged along the size of the core and the force P (in this case only the weight of the drill) are computed. *Results indicate that the lower surface is composed of* ice that shows destructive relative stresses of 0.3 kg/sq.cm.

36-454
Study of the Choanoflagellates (Acanthoecidae) from the Weddell Sea, including a description of *Diaphanoeca multiannulata* n. sp.
Buck, K., *Journal of protozoology*, Feb. 1981, 28(1), MP 1453, p.47-54, 20 refs.
Sea ice, Microbiology, Marine biology, Antarctica—Weddell Sea.
Eight species of loricate choanoflagellates (Acanthoecidae) have been observed, by light and electron microscopy, in samples obtained from the Weddell Sea during the austral summer of 1977. The distribution of most species within the Weddell Sea was widespread. Habitats included the water column, the edge of (or ponds on) ice floes, and the interior of ice floes. The distributional, environmental, habitat, and/or morphological range of all previously described species is expanded. Methods of variation of transverse costal diameters between genera may be potentially useful to the understanding of taxonomy and phylogeny of this family. (Auth. mod.)

36-455
Petroleum exploration of the North Slope in Alaska, U.S.A.
Bird, K.J., *U.S. Geological Survey. Open-file report*, Feb. 1981, No.81-227, 43p., Refs. p.37-43.
Exploration, Petroleum industry, Natural resources, *Geological surveys, Legislation, United States*—Alaska—North Slope.

36-456
Climatology of the ice extent in the Bering Sea.
Webster, B.D., *U.S. National Oceanic and Atmospheric Administration. NOAA technical memorandum*, July 1981, NWS AR-33, 58p., 31 refs.
Climatology, Ice cover effect, Sea ice distribution, Seasonal variations, Maps, Ice navigation, Bering Sea.

36-457
Mount Logan (Yukon Territory); field report, 1978.
Holdsworth, G., et al, Ottawa, Dept. of the Environment, Glaciology Division, Sep. 1979, 67p., Refs. p.52-53.
Dansgaard, W., Johnsen, S., Prantl, F., Johnston, I.
Glacier surveys, Glacier flow, Glacier thickness, Drill core analysis, Glaciology, Paleoclimatology, Climate, Ice drills, Radar echoes.

36-458
Riverbank erosion and recession in the Ottawa area.
Williams, D.R., et al, *Canadian geotechnical journal*, Nov. 1979, 16(4), p.641-650, With French summary. 13 refs.
Romeril, P.M., Mitchell, R.J.
Landslides, Soil erosion, Banks (waterways), Rivers, Canada—Ottawa River.

36-459
Stabilization of planar landslides in permafrost.
Pufahl, D.E., et al. *Canadian geotechnical journal.* Nov. 1979, 16(4), p.734-747. With French summary. 24 refs.
Morgenstern, N.R.
Permafrost preservation, Soil stabilization, Landslides, Shear stress, Active layer.

36-460
Icings and seepage in frozen glaciofluvial deposits, District of Keewatin, N.W.T.
Veillette, J.J., et al. *Canadian geotechnical journal.* Nov. 1979, 16(4), p.789-798. With French summary. 10 refs.
Thomas, R.D.
Permafrost, Ice formation, Seepage, Icing, Glacial deposits, Taliks, Meltwater, Stereophotography.

36-461
Catastrophic glacial outburst flood (jökulhlaup) mechanism for debris flow generation at the Spiral Tunnels, Kicking Horse River basin, British Columbia.
Jackson, L.E., Jr., *Canadian geotechnical journal.* Nov. 1979, 16(4), p.806-813. With French summary. 9 refs.
Glacial hydrology, Glacial deposits, Floods, Forecasting.

36-462
Considerations on the use of cast-in-place piles in permafrost.
Weaver, J.S., et al. *Canadian geotechnical journal.* May 1980, 17(2), p.320-325. With French summary. 8 refs.
Morgenstern, N.R.
Permafrost physics, Pile driving, Cements, Adhesion, Freeze thaw cycles, Concrete placing.

36-463
Behaviour of friction piles in ice and ice-rich soils.
Morgenstern, N.R., et al. *Canadian geotechnical journal.* Aug. 1980, 17(3), p.405-415. With French summary. 44 refs.
Roggensack, W.D., Weaver, J.S.
Ice creep, Ice friction, Piles, Ice solid interface, Rheology, Frozen ground mechanics, Shear stress, Shear strain, Flow rate, Velocity, Ground ice.

36-464
Overview in the use of freeze conditioning agents.
Holtz, M.A., et al. Mini Symposium series, No.80-Coal-01. Coal utilization (Frozen coal). Society of Mining Engineers of AIME, [1980], p.3-13, 3 refs.
Cox, H.B.
Coal, Freezing, Frozen cargo, Ice formation, Ice prevention, Unloading, Artificial thawing, Countermeasures, Chemical ice prevention, Cold weather performance.

36-465
Plant evaluation of coal freeze conditioning agents.
Evans, T.F., Mini Symposium series, No.80-Coal-01. Coal utilization (Frozen coal). Society of Mining Engineers of AIME, [1980], p.15-24.
Coal, Freezing, Frozen cargo, Ice formation, Ice prevention, Unloading, Artificial thawing, Countermeasures, Cold weather performance.

36-466
Physical chemistry of frozen coal.
Glanville, J.O., et al, Mini Symposium series, No.80-Coal-01. Coal utilization (Frozen coal). Society of Mining Engineers of AIME, [1980], p.25-36, 39 refs.
Haley, L.H., Jr.
Coal, Ice strength, Frozen cargo, Ice formation, Ice prevention, Unloading, Artificial thawing, Freezing, Admixtures, Countermeasures, Physical properties, Cold weather performance.

36-467
Frozen coal—problems and solutions.
Mitzel, J.D., Mini Symposium series, No.80-Coal-01. Coal utilization (Frozen coal). Society of Mining Engineers of AIME, [1980], p.37-41.
Coal, Freezing, Frozen cargo, Ice formation, Ice prevention, Unloading, Artificial thawing, Vibration, Countermeasures, Cold weather performance.

36-468
Operational experience with a freeze conditioning agent at Arch Mineral.
Klein, R.S., et al, Mini Symposium series, No.80-Coal-01. Coal utilization (Frozen coal). Society of Mining Engineers of AIME, [1980], p.43-52.
Kestner, M.O.
Coal, Freezing, Frozen cargo, Ice formation, Ice prevention, Unloading, Artificial thawing, Countermeasures, Cold weather performance.

36-469
Present state-of-the-art of transmission line icing.
Pohlman, J.C., et al, IEEE Power Engineering Society. T&D Conference and Exposition, 81, TD 717-8, Minneapolis, Minnesota, Sep. 1981, 8p., 34 refs.
Landers, P.
Power line icing, Ice loads, Snow accumulation, Ice prevention, Wind factors, Mathematical models.

36-470
Thawing grounds as foundations of structures. [Ottaivaiushchie grunty kak osnovaniia sooruzhenii].
Mel'nikov, P.I., ed. Moscow, Nauka, 1981, 96p., In Russian. For individual papers see 36-471 through 36-479. Refs. passim.
Vialov, S.S., ed.
Engineering geology, Permafrost beneath structures, Active layer, Ground thawing, Classifications, Compression tests, Settlement (structural), Mathematical models.

36-471
Problems of thawing ground mechanics and ways of solving them. [Problemy mekhaniki ottaivaiushchikh gruntov i puti ikh resheniia].
Ponomarev, V.D., Ottaivaiushchie grunty kak osnovaniia sooruzhenii (Thawing grounds as foundations of structures) edited by P.I. Mel'nikov and S.S. Vialov, Moscow, Nauka, 1981, p.5-13, In Russian.
Foundations, Ground thawing, Buildings, Settlement (structural), Design, Tests.

36-472
Interaction of thawing ground bases with foundations regarded as component elements of buildings. [Vzaimodeistvie ottaivaiushchikh osnovanii s fundamentami rassmatrivaemymi kak sostavnye elementy konstruktsii zdanii].
Dokuchaev, V.V., et al, Ottaivaiushchie grunty kak osnovaniia sooruzhenii (Thawing grounds as foundations of structures) edited by P.I. Mel'nikov and S.S. Vialov, Moscow, Nauka, 1981, p.14-20, In Russian
Neimark, L.I., Zolotar', A.I.
Frozen ground mechanics, Ground thawing, Foundations, Buildings, Mathematical models.

36-473
Pile foundations in thawing ground (structures of the Urengoy Gas Field taken as an example). [Svainye fundamenty v ottaivaiushchikh gruntakh (na primere ob"ektov Urengoiskogo gazovogo mestorozhdeniia)].
Kolesov, A.A., Ottaivaiushchie grunty kak osnovaniia sooruzhenii (Thawing grounds as foundations of structures) edited by P.I. Mel'nikov and S.S. Vialov, Moscow, Nauka, 1981, p.20-27, In Russian.
Foundations, Piles, Pile driving, Taliks, Ground thawing, Artificial thawing.

36-474
Studying the interaction of buildings with thawing bases, allowing for the time factor. [Vzaimodeistvie zdaniia i ottaivaiushchego osnovaniia s uchetom faktora vremeni].
Vialov, S.S., et al, Ottaivaiushchie grunty kak osnovaniia sooruzhenii (Thawing grounds as foundations of structures) edited by P.I. Mel'nikov and S.S. Vialov, Moscow, Nauka, 1981, p.28-47, In Russian. 15 refs.
Pozovskaia, V.G.
Buildings, Foundations, Permafrost beneath structures, Ground thawing, Thaw depth, Mathematical models, Soil creep, Deformation, Computer applications.

36-475
Using hot dies in experimental field studies of thawing ground settlement. [Eksperimental'nye issledovaniia osadok ottaivaiushchikh gruntov s pomoshch'iu polevykh goriachikh shtampov].
Vialov, S.S., et al, Ottaivaiushchie grunty kak osnovaniia sooruzhenii (Thawing grounds as foundations of structures) edited by P.I. Mel'nikov and S.S. Vialov, Moscow, Nauka, 1981, p.47-55, In Russian. 8 refs.
Pakhomova, G.M.
Ground thawing, Settlement (structural), Penetration tests, Test equipment.

36-476
Reliability of the results of laboratory tests of grounds for compression during thawing. [O dostovernosti rezul'tatov laboratornykh kompressionnykh ispytanii gruntov na szhimaemost' pri ottaivanii].
Sorokin, V.A., Ottaivaiushchie grunty kak osnovaniia sooruzhenii (Thawing grounds as foundations of structures) edited by P.I. Mel'nikov and S.S. Vialov, Moscow, Nauka, 1981, p.56-60, In Russian. 2 refs.
Ground thawing, Compressive properties, Test equipment, Laboratory techniques.

36-477
Experimental studies of thawing ground settlement. [Eksperimental'nye issledovaniia osadki ottaivaiushchikh gruntov].
Fedoseev, U.G., Ottaivaiushchie grunty kak osnovaniia sooruzhenii (Thawing grounds as foundations of structures) edited by P.I. Mel'nikov and S.S. Vialov, Moscow, Nauka, 1981, p.60-68, In Russian. 9 refs.
Frozen ground strength, Porosity, Ground ice, Ice melting, Ground thawing, Settlement (structural).

36-478
New government standards for using dies in field testing of frozen ground during thawing. [Novyi GOST na polevye shtampovye ispytaniia merzlykh gruntov pri ikh ottaivanii].
Vodolazkin, V.M., et al, Ottaivaiushchie grunty kak osnovaniia sooruzhenii (Thawing grounds as foundations of structures) edited by P.I. Mel'nikov and S.S. Vialov, Moscow, Nauka, 1981, p.68-72, In Russian.
Chubarova, N.P.
Permafrost beneath structures, Active layer, Standards, Loads (forces), Penetration tests, Ground thawing, Mechanical properties.

36-479
Classifying the complexity of permafrost-engineering-geological conditions on the basis of settlement of thawing coarse clastic ground in the Central Magadan Region. [Klassifikatsiia slozhnosti merzlotno-inzhenerno-geologicheskikh uslovii na osnove otsenki osadok pri ottaivanii merzlykh krupnooblomochnykh gruntov (na primere tsentral'nykh raionov Magadanskoi oblasti)].
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36-481
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Periglacial processes, Naleds, Classifications, Permafrost hydrology, Alimentation, Topographic factors.

36-483
Naled classification for engineering-geological research. [Klassifikatsiia naledei dlia inzhenerno-geologicheskikh tselei].
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Naleds, Classifications, Engineering geology.

36-484
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Geocryology, Naleds, Permafrost hydrology, Geocryology, Aerial surveys, Alimentation.

36-485
Studying naleds of the Baykal Amur railroad zone from aerial photographs. (Izuchenie naledei zony BAM po aerofotosnimkam).
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Korolev, V.M.
Geocryology, Permafrost hydrology, Naleds, Aerial surveys, Airborne equipment, Photointerpretation, Baykal Amur railroad.

36-486
***Methods of studying and mapping naleds in Southern* Yakutia from satellite photographs.** (Kosmicheskie metody izucheniia i kartirovaniia naledei (na primere IUzhnoi IAkutii)).
Topchiev, A.G., et al. Naledi Sibiri i Dal'nego Vostoka (*Naleds of Siberia and the Far East*) edited by V.R. Alekseev, Novosibirsk, Nauka, 1981, p.64-71. In Russian. 3 refs.
Gavrilov, A.V.
Naleds, Spaceborne photography, Photointerpretation, Aerial surveys, Mapping.

36-487
High altitude naleds of the Kodar Range and problems of mapping naled valleys. (Vysokogornye naledi khrebta Kodar i voprosy kartografirovaniia nalednykh dolin).
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Mountain glaciers, Naleds, Glacial hydrology, Nival relief, Firn, Aerial surveys, Mapping.

36-488
Naleds and hydrogeological structures of the lithosphere's permafrost zone. (Naledi i gidrogeologicheskie struktury merzloi zony litosfery).
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Khimichev, L.G.
Hydrogeology, Permafrost distribution, Permafrost hydrology, Naleds, Alimentation, Suprapermafrost ground water, Subpermafrost ground water.

36-489
Naleds in the southeastern part of the Sikhote-Alin' Highlands. (Naledi na iugo-vostoke gornoi strany Sikhote-Alin').
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Khomichuk, A.N.
Permafrost hydrology, Naleds, Ice cover thickness, Frozen rock temperature, Frost penetration, Engineering geology, Roads.

36-490
Naleds in the central part of the Baykal Amur railroad zone and countermeasures. (Naledi tsentral'noi chasti zony BAM i voprosy bor'by s nimi).
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Hydraulic structures, Embankments, Dams, Permafrost beneath structures, Permafrost hydrology, Naleds, Baykal Amur railroad.

36-491
Naled formation on rivers. (Rasprostranenie naledynykh iavlenii *na rekakh*).
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Borodulin, V.V.
Permafrost beneath rivers, Naleds, Icebound rivers.

36-492
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Ice (construction material), Artificial ice, Naleds, Ice accretion, Ice roads, Snow roads.

36-493
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Permafrost beneath structures, Permafrost hydrology, Naleds, Ice surface, Heat balance, Ablation, Baykal Amur railroad.

36-494
Structure and water regime of naled surfaces during ablation. (*Stroenie i vodnyi rezhim poverkhnosti naledei v period ikh taianiia*).
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Sokolov, B.L.
Glacial hydrology, Naleds, Ice surface, Ablation, Thawing rate, Water supply.

36-495
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Markov, M.L.
Naleds, Water reserves, Ice surface, Heat balance, Ablation, Thawing rate, Ice structure.

36-496
Calculating water balance in the area of formation of the lower Ingamakit naled (Northern Transbaikal). (Raschet vodnogo balansa na uchastke formirovaniia *Nizhneingamakitskoi naledi (Severnoe Zabaikal'e)*).
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Permafrost beneath rivers, Permafrost hydrology, Naleds, Ice accretion, Ablation, Drainage, Water balance, USSR—Chara River.

36-497
Naled regime in the upper course of the Uda River (Eastern Sayan) and its role in the formation of water resources. (Rezhim naledei v verkhov'iakh r. Udy (Vostochnyi Sayan) i ikh rol' v formirovanii vodnykh resursov).
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Alpine glaciation, Mountain glaciers, Naleds, Water reserves.

36-498
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Tsekhanovskaia, N.A.
Alpine glaciation, Ablation, Naleds, Ice growth, Alimentation, Glacial hydrology, Hydraulic structures, Ice pressure.

36-499
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Alpine landscapes, Glacial hydrology, Naleds, Frost weathering, Geomorphology.

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Naleds, Sea ice, Fast ice, Ice cracks, Flooding, Ice roads.

36-501
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36-502
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Icebound rivers, Ice cover thickness, Fracturing, Naleds, Permafrost hydrology, Suprapermafrost ground water, Taliks, Subpermafrost ground water.

36-503
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Naleds, Ice formation, Alimentation, Ice composition, Ice structure, Ice physics.

36-504
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Naleds, Ice composition, Water chemistry, Microelement content.

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Naleds, Countermeasures, Ground water, Flow control, Baykal Amur railroad.

36-506
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Permafrost beneath structures, Naleds, Hydraulic structures, Culverts, Baykal Amur railroad.

36-507
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Geocryology, Naleds, Engineering geology, Taliks, Permafrost hydrology, Roads, Design.

36-508
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Roads, Pavements, Roadbeds, Naleds, Design.

36-509
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K[illegible]
Hydraulic structures, Culverts, Bridges, Naleds, Countermeasures, Railroads, Embankments, Walls.

36-510
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Naleds, Countermeasures, Baykal Amur railroad.

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36-512
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Wind direction, Wind velocity, Weather stations, Weather forecasting, Polar regions.

36-513
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Wind direction, Wind velocity, Meteorological data, Barents Sea.

36-514
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36-515
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Ice navigation, Sea ice, Drift, Wind velocity, Wind direction.

36-516
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Sea ice, Air temperature, Air water interactions, Ice navigation, Drift, Ocean currents.

36-517
Recommendations concerning the calculation of continuous periods with air temperature below given limits using punched tape data. [Rekomendatsii po rascheta nepreryvnoi prodolzhitel'nosti periodov s temperatura vozdukha nizhe zadannykh predelov sredstvami mekhanizatsii].
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Meteorological data, Data processing, Air temperature, Temperature measurement.

36-518
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Panov, V.V.
Ice navigation, Hydraulic structures, Glaze, Ship icing, Meteorological factors.

36-519
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Boundary layer, Air water interactions, Air temperature, Heat transfer, Mass transfer, Arctic Ocean.

36-520
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Weather stations, Precipitation (meteorology), Ice navigation, Weather forecasting, Meteorological charts, Arctic Ocean.

36-521
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36-522
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Lalaian, N.T.
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36-523
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Introduced plants, Cryogenic soils, Plant ecology, Forest soils, Steppes, Plant physiology.

36-524
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36-525
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36-526
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Swamps, Drains, Soil stabilization, Compaction, Foundations, Peat, Construction equipment, Clays.

36-527
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Earthwork, Clay soils, Earth fills, Compaction, Construction equipment.

36-528
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Ice mechanics, Sea ice distribution, Drift, Ice conditions, Remote sensing, Research projects, Aerial surveys, Photointerpretation.

36-532
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36-533
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Offshore drilling, Sea ice distribution, Ice conditions, Remote sensing, Aerial surveys, Pack ice, Photointerpretation, Fast ice, Computer applications.

36-534
Airborne impulse radar sounding of sea ice.
Rossiter, J.R., et al. Canadian Symposium on Remote Sensing, 6th, Halifax, Nova Scotia, May 21-23, 1980 Proceedings. Edited by T.T. Alfoldi, Ottawa, Canadian Aeronautics and Space Institute, [1980], p.187-194, With French summary. 14 refs.
Butt, K.V., Gramberg, J.B., Ridings, T.F.
Ice physics, Sea ice distribution, Ice conditions, Ice cover thickness, Remote sensing, Aerial surveys, Ice salinity, Photointerpretation, Ice crystal structure, Ice electrical properties.

36-535
Lake Melville Labrador offshore synthetic aperture radar study—winter 1979.
Worstold, R.D., et al. Canadian Symposium on Remote Sensing, 6th, Halifax, Nova Scotia, May 21-23, 1980. Proceedings. Edited by T.T. Alfoldi. Ottawa, Canadian Aeronautics and Space Institute, [1980], p.195-202. With French summary. 11 refs.
Parashar, S.K., Strong, D.C.
Ice mechanics, Sea ice distribution, Ice navigation, Ice conditions, Remote sensing, Aerial surveys, Drift, Photointerpretation, Mapping.

36-536
Single and multiple parameter microwave signatures of sea ice.
Hawkins, R.K., et al. Canadian Symposium on Remote Sensing, 6th, Halifax, Nova Scotia, May 21-23, 1980. Proceedings. Edited by T.T. Alfoldi. Ottawa, Canadian Aeronautics and Space Institute, [1980], p.217-229. With French summary. 19 refs.
Microwaves, Sea ice distribution, Radiometry, Ice conditions, Ice islands, Remote sensing, Aerial surveys.

36-537
Radar detection of sea ice ridges and icebergs in frozen oceans at incidence angles from 8 deg to 55 deg.
Pearson, D., et al. Canadian Symposium on Remote Sensing, 6th, Halifax, Nova Scotia, May 21-23, 1980. Proceedings. Edited by T.T. Alfoldi. Ottawa, Canadian Aeronautics and Space Institute, [1980], p.231-241. With French summary. 5 refs.
Pressure ridges, Sea ice distribution, Icebergs, Ice conditions, Airborne radar, Remote sensing, Aerial surveys, Photointerpretation.

36-538
Digital image analysis of SAR imagery for the detection of icebergs.
Kirby, M.E., Canadian Symposium on Remote Sensing, 6th, Halifax, Nova Scotia, May 21-23, 1980. Proceedings. Edited by T.T. Alfoldi. Ottawa, Canadian Aeronautics and Space Institute, [1980], p.249-262. With French summary. 7 refs.
Icebergs, Sea ice distribution, Ice detection, Ice conditions, Pack ice, Remote sensing, Aerial surveys, Ice navigation, Photointerpretation, Offshore drilling.

36-539
Application of synthetic aperture radar data to snow cover monitoring.
Goodison, B.E., et al. Canadian Symposium on Remote Sensing, 6th, Halifax, Nova Scotia, May 21-23, 1980. Proceedings. Edited by T.T. Alfoldi. Ottawa, Canadian Aeronautics and Space Institute, [1980], p.263-271. With French summary. 10 refs.
Waterman, S.E.
Snow cover distribution, Soil water, Airborne radar, Snow water equivalent, Monitors, Meteorological data, Snow depth, Snow density, Photointerpretation.

36-540
Optimizing imaging radar parameters for ice reconnaissance.
Lowry, R.T., et al. Canadian Symposium on Remote Sensing, 6th, Halifax, Nova Scotia, May 21-23, 1980. Proceedings. Edited by T.T. Alfoldi. Ottawa, Canadian Aeronautics and Space Institute, [1980], p.273-283. With French summary. 6 refs.
Hengeveld, H.G.
Airborne radar, Sea ice distribution, Ice conditions, Remote sensing, Aerial surveys, Photointerpretation, Statistical analysis, Computer applications.

36-541
Application of thermography for locating potential frost pockets in forest cutovers.
Lawrence, G.R., et al. Canadian Symposium on Remote Sensing, 6th, Halifax, Nova Scotia, May 21-23, 1980. Proceedings. Edited by T.T. Alfoldi. Ottawa, Canadian Aeronautics and Space Institute, [1980], p.369-376. With French summary. 14 refs.
Banner, A.
Frost, Forest land, Heat loss, Remote sensing, Microclimatology, Soil temperature, Photointerpretation, Air temperature, Geomorphology.

36-542
Computer analysis of TIROS-N NOAA-6 satellite data for operational snow cover mapping.
Waterman, S.E., et al. Canadian Symposium on Remote Sensing, 6th, Halifax, Nova Scotia, May 21-23, 1980. Proceedings. Edited by T.T. Alfoldi. Ottawa, Canadian Aeronautics and Space Institute, [1980], p.435-442. With French summary. 11 refs.
Hogg, W.D., Hannsen, A.J., Polavarapu, V.L.
Watersheds, Snow cover distribution, Mapping, Remote sensing, Computer applications, Snowmelt, Flood forecasting, Statistical analysis.

36-543
Investigation of multispectral remote sensing of snow cover using a solar radiation model.
Waterman, S.E., Canadian Symposium on Remote Sensing, 6th, Halifax, Nova Scotia, May 21-23, 1980. Proceedings. Edited by T.T. Alfoldi. Ottawa, Canadian Aeronautics and Space Institute, [1980], p.525-540. With French summary. 28 refs.
Solar radiation, Snow cover distribution, Spectroscopy, Mathematical models, Remote sensing, Infrared reconnaissance, Altitude.

36-544
Airborne remote sensing program for the Arctic Pilot Project.
Dixit, B., et al, Canadian Symposium on Remote Sensing, 6th, Halifax, Nova Scotia, May 21-23, 1980. Proceedings. Edited by T.T. Alfoldi. Ottawa, Canadian Aeronautics and Space Institute, [1980], p.571-573. With French summary. 5 refs.
Cheung, H.
Ice navigation, Sea ice distribution, Ice conditions, Pressure ridges, Remote sensing, Aerial surveys, Research projects, Gas pipelines, Models.

36-545
Implications of melt ponds to the remote sensing of sea ice.
Kirby, M.E., et al, Canadian Symposium on Remote Sensing, 6th, Halifax, Nova Scotia, May 21-23, 1980. Proceedings. Edited by T.T. Alfoldi. Ottawa, Canadian Aeronautics and Space Institute, [1980], p.577-579. With French summary.
Ramseier, R.O., Pearson, D.E., Dixon, R.G.
Ice mechanics, Sea ice distribution, Ice melting, Ice conditions, Ponds, Remote sensing, Microwaves, Aerial surveys, Photointerpretation.

36-546
Organizing the construction of the Sayano-Shushenskaya hydroelectric power plant. [Organizatsiia stroitel'nogo proizvodstva pri sooruzhenii Saiano-Shushenskoi GES].
Sadovskii, S.I., *Energeticheskoe stroitel'stvo*, Aug 1981, No.8, p.2-8. In Russian.
Electric power, Dams, Concrete structures, Concrete placing, Cranes (hoists), Construction equipment.

36-547
Construction of river crossings of 35-330 kw overhead lines in the North. [Sooruzhenie perekhodov VL 35-330 kB cherez reki v raionakh Severa].
Vinogradov, D.E., *Energeticheskoe stroitel'stvo*, Aug 1981, No.8, p.39-45. In Russian.
Power line supports, Anchors, Electrical grounding, River crossings, Permafrost beneath rivers.

36-548
Effective measures for protecting foundation ground from frost heave. [Effektivnye mery zashchity gruntov osnovaniia ot deistviia sil moroznogo puchentia].
Orlov, E.I., *Energeticheskoe stroitel'stvo*, Aug 1981, No.8, p.53-55. In Russian.
Foundations, Frost heave, Design.

36-549
Preliminary compaction of water-saturated bases with combined sand drains. [Predpostroechnoe uplotnenie vodonasyshchennykh osnovanii s vertikal'nymi drenami].
Svetinskii, E.V., et al, *Neftepromyslovoe stroitel'stvo*, 1981, No.8, p.10-11. In Russian.
Brednev, A.V.
Swamps, Foundations, Drainage, Drains, Sands.

36-550
Studying temperature regime of a pipeline. [Issledovanie temperaturnogo rezhima nefteprovoda].
Bronnikova, N.A., et al, *Neftepromyslovoe stroitel'stvo*, 1981, No.8, p.12-14. In Russian.
Bronfenbrener, R.N.
Petroleum industry, Transportation, Hot oil lines, Thermal regime, Environmental protection.

36-551
Calculation scheme for determining deformations caused by tangential frost heave forces. [Raschetnaia skhema opredeleniia deformatsii kasatel'nykh sil moroznogo puchentia].
Orzhekhovskii, I.R., et al, *Neftepromyslovoe stroitel'stvo*, 1981, No.8, p.14-15. In Russian.
Ganeles, I.B.
Roads, Foundations, Pipelines, Frost heave, Design.

36-552
Economic problems of improving transportation in the Tyumen' petroleum province. [Ekonomicheskie voprosy uluchsheniia transportnogo obsluzhivaniia Tiumenskogo neftegazodobyvaiushchego regiona].
Vasiliuk, V.A., *Neftepromyslovoe stroitel'stvo*, 1981, No.8, p.16-18. In Russian. 2 refs.
Petroleum industry, Transportation, Cargo, Swamps, Roads, Railroads, Permafrost beneath structures, Aircraft, Water transport.

36-553
Highways of the North. [Avtomobil'nye dorogi Severa].
Zolotar', I.A., ed. Moscow, Transport, 1981, 247p. In Russian. 104 refs.
Roads, Roadbeds, Pavements, Permafrost beneath structures, Swamps, Ice roads, Snow roads, Winter maintenance, Design.

36-554
Effect of human activities on mountain forest soils. [Antropogennye vozdeistviia na gorno-lesnye pochvy].
Stefin, V.V., Novosibirsk, Nauka, 1981, 169p., In Russian. Refs. p.162-169.
Mountains, Forest soils, Podsol, Cryogenic soils, Human factors, Forest fires, Environmental protection, Permafrost hydrology, Thermokarst, USSR—Baykal Lake.

36-555
Marine offshore construction abroad. [Morskoe stroitel'stvo za rubezhom].
Tatarenko, M.M., et al, Zarubezhnyi opyt osvoenia Mirovogo okeana (Economic development of the World Ocean outside of the USSR) edited by V.F. Kosov and O.V. Petrov, Vladivostok, 1979, p.70-81. In Russian. 16 refs.
Khodakova, S.B., An, A.A.
Petroleum industry, Transportation, Ice navigation, Drilling, Offshore structures, Ice loads, Foundations, Piles, Design.

36-556
Composition and structure of moss cover on bald peaks and in taiga of Udokan Mountains. [Sostav i slozhenie mokhovogo pokrova gol'tsovo-gorno-taezhnogo Udokana].
Medvedev, I.O., Voprosy biogeografii Sibiri (Problems of the biogeography of Siberia) edited by A.V. Belov and V.F. Liamkin, Irkutsk, 1979, p.70-82. In Russian. 11 refs.
Alpine landscapes, Taiga, Mosses, Cryogenic soils, Swamps, Mapping.

36-557
Botanical-cartographic investigations in the eastern part of Yana-Oymiakon Highlands. [Botaniko-kartograficheskie issledovaniia v vostochnoi chasti Iano-Oimiakonskogo nagor'ia].
Garashchenko, A.V., Voprosy biogeografii Sibiri (Problems of the biogeography of Siberia) edited by A.V. Belov and V.F. Liamkin, Irkutsk, 1979, p.83-107. In Russian. 15 refs.
Mountains, River basins, Permafrost distribution, Cryogenic soils, Alpine tundra, Plant ecology, Ecosystems, Forest fires, Aerial surveys, Photographic reconnaissance, Geobotanical interpretation.

36-558
Studying the state of taiga geosystems. [Izuchenie sostoianii taezhnykh geosistem].
Krauklis, A.A., ed. Irkutsk, 1980. 109p. In Russian. For selected papers see 36-559 through 36-561. Refs. passim.
Permafrost distribution, Permafrost depth, Cryogenic soils, Taiga, Mapping, Economic development, Environmental protection, River basins.

36-559
Changes in the economic development of the Chuna River area. (Izmenenie khoziaistvennogo oblika Prichun'ia).
Medvedkova, E.A., Izuchenie sostoianii taezhnykh geosistem (Studying the state of taiga geosystems) edited by A.A. Krauklis, Irkutsk, 1980, p.5-25, In Russian. 21 refs.
River basins, Forestry, Taiga, Permafrost distribution, Economic development, Transportation, Environmental protection.

36-560
Studying human factors in changes of the geosystems of the Chuna River landscapes. (Issledovaniia antropogennykh izmenenii geosistem prichunskikh landshaftov).
Suvorov, E.G., Izuchenie sostoianii taezhnykh geosistem (Studying the state of taiga geosystems) edited by A.A. Krauklis, Irkutsk, 1980, p.26-36, In Russian. 6 refs.
River basins, Taiga, Landscape types, Forest fires, Cryogenic soils, Mapping, Soil erosion, Snow cover effect, Environmental protection.

36-561
Succesional-age changes in taiga biogeocenoses. (Suktsessionno-vozrastnye smeny taezhnykh biogeotsenozov).
Krauklis, A.A., et al, Izuchenie sostoianii taezhnykh geosistem (Studying the state of taiga geosystems) edited by A.A. Krauklis, Irkutsk, 1980, p.37-71, In Russian. Refs. p.70-71.
Bessolitsyna, E.P.
Taiga, Landscape types, Cryogenic soils, Plant ecology, Biomass, Forestry, Revegetation.

36-562
Proceedings.
Colloquium on Planetary Water, 3rd, Niagara Falls, New York, Oct. 27-29, 1980, Buffalo, N.Y., State University of New York, (1980), 189p., Refs. passim. For selected papers see 36-563 through 36-575.
Permafrost hydrology, Planetary environments, Ground ice, Ground water, Extraterrestrial ice, Geocryology, Mars (planet).

36-563
Hydrogeochemical processes in the active layer of some antarctic soils.
Harris, H.J.H., Colloquium on Planetary Water, 3rd, Niagara Falls, New York, Oct. 27-29, 1980. Proceedings, Buffalo, N.Y., State University of New York, (1980), p.7-12, 11 refs.
Permafrost hydrology, Unfrozen water content, Active layer, Hydrogeochemistry, Meltwater, Antarctica—Wright Valley.
During a single austral summer, groundwater samples were taken periodically near a small pond (informally named VXE-6 Pond) situated in the axis of the south fork of Wright Valley. The pond was supplied entirely by shallow groundwater, which was consistantly less saline than the pond and was relatively rich in mole percent of Na. The pond was precipitating gypsum, but was two to three orders of magnitude below saturation in other common sulfate and chloride precipitates. Other groundwaters sampled were adjacent to and topographically below VXE-6 Pond, but were situated in a basin hydraulically separate from the pond. These groundwaters, which were probably "pooled" in depressions in the surface of frozen ground, were chemically similar to the pond; the pond was slightly richer in Mg. Soil samples were taken from saturated and unsaturated zones associated with all of the groundwaters discussed above. In the laboratory, salts were extracted from the soils with deionized water, as a group, the extracts were slightly richer in Ca and poorer in Mg than were the pooled groundwaters.

36-564
Subglacial fluvial processes, Malaspina Glacier, Alaska.
Boothroyd, J.C., et al, Colloquium on Planetary Water, 3rd, Niagara Falls, New York, Oct. 27-29, 1980. Proceedings, Buffalo, N.Y., State University of New York, (1980), p.13-17, 13 refs.
Gustavson, T.C., Timson, B.S.
Glacial hydrology, Subglacial drainage, Glacial deposits, Meltwater.

36-565
Planetary and extraplanetary event records in polar ice caps.
Zeller, E.J., et al, MP 1461, Colloquium on Planetary Water, 3rd, Niagara Falls, New York, Oct. 27-29, 1980. Proceedings, Buffalo, N.Y., State University of New York, (1980), p.18-27, 6 refs.
Parker, B.C., Gow, A.J.
Ice sheets, Land ice, Glacier mass balance, Planetary environments, Atmospheric composition, Volcanic ash.
A curve of nitrate-N concentration, plotted from 1653 individual analyses from a 108 meter firn core drilled at South Pole Station in 1978-79, is presented. The most prominent feature of the background curve is the sharp drop in nitrate between 1650 and 1720, a period of unusually low solar activity. It is suggested that a comparison of this data with those of polar caps of other planets would make it possible to identify solar system-wide effects.

36-566
Ice in the interiors of Ganymede and Callisto.
Schubert, G., et al, Colloquium on Planetary Water, 3rd, Niagara Falls, New York, Oct. 27-29, 1980. Proceedings, Buffalo, N.Y., State University of New York, (1980), p.36-40, 12 refs.
Ellsworth, K., Stevenson, D.J.
Extraterrestrial ice, Ice accretion, Temperature effects.

36-567
Volume changes in Ganymede and Callisto resulting from ice/water phase changes.
Squyres, S.W., Colloquium on Planetary Water, 3rd, Niagara Falls, New York, Oct. 27-29, 1980. Proceedings, Buffalo, N.Y., State University of New York, (1980), p.41-45, 2 refs.
Extraterrestrial ice, Ice water interface, Phase transformations.

36-568
Water ice on Mars: theoretical vs. morphological distributions.
Judson, S., et al, Colloquium on Planetary Water, 3rd, Niagara Falls, New York, Oct. 27-29, 1980. Proceedings, Buffalo, N.Y., State University of New York, (1980), p.59-63, 10 refs.
Rossbacher, L.A.
Extraterrestrial ice, Ground ice, Mars (planet), Geocryology, Ice water interface, Geomorphology.

36-569
"Fluidized" impact craters in Bingham materials and the distribution of water on Mars.
Fink, J.H., et al, Colloquium on Planetary Water, 3rd, Niagara Falls, New York, Oct. 27-29, 1980. Proceedings, Buffalo, N.Y., State University of New York, (1980), p.64-67, 11 refs.
Greeley, R., Gault, D.E.
Mars (planet), Geomorphology, Ground water, Ice water interface, Geocryology.

36-570
Mars: ground ice replenishment from a subpermafrost ground water system.
Clifford, S.M., Colloquium on Planetary Water, 3rd, Niagara Falls, New York, Oct. 27-29, 1980. Proceedings, Buffalo, N.Y., State University of New York, (1980), p.68-75, 17 refs.
Mars (planet), Heat transfer, Ground ice, Soil water migration, Subpermafrost ground water, Ground water.

36-571
Did ice streams carve Martian outflow channels.
Lucchitta, B.K., et al, Colloquium on Planetary Water, 3rd, Niagara Falls, New York, Oct. 27-29, 1980. Proceedings, Buffalo, N.Y., State University of New York, (1980), p.88-96, 15 refs.
Anderson, D.M., Shoji, H.
Extraterrestrial ice, Mars (planet), Ice scoring, Dredging, Geomorphology, Geocryology, Flooding.

36-572
Remote sensing of Arctic hydrologic processes.
Hall, D.K., et al, Colloquium on Planetary Water, 3rd, Niagara Falls, New York, Oct. 27-29, 1980. Proceedings, Buffalo, N.Y., State University of New York, (1980), p.141-149, 11 refs.
McCoy, J.E., Cameron, R.M., Van Etten, P., Stamm, M.E.
Hydrology, Geomorphology, Permafrost hydrology, Remote sensing, Radio echo soundings, Gas pipelines, Taliks, United States—Alaska.

36-573
Remote sensing of water frost and ice on planetary surfaces using near-infrared spectrophotometric techniques.
Clark, R.N., Colloquium on Planetary Water, 3rd, Niagara Falls, New York, Oct. 27-29, 1980. Proceedings, Buffalo, N.Y., State University of New York, (1980), p.150-158, 11 refs.
Frost, Ice conditions, Water, Ice crystal structure, Ice spectroscopy, Low temperature tests, Grain size, Reflection.

36-574
Composition and microstructure of Ganymede's ice surface from Voyager remote measurements.
Parmentier, E.M., Colloquium on Planetary Water, 3rd, Niagara Falls, New York, Oct. 27-29, 1980. Proceedings, Buffalo, N.Y., State University of New York, (1980), p.58-67, 7 refs.
Extraterrestrial ice, Microstructure, Ice surface, Remote sensing.

36-575
Electromagnetic detection of soil water: use of time domain reflectometry on frozen soils.
Smith, M.W., Colloquium on Planetary Water, 3rd, Niagara Falls, New York, Oct. 27-29, 1980. Proceedings, Buffalo, N.Y., State University of New York, (1980), p.182-185, 5 refs.
Frozen ground, Moisture detection, Soil water, Unfrozen water content, Electromagnetic prospecting, Permafrost hydrology.

36-576
Subsea permafrost research techniques.
Dewellette, R., Geosciences and man, Dec. 30, 1977, Vol.18, p.29-34, 6 refs.
DLC GB45.2R47
Subsea permafrost, Offshore drilling, Boreholes.

36-577
The Soviet North. (Sovetskii Sever).
Savin, S.V., Moscow, Prosveshchenie, 1980, 175p., In Russian with English table of contents enclosed.
Polar regions, Expeditions, Research projects, Drift stations, Economic development, Natural resources, All terrain vehicles, Ice roads, Snow roads, Residential buildings.

36-578
Multizonal spaceborne photography of the earth. (Mnogozonal'nye aerokosmicheskie s'emki zemli).
Sagdeev, R.Z., ed, Moscow, Nauka, 1981, 303p., In Russian with English table of contents enclosed. For selected papers see 36-579 through 36-581. Refs. passim.
Ziman, I.A.L., ed.
Spaceborne photography, Alpine landscapes, Taiga, Albedo, Infrared reconnaissance, Geobotanical interpretation.

36-579
Development of a special spaceborne optical-electronic system for collecting multispectral video-information of the earth's surface. (Razrabotka spetsializirovannoi optiko-elektronnoi sistemy operativnogo sbora mnogospektral'noi videoinformatsii o poverkhnosti zemli s borta ISZ).
Avanesov, G.A., et al, Mnogozonal'nye aerokosmicheskie s'emki Zemli (Multizonal spaceborne photography of the earth) edited by R.Z. Sagdeev and I.A.L. Ziman, Moscow, Nauka, 1981, p.57-76, In Russian. 9 refs.
Glazkov, V.D., Tarnopol'skii, V.I.
Airborne equipment, Spacecraft, Aerial surveys, Earth crust, Ice cover effect, Snow cover effect, Optical properties.

36-580
Spectrometric studies of earth surfaces. (Spektrometricheskie issledovaniia zemnoi poverkhnosti).
Avanesov, G.A., et al, Mnogozonal'nye aerokosmicheskie s'emki Zemli (Multizonal spaceborne photography of the earth) edited by R.Z. Sagdeev and I.A.L. Ziman, Moscow, Nauka, 1981, p.100-117, In Russian. 95 refs.
Snetkova, N.I.
Aerial surveys, Radiation measuring instruments, Airborne equipment, Earth crust, Surface properties, Albedo, Landscape types, Geobotanical interpretation, Spectroscopy, Bibliographies.

36-581
Studying space structure of surface images obtained from satellites. (Izuchenie prostranstvennoi struktury kosmicheskikh izobrazhenii zemnoi poverkhnosti).
Egorov, V.V., et al, Mnogozonal'nye aerokosmicheskie s'emki Zemli (Multizonal spaceborne photography of the earth) edited by R.Z. Sagdeev and I.A.L. Ziman, Moscow, Nauka, 1981, p.235-245, In Russian. 2 refs.
Arutnov, G.P.
Spaceborne photography, Alpine landscapes, Taiga, Photointerpretation.

36-582
Radar methods of studying the earth. (Radiolokatsionnye metody issledovaniia Zemli).
Mel'nik, IU.A., ed. Moscow, Sovetskoe radio, 1980. 262p., In Russian with abridged English table of contents enclosed. 118 refs.
Ice surveys, Ice reporting, Radar echoes, Radar photography, Mapping.

36-583
Methodology problems with seismic reflection surveying in Antarctica. (Metodicheskie problemy seismorazvedki MOV v antarkticheskikh usloviiakh).
Kogan, A.L., Geofizicheskie issledovaniia v Antarktide: sbornik nauchnykh trudov, Leningrad, Nauchno-issledovatel'skii institut geologii Arktiki, 1980, p.59-61, In Russian.
Seismic reflection, Ice shelves, Glacier thickness, Antarctica.
Present-day methods of seismic sounding by the wave reflection method carried out in Antarctic to assess ice thickness and sea depth are discussed. Three zones of Antarctica are delineated on the basis of feasibility of seismic reflection. Seismic reflection is most useful in studying thickness of shelf ice. Prospects for improving seismic reflection methods are considered.

36-584
Velocity parameters in ice cover based on seismic reflection. (Skorostnye parametry ledovoi tolshchi po dannym seismicheskikh issledovanii MOV).
Pozdeev, V.S., Geofizicheskie issledovaniia v Antarktide: sbornik nauchnykh trudov, Leningrad, Nauchno-issledovatel'skii institut geologii Arktiki, 1980, p.62-67, In Russian. 3 refs.
Seismic reflection, Ice shelves, Glacier thickness, Antarctica.
Results of extensive calculations of effective velocities according to seismic reflection travel time curves from soundings in various parts of Antarctica are discussed. Possible error in statistical averaging of velocity values and the difference between averaged effective velocity values and average velocity calculations from radar measurements in continental and shelf ice are considered.

36-585
Using the geodesic radar system *Poisk* to coordinate geophysical surveys in Antarctica. (Primenenie radiogeodezicheskoi sistemy "Poisk" dlia koordinirovaniia geofizicheskikh s"emok v Antarktike).
Bochkovskii, L.M., Geofizicheskie issledovaniia v Antarktide: sbornik nauchnykh trudov, Leningrad, Nauchno-issledovatel'skii institut geologii Arktiki, 1980, p.75-80, In Russian. 7 refs.
Ice shelves, Glacier thickness, Radio echo soundings, Antarctica.
Recommendations for using the *Poisk-D* system in Antarctica for both shelf and sea ice are offered. *Poisk-D* is a geodetic device based on measurement of field intensity of radio waves of medium wavelength.

36-586
Erection of wooden modular buildings in the Baykal Amur railroad area. (Vozvedenie inventarnykh dereviannykh zdanii na BAMe).
Gol'dguber, B., *Na stroikakh Rossii*, Feb. 1981, No.2, p.46-49, In Russian.
Modular construction, Houses, Wooden structures, Prefabrication, Panels, Permafrost beneath structures.

36-587
New assembly for electric heating of cast-in-place concrete. (Novoe ustroistvo dlia elektroprogreva monolitnogo betona).
Trub, M., *Na stroikakh Rossii*, Jan. 1981, No.1, p.24-25, In Russian.
Winter concreting, Concrete freezing, Electric heating, Concrete hardening.

36-588
Thickness of water films in fine grained soils. (O tolshchine vodnykh plenok v tonkodispersnykh gruntakh).
Lysenko, M.P., *Leningrad Universitet Vestnik*, Dec. 1980, 24(4), p.29-36, In Russian with English summary. 11 refs.
Fines, Soil water, Water films, Molecular structure, Hygroscopic water, Phase transformations.

36-589
Forest growth on gley-podsols and surface-gley soils formed on two-member deposits of the Arkhangel'sk area. Pt.1. (O lesorastitel'nykh svoistvakh glee-podzolistykh i podzolistykh poverkhnostno-gleevatykh pochv Arkhangel'skoi oblasti razvitykh na dvuchlennykh otlozheniiakh. I).
Rudneva, E.N., et al, *Leningrad Universitet Vestnik*, Dec. 1980, 24(4), p.85-91, In Russian with English summary. 16 refs.
Dvornikova, L.L., Rubtlin, E.V.
Cryogenic soils, Podsol, Forest soils.

36-590
Efficient turbodrill for Western Siberia. (O ratsional'nom tipe turbobura dlia Zapadnoi Sibiri).
Gusman, M.T., et al, *Neftianoe khoziaistvo*, Feb. 1981, No.2, p.14-16, In Russian.
Ageev, A.I.
Petroleum industry, Drilling, Wells, Drills, Frozen ground.

36-591
Properties of expanding cement solutions at low temperatures. (Svoistva rasshiriaiushchikhsia tsementnykh rastvorov pri ponizhennykh temperaturakh).
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Petroleum industry, Wells, Drilling, Cements, Water content, Permafrost.

36-592
Calculation of a hot oil line during variations in the pumping regime. (Raschet goriachego truboprovoda pri izmenenii rezhima perekachki).
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Hot oil lines, Pumps, Petroleum industry.

36-593
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Cooling systems, Coolants, Supercooled fog, Heat transfer.

36-594
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Ice sheets, Low temperature research, Ice physics, Ice mechanics.
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Ice crystals, Ice optics, Light scattering, Analysis (mathematics).

36-596
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Sea water, Salinity, Water temperature, Seasonal variations, Ice islands, Arctic Ocean.

36-597
Nature of the North and its protection. Problems and measures of environmental protection in the Murmansk area. (Priroda Severa i ee okhrana. Problemy okhrany estestvennoi sredy i opyt organizatsii prirodookhrannykh meropriatii v Murmanskoi oblasti).
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Littoral zone, Subarctic landscapes, Cryogenic soils, Water pollution, Oil spills, Plant ecology, Ecosystems, Environmental protection, Arctic Ocean, USSR—Murmansk.

36-598
Preservation of some plant species in the Murmansk region. (Vidovaia okhrana rastenii v Murmanskoi oblasti).
Andreev, G.N., et al, Priroda Severa i ee okhrana. Problemy okhrany estestvennoi sredy i opyt organizatsii prirodookhrannykh meropriatii v Murmanskoi oblasti (Nature of the North and its protection. Problems and measures of environmental protection in the Murmansk area) edited by V.A. Potanin, Murmansk, Murmanskoe knizhnoe izdatel'stvo, 1981, p.26-34. In Russian. 3 refs.
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Subarctic landscapes, Cryogenic soils, Plant ecology, Ecosystems, Environmental protection.

36-599
Reforestation of felled areas in the Murmansk region. (Lesovosstanovlenie v sviazi s promyshlennymi rubkami v Murmanskoi oblasti).
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Taiga, Cryogenic soils, Forestry, Revegetation, Human factors, Environmental protection.

36-600
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Forest soils, Cryogenic soils, Soil pollution, Revegetation, Environmental protection.

36-601
Revegetation of felled areas in the Lappish reservation. (Vosstanovlenie rastitel'nosti na vyrubkakh Laplandskogo zapovednika).
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Subarctic landscapes, Plant ecology, Forestry, Revegetation, Cryogenic soils, Environmental protection.

36-602
Mapping of lichens in the Lappish reservation. (Likhenoindikatsionnoe kartirovanie Laplandskogo zapovednika).
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Subarctic landscapes, Cryogenic soils, Lichens, Plant ecology, Mapping, Environmental protection.

36-603
Evaluating the pollution of littoral waters in Barents and White seas. (K metodike otsenki zagriaznenia pribrezhnykh vod Barentseva i Belogo morei).
Potanin, V.A., et al, Priroda Severa i ee okhrana. Problemy okhrany estestvennoi sredy i opyt organizatsii prirodookhrannykh meropriatii v Murmanskoi oblasti (Nature of the North and its protection. Problems and measures of environmental protection in the Murmansk area) edited by V.A. Potanin, Murmansk, Murmanskoe knizhnoe izdatel'stvo, 1981, p.52-57, In Russian.
Norina, A.M.
Water pollution, Estuaries, Runoff, Wastes, Environmental protection, Arctic Ocean.

36-604
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Water pollution, Oil spills, Ecosystems, Environmental protection, Arctic Ocean.

36-605
Classification of industrial wastes in the Murmansk area according to fitness for biologic recultivation. [Nekotorye aspekty klassifikatsii otkhodov promyshlennosti Murmanskoĭ oblasti po stepeni prigodnosti k biologicheskoĭ rekul'tivatsii].
Kapel'kina, L.P., Priroda Severa i ee okhrana. Problemy okhrany estestvennoĭ sredy i opyt organizatsii prirodookhrannykh meropriiatiĭ v Murmanskoĭ oblasti (Nature of the North and its protection. Problems and measures of environmental protection in the Murmansk area) edited by V.A. Potanin, Murmansk, Murmanskoe knizhnoe izdatel'stvo, 1981, p.74-78, In Russian. 6 refs.
Mining, Tailings, Wastes, Revegetation, Environmental protection.

36-606
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Engineering geology, Hydraulic structures, Dams, Rock fills, Permafrost beneath structures, Hydrothermal processes, Cold weather construction.

36-607
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Tsytovich, N.A., et al, Voprosy prikladnoĭ geomekhaniki i inzhenernoĭ geologii v stroitel'stve (Problems of applied geomechanics and engineering geology in construction) edited by L.D. Belyĭ, Moscow, 1980, p.32-44, In Russian. 5 refs.
Ter-Martirosian, Z.G.
Engineering geology, Clays, Paludification, Deformation, Test equipment, Laboratory techniques.

36-608
Field observations of cryogenic processes and deformations in the body of the Viliuy dam. [Naturnye nabliudeniia za kriogennymi protsessami i deformatsiiami v tele plotiny Viliuĭskoĭ GES].
Tsytovich, N.A., et al, Voprosy prikladnoĭ geomekhaniki i inzhenernoĭ geologii v stroitel'stve (Problems of applied geomechanics and engineering geology in construction) edited by L.D. Belyĭ, Moscow, 1980, p.61-77, In Russian. 13 refs.
Hydraulic structures, Dams, Concrete structures, Earth dams, Rock fills, Permafrost beneath structures, Hydrothermal processes.

36-609
Geographic aspects of hydrologic investigations (river sistems of the South Minusinsk Basin taken as an example). [Geograficheskie aspekty gidrologicheskikh issledovaniĭ (na primere rechnykh sistem IUzhno-Minusinskoĭ kotloviny)].
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Alpine landscapes, Taiga, Steppes, Cryogenic soils, Precipitation (meteorology), Mapping, Models.

36-610
Cryohydrogeochemical peculiarities of the permafrost zone. [Kriogidrogeokhimicheskie osobennosti merzloĭ zony].
Anisimova, N.P., Novosibirsk, Nauka, 1981, 153p., In Russian with English table of contents enclosed. Refs. p.143-152.
Permafrost hydrology, Taliks, Active layer, Ground ice, Ice composition, Subsea permafrost.

36-611
Calculating the stess-strain state of swelling grounds. [Metod rascheta napriazhenno-deformirovannogo sostoianiia nabukhaiushchikh gruntov].
Davydov, N.I., *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia*, 1980, Vol.137, p.27-29, In Russian. 5 refs.
Clays, Water content, Rheology, Deformation, Mathematical models.

36-612
Influence of preliminary compaction on the strength of frozen peat. [Vliianie predvaritel'nogo uplotneniia na prochnostnye svoistva promorazhivaemogo torfa].
Naumov, V.P., *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia*, 1980, Vol.137, p.79-82, In Russian. 5 refs.
Earth dams, Organic soils, Peat, Frost penetration, Freeze thaw cycles, Compaction, Bearing strength.

36-613
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Voronkov, O.K., et al, *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia*, 1980, Vol.137, p.86-92, In Russian. 8 refs.
Ushakova, L.F.
Frost weathering, Frozen rocks, Freeze thaw cycles, Frost resistance.

36-614
Studying rock streams for evaluating the jointing of rocks. [Izuchenie kurumov s tsel'iu otsenki blochnosti skal'nogo massiva].
Voronkov, O.K., et al, *Leningrad. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut gidrotekhniki. Izvestiia*, 1980, Vol.137, p.116-121, In Russian. 13 refs.
Ushakova, L.F.
Rock streams, Frost weathering, Freeze thaw cycles, Hydrothermal processes.

36-615
Abrasion wear of excavation equipment under northern conditions. [Abrazivnoe iznashivanie zemleroĭnykh mashin v usloviiakh Severa].
Ermolaev, S.V., et al, *Mekhanizatsiia stroitel'stva*, Sep. 1981, No.9, p.16-17, In Russian.
Suslov, A.A.
Cold weather construction, Earthwork, Excavation, Construction equipment, Cold weather performance.

36-616
Arkhangel'sk. Architectural biography. [Arkhangel'sk. Arkhitekturnaia biografiia].
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Urban planning, Swamps, Industrial buildings, Residential buildings, Soil freezing, Frost heave, Microclimatology, Thermal insulation, Wind factors, Design.

36-617
Feasibility of oil spill dispersant application in the southern Beaufort Sea.
Hildebrand, P.B., et al, *Canada. Environmental Protection Service. Economic and technical review report*, Sep. 1977, EPS-3-EC-77-16, 102p., With French summary. 37 refs.
Allen, A.A., Ross, C.W.
Oil spills, Environmental protection, Countermeasures, Dispersions, Cost analysis, Water pollution, Emulsifying agents, Beaufort Sea.

36-618
Transition from natural-convection-controlled freezing to conduction-controlled freezing.
Harris, J.S., Minneapolis, University of Minnesota, Apr. 1980, 74p., Ph.D. thesis. 9 refs.
Freezing, Convection, Conduction, Liquids, Temperature effects, Surface roughness, Time factor, Experimentation.

36-619
Pile design in permafrost.
Weaver, J.S., et al, *Canadian geotechnical journal*, Aug. 1981, 18(3), p.357-370, With French summary. 24 refs.
Morgenstern, N.R.
Pile structures, Permafrost physics, Settlement (structural), Bearing strength, Stresses, Adhesion, Ice solid interface, Soil creep, Loads (forces), Friction, Temperature effects, Design.

36-620
Slope protection along St. Lawrence Seaway canals.
Olpinski, K., et al, *Canadian geotechnical journal*, Aug. 1981, 18(3), p.402-419, With French summary. 22 refs.
Christensen, C.J.
Slope protection, Slope stability, Bank protection (waterways), Channel stabilization, Rivers.

36-621
Mathematical method for estimating soil temperatures in Canada.
Meikle, R.W., et al, *Soil science*, May 1981, 131(5), p.320-326, 2 refs.
Treadway, T.R.
Soil temperature, Seasonal variations, Statistical analysis, Mathematical models, Canada.

36-622
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For individual papers see 36-623 through 36-652.
Glacial deposits, Glacial erosion, Glacial geology, Sedimentation, Meetings, Moraines, Subglacial drainage.

36-623
Contribution of discontinuous rock-mass failure to glacier erosion.
Addison, K., *Annals of glaciology*, 1981, Vol.2, p.3-10, 50 refs.
Glacial erosion, Glacier beds, Rock mechanics, Ice solid interface, Fracturing, Stresses.

36-624
Seasonal variation of solute concentration in melt waters draining from an alpine glacier.
Collins, D.N., *Annals of glaciology*, 1981, Vol.2, p.11-16, 24 refs.
Meltwater, Water chemistry, Glacier ice, Glacial hydrology, Electrical resistivity, Seasonal variations, Glacier ablation, Subglacial drainage.

36-625
Subglacial morphology in northern Palmer Land, Antarctic Peninsula.
Crabtree, R.D., *Annals of glaciology*, 1981, Vol.2, p.17-22, 8 refs.
Subglacial observations, Glacier thickness, Glacier flow, Glacial erosion, Radio echo soundings, Profiles, Antarctica—Antarctic Peninsula.
Ice-thickness and surface-elevation data gathered from radio echo flights over the Antarctic Peninsula are presented as profiles for five major outlet glaciers in northern Palmer Land and as contour maps for an area of 8,000 sq km to the east of George VI Sound. Glacier profiles appear to be closely related to ice discharge especially to convergent and divergent flow. Comparison of subglacial topography with geological evidence of faulting suggests that the area around George VI Sound is a region where structure is an important influence on the pattern of glacial erosion. (Auth.)

36-626
Glacial abrasion and sliding: their dependence on the debris concentration in basal ice.
Hallet, B., *Annals of glaciology*, 1981, Vol.2, p.23-28, 21 refs.
Glacier flow, Glacial deposits, Basal sliding, Abrasion, Glacier beds, Rock mechanics, Ice solid interface.

36-627
Basal stress concentrations due to abrupt changes in boundary conditions: a cause for high till concentration at the bottom of a glacier.
Hutter, K., et al, *Annals of glaciology*, 1981, Vol.2, p.29-33, 19 refs.
Olunloyo, V.O.S.
Glacier flow, Basal sliding, Glacial deposits, Boundary layer, Stresses, Viscosity, Ice temperature, Temperature gradients, Analysis (mathematics).

36-628
Bore-hole video and photographic cameras.
Koerner, R.M., et al, *Annals of glaciology*, 1981, Vol.2, p.34-38, 4 refs.
Fisher, D.A., Parnandi, M.
Ice drills, Boreholes, Ice sheets, Ice solid interface, Ice deformation, Photographic equipment.

36-629
Particle size, shape, and load in a cold and temperate valley glacier.
Lister, H., *Annals of glaciology*, 1981, Vol.2, p.39-44, 9 refs.
Glacier ice, Rocks, Particle size distribution, Glacial erosion, Glacial deposits, Geomorphology, Glacial geology, Loads (forces).

36-630
Forms of glacial relief of Spitsbergen glaciers.
Macheret, IU.IA., *Annals of glaciology*, 1981, Vol.2, p.45-51, 13 refs.
Glacier surfaces, Glacier thickness, Glacier beds, Glacial deposits, Radio echo soundings, Moraines, Norway—Spitsbergen.

36-631
Freezing fronts and their possible influence upon processes of subglacial erosion and deposition.
Menzies, J., *Annals of glaciology*, 1981, Vol.2, p.52-56, 26 refs.
Glacial erosion, Glacial deposits, Sedimentation, Glacier heat balance, Freezing points, Ice water interface, Subglacial observations.

36-632
***Plucking* as an effect of water-pressure variations at the glacier bed.**
Rothlisberger, H., et al. *Annals of glaciology*, 1981, Vol.2, p.57-62, 13 refs.
Iken, A.
Water pressure, Subglacial drainage, Glacial hydrology, Glacial erosion, Rock mechanics, Abrasion.

36-633
Basal freezing of squeezed water: its influence on glacier erosion.
Souchez, R.A., et al. *Annals of glaciology*, 1981, Vol.2, p.63-66, 8 refs.
Tison, J.L.
Water pressure, Glacial erosion, Glacier beds, Freezing, Ice composition, Glacial deposits, Melting points, Glacial hydrology, Ice lenses, Water temperature.

36-634
Influence of mass balance and run-off on relief-forming activity of mountain glaciers.
Chernova, L.P., *Annals of glaciology*, 1981, Vol.2, p.69-70, 6 refs.
Mountain glaciers, Glacier mass balance, Runoff, Glacier surfaces, Glacial deposits, Glacial rivers, Moraines.

36-635
***Observations on* debris in the basal transport zone of Myrdalsjökull, Iceland.**
Humlum, O., *Annals of glaciology*, 1981, Vol 2, p.71-77, 32 refs.
Glacial deposits, Moraines, Glacier oscillation, Glacier beds, Rock mechanics.

36-636
Distinguishing characteristics of diamictons at the margin of the Matanuska Glacier, Alaska.
Lawson, D.E., *Annals of glaciology*, 1981, Vol.2, MP 1462, p.78-84, 34 refs.
Glacial deposits, Subglacial drainage, Moraines, Sediment transport.
The origins of diamictons deposited at the Matanuska Glacier are identified in stratigraphic sequences *mainly by the presence* or absence of a pebble fabric, internal structure, and variation in gravel-size clast distribution. These properties correlate with major differences in depositional mechanisms and source material. Melt-out till mostly inherits fabric, internal structure, and grain-size distribution from its debris-laden basal ice source. Sediment flow deposits and ice-slope colluvium (deposited by ablational slope processes) have properties developed by resedimentation mechanisms. Melt-out till ranges from structureless to stratified with interspersed lenses and discontinuous laminae, and generally possesses a well-defined pebble fabric.

36-637
Field experiments to determine the effect of a debris layer on ablation of glacier ice.
Nakawo, M., et al. *Annals of glaciology*, 1981, Vol.2, p.85-91, 33 refs.
Young, G.J.
Glacier ablation, Glacial deposits, Thermal conductivity, Water content.

36-638
***Sediment* source for melt-water deposits.**
Pessl, F., Jr., et al. *Annals of glaciology*, 1981, Vol.2, p.92-96, 32 refs.
Frederick, J.E.
Glacial deposits, Meltwater, Sediments, Glacial hydrology, Moraines, Theories.

36-639
Moraine in-transit as parent material for soil development and the growth of Valdivian rain forest on moving ice: Casa Pangue Glacier, Mount Tronador (lat. 41 deg 10'S), Chile.
Rabassa, J., et al. *Annals of glaciology*, 1981, Vol.2, p.97-102, 32 refs.
Rubulis, S., Suarez, J.
***Mountain glaciers, Moraines, Soil formation, Sediment transport, Glacial deposits, Glacier oscillation,* Forestry.**

36-640
Sediment transport from the glacier zone, Central Asia.
Shcheglova, O.P., et al. *Annals of glaciology*, 1981, Vol.2, p.103-108, 12 refs.
Chizhov, O.P.
Glacial deposits, Sediment transport, Glacial rivers, Geomorphology, Glacier melting.

36-641
Nature and origin of debris layers Glacier de Tsidjiore Nouve, Valais, Switzerland.
Small, R.J., et al. *Annals of glaciology*, 1981, Vol 2, p.109-113, 9 refs.
Gomez, B.
Glacial deposits, Sediment transport, Moraines, Particle size distribution, Mountain glaciers, Origin, Stresses.

36-642
Processes and models of Antarctic glaciomarine sedimentation.
Drewry, D.J., et al. *Annals of glaciology*, 1981, Vol 2, p.117-122, 27 refs.
Cooper, A.P.R.
Glacial deposits, Sedimentation, Periglacial processes, Marine deposits, Ice shelves, Models, Calving.
The processes governing sedimentation of the ice-rafted debris (IRD) component of glaciomarine sediments are investigated in the marine zone around Antarctica. Four controlling factors are identified: nature and disposition of sediments at the grounding line, transition from grounded to floating ice, processes of under-side melting and freezing of these ice masses, and mechanisms of iceberg calving, fragmentation, and melt-*release of debris in the open ocean*. *Modelling studies of Brunt* and Ross ice shelves suggest two main conclusions. (1) Ice shelves are of major importance for sedimentation on the continental shelf. (2) Outlet glaciers, in contrast, have high sediment content, calve rapidly, and produce debris-rich icebergs which contribute the major portion of IRD in the ocean. (Auth. mod.)

36-643
Model for submarine glacial deposition.
Orheim, O., et al. *Annals of glaciology*, 1981, Vol 2, p.123-128, 23 refs.
Elverhöi, A.
Glacial deposits, Ice shelves, Sedimentation, Marine deposits, Grounded ice, Bottom sediment, Ice scoring, Glacier oscillation, Models, Antarctica—Weddell Sea.
Present-day sedimentary environments in the eastern Weddell Sea confirm low clastic sediment input from wide (> 100 km) ice shelves. Mainly bioclastic sediments are formed *in situ* on the inner and shallow central-shelf areas (250 to 350 m water depth), with sedimentation rates probably < 0.01 m cu ka. Ice-rafted debris (IRD) is mainly deposited on the outer shelf and upper continental slope, with a sedimentation rate of 0.02 to 0.07 m/cu ka. The coarse-grained texture of these deposits is caused by removal of finer grades in suspension during settling of IRD sediments. Overconsolidated till was deposited < 31 ka BP during expansion of grounded ice to the shelf break. Subsequent eustatic rise caused grounded ice to float. Frozen-on sediments melted out of the base of the ice, depositing soft pebbly mud above the till. Marine conditions similar to present-day conditions were found for the interval 30 to 40 ka BP. IRD variation is an indicator of ice-shelf coverage and changes *in relative sea-level, and is, in low latitudes, probably inversely* related to the degree of ice cover.

36-644
Model for sedimentation by tidewater glaciers.
Powell, R.D., *Annals of glaciology*, 1981, Vol 2, p.129-134, 2 refs.
Glacial deposits, Marine deposits, Sedimentation, Stratigraphy, Tides, Models, Glacier flow, Calving, Outwash.

36-645
Ice-shelf moraine, George VI Sound, Antarctica.
Sugden, D.E., et al. *Annals of glaciology*, 1981, Vol 2, p.135-141, 20 refs.
Clapperton, C.M.
Ice shelves, Moraines, Glacial deposits, Sedimentation, Marine deposits, Models, Bottom sediment, Geomorphology, Antarctica—George VI Sound.
The morphology, sediments, and processes associated with the construction of a moraine along the western margin of the ice shelf in George VI Sound, Antarctica, are discussed. The moraine occurs as a double ridge where the ice sheet grounds against promontories on Alexander Island and is approximately horizontal over a distance of 120 km. It consists of exotic rock debris carried into the ice shelf by Antarctic Peninsula glaciers and local rock debris derived from the grounding line on Alexander Island. As the coast steepens, so the proportion of exotic rocks increases. The transport of basal material from the peninsula implies that there can be little bottom melting beneath this part of the ice shelf. The moraine is modified by streams and marginal lakes which periodically drain into and through the ice shelf. Tidal lakes are impounded against the ice shelf in shallower embayments and consist of fresh water overlying sea-water. A conceptual model of the moraine is developed and may help to explain some features of puzzling horizontal moraines found in formerly glaciated areas. (Auth.)

36-646
Some aspects of glacial erosion and deposition in north Germany.
Ehlers, J., *Annals of glaciology*, 1981, Vol 2, p.143-146, 14 refs.
Glacial erosion, Glacial deposits, Glaciation, Sedimentation, Subglacial drainage, Paleoclimatology, Pleistocene, Ice sheets, Germany.

36-647
Importance of the regelation process to certain properties of basal tills deposited by the Laurentide ice sheet in Iowa and Illinois, U.S.A.
Kemmis, T.J., *Annals of glaciology*, 1981, Vol.2, p.147-152, 2 refs.
Regelation, Glacial deposits, Moraines, Periglacial processes, Paleoclimatology, Stratigraphy, Quaternary deposits, Freezing, Subglacial observations.

36-648
Erosion rate of a Younger Dryas cirque glacier at Krakenes, western Norway.
Larsen, E., et al. *Annals of glaciology*, 1981, Vol.2, p.153-158, 14 refs.
Mangerud, J.
Cirque glaciers, Glacial erosion, Lacustrine deposits, Glacial deposits, Moraines, Glacial geology, Stratigraphy.

36-649
Rock jointing and abrasion forms on *roches moutonnees*, SW Finland.
Rastas, J., et al. *Annals of glaciology*, 1981, Vol.2, p.159-163, 13 refs.
Seppälä, M.
Glacial erosion, Glacier beds, Abrasion, Rocks, Glacier flow, Glacial geology, Glacier oscillation, Ice mechanics, Models.

36-650
Glacier erosion and sedimentation in the volcanic regions of Kamchatka.
Vinogradov, V.N., *Annals of glaciology*, 1981, Vol.2, p.164-169, 13 refs.
Glacial erosion, Sedimentation, Glacial deposits, Moraines, Mountain glaciers, Volcanoes.

36-651
Bedrock weathering features in a portion of eastern high Arctic Canada: their nature and significance.
Watts, S., *Annals of glaciology*, 1981, Vol.2, p.185-186, 25 refs.
Glacial deposits, Rocks, Frost weathering, Moraines, Geochemistry, Geomorphology.

36-652
Tiskilwa Till, a regional view of its origin and depositional processes.
Wickham, S.S., et al. *Annals of glaciology*, 1981, Vol.2, p.176-182, 16 refs.
Johnson, W.H.
Glacial deposits, Periglacial processes, Glacial erosion, Moraines, Origin, Glacier flow, Ice sheets, Subglacial observations.

36-653
Pedological, isotopic, and geochemical investigations of the soils at the boreal forest and alpine tundra transition in northern Alaska.
Ugolini, F.C., et al. *Soil science*, June 1981, 131(6), p.359-374, 46 refs.
Reanier, R.E., Rau, G.H., Hedges, J.I.
Alpine tundra, Forest land, Podsol, Soil composition, Geochemistry, Isotope analysis, Vegetation, Forest *lines*.

36-654
Element concentrations in rehabilitation species from thirteen coal-stripmines in five western states and Alaska.
Gough, L.P., et al. *U.S. Geological Survey Open-file report*, (1981), 110p., 25 refs.
Severson, R.C.
Plant ecology, Vegetation, Chemical composition, Quarries, Coal, Statistical analysis, United States—Alaska.

36-655
Proceedings.
International Conference on Cloud Physics, 8th, Clermont-Ferrand, France, July 25-29, 1980. *Journal de recherches atmospheriques*, July-Dec. 1980, 14(4), p.185-527. With French summaries. Refs. passim.
Cloud physics, Ice crystal nuclei, Nucleating agents, Cloud droplets, Supercooled clouds, Ice crystal growth, Ice accretion, Meetings, Hailstone growth, Phase transformations.

36-656
Formation mechanism of ice crystals in the polar atmosphere. [Kyokuiki-ten no hyoshoo kansoku-ki].
Ohtake, T., *Polar news* (*Kyokuhoo*), Jan. 1981, 360, p.9-15, In Japanese.
Cloud physics, Precipitation (meteorology), Ice crystals.
In polar areas ice crystals are frequently seen precipitating from clear skies. To study arctic ice crystals a plane with a Knollenberg particle spectrometer, a cloud particle replicator, a dew-point hygrometer, and a condensation nucleus counter was used near Barrow, Alaska. Two water vapor sources were identified: open leads of arctic pack ice and human activities from

villages. Water droplets, condensed from these sources, subsequently freeze and grow to larger crystals in a saturated environment. This occurs a long distance from where the crystals precipitate. Studies on antarctic ice crystals—occurrence, shape, size, concentration and chemical composition of nuclei related to weather—were also carried out. Clear-sky ice crystals at the South Pole may result from slightly uprising and cooling warm air transported from the Weddell Sea along the slope toward the plateau. Aerial observations of clouds over the plateau support this hypothesis.

36-657
Growth of forage crops in the Far North. [Kormoproizvodstvo na Krainem Severe].
Andreev, N.G., ed, Moscow, Kolos, 1981, 152p., In Russian. For selected papers see 36-658 through 36-667.
Thermokarst lakes, Subarctic landscapes, Meadows, Continuous permafrost, Grasses, Cryogenic soils, Soil water migration, Tundra, Taiga, Microclimatology, Flood plains.

36-658
Problems of growing fodder crops in the Far North and their solutions. [Problemy kormoproizvodstva v raionakh Krainego Severa i puti ikh resheniia].
Andreev, N.G., Kormoproizvodstvo na Krainem Severe (Growth of forage crops in the Far North), Moscow, Kolos, 1981, p.6-14, In Russian.
Meadows, Cryogenic soils, Active layer, Permafrost depth, Plant ecology, Microclimatology.

36-659
Growing forage crops in the northern Pechora River area. [Voprosy kormoproizvodstva na Pechorskom Severe].
Rochev, P.A., Kormoproizvodstvo na Krainem Severe (Growth of forage crops in the Far North) edited by N.G. Andreev, Moscow, Kolos, 1981, p.14-23, In Russian.
Meadows, Grasses, Cryogenic soils, Plant ecology, Microclimatology, Freeze thaw cycles, Flood plains, Wind factors.

36-660
Ways of improving the development of natural grasslands in the northern Komi ASSR. [Puti intensifikatsii kormoproizvodstva na severe Komi ASSR].
Gagiev, G.I., et al, Kormoproizvodstvo na Krainem Severe (Growth of forage crops in the Far North) edited by N.G. Andreev, Moscow, Kolos, 1981, p.23-32, In Russian.
Chernov, B.A.
Meadows, Cryogenic soils, Grasses, Permafrost beneath rivers, Flood plains.

36-661
Forage reserves of the northern Ob' River area. [Aktual'nye voprosy kormovoi bazy na Obskom Severe].
Purtov, G.M., Kormoproizvodstvo na Krainem Severe (Growth of forage crops in the Far North) edited by N.G. Andreev, Moscow, Kolos, 1981, p.32-40, In Russian
Subarctic landscapes, Tundra, Taiga, Meadows, Grasses, Cryogenic soils.

36-662
Ways of increasing the effectiveness of fodder plant production in the northern Yenisey River area. [Puti razvitiia i povysheniia effektivnosti kormoproizvodstva na Eniseiskom Severe].
Dergunov, I.S., et al, Kormoproizvodstvo na Krainem Severe (Growth of forage crops in the Far North) edited by N.G. Andreev, Moscow, Kolos, 1981, p.40-48, In Russian. 7 refs.
Krivenko, M.F.
Grasses, Subarctic landscapes, Cryogenic soils, Meadows, Flood plains.

36-663
Components of the process of intensification of fodder plant production in the northern Yenisey River area. [Slagaemye intensifikatsii kormoproizvodstva na Eniseiskom Severe].
Dergunov, I.S., Kormoproizvodstvo na Krainem Severe (Growth of forage crops in the Far North) edited by N.G. Andreev, Moscow, Kolos, 1981, p.50-52, In Russian
Polar regions, Cryogenic soils, Meadows, Flood plains.

36-664
Water regime of cryogenic flood-plain soils of cultivated pastures. [Vodnyi rezhim merzlotnykh pormennykh pochv kul'turnykh pastbishch].
Semenova, T.N., et al, Kormoproizvodstvo na Krainem Severe (Growth of forage crops in the Far North) edited by N.G. Andreev, Moscow, Kolos, 1981, p.107-110, In Russian. 3 refs.
Chemerzanskaia, L.M.
Meadows, Cryogenic soils, Active layer, Permafrost hydrology, Soil water migration, Hydrothermal processes.

36-665
Hay meadows on dried thermokarst lakes of Chukchi Peninsula. [Sozdanie senokosov na osushennykh termokarstovykh ozerakh Chukotki].
Tatarchenkov, M.I., et al, Kormoproizvodstvo na Krainem Severe (Growth of forage crops in the Far North) edited by N.G. Andreev, Moscow, Kolos, 1981, p.127-135, In Russian. 10 refs.
Shvirst, A.T.
Subarctic landscapes, Tundra, Thermokarst lakes, Meadows, Meadow soils.

36-666
Complex mechanization of the construction of main pipelines. [Kompleksnaia mekhanizatsiia sooruzheniia magistral'nykh truboprovodov].
Savenko, V.A., Moscow, Nedra, 1981, 295p., In Russian. Abridged English table of contents enclosed. 74 refs.
Petroleum industry, Pipelines, Permafrost beneath structures, Swamps, River crossings, Mountains, Earthwork, Pipe laying, Pipeline insulation, Underground pipelines, Suspended pipelines, Hot oil lines.

36-667
Structure and dynamics of pine forests in Nizhnee Priangar'e (the lower Angara River area). [Struktura i dinamika sosnovykh lesov Nizhnego Priangar'ia].
Lashchinskii, N.N., Novosibirsk, Nauka, 1981, 272p., In Russian with English table of contents enclosed. Refs. p.254-270.
***Subarctic* landscapes, Permafrost distribution, Landscape types, Permafrost hydrology, Cryogenic soils, Forest soils, Plant ecology, Plant physiology.**

36-668
Dry Valley Drilling Project.
McGinnis, L.D., ed, American geophysical Union. Antarctic research series, Vol.33, Washington, D.C., 1981, 465p., For individual papers see 36-669 through 36-683, or A-25316, A-25344, E-25317 through E-25322, E-25324 through E-25343, and F-25323.
Geophysical surveys, Hydrogeology, Glacial geology, Drill core analysis, Frozen rocks, Antarctica—Ross Island, Antarctica—Victoria Land.
The objectives of the Antarctic Research Series are stated in an introduction, along with the format and publication priorities for the series. An overview of the responsibilities of Japan, New Zealand, and the United States in executing the planned DVDP is given. The 29 papers comprising this volume are classed under the headings: Exploration Geophysics; Lithologic, Geophysical, and Geochemical Logs; Lake Chemistry and Hydrogeology; Analyses of Crystalline Rocks; Analyses of Sedimentary Rocks; Glacial and Geologic History; and DVDP Core Storage and Bibliography.

36-669
Seismic refraction study in western McMurdo Sound.
McGinnis, L.D., *American Geophysical Union. Antarctic research series*, 1981, Vol.33, p.27-35, 13 refs.
Seismic refraction, Seismic velocity, Subsea permafrost, Sea ice, Antarctica—McMurdo Sound.
Three reversed seismic refraction profiles in western McMurdo Sound were shot from sea ice in water depths ranging from less than 100 m to over 200 m. Velocity and depth interpretations indicate abnormally high sea floor velocities of 2.7 to 2.9 km/s, which are explained as being caused by submarine permafrost sediment. It is believed that the sea floor velocities observed here are the frozen equivalents of the lower-velocity sea floor sediments found farther out in McMurdo Sound. Basement depth varies from 0.48 km below sea level in New Harbor to 1.75 km about 15 km offshore. In areas of deep water and thick sediment, bottom fractions are attenuated due to thin, high-velocity, bonded submarine permafrost resting upon lower-velocity, unfrozen sediments. The combination of low ocean water temperature (-1.9C) and low pore water salinity, at times less than one fifth that of sea water, is sufficient to explain the presence of frozen beds near the floor. Submarine, freshwater sediments are probably due to a combination of sea floor lowering as observed on the Atlantic Continental shelf of the United States and ponding marginal to a retreating McMurdo Ice Shelf. Intermediate velocities ranging from 3 to 3.6 km/s observed below the frozen sea floor may represent sediment of Late Mesozoic to Early Cenozoic age. (Auth. mod.)

36-670
Reconnaissance seismic survey of McMurdo Sound and Terra Nova Bay, Ross Sea.
Wong, H.K., et al, *American Geophysical Union. Antarctic research series*, 1981, Vol.33, p.37-62, 47 refs.
Christoffel, D.A.
Seismic surveys, Sedimentation, Glacial geology, Ice sheets, Antarctica—McMurdo Sound, Antarctica—Terra Nova Bay.
The sea floor of McMurdo Sound may be described as a north-south trending, eastward dipping slope incised by two submarine, fjordlike valleys. Sediments subparallel to and underlying this slope continue beneath the flat-lying, stratified sequence in the deep Erebus Basin and may persist uninterrupted to underlie Ross Island. Continuous seismic profiling in McMurdo Sound has demonstrated the presence and pervasiveness of the angular unconformity first mapped elsewhere in the Ross Sea. By assuming that this unconformity is contemporaneous with that at sites 270-272 of the Deep Sea Drilling Project, an age of 4-5 m.y. may be assigned, and from this an uncorrected, average sedimentation rate in McMurdo Sound of 18 m m.y. since mid-Pliocene follows. The total sedimentary sequence exceeds 1.4 km in thickness in the central part of the sound. Four north-south sonobuoy refraction profiles provide information on the sedimentary structure in the sound. Four layers with refraction velocities of 1.9, 2.4, 2.8-3.1, and 3.9-4.2 km/s have been resolved. They are interpreted as marine, pebbly, muddy sand, a coarse, nearshore facies of Miocene-Oligocene mudstone, older preglacial sandstone and mudstone, and metasediments, respectively. (Auth. mod.)

36-671
Gamma ray, salinity, and electric logs of DVDP boreholes.
McGinnis, L.D., et al, *American Geophysical Union. Antarctic research series*, 1981, Vol.33, p.95-108, 17 refs.
Stuckless, J.S., Osby, D.R., Kyle, P.R.
Permafrost, Ground ice, Electrical resistivity, Radioactivity, Salinity.
Natural gamma radiation measurements were made in eight boreholes on Ross Island and in the dry valleys. Total salinity of pore water was determined in five holes in Taylor and Wright valleys and in McMurdo Sound. Electrical resistivity measurements were made only in the Don Juan Pond hole which is uncased. Additional electrical measurements were made on core samples. Resistivities are used to estimate salinities at intervals where water could not be squeezed from a sample. Gamma logs supplemented by *laboratory measurements* of radioelement contents of core samples, show that relative to rocks of similar silica contents, basement rocks of the dry valley region are anomalously low in uranium and thorium but that the volcanic rocks from Ross Island are anomalously high in these elements as well as potassium. We attribute anomalies in the two groups of rock to radioelement abundance present at the time of crystallization. The gamma ray log od DVDP 3 shows an increasing radioactivity with increasing silica. Below 90 m the hole is dominated by basanite and a low radioactivity. The upper portion of the hole is dominated by differentiated alkalic rocks of higher radioactivity and a few ice lenses with little or no radioelement content. Logs of holes 10-14 reflect the low radioelement content of reworked sediment. In general, diamictons are more radioactive than coarse-grained sands and gravels. (Auth. mod.)

36-672
Magnetic stratigraphy of Late Cenozoic glaciogenic sediments from drill cores, Taylor Valley, Transantarctic Mountains, Antarctica.
Purucker, M.E., et al, *American Geophysical Union. Antarctic research series*, 1981, Vol.33, p.109-129, 34 refs.
Elston, D.P., Elston, D.P., Bressler, S.L.
Soil composition, Magnetic properties, Drill core analysis, Stratigraphy, Antarctica—Taylor Valley.
Frozen glaciogenic sediments, deposited in a former fjord, were cored to 325 m in ice-free Taylor Valley. About 750 samples were obtained from material ranging from unstratified diamictite matrix to finely laminated sandstone and siltstone. The Koeningsberger ratio was used to discard material of low magnetic stability. Removal of material with Koeningsberger ratios less than 0.1 resulted in a significant refinement in the definition of polarity zones and allowed a refined temporal correlation between the sections in DVDP holes. Intervals of increased susceptibility reflect increased influx of titanomagnetite-bearing sediment derived from the McMurdo Volcanic Group, subaerially erupted to the east in the area of McMurdo Sound. One of these susceptibility zones is time-transgressive in relation to the polarity zonation, perhaps because deposition of till from a grounded ice sheet at site 11 continued after deposition of till had ceased at sites 8 and 10. The finding of magnetite as the principal magnetic mineral in core 12 and in the lowermost susceptibility zones in cores 8, 10, and 11 indicates a different source area for this sediment. Magnetite in core 12 was derived from the Ferrar Dolerite, presumably from bedrock in western Taylor Valley. Titanohematite-bearing volcanic fragments in core 12 were erupted from a local source in Taylor Valley at a time when it was covered by ice. (Auth. mod.)

36-673

Oxygen isotope ratios of antarctic permafrost and glacier ice.

Stuiver, M., et al. *American Geophysical Union. Antarctic research series*, 1981, Vol.33, p.131-139, 16 refs.

Yang, I.C., Denton, G.H., Kellogg, T.B.

Isotope analysis, Ice cores, Permafrost hydrology, Antarctica—Taylor Valley.

Oxygen isotope records of permafrost waters of DVDP cores 10, 11, and 12 often appear to be defined by nonconnate waters infiltrated much later. For the Lake Hoare core (DVDP 12) the preserved O18 record agrees with permafrost formation advancing downward from the surface after drainage of glacial Lake Washburn about 10,000 years ago. Replacement of fresh water by seawater took place fairly recently in the New Harbor core (DVDP 10). Perhaps only the main part of the Commonwealth Glacier core permafrost (DVDP 11) was formed from connate waters. The isotope ratios from the core ice are compared with oxygen isotope ratios of valley glaciers, polar plateau ice, ice-cored moraines, and McMurdo shelf ice. The McMurdo Ice Shelf isotope ratios show the main part of the shelf ice to be of seawater origin. (Auth.)

36-674

Limnological studies of saline lakes in the dry valleys.

Torii, T., et al. *American Geophysical Union. Antarctic research series*, 1981, Vol.33, p.141-159, Refs. p.156-159.

Yamagata, N.

Limnology, Salt lakes, Water chemistry.

The dry valley area is characterized by the presence of a number of lakes and ponds, some of them containing extremely saline water. In this report a general description of the nature of these saline waters is given. The exceptionally high water temperatures found throughout the year in some dry valley lakes have drawn special attention for many investigators interested in the heat source. Solar radiation was suggested and is now generally accepted as the source. In recent studies no geothermal activity was found. The possible sources of salts in the saline lakes are (1) geothermal and hydrothermal, (2) trapped seawater, (3) chemical weathering of rocks, (4) sea spray, (5) glacial meltwater, and (6) groundwater discharge. An explanation using a single source has never been successful, and most workers are now inclined to favor multiple sources of salt. (Auth. mod.)

36-675

Hydrology of the Don Juan basin, Wright Valley, Antarctica.

Harris, H.J.H., et al. *American Geophysical Union. Antarctic research series*, 1981, Vol.33, p.161-184, 39 refs.

Cartwright, K.

Hydrology, Water chemistry, Salt lakes, Antarctica—Don Juan Pond.

Don Juan Pond is an intermittent, chemically unique brine pond situated in a closed basin in the south fork of Wright Valley, Antarctica. The floor of the basin is a discharge zone for groundwater brines confined in an underlying dolerite aquifer. Although the flux of groundwater is quite small, groundwater probably provided about 70% of the water entering the pond late in the austral summer; the melting of ice in near-surface frozen ground gives rise to the streams. Precipitation is an insignificant source of water for the pond. Evaporation and sublimation are, with aerosols, the sole means whereby water leaves the basin. The pond appears to be in a precarious hydrologic equilibrium; the cessation of either streamflow or groundwater flow would cause the pond to go dry. The major element chemistry of the groundwater is like that of the pond, indicating that the dissolved salts in both have a common origin.

36-676

Review of the geochemistry and lake physics of the antarctic dry areas.

Wilson, A.T. *American Geophysical Union. Antarctic research series*, 1981, Vol.33, p.185-192, 28 refs.

Geochemistry, Icebound lakes, Soil chemistry, Solar radiation.

This paper reviews the lake physics and geochemistry of Antarctic ice free areas. Because of the extreme cold and aridity and the fact that these areas are truly rainless, many features and phenomena exist that are not found on the other continents. The major source of the salts in the soil and lakes appears to be from the sea via snow. A relative humidity mechanism for salt separation is proposed in order to explain the distribution of salts in the soils, glaciers, streams, and lakes of Antarctic dry areas. This mechanism leaves the least deliquescent salts in the soil and delivers the more deliquescent salts to the groundwater which flows along the surface of the ice-cemented layer and hence to the saline lakes. While in the groundwater system, trace elements such as strontium may be leached from the soils. Climatic conditions are such that perennially ice-covered freshwater lakes can exist, and the conditions for the existence of these are defined. Solar heating of density-stratified lakes is common and in some cases very spectacular, the bottom of Lake Vanda being 46C above the mean temperature of the region. (Auth.)

36-677

Hydrogeology of the dry valley region, Antarctica.

Cartwright, K., et al. *American Geophysical Union. Antarctic research series*, 1981, Vol.33, p.193-214, Refs. p.212-214.

Harris, H.J.H.

Hydrogeology, Hydrology, Water flow, Subpermafrost ground water, Water chemistry.

The polar desert climate of the dry valley region of southern Victoria Land, Antarctica, severely restricts the occurrence and movement of all liquid water. The significance of liquid groundwater in the annual hydrologic cycle of the region is particularly limited. However, under appropriate thermal and chemical conditions, liquid groundwaters and groundwater flow systems do occur; these systems are locally significant in the transport of water and solutes. Three varieties of groundwater and of flow systems are identified. Shallow flow systems, which generally occur in the active layer, are widespread at lower elevations; they are the primary source of water for numerous small, intermittent ponds; they have a significant effect on the distribution of soluble salts in surficial materials and soils. There is apparently very little movement of groundwater in frozen ground; limited evidence of movement at two locations is presented. Deep, liquid groundwaters are found penetrating or lying entirely beneath frozen ground in Taylor and Wright valleys. The discharge of these deep groundwaters significantly affects the mass balance and chemistry of Don Juan Pond; the chemistry of bottom waters in lakes Vanda and Bonney may also be affected. (Auth.)

36-678

Some trace element relationships in the Cenozoic rocks from Ross Island and vicinity, Antarctica.

Goldich, S.S., et al. *American Geophysical Union. Antarctic research series*, 1981, Vol.33, p.215-228, 23 refs.

Stuckless, J.S., Suhr, N.H., Bodkin, J.B., Wamser, R.C.

Frozen rocks, Chemical composition, Geologic structures, Geochemistry, Antarctica—Ross Island.

The variability in chemical composition of the basanitoid (basanite) rocks of Ross Island and vicinity, Antarctica, results from a number of causes. A large part reflects crystal-liquid fractionation processes which produced the silica-undersaturated rock series—basanitoid, trachybasalt, trachyandesite, phonolite. Some of the variability in the basanitoids that is recognizable in the scatter of data points in variation diagrams, however, is directly the result of contamination with xenocrysts of olivine, clinopyroxene, and spinel derived by attrition of mafic and ultramafic xenoliths. Cr-Ni-Co relationships are useful in demonstrating contamination with xenolithic material that may be as much as 10-20 wt%. Ni-MgO and Cr-MgO relationships suggest that reactions took place between the xenoliths and the basanitoid and trachybasalt magmas and that the metals were added to the liquids by diffusion. The large lithophile cations (K, Rb, Ba, and Sr) behaved as incompatible elements, and a similar behavior is noted for La and Zr. Large variations in the concentrations of these elements and in ratios indicate differences in the parental basanitoid magmas. These differences may reflect different degrees of partial melting of garnet peridotite mantle and also heterogeneity in composition of the mantle. (Auth.)

36-679

***Q*-mode factor model for the petrogenesis of the volcanic rocks from Ross Island and vicinity, Antarctica.**

Stuckless, J.S., et al. *American Geophysical Union. Antarctic research series*, 1981, Vol.33, p.257-280, 32 refs.

Miesch, A.T., Goldich, S.S., Weiblen, P.W.

Frozen rocks, Models, Antarctica—Ross Island.

Major and minor elemental data examined by extended *Q*-mode factor analysis show that the petrogenetic evolution of the volcanic rocks from Ross Island and vicinity occurred in distinct stages that were complex in detail. The chemical analyses for 24 oxides in 49 samples can be modeled closely by a three-dimensional system that consists of a starting liquid and two solidus assemblages. This fact suggests that all of the samples are related to a common parent magma. However, the three-dimensional system shows a large compositional gap between the basanitoids and trachybasalts. Furthermore, attempts to match possible solidus compositions to actual minerals failed to yield assemblages similar to those observed in the samples. Modeling was therefore attempted by dividing the samples into two related groups: (1) basanitoids and (2) trachybasalts and phonolites. Results of the study are reported. (Auth. mod.)

36-680

Sedimentology and petrology core from DVDP 15, western McMurdo Sound.

Barrett, P.J., et al. *American Geophysical Union. Antarctic research series*, 1981, Vol.33, p.281-314, 28 refs.

Treves, S.B.

Drill core analysis, Bottom sediment, Rocks, Antarctica—McMurdo Sound.

The first drilling into the floor of McMurdo Sound (DVDP 15) took place in November 1975, 16 km east of Marble Point through 122m of water. The purpose was to core the Cenozoic glaciomarine sequence estimated to be 300 m thick. 2-m-thick annual ice was used as a drilling platform until November 21, when the appearance of cracks in the ice caused the hole to be abandoned. The drill penetrated 65 m below the sea floor, recovering a total of 34 m of core. Over 278 kg of wash samples were also collected. The core is mainly sand made up chiefly of glassy and crystalline basaltic grains, with persistent quartz, feldspar, and granitic fragments. The sources were the late Cenozoic McMurdo Volcanics to the south and the basement complex, Beacon and Ferrar rocks in the adjacent Transantarctic Mountains. A detailed description of the core is given in the appendix. (Auth.)

36-681

Chemistry and clay mineralogy of selected cores from the Antarctic Dry Valley Drilling Project.

Ugolini, F.C., et al. *American Geophysical Union. Antarctic research series*, 1981, Vol.33, p.315-329, Refs. p.327-329.

Deutsch, W., Harris, H.J.H.

Drill core analysis, Clay minerals, Chemical composition, Subsea permafrost, Electrical resistivity, Antarctica—Taylor Valley.

Electrical conductivity and ionic composition of solutions extracted from ice-cemented permafrost from cores 8, 9, and 10, New Harbor, show that most of the sediments were deposited in a marine environment and suggest that aggradation of permafrost during exposure of the sediments to sub-aerial conditions caused ionic concentration. Influx of brines capable of moving in permafrost is also suggested. Regions of low conductivity are interpreted as a result either of freshwater episodes or of textural discontinuities. The clay minerals of the above cores and of core 11, Commonwealth Glacier, and core 12, Lake Leon, show little weathering and complex irregular interstratification of mica, vermiculite, montmorillonite, and chlorite. Clay mineralogy of core 10 can be separated into three major assemblages corresponding to the three major lithologic units. (Auth.)

36-682

Sedimentation conditions in Taylor Valley, Antarctica, inferred from textural analysis of DVDP cores.

Powell, R.D. *American Geophysical Union. Antarctic research series*, 1981, Vol.33, p.329-353, 35 refs.

Drill core analysis, Sediments, Soil composition, Frozen ground, Glacial deposits.

Six major sediment types have been defined from particle-size analyses of samples from DVDP cores 8, 9, 10, 11, and 12. Samples of present sedimentary environments in Taylor Valley provide 'baseline' data for interpretation of each sediment type with respect to depositional processes. The sorted sediments are thought to be the result of re-working of the syndepositional diamictons. The particle-size analyses show a trend of increase in sorting as size increases or decreases toward 2.5 *phi*. Two interpretations are proposed for the glacial history of Taylor Valley. The two histories involve similar depositional processes and sedimentary environments; they differ in the timing of glacial events. This problem is created by discrepancies in chronostratigraphy. Thus a preferred glacial history of Taylor Valley cannot be given until the discrepancies are resolved. (Auth. mod.)

36-683

Provenance and depositional environments of Late Cenozoic sediments in permafrost cores from lower Taylor Valley, Antarctica.

Porter, S.C., et al. *American Geophysical Union. Antarctic research series*, 1981, Vol.33, p.351-363, 32 refs.

Beget, J.E.

Permafrost structure, Glacial geology, Geologic structures, Sediments, Antarctica—Taylor Valley.

The provenance and depositional environments of frozen late Cenozoic sediments of glacial and nonglacial origin recovered in four drill cores from lower Taylor Valley were assessed by means of lithic counts, microfabric analyses, and studies of sand grain surface textures, supplemented by isotopic and paleontologic analyses by convenient investigators. Three of the cores, DVDP 8, 9, and 10, were drilled near the shore of New Harbor and intersected 185 m of sediment; the fourth (DVDP 11), drilled about 3 km inland near Commonwealth Glacier, penetrated 328 m of sediment. The uppermost 39 m of section in the New Harbor cores consists of deltaic sediments deposited in a shallow marine environment during the middle Holocene following recession of a grounded ice sheet in the Ross Sea (Ross Sea I). A thick section between 39 and 125 m consists largely of diamictons of inferred glacial/marine origin, but the lowest diamicton unit, between 104 and 125 m, has a well-developed fabric and is interpreted as a possible basal till deposited by grounded Ross Sea ice. A major lithologic change was recognized about 154 m in cores 8 and 10 and at about 205 m in core 11, above those levels, volcanic clasts of the McMurdo volcanic group derived from the region of the Ross Sea were found in all samples; at lower levels none were detected. (Auth. mod.)

36-684

Glacier surges and related catastrophic phenomena [Pul'satsii [illegible] i svyazannye s nimi katastroficheskie yavleniya].

Dolgushin, L.D., et al. *Akademiya Nauk SSSR. Vestnik*, Vol.25, p.93-[illegible], 1955. In Russian. 6 refs.

Osipova, G.B.

DLC QE1.A5

Mountain glaciers, Glacier surges, Glacier ice, Ice breakup, Glacial lakes, Floods, Mudflows.

36-685

Lowering power expenses in winter concreting [Snizhenie [illegible] pri zimnem betonirovanii].

Gorodov, V.I.V. *Promyshlennost' Stroitel'stva*, Vol.[illegible], No.5, p.[illegible], 1958. In Russian.

Winter concreting, Concrete aggregates, Formwork (construction), Electric heating.

36-686
Lightweight enclosures on the base of thermoinsulative fibrous materials. (Legkie ograzhdaiushchie konstruktsii na osnove voloknistykh teploizoliatsionnykh materialov).
Khromets, IU. N., et al. *Promyshlennoe stroitel'stvo*, Feb. 1981, No.2, p.9-11. In Russian.
Grimes, V. V., Putzig, M., Lundstrom, B.
Steel structures, Walls, Roofs, Thermal insulation.

36-687
Investigations for the design of objects built under complicated engineering and geological conditions. (Issledovaniia pod proektirovanie ob"ektov v slozhnykh inzhenerno-geologicheskikh usloviiakh).
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Foundations, Industrial buildings, Site surveys, Swamps, Slope processes, Slope protection, Thermokarst.

36-688
Ways of lowering power expenses in winter concreting of massive structures. (Puti snizheniia energozatrat pri zimnem betonirovanii massivnykh monolitnykh konstruktsii).
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Winter concreting, Formwork (construction), Concrete aggregates, Electric heating.

36-689
Artificial freezing of ground for building large foundation pits. (Zamorazhivanie gruntov pri sooruzhenii kotlovanov bol'shikh ploshchadei).
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36-690
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Foundations, Piles, Pile driving, Frozen fines, Clays, Bearing strength, Design.

36-691
Design of foundations for the Krasnoyarsk plant of heavy excavation equipment. (Proektnye resheniia fundamentov Krasnoiarskogo zavoda tiazhelykh ekskavatorov).
Kovalov, IU. N., *Promyshlennoe stroitel'stvo*, Nov. 1980, No.11, p.9. In Russian.
Industrial buildings, Foundations, Piles, Permafrost beneath structures.

36-692
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Dudar', V. I.
Permafrost bases, Foundations, Discontinuous permafrost, Permafrost control, Artificial thawing, Design.

36-693
Determining bearing strength of piles in the Far North. (Opredelenie nesushchei sposobnosti svai v usloviiakh Krainego Severa).
Bogdashov, N. M., *Promyshlennoe stroitel'stvo*, Nov. 1980, No.11, p.11-12. In Russian.
Foundations, Supports, Piles, Swamps, Frozen ground, Design.

36-694
Effective assemblies for unloading frozen cargo. (Effektivnye sistemy dlia vygruzki smerzshikhsia gruzov).
Kovalenko, V. N., et al. *Promyshlennyi transport*, Feb. 1981, No.2, p.5-6. In Russian.
Kovalenko, V. I.
Railroad equipment, Unloading, Frozen cargo.

36-695
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Kovtsov, B. V., Obraztsov, A. P., Mironova, N. B.
Frozen cargo, Unloading, Railroad equipment.

36-696
Clamp-pin vibration ripper. (Vibratsionnyi shtyrevoi rykhlitel').
Dragal, N. V., *Promyshlennyi transport*, Feb. 1981, No.2, p.8-9. In Russian.
Frozen cargo, Railroad equipment, Unloading.

36-697
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Severinova, E. P.
Railroad equipment, Unloading, Frozen cargo, Defrosting, Radiant heating, Vibration.

36-698
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River crossings, Icebound rivers, Ice crossings, Ice cover thickness.

36-699
All terrain vehicles. (Transportnye sredstva dlia bezdorozhiia).
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All terrain vehicles, Swamps, Snow cover, Trafficability, Air cushion vehicles.

36-700
How to protect shoots from snow breakage. (Kak uberech' porosli ot snegoloma).
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Forest strips, Protective vegetation, Snow retention, Snow loads, Railroads.

36-701
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Tunnels, Electric heating, Drainage, Baykal Amur railroad.

36-702
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Ershov, I. N., *Put' i putevoe khoziaistvo*, 1981, No.2, p.27-28. In Russian.
Railroad tracks, Electric heating, Winter maintenance, Icing, Snow removal.

36-703
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Masal'skii, V. V.
Railroads, Railroad tracks, Winter maintenance, Snow removal.

36-704
Snow removal machine for subways. (Snegouborochnaia mashina dlia metro).
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Railroads, Railroad tracks, Winter maintenance, Snow removal.

36-705
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Railroad tracks, Icing, Ice breaking, Railroad equipment, Winter maintenance, Railroads.

36-706
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Snow hydrology, Snow accumulation, Snow water equivalent, Snow surveys, Snow melting, Runoff, Watersheds, Meetings, Microwaves, Forecasting.

36-707
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Snow water content, Wet snow, Runoff forecasting, Liquid phases, Snow water equivalent, Microwaves, Snow depth, Snow density.

36-708
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Boyne, H. S.
Snow pillows, Snow loads, Snow temperature, Snow compression, Models, Laboratory techniques, Thermal expansion, Analysis (mathematics).

36-709
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Larson, L. W.
Snow surveys, Snow hydrology, Flood forecasting, Snow cover distribution, Snow water equivalent, Gamma irradiation, Airborne radar, Snow accumulation, Ablation, Soil water, Rivers, Models.

36-710
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Randolph, K. I.
Blowing snow, Snowdrifts, Snow mechanics, Snow trenches, Snow accumulation, Snowfall, Particles, Wind velocity, Mathematical models.

36-711
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Snow melting, Runoff forecasting, Drainage, Watersheds, Snow hydrology, Models, Stream flow.

36-712
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Snowdrifts, Snow accumulation, Runoff, Precipitation (meteorology), Snow fences.

36-713
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Snow melting, Runoff forecasting, Watersheds, Hydrology, Precipitation (meteorology), Mining, Computer applications, Models.

36-714
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Davis, R. T., Moreland, R. E.
Snow surveys, Snow depth, Snow water equivalent, Volcanic ash, Albedo, Mountains.

36-715
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Lettenmaier, D. P.
Snow melting, Volcanic ash, Runoff forecasting, Mountains.

36-716
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Avalanche deposits, Roads, Damage, Snow depth, Vehicles, Accidents, Trafficability.

36-717
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Snowstorms, Snow density, Snow cover distribution, Snow water equivalent, Lakes, Precipitation (meteorology), Air temperature.

36-718
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Snow surveys, Telemetering equipment, Snow water content, Soil water, Forecasting.

36-719
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Griffith, D., Ogden, V. C.
Water supply, Weather modification, Precipitation (meteorology), Cloud seeding, Agriculture, Cold weather performance.

36-720
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Snow hydrology, Watersheds, Stream flow, Runoff.

36-721
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Snow accumulation, Weather stations, Precipitation gages, Runoff, Water supply.

36-722
Problems in the development of systems for engineering equipment of populated areas in Siberia, the Far East and North. [Aktual'nye problemy razvitiia sistem inzhenernogo oborudovaniia naselennykh mest Sibiri, Dal'nego Vostoka i Krainego Severa], *Vodosnabzhenie i sanitarnaia tekhnika*, 1981, No.1, p.2-4, In Russian.
Microclimatology, Residential buildings, Houses, Industrial buildings, Heating, Permafrost beneath structures, Cost analysis.

36-723
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Permafrost beneath structures, Earthquakes, Pipe laying, Pipeline supports, Pipelines.

36-724
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Water pollution, Microbiology, Icebound rivers, Freeze thaw cycles.

36-725
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Fedorov, V.V.
Residential buildings, Industrial buildings, Modular construction, Roads, Pipelines, Permafrost beneath structures, Construction equipment.

36-726
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Setov, I.A.
Water supply, Water intakes, Filters, Icing, Slush.

36-727
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Permafrost beneath structures, Waste disposal, Sewage treatment, Baykal Amur railroad.

36-728
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Modular construction, Residential buildings, Thermal insulation, Microclimatology.

36-729
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Urban planning, Thermal insulation, Utilities, Pipe laying, Permafrost beneath structures, Pipelines.

36-730
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Residential buildings, Industrial buildings, Microclimatology, Thermal regime, Permafrost beneath structures.

36-731
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Pipelines, Water supply, Waste treatment, Sewage disposal, Permafrost beneath structures.

36-732
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Water supply, Sewage disposal, Waste treatment, Pipelines, Permafrost beneath structures.

36-733
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Shinkarev, A.I.
Pipelines, Electric heating, Water supply, Sewage disposal, Waste treatment, Soil freezing.

36-734
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Water supply, Ground water, Water reserves, Permafrost hydrology.

36-735
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Paskutskaia, L.N.
Water supply, Water treatment, Water reserves, Filters.

36-736
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Meetings, Pipelines, Water supply, Sewage disposal, Waste treatment, Permafrost beneath structures.

36-737
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Microclimatology, Buildings, Thermal insulation, Permafrost beneath structures, Heating, Ventilation.

36-738
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Sologub, A.M.
Water supply, Surface waters, Permafrost hydrology, Taliks, Water treatment.

36-739
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Water supply, Sewage disposal, Pipelines, Permafrost beneath structures.

36-740
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Water supply, Water treatment, Sewage disposal, Baykal Amur railroad, Permafrost beneath structures.

36-741
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36-742
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Pipelines, Water supply, Sewage, Permafrost beneath structures.

36-743
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36-744
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36-745
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Zelinskii, A.
Ports, Cargo, Unloading, Equipment, Work time standards, Arctic Ocean.

36-746
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Ice navigation, Icebreakers, Design.

36-747
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Railroad tracks, Tunnels, Baykal Amur railroad, Flooding, Drainage, Cold weather operation.

36-748
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36-750
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36-751
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36-758
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36-759
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36-760
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Traffic tests were conducted on Alaskan tundra near Barrow in 1971. The impact of an air cushion vehicle is significantly less than that of a tracked or wheeled vehicle and is limited to whatever damage is done to the vegetation by skirt contact, the effects of cushion pressure and cushion air flow are insignificant. The impact of wheeled and tracked vehicles is influenced primarily by the type and geometry of tires or tracks, ground contact pressure, and the number of traffic passes.

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36-762
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Trafficability, Vehicle wheels, Swamps, Environmental protection, Models.

36-763
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36-764
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Vehicle wheels, Trafficability, Soil strength, Military transportation.

36-765
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All terrain vehicles, Tracked vehicles, Snow cover effect, Trafficability, Design.

36-766
Trials on muskeg with high floatation forestry tires.
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Muskeg, All terrain vehicles, Trafficability, Vehicle wheels, Swamps, Analysis (mathematics).

36-767
Estimating the cost of off-road transportation.
Rhoads, E.M., International Society for Terrain-Vehicle Systems. International Conference, 7th, Calgary, Alberta, Aug. 16-20, 1981. Proceedings, Hanover, N.H., ISTVS, 1981, p.797-823, 5 refs.
All terrain vehicles, Tracked vehicles, Trafficability, Cold weather operation, Cost analysis, United States—Alaska.

36-768
Subsea trenching in the Arctic.
Mellor, M., MP 1464, International Society for Terrain-Vehicle Systems. International Conference, 7th, Calgary, Alberta, Aug. 16-20, 1981. Proceedings, Hanover, N.H., ISTVS, 1981, p.843-882, Refs. p.873-875.
Trenching, Ocean bottom, Bottom sediment, Pipelines, Ice scoring, Pressure ridges, Icebergs.
Environmental conditions are described for the continental shelf of the western Arctic, and for the shelf of Labrador and Newfoundland. Special emphasis is given to the gouging of bottom sediments by ice pressure ridges and icebergs, and an approach to systematic risk analysis is outlined. Protection of subsea pipelines and cables by trenching and direct embedment is discussed, touching on burial depth, degree of protection, and environmental impact. Conventional land techniques can be adapted for trenching across the beach and through the shallows, but in deeper water special equipment is required.

36-769
Radar-techniques in detecting the trafficability of frozen peatlands.
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Peat, Frozen ground strength, Trafficability, Bearing strength, Snow cover effect, Microwaves, Detection, Radar echoes, Dielectric properties, Lake ice.

36-770
Plate loading and vane-cone measurements for fresh and sintered snow.
Yong, R.N., et al, International Society for Terrain-Vehicle Systems. International Conference, 7th, Calgary, Alberta, Aug. 16-20, 1981. Proceedings, Hanover, N.H., ISTVS, 1981, p.1093-1118, 5 refs.
Muro, T.
Snow cover effect, Trafficability, Plates, Snow compression, Snow mechanics, Snow density, Snow deformation, Shear strength, Experimentation, Penetration tests, Loads (forces).

36-771
Prediction of drawbar-pull of tracked over-snow vehicle.
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Tracked vehicles, Snow cover effect, Traction, Sliding, Friction, Shear stress, Plates, Sintering, Snow depth, Forecasting, Penetration tests, Analysis (mathematics).

36-772
Analytical model for the turning of tracked vehicles in soft soils.
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36-773
Determination of net accumulations from gross beta activity measurements in the North Water region.
Aimbach, W., et al, *Polarforschung*, 1980, 50(1-2), p.1-7, In English with German summary. 9 refs.
Muller, F.
Radioactive logging, Ice cores, Meltwater, Firn.

36-774
Contamination of firn layers by radioactive fallout. [Zur Kontamination von Firnschichten durch radioaktiven Fallout].
Aimbach, W., *Polarforschung*, 1980, 50(1-2), p.17-22, In German with English summary and figure captions. 18 refs.
Radioactive isotopes, Fallout, Firn, Drill core analysis.
Measurements of the gross-beta-activity and the tritium concentration of firn samples from different regions indicate environmental pollution by radioactive fission products from nuclear weapon tests which have been carried out in the atmosphere since 1952. In order to review the exposure dose from contaminated firn maximum values of the exposure dose for the exposition of 168 hours per week were taken for comparison from the "Österreichische Strahlenschutzverordnung", 1972 (HZK 168). For example, the value of HZK 168 for a mixture of unknown composition decaying by alpha beta gamma radiation, as well as the values of HZK 168 for individual nuclids such as Sr-90, Cs-137, and Pm-147 are discussed in this article. Assuming realistic conditions it is shown that the heavily contaminated firn layers are no significant risk to human beings. Results of examinations of ice cores from the South Pole are included in the data analysis. (Auth. mod.)

36-775
Trigonometric altimetry over extremely cold snow surfaces. [Zur trigonometrischen Höhenmessung bei extrem kalten Schneeflächen].
Zick, W., *Polarforschung*, 1980, 50(1-2), p.23-28, In German with English summary and figure captions. 5 refs.
Snow cover effect, Height finding, Refraction, Air temperature, Antarctica.
In Dome C (Antarctica) the refraction coefficient k was determined by reciprocal vertical angle measurements taken over a

period of two days. In addition, the accuracy of the trigonometric levelling was investigated. Results are presented in tables and graphs. (Auth. mod.)

36-776
Seven-year performance of CRREL slow-rate land treatment prototypes.
Jenkins, T.F., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, July 1981, SR 81-12, 25p., ADA-103 739, 6 refs.
Palazzo, A.J., Schumacher, P.W., Hare, H.E., Butler, P.L., Diener, C.J., Graham, J.M.
Waste treatment, Water treatment, Land reclamation, Water chemistry, Nutrient cycle, Statistical analysis, Soil water.
A set of six outdoor, slow-rate land treatment prototypes was operated from June 1973 through May 1980. Water quantity and quality data are presented for the wastewater applied to and the percolate leaving the 5-foot soil profile. Average concentration, mass loading and mass and percentage removal of wastewater constituents are presented on a yearly basis. Tabulations of crop production and nutrient uptake are also presented. Nutrient balance sheets summarize the relative amounts removed by plant uptake, deep percolation and other removal mechanisms for nitrogen and phosphorus.

36-777
Thermal design of frost proof pavements.
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Pavements, Frost resistance, Thermal properties, Construction materials, Roads, Protection, Frost action, Thermal conductivity, Design.

36-778
Polystyrene foam for lightweight road embankments.
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Embankments, Polymers, Bearing strength, Soil stabilization, Ice control, Road icing, Slope stability.

36-779
Hot applied thermoplastic road marking materials.
Ruud, O.E., *Norway. Statens vegvesen, veglaboratoriet. Meddelelser*, Feb. 1981, No.53, p.41-44.
Road maintenance, Markers, Plastics, Thermal properties, Cold weather operation.

36-780
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Refsdal, G.
Frost resistance, Construction materials, Buildings, Soil freezing, Frozen ground strength, Bearing strength, Thermal conductivity, Frost action, Frost heave, Protection, Water content, Compressive properties, Freezing indexes, Roads.

36-781
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36-782
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36-783
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Kane, D.L., Alaska, University, Institute of Water Resources, Completion report, No. 80-06, Feb. 1981, 21p., 7 refs.
Snowmelt, Seepage, Frozen ground physics, Runoff, Soil water, Ground ice, Ice lenses, Snow depth.

36-784
Precipitation and snow cover data, 1976. *Finnish Meteorological Institute. Meteorological yearbook of Finland*, 1979, Vol.76, Pt.2, 1976, 108p., In English and Finnish.
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36-785
Road construction machines used in building the Baykal Amur railroad. [Stroitel'nye i dorozhnye mashiny na BAMe].
Ikonnikov, V.G., et al, *Stroitel'nye i dorozhnye mashiny*, Jan. 1981, No.1, p.5-6, In Russian.
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Embankments, Earthwork, Baykal Amur railroad, Construction equipment, Permafrost beneath structures.

36-786
Hammers for frozen ground excavation. [Mashiny udarnogo deistviia dlia razrabotki merzlykh gruntov].
Odyshev, A.G., et al, *Stroitel'nye i dorozhnye mashiny*, Jan. 1981, No.1, p.6-7, In Russian. 3 refs.
Polonskii, G.L.
Earthwork, Excavation, Hammers, Cranes (hoists), Frozen ground.

36-787
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Trenching, Equipment, Earthwork.

36-788
Selecting optimal parameters of cutting tools of trench excavators for frozen ground. [Vybor ratsional'nykh parametrov rezhushchikh organov transheinykh mashin dlia razrabotki merzlykh gruntov].
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Earthwork, Trenching, Frozen ground.

36-789
Standardized cutting tools for trenching equipment. [Unifitsirovannyi rezhushchii instrument dlia transheinykh ekskavatorov],
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Earthwork, Trenching, Equipment, Frozen ground.

36-790
Operational loading regimes of pumps and hydraulic motors of universal excavators at low temperatures. [Ekspluatatsionnye rezhimy nagruzheniia nasosov i gidromotorov khoda universal'nykh ekskavatorov v usloviiakh nizkikh temperatur],
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36-791
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Earthwork, Drilling, Drills, Cold weather construction.

36-792
Influence of transmission fluid temperature on the performance of EO-4121 excavators. [Vliianie temperatury rabochei zhidkosti na proizvoditel'nost' ekskavatorov EO-4121],
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Earthwork, Excavation, Equipment.

36-793
"Sloterm" type heating panels for tower crane cabins. [Otoplenie kabin bashennykh kranov nagrevatel'nymi paneliami tipa "Sloterm"],
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Khatnatskii, G.F., Zal'tsman, E.G.
Construction equipment, Cranes (hoists), Cold weather construction, Heating.

36-794
Dynamic loads on the plowing equipment of a high-speed patrol snowplow. [Dinamicheskie nagruzki pluzhnogo oborudovaniia skorostnogo patrul'nogo snegoochistitelia].
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Roads, Winter maintenance, Snow removal.

36-795
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Soil water migration, Frost penetration, Ground water, Phase transformations, Snow cover effect, Seasonal freeze thaw.

36-796
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Military operation, Roads, Swamps, Forest soils, Military transportation, Roadbeds, Earthwork.

36-797
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Expeditions, Glaciation, Glacier ice, Ablation, Ice surface, Glacier surveys, Snow surveys, Norway—Svalbard.

36-800
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Zhuntsov, S.Zh.
Lightweight concretes, Concrete aggregates, Wastes.

36-802
Phenolformaldehyde fiber glass thermal insulation for enclosures. [Steklofenopiasty effektivnye teploizoliatsionnye materialy dlia ograzhdaiushchikh konstruktsii].
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Modular construction, Industrial buildings, Thermal insulation.

36-803
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Ice navigation, Icebreakers, Ice pressure.

36-804
Bending moment in pipe bending using ice as filler [Izgibaiushchii moment pri gibke trub s ispol'zovaniem l'da v kachestve napolnitelia].
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Ships, Pipes (tubes), Design.

36-805
Support devices for oceanographic work aboard the icebreaker "Otto Schmidt". [Ustroistva dlia obespecheniia okeanograficheskikh rabot na ledokole "Otto Shmidt".]
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Kuperman, A.M.
Icebreakers, Ice navigation, Oceanographic surveys, Equipment.

36-806
Studying stresses on icebreaker shafting and cargo vessels in ice navigation. [Issledovanie nagruzok na valoprovodakh ledokolov i transportnykh sudov ledovogo plavaniia].
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Icebreakers, Ice breaking, Ice loads, Propellers.

36-807
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Floating structures, Docks, Winter maintenance, Equipment, Heating.

36-808
Evaluating the performance of logs aboard icebreakers. [Otsenka raboty lagov na ledokolakh].
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36-810
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36-816
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Permafrost thermal properties, Frozen ground physics, Soil freezing, Freeze thaw cycles, Thermal conductivity, Unfrozen water content, Analysis (mathematics).

36-817
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Mining, Excavation, Ground water, Seepage, Artificial freezing.

36-818
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Mining, Shafts (excavations), Water level, Seepage, Artificial freezing.

36-819
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Mining, Shafts (excavations), Water level, Artificial freezing.

36-820
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36-821
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Mining, Shafts (excavations), Water level, Artificial freezing, Frozen rock temperature, Temperature control.

36-822
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36-823
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Petroleum industry, Gas pipelines, Permafrost beneath structures, Environmental protection.

36-824
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Petroleum industry, Oil wells, Well casings, Permafrost.

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***River diversion*, Swamps, Drainage, Peat, Land reclamation, Irrigation, Revegetation.**

36-891
New approach and trends in economic development of the North. Foreign experience and Soviet practice. [Novye podkhody i tendentsii osvoeniia Severa: zarubezhnyi opyt i sovetskaia praktika].
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Economic development, Environmental protection, Subpolar regions, Subarctic landscapes.

36-892
Rating the forest protection zone in the Baykal Amur railroad area. [Normirovanie zashchitnykh lesov zony BAMa].
Sapozhnikov, A.P., *Geografiia i prirodnye resursy*, July-Sep. 1981, No.3, p.77-82. In Russian. 3 refs.
Environmental protection, Forest land, Landscape types, Cryogenic soils, Protective vegetation, Forest strips, Baykal Amur railroad.

36-893
Remote-sensing techniques of studying soils. [Primenenie distantsionnykh metodov dlia issledovaniia *pochv*].
Kondrat'ev, K.IA., et al. *Geografiia i prirodnye resursy*, July-Sep. 1981, No.3, p.83-90. In Russian. 20 refs.
Fedchenko, P.P.
Soil surveys, Optical properties, Albedo, Remote sensing.

36-894
Applying system analysis to reflection spectra of soils. [Sistemnyi analiz spektrov otrazheniia pochv].
Kuznetsov, V.V., et al. *Geografiia i prirodnye resursy*, July-Sep. 1981, No.3, p.90-97. In Russian. 15 refs.
Tolchel'nikov, IU.S.
Soil surveys, Optical properties, Albedo, Remote sensing, Soil composition, Classifications, Spaceborne photography, Aerial surveys, Mapping.

36-895
Microelements in the landscapes of the Central Nonchernozem area. [Mikroelementy landshaftov tsentral'nogo Nechernozem'ia].
Khrustaleva, M.A., et al. *Geografiia i prirodnye resursy*, July-Sep. 1981, No.3, p.120-124. In Russian. 9 refs.
Korenevskaia, V.E., Shkuratenko, Z.V.
Forest soils, Podsol, Moraines, Seasonal freeze thaw, Microclimatology, Soil composition, Soil profiles.

36-896
Resistance of cryogenic biogeocenoses to the influence of human activities. [Ob ustoichivosti merzlotnykh biogeotsenozov k antropogennomu vozdeistviiu].
Savvinov, D.D. *Geografiia i prirodnye resursy*, July-Sep. 1981, No.3, p.124-126. In Russian. 6 refs.
Taiga, Cryogenic soils, Landscape types, Human factors, Soil erosion, Environmental protection.

36-897
Trends in improving technology of the construction of 500 kw overhead lines in mountains. [Osnovnye napravleniia sovershenstvovaniia tekhnologii stroitel'stva VL 500 kV v gornykh usloviiakh].
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Chipashvili, V.Sh., Elenbogen, G.N.
Alpine landscapes, Power line supports, Foundations, Snow loads, Avalanches.

36-898
Earthwork and rock excavation in the construction of 500 kw overhead lines. [Proizvodstvo zemel'noskal'nykh rabot pri stroitel'stve VL 500 kV v gornykh usloviiakh].
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Gogichaishvili, V.I., Bosikov, A.I.
Power lines, Foundations, Earthwork, Blasting, Alpine landscapes.

36-899
Construction of anchored foundations in fractured bedrock. [Tekhnologiia sooruzhenii ankernykh fundamentov v treshchinovatykh skal'nykh gruntakh].
Gonchar, A.L., et al. *Energeticheskoe stroitel'stvo*, Sep. 1981, No.9, p.9-14. In Russian. 2 refs.
Kireev, V.I., Gorzheni, A.I.
Power line supports, Foundations, Anchors, Mountains.

36-900
Design of lightweight steel frames for unit-construction. [Osobennosti konstruktivnykh reshenii oblegchennykh stal'nykh karkasov sborno-razbornykh zdanii].
Kasatkin, V.B., et al. *Energeticheskoe stroitel'stvo*, Sep. 1981, No.9, p.20-22.
Bel'kov, A.A.
Industrial buildings, Steel structures, Prefabrication, Panels, Walls, Thermal insulation.

36-901
Design and building standards for earth dams in the northern construction-climatic zone. [O normakh proektirovaniia i stroitel'stva gruntovykh plotin v severnoi stroitel'no-klimaticheskoi zone].
Myznikov, IU.N., *Energeticheskoe stroitel'stvo*, Sep. 1981, No.9, p.39-42. In Russian. 3 refs.
Standards, Earth dams, Earth fills, Drainage, Hydraulic structures, Permafrost beneath structures.

36-902
Assigning the density of packing supersaturated earth in the core of the dam under northern conditions. [K voprosu obosnovaniia plotnosti ukladki pereuvlazhnennykh gruntov v iadro plotiny v severnykh usloviiakh].
Kadkina, E.L., *Energeticheskoe stroitel'stvo*, Sep. 1981, No.9, p.69-70. In Russian.
Earth dams, Earth fills, Permafrost beneath structures, Frozen fines, Active layer, Cores.

36-903
Performance of marker beacon foundations under ice conditions. [Osnovaniia stvornogo znaka rabotaiushchego v ledovykh usloviiakh].
Dovgalenko, A.G., *Transportnoe stroitel'stvo*, Sep. 1981, No.9, p.19-20. In Russian.
Hydraulic structures, Foundations, Piles, Ice loads, Beac

36-904
Using octahedral piles in building foundations in the Baykal Amur railroad area. [Iz opyta primeneniia vos'migrannykh svai v fundamentakh zdanii na BAMe].
Rozanov, A.S., *Transportnoe stroitel'stvo*, Sep. 1981, No.9, p.22-23. In Russian.
Buildings, Foundations, Piles, Permafrost beneath structures.

36-905
Manufacturing prestressed PAG-XIV plates for airfield pavements at the Kolchedansk reinforced concrete plant. [Izgotovlenie prednapriazhennykh aerodromnykh plit PAG-XIV na Kolchedanskom zavode ZhBK].
Fomina, N.I., *Transportnoe stroitel'stvo*, Sep. 1981, No.9, p.23-25. In Russian.
Airports, Pavements, Reinforced concretes, Permafrost beneath structures.

36-906
Cost of railroad construction in paluded taiga. [O smetnoi stoimosti stroitel'stva zheleznykh dorog v taezhno-bolotistoi mestnosti].
Larionov, A.D., *Transportnoe stroitel'stvo*, Sep. 1981, No.9, p.38-39. In Russian.
Taiga, Cost analysis, Paludification, Railroads, Buildings, Earthwork.

36-907
Increasing the role of experimental work. [Povyshenie roli opytno-eksperimental'nykh rabot].
Stafeev, P.F., *Transportnoe stroitel'stvo*, Sep. 1981, No.9, p.40-42. In Russian.
Buildings, Railroads, Tunnels, Naleds, Construction materials, Permafrost beneath structures, Tests, Experimentation.

36-908
Using concretes with evenly distributed reinforcement in marine shore-protecting structures. [Primenenie dispersno-armirovannogo betona v beregozashchitnykh morskikh sooruzheniiakh].
Pisanko, G.N., et al. *Transportnoe stroitel'stvo*, Sep. 1981, No.9, p.50-52. In Russian. 1 ref.
Nagevich, IU.M., Sazhnev, V.I., Kadakin, V.I.
Hydraulic structures, Shore erosion, Ocean waves, Protection, Reinforced concretes, Frost resistance, Walls, Seasonal freeze thaw.

36-909
Exhibition of construction and road maintenance machines. [Vystavka stroitel'nykh i dorozhnykh tekhnik].
Kazanovskaia, N.P., *Transportnoe stroitel'stvo*, Sep. 1981, No.9, p.53-54. In Russian.
Construction equipment, Roads, Earthwork, Equipment, Excavation.

36-910
Review of the Dry Valley drilling Project, 1971-76.
Torii, T., *Polar record*, Sep. 1981, 20(129), p.553-554.
Drill core analysis, Geocryology, Low temperature research, Glacial geology.
The concept and developmental background of the project are described and the general geographic and geological features of the area noted. The planning and field work, strongly supported by the National Science Foundation, began in 1971 and 1973 respectively. The 15 DSDP drill holes are listed with their locations, penetration depths, dates and principal geological units. Summaries of results are given for Ross Island, the Dry Valleys, and McMurdo Sound.

36-911
Shipping routes, ice cover and year-round navigation in the Canadian Arctic.
Dey, B.B., *Polar record*, Sep. 1981, 20(129), p.549-559, 35 refs.
Ice navigation, Sea ice distribution, Ice breaking, Canada—Arctic Archipelago.

36-912
Polar Ice Coring Office antarctic field activities, 1979-80.
Marshall, P.S., et al. *Polar record*, Sep. 1981, 20(129), p.561-562. 3 refs.
Kuivinen, K.C.
Ice cores, Drilling fluids.
In its third Antarctic field season PICO conducted a programme of shallow ice core drilling at Amundsen-Scott South Pole station, and for the first time obtained ice core to 100-m depths from Vostok station (USSR) for American researchers. Hot-water drilling of shot holes at Dome C was also completed. Field work included testing the new PICO shallow ice core drill and the PICO hot water drill; recovery of the NSF-Swiss shallow drill stuck at a depth of 65 m at Dome C during the previous field season; and inspection and reactivation of the Norwegian and Soviet Union's freeze-in experiments at the RISP drill camp, J-9. (Auth.)

36-913
Greenland Ice Sheet Program, 1980.
Marshall, P.S., et al. *Polar record*, Sep. 1981, 20(129), p.562-565.
Kuivinen, K.C.
Ice sheets, Rotary drilling, Drill core analysis, Ice composition, Greenland.

36-914
Transglobe Expedition, 1979-1982.
Shepard, O., *Polar record*, Sep. 1981, 20(129), p.567-575.
Expeditions, Weather observations, Snow cover, Drill core analysis, Oxygen isotopes.
The Transglobe Expedition, intending to circumnavigate the globe along the Greenwich Meridian using surface transportation, is reported during its traverse of Antarctica from near SANAE station to Scott Base via the South Pole. General results of the meteorological and glaciological programs are reported, daily travel routines are given and expected next steps to be undertaken by the Expedition are noted.

36-915
Problems of the Arctic and the Antarctic. Collection of articles. Vol.49.
Treshnikov, A.F., et al. New Delhi, Amerind Publishing Co., 1981. 167p. Translation of Problemy Arktiki i Antarktiki. Sbornik statei. Vol.49. For individual articles see Soviet Publications 28425 or 28 295-97 through 28 295-99 and K-25 500.
Polar regions, Low temperature research.
The original Russian articles from which this translation was made can be found under accession numbers 32 546 through 32-454 or 9B-19073, 9B-19072, and 10K-21264. The papers cover a variety of topics including water circulation and ice in the Arctic Ocean, heat exchange between Arctic and Atlantic waters, the Chukchi Plateau, thickness of multi-year ice, three-day atmospheric circulation forecasts for the Antarctic, polar cap auroras, ingestion of arctic cod, sea ice compressive strength, temperature sensors, ice island deformation, ice bottom relief, and sea ice mapping from satellite data.

36-916
Circulation of water masses in the central part of the Arctic Basin.
Egorov, K.I. Problems of the Arctic and the Antarctic. Collection of articles. Vol. 49, edited by A.F. Treshnikov. New Delhi, Amerind Publishing Co., 1981. p.14-23. For Russian original see 32-536. 10 refs.
Ocean currents, Sea ice, Drift, Boundary value problems.

36-917
Peculiarities of heat exchange of Atlantic waters in the Arctic Basin.
Bukatov, I.N. Problems of the Arctic and the Antarctic. Collection of articles. Vol. 49, edited by A.F. Treshnikov. New Delhi, Amerind Publishing Co., 1981. p.24-36. For Russian original see 32-537. 18 refs.
Water transport, Heat transfer, Ocean currents, Arctic Ocean, Atlantic Ocean.

36-918
Method of calculating the state of the Chukchi flaw lead in June.
Alekanen, A.I. Problems of the Arctic and the Antarctic. Collection of articles. Vol. 49, edited by A.F. Treshnikov. New Delhi, Amerind Publishing Co., 1981. p.44-51. For Russian original see 32-538. 5 refs.
Sea ice, Fast ice, Polynyas, Ice melting, Analysis (mathematics), Chukchi Sea.

36-919
Influence of puddles on the spatial nonuniformity of thickness of multi-year ice in winter.
Buzuev, A.I.V., et al. Problems of the Arctic and the Antarctic. Collection of articles. Vol. 49, edited by A.F. Treshnikov. New Delhi, Amerind Publishing Co., 1981. p.6-67. For Russian original see 32-539. 6 refs.
Spichkin, V.A.
Ice cover thickness, Sea ice, Snow cover, Seasonal variations, Arctic Ocean.

36-920
Compression strength of sea ice specimens under complex loading.
Pavlov, V.V., et al. Problems of the Arctic and the Antarctic. Collection of articles. Vol. 49, edited by A.F. Treshnikov. New Delhi, Amerind Publishing Co., 1981. p.97-104. For Russian original see 32-540. 6 refs.
Pavlov, V.V.
Sea ice, Salt ice, Compressive properties, Dynamic loads.

36-921
Microscopic algae in the fast ice of Alasheyev Bight.
Buinitskii, V.Kh., et al. Problems of the Arctic and the Antarctic. Collection of articles. Vol. 49, edited by A.F. Treshnikov. New Delhi, Amerind Publishing Co., 1981. p.105-119. For Russian original see 32-541 or 98.1907. 9 refs.
Nikolaev, V.A., Nikolaev, S.E.
Fast ice, Algae, Cryobiology, Ice cores, Antarctica—Alasheyev Bight.
Glacio-biological observations in the Alasheyev Bight, made by the Fourteenth Soviet Antarctic Expedition, revealed that active life of microscopic algae in sea ice continues through all climatic seasons. A total of 78 species of diatoms and one silicoflaeellate alga were identified. Ice sampling and sample handling techniques and the properties of fast ice and sea water are described.

36-922
Three sensors of air temperature pulsations.
Egorov, B.P. Problems of the Arctic and the Antarctic. Collection of articles. Vol. 49, edited by A.F. Treshnikov. New Delhi, Amerind Publishing Co., 1981. p.128-136. For Russian original see 32-542. 2 refs.
Atmospheric circulation, Turbulent flow, Air temperature, Temperature measurement.

36-923
Deformation of ice island occupied by *Severnyi Polyus-19*.
Losev, V.P., et al. Problems of the Arctic and the Antarctic. Collection of articles. Vol. 49, edited by A.F. Treshnikov. New Delhi, Amerind Publishing Co., 1981. p.44-149. For Russian original see 32-543. 4 refs.
Losev, V.P., Basova, I.G.
Ice islands, Ice deformation, Ice mechanics.

36-924
Nomenclature of major objects of bottom relief of Arctic Ocean.
Krylenko, I.V., Problems of the Arctic and the Antarctic. Collection of articles. Vol. 49, edited by A.F. Treshnikov. New Delhi, Amerind Publishing Co., 1981. p.150-152. For Russian original see 32-544.
Bottom topography, Topographic features, Terminology.

36-925
Possible use of microwave satellite data for sea ice mapping.
Loshchilov, V.S., Problems of the Arctic and the Antarctic. Collection of articles. Vol. 49, edited by A.F. Treshnikov. New Delhi, Amerind Publishing Co., 1981. p.164-167. For Russian original see 32-545. 6 refs.
Sea ice, Microwaves, Mapping, Spacecraft.

36-926
Snow and snow cover; proceedings of a symposium. [Snieg i pokrywa Snieżna; materiały z Sympozjum].
Sympozjum "Snieg in Pokrywa Snieżna", Zakopane, Poland, March 15-17, 1973. Warsaw, Institut Meteorologii i Gospodarki Wodnej, 1977, 188p. In Polish with English and Russian summaries. Refs. passim. For individual papers see 36-927 through 36-936.
Snow surveys, Snow physics, Snow cover distribution, Snowmelt, Meetings, Mountains, Avalanche formation, Snow depth.

36-927
Peculiarities and anomalies of snow precipitation in mountains. [Osobliwości i anomalie opadów snieżnych w gorach].
Chomicz, K., Snieg i pokrywa snieżna; materiały z Sympozjum w Zakopanem, March 15-17, 1973. Warsaw, Institut Meteorologii i Gospodarki Wodnej, 1977, p.5-29, 8 refs. In Polish with English and Russian summaries.
Snow accumulation, Precipitation gages, Snowfall, Snow surveys, Mountains, Models.

36-928
Probability of duration and maximum depth of snow cover in Slovakia. [Prawdopodobienstwo występowania oraz maksymalnej grubości pokrywy snieżnej na Słowacji].
Šamaj, F., et al. Snieg i pokrywa snieżna; materiały z Sympozjum w Zakopanem, March 15-17, 1973. Warsaw, Institut Meteorologii i Gospodarki Wodnej, 1977, p.31-62, 7 refs. In Polish with English and Russian summaries.
Valovič, Š.
Snow depth, Snow cover distribution, Altitude, Mountains.

36-929
Snow cover in Karkonosze Mountains. [Pokrywa snieżna w Karkonoszach].
Sadowski, M., Snieg i pokrywa snieżna; materiały z Sympozjum w Zakopanem, March 15-17, 1973. Warsaw, Institut Meteorologii i Gospodarki Wodnej, 1977, p.63-75, 4 refs. In Polish with English and Russian summaries.
Snow depth, Snow water equivalent, Charts, Mountains.

36-930
Spatial structure of the snow cover in the upper part of the watershed of the Potok Szrenicki. [Struktura przestrzenna pokrywy snieżnej w górnej czesci zlewni Potoku Szrenickiego].
Glowicki, B., Snieg i pokrywa snieżna; materiały z Sympozjum w Zakopanem, March 15-17, 1973. Warsaw, Institut Meteorologii i Gospodarki Wodnej, 1977, p.77-95, 10 refs. In Polish with English and Russian summaries.
Snow cover structure, Snow density, Watersheds, Altitude.

36-931
Snow cover in the Rzeszow Voivodship with particular attention to the mountain regions. [Pokrywa snieżna w województwie rzeszowskim ze szczególnym uwzględnieniem obszarów górskich].
Paczos, S., Snieg i pokrywa snieżna; materiały z Sympozjum w Zakopanem, March 15-17, 1973. Warsaw, Institut Meteorologii i Gospodarki Wodnej, 1977, p.97-123, 10 refs. In Polish with English and Russian summaries.
Snow cover distribution, Snow surveys, Snow depth, Snowmelt, Weather stations, Mountains.

36-932
Influence of snow on trees and shrubs in the upper forest zone of the Tatra Mountains. [Wpływ sniegu na drzewa i krzewy w obszarze górnej granicy lasu w Tatrach].
Myczkowski, S., Snieg i pokrywa snieżna; materiały z Sympozjum w Zakopanem, March 15-17, 1973. Warsaw, Institut Meteorologii i Gospodarki Wodnej, 1977, p.125-134, 17 refs. In Polish with English and Russian summaries.
Snow cover effect, Trees (plants), Forest lines, Snowfall, Alpine landscapes, Protective vegetation, Climatic factors, Plant ecology, Avalanche formation, Countermeasures.

36-933
Results of measurements of evaporation and sublimation from snow cover in the Tatra Mts. [Wstępne wyniki pomiarów parowania i sublimacji z pokrywy snieżnej w Tatrach].
Szkutnicki, J., Snieg i pokrywa snieżna; materiały z Sympozjum w Zakopanem, March 15-17, 1973. Warsaw, Institut Meteorologii i Gospodarki Wodnej, 1977, p.135-144, 10 refs. In Polish with English and Russian summaries.
Snow evaporation, Sublimation, Snow surface, Water balance, Snow physics.

36-934
Physical properties of snow in Hala Gasienicowa (Tatra Mts.). [Fizyczne właściwości sniegu na Hali Gasienicowej].
Klapowa, M., Snieg i pokrywa snieżna; materiały z Sympozjum w Zakopanem, March 15-17, 1973. Warsaw, Institut Meteorologii i Gospodarki Wodnej, 1977, p.145-163, 21 refs. In Polish with English and Russian summaries.
Snow physics, Metamorphism (snow), Snow water content, Snow temperature, Snow density, Temperature gradients.

36-935
Attempt of a quantitative evaluation of creep in a snow cover. [Proba ilościowej oceny powolnych ruchów masowych w pokrywie snieżnej].
Baranow, Ki. S., Snieg i pokrywa snieżna; materiały z Sympozjum w Zakopanem, March 15-17, 1973. Warsaw, Institut Meteorologii i Gospodarki Wodnej, 1977, p.165-175, 13 refs. In Polish with English and Russian summaries.
Snow creep, Rheology, Snow cover stability, Snow compression, Snow surface, Air temperature.

36-936
Results concerning snow avalanches in the Tatra Mountains. [Wyniki badań nad lawinami snieżnymi w Tatrach].
Klapowa, M., Snieg i pokrywa snieżna; materiały z Sympozjum w Zakopanem, March 15-17, 1973. Warsaw, Institut Meteorologii i Gospodarki Wodnej, 1977, p.177-188, 29 refs. In Polish with English and Russian summaries.
Avalanche formation, Snow cover stability, Slope orientation, Mountains.

36-937
Theoretical estimates of the various mechanisms involved in iceberg deterioration in the open ocean environment.
White, F.M., et al. *U.S. Coast Guard ... Report*, May 1980. CG-D-62-80, 126p. ADA-091 857. Refs. p.125-126.
Spaulding, M.L., Greenhalgh, J.
Icebergs, Ice deterioration, Ice melting, Ocean waves, Calving, Wind factors, Convection, Buoyancy, Stability.

36-938
First Annual Workshop on Ice Storage for Cooling Applications.
Workshop on Ice Storage for Cooling Applications, 1st, Argonne National Laboratory, June 4-5, 1981. Argonne National Laboratory ... *Report*, July 1981. ANL-81-45, 54p. Includes 7 papers.
Gorski, A.J., comp.
Cold storage, Ice, Cooling systems, Design, Meetings.

36-939
Effects of ice on coal movement via the inland waterways.
Lunardini, V.J., et al. *U.S. Army Cold Regions Research and Engineering Laboratory*, June 1981. SR 81-13, 72p. ADA-105 240. Refs.
Minsk, L.D., Pietroniro, G.
Ice cover effect, Channels (waterways), Coal, Fuel transport, Locks (waterways), Marine transportation, Cold weather performance, Dams.
The part of the Inland Waterways which carries significant coal and which may experience significant ice problems includes the

following rivers or waterways: Ohio, Monongahela, Allegheny, Kanawha, Upper Mississippi, and Illinois. Coal transportation along these rivers may be locally interrupted for periods up to 30 days or more every three to five years. Coal handling facilities, navigation channels, and lock and dam sites along the ice prone rivers were surveyed by visit or telephone to ascertain the scope of the ice problems. The importance of ice as a barrier to increased coal movement on the waterways studied manifests itself differently for each link of the flow system. In order of importance the ice will affect the navigation channels, locks and dams, and finally the coal loading/unloading facilities. The coal handling facilities will not be significantly slowed down by ice problems associated with winter navigation.

36-940
Distribution of snow accumulation in Sapporo (in 1979 and 1980).
Naruse, R., et al. *Low temperature science (Teion kagaku). Series A Physical sciences. Data report*, 1980, No.39, p.1-3, In Japanese. 1 ref.
Aburakawa, H.
Snow cover distribution, Snow accumulation, Japan—Sapporo.

36-941
Survey of snow patches in Nakanosawa, Satsunai River, Mts. Hidaka.
Ohmae, H., et al. *Low temperature science (Teion kagaku). Series A Physical sciences. Data report*, 1980, No.39, p.5-11, In Japanese. 8 refs.
Naruse, R., Fukami, H., Naitoh, A., Nishimura, H.
Snow cover distribution, Snow surveys, Mountains, Rivers.

36-942
Strain rate and stresses of snow on a mountain slope, Toikanbetsu, northern Hokkaido; Pt.3.
Hazioka, T., et al. *Low temperature science (Teion kagaku). Series A Physical sciences. Data report*, 1980, No.39, p.13-33, In Japanese. 2 refs.
Shimizu, H., Akitaya, E., Narita, H.
Snow physics, Strains, Stresses, Slope orientation, Mountains.

36-943
Distribution of patch ice off Okhotsk Sea coast of Hokkaido observed with sea ice radar network, January-April, 1980.
Tabata, T., et al. *Low temperature science (Teion kagaku). Series A Physical sciences. Data report*, 1980, No.39, p.35-61, In Japanese. 2 refs.
Sea ice distribution, Radar echoes, Radar photography, Okhotsk Sea.

36-944
Studies of the behavior of a snow cover on mountain slope; 7—single vertical principal stress.
Yoshida, Z., *Low temperature science (Teion kagaku) Series A Physical sciences*, 1980, No.39, p.1-16, In Japanese with English summary. 17 refs.
Snow strength, Snow cover, Stresses, Strains, Snow deformation, Slopes.

36-945
Compression tests of wet snow.
Ohmae, H., et al. *Low temperature science (Teion kagaku). Series A Physical sciences*, 1980, No.39, p.17-24, In Japanese with English summary. 12 refs.
Wakahama, G.
Wet snow, Snow compression, Snow creep, Snow strength, Stresses, Snow water content, Snow mechanics, Tests.

36-946
Propagation of micro-pressure waves in a snow layer.
Ishida, T., *Low temperature science (Teion kagaku) Series A Physical sciences*, 1980, No.39, p.25-31, In Japanese with English summary. 3 refs.
Snow physics, Wave propagation, Pressure.

36-947
Measurements of heat transfer coefficients in blowing snow.
Kaneda, Y., et al. *Low temperature science (Teion kagaku). Series A Physical sciences*, 1980, No.39, p.33-47, In Japanese with English summary. 13 refs.
Maeno, N.
Blowing snow, Heat transfer, Wind velocity, Snowdrifts, Wind tunnels.

36-948
Observations of particle motions in blowing snow.
Araoka, K., et al. *Low temperature science (Teion kagaku). Series A Physical sciences*, 1980, No.39, p.49-54, In Japanese with English summary. 9 refs.
Maeno, N.
Blowing snow, Snow mechanics, Particles, Velocity, Photographic reconnaissance, Wind tunnels.

36-949
Characteristics of the snow cover in mid-winter in Hokkaido.
Akitaya, E., et al. *Low temperature science (Teion kagaku). Series A Physical sciences*, 1980, No.39, p.55-61, In Japanese with English summary. 4 refs.
Endo, Y.
Snow cover distribution, Snow hardness, Snow depth, Temperature gradients, Air temperature.

36-950
Snow survey by snow depth recorders in Teshio mountainous region.
Aburakawa, H., *Low temperature science (Teion kagaku). Series A Physical sciences*, 1980, No.39, p.63-74, In Japanese with English summary. 8 refs.
Snow depth, Snow surveys, Snowfall, Snow melting, Mountains, Precipitation (meteorology), Slope orientation.

36-951
Surface shapes of snow cornices.
Naruse, R., *Low temperature science (Teion kagaku) Series A Physical sciences*, 1980, No.39, p.75-80, In Japanese with English summary. 12 refs.
Snow cornices, Surface properties, Measurement.

36-952
Glide mechanism of a snow cover on a slope covered with dwarf bamboo bushes, Pt.2.
Endo, Y., *Low temperature science (Teion kagaku) Series A Physical sciences*, 1980, No.39, p.81-89, In Japanese with English summary. 4 refs.
Snow slides, Snow mechanics, Slopes, Surface properties, Snow density, Snow depth.

36-953
Formation process of snow drifts by horizontal-slat fences.
Kobayashi, D., et al. *Low temperature science (Teion kagaku). Series A Physical sciences*, 1980, No.39, p.91-100, In Japanese with English summary. 14 refs.
Aburakawa, H., Tushima, K., Kinoshita, S.
Snowdrifts, Snow fences, Snow mechanics, Blowing snow.

36-954
Continuous observation of melting at the bottom of a snow cover during the winter (preliminary report).
Kojima, K., *Low temperature science (Teion kagaku). Series A Physical sciences*, 1980, No.39, p.101-108, In Japanese with English summary. 5 refs.
Heat flux, Snow melting, Snow water equivalent, Bottom melting, Soils, Winter, Snow cover.

36-955
Experimental study of local temperature increases within a snow cover.
Fukami, H., et al. *Low temperature science (Teion kagaku). Series A Physical sciences*, 1980, No.39, p.109-117, In Japanese with English summary. 15 refs.
Kojima, K.
Snow temperature, Thermal conductivity, Solar radiation, Snow cover, Temperature variations, Tests.
While penetrating into the snow cover, short-wave solar radiation is absorbed in it. As a result the temperature in the snow cover increases locally and may lead to internal melting. Remarkable examples are seen in ice shelves or sea ice in Antarctica, which are generally referred to as subsurface melt pools or puddles. Simulating the conditions experimentally, a study was made of the local temperature increase. By supplying an artificial short-wave radiation and a wind on the upper surface of a snow sample block, temperatures at various depths within each sample were measured. The experimental apparatus is shown. In all the experiments local temperature increases were observed, and in some instances internal melting took place. Extinction of short-wave radiation within the snow cover was measured by a device developed by the authors. The influence of snow properties on local temperature increase was determined from the experiments and calculations as follows. 1) With a decrease in thermal conductivity of the snow cover, the maximal value of local temperature increase shows an increase. 2) The depth of maximal value of local temperature increase is mainly determined by the extinction coefficient. With a decrease in extinction coefficient, the depth of the maximal value of local temperature increase lowers. (Auth. mod.)

36-956
Extinction measurements of solar radiation within a snow cover.
Fukami, H., et al. *Low temperature science (Teion kagaku). Series A Physical sciences*, 1980, No.39, p.119-126, In Japanese with English summary. 9 refs.
Kojima, K.
Snow physics, Solar radiation, Radiation absorption, Snow density, Snow cover, Grain size.

36-957
Percolation of sea ice, Pt.2—brine drainage channels in young sea ice.
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Ono, N.
Sea ice, Brines, Surface drainage, Grain size, Channels (waterways).

36-958
Observation of the wind on drift ice and its movement.
Kawamura, T., *Low temperature science (Teion kagaku). Series A Physical sciences*, 1980, No.39, p.133-139, In Japanese with English summary. 9 refs.
Ice floes, Drift, Ice mechanics, Wind velocity, Radar photography, Wind direction.

36-959
Height distribution of pack ice off the Okhotsk Sea coast of Hokkaido.
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Tabata, T.
Pack ice, Sea ice distribution, Remote sensing, Stereophotography, Radar echoes, Lasers.

36-960
Observed sea ice thickness in the northern Okhotsk Sea.
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Nohguchi, Y., Saito, T.
Sea ice, Ice cover thickness, Remote sensing, Stefan problem, Air temperature, Statistical analysis, Okhotsk Sea.

36-961
Freezing phenomena at seawater surface opening in polar winter; Pt.1—Role of evaporation in initial growth of sea ice and behavior of brine in young ice.
Ono, N., et al. *Low temperature science (Teion kagaku). Series A Physical sciences*, 1980, No.39, p.159-166, In Japanese with English summary. 6 refs.
Wakatsuchi, M., Kawamura, T.
Sea water freezing, Polynyas, Ice growth, Evaporation, Brines, Air temperature.

36-962
Freezing phenomena at seawater surface opening in polar winter; Pt.2—Measurements of salinities and volumes of brine rejected by a growing sea ice.
Wakatsuchi, M., et al. *Low temperature science (Teion kagaku). Series A Physical sciences*, 1980, No.39, p.167-174, In Japanese with English summary. 8 refs.
Ono, N.
Sea water freezing, Polynyas, Ice growth, Ice salinity, Brines.

36-963
Freezing phenomena at seawater surface opening in polar winter; Pt.3—Measurement of crystallographic orientation of newly grown sea ice.
Kawamura, T., et al. *Low temperature science (Teion kagaku). Series A Physical sciences*, 1980, No.39, p.175-180, In Japanese with English summary. 7 refs.
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Sea water freezing, Polynyas, Ice crystal structure, Ice growth.

36-964
Water migration and heat conduction in soil near its melting temperature.
Izuta, H., et al. *Low temperature science (Teion kagaku). Series A Physical sciences*, 1980, No.39, p.181-187, In Japanese with English summary. 4 refs.
Suzuki, Y.
Soil water migration, Frozen ground temperature, Specific heat, Thermal conductivity, Temperature effects.

36-965
Note on analysis of data obtained by thermal probe method.
Suzuki, Y., *Low temperature science (Teion kagaku) Series A Physical sciences*, 1980, No.39, p.189-192, In Japanese with English summary. 1 ref.
Thermal conductivity, Thermal diffusion, Analysis (mathematics).

36-966
Measurements of the velocity of crack propagation in ice.
Sato, A., et al. *Low temperature science (Teion kagaku). Series A Physical sciences*, 1980, No.39, p.193-195, In Japanese. 5 refs.
Wakahama, G.
Ice cracks, Crack propagation, Velocity.

36-967

Snapshot apparatus for impact force of snow.

Kawada, K., *Low temperature science (Teion kagaku) Series A Physical sciences*, 1980, No 39, p 197-199, In Japanese. 1 ref.

Snow physics, Photographic equipment, Impact strength, Photography.

36-968

Observation of the ground-ice mass found in Oketo, Hokkaido.

Fukuda, M., et al, *Low temperature science (Teion kagaku) Series A Physical sciences*, 1980, No 39, p 201-205, In Japanese. 2 refs.

Narita, H.

Ground ice, Frozen ground physics, Temperature effects, Permafrost physics.

36-969

Kinetics of the coagulation growth of hailstone nuclei. [O kinetike koaguliatsionnogo rosta zarodyshei gradin].

Begalishvili, N.A., *Zakavkazskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1981, Vol.73, p.46-54, In Russian. 8 refs.

Hailstone growth, Cloud droplets, Coagulation.

36-970

Studying the coalescence growth of hailstones in supercooled fine cloud droplets. [Issledovanie koaguliatsionnogo rosta gradin v srede pereokhlazhdennykh melkikh oblachnykh kapel'].

Nadibaidze, G.A., et al, *Zakavkazskii regional'nyi nauchno-issledovatel'skii institut. Trudy*, 1981, Vol.73, p.55-59, In Russian. 4 refs.

Robitashvili, G.A., Rukhadze, I.I.

Supercooled clouds, Hail clouds, Hailstone growth, Cloud droplets, Coalescence.

36-971

Mineralization and the chemical composition of atmospheric precipitation in the Arctic sector of Eurasia. [Mineralizatsiia i khimicheskii sostav atmosfernykh osadkov v arkticheskom sektore Evrazii].

Lychagin, M.IU., *Moscow. Universitet. Vestnik. Seriia 5 Geografiia*, Sep.-Oct. 1981, No.5, p.80-82, In Russian. 3 refs.

Polar regions, Precipitation (meteorology), Snow composition, Water chemistry, Meteorological data.

36-972

Bottom heat transfer to water bodies in winter.

O'Neill, K., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Sep. 1981, SR 81-18, 8p, ADA-106-977.

Ashton, G.D.

Water temperature, Freezing points, Heat flux, Heat transfer, Bottom sediment, Limnology, Lakes, Ponds, Winter.

In many surface water bodies, water temperature closely follows ambient air temperature. This means that warmer water in winter absorbs heat from below. The extent and pattern of winter heat gain is constrained by the fact that the water temperature does not fall below the freezing point. On the basis of a few simple assumptions, governing equations are solved here pertaining to heat flow in bottom sediments. The results are presented in general nondimensionalized curves. These allow estimation of water/sediment heat flux for any particular case, given truncation of the water temperature curve at the freezing point. The user must supply pertinent yearly air temperature mean and amplitude of variation, together with the thermal diffusivity for the bottom material. The governing equations are solved using a higher order finite element method which solves directly for temperature gradients and hence for heat flux. Thus the method provides particularly accurate flux values at high efficiency. The results illustrate in detail how winter water heat gain is less in cases where mean air temperatures are lower.

36-973

Mine/countermine problems during winter warfare. Final report of a workshop.

Lunardini, V.J., ed, *U.S. Army Cold Regions Research and Engineering Laboratory*, Sep. 1981, SR 81-20, 43p, ADA-107 047.

Explosives, Cold weather performance, Snow cover effect, Blasting, Frozen ground, Research projects, Land mine warfare.

The possibility of modern warfare being waged under cold weather conditions has raised questions about the effectiveness of conventional and new mine systems during the winter. A workshop on mine/countermine winter warfare was held at the U.S. Army Cold Regions Research and Engineering Laboratory, 21-23 October 1980, to define problems related to cold climates. The designer, developer and user communities sent 22 representatives from 16 organizations outside of CRREL. Discussion papers were prepared by four groups, covering emplacement of mines, mine performance, detection of mines, and neutralization of mines. The emphasis was on the unique problems of the winter environment. It appears that the U.S. has the capability to conduct defensive warfare during the summer but is not adequately prepared for mine/countermine winter warfare. Test and research programs are called for to compensate for the prior lack of consideration of the winter environment, to adequately winterize new mine countermine systems, and to formulate appropriate doctrine for defensive winter warfare.

36-974

Surface drainage design for airfields and heliports in arctic and subarctic regions.

Lobacz, E.F., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Sep. 1981, SR 81-22, 56p, ADA-107 293, 40 refs.

Eff, K.S.

Airports, Surface drainage, Road icing, Permafrost distribution, Cold weather construction, Design criteria, Environmental impact, Helicopters, Engineering.

This report presents engineering guidance and design criteria for drainage facilities at Army and Air Force airfields and heliports in arctic and subarctic regions. Attention is given to hydrologic criteria, icings, environmental impact, storm drains and design computer programs. A design example and a list of 40 references are included in two appendixes.

36-975

Statistical evaluation of soil and climatic parameters affecting the change in pavement deflection during thawing of subgrades.

Chamberlain, E.J., *U.S. Army Cold Regions Research and Engineering Laboratory*, July 1981, CR 81-15, 10p., ADA-106 976, 7 refs.

Pavements, Deformation, Seasonal freeze thaw, Subgrade soils, Loads (forces), Climatic factors, Frost penetration, Statistical analysis.

This report analyzes the results of a field study previously reported by Scrivner et al (1969) for the National Cooperative Highway Research Program. These authors studied the seasonal pavement deflection characteristics of 24 test sites on roads in service in regions with freezing indexes ranging from 100F-days to 2100F-days. They used the Dynaflect cyclic pavement loading device to determine the pavement system response. Of specific interest to the analysis was the increased pavement deflection after freezing and thawing and the time to recovery of normal deflection characteristics. These characteristics were related to soil and climatic factors using statistical techniques. The most significant observations of this statistical analysis are: 1) that the freezing index is not a significant parameter in determining the percent increase in pavement deflection during thawing, and 2) that the recovery time is inversely proportional to the depth of freezing. As was expected, the most significant variable affecting the increase in pavement deflection was the frost susceptibility classification. This observation reinforces the necessity for careful selection of soil materials used in pavement systems.

36-976

Geocryology. [Merzlotovedenie].

Kudriavtsev, V.A., ed, Moscow, Universitet, 1981, 239p., In Russian with English table of contents enclosed. 40 refs.

Geocryology, Permafrost origin, Permafrost distribution, Classifications, Terminology, Permafrost thermal properties, Permafrost physics, Permafrost transformation, Permafrost hydrology, Unfrozen water content, Active layer, Maps, Surveys.

36-977

Formation of dispersed rock composition in cryolithosphere. [Formirovanie sostava dispersnykh porod v kriolitosfere].

Konishchev, V.N., Novosibirsk, Nauka, 1981, 197p., In Russian with English table of contents enclosed. Refs. p.187-195.

Permafrost origin, Frozen fines, Loess, Clays, Frost penetration, Clay minerals, Frost action, Frost weathering, Ground ice, Permafrost structure, Grain size.

36-978

Hydrometeorological conditions of formation and destruction of multilayer ice on slopes of the reservoir at the Kiev pumped-storage station.

Vonokov, V.K., *Hydrotechnical construction*, Feb 1981, 15(2), p.78-82, Translated from Gidrotekhnicheskoe stroitel'stvo. 6 refs.

Reservoirs, Concrete structures, Icing, Seasonal freeze thaw, Ice accretion, Ice deterioration, Slopes.

36-979

Evaluation of earthquake resistance of deep foundations of bridge supports, taking into account the interaction with the adjacent soil mass.

Nikitin, A.A., et al, *Soil mechanics and foundation engineering*, Mar.-Apr. 1981 (Pub. Sep 1981), 18(2), p.66-70, Translated from Osnovaniia, fundamenty i mekhanika gruntov. 10 refs.

Bridges, Piers, Supports, Foundations, Permafrost beneath structures, Baykal Amur railroad.

36-980

Formation of ice jams and their distribution.

Zhukova, M.V., *Soviet hydrology: selected papers*, May 1979, 18(1), p.73-85, 9 refs.

Icebound rivers, Ice breakup, Water level, Floods, Ice jams, Baykal Amur railroad, Forecasting.

36-981

Long-range forecast of the flood volume of the Oka River with allowance for irregular soil freezing in the basin.

Rakhmanov, V.V., *Soviet hydrology: selected papers*, May 1979, 18(1), p.34-39, 2 refs.

River basins, Soil freezing, Runoff, Floods, Long range forecasting.

36-982

Formation of river icing.

Sokolov, B.L., *Soviet hydrology: selected papers*, May 1979, 18(1), p.53-57, 9 refs.

Icebound rivers, Permafrost beneath rivers, Ice breaking, Naleds, Ice growth, Alimentation, Water reserves.

36-983

Results of additional investigations of the effect of the forest on maximum spring flood discharges.

Vodogretskii, V.E., et al, *Soviet hydrology: selected papers*, May 1979, 18(1), p.70-76, 23 refs.

Zaitseva, R.S.

Forest land, Snow cover distribution, Forest canopy, Snow accumulation, Snow water equivalent, Rivers, Floods.

36-984

Roadbed construction in western Siberia. [Vozvedenie zemlianogo polotna v usloviiakh Zapadnoi Sibiri].

Leitland, V.G., et al, *Avtomobil'nye dorogi*, Aug 1981, No.8, p.12-13.

Vorob'ev, N.I., Tabakov, N.V., Akhpatelov, E.A.

Roads, Roadbeds, Permafrost beneath structures, Earthwork, Equipment.

36-985

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Lyzhenko, I.G., Kocharov, M.M.

Roadbeds, Pavements, Foundations, Concretes, Concrete aggregates, Wastes, Cements, Frost resistance.

36-986

Requirements for road parameters when allowing for climatic differences. [Osobennosti obosnovaniia trebovanii k parametram dorog s uchetom klimata razlichnykh regionov].

Vasil'ev, A.P., *Avtomobil'nye dorogi*, Aug 1981, No.8, p.19-21, In Russian. 5 refs.

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36-987

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Markham, W.E., Hull, Quebec, Canadian Government Publishing Centre, 1981, 198p., In English and French. 32 refs.

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36-988

Development of geographic sciences in Kirghizia. [Razvitie geograficheskikh nauk v Kirgizii].

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36-989

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Mountain glaciers, Ablation, Glacier ice, Water reserves, Glacial rivers, Alimentation.

36-990
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Bol'shakov, M.N., Razvitie geograficheskikh nauk v Kirgizii (Development of geographic sciences in Kirghizia) edited by S.U. Umurzakov, Frunze, Ilim, 1980, p.78-95, In Russian. 10 refs.
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36-992
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36-993
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Kuznetsov, L.L., *Soviet journal of marine biology*, Sep.-Oct. 1980, 6(5), p.297-299, 11 refs. Translated from Biologiia moria.
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Coastal morphology, coastal erosion, and barrier islands of the Beaufort Sea, Alaska.
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Snowfall, Lacustrine deposits, Climatic factors, Thickness, Temperature effects, Paleoclimatology, Bottom sediment, United States—Alaska—Skilak Lake.

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Tundra, Ecology, Animals, Grasses.

36-998
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36-999
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36-1001
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36-1002
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Soviets push for construction of strategic Yamal gas line. *Oil and gas journal*, Nov. 2, 1981, 79(44), p.57-62.
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36-1004
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36-1005
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Sea ice, Ice mechanics, Ice pressure, Offshore structures, Offshore drilling, Protection.

36-1006
Unprotected cp propellers on Polar-class icebreakers. *Shipbuilding and marine engineering international*, Sep. 1981, 104(1250), p.361-365, 5 refs.
Icebreakers, Propellers, Protection.

36-1007
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Aircraft icing, Helicopters, Ice prevention, Ice formation, Ice forecasting, Cloud droplets, Tests.

36-1008
Linear and nonlinear processes in the erosion of H2O ice by fast light ions.
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Permafrost preservation, Human factors, Damage, Oil spills, Permafrost distribution.

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Pipe laying, Cold weather construction, Welding.

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Gas pipelines, Cold weather construction, Pipe laying, Natural gas.

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Sea ice, Ice acoustics, Attenuation, Ice water interface, Reflection.

36-1028
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36-1029
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Snow cover distribution, Snow courses, Snow depth, Snow water equivalent, Statistical analysis, Altitude, Canada.

36-1030
Use of pre-fabricated Parshall flumes to measure stream flow in permafrost-dominated watersheds.
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36-1031
Water balance and heat balance. (Wasserhaushalt und Wärmehaushalt).
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36-1032
Glacier movement and subglacial water drainage. (Gletscherbewegung und Wasserabfluss).
Röthlisberger, H., *Wasser, Energie, Luft—Eau, énergie, air,* 1980, 72(9), p.290-294, In German with English and French summaries. 15 refs.
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36-1033
Ice-clearing dates for Maine lakes.
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36-1034
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Ice strength, Countermeasures, Solutions, Antifreezes, Frozen cargo.

36-1035
Cooperative test program for precast concrete paving elements.
Litvan, G.G., et al, *American Society for Testing and Materials. Special technical publication.* 1980, No.691, National Research Council, Canada. Division of Building Research, DBR paper No.937, p.560-573, With French summary.
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Precast concretes, Freeze thaw cycles, Construction materials, Concrete durability, Paving, Salting, Chemical ice prevention, Humidity, Tests.

36-1036
High-humidity buildings in cold climates—a case history.
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Masonry, Frost action, Air leakage, Humidity, Buildings, Construction materials, Corrosion, Indoor climates, Temperature effects.

36-1037
Electromagnetic subsurface measurements.
Dean, A.M., Jr., *U.S. Army Cold Regions Research and Engineering Laboratory.* Oct. 1981, SR 81-23, 19p. ADA-108 192.
Ice cover, Profiles, Electromagnetic prospecting, Airborne radar, Subglacial observations, Remote sensing, Ice bottom surface, Frazil ice, Ice jams, Permafrost, Oil spills.
In 1974 personnel at the U.S. Army Cold Regions Research and Engineering Laboratory (CRREL) began using an impulse radar system to profile accumulations of ice forms. Through field experience the system has been modified so that it can be effectively used as a profiling system, in a ground or airborne configuration, in certain high-noise environments. The system can penetrate fresh water and media with a high water content. For instance, frazil and brash ice accumulations with approximately 50% water have been profiled to a depth of 25 to 35 ft. As a result of the CRREL modifications, the system has found extensive and varied applications as a low-level remote sensing tool. Applications include profiling ice accumulations (including ice jams), river beds, sheet ice, permafrost, subsurface ice masses river bank revetments through air-entrained water, snow covers, sea ice, icebergs, and peat bogs. Limited laboratory work has also shown that the impulse radar system may be able to detect oil and gas under sea ice. Selected applications and data are presented. Since it has been used mainly for research, the CRREL system needs further development to make it useful to operational units. Additional development of hardware and software is recommended.

36-1038
Final report on statistical analysis of pingo-like features (P.L.F.) in the Beaufort Sea.
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Pingos, Subsea permafrost, Ocean bottom, Detection, Frost mounds, Analysis (mathematics), Statistical analysis, Beaufort Sea.

36-1039
Deformation characteristics of sea ice.
Bogorodskiĭ, V.V., et al, *U.S. Army Cold Regions Research and Engineering Laboratory.* Jan. 1981, TL 750, 7p., ADB 055 331L. For Russian original see 34-4251. 3 refs.
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Sea ice, Ice deformation, Bearing strength, Ice mechanics, Ice loads, Test equipment, Scale effect.
The authors used a "pressimetric technique" to study the deformation characteristics of ice directly in the ice cover. A probe, comprised of a rubber-coated metal cylinder, is a part of the pressiometric complex which is inserted in the ice cover. An active liquid is pumped under pressure through a hydromain into the probe. As a consequence, the rubber coating expands and the diameter of the well wall becomes larger. The radial deformation of the well wall is measured based on the volume of the active liquid, with its discharge being measured by means of a calibrated cylinder. The accuracy of the ice deformation measurements is within 0.001 mm. The results of the calculations given in this paper are graphically depicted.

36-1040
Evaporation from a snow cover; review and discussion of measurements.
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Snow evaporation, Snow surface, Heat flux, Snow melting, Atmospheric density.

36-1041
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36-1042
Columbia Glacier and the Trans-Alaska Pipeline. (Der Columbiagletscher und die Alaska-Pipeline).
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Glacier mass balance, Calving, Icebergs, Pipelines, Petroleum transportation, Marine transportation, Ice conditions, Radar echoes.

36-1043
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Emmett, W.W., Parks, B.
Sediment transport, River flow, Sedimentation, Geomorphology, Suspended sediments, Particle size distribution, United States—Alaska—Tanana River.

36-1044
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Snowmelt, Runoff, Snow water content, Water flow.

36-1046
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Sea ice, Ice cover thickness, Baltic Sea.

36-1047
Sea ice: the potential of remote sensing.
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Sea ice, Lake ice, Ice physics, Remote sensing, Spaceborne photography.

36-1048
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36-1049
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36-1050
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36-1051
Regional scientific conference "Results and prospects of glacioclimatic investigations in the Altai-Sayan Mountains". (Regional'naia nauchnaia konferentsiia "Itogi i perspektivy gliatsio-gidroklimaticheskogo izucheniia Altae-Sayanskoĭ gornoĭ oblasti").
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Lebedeva, I.M.
Meetings, Mountain glaciers, Alpine glaciation, Glacial hydrology, Climatology.

36-1052
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Meetings, Remote sensing, Glaciology, Radar echoes, Ice cover thickness, Glacier ice, Snow surveys, Temperature measurement, Airborne equipment, Infrared photography.

36-1053
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Polar regions, Glacier ice, Unfrozen water content.

36-1054
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Mountain glaciers, Glacier surfaces, Heat balance, Glacier surveys, Microrelief.

36-1055
Possibility of forecasting characteristics of floods caused by outbursts of glacial lakes. [Vozmozhnost' prognoza kharakteristik pavodkov vyzyvaemykh proryvami lednikovykh ozer].
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Mountain glaciers, Glacial hydrology, Glacial lakes, Floods.

36-1056
***Influence of the thermal regime of the Muksu River* basin on the formation of snowmelt and glacier ablation runoff.** [Vliianie termicheskogo rezhima vodosbora na formirovanie talogo snegovogo i lednikovogo stoka r. Muksu].
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Glacial rivers, River basins, Thermal regime, Mountain glaciers, Ablation, Snowmelt, Glacial hydrology.

36-1057
Recent glaciation of Wrangel Island and its dependence on climatic fluctuations. [Sovremennoe oledenenie ostrova Vrangelia i zavisimost' ego rezhima ot kolebanii klimata].
Svatkov, N.M., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, July 1975, Vol.26, p.89-96, In Russian with English summary. 6 refs.
Mountain glaciers, Glacier surveys, Nivation, Aerial surveys.

36-1058
Calculating approximate numbers and areas of glaciers in unexplored regions. [Raschet priblizitel'nogo chisla i ploshchadi lednikov v neizuchennykh raionakh].
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Sokolov, L.N.
Alpine glaciation, Glacier ice, Distribution, Ice volume, Snow line, Ice surveys.

36-1059
***Homogeneity* of perennial variations of the equilibrium line altitude within glaciated areas.** [Stepen' odnorodnosti mnogoletnikh kolebanii vysoty granitsy pitaniia v predelakh lednikovoi oblasti].
Shantykova, L.N., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, July 1975, Vol.26, p.101-105, In Russian with English summary. 13 refs.
Mountain glaciers, Alimentation, Snow line, Snow cover distribution, Glacier surfaces.

36-1060
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Rototaeva, O.V., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, July 1975, Vol.26, p.105-119, In Russian with English summary. 8 refs.
Alpine glaciation, Slope orientation, Snow line, Mountain glaciers, Mapping, Classifications.

36-1061
Evaporation from glaciers in Central Asia (measurements and calculations). [Intensivnost' isparenija s lednikov sredneĭ i tsentral'noi Azii (vozmozhnosti izmerenii i raschetov)].
Lebedeva, I.M., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, July 1975, Vol.26, p.119-129, In Russian with English summary. 9 refs.
Mountain glaciers, Glacier surfaces, Evaporation, Snow evaporation, Ice sublimation, Meltwater.

36-1062
Meteorological peculiarities of water accumulation in the Kolka glacier basin. [Meteorologicheskie usloviia nakopleniia vody v basseine lednika Kolka].
Krenke, A.N., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, July 1975, Vol.26, p.130-140, In Russian with English summary. 7 refs.
Kukushkina, K.I.
Alpine glaciation, Glacial hydrology, Meltwater, Rain, USSR—Caucasus.

36-1063
Space statistical structure of the surface-ablation field of a mountain glacier. [Izuchenie prostranstvennoĭ statisticheskoi struktury polia poverkhnostnoi abliatsii gornogo lednika].
Diurgerov, M.B., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, July 1975, Vol.26, p.140-144, In Russian with English summary. 5 refs.
Mountain glaciers, Glacier surfaces, Ablation, Measurement, Accuracy.

36-1064
Studying snow cover in steppe geosystems of southern Minusinsk Basin. [Issledovanie snezhnogo pokrova stepnykh geosistem iuga Minusinskoi kotloviny].
Grudinin, G.V., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, July 1975, Vol.26, p.145-150, In Russian with English summary. 7 refs.
Steppes, Snow cover distribution, Snow water equivalent, Snow surveys.

36-1065
Variations of isotope composition of atmospheric precipitation and lake waters in Antarctica. [Variatsii izotopnogo sostava atmosfernykh osadkov i ozernoi vody v Antarktide i Subantarktike].
Gordienko, F.G., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, July 1975, Vol.26, p.150-154, In Russian with English summary. 12 refs
Barkov, N.I., Orlov, A.I.
Polar regions, Precipitation (meteorology), Isotope analysis, Antarctica.
Oxygen and hydrogen isotope compositions of atmospheric precipitation are influenced by different parameters: distance between the ocean and observation stations, condensation temperature, evaporation in the process of precipitation and others. *Mean annual air temperature in the ground layer is considered* of principal importance and equations, relating isotope compositions to surface air temperature, are derived. Approximate linear relations between these values, obtained for 7 inland and 5 coastal stations, revealed some discrepancies, so *that the* absolute temperature correlation was not made, pending further investigations and corrections.

36-1066
Prospects and results of deep drilling in Antarctica. [Itogi i perspektivy glubokogo bureniia v Antarktide].
Korotkevich, E.S., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, July 1975, Vol.26, p.155-158, In Russian with English summary
Petrov, V.N.
Ice drills, Drilling fluids, Thermal drills, Ice coring drills, Antarctica.
Preliminary results of studying ice cores obtained from a 900-meter borehole at Vostok Station are described and discussed. They include ice-density measurements, petrographic and crystallographic analyses, caliper logging, thermometry, microbiology and micropaleontology of ice, thermophysical and isotope investigations. A special thermo-electric assembly was designed for dry drilling under specific Antarctic conditions. Research is continued on the use of antifreologic fluids in attempts to drill down to the ice bottom.

36-1067
Radar-echo sounding of West Spitsbergen glaciers in 1974. [Nekotorye rezul'taty radiolokatsionnogo zondirovaniia lednikov Zapadnogo Shpitsbergena v 1974 g.].
Macheret, Iu.IA., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, July 1975, Vol.26, p.158-164, In Russian with English summary. 11 refs.
Mountain glaciers, Glacier surveys, Radar echoes, Glacier ice, Ice cover thickness, Glacier beds, Bottom topography.

36-1068
Mechanics of heavy snowstorms and studies of snowstorm regimes in mountains. [Mekhanika sil'nykh metelei i osobennosti issledovaniia metelevogo rezhima v gorakh].
Diunin, A.K., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, July 1975, Vol.26, p.165-171, In Russian with English summary. 9 refs.
Snowstorms, Snow mechanics, Snow transfer, Snow surveys, Mountains, Wind factors.

36-1069
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Komarov, A.A., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, July 1975, Vol.26, p.172-178, In Russian with English summary. 17 refs.
Al'tshuler, Z.E.
Mountains, Snow transfer, Snow accumulation, Snowfall, Wind factors.

36-1070
Theoretical model of snow deposition on leeward slopes. [Teoreticheskaia model' snezhnykh otlozhenii *na gornom podvetrennom sklone*].
Matvienko, V.S., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, July 1975, Vol.26, p.179-183, In Russian with English summary. 3 refs.
Alpine landscapes, Slope orientation, Snow cover distribution, Wind factors, Mathematical models.

36-1071
Methods of determining optimal number of snow-survey points for forecasting discharges of mountain rivers. [Metodika opredeleniia optimal'nogo nabora snegopunktov dlia prognozov stoka gornykh rek].
Getker, M.I., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, July 1975, Vol.26, p.184-193, In Russian with English summary. 6 refs.
Shentsis, I.D.
Alpine landscapes, Glacial hydrology, Snow surveys, Snow cover distribution, Mountain glaciers, Glacial rivers.

36-1072
Improving snow measurements in mountains for hydrologic forecasts. [Sovershenstvovanie izmerenii snezhnogo pokrova v gorakh dlia gidroprognozov].
Borovikova, L.N., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, July 1975, Vol.26, p.193-202, In Russian with English summary. 6 refs.
Konovalov, V.G.
Snow surveys, Snow water equivalent, Glacial hydrology, Runoff.

36-1073
Calculating the part of solid, liquid and mixed precipitation in the monthly norm. [Sposob rascheta doli tverdykh, zhidkikh i smeshannykh osadkov v ikh mesiachnoi norme].
Bogdanova, E.G., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, July 1975, Vol.26, p.202-207, In Russian with English summary. 6 refs.
Water supply, Snow water equivalent, Snowfall, Air temperature.

36-1074
Distribution of solid precipitation over the Globe. [Raspredelenie tverdykh osadkov po zemnomu sharu].
Bogdanova, E.G., et al. *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia.* July 1975, Vol.26, p.207-212. In Russian with English summary. 10 refs.
Sokolova, G.P.
Snowfall, Snow accumulation, Snow depth, Snow cover distribution, Charts.

36-1075
Kharacteristics of heavy snowfalls. [Kharakteristiki sil'nykh snegopadov].
Lipovskaia, V.I., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia.* July 1975, Vol.26, p.212-216. In Russian with English summary. 12 refs.
Snowfall, Snow accumulation, Meteorological data, Statistical analysis.

36-1076
Using satellite information in studying snow melting dynamics. [Primenenie sputnikovoi informatsii v izuchenii dinamiki snegotaianiia].
Deleur, M.S., et al. *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia.* July 1975, Vol.26, p.216-221. In Russian with English summary. 9 refs.
Babkina, L.P., Pankratova, E.I.
Snow surveys, Remote sensing, Airborne equipment, Snow melting, Snow line, Mapping, Radar photography.

36-1077
Large scale mapping of snow reserves from aerial survey data. [Printsipy krupnomasshtabnogo kartirovaniia snegozapasov na osnove aerofotos"emok].
Shcheglova, O.P., et al. *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia.* July 1975, Vol.26, p.221-226. In Russian with English summary. 14 refs.
Gapishko, V.G.
Snow surveys, Aerial surveys, Snow cover distribution, Mapping.

36-1078
Snow cover distribution in the high altitude zone of ranges adjacent to the Issyk-Kul' basin. [Raspredelenie snezhnogo pokrova v vysokogornoi zone khrebtov[redacted] prilegaiushchikh k Issyk-Kul'skoi kotlovine].
Dikikh, A.N., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia.* July 1975, Vol.26, p.226-229. In Russian with English summary. 8 refs.
Alpine landscapes, Snow cover distribution, Snow surveys, Slope orientation, Snow density, Snow evaporation, Snow cover structure.

36-1079
Snow cover transformation and evaporation in relation to microclimatic conditions of the valley slopes and bottom. [Osobennosti ispareniia i transformatsii snezhnogo pokrova v zavisimosti ot mikroklimaticheskikh uslovii sklonov i dna doliny].
Kuvaeva, G.M., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia.* July 1975, Vol.26, p.229-239. In Russian with English summary. 18 refs.
Alpine landscapes, Valleys, Slopes, Snow cover distribution, Metamorphism (snow), Microclimatology, Snow evaporation, Topographic effects.

36-1080
Accuracy of measuring snow reserves on mountain glaciers. [O tochnosti izmereniia snegozapasov na gornykh lednikakh].
Emel'ianov, IU.N., et al. *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia.* July 1975, Vol.26, p.239-245. In Russian with English summary. 1 ref.
Zhidkov, V.A., Nozdriukhin, V.K.
Mountain glaciers, Snow surveys, Water reserves, Snow water equivalent.

36-1081
Erroneous concepts on temperatures in glacier ice. [Oshibochnye predstavleniia o temperaturakh v tolshche lednikov].
Krass, M.S., et al. *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia.* July 1975, Vol.26, p.246-253. In Russian.
Shumskii, P.A.
Glacier ice, Ice temperature, Mathematical models, Heat transfer.

36-1082
Comments on "Erroneous ideas about temperatures in glacier ice". [Po povodu oshibochnykh predstavlenii o temperaturakh v tolshche lednikov].
Zotikov, I.A., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia.* July 1975, Vol.26, p.253-254. In Russian with English summary. 5 refs.
Glacier ice, Glacier surges, Ice temperature, Heat transfer.

36-1083
New way of calculating deformation rates in glacier ice. [O novom metode rascheta skorostei deformatsii v lednikakh].
Shumskii, P.A., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia.* July 1975, Vol.26, p.254-257. In Russian. 2 refs.
Glacier ice, Stresses, Deformation.

36-1084
More on the new method of calculating deformation rates in glacier ice. [Eshche raz o novom metode rascheta skorostei deformatsii v lednikakh].
Vinogradov, O.N., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia.* July 1975, Vol.26, p.257-259. In Russian with English summary. 4 refs.
Garelik, I.S.
Glacier ice, Stresses, Deformation.

36-1085
Comments on the article by P.S. Shpin', G.S. Avraamov and V.P. Avraamova "On the possibilities of using the apparatus of the energy distribution model in analyzing and forecasting the state and regime of glaciers". [Retsenziia na stat'iu P.S. Shpinia, I.S. Avraamova i V.P. Avraamovoi "O vozmozhnosti primeneniia apparata energeticheskoi modeli razrusheniia dlia analiza i prognozirovaniia sostoianiia i rezhima lednikov"].
Denisov, IU.M., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia.* July 1975, Vol.26, p.259-261. In Russian. 4 refs.
Kotliakov, V.M., Glazyrin, G.E., Krenke, A.N.
Glacier ice, Ablation, Ice surface, Heat balance, Mathematical models.

36-1086
Annotated list of Soviet literature on glaciology for 1973. [Annotirovannyi spisok sovetskoi literatury po gliatsiologii za 1973 god].
Kotliakov, V.M., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia.* July 1975, Vol.26, p.262-325. In Russian. 586 refs.
Lapina, I.IA., Chernova, L.P.
Glaciology, Bibliographies.

36-1087
Geomorphology and permafrost conditions of Garry Island, N.W.T.
Kerfoot, D.E., Vancouver, University of British Columbia, 1970, 308p. + figs., Canadian theses on microfilm, No.5819, Ph.D. thesis. Refs. p.299-304.
Geomorphology, Permafrost thermal properties, Tundra, Vegetation, Active layer, Patterned ground, Ground ice, Soil temperature, Shoreline modification, Ocean waves, Mudflows, Erosion, Canada—Northwest Territories—Garry Island.

36-1088
Sea ice, winter convection, and the temperature minimum layer in the Southern Ocean.
Toole, J.M., *Journal of geophysical research*, Sep. 20, 1981, 86(9), p.8037-8047, 40 refs.
Sea ice, Water temperature, Heat transfer, Ice models, Mathematical models.
The structure of the near surface waters in the Southern Ocean, poleward of the Antarctic Polar Front but away from continental margins, is investigated with a three-dimensional time-dependent numerical model which resolves the annual sea ice cycle. The growth and decay of the ice field is predicted, using an earlier thermodynamic ice model, in terms of specified atmospheric data and computed thermohaline characteristics of the ocean layers. The model treats the temperature minimum layer in the Southern Ocean as the remnant of a deep winter mixed layer which becomes capped by surface heating and precipitation in summer. The predicted thermohaline characteristics of the temperature minimum layer and the surface mixed layer are in good agreement with observations. Finally, the annual air-sea heat exchange predicted by the model is discussed. (Auth. mod.)

36-1089
Modeling of anisotropic electromagnetic reflections from sea ice.
Golden, K.M., et al, *Journal of geophysical research*, Sep. 20, 1981, 86(C9), MP 1469, p.8107-8116, 17 refs.
Ackley, S.F.
Sea ice, Ice salinity, Electromagnetic properties, Anisotropy.
The contribution of brine layers to observed reflective anisotropy of sea ice at 2100 MHz is quantitatively assessed, and a theoretical explanation for observed reflective anisotropy is proposed in terms of anisotropic electric flux penetration into the brine layers. The sea ice is assumed to be a stratified dielectric consisting of prue ice containing ellipsoidal conducting inclusions (brine layers) uniformly aligned with their long axes perpendicular to the preferred crystallographic *c* axis direction. The asymmetrical geometry of the brine layers is shown to produce an anisotropy in the complex dielectric constant of sea ice. The contribution of these layers to the reflective anisotropy is examined with a numerical method of approximating the reflected power of a radar pulse incident on a slab of sea ice. (Auth. mod.)

36-1090
Estimating surface wind direction over drifting open pack ice.
Feldman, U., et al, *Journal of geophysical research*, Sep. 20, 1981, 86(C9), p.8117-8120, 36 refs.
Howarth, P.J., Davies, J.A.
Wind direction, Pack ice.

36-1091
Numerical-graphic method c calculating temperatures at the filter-dam abutment to the frozen side of the river valley. [Chislenno-graficheskii metod temperaturnogo rascheta primykaniia fil'truiushchei plotiny k merzlomu bortu rechnoi doliny].
Bitiurin, A.K., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1981, Vol.8, p.89-92. In Russian. 4 refs.
Gorokhov, E.N.
Earth dams, Permafrost beneath structures, Thermal regime, Design.

36-1092
Determining elasticity modulus and viscosity coefficient of ice cover from field data. [Opredelenie modulia uprugosti i koeffitsienta viazkosti ledianogo pokrova po dannym naturnykh issledovanii].
[Akunin, A.E., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1981, Vol.8, p.92-97. In Russian. 5 refs.
Ice physics, Viscoelasticity, Ice thermal properties.

36-1093
Classification of frozen grounds according to abrasive properties. [Klassifikatsiia merzlykh gruntov po iznashivaiushchei sposobnosti].
Leshchiner, V.B., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1981, Vol.8, p.123-127. In Russian. 6 refs.
Kravchenko, S.M.
Frozen ground strength, Earthwork, Excavation, Equipment, Abrasion, Classifications.

36-1094
Engineering-geological problems of protecting geological environment. [Inzhenerno-geologicheskie problemy okhrany okruzhaiushchei geologicheskoi sredy].
Osipov, IU.B., et al, *Itogi nauki i tekhniki. Seriia Gidrogeologiia. Inzhenernaia geologiia*, 1980, Vol.7, 96p., In Russian with English table of contents enclosed. 115 refs.
Alpine landscapes, Glaciation, Geocryology, Glacial hydrology, Periglacial processes, Cryogenic soils, Slope processes, Solifluction, Soil erosion, Human factors, Water pollution, Environmental protection, Permafrost thermal properties, Land reclamation.

36-1095
Thermos method of curing concrete in freezing weather. [Osobennosti "termosnogo" vyderzhivaniia betona pri proizvodstve rabot v zimnikh usloviiakh].
Osipov, IU.K., et al, *Moscow. Inzhenerno-stroitel'nyi institut. Sbornik trudov*, 1978, No.167, p.24-35. In Russian. 7 refs.
Kopylov, V.D.
Winter concreting, Concrete placing, Reinforced concretes, Concrete strength.

36-1096
Equipment with thermomechanical digging tools for hard ground. (Razrabotka prochnykh gruntov mashinami s termomekhanicheskimi rabochimi organami).
Chechenkov, M.S., *Moscow. Inzhenerno-stroitel'nyi institut. Sbornik trudov*, 1978, No.167, p.153-158. In Russian.
Earthwork, Thermal drills, Excavation, Frozen ground.

36-1097
Snow cover dynamics in non-homogeneous physiographic types of terrain. (Dinamika snezhnogo pokrova v neodnorodnykh fiziko-geograficheskikh tipakh mestnosti).
Kobzistyi, P.I., et al. *Fizicheskaia geografiia i geomorfologiia*, 1978, Vol.20, p.139-143. In Russian with English summary. 5 refs.
Shcherban', I.M.
DLC GI.F56
Landscape types, Snow surveys, Snow transfer, Snow accumulation, Snow cover distribution, Snow stratigraphy.

36-1098
Road construction manual for engineers. (Stroitel'stvo avtomobil'nykh dorog. Spravochnik inzhenera-dorozhnika).
Bochin, V.A., ed. Moscow, Transport, 1980, 511p. In Russian with abridged English table of contents enclosed. 66 refs.
DLC TE151.S83
Manuals, Standards, Roads, Pavements, Roadbeds, Foundations, Hydraulic structures, Bridges, Culverts, *Soil stabilization, Permafrost beneath structures*, Earthwork, Construction equipment, Construction materials.

36-1099
Geothermal conditions in the sedimentary cover of the Siberian Platform.
Slavin, V.I., et al. *International geology review*, Sep 1981, 23(9), p.1058-1066, 11 refs. For Russian original see 35-1570.
Tychino, N.IA., Boboshina, O.A.
Polar regions, Permafrost distribution, Permafrost depth, Frozen rock temperature, Geothermy.

36-1100
Problems of thematic mapping. Scientific-technical conference on cartography, 3rd, Irkutsk, Jan.30-Feb.2, 1968. (Voprosy tematicheskogo kartografirovaniia).
Nauchno-tekhnicheskaia konferentsiia po kartografii, 3rd, Irkutsk, Jan.30-Feb.2, 1968, Irkutsk, 1968, 181p., In Russian. For selected papers see 36-1101 through 36-1111.
DLC GA108.N3 1968
Permafrost distribution, Landscape types, Cryogenic soils, Taiga, Tundra, Swamps, Geocryology, Geological maps, Snow cover distribution, Aerial surveys, Photointerpretation, Stereophotography.

36-1101
Using the map of taiga landscapes in western Siberia for analyzing and mapping some hydrologic phenomena. (Ispol'zovanie karty tipov mestnosti taigi Zapadnoi Sibiri pri analize i kartografirovanii nekotorykh gidrologicheskikh iavlenii).
Burakov, D.A., et al. Nauchno-tekhnicheskaia konferentsiia po kartografii, 3rd, Irkutsk, Jan. 30-Feb. 2, 1968. Voprosy tematicheskogo kartografirovaniia (Scientific-technical conference on cartography, 3rd, Irkutsk, Jan.30-Feb. 2, 1968, Problems of thematic mapping) edited by B.A. Bogoiavlenskii, Irkutsk, 1968, p.13-15, In Russian.
Bulatov, V.I.
DLC GA108.N3 1968
Taiga, Landscape types, Paludification, Mapping, Snow cover distribution, Floods.

36-1102
Map of swamps in the Tyumen' region atlas. (Karta bolot v atlase Tiumenskoi oblasti).
Shumilova, L.V., Nauchno-tekhnicheskaia konferentsiia po kartografii, 3rd, Irkutsk, Jan.30-Feb.2, 1968. Voprosy tematicheskogo kartografirovaniia (Scientific-technical conference on cartography, 3rd, Irkutsk, Jan.30-Feb.2, 1968, Problems of thematic mapping) edited by B.A. Bogoiavlenskii, Irkutsk, 1968, p.17-19, In Russian.
DLC GA108.N3 1968
Swamps, Cryogenic soils, Maps, Geocryology, Permafrost distribution, Landscape types, Polar regions, USSR—Tyumen'.

36-1103
Large scale mapping of different swamp types in the Irkutsk region. (Tipologicheskaia kharakteristika bolot Irkutskoi oblasti dlia krupnomasshtabnogo kartografirovaniia).
Liakhova, I.G., et al. Nauchno-tekhnicheskaia konferentsiia po kartografii, 3rd, Irkutsk, Jan.30-Feb.2, 1968. Voprosy tematicheskogo kartografirovaniia (Scientific-technical conference on cartography, 3rd, Irkutsk, Jan.30-Feb.2, 1968, Problems of thematic mapping) edited by B.A. Bogoiavlenskii, Irkutsk, 1968, p.19-21, In Russian.
Malomyzheva, T.V.
DLC GA108.N3 1968
Swamps, Landscape types, Cryogenic soils, Peat, Mapping, USSR—Irkutsk.

36-1104
Large scale geomorphologic and geocryologic mapping. (Krupnomasshtabnoe kriogeomorfologicheskoe kartirovanie).
Liubimov, B.P., et al. Nauchno-tekhnicheskaia konferentsiia po kartografii, 3rd, Irkutsk, Jan.30-Feb.2, 1968. Voprosy tematicheskogo kartografirovaniia (Scientific-technical conference on cartography, 3rd, Irkutsk, Jan.30-Feb.2, 1968, Problems of thematic mapping) edited by B.A. Bogoiavlenskii, Irkutsk, 1968, p.22-24, In Russian.
Mudrov, IU.V.
DLC GA108.N3 1968
Geological maps, Geomorphology, Frost weathering, Geocryology, Permafrost distribution, Permafrost structure, Ground ice, Tundra.

36-1105
Methods of compiling small scale engineering-geological maps of lowlands with a wide development of permafrost. (K voprosu o metodike sostavleniia melkomasshtabnykh inzhenerno-geologicheskikh kart ravninnykh territorii s shirokim razvitiem mnogoletnemerzlykh porod).
Trofimov, V.T., Nauchno-tekhnicheskaia konferentsiia po kartografii, 3rd, Irkutsk, Jan.30-Feb.2, 1968. Voprosy tematicheskogo kartografirovaniia (Scientific-technical conference on cartography, 3rd, Irkutsk, Jan.30-Feb.2, 1968, Problems of thematic mapping) edited by B.A. Bogoiavlenskii, Irkutsk, 1968, p.24-25, In Russian.
DLC GA108.N3 1968
Geocryology, Permafrost distribution, Permafrost structure, Mapping, Geological maps.

36-1106
Compiling small scale geocryologic map of plains with a wide development of Quaternary deposit (exemplified by the northern part of the west Siberian lowland). (Opyt sostavleniia melkomasshtabnoi karty ravninnykh territorii s shirokim razvitiem chetvertichnykh otlozhenii (na primere severa Zapadno-Sibirskoi nizmennosti)).
Gruzdov, A.V., et al. Nauchno-tekhnicheskaia konferentsiia po kartografii, 3rd, Irkutsk, Jan.30-Feb.2, 1968. Voprosy tematicheskogo kartografirovaniia (Scientific-technical conference on cartography, 3rd, Irkutsk, Jan.30-Feb.2, 1968, Problems of thematic mapping) edited by B.A. Bogoiavlenskii, Irkutsk, 1968, p.25-27, In Russian.
Trofimov, V.T.
DLC GA108.N3 1968
Geocryology, Geological maps, Permafrost distribution, Aerial surveys, Permafrost structure, Mapping.

36-1107
Large scale geocryologic mapping of mountain taiga areas in southern Yakutia on the landscape basis. (Krupnomasshtabnoe geokriologicheskoe kartirovanie gorno-taezhnykh raionov IUzhnoi IAkutii na landshaftnoi osnovei).
Alekseev, V.R., Nauchno-tekhnicheskaia konferentsiia po kartografii, 3rd, Irkutsk, Jan.30-Feb.2, 1968. Voprosy tematicheskogo kartografirovaniia (Scientific-technical conference on cartography, 3rd, Irkutsk, Jan.30-Feb.2, 1968, Problems of thematic mapping) edited by B.A. Bogoiavlenskii, Irkutsk, 1968, p.28-29, In Russian.
DLC GA108.N3 1968
Landscape types, Taiga, Permafrost distribution, Active layer, Cryogenic soils, Maps.

36-1108
Principles of editing large scale topographic maps of *mountain taiga*. (Osnovnye printsipy geograficheskogo redaktirovaniia krupnomasshtabnykh topograficheskikh kart gorno-taezhnykh territorii).
Plastinin, I.V., Nauchno-tekhnicheskaia konferentsiia po kartografii, 3rd, Irkutsk, Jan.30-Feb.2, 1968. Voprosy tematicheskogo kartografirovaniia (Scientific-technical conference on cartography, 3rd, Irkutsk, Jan.30-Feb.2, 1968, Problems of thematic mapping) edited by B.A. Bogoiavlenskii, Irkutsk, 1968, p.136-139, In Russian.
DLC GA108.N3 1968
Taiga, Aerial surveys, Landscape types, Photointerpretation, Mapping.

36-1109
Landscape regionalization of paluded taiga in the west Siberian plain for topographic studies. (Printsipy landshaftnogo raionirovaniia taezhnykh zabolochennykh raionov Zapadno-Sibirskoi nizmennosti dlia redaktsionno-topograficheskikh rabot).
Sudakova, S.S., et al. Nauchno-tekhnicheskaia konferentsiia po kartografii, 3rd, Irkutsk, Jan.30-Feb.2, 1968. Voprosy tematicheskogo kartografirovaniia (Scientific-technical conference on cartography, 3rd, Irkutsk, Jan.30-Feb.2, 1968, Problems of thematic mapping) edited by B.A. Bogoiavlenskii, Irkutsk, 1968, p.139-141, In Russian.
Tolstoukhov, A.S.
DLC GA108.N3 1968
Taiga, Paludification, Landscape types, Mapping.

36-1110
Using aerial photographs (scale 1:50 000) for topographic interpretation in compiling stereotopographic maps (*scale 1:25 000*) of forest lands in Siberia and the Far East. (O primenenii aerosnimkov masshtaba 1:50 000 dlia topograficheskogo deshifrirovaniia pri sozdanii kart masshtaba 1:25 000 stereotopograficheskim metodom na zalesennykh raiony Sibiri i Dal'nego Vostoka).
Kosmakova, O.P., et al. Nauchno-tekhnicheskaia konferentsiia po kartografii, 3rd, Irkutsk, Jan.30-Feb.2, 1968. Voprosy tematicheskogo kartografirovaniia (Scientific-technical conference on cartography, 3rd, Irkutsk, Jan.30-Feb.2, 1968, Problems of thematic mapping) edited by B.A. Bogoiavlenskii, Irkutsk, 1968, p.143-146, In Russian.
Shul'min, M.V.
DLC GA108.N3 1968
Forest land, Aerial surveys, Photointerpretation, Stereophotography.

36-1111
Western Siberia from an airplane (aerial reconnaissance for small scale mapping of western Siberia). (Zapadnaia Sibir' s samoleta (aerovizual'noe obsledovanie dlia obespecheniia melkomasshtabnogo kartografirovaniia Zapadnoi Sibiri)).
Bogoiavlenskii, B.A., et al. Nauchno-tekhnicheskaia konferentsiia po kartografii, 3rd, Irkutsk, Jan.30-Feb.2, 1968. Voprosy tematicheskogo kartografirovaniia (Scientific-technical conference on cartography, 3rd, Irkutsk, Jan.30-Feb.2, 1968, Problems of thematic mapping) edited by B.A. Bogoiavlenskii, Irkutsk, 1968, p.146-148, In Russian.
DLC GA108.N3 1968
Taiga, Mapping, Aerial surveys.

36-1112
National icing facilities requirements investigation.
Taylor, F.R., et al. *U.S. Federal Aviation Administration, Technical Center Report*, June 1981, FAA-CT-81-35, Var. p., ADA-102 520, 31 refs.
Adams, R.J.
Aircraft icing, Runways, Icing, Research projects, Laboratories, Ice formation, Wind tunnels, Meteorological factors, Legislation, Tests, Facilities.

36-1113
Dynamic response of bridge piers to ice forces.
Gordon, E.W., et al. *Alberta University, Edmonton. Department of Civil Engineering. Structural engineering report*, Apr 1981, No.96, 224p., Refs. p.84-88.
Montgomery, C.J.
Bridges, Piers, Ice loads, Ice mechanics, Ice cover strength, Dynamic properties, Ice pressure, Design.

36-1114
Pothole primer—a public administrator's guide to understanding and managing the pothole problem.
Eaton, R.A., et al. *U.S. Army Cold Regions Research and Engineering Laboratory*, Sep 1981, SR-81-24, 24p., ADA-107 294, 11 refs.
Joubert, R.H., Wright, E.A.
Pavements, Defects, Road maintenance, Freeze thaw cycles, Damage, Fatigue, Cavities.

36-1115
Rate of progressive deterioration on Colorado highways.
Hutter, W., et al. *Colorado Department of Highways. Division of Transportation Planning. Report.* Apr. 1978. CDH-DTP-R-78-4, 86p., 9 refs.
Donnelly, D.F.
Road maintenance, Pavements, Damage, Freeze thaw cycles, Design, Altitude.

36-1116
Solar design manual for Alaska.
Seifert, R.D., *Alaska. University. Institute of Water Resources. Bulletin.* July 1981, Vol.1, 163p., 25 refs.
Solar energy, Heating, Heat loss, Thermal insulation, United States—Alaska.

36-1117
No respite in county airport operations. *Public works.* Feb. 1981, 112(2), p.78-79.
Snow removal, Runways, Equipment, Aircraft landing areas.

36-1118
Comparison of models for forecasting snowmelt runoff volumes.
Hawley, M.E., et al. *Water resources bulletin.* Oct. 1980, 16(5), p.914-920, 8 refs.
McCuen, R.H., Rango, A.
Runoff, Snowmelt, Forecasting, Volume, Mathematical models.

36-1119
New method for sampling snow melt and rainfall in forests.
Helvey, J.D., et al. *Water resources bulletin.* Oct. 1980, 16(5), p.938-940, 7 refs.
Fowler, W.B.
Snowmelt, Sampling, Precipitation gages, Forest land, Snow samplers, Mountains, Rain.

36-1120
Morphology, hydrology and hydrochemistry of karst in permafrost terrain near Great Bear Lake, Northwest Territories.
Van Everdingen, R.O., *National Hydrology Research Institute, Ottawa, Canada. Paper.* 1981, No.11, Inland Waters Directorate, IWD scientific series No.114, 53p. + maps. With French summary. 47 refs.
Karst, Hydrology, Permafrost hydrology, Geomorphology, Water chemistry, Ground water, Ions, Canada—Northwest Territories—Great Bear Lake.

36-1121
High-luminance road surfaces.
Thurmann-Moe, T., et al. *U.S. Army Cold Regions Research and Engineering Laboratory.* Dec. 1980, TL 765, 18p., Translated from Norway. Veglaboratoriet. Meddelelser, June 1980, No.52. 14 refs.
Dorum, S.
Roads, Surface properties, Luminance, Optical properties, Visibility, Weathering, Tests.
The road surface is an important factor for the visibility conditions of night driving. The most important characteristics are the structure and the luminosity of the surface. These characteristics have been proven to have major significance for visual guidance, recognition of obstacles, and glare. In order to obtain maximum effect, the luminosity of the road surface must be produced by the particles protruding up from the surface, i.e. the coarsest portion of the aggregates. The usefulness is determined by the durability, the resistance to weathering, and the degree of luminosity. Quartzites have the best wear properties and anorthosites are lighter in color. The field tests have confirmed the positive effect of a light-colored road surface or a light-colored shoulder on the recognition of obstacles on the road. The tests have also shown satisfactory wear characteristics of those light-colored aggregates that had been selected on the basis of laboratory testing.

36-1122
Limnological investigations: Lake Koocanusa, Montana. Pt. 5: Phosphorus chemistry of sediments.
Isaacson, H.R., et al. *U.S. Army Cold Regions Research and Engineering Laboratory.* July 1981, SR 81-15, 9p., AD A107 049, 13 refs.
Shukla, S.S.
Limnology, Lacustrine deposits, Chemical composition, Bottom sediment.
This study characterizes the sediments from Lake Koocanusa (Libby Dam reservoir), Montana, in terms of their ability to sorb and release P. Sediment samples were collected at 12 stations located between the U.S.-Canadian border and Libby Dam (42 miles downstream of the border) during July 1977. The sediments from Lake Koocanusa are calcareous, low in organic matter (< 2.3%), and have a silty loam or loam texture. Most of the P associated with these sediments was in the inorganic form (> 85%), which was highly correlated ($r = 0.89$) with oxalate extractable Fe in the sediment. Sorption tests, with concentrations of either 1 or 10 mg P/g sediments, showed that these sediments have limited ability to sorb additional P from concentrated solutions. The maximum amount sorbed at the lower P concentrations was 67% of the added P and was highly correlated with oxalate extractable Fe in the sediments. Desorption studies showed that very small amounts of both the originally bound P (1 to 2%) and the added P (< 6.3%) were released. Conclusion: the sediments in Lake Koocanusa act as a P sink.

36-1123
Integral transform method for the linearized Boussinesq groundwater flow equation.
Daly, C.J., et al. *Water resources research.* Aug. 1981, 17(4), MP 1470, p.875-884, 10 refs.
Morel-Seytoux, H.J.
Ground water, Water flow, Mathematical models, Soil water.
An analytical procedure is developed for the determination of potentiometric head in nonhomogeneous aquifers. Both steady and unsteady flow conditions are considered. The analytical procedure is based upon the use of orthogonal functions. It consists essentially of assuming an appropriate orthogonal series for both the aquifer properties and the unknown potentiometric head. The technique is applied to several one- and two-dimensional flow problems where conditions are described by the linearized Boussinesq equation. The result of the analysis is the expression of potentiometric heads in analytic form. Subsequent use of Darcy's law yields accurate, analytic equations for the associated velocity fields. Such representations of the flow field are a potential benefit for prediction of mass transport in groundwater since velocity is known as a continuous function of space and time. Other useful features of the orthogonal series approach include its straightforward application. The approach is also shown to eliminate the introduction of discretization errors associated with the use of node systems which are required by many alternative numerical methods.

36-1124
Ice effects on bridges. Ottawa, Roads and Transportation Association of Canada, 1981, 123p., Refs. p.117-123.
Bridges, Ice solid interface, Piers, Pile load tests, Ice loads, Ice pressure, Ice mechanics, Damage, River ice, Lake ice, Ice cover thickness, Ice cover strength, Design.

36-1125
Water resources appraisals for hydroelectric licensing; Alaska river basins, Alaska. *U.S. Federal Energy Regulatory Commission. Office of Electric Power Regulation. Planning status report.* Jan. 1981, FERC-0068, 32p. + 3 maps, Originally issued 1967; revised January 1981.
River basins, Water reserves, Hydrology, Electric power, Legislation, United States—Alaska.

36-1126
Production strategies in antarctic inland waters: phytoplankton eco-physiology in a permanently ice-covered lake.
Vincent, W.F., *Ecology.* Oct. 1981, 62(5), p.1215-1224, 37 refs.
Limnology, Plankton, Lake ice, Ice cover effect, Antarctica—Fryxell, Lake.
Three distinct population strategies were observed within the summer algal plankton of Lake Fryxell. Phytoplankton immediately under the ice were adapted to relatively bright light but were limited by nitrogen availability. Net population increases in both the upper and lower euphotic communities occurred very early in the season. Flagellated algae in the middle of the oxygenated water column swam up to depths of greater light during the day and returned to lower depths of greater nutrient supply at night. These mid-euphotic populations continued to grow throughout midsummer. Comparisons with other Dry Valley lakes suggest that nutrient supply, rather than in situ light or temperature, determines the large lake-to-lake and depth variations in primary productivity. Nutrient availability appears to control algal biomass, but in contrast to arctic ecosystems, low light rather than low temperature dampens algal photosynthesis to cellular rates that are well below those recorded at lower latitudes. (Auth. mod.)

36-1127
Fracture mechanical models of dry slab avalanche release.
McClung, D.M., *Journal of geophysical research.* Nov. 10, 1981, 86(B11), p.10783-10790, 35 refs.
Snow mechanics, Avalanche mechanics, Avalanche modeling, Shear strain.

36-1128
Oceanic CO2 produced by the precipitation of CaCO3 from brines in sea ice.
Jones, E.P., et al. *Journal of geophysical research.* Nov. 20, 1981, 86(C11), p.11041-11043, 20 refs.
Coote, A.R.
Sea ice, Brines, Water chemistry.
Carbon dioxide is produced in brines formed during the growth of sea ice as a result of preferential precipitation of calcium carbonate. This process can explain the observed CO2 supersaturation in some arctic waters and could produce a CO2 flux into the ocean in ice-covered waters of 1.5 mol m^{-2} yr^{-1} or a total of 6 billion mol yr^{-1} for both the arctic and antarctic regions. (Auth.)

36-1129
On the dynamics of ice sheets.
Hallet, B., *Journal of geophysical research.* Nov. 20, 1981, 86(C11), p.10869-10872, 15 refs.
Ice sheets, Ice mechanics, Ice models.
A similarity solution of the equation that describes the time evolution of an ice sheet is obtained by separation of variables. It describes the motion of an initial delta function ice sheet distribution and is asymptotically stable with respect to all perturbations that leave the total volume invariant. Homogeneity in one horizontal direction is assumed. (Auth.)

36-1130
Sea ice displacement from SEASAT synthetic aperture radar.
Hall, R.T., et al. *Journal of geophysical research.* Nov. 20, 1981, 86(C11), p.11078-11082, 7 refs.
Rothrock, D.A.
Sea ice, Drift, Remote sensing, Radar echoes.

36-1131
Static electrical conductivity as an indicator of the sulfate content of polar ice cores.
Maccagnan, M., et al. *Geophysical research letters.* Sep. 1981, 8(9), p.970-972, 17 refs.
Barnola, J.M., Delmas, R., Duval, P.
Ice cores, Ice electrical properties.
Past atmospheric sulfate content is probably recorded in polar snow and ice. A simple method based on electrical conductivity measurements on ice cores has been proposed recently to easily detect atmospheric sulfate changes caused by violent volcanic eruptions in the past. It is shown that this method is particularly useful when used in central polar areas but that its application must be done carefully when analyzing coastal or bedrock ices for which aging effects are able to seriously disturb their electrical properties. Cores from Dome C were used in the measurements for sulfate content. (Auth. mod.)

36-1132
Satellite information as data source for mapping natural resources. (Aerokosmicheskaia informatsiia kak istochnik resursnogo kartografirovaniia).
Plastinin, L.A., ed. Irkutsk, 1979, 150p. In Russian. For selected papers see 36-1133 through 36-1138. Refs. passim.
Belov, A.V., ed. Bogoiavlenskii, B.A., ed.
Spaceborne photography, Alpine landscapes, Mapping, Taiga, Swamps, Cryogenic soils, Snow cover distribution, Permafrost distribution, Slope processes, Snow accumulation, Avalanches.

36-1133
Using satellite data in landscape mapping of mountain taiga in the northern Lake Baykal area. (Ispol'zovanie kosmicheskoi informatsii pri landshaftnom kartografirovanii gornotaezhnykh territorii (na primere Severnogo Pribaikal'ia)).
Amelina, T.V., et al. Aerokosmicheskaia informatsiia kak istochnik resursnogo kartografirovaniia (Satellite information as a data source for mapping natural resources) edited by L.A. Plastinin, A.V. Belov and B.A. Bogoiavlenskii. Irkutsk, 1979, p.49-58. In Russian. 2 refs.
Amelin, A.V.
Spaceborne photography, Alpine landscapes, Taiga, Photointerpretation.

36-1134
Using satellite data in mapping soils of mountain-basin areas of northern Transbaikal. (Ispol'zovanie aerokosmicheskikh materialov pri kartirovanii pochv gorno-kotlovinnykh territorii Severnogo Zabaikal'ia).
Kaz'min, V.A., Aerokosmicheskaia informatsiia kak istochnik resursnogo kartografirovaniia (Satellite information as a data source for mapping natural resources) edited by L.A. Plastinin, A.V. Belov and B.A. Bogoiavlenskii. Irkutsk, 1979, p.59-78. In Russian. 7 refs.
Spaceborne photography, Cryogenic soils, Permafrost distribution, Mapping, Alpine landscapes.

36-1135
Using satellite information in complex thematic mapping of subarctic territories in the northeastern USSR. (Ispol'zovanie kosmicheskoi informatsii dlia kompleksnogo tematicheskogo kartografirovaniia subarkticheskikh territorii Severo-Vostoka SSSR).
Astakhova, A.V., et al. Aerokosmicheskaia informatsiia kak istochnik resursnogo kartografirovaniia (Satellite information as a data source for mapping natural resources) edited by L.A. Plastinin, A.V. Belov and B.A. Bogoiavlenskii. Irkutsk, 1979, p.88-98. In Russian. 7 refs.
Spaceborne photography, Subarctic landscapes, Mapping, Photointerpretation.

36-1136
Using satellite photographs in mapping snow avalanches in western Altai. [Ispol'zovanie materialov aerokosmicheskoi s"emki dlia kartografirovaniia snezhnykh lavin na primere Zapadnogo Altaia].
Kravtsova, V.I., et al. Aerokosmicheskaia informatsiia kak istochnik resursnogo kartografirovaniia (Satellite information as a data source for mapping natural resources) edited by L.A. Plastinin, A.V. Belov and B.A. Bogoiavlenskii. Irkutsk, 1979, p.99-124, In Russian. 10 refs.
Sokolova, O.A.
Spaceborne photography, Alpine landscapes, Slope processes, Avalanches, Maps.

36-1137
Aerial survey methods for studying and mapping glaciers in northern Transbaikal. [Aerometody v izuchenii i kartografirovanii lednikov Severnogo Zabaĭkal'ia].
Plastinin, L.A., et al. Aerokosmicheskaia informatsiia kak istochnik resursnogo kartografirovaniia (Satellite information as a data source for mapping natural resources) edited by L.A. Plastinin, A.V. Belov and B.A. Bogoiavlenskii. Irkutsk, 1979, p.125-135, In Russian. 4 refs.
Pliusnin, V.M.
Aerial surveys, Photointerpretation, Mapping, Glacier surfaces, Snow cover distribution, Moraines, Mountain glaciers.

36-1138
Application of aerial surveying methods to studies of slope processes in mountains of the Baykal Amur railroad area. [Opyt primeneniia aerometodov v izuchenii sklonovykh protsessov gornykh raionov BAM].
Pliusnin, V.M., Aerokosmicheskaia informatsiia kak istochnik resursnogo kartografirovaniia (Satellite information as a data source for mapping natural resources) edited by L.A. Plastinin, A.V. Belov and B.A. Bogoiavlenskii. Irkutsk, 1979, p.136-143, In Russian. 2 refs.
Aerial surveys, Mountains, Slope processes, Stereophotography, Photointerpretation, Permafrost distribution, Snow accumulation, Avalanches, Mudflows, Baykal Amur railroad, USSR—Kadar Range.

36-1139
Snow cover of southern Minusinsk Basin. [Snezhnyĭ pokrov iuga Minusinskoi kotloviny].
Grudinin, G.V., Novosibirsk, Nauka, 1981, 160p., In Russian with English table of contents enclosed. Refs. p.150-158.
Taiga, Steppes, Snow cover distribution, Snow accumulation, Snowstorms, Snow transfer, Snow evaporation, Ice sublimation, Snowmelt.

36-1140
Feasibility of heating ship's hull to prevent icing. [Ratsional'nost' primeneniia obogreva korpusa sudna dlia bor'by s obmerzaniem].
Roslik, I.A.F., et al. *Leningrad. Tsentral'nyi nauchno-issledovatel'skiĭ institut morskogo flota. Trudy*, 1980, Vol.260, p.49-54, In Russian. 5 refs.
Seliugin, N.G.
Ship icing, Ice adhesion, Ice accretion, Ice prevention, Heating.

36-1141
Continuous sagging of dams built in swampy areas of the Bam-Tynda line. [Dlitel'nye osadki nasypi na marevykh uchastkakh linii Bam-Tynda].
Minaĭlov, G.P., et al. *Transportnoe stroitel'stvo*, Oct. 1981, No.10, p.3-5, In Russian.
Guletskii, V.V.
Swamps, Railroads, Embankments, Permafrost beneath structures, Discontinuous permafrost, Frozen ground settling.

36-1142
Use of synthetic materials in hydraulic construction. [Primenenie sinteticheskikh materialov v gidrotekhnicheskom stroitel'stve].
Evgskii, R.V., *Transportnoe stroitel'stvo*, Oct. 1981, No.10, p.16-18, In Russian. 3 refs.
Hydraulic structures, Filters, Drains, Plastics, Frost resistance, Construction materials.

36-1143
Ecology. [Ekologiia].
Fedorov, V.D., et al. Moscow, Universitet, 1980, 464p., In Russian with English table of contents enclosed. Refs. p.410-433
Gil'manov, T.G.
Ecology, Theories, Terminology, Ecosystems, Tundra, Landscape types, Heat balance, Cryogenic soils, Biomass, Soil microbiology.

36-1144
Analysis of the influence of ice on spring phytoplankton population structure in the southeast Bering Sea.
Schandelmeier, L., et al, *Limnology and oceanography*, Sep. 1981, 26(5), p.935-943, 17 refs.
Alexander, V.
Plankton, Marine biology, Sea ice, Bering Sea.

36-1145
Summer ice and carbon dioxide.
Kukla, G., et al, *Science*, Oct. 30, 1981, 214(4520), p.497-503, Numerous refs.
Gavin, J.
Sea ice distribution, Ice volume, Atmospheric composition, Carbon dioxide.
The extent of Antarctic pack ice in the summer, as charted from satellite imagery, decreased by 2.5 million square kilometers between 1973 and 1980. The U.S. Navy and Russian atlases and whaling and research ship reports from the 1930's indicate that summer ice conditions earlier in this century were heavier than the current average. Surface air temperatures along the seasonally shifting belt of melting snow between 55 and 80 N during spring and summer were higher in 1974 to 1978 than in 1934 to 1938. The observed departures in the two hemispheres qualitatively agree with the predicted impact of an increase in atmospheric carbon dioxide. However, since it is not known to what extent the changes in snow and ice cover and in temperature can be explained by the natural variability of the climate system or by other processes unrelated to carbon dioxide, a cause-and-effect relation cannot yet be established. (Auth.)

36-1146
Problems in sea ice studies. [Voprosy morskogo ledovedeniia].
Volkov, N.A., ed. *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.372, 154p., In Russian. For individual papers see 36-1147 through 36-1165. Refs. passim.
Air water interactions, Ice formation, Ice conditions, Ice navigation, Icebreakers, Ice surveys, Ice forecasting, Ice salinity, Ice physics, Arctic Ocean.

36-1147
Interrelation between changes of water temperature in the northern Atlantic Ocean and the area of polar ice. [K voprosu o vzaimosviazi izmeneniĭ temperatury vody v Severno[illegible] Atlantike i ploshchadi poliarnykh l'dov].
Abramov, V.A., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.372, p.5-17, In Russian. 9 refs.
Zakharov, V.F.
Water temperature, Air water interactions, Ice formation, Ice conditions, Arctic Ocean.

36-1148
Long range anomalies of glacial and thermal inhomogeneities in the ocean and the state of atmospheric processes in the northern European basin. [Dlitel'nye anomalii ledovo-termicheskikh neodnorodnostei okeana i sostoianiia atmosfernykh protsessov v raione Severo-Evropeĭskogo basseĭna].
Lebedev, A.A., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.372, p.18-25, In Russian. 8 refs.
Ice conditions, Meteorological factors, Arctic Ocean.

36-1149
Long range changes in ice conditions of the polar Atlantic Ocean. [Mnogoletniaia izmenchivost' ledovykh uslovii v poliarnykh raionakh Atlanticheskogo okeana].
Lebedev, A.A., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.372, p.26-34, In Russian. 3 refs.
Polar regions, Ice conditions, Icebergs, Ice navigation, Ice forecasting, Atlantic Ocean.

36-1150
Space structure of ice cover in the Arctic Ocean and its seasonal variations. [Osobennosti prostranstvennoĭ struktury ledianogo pokrova Severnogo Ledovitogo okeana i ee sezonnaia izmenchivost'].
Borodachev, V.E., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.372, p.35-43, In Russian.
Volkov, N.A., Grishchenko, V.D.
Ice cover, Structural changes, Arctic Ocean.

36-1151
Automation of the search for optimal forecasting indices and the compilation of prognostic schemes. [Avtomatizatsiia poiska optimal'nykh predskazatelei i postroeniia prognosticheskikh skhem].
Kovalev, E.G., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut Trudy*, 1981, Vol.372, p.44-52, In Russian. 5 refs.
Nikolaev, IU.V., Priamikov, S.A.
Polar regions, Ice navigation, Ice forecasting, Computer applications, Arctic Ocean.

36-1152
Characteristics correlating ice condition anomalies in Arctic seas of the Atlantic Ocean region. [Obobshchaiushchie kharakteristiki anomalii ledovitosti morei priatlanticheskoĭ Arktiki].
Lebedev, A.A., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.372, p.53-62, In Russian. 2 refs.
Polar regions, Sea ice distribution, Ice conditions, Seasonal variations, Arctic Ocean.

36-1153
Possibility of long range forecasts of anomalous ice conditions in the Davis Strait. [O vozmozhnosti prognoza anomalii ledovitosti Devisova proliva s bol'shoĭ zablagovremennost'iu].
Mironov, E.U., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.372, p.63-68, In Russian. 6 refs.
Ice forecasting, Sea ice distribution, Ice conditions, Meteorological factors, Atmospheric circulation.

36-1154
Using mean-weighted criteria in forecasting leads beyond fast ice in the Chukchi Sea. [Ispol'zovanie srednevzveshennykh kriteriev dlia prognoza chukotskoĭ zapripainoĭ progaliny].
Arikainen, A.I., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.372, p.69-72, In Russian. 4 refs.
Sea ice distribution, Fast ice, Polynyas, Ice forecasting.

36-1155
Numerical model of fall-winter ice phenomena. [Chislennaia model' osenne-zimnikh ledovykh iavleniĭ].
Frolov, I.E., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.372, p.73-81, In Russian. 11 refs.
Sea ice distribution, Ice forecasting, Long range forecasting, Mathematical models, Polar regions.

36-1156
Modification of the MAS method for calculating redistribution of drifting ice. [O modifikatsii metoda MAS dlia rascheta pererasprede leniia l'da pri dreife].
Kheĭsin, D.E., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.372, p.82-89, In Russian. 10 refs.
Sea ice distribution, Drift, Pack ice, Ice forecasting.

36-1157
Formation of the Novosibirsk polynya beyond fast ice in winter. [Osobennosti formi[illegible]vaniia Novosibirskoi zapripainoĭ polyn'i v zimnii period].
Arikainen, A.I., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.372, p.90-105, In Russian. 17 refs.
Polar regions, Sea ice distribution, Fast ice, Snow cover distribution, Polynyas, Ice conditions, Meteorological factors.

36-1158
Shifting of ice edges and massive ice boundaries in Arctic seas during summer. [Smeshchenie kromok l'da i granits ledianykh massivov v arkticheskikh moriakh v letnii period].
Karelin, I.D., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.372, p.106-113, In Russian. 1 ref.
Ice surveys, Ice forecasting, Ice conditions, Drift, Ice edge, Arctic Ocean.

36-1159
Annual variations in ice exchange through Novosibirsk straits. [Mezhgodovye izmeneniia ledoobmena cherez Novosibirskie prolivy].
Gorbunov, IU.A., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.372, p.114-116, In Russian. 2 refs.
Karelin, I.D.
Ice surveys, Ice passing, Sea ice distribution, Drift, Ice volume, Arctic Ocean.

36-1160
Dependence of wind and isobaric coefficients of drift on ice packing. [Zavisimost' vetrovogo i izobaricheskogo koeffitsientov dreifa ot splochennosti l'da].
Nikolaeva, A.IA., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.372, p.117-122, In Russian. 4 refs.
Ice conditions, Drift, Pack ice, Ice forecasting, Meteorological factors, Arctic Ocean.

36-1161
Peculiarities of melting and accretion in submerged parts of Arctic Basin ice. [Nekotorye osobennosti taianiia i narastaniia podvodnoi chasti l'dov v Arkticheskom basseine].
Grishchenko, V.D., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.372, p.123-128, In Russian. 7 refs.
Underwater ice, Ice formation, Ice accretion, Ice melting, Arctic Ocean.

36-1162
Peculiarities of ice compression in Antarctica. [Osobennosti szhatiia l'da v Antarktike].
Voevodin, V.A., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.372, p.129-134, In Russian. 2 refs.
Romanov, A.A.
Ice edge, Drift, Ice pressure, Compressive properties, Pressure ridges, Meteorological factors, Antarctica.
Due to specific natural conditions in Antarctica, the northern progress of ice edge is irregular in time and space. Ice drifting speeds are higher compared to the Arctic. This combined with irregular progress furthers ice compression. Specific features of ice compression processes and the observed relation between wind velocities and ice compression intensity is discussed.

36-1163
Salinity of ice in the Kara and Laptev seas. [O solenosti l'dov morei Karskogo i Laptevykh].
Appel', I.L., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.372, p.135-142, In Russian. 14 refs.
Nazintsev, Iu.L.
Polar regions, Sea ice, Ice salinity, Drift, Physical properties.

36-1164
Selecting optimal place for unloading and laying out transportation routes on fast ice. [Optimizatsiia vybora mesta vygruzki i prokladki transportnykh trass na pripae], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.372, p.143-148, In Russian.
Polar regions, Fast ice, Ice surveys, Aerial surveys, Remote sensing, Mapping, Cargo, Unloading, Transportation.

36-1165
Ice compression during fall-winter period between the Karskie Vorota strait and Yenisey Bay. [Szhatie l'da v osenne-zimnii period na trasse proliv Karskie Vorota-Eniseĭskiĭ zaliv].
Voevodin, V.A., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.372, p.149-154, In Russian. 1 ref.
Ice navigation, Pack ice, Pressure ridges, Ice breaking, Icebreakers, Arctic Ocean.

36-1166
Environmental assessment of the Alaskan continental shelf, Vol.11. Biological studies. Boulder, Colorado, Outer Continental Shelf Environmental Assessment Program, July 1981, 670p., Principal investigators' final reports. Includes 5 papers. Refs. passim.
Offshore drilling, Environmental impact, Drilling fluids, Marine biology, Sea ice distribution, Ice conditions.

36-1167
Alaskan wind energy handbook.
Reckard, M., et al, Fairbanks, Alaska, Department of Transportation and Public Facilities, July 1981, 144p., Refs p.136-143.
Newell, M.
Electric power, Wind factors, Manuals, Construction, Maintenance, Windmills, United States—Alaska.

36-1168
All-Union conference "Physical origin of recent climatic changes", Moscow, Apr.23-25, 1979. Proceedings, No.2, part 2. [Sbornik No.2, chast' 2].
Vsesoiuznyĭ simpozium "Fizicheskie osnovy izmeneniia sovremennogo klimata", Moskva, 23-25 apr., 1979, Moscow, Nauka, 1981, 334p., In Russian.
For selected papers see 36-1169 through 36-1173.
Refs. passim.
Climatic changes, Atmospheric circulation, Taiga, Microclimatology, Paludification, Cryogenic soils, Frost penetration, Human factors, Permafrost beneath lakes, Shores, Environmental protection.

36-1169
Fluctuations of mean monthly air temperature in eastern Siberia related to atmospheric circulation. [Kolebaniia srednei mesiachnoi temperatury vozdukha v Vostochnoi Sibiri i ikh sviaz' s tsirkuliatsiei atmosfery].
Sorokina, L.P., et al, Vsesoiuznyĭ simpozium "Fizicheskie osnovy izmeneniia sovremennogo klimata", Moskva, 23-25 apr., 1979. Sbornik No.2, chast' 2 (All-Union conference "Physical origin of recent climatic changes", Moscow, Apr. 23-25, 1979. Proceedings, No.2, part 2), Moscow, Nauka, 1981, p.162-174, In Russian. 4 refs.
Durnev, V.F., Semenchuk, M.P.
Climatic changes, Atmospheric circulation, Air temperature, Meteorological data, USSR—Angara River, USSR—Yenisey River.

36-1170
Changes in heat transfer and microclimate in relation to paludification of southern taiga in the Irtysh River area. [Izmenenie teploobmena i mikroklimata v sviazi s protsessom zabolachivaniia v iuzhnotaezhnom Priirtysh'e].
Linevich, N.L., Vsesoiuznyĭ simpozium "Fizicheskie osnovy izmeneniia sovremennogo klimata", Moskva, 23-25 apr., 1979. Sbornik No.2, chast' 2 (All-Union conference "Physical origin of recent climatic changes", Moscow, Apr. 23-25, 1979. Proceedings, No.2, part 2), Moscow, Nauka, 1981, p.207-214, In Russian. 2 refs.
Taiga, Microclimatology, Paludification, Peat, Soil temperature, Cryogenic soils, Heat transfer.

36-1171
Influence of the Bratsk water reservoir on microclimate of its coastal zone. [Vliianie Bratskogo vodokhranilishcha na mikroklimat pribrezhnoi zony].
D'iakonov, A.I., et al, Vsesoiuznyĭ simpozium "Fizicheskie osnovy izmeneniia sovremennogo klimata", Moskva, 23-25 apr., 1979. Sbornik No.2, chast' 2 (All-Union conference "Physical origin of recent climatic changes", Moscow, Apr. 23-25, 1979. Proceedings, No.2, part 2), Moscow, Nauka, 1981, p.251-257, In Russian. 5 refs.
Strelochnykh, L.G.
Lakes, Shores, Cryogenic soils, Soil water, Permafrost beneath lakes, Air temperature, Water temperature, Heat transfer.

36-1172
Influence of human activities on microclimatic conditions of taiga. [Vliianie khoziaĭstvennoi deiatel'nosti cheloveka na mikroklimaticheskie usloviia v taezhnykh lesakh].
Chertovskiĭ, V.G., et al, Vsesoiuznyĭ simpozium "Fizicheskie osnovy izmeneniia sovremennogo klimata", Moskva, 23-25 apr., 1979. Sbornik No.2, chast' 2 (All-Union conference "Physical origin of recent climatic changes", Moscow, Apr. 23-25, 1979. Proceedings, No.2, part 2), Moscow, Nauka, 1981, p.275-281, In Russian. 5 refs.
Anikeeva, V.A., Kubrak, N.I.
Taiga, Human factors, Microclimatology, Cryogenic soils, Soil temperature, Frost penetration.

36-1173
Protection and melioration of landscapes and climate in the Lake Baykal area. [K probleme sokhraneniia i melioratsii klimata i landshaftov Pribaĭkal'ia i basseina ozera Baĭkal].
Ladeishchikov, N.P., et al, Vsesoiuznyĭ simpozium "Fizicheskie osnovy izmeneniia sovremennogo klimata", Moskva, 23-25 apr., 1979. Sbornik No.2, chast' 2 (All-Union conference "Physical origin of recent climatic changes", Moscow, Apr. 23-25, 1979. Proceedings, No.2, part 2), Moscow, Nauka, 1981, p.288-301, In Russian. 27 refs.
Ladeishchikova, E.N.
Forest land, Landscape types, Economic development, Human factors, Soil erosion, Revegetation, Environmental protection.

36-1174
Biologic melioration of lands in Siberia and Ural Mountains (recommendations and experimental schemes). [Biologicheskaia rekul'tivatsiia zemel' v Sibiri i na Urale (rekomendatsii i eksperimental'nye skhemy)].
Trofimov, S.S., ed, Novosibirsk, Nauka, 1981, 113p., In Russian. For selected papers see 36-1175 and 36-1176.
Mining, Tailings, Revegetation, Swamps, Peat, Land reclamation, Environmental protection, Cryogenic soils.

36-1175
Revegetation of depleted placer deposits in Ural Mountains and Siberia. [Rekul'tivatsiia otrabotannykh rossypei na Urale i v Sibiri].
Nakariakov, A.V., Biologicheskaia rekul'tivatsiia zemel' v Sibiri i na Urale (rekomendatsii i eksperimental'nye skhemy) (Biologic melioration of lands in Siberia and Ural Mountains (recommendations and experimental schemes)), Novosibirsk, Nauka, 1981, p.46-68, In Russian.
Mining, Tailings, Environmental protection, Revegetation, Land reclamation, Cryogenic soils, Permafrost.

36-1176
Biologic melioration of depleted peat deposits in Ural Mountains and Siberia. [Biologicheskaia rekul'tivatsiia vyrabotannykh torfianikov Urala i Sibiri].
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Nazarenko, V.V.
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36-1297
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Quam, H.A., *Spill technology newsletter,* May-June 1978, 3(3), p.51-74.
Oil recovery, Oil spills, River ice, Ice bottom surface, Countermeasures, Ice cutting, Bubbles, River flow, Velocity.

36-1298
Missiles or parachutes—how to track oiled ice.
Blackall, P.J., *Spill technology newsletter,* Sep.-Oct. 1978, 3(5), p.25-26, 2 refs.
Oil spills, Detection, Sea ice distribution, Ice bottom surface, Pollution.

36-1299
Study on the feasibility of underwater containment of subsea oil spills in Arctic waters.
Chen, K.W., *Spill technology newsletter,* Jan.-Feb. 1979, 4(1), p.37-45.
Oil spills, Countermeasures, Offshore drilling, Ice bottom surface, Ice conditions, Drift, Oil recovery.

36-1300
Feasibility study of surface techniques for the detection of oil under ice.
Gill, R.J., et al, *Spill technology newsletter,* Mar.-Apr. 1979, 4(2), p.57-67.
Keliher, T.E., Rossiter, J.R., Rich, N.H., Bruce-Lockhart, M.P.
Oil spills, Detection, Subglacial observations, Ice bottom surface, Snow electrical properties, Ice electrical properties.

36-1301
Remote sensing of oil spills.
Neville, R.A., et al, *Spill technology newsletter,* Mar.-Apr. 1979, 4(2), p.111-121, 7 refs.
O'Neil, R.A., Dagg, K.
Oil spills, Detection, Remote sensing, Ice conditions, Sea ice.

36-1302
Oil-ice interaction.
Thornton, D.E., *Spill technology newsletter,* May-June 1979, 4(3), p.160-161.
Oil spills, Sea ice, Subglacial observations, Ice bottom surface, Offshore drilling, Ice oil interface.

36-1303
Remote sensing of oil spills.
Fingas, M., *Spill technology newsletter,* May-June 1979, 4(3), p.191-192.
Oil spills, Remote sensing, Sea ice distribution.

36-1304
Proposed study of oil and gas under ice.
Pistruzak, W.M., *Spill technology newsletter,* Sep.-Oct. 1979, 4(5), p.304-313.
Oil spills, Natural gas, Water pollution, Pack ice, Ice bottom surface, Subglacial observations, Ocean bottom, Offshore drilling, Environmental impact.

36-1305
Prediction of temperatures in concrete bridges.
Churchward, A., et al, *American Society of Civil Engineers. Structural Division. Journal,* Nov. 1981, 107(ST11), p.2163-2176, 12 refs.
Sokal, Y.J.
Bridges, Concrete structures, Strains, Temperature gradients, Temperature variations, Solar radiation.

36-1306
Sand waves in lower Cook Inlet, Alaska.
Mahmood, A., et al, *American Society of Civil Engineers. Geotechnical Engineering Division. Journal,* Oct. 1981, 107(GT10), p.1293-1307, 17 refs.
Ehlers, C.J., Cilweck, B.A.
Ocean bottom, Sands, Marine geology, Geomorphology, Acoustics, United States—Alaska—Cook Inlet.

36-1307
Ice cover effects on stream flows and mixing.
Lau, Y.L., et al, *American Society of Civil Engineers. Hydraulics Division. Journal,* Oct. 1981, 107(HY10), p.1225-1242, 14 refs.
Krishnappan, B.G.
Ice cover effect, Channels (waterways), Flow rate, Turbulent flow, Shear stress, Velocity, Analysis (mathematics).

36-1308
Wastewater treatment by a prototype slow rate land treatment system.
Jenkins, T.F., et al, *U.S. Army Cold Regions Research and Engineering Laboratory,* Aug. 1981, CR 81-14, 44p., ADA-106 975, Refs. p.37-39.
Palazzo, A.J.
Waste treatment, Water treatment, Chemical analysis, Nutrient cycle, Evapotranspiration, Plants (botany), Soil water.

36-1309
Cold regions testing of an air-transportable shelter.
Flanders, S.N., *U.S. Army Cold Regions Research and Engineering Laboratory,* Aug. 1981, CR 81-16, 20p., ADA-107 131, 9 refs.
Portable shelters, Transportation, Cold weather performance, Airplanes, Tests.
An air-transportable shelter designed and built at CRREL for use in cold regions underwent testing in Hanover, New Hampshire, and Ft. Greely, Alaska. The shelter demonstrated some of its capabilities for mobility by being towed for more than 60 miles behind various vehicles and by being transported on a C-130 cargo airplane, a CH-47 helicopter, and a trailer truck. The shelter proved to be very easy for a crew of two to four to set up in all weather conditions including -40F cold. However, the gasoline-powered generator, which was a source for space heat as well as electricity, functioned very poorly. Overall, the *prototype successfully demonstrated qualities of self-reliance,* ease of operation and thermal efficiency.

36-1310
MIZEX—a program for mesoscale air-ice-ocean interaction; experiments in Arctic marginal ice zones. 1. Research strategy.
Wadhams, P., ed, *U.S. Army Cold Regions Research and Engineering Laboratory,* June 1981, SR 81-19, 20p., ADA-107 046, 59 refs.
Martin, S., ed, Johannessen, O.M., ed, Hibler, W.D., III, ed, Campbell, W.J., ed.
Ice air interface, Ice water interface, Ice edge, Sea ice distribution, Research projects, Climatic factors, Sea water, Water temperature.
This document describes the research strategy for a series of mesoscale studies of arctic marginal ice zones. The main goal of this program is to gain a better understanding of the processes occurring at the ice margin. These processes are relevant to climate, weather forecasting, petroleum exploration and production, marine transportation, naval operations, and commercial fisheries. In addition MIZEX will aid in determining what modifications to existing ice-ocean-atmospheric models are needed for better prediction near the ice margin.

36-1311
Spring flood - meltwater or groundwater.
Rodhe, A., *Nordic hydrology,* 1981, 12(1), p.21-30, 14 refs.
Floods, Meltwater, Snowmelt, Ground water, Stream flow.

36-1312
Ice action on lakeshores near Schefferville, central Quebec—Labrador, Canada.
Pyokari, M., *Canadian journal of earth sciences,* Oct. 1981, 18(10), p.1629-1634, With French summary, 20 refs.
Shore erosion, Shoreline modification, Pressure ridges, Ice pressure, Lake ice, Ice erosion, Vegetation, Damage, Wind factors.

36-1313
Frost action effects on pavements—executive summary.
Hoffman, G.L., et al, *Pennsylvania. Department of Transportation. Bureau of Materials, Testing and Research.* (Report), Dec. 1979, 17p., PB80-198 554, Cumberledge, G., Beaucheis, N.C.
Frost action, Pavements, Freezing indexes, Frost heave, Frost penetration, Subgrades, Bearing strength.

36-1314
Closed-system freezing of soils in linings and earth embankment dams.
Jones, C.W., *Engineering and Research Center, Denver, Colorado. Water and Power Resources Service. [Report]*, Mar. 1981, REC-ERC-81-1, 48p., PB81-240491, 23 refs.
Soil freezing, Earth dams, Embankments, Linings, Freezing indexes, Frost action, Frost protection, Frost penetration, Frozen ground, Soil water, Density (mass volume).

36-1315
Monitoring glacier outburst floods.
Young, G.J., *Nordic hydrology*, 1980, Vol.11, p.285-299, 32 refs.
Glacial hydrology, Glacial lakes, Subglacial drainage, Subglacial caves, Floods, Glacier oscillation, Glacier surfaces.

36-1316
Round table on the formation of heterogeneous slopes, Caen, March 1979. [Table ronde sur les formations de versants heterogenes, Caen, Mars 1979], *Centre de geomorphologie de Caen. Bulletin*, Nov. 1979, No.24, 200p., In French. Refs. passim.
Slope processes, Landscape development, Stratigraphy, Meetings, Paleoclimatology.

36-1317
Effects of timber harvest in the snow zone on volume and timing of water yield.
Troendle, C.A., et al. Interior West watershed management. Compiled and edited by D.M. Baumgartner. [Symposium, Spokane, Wash., April 8-10, 1980], 1981, p.231-243, 26 refs.
Leaf, C.F.
Snow cover effect, Forest canopy, Watersheds, Evapotranspiration, Structural timbers.

36-1318
Snowfall in the Moroccan Atlas Mountains. [Les chutes de neige dans l'Atlas marocain].
Peyron, M., *Revue de geographie alpine*, 1980, 68(3), p.237-254, In French with English summary. 14 refs.
Snow cover distribution, Snowfall, Mountains, Solar radiation, Wind factors.

36-1319
Workshop on oil-gas and ice.
Mackay, D., *Spill technology newsletter*, Jan.-Feb. 1980, 5(1), p.15-18.
Oil spills, Countermeasures, Ice bottom surface, Drift, Ice mechanics, Meetings, Water pollution, Ice oil interface, Ice gas interface.

36-1320
Dome petroleum's oil and gas undersea ice study.
Buist, I.A., et al., *Spill technology newsletter*, May-June 1981, 6(3), p.120-146, 13 refs.
Dickins, D.F.
Oil spills, Natural gas, Water pollution, Countermeasures, Ice bottom surface, Sea ice, Ice oil interface.

36-1321
River and suspended sediment discharge into Byam Channel, Queen Elizabeth Islands, Northwest Territories, Canada.
McLaren, P., *Arctic*, June 1981, 34(2), p.141-146, 14 refs.
Suspended sediments, Sediment transport, River flow, Ice breakup, Drainage, Channels (waterways).

36-1322
Erosion control along transportation routes in northern climates.
Claridge, F.B., et al., *Arctic*, June 1981, 34(2), p.147-157, With French summary. 3 refs.
Mirza, M.M.
Soil erosion, Bank protection (waterways), Permafrost control, Drainage, Ground ice, Countermeasures, Marine transportation.

36-1323
Holocene glaciation of the Arrigetch Peaks, Brooks Range, Alaska.
Ellis, J.M., et al., *Arctic*, June 1981, 34(2), p.158-168, With French summary. 42 refs.
Hamilton, T.D., Calkin, P.E.
Cirque glaciers, Glaciation, Moraines, Glacial deposits, Paleoclimatology.

36-1324
Seismic evidence of shallow permafrost beneath islands in the Beaufort Sea, Alaska.
Morack, J.L., et al., *Arctic*, June 1981, 34(2), p.169-174, 9 refs.
Rogers, J.C.
Permafrost distribution, Offshore landforms, Freeze thaw cycles, Seismic refraction.

36-1325
Tussock replacement as a means of stabilizing fire breaks in tundra vegetation.
Patterson, W.A., III, et al., *Arctic*, June 1981, 34(2), p.188-189, 7 refs.
Dennis, J.G.
Tundra, Fires, Countermeasures, Revegetation, Vegetation, Thermokarst.

36-1326
Characteristics of the broadscale antarctic sea ice extent and the associated atmospheric circulation 1972-1977.
Streten, N.A., et al., *Archiv fur Meteorologie, Geophysik und Bioklimatologie. Ser. A*, 1980, 29(3), p.279-299, 18 refs.
Pike, D.J.
Sea ice distribution, Sea ice distribution. Seasonal variations, Atmospheric circulation, Atmospheric circulation, Antarctica.
The monthly and seasonal means, extremes and variability of the Southern Hemisphere sea ice are examined for a five year period. Variability is found to be greatest in the longitudes of the Antarctic coastal embayments, and a small but general decline in extent at all seasons throughout the period is observed. At near maximum ice extent (Jul-Nov), the 5 year mean of the zonal westerlies to the north of the ice increases with increasing ice extent; however for individual years, at maximum ice extent, there is no clear correlation between zonally averaged ice extent and the strength of the zonal westerlies in the preceding or succeeding month. Comparison with the 5 year mean longitudinal pattern of atmospheric pressure maxima and minima at the latitude of the Antarctic trough points generally to asymmetries in the ice edge, such that it is further north and more variable in regions of frequent low pressure, and further south in regions of relatively high pressure. Examination of a specific longitudinal zone indicates that the pattern of ice extent is clearly regional, and apparently related to variations in the combined oceanic and atmospheric circulation particularly in the Antarctic embayments. (Auth.)

36-1327
General Assembly, 1981. [Assemblee generale 1981], Association Nationale pour l'Etude de la Neige et des Avalanches, *Neige et avalanches*, July 1981, No.26, p.4-35, In French.
Avalanche formation, Avalanche forecasting, Meetings, Avalanche triggering, Meteorological instruments, Cost analysis.

36-1328
"Avalancher", a pneumatic launcher for avalanche triggering. ["Avalancheur", un lanceur pneumatique pour le declenchement d'avalanches].
Perroud, P., et al., *Neige et avalanches*, July 1981, No.26, p.45-57, In French.
Tougne, M.
Avalanche triggering, Equipment, Avalanche formation.

36-1329
Oceanography of the eastern Bering Sea ice-edge zone in spring.
Alexander, V., et al., *Limnology and oceanography*, Nov. 1981, 26(6), p.1111-1125, 20 refs.
Niebauer, H.J.
Sea ice, Ice edge, Biomass, Plankton, Climatic changes.

36-1331
Temporal variability of microparticle properties in polar ice sheets.
Thompson, L.G., et al., *Journal of volcanology and geothermal research*, Aug. 1981, 11(1), p.11-27, 38 refs.
Mosley-Thompson, E.
Ice sheets, Microelement content, Periodic variations, Particles.
Four recent ice core studies reveal a consistently recurring temporal correlation between increased microparticle concentrations and lower global temperatures. A continuous 900-year record of particle deposition from the 101-m South Pole core was obtained by analyzing 6218 samples. The concentration of insoluble particles with diameters < 0.63 microns increases substantially between A.D. 1450 and 1850. Some of the additional material may be volcanic. The microparticle analyses of selected sections from three deep cores coupled with the respective O18 measurements reveal that in all three cores the last glacial or Late Wisconsin ice contained great quantities of microparticles. The ratio of the average microparticle concentration in Wisconsin sections to that in Holocene sections is 6 for the 905-m Dome C, Antarctica core, 3 for the 2164-m Byrd Station, Antarctica core and 12 for the 1387-m Camp Century, Greenland core. These data suggest that the global atmosphere was heavily laden with suspended particulates near the end of the last major glaciation. (Auth. mod.)

36-1332
Tephra layers in the Byrd Station ice core and the Dome C ice core, Antarctica and their climatic importance.
Kyle, P.R., et al., *Journal of volcanology and geothermal research*, Aug. 1981, 11(1), p.29-39, 19 refs.
Jezek, P.A., Mosley-Thompson, E., Thompson, L.G.
Ice cores, Impurities, Climate, Volcanic ash, Antarctica—Takahe, Mount, Antarctica—Byrd Station.
Volcanic glass shards from tephra layers in the Byrd Station ice core were chemically analyzed by electron microprobe. Tephra in seven layers have similar peralkaline trachyte compositions. The tephra are believed to originate from Mt. Takahe, on the basis of their chemical similarity to analyzed rocks from Mt. Takahe and because dated rock samples from the volcano are younger than 250,000 years old. Glass shards from 726 m deep in the Dome C ice core, which is 2400 km from Byrd Station, are composed of peralkaline trachyte and may have also been derived from Mt. Takahe. The tephra could have resulted from eruptions which were triggered by increased ice loading during the late Wisconsin glaciation. Preliminary grain size data suggest the eruptions were only minor and they were unlikely to have instantaneously altered global climate as have explosive eruptions in the tropics. Nevertheless, the effect of this localized volcanic activity upon the Antarctic energy budget warrants further investigation. (Auth.)

36-1333
Rational use and protection of natural resources in Siberia. [Ratsional'noe ispol'zovanie i okhrana prirodnykh resursov Sibiri].
Vorob'ev, V.V., ed., Novosibirsk, Nauka, 1981, 184p., In Russian. For selected papers see 36-1333 through 36-1345. Refs. passim.
Naprasnikov, A.T., ed.
Environmental protection, Natural resources, Permafrost beneath rivers, Permafrost beneath lakes, Cryogenic soils, Landscape types, Taiga, Alpine tundra, Swamps, Economic development, Land reclamation, Permafrost hydrology, Ice forecasting, Baykal Amur railroad.

36-1334
Regional landscape forecasts related to the river diversion problem in Siberia. [Opyt regional'nogo landshaftnogo prognozirovaniia v sviazi s problemoi perebroski stoka sibirskikh rek].
Mikhailov, N.I., et al., Ratsional'noe ispol'zovanie i okhrana prirodnykh resursov Sibiri (Rational use and protection of natural resources in Siberia) edited by V.V. Vorob'ev and A.T. Naprasnikov, Novosibirsk, Nauka, 1981, p.10-36, In Russian. 16 refs.
Nikolaev, V.A., Timashev, I.E.
River diversion, Landscape types, Permafrost beneath rivers, Cryogenic soils, Maps, Taiga, Swamps, Land reclamation, Environmental protection.

36-1335
Landscape-geographic provisions for regional economic development programs (exemplified by the western BAM section). [Landshaftno-geograficheskoe obespechenie regional'nykh programm osvoeniia (na primere zapadnogo uchastka BAM)].
Mikheev, V.S., Ratsional'noe ispol'zovanie i okhrana prirodnykh resursov Sibiri (Rational use and protection of natural resources in Siberia) edited by V.V. Vorob'ev and A.T. Naprasnikov, Novosibirsk, Nauka, 1981, p.36-58, In Russian. 25 refs.
Taiga, Alpine tundra, Glaciation, Environmental protection, Baykal Amur railroad, Charts.

36-1336
Combined development of natural resources and the quality of natural environment in the BAM area. [Kompleksnoe osvoenie prirodnykh resursov i kachestvo okruzhaiushchei sredy v zone BAM].
Drozdovskii, E.E., Ratsional'noe ispol'zovanie i okhrana prirodnykh resursov Sibiri (Rational use and protection of natural resources in Siberia) edited by V.V. Vorob'ev and A.T. Naprasnikov, Novosibirsk, Nauka, 1981, p.58-73, In Russian.
Environmental protection, Economic development, Baykal Amur railroad, Permafrost, Cryogenic soils.

36-1337
Water resources in the BAM zone and prospects for their utilization. [Vodnye resursy zony BAM i perspektivy ikh ispol'zovaniia].
Dobrotinov, B.M., Ratsional'noe ispol'zovanie i okhrana prirodnykh resursov Sibiri (Rational use and protection of natural resources in Siberia) edited by V.V. Vorob'ev and A.T. Naprasnikov, Novosibirsk, Nauka, 1981, p.73-88, In Russian. 30 refs.
Watersheds, Water supply, Snow water equivalent, Permafrost hydrology, Baykal Amur railroad.

36-1338
Using and protecting water resources in the Aldan-Chul'man region. [Voprosy ispol'zovaniia i okhrany vodnykh resursov Aldan-Chul'manskogo regiona].
Konstantinov, A.F., Ratsional'noe ispol'zovanie i okhrana prirodnykh resursov Sibiri (Rational use and protection of natural resources in Siberia) edited by V.V. Vorob'ev and A.T. Naprasnikov, Novosibirsk, Nauka, 1981, p.88-102, In Russian. 20 refs.
Mountains, Alpine landscapes, Permafrost distribution, Snow water equivalent, Water supply, Permafrost hydrology, Naleds, Taliks, Environmental protection.

36-1339
Possibility of forecasting ice breakup on the BAM zone rivers. [*O vozmozhnosti prognoza vskrytiia rek pereseka iushchikh BAM*].
Shilina, L.I., Ratsional'noe ispol'zovanie i okhrana prirodnykh resursov Sibiri (Rational use and protection of natural resources in Siberia) edited by V.V. Vorob'ev and A.T. Naprasnikov, Novosibirsk, Nauka, 1981, p.102-106, In Russian. 3 refs.
River basins, River ice, Ice forecasting, Ice breakup, Baykal Amur railroad.

36-1340
Lakes in the central BAM area and their rational utilization. [Ozera tsentral'nogo uchastka zony BAM i problemy ikh ratsional'nogo ispol'zovaniia].
Dmitrieva, V.T., et al, Ratsional'noe ispol'zovanie i okhrana prirodnykh resursov Sibiri (Rational use and protection of natural resources in Siberia) edited by V.V. Vorob'ev and A.T. Naprasnikov, Novosibirsk, Nauka, 1981, p.106-124, In Russian. 14 refs.
Naprasnikov, A.T.
Glacial lakes, Thermal regime, Permafrost beneath lakes, Permafrost hydrology, Thermokarst, Water supply, Baykal Amur railroad, Charts, Environmental protection.

36-1341
Geographic investigations and use of biotic resources in the BAM zone. [Geograficheskoe izuchenie i ispol'zovanie bioticheskikh resursov zony BAM].
Il'ina, L.N., Ratsional'noe ispol'zovanie i okhrana prirodnykh resursov Sibiri (Rational use and protection of natural resources in Siberia) edited by V.V. Vorob'ev and A.T. Naprasnikov, Novosibirsk, Nauka, 1981, p.124-140, In Russian. 17 refs.
Landscape types, Alpine landscapes, Taiga, Mapping, Economic development, Environmental protection, Baykal Amur railroad, Charts.

36-1342
Environmental protection in the BAM zone. [Problemy okhrany okruzhaiushchei sredy v zone BAM].
Mikhailov, N.A., et al, Ratsional'noe ispol'zovanie i okhrana prirodnykh resursov Sibiri (Rational use and protection of natural resources in Siberia) edited by V.V. Vorob'ev and A.T. Naprasnikov, Novosibirsk, Nauka, 1981, p.148-155, In Russian. 5 refs.
Pogrebnoi, A.K.
Permafrost beneath structures, Cryogenic soils, Active layer, Soil temperature, Foundations, Embankments, Baykal Amur railroad, Snow cover effect, Topographic effects.

36-1343
Changes in soil climate induced by economic development of permafrost areas. [Nekotorye voprosy izmeneniia pochvennogo klimata pri khoziaistvennom osvoenii oblasti mnogoletnei merzloty].
Dugarov, V.I., Ratsional'noe ispol'zovanie i okhrana prirodnykh resursov Sibiri (Rational use and protection of natural resources in Siberia) edited by V.V. Vorob'ev and A.T. Naprasnikov, Novosibirsk, Nauka, 1981, p.155-159, In Russian. 8 refs.
Permafrost distribution, Cryogenic soils, Soil temperature, Baykal Amur railroad, Hydrothermal processes, Vegetation factors.

36-1344
Peculiarities of ice and thermal regimes of northern Lake Baykal. [Osobennosti ledovo-termicheskogo rezhima Severnogo Baikala].
Shimaraev, M.N., Ratsional'noe ispol'zovanie i okhrana prirodnykh resursov Sibiri (Rational use and protection of natural resources in Siberia) edited by V.V. Vorob'ev and A.T. Naprasnikov, Novosibirsk, Nauka, 1981, p.163-168, In Russian. 2 refs.
Permafrost beneath lakes, Lake ice, Ice conditions, Ice cover thickness, Thermal regime.

36-1345
Microbiologic characteristics of water-bodies in the Upper Angara River basin. [Mikrobiologicheskaia kharakteristika vodoemov Verkhneangarskoi kotloviny].
Nechesov, I.A., Ratsional'noe ispol'zovanie i okhrana prirodnykh resursov Sibiri (Rational use and protection of natural resources in Siberia) edited by V.V. Vorob'ev and A.T. Naprasnikov, Novosibirsk, Nauka, 1981, p.168-180, In Russian. 16 refs.
Rivers, Lake water, Bacteria, Plankton, Ecology, Ecosystems, Baykal Amur railroad, Permafrost beneath lakes.

36-1346
Physical basis for polymer reliability in cold climates. [*Fizicheskie osnovy nadezhnosti polimernykh* materialov v usloviiakh kholodnogo klimata].
Kozlov, A.G., ed, Yakutsk, Izd-e IAkutskogo filiala SO AN SSSR, 1977, 116p., In Russian. For selected papers see 36-1347 through 36-1350. Refs. passim.
Polymers, Plastics, Construction materials, Composite materials, Laminated glass, Glue, Adhesion, Cold weather performance.

36-1347
Weather resistance of polymers under climatic conditions of Yakutsk. [Atmosferostoikost' polimernykh materialov v klimaticheskikh usloviiakh goroda IAkutska].
Cherskii, I.N., et al, Fizicheskie osnovy nadezhnosti polimernykh materialov v usloviiakh kholodnogo klimata (Physical basis for the stability of polymer materials in cold climates) edited by A.G. Kozlov, Yakutsk, Izd-e IAkutskogo filiala SO AN SSSR, 1977, p.3-45, In Russian. 10 refs.
Polymers, Plastics, Cold weather performance.

36-1348
Weather resistance of glued laminated glass. [Atmosferostoikost' kleevykh soedinenii organicheskogo stekla].
Karateev, L.P., Fizicheskie osnovy nadezhnosti polimernykh materialov v usloviiakh kholodnogo klimata (Physical basis for the stability of polymer materials in cold climates) edited by A.G. Kozlov, Yakutsk, Izd-e IAkutskogo filiala SO AN SSSR, 1977, p.67-70, In Russian. 1 ref.
Buildings, Windows, Laminated glass, Composite materials, Cold weather performance, Construction materials.

36-1349
***New structure-colored epoxy resins are promising* polymers for use at low temperatures.** [Novye strukturnookrashennye eposidnye smoly - perspektivnye polimernye materialy, primeniaemye v usloviiakh nizkikh temperatur].
Ivanov, V.N., et al, Fizicheskie osnovy nadezhnosti polimernykh materialov v usloviiakh kholodnogo klimata (Physical basis for the stability of polymer materials in cold climates) edited by A.G. Kozlov, Yakutsk, Izd-e IAkutskogo filiala SO AN SSSR, 1977, p.71-76, In Russian. 5 refs.
Polymers, Resins, Construction materials, Cold weather performance.

36-1350
Application aspects of studying weather resistance of polymers. [*O* nekotorykh prikladnykh aspektakh izucheniia atmosferostoikosti polimerov].
Cherskii, I.N., Fizicheskie osnovy nadezhnosti polimernykh materialov *v usloviiakh kholodnogo klimata* (Physical basis for the stability of polymer materials in cold climates) edited by A.G. Kozlov, Yakutsk, Izd-e IAkutskogo filiala SO AN SSSR, 1977, p.84-90, In Russian. 6 refs.
Polymers, Plastics, Construction materials, Cold weather performance.

36-1351
Control of hanging walls in mine shafts of permafrost areas (northeastern mines taken as an example). [Upravlenie krovlei na shakhtakh oblasti mnogoletnei merzloty (na primere shakht Severo-Vostoka)].
Sleptsov, A.E., et al, Novosibirsk, Nauka, 1981, 117p., In Russian with English table of contents enclosed. 41 refs.
Skuba, V.N., Andreev, V.S., Rozenbaum, M.A.
Mining, Mine shafts, Roofs, Frozen rock strength, Supports, Permafrost physics, Models.

36-1352
Growth of concrete strength in load-bearing wall panels of large-panel buildings under winter conditions of Moscow. [Rost prochnosti betona nesushchikh stenovykh panelei v krupnopanel'nykh domakh v zimnikh usloviiakh g. Moskvy].
Manasian, V.S., et al, Issledovaniia nesushchikh betonnykh i zhelezobetonnykh konstruktsii sbornykh mnogoetazhnykh zdanii (Studies of load-bearing concrete and reinforced concrete elements of sectional many-storied buildings) edited by G.N. L'vov and IU.M. Strugatskii, Moscow, 1980, p.133-139, In Russian. 5 refs.
Morozkin, V.P., Nesterova, L.N.
Large panel buildings, Walls, Panels, Prefabrication, Concrete aggregates, Cements, Concrete strength, Concrete freezing.

36-1353
New way of stabilizing roadbed slopes. [Novyi sposob ukrepleniia otkosov zemlianogo polotna].
Gadilev, E.O., et al, *Transportnoe stroitel'stvo*, Nov, 1981, No.11, p.6-7, In Russian.
Sobolev, G.I., Pinchuk, V.P.
Roadbeds, Soil erosion, Slope stability, Cold weather construction, Prefabrication, Peat, Plates.

36-1354
Using ripper-bulldozers in roadbed construction. [Ispol'zovanie bul'dozerov-rykhlitelei pri sooruzhenii zemlianogo polotna].
Pristupa, R.A., *Transportnoe stroitel'stvo*, Nov, 1981, No.11, p.7-9, In Russian.
Roads, Roadbeds, Earthwork, Permafrost beneath structures, Swamps, Peat, Excavation.

36-1355
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Railroads, Embankments, Permafrost beneath structures, Thaw depth.

36-1356
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Shapiro, L.B., Romichev, V.B.
Bridges, Icebound rivers, Ice jams, Ice loads, Piers, Design.

36-1357
Nondestructive control techniques used in laboratories of the Main Administration of the Baykal Amur Railroad Construction. [Nerazrushaiushchii kontrol' v stroitel'nykh laboratoriiakh Glavbamstroia].
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Concrete structures, Measuring instruments, Reinforced concretes, Concrete freezing, Quality control, Baykal Amur railroad.

36-1358
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Earthwork, Soil compaction, Construction equipment, Baykal Amur railroad, Frozen ground.

36-1359
Mobile structures for weather protection of construction equipment. [Inventarnye sredstva zashchity tekhniki ot nepogody].
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Storage, Construction equipment, Tents, Baykal Amur railroad.

36-1360
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Cold weather construction, Economic analysis, Transportation, Work time standards, Houses, Baykal Amur railroad.

36-1361
Design of temperary railroad bypasses. [K voprosu proektirovaniia vremennykh zheleznodorozhnykh obkhodov].
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Mountains, Brakes (motion arresters), Railroad equipment, Baykal Amur railroad.

36-1362
Methods of road construction on oil fields of western Siberia. [K metodike obosnovaniia stroitel'stva avtomobil'nykh dorog pri osvoenii neftianykh mestorozhdenii Zapadnoĭ Sibiri].
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Petroleum industry, Roads, Permafrost beneath structures.

36-1363
Evaluating the methods and means of land transportation of large structural units to West Siberian oil fields. [Otsenka sposobov i sredstv dostavki superblokov po sushe na neftianye mestorozhdeniia Zapadnoĭ Sibiri].
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Salov, V.I.
Petroleum industry, Roads, Permafrost beneath structures, Snow roads, Ice roads, All terrain vehicles, Air cushion vehicles.

36-1364
Calculating thermal interaction between "communication corridors" (simultaneously built parallel roads and pipelines) and frozen ground. [Raschet teplovogo vzaimodeĭstviia koridorov kommunikatsiĭ s merzlymi gruntami],
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Petroleum industry, Roads, Pipelines, Embankments, Permafrost beneath structures, Permafrost thermal properties, Heat transfer.

36-1365
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Pipelines, Anchors, Permafrost beneath structures.

36-1366
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Roads, Pavements, Road icing, Chemical ice prevention, Brines.

36-1367
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Roads, Pavements, Corrosion, Road icing, Chemical ice prevention.

36-1368
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Roads, Ice roads, Snow roads, Winter maintenance.

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36-1370
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Bethke, P.M., Bodnar, R.J., Werre, R.W., Jr.
Gases, Freezing, Heating, Flow measurement, Heat transfer.

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Latta, J.K., *National Research Council, Canada. Division of Building Research. Special technical publication*, Oct. 1973, No.1, 94p. + figs., Refs. passim. Reprinted Dec. 1979.
Construction materials, Buildings, Ice lenses, Temperature gradients, Walls, Windows, Roofs, Thermal insulation, Heat flux, Wind pressure, Solar radiation.

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Myer, G.H.
Snow composition, Pollution, Metals, Environmental impact, Lead (metal).

36-1374
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Vegetation, Environmental impact, Tundra, Classifications, Soil composition, Animals, Distribution, United States—Alaska—Prudhoe Bay.

36-1375
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36-1376
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Ice jams, Ice breakup, Flooding, River flow, Water level, Mapping.

36-1377
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Tsang, G., *Canada. Inland Waters Directorate. Technical workshop series*, 1980, No.2, p.211-227, 7 refs.
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36-1378
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Flood forecasting, River flow, Ice jams, Snowmelt, Rain, Mathematical models.

36-1379
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36-1380
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Glacial hydrology, Glacier ablation, Meltwater, Glacial lakes, Glacier oscillation, Precipitation (meteorology), Greenland.

36-1381
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Czys, R.R., et al, Conference on Inadvertent and Planned Weather Modification, 7th, Banff, Alberta, Oct 8-12, 1979. Proceedings, Boston, Mass., American Meteorological Society, (1980), p.24-25, 2 refs.
Passarelli, R.E., Jr.
Ice crystal nuclei, Ice nuclei, Wind direction, Airborne equipment.

36-1382
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Snow water equivalent, Snow depth, Precipitation (meteorology), Meteorological factors.

36-1383
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Glacial lakes, Periglacial processes, Limnology, Sediment transport, Structural analysis, Ice dams, Subglacial drainage.

36-1384
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Snow water equivalent, Snow depth, Statistical analysis, Air temperature, Humidity, Snowfall.

36-1385
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Slaymaker, H.O.
Stream flow, Snowmelt, Snow depth, Snow cover distribution, Runoff, Meltwater, Mountains.

36-1386
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Perla, R., et al, *Canada. Inland Waters Directorate. Scientific series*, 1978, No.97, 8p., With French summary. 1 ref.
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Snow loads, Impact strength, Snow density, Snow mechanics, Avalanche mechanics, Analysis (mathematics), Tests.

36-1387
Nearshore ice conditions and hazards in the Beaufort, Chukchi, and Bering Seas.
Stringer, W.J., et al, Fairbanks, Alaska, University, Geophysical Institute, May 1980, 96p. + figs., 16 refs.
Barrett, S.A., Schreurs, L.K.
Fast ice, Ice conditions, Sea ice distribution, Ice mechanics, Ice islands, Ice melting, Freezeup, Seasonal variations, Mapping, Offshore drilling.

36-1388
Snow-covering effects on the power output of solar photovoltaic arrays.
Brench, B.L., Lexington, MIT Lincoln Laboratory, Dec. 1979, 24p., 4 refs.
Snow cover effect, Photography, Snowmelt, Heat loss, Solar radiation, Snow density, Panels, Experimentation, Measuring instruments.

36-1389
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Martin, S., et al, Seattle, University of Washington, Dept. of Atmospheric Sciences, 1979, 37p. ADA-079 527.
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Research projects, Sea ice.

36-1390
Proceedings of the International Society for Terrain-Vehicle Systems Workshop on Snow Traction Mechanics, Alta, Utah, Jan. 29-Feb. 2, 1979.
Harrison, W.L., ed, *U.S. Army Cold Regions Research and Engineering Laboratory*, July 1981, SR 81-16, 71p., ADA-106 972, Refs. passim. For individual papers see 36-1391 through 36-1397.
Snow mechanics, Snow compression, Traction, Trafficability, Vehicle wheels, Tracked vehicles, Meetings, Mathematical models.
This report reviews the state of the art of snow traction mechanics and presents the results of a limited field exercise that allowed participants to observe and practice current snow measurement processes and vehicle test procedures. The prime

recommendations of the workshop attendees were 1) the use of parameters basic to the laws of physics for the classification of snow strength, and 2) the use of instrumented tracked and wheeled vehicles for snow strength measurements.

36-1391

Snow traction mechanics.

Yong, R.N., *U.S Army Cold Regions Research and Engineering Laboratory. Special report*, July, 1981, No.81-16, p.3-12. ADA-106 972.

Snow mechanics, Snow compression, Traction, Trafficability, Snow deformation, Vehicles, Metamorphism (snow), Loads (forces), Rubber snow friction, Snow compaction.

36-1392

Snow measurements in relation to vehicle performance.

Harrison, W.L., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, July, 1981, No.81-16, MP 1473, p.13-24, ADA-106 972, 2 refs.

Snow compression, Vehicles, Traction, Snow depth, Snow drift, Snow crystal structure, Snow density, Snow cover effect.

36-1393

Application of energetics to vehicle trafficability problems.

Brown, R.L., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, July, 1981, No.81-16, MP 1474, p.25-38, ADA-106 972, 8 refs.

Snow cover effect, Traction, Vehicles, Trafficability, Snow density, Snow compaction.

36-1394

Prediction methods.

Harrison, W.L., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, July, 1981, No.81-16, MP 1475, p.39-46. ADA-106 972.

Snow cover effect, Traction, Vehicles, Trafficability, Snow strength, Forecasting, Mathematical models, Snow depth, Vehicle wheels, Tracked vehicles.

36-1395

Field investigations.

Harrison, W.L., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, July, 1981, No.81-16, MP 1476, p.47-48. ADA-106 972.

Snow cover effect, Traction, Vehicles, Trafficability, Tests.

36-1396

Analysis of vehicle tests and performance predictions.

Berger, R.H., et al, *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, July, 1981, No.81-16, MP 1477, p.51-67. ADA-106 972.

Brown, R.L., Harrison, W.L., Irwin, G.S.

Snow strength, Vehicles, Traction, Shear stress, Loads (forces), Snow compaction, Tests, Snow depth, Forecasting, Analysis (mathematics).

36-1397

Shallow snow test results.

Harrison, W.L., *U.S. Army Cold Regions Research and Engineering Laboratory. Special report*, July, 1981, No.81-16, MP 1478, p.69-71. ADA-106 972.

Snow depth, Snow cover effect, Vehicles, Traction, Trafficability, Shear stress, Tests.

36-1398

Frost heave test being expanded. *Pipeline and gas journal*, March 1981, 208(3), p.71-72.

Frost heave, Pipeline insulation.

36-1399

Theory of the dielectric constant of ice.

Adams, D.J., *Nature*, Oct. 8-14, 1981, 293(5832), p.447-449, 19 refs.

Ice electrical properties, Dielectric properties, Ice models.

36-1400

Ice age aerosol content from East Antarctic ice core samples and past wind strength.

Petit, J.R., et al, *Nature*, Oct. 1-7, 1981, 293(5831), p.391-394, 55 refs.

Briat, M., Royer, A.

Aerosols, Ice, Impurities, Isotope analysis, Ice composition, Antarctica—East Antarctica.

Isotopic analysis of antarctic deep cores provides valuable information on the earth's past climate. Past atmospheric trace element contents of continental, volcanic, marine or other origins can also be reconstructed assuming that the chemical concentrations in the air and in the snow are well correlated. These atmospheric trace element contents as well as atmospheric gas contents, are important for climate reconstruction models because they influence the earth's radiation balance. The possible link between aerosol content and climate which was investigated from the 905 deep Dome C ice core (East Antarctica) spanning some 32,000 yr is considered. No evidence of major global or local volcanic activity was found; however, large marine and continental inputs (respectively 5 and 20 times higher than present) were observed at the end of the last glacial stage. They reflect glacial age climate with stronger atmospheric circulation, enhanced aridity and faster aerosol transport towards the antarctic continent. (Auth.)

36-1401

Ice-sheet initiation and climatic influences of expanded snow cover in Arctic Canada.

Williams, L.D., *Quaternary research*, Sep. 1978, 10(2), p.141-149, 42 refs.

DLC QE696.Q35

Ice formation, Ice sheets, Snow cover effect, Climatic changes.

36-1402

Under ice reflectivities at frequencies below 1 kHz.

Yang, T.C., et al, *Acoustical Society of America. Journal*, Sep. 1981, 70(3), p.841-851, 15 refs.

Votaw, C.W.

Ice acoustics, Reflectivity, Subglacial observations.

36-1403

Humidity required for ice nucleation from the vapor onto silver iodide and lead iodide aerosols over the temperature range -6 to -67C.

Detwiler, A.G., et al, *Journal of applied meteorology*, Sep. 1981, 20(9), p.1006-1012, 24 refs.

Vonnegut, B.

Ice formation, Ice sublimation, Humidity, Nucleation, Silver iodide.

36-1404

Aerosol measurements over and near the south Pacific Ocean and Ross Sea.

Hogan, A.W., *Journal of applied meteorology*, Oct. 1981, 20(10), p.1111-1118, 26 refs.

Impurities, Aerosols, Sea ice, Atmospheric composition, Antarctica—Ross Sea.

Aerosol concentrations were measured at sea along the international date line from 40 to 75 S and over pack ice, fast ice and unvegetated land surfaces in a 100 km circle immediately south of the Ross Sea. Surface aerosol concentrations measured were similar to oceanic concentrations measured in the Northern Hemisphere in westerly and northwesterly winds, but lower concentrations were observed in the polar easterlies. Turbidity measurements indicated a relatively greater total aerosol burden in the vicinity of the antarctic convergence than near New Zealand or over the Ross Sea. Similar turbidity measurements showed a progressively smaller relative aerosol burden over fast ice, Ross Island, and the Antarctic continent. Comparison of these turbidity measurements with those made 13 and 31 years previously show no systematic change in turbidity. Surface aerosol measurements in the dry valleys of Victoria Land indicated higher concentrations that may result from natural production mechanism. (Auth.)

36-1405

Growth kinetics of ice from the vapor phase and its growth forms.

Kuroda, T., et al, *Journal of crystal growth*, Jan. 1982, 56(1), p.189-205, 69 refs.

Lacmann, R.

Ice physics, Ice growth, Ice sublimation.

36-1406

Detailed study of glacier beds using radio-echo techniques.

Walford, M.E.R., et al, *Geophysical journal*, Nov. 1981, 67(2), p.487-514, 19 refs.

Harper, M.F.L.

Radio echo soundings, Glacier beds, Ice acoustics.

36-1407

Viscosity of high-pressure ice VI and evolution and dynamics of Ganymede.

Poirier, J.P., et al, *Nature*, July 16, 1981, 292(5820), p.225-227, 11 refs.

Sotin, C., Peyronneau, J.

Viscosity, High pressure ice, Extraterrestrial ice, Planets.

36-1408

Ice layer in Uranus and Neptune—diamonds in the sky.

Ross, M., *Nature*, July 30, 1981, 292(5822), p.435-436, 10 refs.

Extraterrestrial ice, Planets.

36-1409

Radio-echo layering in polar ice sheets and past volcanic activity.

Millar, D.H.M., *Nature*, July 30, 1981, 292(5822), p.441-443, 18 refs.

Ice sheets, Layers, Radio echo soundings, Volcanic ash.

It has been suggested that layers of acidic ice in polar ice sheets may be detected by airborne radio-echo sounding (RES) techniques as stratification echoes. Explosive volcanic eruptions eject large amounts of SO_2 into the stratosphere where it forms an H_2SO_4 aerosol. Studies show that this material can be deposited in layers of large areal extent on polar ice sheets. Calculations based on observations of these slightly acidic layers show that they should give rise to radar reflections of similar magnitude to those observed for stratification echoes. New RES data from the Antarctic enables the present comparison to be made between observed layer power reflection coefficients (PRCs), and calculated values for reflections from acidic ice layers and from layers of ice of changed density. A gap in layering has been identified which seems to coincide with a similar gap reported in Greenland at Crête, profiles of layer PRC against age show a common pattern for many sites on the Antarctic ice sheet. This PRC/age profile may provide a record of explosive volcanic activity for the Southern Hemisphere over the past 150,000 yr. (Auth. mod.)

36-1410

Foundations of structures in polar waters.

Chamberlain, E.J., *U.S. Army Cold Regions Research and Engineering Laboratory*, Oct. 1981, SR 81-25, 16p., ADA-108 344, 29 refs.

Offshore structures, Foundations, Hydraulic structures, Offshore drilling, Artificial islands, Ice loads, Subsea permafrost, Sea ice, Seasonal freeze thaw, Pile structures, Site surveys, Beaufort Sea.

Artificial islands and gravity- and pile-founded towers used for the exploration and production of petroleum resources in the Alaskan Beaufort Sea will be affected by conditions not found in more temperate waters. The force of sea ice, the thawing of subsea permafrost, and seasonal freezing and thawing all may cause failure of the foundations of these structures. To ensure the stability of foundations and fill structures, special precautions must be taken in selecting sites and evaluating the engineering properties of sea bed and fill materials.

36-1411

Evidence for a late Wisconsin glaciation of the Weddell Sea.

Elverhöi, A., *Nature*, Oct. 22, 1981, 293(5834), p.641-642, 13 refs.

Ice sheets, Paleoclimatology, Antarctica—Weddell Sea.

The huge ice shelves in West Antarctica—the Ross and Filchner/Ronne Ice Shelves—have probably extended out on the continental shelf during the late Wisconsin. Previous discussions, which have focused on the Ross Sea, have suggested (1) that the ice extended across the whole continental shelf or (2) that there was only a minor expansion. The authors present sedimetological data from the the Weddell Sea which suggest that a late Wisconsin grounded ice sheet extend to the shelf edge. The evidence includes a recent thicker ice in Ellsworth Mountains at the head of the Filchner/Ronne Ice Shelf. This thickening would lead to an expansion of the inland ice sheet over the continental shelf, filling up the Weddell sea embayment.

36-1412

Ice conditions for navigation in antarctic waters and fast ice conditions at unloading areas. [Ledovye usloviia plavaniia sudov v antarkticheskikh vodakh i sostoianie pripainogo l'da v raionakh vygruzki].

Botnikov, V.N., *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1980, Vol.70, p.36-49, In Russian.

Sea ice, Loading, Ice breaking, Antarctica—Molodezhnaya Station.

Features of ice conditions along the route of all expedition vessels and fast ice conditions in unloading areas at Molodezhnaya area described.

36-1413

Summer pack ice structure, salinity and density near Mirnyy Observatory. [Struktura, solenost' i prochnost' l'da v pripae letom v raione observatorii Mirnyi].

Kozlovskii, A.M., *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1980, Vol.70, p.50-54.

Sea ice, Pack ice, Ice deformation, Ice salinity, Ice density, Ice deterioration, Antarctica—Mirnyy Station.

Results of structural, salinity and density studies of fast ice are presented. The effect of underwater ice formation on vertical distribution of density and salinity and the connection between ice density and ice deformation in the layer undergoing destruction and short-term temperature variations are considered.

36-1414

Reproduction and nest-site selection by white-tailed Ptarmigan in Colorado.

Giesen, K.M., et al, *Wilson bulletin*, 1980, 92(2), p.188-199, 40 refs.

Braun, C.E., May, T.A.

Ecology, Alpine landscapes, Animals, Slope orientation, Birds.

36-1415

Offshore structure for use in waters containing large moving ice masses.

Baardsen, P., *U.S Patent Office. Patent*, Aug 5, 1980, 8 col. USP-4,215,952

Offshore structures, Protection, Icebergs, Ice mechanics, Ice pressure, Impact strength, Countermeasures.

36-1416

Containment and recovery techniques for cold weather, inland oil spills.

Allen, A.A., Oil Spill Conference, 1979. Proceedings, American Petroleum Institute, [1980], p.345-353, 6 refs.

Oil spills, Cold weather operation, Countermeasures, Maintenance, Ice cover, Snow cover, Water pollution, Soil pollution.

36-1417
Thawing frozen services and mains.
Bowen, R., *Water engineering and management*, 1981, p.(R)96-(R)97.
Water pipelines, Thawing, Pipeline freezing, Maintenance.

36-1418
Ice pressure sensor inclusion factors.
Chen, A.C.T., *Journal of energy resources technology*, Mar. 1981, 103(1), p.82-86, 7 refs.
Ice pressure, Sea ice, Ice sheets, Measuring instruments.

36-1419
Analysis for an embedded ice pressure sensor.
Templeton, J.S., III, *Journal of energy resources technology*, Mar. 1981, 103(1), p.87-95, 15 refs.
Ice pressure, Ice elasticity, Floating ice, Ice strength, Measuring instruments.

36-1420
Experimental study on moving loads on a floating sea ice road.
Haspel, R.A., et al, *Journal of energy resources technology*, Mar. 1981, 103(1), p.96-105, 11 refs.
Masterson, D.M., Goff, R.J., Potter, R.F.
Ice pressure, Ice strength, Ice roads, Sea ice, Dynamic loads, Floating ice, Stress strain diagrams, Ice elasticity, Flexural strength, Static loads.

36-1421
General report session 2: mechanical properties.
Ladanyi, B., et al, *Engineering geology*, 1979, Vol.13, p.7-18, 5 refs.
Sayles, F.H.
Frozen ground mechanics, Frozen ground strength, Construction materials, Artificial freezing, Ice lenses, Ground ice, Temperature gradients, Design, Permafrost.

36-1422
Thermal energy and the environment.
Crosby, R.L., et al, MP 1480, Hanover, N.H., U.S. Army Cold Regions Research and Engineering Laboratory, Nov. 1975, 3p. + 2p. figs., Presented at Energy and Environment Conference, Dallas, Texas.
Aamot, H.W.C., Wright, E.A.
Heat sources, Heat loss, Thermal effects, Thermal pollution, Environmental impact, Cold weather construction, Polar regions.

36-1423
Further studies of heterogeneous nucleation of ice at the liquid-liquid interface.
Rosinski, J., et al, *Journal of physical chemistry*, Oct. 1, 1981, 85(20), p.2993-2997.
Lecinski, A.
Heterogeneous nucleation, Ice nuclei, Liquid phases, Interfaces, Supercooling.

36-1424
Formation of stacking faults in pure ice single crystals by cooling.
Hondoh, T., et al, *Japanese journal of applied physics*, Oct. 1981, 20(10), p.L737-L740, 9 refs.
Itoh, T., Higashi, A.
Ice crystal structure, Doped ice, Cooling, X ray diffraction.

36-1425
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Godin, R.H., *Glaciological data*, Oct. 1981, GD-11, p.71-77.
Sea ice distribution, Ice forecasting, Charts, Climate, Remote sensing.
Since 1973, the Naval Polar Oceanography Center has reported global sea ice conditions. The Joint Ice Center produces weekly Arctic and Antarctic ice analyses and forecasts. The Antarctic Sea Ice Chart is produced almost exclusively from satellite information. Data sources for ice reports are antarctic shore stations, ship reports and aerial ice reconnaissance. Analysis tools and methodology of ice charting are described.

36-1481
Antarctic sea ice cover from satellite passive microwave.
Zwally, H.J., et al, *Glaciological data*, Oct. 1981, GD-11, p.79-85.
Sea ice distribution, Ice conditions, Remote sensing, Microwaves, Radiometry, Maps, Seasonal variations.
The Nimbus-5 satellite was launched in Nov. 1972 with the Electrically Scanning Microwave Radiometer (ESMR) on board to distinguish ice-covered from ice-free ocean. As a result, a complete map of the Antarctic sea ice distribution has been produced for most 3-day intervals during 1973-1976. These ESMR sea ice data will be presented in an upcoming atlas by the same authors.

36-1482
Lamont climatic snow charts.
Kukla, G., et al, *Glaciological data*, Oct. 1981, GD-11, p.87-91, 8 refs.
Robinson, D., Brown, J.
Snow cover distribution, Radiometry, Remote sensing, Snow optics, Albedo, Climate, Reflectivity, Accuracy, Charts.

36-1483
Snow and ice mapping in Canada.
Goodison, B., *Glaciological data*, Oct. 1981, GD-11, p.93-95, 3 refs.
Ice conditions, Snow cover distribution, Climate, Mapping, Ice cover, Ice forecasting, Models, Charts.

36-1484
Study of the sea ice distribution in the North Pole regions.
Haupt, I., *Glaciological data*, Oct. 1981, GD-11, p.97-102, 4 refs.
Sea ice distribution, Remote sensing, Atmospheric circulation, Charts, Polar regions.

36-1485
Climatic value of operational snow and ice charts.
Kukla, G., et al, *Glaciological data*, Oct. 1981, GD-11, p.103-119, 31 refs.
Robinson, D.
Snow cover distribution, Sea ice distribution, Climate, Albedo, Snow depth, Charts.

36-1486
Digitization of the NOAA/NESS continental snow cover data base.
Matson, M., et al, *Glaciological data*, Oct. 1981, GD-11, p.123-127, 1 ref.
Varnadore, M.S.
Snow cover distribution, Remote sensing, Data transmission, Charts.

36-1487
Snow cover digital products.
Dewey, K.F., *Glaciological data*, Oct. 1981, GD-11, p.129-133, 1 ref.
Snow cover distribution, Remote sensing, Data transmission, Charts.

36-1488
Maximum snow area density digital product.
Kukla, G., et al, *Glaciological data*, Oct. 1981, GD-11, p.135-138, 6 refs.
Robinson, D.
Snow cover distribution, Albedo, Snow optics, Remote sensing, Vegetation factors, Topographic effects, Data transmission.

36-1489
Snow and ice data sets.
Walsh, J.E., *Glaciological data*, Oct. 1981, GD-11, p.139-144, 30 refs.
Snow cover distribution, Sea ice distribution, Ice conditions, Remote sensing, Climate, Charts.
Data sets on the variability of sea ice and snow in the Arctic and Antarctic are summarized. The Arctic grids of the Max Planck data set are digitizations of the monthly charts compiled by the British Meteorological Office. Similarly, the Antarctic grids of the Max Planck set were digitized directly from the Navy - NOAA Antarctic ice charts.

36-1490
Snow and ice indices.
Kukla, G., et al, *Glaciological data*, Oct. 1981, GD-11, p.145-148, 4 refs.
Gavin, J.
Snow cover distribution, Sea ice distribution, Albedo, Remote sensing, Pack ice, Climate.
Several indices, generated on a weekly basis to investigate the impact of recent seasonal and interannual variation of snow and ice cover in the Arctic and Antarctic are described. A total of 70 geographic segments in both hemispheres are assessed. The meridional divisions of the segments were designed so as to approach boundaries of major climatic provinces. The data are obtained by analyzing charts produced primarily by the Navy and NOAA.

36-1491
Mobility bibliography.
Liston, N., comp, *U.S. Army Cold Regions Research and Engineering Laboratory*, Nov. 1981, SR 81-29, 313p. ADA-108 228.
Hutt, M., comp, White, L., comp.
Trafficability, Vehicles, Bibliographies, Transportation, Snow vehicles, Air cushion vehicles, Tracked vehicles, Snow strength, Soil strength.
This bibliography is an international compilation of literature relating to terrain vehicles, amphibious vehicles, snow vehicles, air cushion vehicles, tracked vehicles, wheeled vehicles, and *off-road vehicles. It also covers the related subjects of rolling* resistance, traction, snow strength measurement, soil strength measurement, terrain analogs, vehicle models, and the overall topic of vehicle mobility. It is not comprehensive but begins at about 1970 and ends in 1980. The European coverage is lacking because much of this material is not accessible by computerized literature searching, which was the mechanism used for compiling this bibliography.

36-1492
Malfunction of hydrofoil and air-cushion vessels. [Avarii sudov na vozdushnoi podushke i podvodnykh kryl'iakh].
Korotkin, I.M., Leningrad, Sudostroenie, 1981, 215p., In Russian with English table of contents enclosed. 79 refs.
Ice navigation, Ship icing, Air cushion vehicles, Hydrofoil craft.

36-1493
Foundations of power line supports under complicated ground conditions. [Fundamenty opor linii elektroperedachi v slozhnykh gruntovykh usloviiakh], Gabliia, IU.A., Moscow, Energoizdat, 1981, 191p., In Russian with English table of contents enclosed. 42 refs.
Power line supports, Foundations, Frost heave, Permafrost beneath structures, Mountains.

36-1494
Climate and the reliability of machine performance. [Klimat i nadezhnost' mashin],
Kokh, P.I., Moscow, Mashinostroenie, 1981, 175p. (pertinent p.47-48, 60-94), In Russian with English table of contents enclosed. 111 refs.
Motor vehicles, Tracked vehicles, Construction equipment, Cold weather performance, Meteorological data, Charts, Mining, Earthwork, Rock excavation.

36-1495
Method for determining water reserves in snow and soil moisture content from cosmic rays. [Metod opredeleniia vlagozapasov v snege i vlazhnosti pochv po kosmicheskim luchami],
Kolomeets, E.V., et al, Leningrad, Gidrometeoizdat, 1981, 160p., In Russian with English table of contents enclosed. 97 refs.
Fridman, Sh.D.
Snow surveys, Snow water equivalent, Soil water, Measuring instruments, Telemetering equipment, Airborne equipment.

36-1496
Physico-chemical bases of the formation of cement stone structure. [Fiziko-khimicheskie osnovy formirovaniia struktury tsementnogo kamnia].
Shpynova, L.G., et al, L'vov, Vishcha shkola, 1981, 158p., In Russian with English table of contents enclosed. 154 refs.
Concretes, Cements, Winter concreting, Concrete aggregates, *Concrete freezing, Concrete hardening,* Cement admixtures.

36-1497
Maintenance and repairs of earthwork equipment. [Obsluzhivanie i remont zemleroĭnoĭ tekhniki].
Bardyshev, O.A., et al, Moscow, Transport, 1981, 110p., In Russian with English table of contents enclosed.
Rozanov, I.S., Cherevko, V.I., Berkut, I.A.
Industrial buildings, Modular construction, Earthwork, Construction equipment, Winter maintenance, *Cold weather construction, Permafrost beneath* structures, Baykal Amur railroad.

36-1498
Geographic distribution of algae. [O geograficheskom raspredelenii vodorosleĭ].
Muzafarov, A.M., Tashkent, Fan, 1981, 239p., In Russian with English table of contents enclosed. Refs. p.231-238.
Polar regions, Algae, Plankton, Geography, Classifications.
Geographic distribution of algae in continental water bodies and of marine plankton and benthic species are described and the regularities governing their development, ecology and associations discussed. The Antarctic flora is compared to the Arctic and European assemblies.

36-1499
Aerial landscape indication methods in regional engineering-geological investigations. [Aerolandshaftno-indikatsionnye metody pri regional'nykh inzhenerno-geologicheskikh issledovaniiakh].
Viktorov, S.V., et al, Moscow, Nedra, 1981, 203p., In Russian with English table of contents enclosed. 50 refs.
Aerial surveys, *Radar photography, Spaceborne photography,* Engineering geology, Landscape types, Alpine landscapes, Deserts, Tundra, Meadows, Taiga, Swamps, Slope processes, Human factors.

36-1500
Volcano-ice interactions on the Earth and Mars.
Allen, C.C., Tucson, University of Arizona, 1979, 145p., University Microfilms order No. 7917333, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Aug. 1979, p.642.
Glacier melting, Volcanoes, Ice solid interface, Floods, Landforms, Meltwater, Stream flow, *Heat sources,* Mountains, Mars (planet), Subglacial observations.

36-1501
Electrical properties of permafrost.
Olhoeft, G.R., Toronto, University, 1975, n.p., PB 649 650, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Aug. 1979, p.649-650. Microfilm copy available from the National Library of Canada.
Permafrost physics, Electrical resistivity, Permafrost thermal properties, Freezing, *Dielectric properties.*

36-1502
First glaciological studies on the James Ross Island ice cap, Antarctic Peninsula.
Aristarain, A.J., et al, *Journal of glaciology*, 1981, 27(97), p.371-379, 25 refs., In English with French and German summaries.
Delmas, R.
Ice cores, Drill core analysis, Chemical analysis, Age determination, Climatic changes, Antarctica—James Ross Island.
A 10 m deep core and a 2 m pit were achieved in Dec. 1977 on the James Ross Island ice cap, at an altitude of 1,500 m. The 10 m temperature was -14.2C. The core was cut into 106 samples which have been used for density, total beta radioactivity, electroconductivity, and deuterium content measurements. The age at the bottom of the bore hole is estimated at 1,965 yr. and a mean annual snow accumulation rate for the last 13 years is calculated at 37.7 g/sq cm/a. The climate of upper James Ross Island seems to follow the regime of the western coast. Snow impurities appear to be mainly sea salt derived. A clearly defined conductivity peak at the end of 1967 could be linked with the volcanic eruption of Deception Island in Dec. 1967. (Auth. mod.)

36-1503
On glacier energy balance, ablation, and air temperature.
Braithwaite, R.J., *Journal of glaciology*, 1981, 27(97), p.381-391, 28 refs., In English with French and German summaries.
Glacier heat balance, Glacier ablation, Air temperature, Solar radiation, Analysis (mathematics).

36-1504
Creep slump in glacier reservoirs—theory and experiment.
Shoemaker, E.M., *Journal of glaciology*, 1981, 27(97), p.393-406, 15 refs., In English with French and German summaries.
Glacier ice, Ice mechanics, Glacier surges, Mathematical models, Glacier flow.

36-1505
Effect of the subglacial water pressure on the sliding velocity of a glacier in an idealized numerical model.
Iken, A., *Journal of glaciology*, 1981, 27(97), p.407-421, 17 refs., In English with French and German summaries.
Water pressure, Subglacial observations, Glacier flow, Mathematical models.

36-1506
Micro-morphology of the snow surface at the Quelccaya Ice Cap, Peru.
Hastenrath, S., et al, *Journal of glaciology*, 1981, 27(97), p.243-428, 6 refs., In English with French and German summaries.
Koci, B.
Snow morphology, Snow cover structure, Peru—Quelccaya Ice Cap.

36-1507
Bottom melting under George VI Ice Shelf, Antarctica.
Bishop, J.F., et al, *Journal of glaciology*, 1981, 27(97), p.429-447, 15 refs., In English with French and German summaries.
Walton, J.L.W.
Ice shelves, Ice bottom surface, Ice melting, Ice physics.
Bottom melting rates have been calculated for a large number of sites on George VI Ice Shelf from measurements of its kinematic behaviour. No simple explanation for the melt-rate pattern was found in terms of ice-shelf parameters, assuming steady-state conditions. Values of apparent melt rates varied from 1 to 8 m/a of ice. Along different flow lines the melt rate would sometimes increase with distance from the grounding line and sometimes the melt rate would decrease with distance. Large melt rates were found both where ice flowed off Palmer Land and where the ice shelf butted against Alexander Island. Although oceanographic conditions probably control bottom melting rates the complex pattern with large spatial variation seems to indicate that some areas of ice shelf are changing in thickness. (Auth.)

36-1508
Interaction among controls of cirque development: Sangre de Cristo Mountains, Colorado, USA.
Olyphant, G.A., *Journal of glaciology*, 1981, 27(97), p.449-458, 25 refs., In English with French and German summaries.
Cirque glaciers, Topography, Climate.

36-1509
Systems for measuring thickness of temperate and polar ice from ground or from the air.
Watts, R.D., et al, *Journal of glaciology*, 1981, 27(97), p.459-469, 7 refs., In English with French and German summaries.
Wright, D.L.
Ice cover thickness, Radio echo soundings, Airborne *equipment, Electronic equipment.*

36-1510
Stress-wave generator for snow and ice studies.
Bowles, D., et al, *Journal of glaciology*, 1981, 27(97), p.470-475, 6 refs., In English with French and German summaries.
Brown, R.L.
Measuring instruments, Shock waves, Ice mechanics, Snow mechanics.

36-1511
Visible and near-infrared scanning photometer for field measurements of spectral albedo and irradiance *under polar conditions.*
Grenfell, T.C., *Journal of glaciology*, 1981, 27(97), p.476-481, 6 refs., In English with French and German summaries.
Photometers, Solar radiation, Low temperature tests.

36-1512
Tracing particle paths in the antarctic ice sheet.
Doake, C.S.M., *Journal of glaciology*, 1981, 27(97), p.483-486, 5 refs., In English with French and German summaries.
Ice sheets, Echo sounding, Particles, Models.
A layer of moraine within the Antarctic ice sheet has been detected in the course of airborne radar ice soundings. The moraine was injected at the margin of the ice and can serve as a tracer to pick out a particle path within the ice. When combined with surface measurements, the ability to trace particle paths should allow detailed modelling of the dynamic behaviour in limited areas. (Auth.)

36-1513
Evidence for a former large ice sheet in the Orville Coast-Ronne Ice Shelf area, Antarctica.
Carrara, P., *Journal of glaciology*, 1981, 27(97), p.487-491, 9 refs., In English with French and German summaries.
Ice sheets, Ice scoring, Paleoclimatology, Antarctica—Orville Coast, Antarctica—Ronne Ice Shelf.
The Orville Coast area of the Antarctic Peninsula was extensively glacierized in the past. Striations, polished rock surfaces, and erratics on nunatak summits indicate that this area was covered by a broad regional ice sheet whose grounded ice margin was on the continental shelf, in the present-day Ronne Ice Shelf area. If the glacial history of Antarctica has been controlled by eustatic sea-level changes, the destruction of this ice sheet would have been contemporaneous with that of the Ross Sea ice sheet due to the world-wide rise of eustatic sea-level at the end of the Wisconsin glaciation. (Auth.)

36-1514
Periglacial features on the margins of a receding plateau ice cap, Lyngen, north Norway.
Whalley, W.B., et al, *Journal of glaciology*, 1981, 27(97), p.492-496, 9 refs., In English with French and German summaries.
Gordon, J.E., Thompson, D.L.
Ice sheets, Periglacial processes, Norway.

36-1515
Till texture in drumlins.
Karrow, P.F., *Journal of glaciology*, 1981, 27(97), p.497-502, 29 refs., In English with French and German summaries.
Glacial till, Terminology, Sands.

36-1516
Conjectures, hypotheses, and theories of drumlin formation.
Smalley, I.J., *Journal of glaciology*, 1981, 27(97), p.503-505, 10 refs., In English with French and German summaries.
Glacial till, Shear strength, Geomorphology.

36-1517
Ice segregation as an origin for lenses of non-glacial ice in "ice-cemented" rock glaciers.
Wayne, W.J., *Journal of glaciology*, 1981, 27(97), p.506-510, 22 refs., In English with French and German summaries.
Rock glaciers, Ice lenses, Glacier flow.

36-1518
Cirque-glacier chronology based on emergent lichens and mosses.
Calkin, P.E., et al, *Journal of glaciology*, 1981, 27(97), p.511-515, 24 refs., In English with French and German summaries.
Ellis, J.M.
Cirque glaciers, Geochronology, Lichens, Mosses.

36-1519
On the grain-size dependence of secondary creep.
Jones, S.J., et al, *Journal of glaciology*, 1981, 27(97), p.517-518, 2 refs.
Chew, H.A.M.
Ice crystals, Ice creep, Strains.

36-1520
Weak underbelly of the West Antarctic ice sheet.
Hughes, T.J., *Journal of glaciology*, 1981, 27(97), p.518-525, 12 refs.
Glacier surges, Ice sheets, Ice deterioration, Antarctica—West Antarctica, Antarctica—Thwaites Glacier, Antarctica—Pine Island Glacier.
Neither Thwaites nor Pine Island Glacier, which empty into Pine Island Bay, is buttressed, nor are they confined by large ice shelves as are the glaciers which empty into the Ross and Weddell Sea areas. Because they are unhooked, it is proposed that warming resulting from increasing CO2 in the atmosphere will cause these two glaciers to surge. Ten conditions are listed as being favorable to the surging of the two glaciers and the subsequent collapse of the west antarctic ice sheet.

36-1521
Distributive features of permafrost near the Kuixian Daban in the Tianshan Mountains.
Qiu, G., et al, *Academia Sinica. Lanzhou Institute of Glaciology and Cryopedology. Memoirs*, 1981, No.2, p.1-16, In Chinese, 4 refs.
Zhang, C.
Permafrost distribution, Permafrost thermal properties, Frozen ground temperature, Temperature distribution, Mountains.

36-1522
Experimental formula for determination of natural permafrost table from altitude and latitude.
Xu, X., et al. *Academia Sinica. Lanchou Institute of Glaciology and Cryopedology. Memoirs*, 1981, No.2, p.17-25. In Chinese.
Fu, L., Zhu, L.
Permafrost distribution, Permafrost indicators, Altitude, Mathematical models.

36-1523
Application of the DC vertical electrical resistivity sounding to permafrost surveys.
Huang, Y., et al. *Academia Sinica. Lanchou Institute of Glaciology and Cryopedology. Memoirs*, 1981, No.2, p.26-39. In Chinese. 6 refs.
Gu, Z., Zeng, Z., Wang, S.
Permafrost physics, Electrical resistivity, Permafrost thermal properties, Temperature distribution.

36-1524
Formula for calculation of the thickness of the insulating layer of the subgrade determined by one-dimensional subgrade model experiments.
Ding, D., et al. *Academia Sinica. Lanchou Institute of Glaciology and Cryopedology. Memoirs*, 1981, No.2, p.40-47. In Chinese.
Mi, X., Luo, X.
Subgrades, Thermal insulation, Mathematical models, Experimentation.

36-1525
Observational study about the thermal regime in the subgrade under the heating building and mechanical stability of foundation, Muli District, Qilian Mountain.
Chen, X. *Academia Sinica. Lanchou Institute of Glaciology and Cryopedology. Memoirs*, 1981, No.2, p.48-54. In Chinese.
Subgrades, Thermal regime, Permafrost beneath structures, Foundations, Frozen ground mechanics, Soil mechanics, Soil strength.

36-1526
Thermal properties of typical thawed and frozen soils.
Xu, X., et al. *Academia Sinica. Lanchou Institute of Glaciology and Cryopedology. Memoirs*, 1981, No.2, p.55-71. In Chinese.
Tao, Z., Fu, S.
Ground thawing, Frozen ground temperature, Permafrost thermal properties, Analysis (mathematics), Soil temperature.

36-1527
Frost heave of the seasonal active layer, Muli District, Qilian Mountain.
Chen, X. *Academia Sinica. Lanchou Institute of Glaciology and Cryopedology. Memoirs*, 1981, No.2, p.72-81. In Chinese.
Frost heave, Active layer, Frozen ground mechanics, Permafrost physics, Seasonal variations, Mountains.

36-1528
Laboratorial study of frost heave of soils.
Wu, Z., et al. *Academia Sinica. Lanchou Institute of Glaciology and Cryopedology. Memoirs*, 1981, No.2, p.82-96. In Chinese.
Zhang, J., Wang, Y., Shen, Z.
Frost heave, Frozen ground mechanics, Temperature effects, Analysis (mathematics).

36-1529
Characteristics of thaw consolidation of permafrost, Muli District, Qilian Mountain. *Academia Sinica. Lanchou Institute of Glaciology and Cryopedology. Memoirs*, 1981, No.2, p.97-103. In Chinese. 2 refs.
Permafrost physics, Active layer, Ground thawing, Soil mechanics, Soil stabilization, Mountains, Consolidation.

36-1530
Preliminary study of thaw settlement of frozen soils.
Wu, Z., et al. *Academia Sinica. Lanchou Institute of Glaciology and Cryopedology. Memoirs*, 1981, No.2, p.104-112. In Chinese.
Zhang, J., Wang, Y., Shen, Z.
Frozen ground settling, Ground thawing, Settlement (structural).

36-1531
Laboratorial study of the tangential frost-heave force against the foundation during soil freezing.
Wu, Z., et al. *Academia Sinica. Lanchou Institute of Glaciology and Cryopedology. Memoirs*, 1981, No.2, p.113-128. In Chinese.
Shen, Z., Zhang, J., Wang, Y.
Frost heave, Loads (forces), Foundations, Soil freezing, Experimentation.

36-1532
Laboratorial study of adfreezing strength between the foundation and frozen soil.
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Wang, Y., Shen, Z., Zhang, J.
Frozen ground physics, Frozen ground strength, Foundations, Adhesion, Temperature effects, Experimentation.

36-1533
Characters on the maximum snow depth and its probabilistic distribution in Akita district.
Ito, T., *Seppyo*, Sep. 1981, 43(3), p.137-146. In Japanese with English summary. 24 refs.
Snow depth, Snow cover distribution, Statistical analysis, Mapping.

36-1534
Study of heat balance on the Yukikabe snow patch in the Daisetsu Mountains.
Takahashi, S., et al. *Seppyo*, Sep. 1981, 43(3), p.147-154. In Japanese with English summary. 17 refs.
Sato, A., Naruse, R.
Snow thermal properties, Heat balance, Ablation, Air temperature, Radiation, Latent heat, Temperature effects, Mountains.

36-1535
Digital analyses on the seasonal change of the remnant snowpack of Mt. Chokai based on the data of LANDSAT.
Tsuchiya, I., *Seppyo*, Sep. 1981, 43(3), p.155-161. In Japanese with English summary. 8 refs.
Snow cover distribution, Snow depth, Snowmelt, Remote sensing, Computer applications, LANDSAT, Snow optics, Seasonal variations, Mountains.

36-1536
Car noise test on snow-covered roads.
Shimoda, S., et al. *Seppyo*, Sep. 1981, 43(3), p.163-172. In Japanese with English summary. 4 refs.
Ishibashi, T., Oshima, M.
Snow roads, Vehicles, Noise (sound), Tests.

36-1537
Electric-heater-immersed calorimeter for the determination of liquid water.
Murayama, M., et al. *Seppyo*, Sep. 1981, 43(3), p.173-174. In Japanese. 2 refs.
Ikarashi, H.
Snow water content, Calorimeters.

36-1538
Canadian field activities in ice engineering.
Nakawo, M., *Seppyo*, Sep. 1981, 43(3), p.175-180. In Japanese. 2 refs.
Sea ice, Ice strength, Ice navigation, Offshore structures, Ice surveys, Ice loads, Ice jams, Canada.

36-1539
Last-decennary activities of the avalanche research group in Japan (2).
Nitta, R., *Seppyo*, Sep. 1981, 43(3), p.181-184. In Japanese.
Avalanche formation, Avalanche forecasting, Countermeasures, Japan.

36-1540
Arctic Project bulletin, No.33. Fairbanks, Alaska, Outer Continental Shelf Environmental Assessment Program, Apr. 15, 1981, 17p., Refs. passim
Ocean currents, Meteorology, Sea ice distribution, Ice mechanics, Shores, Marine biology, Meetings, United States—Alaska.

36-1541
Status of the Neoglacial in western Greenland.
Kelly, M., *Denmark. Grønlands geologiske undersøgelse. Rapport*, 1980, No.96, 24p., Refs. p.22-24.
Glaciology, Glacier oscillation, Moraines, Paleoecology.

36-1542
Problems of modelling a high mountainous drainage basin with predominant snow yields.
Charbonneau, R., et al. *Hydrological sciences bulletin*, Dec. 1981, 26(4), p.345-361. With French summary. 14 refs.
Lardeau, J.P., Obled, C.
Snowmelt, Drainage, Hydrology, Mountains, Snow water equivalent, Meteorological factors, Models, Altitude.

36-1543
Elevation: a major influence on the hydrology of New Hampshire and Vermont, USA.
Dingman, S.L., *Hydrological sciences bulletin*, Dec. 1981, 26(4), p.399-413. With French summary. 14 refs.
Hydrology, Snowmelt, Runoff, Snow water equivalent, Snow depth, Altitude, Air temperature, Evapotranspiration, Floods, Slope orientation.

36-1544
Regional modelling of ablation in West Greenland.
Braithwaite, R.J., *Denmark. Grønlands geologiske undersøgelse. Rapport*, 1980, No.98, 20p., 25 refs.
Glacier ablation, Glacial hydrology, Runoff, Water reserves, Air temperature, Models, Weather stations, Greenland.

36-1545
Glaciological investigations at Qamanârssûp sermia, West Greenland.
Olesen, O.B., *Denmark. Grønlands geologiske undersøgelse. Rapport*, 1981, No.105, p.60-61.
Glacier ablation, Glacier mass balance, Temperature effects, Meteorological factors, Greenland.

36-1546
Glaciological investigations in Johan Dahl Land 1980, South Greenland.
Clement, P., *Denmark. Grønlands geologiske undersøgelse. Rapport*, 1981, No.105, p.62-64, 3 refs.
Glacier mass balance, Glacier ablation, Glacial lakes, Glacial hydrology, Seasonal variations, Altitude, Greenland.

36-1547
Modelling glacier hydrology in West Greenland.
Braithwaite, R.J., *Denmark. Grønlands geologiske undersøgelse. Rapport*, 1981, No.105, p.64-66, 7 refs.
Glacial hydrology, Runoff, Precipitation (meteorology), Temperature effects, Evaporation, Glacier mass balance, Models.

36-1548
Status of the West Greenland glacier inventory 1980.
Weidick, A., *Denmark. Grønlands geologiske undersøgelse. Rapport*, 1981, No.105, p.66-67, 4 refs.
Glacial hydrology, Glacier mass balance, Drainage, Runoff, Glacier ablation, Mapping.

36-1549
Comparison of thermal observations of Mount St. Helens before and during the first week of the initial 1980 eruption.
St. Lawrence, W., et al. *Science*, Sep. 26, 1980, Vol.209, MP 1482, p.1526-1527, 11 refs.
Qamar, A., Moore, J., Kendrick, G.
Thermal regime, Volcanoes, Temperature measurement, Infrared reconnaissance, Mountains, Volcanic ash, United States—Washington—Mount Saint Helens.

36-1550
Petrology of the ultramafic and gabbroic rocks of the Brady Glacier nickel-copper deposit, Fairweather Range, southeastern Alaska.
Himmelberg, G.R., et al. *U.S. Geological Survey Professional paper*, 1981, No.1195, 26p., Refs. p.24-26.
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Glacial deposits, Rocks, Chemical composition.

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Ager, T.A., et al. *Arctic anthropology*, 1980, 17(1), p.27-48, 30 refs.
Ager, L.P.
Vegetation, Plants (botany), Agriculture, Polar regions, Survival, United States—Alaska—Nelson Island.

36-1552
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Weather observations, Sea ice, Ecology, Offshore drilling, Air temperature, Wind factors, Icebergs, Canada.

36-1553
Simple mechanical model for rockslides and avalanches.
Pariseau, W.G., *Engineering geology*, 1980, 16(1-2), p.111-123, 5 refs.
Landslides, Rock mechanics, Slope processes, Mathematical models.

36-1554
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Thermal regime, Lake water, Snowmelt, Runoff, Meteorological data, Mountains, Yugoslavia—Ohrid Lake.

36-1559
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36-1560
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Pipelines, Swamps, Roads, Roadbeds, Embankments, Peat.

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Petroleum industry, Large panel buildings, Panels, Metals, Thermal insulation, Plastics.

36-1563
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Pipelines, Permafrost beneath structures, Active layer, Swamps, Anchors, Thermopiles, Permafrost control.

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36-1567
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Petroleum industry, Pipelines, Snow removal.

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36-1569
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Prefabrication, Panels, Pipes (tubes), Refrigeration, Heating, Defrosting, Ice prevention, Pavements, Buildings, Walls, Heat transfer.

36-1572
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Arctic landscapes, Plant ecology, Plant physiology, Pollen.

36-1573
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Power line supports, Foundations, Piles, Permafrost beneath structures.

36-1576
Influence of polimerization regime on properties of polymer concretes. [Vliianie rezhima propitki polimerizatsionnoi sredy i polimerizatsii na nekotorye svoistva betonopolimerov].
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Concretes, Polymers, Concrete freezing, Frost resistance.

36-1577
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Earthwork, Soil compaction, Loess, Clay soils, Earth fills, Sands, Earth dams.

36-1578
Soil compaction with hydraulic hammers. [Uplotnenie gruntov gidromolotami].
Saibel', E.I.V., et al. *Mekhanizatsiia stroitel'stva*, Nov. 1981, No.11, p.13-14, In Russian
Grinshpun, I.V., Ivanov, K.K.
Earthwork, Soil compaction, Earth fills, Construction equipment, Frozen ground.

36-1579
Hardened surfacing of road wheels of high-power bulldozers designed for the Far North. [Napavka sobstvennoi zashchitnoi poverkhnosti katkov moshchnykh bul'dozerov, rabotaiushchikh na trassakh Krainego Severa].
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Susiov, V.V.
Earthwork, Construction equipment, Tracked vehicles, Excavation, Permafrost.

36-1580
Display pavilion "Construction and road building equipment". [Vystavochnyi pavilion "Stroitel'stvo i dorozhnye mashiny"].
Voikova, V.F., *Mekhanizatsiia stroitel'stva*, Dec. 1981, No.12, p.22-27, In Russian.
Construction equipment, Roads, Earthwork, Cranes (hoists), Tractors, Drills, Frozen ground.

36-1581
Physical properties of chemically impure ice sheets.
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Martin, R.A.
Ice physics, Doped ice, Ice composition, Ice sheets, Flexural strength, Strains, Ice models, Solutions, Freezing, Impurities, Experimentation

36-1582
New considerations on one dimensional thermal expansion coefficient of asphalt. (Neue Überlegungen zum eindimensionalen thermischen Ausdehnungskoeffizenten von Asphalt).
Löffler, M., *Bitumen*, Sep.-Oct. 1981, 43(5), p.159-163, In German. 4 refs.
Bitumens, Thermal expansion, Temperature effects, Concrete admixtures.

36-1583
Heavy metal enrichment in antarctic precipitation and near surface snow.
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Molenar, J.V., Owens, M.S., Anderson, A.
Snow composition, Snow mechanics, Precipitation (meteorology), Snow impurities.
Ion exchange and flameless atomic absorption spectrophotometry methods were used to measure the concentrations of sodium, manganese, iron and silver in snow accumulating at several sites on the Antarctic continent. The results show that the ratio of Mn/Fe is consistently close to the crustal values at all sites. The silver concentrations observed suggest a different origin, probably oceanic. When referenced to sodium, the degrees of enrichment of silver, manganese and iron increase by factors of 8, 2 and 2 respectively over a distance of 500 km from the ocean, after changes in sodium are accounted. Investigation of the heavy metal content of fresh falling precipitation occurring on the Ross Ice Shelf, has shown that more enhanced enrichments of silver, manganese and iron occur in this fresh precipitation by factors up to 100, than in samples of snow and firn collected from shallow (up to 2 meters depth) pits at the same locations. Because occurrences of these precipitation types vary temporally and geographically it seems apparent that the shear stress conditions in the near surface boundary layer need to be considered in studies of snow and ice chemistry, particularly in polar regions where the chemical composition of permanent snow and ice fields is often investigated for evidence of climatic change, of glaciological behavior and of origins of chemical constituents. (Auth.)

36-1584
Studies of the glacial cover and periglacial areas of Severnaya Zemlya. (Issledovaniia lednikovogo pokrova i perigliatsiala Severnoĭ Zemli).
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Semenov, I.V., ed, Govorukha, L.S., ed.
Glaciology, Geomorphology, Research projects, Glaciers, Ice sheets, Deserts, River basins, Geocryology, Cryogenic soils, Glacial hydrology, Geophysical surveys, Thermal drills, Periglacial processes, USSR—Severnaya Zemlya.

36-1585
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Govorukha, L.S., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.367, p.5-8, In Russian. 1 ref.
Glaciology, Research projects, Deserts, Ice sheets, Glaciers, Glacial hydrology, Geophysical surveys, Thermal drills, Geomorphology, Mass balance, Heat balance.

36-1586
Morphology of Severnaya Zemlya glaciers. (Morfologiia lednikov Severnoĭ Zemli).
Semenov, I.V., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.367, p.9-20, In Russian. 18 refs.
Glaciers, Ice sheets, Snow cover distribution, Geomorphology, Snow surveys, Glacier surveys.

36-1587
Space regularities governing glaciation development in Severnaya Zemlya. (Prostranstvennye zakonomernosti razvitiia oledeneniia Severnoĭ Zemli).
Semenov, I.V., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.367, p.21-30, In Russian. 21 refs.
Ice cover, Distribution, Altitude, Mountain glaciers, Ice cover thickness, Ice shelves, Shores.

36-1588
Budget of the external mass transfer of Severnaya Zemlya glaciers. (Biudzhet vneshnego massoobmena oledeneniia Severnoĭ Zemli v 1974-1976 gg.).
Govorukha, L.S., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.367, p.31-37, In Russian. 7 refs.
Glaciers, Ice sheets, Ice shelves, Glacial hydrology, Mass balance.

36-1589
Glaciologic and climatic characteristics of the Vavilov dome during ablation. (Gliatsiokhimaticheskaia kharakteristika kupola Vavilova v period ablatsii).
Briazgin, N.N., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.367, p.38-53, In Russian. 5 refs.
Glacier ablation, Snow melting, Meteorological factors, Water vapor, Mass balance, Condensation, Sublimation.

36-1590
Temperature regime of the Vavilov dome to the depth of 11 m. (O temperaturnom sostoianii lednikovoĭ tolshchi kupola Vavilova do glubiny 11 m).
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Govorukha, L.S., Zotikov, I.A.
Glacier surveys, Glacier thickness, Ice temperature, Glacier flow, Glacial hydrology.

36-1591
Results of radar-gliaciological investigations on Severnaya Zemlya. (Nekotorye rezul'taty radiogliatsiologicheskikh issledovanii na Severnoĭ Zemle).
Boiarskiĭ, V.I., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.367, p.58-63, In Russian. 1 ref.
Govorukha, L.S., Fedorov, B.A.
Glacier ice, Ice (water storage), Glacier surveys, Radio echo soundings, Ice cover thickness, Subglacial observations, Bottom topography, Radar echoes, Airborne radar.

36-1592
Using AANII thermodrills in experimental drilling of cold ice sheets. (Eksperimental'nye raboty po bureniiu kholodnykh pokrovnykh lednikov termoburovymi snariadami AANII).
Morev, V.A., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.367, p.64-68, In Russian.
Pukhov, V.A.
Glacier ice, Thermal drills, Ice sheets, Ice coring drills, Ice drills.

36-1593
Oxygen-isotope studies of surface layers of the Vavilov ice dome. (Rezul'taty izotopno-kislorodnykh issledovanii poverkhnostnykh sloev lednikovogo kupola Vavilova).
Gordienko, F.G., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.367, p.69-74, In Russian. 7 refs.
Barbash, V.R., Klement'ev, O.L.
Glacier ice, Snow cover, Firn stratification, Isotope analysis, Oxygen isotopes.

36-1594
Microtexture of ice in the central part of the Vavilov dome. (Mikrostruktura l'da tsentral'noĭ chasti kupola Vavilova).
Portnov, V.G., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.367, p.75-80, In Russian. 9 refs.
Tarasov, L.S., Klement'ev, O.L.
Drill core analysis, Ice cores, Microscope slides, Microstructure, Ice crystal size, Recrystallization.

36-1595
Regularities governing transformations of air inclusion forms in the Vavilov dome ice. (Nekotorye zakonomernosti preobrazovaniia formy vozdushnykh vkliucheniĭ vo l'du (na primere kupola Vavilova)).
Portnov, V.G., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.367, p.81-85, In Russian. 5 refs.
Glacier ice, Snow cover, Firn stratification, Impurities, Gas inclusions.

36-1596
Discharge and water balance of rivers on Oktyabr'skaya Revolyutsiya Island (Severnaya Zemlya). (Stok i vodnyĭ balans rek o. Oktiabr'skoĭ Revoliutsii (Severnaia Zemlia)).
Mordvinov, A.A., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.367, p.86-102, In Russian. 8 refs.
Glacial hydrology, Runoff, Glacial rivers, Hydrography, Alimentation, Discharge.

36-1597
Lakes on Oktyabr'skaya Revolyutsiya Island. (Ozera o. Oktiabr'skoĭ Revoliutsii).
Mordvinov, A.A., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.367, p.103-110, In Russian. 5 refs.
Glacial hydrology, Glacial lakes, Ice conditions, Classifications, Thermal regime, Water temperature, Gases, Alimentation.

36-1598
Geomorphologic investigations performed by the Severnaya Zemlya expedition of the AANII on the Island of Oktyabr'skaya Revolyutsiya during 1974-76 (short review). (Geomorfologicheskie issledovaniia Severozemel'skoĭ ekspeditsii AANII o. Oktiabr'skoĭ Revoliutsii v 1974-1976 gg. (kratkiĭ obzor)).
Makeev, V.M., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.367, p.111-119, In Russian. 9 refs.
Expeditions, Quaternary deposits, Geomorphology, Glaciology, Glacial lakes, Bottom sediment, Drill core analysis, River basins, Valleys, Mapping.

36-1599
Valley structure of the Ushakov and Knizhnaya rivers (Oktyabr'skaya Revolyutsiya Island). (O stroenii dolin rek Ushakova i Knizhnoĭ o. Oktiabr'skoĭ Revoliutsii).
Makeev, V.M., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.367, p.120-125, In Russian. 1 ref.
Malakhovskiĭ, D.B., Makhov, V.V.
River basins, Valleys, Geomorphology, Glaciation, Glacial erosion, Glacial deposits, Moraines.

36-1600
Studies of permafrost phenomena on Oktyabr'skaya Revolyutsiya Island. (Nekotorye rezul'taty izucheniia merzlotnykh iavlenii na o. Oktiabr'skoĭ Revoliutsii).
Orlov, A.V., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.367, p.126-131, In Russian. 5 refs.
Geocryology, Periglacial processes, Glacial erosion, Permafrost depth, Active layer, Ground ice, Ice structure, Continuous permafrost, Slope processes, Solifluction.

36-1601
Soil formation in Arctic deserts of Oktyabr'skaya Revolyutsiya Island (Severnaya Zemlya). (O pochvoobrazovanii v usloviiakh arkticheskikh pustyn' o. Oktiabr'skoĭ revoliutsii (Severnaia Zemlia)).
Govorenkov, B.F., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.367, p.132-141, In Russian. 10 refs.
Polar regions, Deserts, Cryogenic soils, Soil formation, Vegetation factors.

36-1602
Flora of Oktyabr'skaya Revolyutsiya Island. (Flora o. Oktiabr'skoĭ Revoliutsii).
Safronova, I.N., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.367, p.142-150, In Russian. 3 refs.
Polar regions, Landscape types, Plant ecology, Ecosystems.

36-1603
First results of studying the structure of periglacial geosystems on Oktyabr'skaya Revolyutsiya Island. (Pervye rezul'taty izucheniia struktury perigliatsial'nykh geosistem o. Oktiabr'skoĭ Revoliutsii).
Simonov, I.M., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.367, p.151-170, In Russian. 10 refs.
Chernyshev, N.I., Unak, R.I.
Periglacial processes, Mountains, Plains, Shores, Landscape types, Mapping, Charts.

36-1604
Observational and numerical study of the atmospheric boundary layer overlying the east antarctic ice sheet.
Neff, W.D., *U.S. National Oceanic and Atmospheric Administration. Technical memorandum*, Feb. 1981, NOAA TM ERL-WPL-67, 272p., Refs. p.204-213.
This NOAA TM is essentially a copy of Neff's Ph.D. dissertation approved by the University of Colorado June 1980.
Ice sheets, Atmospheric composition, Boundary layer, Mathematical models.
This thesis presents an observational and numerical study of the lowest few hundred meters of the atmosphere overlying the East Antarctic ice sheet. In the past, the harsh environment of Antarctica limited any detailed studies of the boundary layer to the lowest few tens of meters. In particular, full use could not be made of the research site at Amundsen-Scott station which is characterized by a remarkable surface uniformity and slope, the lack of an insolation cycle, and an almost continuous

loss of heat through radiation to space. Acoustic remote sensing devices overcame these limitations, providing added insight into the structure and evolution of this stable atmospheric boundary layer. The study falls into two parts. The first deals with obtaining and interpreting new observations. The second consists of testing and determining the limits of a simplified second-order turbulence closure model when applied to these new data. (Auth. mod.)

36-1605
Mechanical properties of LiCl-doped model ice.
Timco, G.W., *National Research Council, Canada. Division of Mechanical Engineering. Hydraulics Laboratory. Technical report*, May 1980, LTR-HY-79, 29p., 17 refs.
Ice mechanics, Doped ice, Ice physics, Ice growth, Ice structure, Flexural strength, Shear strain, Sea ice.

36-1606
Freshwater ice thickness observations using passive microwave sensors.
Hall, D.K., et al. *IEEE transactions on geoscience and remote sensing*, Oct. 1981, GE-19(4), p.189-193, 11 refs.
Foster, J.L., Chang, A.T.C., Rango, A.
Ice cover thickness, Microwaves, Radiometry, Remote sensing, Lake ice, Snow cover effect, Snow depth.

36-1607
HF radio wave transmission over sea ice and remote sensing possibilities.
Hill, D.A., et al. *IEEE transactions on geoscience and remote sensing*, Oct. 1981, GE-19(4), p.204-209, 17 refs.
Wait, J.R.
Sea ice, Ice cover thickness, Radio waves, Wave propagation, Ice cover thickness, Attenuation, Analysis (mathematics).

36-1608
HF ground wave propagation over mixed land, sea, and sea-ice paths.
Hill, D.A., et al. *IEEE transactions on geoscience and remote sensing*, Oct. 1981, GE-19(4), p.210-216, 23 refs.
Wait, J.R.
Sea ice, Land ice, Sea water, Wave propagation, Attenuation, Remote sensing, Analysis (mathematics).

36-1609
Ice conditions in the eastern Bering Sea from NOAA and LANDSAT imagery: winter conditions 1974, 1976, 1977, 1979.
McNutt, L., *U.S. National Oceanic and Atmospheric Administration. NOAA technical memorandum*, [1980], ERL PMEL-24, 179p., 8 refs.
Ice conditions, Sea ice distribution, Remote sensing, LANDSAT, Statistical analysis, Maps, Charts, Polynyas, Winter.

36-1610
Glacial landforms: Des Moines drift sheet, Iowa.
Palmquist, R., et al. *Association of American Geographers. Annals*, 1978, Vol.68, p.166-179.
Connor, K.
Landforms, Moraines, Landscape types, Topographic features, Glacial processes, Soil formation.

36-1611
Soil formation in northeastern Canada.
Moore, T.R., *Association of American Geographers. Annals*, 1978, Vol.68, p.518-534, 28 refs.
Soil formation, Soil profiles, Decomposition, Canada.

36-1612
Protection of vegetation in Siberia. [Okhrana rastitel'nogo mira Sibiri].
Malyshev, L.I., ed. Novosibirsk, Nauka, 1981, 224p., In Russian. For selected papers see 36-1613 through 36-1617. Refs. passim.
Alpine landscapes, Taiga, Paludification, Landscape types, Cryogenic soils, Saline soils, Human factors, Environmental protection.

36-1613
Changes in the Baraba Plain vegetation due to human activities. [Izmenenie rastitel'nogo pokrova Barabinskoi nizmennosti pod vliianiem khoziaistvennoi deiatel'nosti cheloveka].
Vagina, T.A., Okhrana rastitel'nogo mira Sibiri (Protection of vegetation in Siberia) edited by L.I. Malyshev, Novosibirsk, Nauka, 1981, p.54-59, In Russian. 4 refs.
Taiga, Cryogenic soils, Paludification, Saline soils, Human factors, Environmental protection.

36-1614
Structural changes in steppe phytocenoses of Tuva induced by human activities. [Izmenenie struktury stepnykh fitotsenozov Tuvy pod vliianiem antropogennykh faktorov].
Gorshkova, A.A., et al. Okhrana rastitel'nogo mira Sibiri (Protection of vegetation in Siberia) edited by L.I. Malyshev, Novosibirsk, Nauka, 1981, p.59-77, In Russian. 15 refs.
Shushueva, M.G.
Steppes, Grasses, Cryogenic soils, Plant ecology, Ecosystems, Human factors, Environmental protection.

36-1615
Preservation of initial vegetation sections in the Salair Range taiga. [O sokhranenii etalonnykh uchastkov chernevoi taigi na Salairskom kriazhe].
Lashchinskii, N.N., Okhrana rastitel'nogo mira Sibiri (Protection of vegetation in Siberia) edited by L.I. Malyshev, Novosibirsk, Nauka, 1981, p.106-110, In Russian. 10 refs.
Taiga, Cryogenic soils, Landscape types, Environmental protection.

36-1616
Scientific bases for protection of forest vegetation. [Nauchnye osnovy okhrany lesnoi rastitel'nosti].
Popov, L.V., Okhrana rastitel'nogo mira Sibiri (Protection of vegetation in Siberia) edited by L.I. Malyshev, Novosibirsk, Nauka, 1981, p.127-138, In Russian. 45 refs.
Forest land, Forest soils, Cryogenic soils, Human factors, Environmental protection.

36-1617
Introduction of nemorose relicts from the Siberian-pine mountain taiga in Kuznetskiy Alatau to an artificially created community of taiga vegetation. [Introduktsiia nemoral'nykh reliktov chernevoi taigi Kuznetskogo Alatau v iskusstvenno sozdavaemyi fitotsenoz].
Lubiagina, N.P., Okhrana rastitel'nogo mira Sibiri (Protection of vegetation in Siberia) edited by L.I. Malyshev, Novosibirsk, Nauka, 1981, p.160-166, In Russian. 16 refs.
Introduced plants, Taiga, Landscape types, Plant ecology, Ecosystems, Snow cover effect, Human factors.

36-1618
Reliable foundation for the Baykal Amur railroad tracks. [Zheleznodorozhnomu puti BAMa nadezhnoe osnovanie].
Merenkov, N.D., et al. *Transportnoe stroitel'stvo*, Dec. 1981, No.12, p.8-10, In Russian.
Tsvelodub, B.I.
Embankments, Roadbeds, Foundations, Permafrost beneath structures, Active layer, Baykal Amur railroad, Settlement (structural).

36-1619
Determining actual steepness of excavation slopes. [Opredelenie fakticheskogo znacheniia krutizny otkosa vyemki].
Vizirov, IU.V., et al. *Transportnoe stroitel'stvo*, Dec. 1981, No.12, p.10-11, In Russian.
Sokolov-Baikov, O.V.
Earthwork, Permafrost beneath structures, Excavation, Embankments, Slopes, Seasonal freeze thaw, Baykal Amur railroad.

36-1620
Improving the quality and performance of road-construction equipment. [Povysit' kachestvo i nadezhnost' putevoi tekhniki].
Shvadronov, V.A., *Transportnoe stroitel'stvo*, Dec. 1981, No.12, p.24-25, In Russian.
Embankments, Permafrost beneath structures, Cold weather construction, Construction equipment, Baykal Amur railroad.

36-1621
On antarctic glaciology: ice sheets and ice cores.
Weertman, J., et al. *Nature*, Nov. 19, 1981, 294(5838), p.210-212.
Peel, D.A.
Meetings, Paleoclimatology, Ice composition, Ice cores.
General brief accounts of papers presented at the Third International Symposium on Antarctic Glaciology held at Ohio State University, Sept. 1981 are given. One author (J.W.) reports the major themes of these papers dealing with ice sheets, the stability of West Antarctica, the effect of increased atmospheric CO2, and computer modeling of the iceberg calving process. The other author (D.A.P.) gives the gist of those papers treating interpretation of ice cores obtained from the many drilling programs in progress in Antarctica. Core chemistry, particularly with regard to sulphate and nitrates in snow and ice, constitutes the major point of discussion.

36-1622
Karst of Siberia and the Far East. [Karst Dal'nego Vostoka i Sibiri].
Demin, L.V., ed. Vladivostok, 1980, 166p., In Russian. For selected papers see 36-1623 through 36-1625. Refs. passim.
Krasnov, E.V., ed. Tsykin, R.A., ed.
Karst, Ice caves, Icing, Ice formation, Naleds, Lake ice, Ground ice, Permafrost distribution, Thermokarst, Permafrost hydrology.

36-1623
Karst in Primor'ye, Khabarovsk and Amur regions. [Karst Primorskogo, Khabarovskogo kraev i Amurskoi oblasti].
Demin, L.V., et al. Karst Dal'nego Vostoka i Sibiri (Karst of Siberia and the Far East) edited by L.V. Demin, E.V. Krasnov and R.A. Tsykin, Vladivostok, 1980, p.5-54, In Russian. 56 refs.
Bersenev, IU.I., Tatarnikov, V.A.
Karst, Ice caves, Microclimatology, Ice formation, Naleds, Lake ice, Ground ice, Permafrost distribution, Ice crystals.

36-1624
Karst of the Mar-Kyuel' plateau. [Karst plato Mar-Kiuel'].
Bersenev, IU.I., Karst Dal'nego Vostoka i Sibiri (Karst of Siberia and the Far East) edited by L.V. Demin, E.V. Krasnov and R.A. Tsykin, Vladivostok, 1980, p.105-109, In Russian.
Thermokarst, Ground ice, Permafrost hydrology, Thermokarst lakes.

36-1625
Icing of caves as a part of Earth's glaciosphere. [Oledenenie peshcher kak chast' gliatsiosfery Zemli].
Dmitriev, V.E., Karst Dal'nego Vostoka i Sibiri (Karst of Siberia and the Far East) edited by L.V. Demin, E.V. Krasnov and R.A. Tsykin, Vladivostok, 1980, p.130-145, In Russian. 27 refs.
Ice caves, Karst, Icing, Ground ice, Terminology, Theories.

36-1626
Complex geographic studies of economically developing regions in Siberia. [Kompleksnye geograficheskie issledovaniia osvaivaemykh raionov Sibiri].
Belov, A.V., ed. Irkutsk, 1980, 156p., In Russian. For selected papers see 36-1627 through 36-1632. Refs. passim.
Alpine tundra, Taiga, River basins, Plains, Naleds, Ground ice, Permafrost hydrology, Cryogenic soils, Biomass, Ecosystems, Environmental protection.

36-1627
Small erosional forms of relief in Transbaikal steppes. [Malye erozionnye formy rel'efa stepnogo Zabaikal'ia].
Liubtsova, E.M., Kompleksnye geograficheskie issledovaniia osvaivaemykh raionov Sibiri (Complex geographic investigations of economically developing regions in Siberia) edited by A.V. Belov, Irkutsk, 1980, p.14-23, In Russian. 7 refs.
Steppes, Cryogenic soils, Slope processes, Ground ice, Soil erosion, Frozen fines, Fracturing, Wind erosion, Vegetation factors.

36-1628
Snow cover formation and distribution in the taiga zone of western Siberia. [Nekotorye osobennosti formirovaniia i raspredeleniia snezhnogo pokrova v taezhnoi zone Zapadnoi Sibiri].
Nikitin, S.P., et al. Kompleksnye geograficheskie issledovaniia osvaivaemykh raionov Sibiri (Complex geographic investigations of economically developing regions in Siberia) edited by A.V. Belov, Irkutsk, 1980, p.24-46, In Russian. 21 refs.
Antipov, A.N., Spiridov, A.V.
Taiga, Snow cover distribution, Snow surveys, Snow water equivalent.

36-1629
Injected ice formed on naled plains of the Upper Chara River basin. [Inektsionnye l'dy na naledonykh polianakh Verkhnecharskoi kotloviny].
Sannikov, S.V., Kompleksnye geograficheskie issledovaniia osvaivaemykh raionov Sibiri (Complex geographic investigations of economically developing regions in Siberia) edited by A.V. Belov, Irkutsk, 1980, p.57-63, In Russian. 5 refs.
River basins, Plains, Naleds, Permafrost hydrology, Frost heave, Frost mounds.

36-1630
Protection of vegetational cover in the area east of Lake Baykal under conditions of chemical air pollution. [K voprosu ob okhrane rastitel'nogo pokrova Predbaikal'ia v usloviiakh khimicheskogo zagriazneniia atmosfery].
Vyrkina, L.A., Kompleksnye geograficheskie issledovaniia osvaivaemykh raionov Sibiri (Complex geographic investigations of economically developing regions in Siberia) edited by A.V. Belov, Irkutsk, 1980, p.93-101, In Russian. 17 refs.
Cryogenic soils, Forest soils, Vegetation, Biomass, Ecosystems, Air pollution, Environmental protection.

36-1631
Changes in vegetational cover of the Kodar Range due to economic development of the Upper Chara River basin. [Nekotorye voprosy antropogennykh izmenenii rastitel'nogo pokrova Kodarskogo khrebta v sviazi s khoziaistvennym osvoeniem Verkhnecharskoi kotloviny].
Medvedev, A.L., Kompleksnye geograficheskie issledovaniia osvaivaemykh raionov Sibiri (Complex geographic investigations of economically developing regions in Siberia) edited by A.V. Belov, Irkutsk, 1980, p.102-110, In Russian. 9 refs.
Alpine landscapes, Landscape types, Taiga, Alpine tundra, Soil erosion, Forest fires, Cryogenic soils, Permafrost thermal properties, Environmental protection.

36-1632
Vegetation of naled plains in the Upper Chara basin. [Rastitel'nost' nalednykh polian Verkhnecharskoi kotloviny].
Dneprovskaia, V.N., Kompleksnye geograficheskie issledovaniia osvaivaemykh raionov Sibiri (Complex geographic investigations of economically developing regions in Siberia) edited by A.V. Belov, Irkutsk, 1980, p.111-118, In Russian. 9 refs.
River basins, Plains, Naleds, Plant ecology, Ecosystems, Landscape types, Vegetation patterns, Environmental protection.

36-1633
Subsurface mining of placer deposits in Yakutia. [Podzemnaia razrabotka rossypnykh mestorozhdenii IAkutii].
Sherstov, V.A., et al, Yakutsk, IAkutskoe knizhnoe izd-vo, 1981, 186p., In Russian with English table of contents enclosed. 120 refs.
Skuba, V.N., Lubii, K.I., Kostromitinov, K.N.
Placer mining, Mine shafts, Shaft sinking, Blasting, Permafrost physics, Permafrost thermal properties, Permafrost structure.

36-1634
Peculiarities of lakes in the bald mountain zone of the Kodar Range. [Osobennosti ozer gol'tsovogo poiasa khrebta Kodar (sever Vostochnogo Zabaikal'ia)].
Ivanov, A.V., *Geograficheskoe obshchestvo SSSR. Izvestiia*, Sep.-Oct. 1981, 113(5), p.423-429, In Russian. 8 refs.
Mountain glaciers, Moraines, Glacial hydrology, Glacial lakes, Icebound lakes, Thermal regime, Snow cover effect.

36-1635
New data on evolution of the lake at the end of the Petrov glacier (Tien Shan). [Novye dannye ob evoliutsii vysokogornogo ozera u kontsa lednika Petrova (Tian'-Shan')].
Sevast'ianov, D.V., et al, *Geograficheskoe obshchestvo SSSR. Izvestiia*, Sep.-Oct. 1981, 113(5), p.430-435, In Russian. 14 refs.
Funtikov, A.B.
Mountain glaciers, Moraines, Glacial hydrology, Glacial lakes, Alimentation, Glacier oscillation, Glacier ablation.

36-1636
Radar sounding of glaciers near Molodezhnaya (Antarctica).
Trepov, G.V., et al, *Polar geography and geology*, Jul.-Sep. 1981, 5(3), p.150-153, For Russian original see 34-1827 or 11F-22652. 1 ref.
Sheremet'ev, A.N., Stepanov, V.K.
Glacier ice, Glacier flow, Radar echoes, Antarctica—Molodezhnaya Station.
A radar sounding technique for measuring ice velocity was developed in 1976 during a tractor-sled traverse by the 21st Soviet Antarctic Expedition in the Molodezhnaya area, and compared well with previous velocity data obtained by East German scientists in 1972 by geodetic measurements. Ice thickness measurements and barometric leveling during the 1976 traverse were also used to construct an ice profile. (Auth.)

36-1637
Temperature regime of antarctic fast ice.
Nazintsev, IU.L., *Polar geography and geology*, Jul.-Sep. 1981, 5(3), p.166-170, For Russian original see 34-1829 or 11F-22656. 4 refs.
Fast ice, Ice temperature, Thermal regime, Antarctica—Alasheyev Bight.
Direct measurements of fast-ice temperatures in Alasheyev Bight demonstrate the strong effect of snow cover on temperature amplitude. A change from cyclonic weather to drainage wind with low air temperature is accompanied by removal of part of the snow cover that acts as a thermal insulator, reducing the amplitude of the fast-ice temperatures. The opposite occurs with a change from drainage wind to cyclonic weather, associated with warming and snow deposition. (Auth.)

36-1638
Snow measurements on antarctic fast ice.
Kozlovskii, A.M., *Polar geography and geology*, Jul.-Sep. 1981, 5(3), p.171-174, For Russian original see 34-1830 or 11F-22657. 8 refs.
Fast ice, Snow depth, Snow accumulation.
Snow stakes have generally been the common technique for direct measurements of snow depths. However, on Antarctic fast ice such observations, especially for budget computations, must be adjusted for the presence of snow-water infiltration-congelation ice that is formed through the upward infiltration of seawater through cracks in the fast ice. Investigations in 1970 and 1971 showed that actual snow accumulation on fast ice is two to three times the snow depth that can be directly measured with a stake. (Auth.)

36-1639
Properties of diamond dust type ice crystals observed in summer season at Amundsen-Scott South Pole Station, Antarctica.
Kikuchi, K., et al, *Meteorological Society of Japan. Journal (Nihon kishogakki)*, Apr. 1979, 57(2), p.180-190, 25 refs.
Hogan, A.W.
Snow crystals, Snow crystal growth, Snow crystal structure, Antarctica—Amundsen-Scott Station.
The properties of diamond dust type ice crystals were studied from replicas obtained during the 1975 austral summer at South Pole Station. Columnar type crystals prevailed, but occasionally more than half the number of ice crystals were plate types, including hexagonal, scalene hexagonal, pentagonal, rhombic, trapezoidal and triangular plates. A time variation of two hour periodicity was found in concentration of columnar and plate type crystals. When concentration of columnar type crystals decreased, the length of the c-axis of columnar type crystals also decreased. There was sufficient water vapor to grow these ice crystals in a supersaturation layer several tens to several hundred meters above the surface. Plate type crystals prevailed occasionally at an air temperature of -35C, at which the sheath, hollow and solid prism (column) usually prevail. (Auth. mod.)

36-1640
Shear fracture precipitated by strain softening as a mechanism of dry slab avalanche release.
McClung, D.M., *Journal of geophysical research*, July 10, 1979, 84(B7), p.3519-3526, 24 refs.
Avalanche mechanics, Avalanche formation, Snow stratigraphy, Shear strength, Fracturing, Shear strain, Shear stress, Mathematical models.

36-1641
Effects of experimental crude oil spills on subarctic boreal forest vegetation near Norman Wells, N.W.T., Canada.
Hutchinson, T.C., et al, *Canadian journal of botany*, Oct. 1, 1978, 56(19), p.2424-2433, 21 refs.
Freedman, W.
Oil spills, Forest land, Vegetation, Environmental impact, Seasonal variations, Subpolar regions, Experimentation.

36-1642
Root growth in a polar semidesert environment.
Bell, K.L., et al, *Canadian journal of botany*, Oct. 15, 1978, 56(20), p.2470-2490, With French summary 37 refs.
Bliss, L.C.
Roots, Growth, Desert soils, Polar regions.

36-1643
Effects of highway deicing agents on *Thuja occidentalis* in a greenhouse.
Foster, A.C., et al, *Canadian journal of botany*, Nov. 1, 1978, 56(21), p.2760-2766, With French summary 18 refs.
Maun, M.A.
Trees (plants), Damage, Chemical ice prevention, Vegetation, Salting, Roots, Soil pollution, Experimentation.

36-1644
Site investigations and submarine soil mechanics in polar regions.
Chamberlain, E.J., *U.S. Army Cold Regions Research and Engineering Laboratory*, Oct. 1981, SR 81-24, 18p., ADA-108 269, 44 refs.
Subsea permafrost, Soil mechanics, Frozen ground mechanics, Ocean bottom, Offshore drilling, Offshore structures, Site surveys, Polar regions, Beaufort Sea.
Placing oil exploration and production structures offshore in the Alaskan Beaufort Sea will require careful site investigation and evaluation of submarine soil mechanics. Ice-bounded permafrost occurs widely under the Beaufort Sea floor. Its engineering properties are important to the design of offshore structures. Highly overconsolidated clays also occur widely and interfere with access to gravels for constructing artificial islands. Sites should be selected to avoid ice-rich permafrost. Laboratory tests may need to be conducted to determine the potential hazards of thaw consolidation and weakening.

36-1645
Regional peculiarities of efficiency promotion in the utilization of natural resources and environmental protection. [Regional'nye osobennosti ratsionalizatsii prirodopol'zovaniia i okhrany sredy].
Ishmuratov, B.M., ed, Irkutsk, 1980, 178p., In Russian. For selected papers see 36-1646 through 36-1650. Refs. passim.
Taiga, Mountains, Swamps, Earthquakes, Permafrost distribution, Permafrost hydrology, Railroads, Buildings, Foundations, Permafrost beneath structures, Environmental protection.

36-1646
Landscape-geographic problems in optimizing utilization of natural resources and environmental protection. [Landshaftno-geograficheskie problemy optimizatsii prirodopol'zovaniia i okhrany okruzhaiushcheĭ sredy].
Ishmuratov, B.M., Regional'nye osobennosti ratsionalizatsii prirodopol'zovaniia i okhrany sredy (Regional peculiarities of efficiency promotion in the utilization of natural resources and environmental protection) edited by B.M. Ishmuratov, Irkutsk, 1980, p.5-19, In Russian. 13 refs.
Economic development, Environmental protection, Landscape types.

36-1647
Hydroclimatic evaluation of water regime formation in rivers and lakes for economic development of the BAM area. [Gidroklimaticheskaia otsenka uslovii formirovaniia vodnogo rezhima rek i ozer v sviazi s osvoeniem zony BAM].
Naprasnikov, A.T., et al, Regional'nye osobennosti ratsionalizatsii prirodopol'zovaniia i okhrany sredy (Regional peculiarities of efficiency promotion in the utilization of natural resources and environmental protection) edited by B.M. Ishmuratov, Irkutsk, 1980, p.107-122, In Russian. 17 refs.
Dmitrieva, V.T.
Alpine landscapes, Taiga, Economic development, Environmental protection, Baykal Amur railroad, Hydrology, Rivers, Lakes.

36-1648
Economic and geographic problems of utilizing natural resources in the western part of the BAM zone. [Ekonomiko-geograficheskie voprosy prirodopol'zovaniia v zapadnoi chasti zony BAMa].
IUlinov, V.L., Regional'nye osobennosti ratsionalizatsii prirodopol'zovaniia i okhrany sredy (Regional peculiarities of efficiency promotion in the utilization of natural resources and environmental protection) edited by B.M. Ishmuratov, Irkutsk, 1980, p.123-132, In Russian. 8 refs.
Railroads, Mountains, Taiga, Economic development, Environmental protection.

36-1649
Distinguishing and evaluating territorial combinations of natural conditions limiting economic development of the Amur region. [Opyt vydeleniia i otsenki territorial'nykh sochetanii prirodnykh uslovii limitiruiushchikh promyshlennoe osvoenie Amurskoi oblasti].
Krivoborskaia, A.L., Regional'nye osobennosti ratsionalizatsii prirodopol'zovaniia i okhrany sredy (Regional peculiarities of efficiency promotion in the utilization of natural resources and environmental protection) edited by B.M. Ishmuratov, Irkutsk, 1980, p.133-145, In Russian. 17 refs.
Buildings, Foundations, Permafrost beneath structures, Permafrost distribution, Permafrost hydrology, Earthquakes, Swamps, Taiga, Baykal Amur railroad, Geocryology.

36-1650
Geographic aspects of evaluating avalanche danger in the Kodar-Udokan area for economic development. [Geograficheskie aspekty otsenki lavinnoĭ opasnosti Kodaro-Udokanskogo raiona v sviazi s promyshlennym osvoeniem].
Kirichenko, A.V., Regional'nye osobennosti ratsionalizatsii prirodopol'zovaniia i okhrany sredy (Regional peculiarities of efficiency promotion in the utilization of natural resources and environmental protection) edited by B.M. Ishmuratov, Irkutsk, 1980, p.146-163, In Russian. 16 refs.
Mountains, Snow cover distribution, Snow density, Snow depth, Snow surveys, Avalanche forecasting.

36-1651
Natural and economic factors in the formation of KATEK (Kama-Atchinsk fuel and power production complex. [Prirodnye i ekonomicheskie faktory formirovaniia KATEKa].
Vorob'ev, V.V., ed, Irkutsk, 1980, 161p., In Russian. For selected papers see 36-1652 through 36-1654. Refs. passim.
Korytnyi, L.M., ed.
Fuels, Electric power, Metals, Cryogenic soils, Hydrothermal processes, Soil pollution, Water pollution, Snow cover effect.

36-1652
Present state of soils in the western part of the Kama-Atchinsk complex. [Pochvy zapadnogo uchastka KATEKa i ikh sovremennoe sostoianie].
Martynov, A.V., Prirodnye i ekonomicheskie faktory formirovaniia KATEKa (Natural and economic factors in the formation of KATEK (Kama-Atchinsk fuel and power production complex)) edited by V.V. Vorob'ev and L.M. Korytnyi, Irkutsk, 1980, p.4-9, In Russian. 9 refs.
Fuels, Electric power, Cryogenic soils, Soil erosion, Hydrothermal processes, Human factors.

36-1653
Influence of the Nazarov State Regional Electric Power Plant on geosystems. [Izuchenie vozdeĭstviia Nazarovskoĭ *GRES na geosistemy*].
Davydova, N.D., Prirodnye i ekonomicheskie faktory formirovaniia KATEKa (Natural and economic factors in the formation of KATEK (Kama-Atchinsk fuel and power production cor lex)) edited by V.V. Vorob'ev and L.M. Korytnyi, Irkutsk, 1980, p.27-35, In Russian. 20 refs.
Fuels, Electric power, Metals, Soil pollution, Cryogenic soils, Snow cover effect, Environmental protection.

36-1654
Variations in ice and thermal regimes of water bodies induced by the Kama-Atchinsk plant. [Otsenka izmenenii i termicheskogo rezhima vodnykh ob"ektov Zapadnogo uchastka KATEKa].
Znamenskiĭ, V.A., et al, Prirodnye i ekonomicheskie faktory formirovaniia KATEKa (Natural and economic factors in the formation of KATEK (Kama-Atchinsk fuel and power production complex)) edited by V.V. Vorob'ev and L.M. Korytnyi, Irkutsk, 1980, p.82-88, In Russian. 7 refs.
Filippov, A.M., Fuksova, T.V.
Fuels, Electric power, Water pollution, Rivers, Lakes, Ice conditions, Thermal regime.

36-1655
Problems of the North; a current bibliography. [Problemy Severa; tekushchiĭ ukazatel' literatury].
Akademiia nauk SSSR. Sibirskoe otdelenie. Gosudarstvennaia publichnaia nauchno-tekhnicheskaia biblioteka, Novosibirsk, 1979, 6 issues, Nos. 1, 2, 3, 4, 5, 6. In Russian.
Bibliographies, Climate, Soils, Permafrost, Natural resources, Economic development, Mining, Petroleum industry, Transportation, Construction, Urban planning, Agriculture.

36-1656
Problems of the North; a current bibliography [Problemy Severa; tekushchiĭ ukazatel' literatury].
Akademiia nauk SSSR. Sibirskoe otdelenie. Gosudarstvennaia publichnaia nauchno-tekhnicheskaia biblioteka, Novosibirsk, 1980, 4 issues, Nos. 2, 3, 4, 5. In Russian.
Bibliographies, Climate, Soils, Permafrost, Natural resources, Economic development, Mining, Petroleum industry, Transportation, Construction, Urban planning, Agriculture.

36-1657
Problems of the North; a current bibliography. [Problemy Severa; tekushchiĭ ukazatel' literatury].
Akademiia nauk SSSR. Sibirskoe otdelenie. Gosudarstvennaia publichnaia nauchno-tekhnicheskaia biblioteka, Novosibirsk, 1981, 4 issues, Nos. 1, 2, 3, 6. In Russian.
Bibliographies, Climate, Soils, Permafrost, Natural resources, Economic development, Mining, Petroleum industry, Transportation, Construction, Urban planning, Agriculture.

36-1658
Chemical constituents of the Arctic Ocean in the Svalbard Sea.
Dyrssen, L.A.D., *Oceanologica acta*, 1981, 4(3), p.305-312. With French summary. 22 refs.
Sea water, Chemical composition, Water temperature, Water surfaces, Water chemistry, Arctic Ocean.

36-1659
Winter operation of Mi-2 helicopters.
Khrapkovskii, B., *U.S. Army Foreign Science and Technology Center. Technical translation*, Mar. 24, 1981, FSTC-HT-959-80, 4p., Translation from Kryl'ia rodiny, 1978, 12(10).
Helicopters, Winter maintenance, Cold weather operation.

36-1660
Design criteria for avalanche control structures in the runout zone.
Mears, A.I., *U.S. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado. U.S. Forest Service general technical report*, June 1981, RM-84, 28p., 18 refs.
Avalanche engineering, Avalanche mechanics, Countermeasures, Structures, Impact strength, Design criteria, Protection, Walls, Avalanche tracks, Mountains.

36-1661
Carbon dioxide warming and coastline flooding: physical factors and climatic impact.
Schneider, S.H., et al, *Annual review of energy*, 1980, Vol.5, p.107-140, 131 refs.
Chen, R.S.
DLC TJ163.2.A55
Ice sheets, Glacier melting, Sea level, Carbon dioxide, Climatic changes, Atmospheric composition, Melting, Antarctica—West Antarctica.
Methods of estimating the increase in atmospheric CO2 due to the burning of fossil fuels and tropical forest denudation, the climatic changes due to such increase, the effect of such changes on the West Antarctic ice sheet, and the resultant sea level rises are reviewed. Demographic, economic, social and political impacts, and various policy options are considered.

36-1662
Nature and classification of palsa bogs.
Novikov, S.M., et al, *Soviet hydrology: selected papers*, 1979, 18(2), p.109-113, 14 refs. For Russian original see 34-826.
Usova, L.I.
Swamps, Microrelief, Frost mounds, Permafrost distribution, Classifications.

36-1663
Hydrologic role of the forest in the Komi ASSR.
Brattsev, S.A., *Soviet hydrology: selected papers*, 1979, 18(2), p.127-133, 11 refs. Translated from Akademiia nauk SSSR. Seriia geograficheskaia, 1979, No.6, p.45-56.
Forest land, Forest soils, Cryogenic soils, Rivers, Runoff, Water balance.

36-1664
Reclamation of tundra lowlands on the Chukchi Peninsula.
Skorodumov, I.N., *Soviet hydrology: selected papers*, 1979, 18(2), p.146-149. For Russian original see 33-4495
Arctic landscapes, Tundra, Swamps, Land reclamation.

36-1665
Distribution of the water equivalents of snow in the northeastern regions of the European USSR.
Vershinina, L.K., et al, *Soviet hydrology: selected papers*, 1979, 18(3), p.171-176, 5 refs. For Russian original see 34-1079.
Volchenko, V.N.
Snow surveys, Snow water equivalent, Snow cover distribution, Landscape types, Forest land, Swamps.

36-1666
Assessment of the possibility of determining the water equivalent of snow from aircraft by the gamma method in regions with an unstable snow cover.
Vershinina, L.K., *Soviet hydrology: selected papers*, 1979, 18(3), p.177-180, 5 refs. For Russian original see 34-1080.
Snow surveys, Airborne equipment, Gamma irradiation, Snow water equivalent.

36-1667
Estimation of evaporation from the forest in early spring.
Krestovskii, O.I., et al, *Soviet hydrology: selected papers*, 1979, 18(3), p.181-186, 16 refs. Translated from Leningrad. Gosudarstvennyi gidrologicheskii institut. Trudy, 1979, Vol.259, p.76-86.
Postnikov, A.N., Sergeeva, A.G.
Snow melting, Runoff, Forest soils, Meadow soils, Evaporation.

36-1668
Estimation of the Errors of determination of snow cover characteristics in the northeastern regions of the European USSR.
Vershinina, L.K., et al, *Soviet hydrology: selected papers*, 1979, 18(3), p.198-202, 3 refs. For Russian original see 34-1082.
Belova, L.B.
Snow surveys, Snow density, Snow depth, Snow cover distribution, Snow water equivalent.

36-1669
Evaluation of the error in the determination of soil freezing depth at observation points.
Sokolova, N.V., *Soviet hydrology: selected papers*, 1979, 18(3), p.203-206, 7 refs. For Russian original see 34-1083.
Forest soils, Steppes, Soil water, Soil freezing, Frost penetration.

36-1670
Model of the formation of direct runoff for wooded drainage basins.
Bel'chikov, V.A., et al, *Soviet hydrology: selected papers*, 1979, 18(3), p.207-216, 14 refs. Translated from Leningrad. Gidrometeorologicheskii tsentr SSSR. Trudy, 1979, Vol.218, p.3-21.
Koren', V.I.
Forest land, Forest soils, Soil freezing, Freeze thaw cycles, Meltwater, Runoff, Seepage, Soil water, Mathematical models.

36-1671
Simulation of meltwater losses through infiltration into soil.
Motovilov, Iu.G., *Soviet hydrology: selected papers*, 1979, 18(3), p.217-221. Translated from Leningrad. Gidrometeorologicheskii tsentr SSSR. Trudy, 1979, Vol.218, p.22-32.
Soil freezing, Meltwater, Soil water, Seepage, Runoff, Frozen ground, Mathematical models.

36-1672
Achievements and problems in the study of avalanches and mudflows by the geographers of Moscow State University.
Miagkov, S.M., et al, *Soviet hydrology: selected papers*, 1979, 18(3), p.235-237. For Russian original see 34-1639.
Trofshkina, E.S.
Slope processes, Mudflows, Avalanche formation, Mapping, Avalanche forecasting, Meteorological factors.

36-1673
Land reclamation in Yakutia.
Seliverstov, A.P., *Soviet hydrology: selected papers*, 1979, 18(3), p.238-239. Translated from Gidrotekhnika i meliboratsiia, 1979, No.11, p.17-18.
Land reclamation, Permafrost distribution, Meadow soils, Cryogenic soils, Irrigation.

36-1674
Cosmogenic 10Be concentrations in antarctic ice during the past 30,000 years.
Raisbeck, G.M., et al, *Nature*, Aug. 27, 1981, 292(5826), p.825-826, 21 refs.
Ice cores, Drill core analysis, Isotope analysis, Age determination.
The first significant measurements in a programme to determine the Be-10 concentration profile over the entire length of a 906-m Antarctic ice core are reported. The results suggest an increased production of Be-10 during the Maunder minimum, a period of apparently low solar activity lasting from 1645 to 1715. More surprisingly, a substantially increased Be-10 concentration in snow deposited during the last ice age was also found. While the interpretation of this latter effect is not yet clear, it will almost certainly have important implications for climatology studies. If production variations are indeed involved, there are also important implications for solar-terrestrial relationships and radiocarbon dating. (Auth. mod.)

36-1675
Natural concentrations of lead in ancient arctic and antarctic ice.
Ng, A., et al. *Geochimica et cosmochimica acta.* Nov. 1981, 45(11), p.2109-2121. 52 refs.
Patterson, C.
Ice cores, Impurities, Air pollution.
The authors, analyzing samples from the same Greenland and antarctic ice cores which had given samples for earlier analyses, refute the claims of the previous investigators that excess Pb in the atmosphere comes from natural sources. It is claimed that 99% of the excess Pb can be traced to industrial emissions into the atmosphere.

36-1676
Flow of metals into the global atmosphere.
Jaworowski, Z., et al. *Geochimica et cosmochimica acta.* Nov. 1918, 45(11), p.2185-2199. Refs. p.2197-2199.
Bysiek, M., Kownacka, L.
Ice sheets, Impurities, Ice composition, Metals, Antarctica—King George Island.
Concentrations of 137 CS, 210 Pb, 226 Ra, U, V, Pb, Cd and Hg have been measured in firn and ice deposited during the past three decades in accumulation zones of glaciers and also in pre-industrial glacier ice collected in Spitsbergen, Northern Norway, Alaska, Southern Norway, Alps, Himalayas, Ruwenzori, Peruvian Andes, and at King George Island in Antarctica. No evidence was found of changes in rate of metal deposition during the last three decades, as compared with pre-industrial period, migrating from the exposed surface of old parts of glaciers into the deeper ice layers. (Auth. mod.)

36-1677
Active layer slope movement in a continuous permafrost environment, Garry Island, Northwest Territories, Canada.
Mackay, J.R., *Canadian journal of earth sciences.* Nov. 1981, 18(11), p.1666-1680. With French summary. 54 refs.
Slope processes, Active layer, Continuous permafrost, Soil mechanics, Ice wedges, Ground ice, Soil creep, Hummocks, Ice lenses, Soil temperature.

36-1678
Proceedings; Closing comments; Chairmen's reports and discussions.
International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-26, 1980. Trondheim, Norway, University, [1981], 150p., Refs. passim. For individual papers see 36-1679 through 36-1681. Contains late papers, reports from the session chairmen, discussions from all sessions, and a list of participants. For the preprint volumes see 36-1 through 36-92.
Soil freezing, Frozen ground physics, Heat transfer, Artificial freezing, Frost action, Meetings, Rheology, Pipelines.

36-1679
Proposed method for reference tests on frozen soil.
Jessberger, H.L., et al. International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-16, 1980. Proceedings, Trondheim, University, [1981], p.3-8.
Ebel, W.
Frozen ground physics, Frozen ground mechanics, Soil creep, Compressive properties, Rheology, Tests.

36-1680
Optimization of the freeze pipe arrangement and the necessary refrigeration plant capacity by a FEM-computer program.
Jessberger, H.L., et al. International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-16, 1980. Proceedings, Trondheim, University, [1981], p.43-59. 25 refs.
Makowski, E.
Soil freezing, Artificial freezing, Heat transfer, Phase transformations, Temperature distribution, Thermal conductivity, Soil temperature, Latent heat, Pipes (tubes), Computer programs.

36-1681
Successful application of an unusual ground freezing method to secure tunnel excavation.
Valk, J., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-16, 1980. Proceedings, Trondheim, University, [1981], p.79-93.
Artificial freezing, Soil freezing, Tunneling (excavation), Drilling, Pipes (tubes).

36-1682
Pipeline design methodology for the Arctic environment.
Beheshti, M., International Symposium on Ground Freezing, 2nd, Trondheim, Norway, June 24-16, 1980. Proceedings, Trondheim, University, [1981], p.94-108, 18 refs.
Gas pipelines, Thermal insulation, Frost heave, Permafrost preservation, Underground pipelines, Forecasting, Frost action, Design.

36-1683
Patterned ground and permafrost in southern Abitibi, Quebec. [Géliformes et sols cryiques dans le sud de l'Abitibi, Québec].
Brown, J.L., et al. *Géographie physique et quaternaire.* 1980, 34(2), p.137-158. In French with English and German summaries. 30 refs.
Gangloff, P.
Patterned ground, Discontinuous permafrost, Cryoturbation, Geocryology, Canada—Quebec—Abitibi.

36-1684
Shore ice dynamics at Point d'Argentenay, Orleans Island, Quebec. [Dynamique glacielle à la Pointe d'Argentenay, île d'Orléans, Québec].
Allard, M., et al. *Géographie physique et quaternaire.* 1980, 34(2), p.159-174. In French with English and German summaries. 66 refs.
Champagne, P.
Fast ice, Ice formation, Ice accretion, Ice rafting, Ice breakup.

36-1685
Peatlands of the southern James Bay area, Quebec. [Les tourbières du sud de la Jamésie, Québec].
Grondin, P., et al. *Géographie physique et quaternaire.* 1980, 34(3), p.267-299. In French with English and German summaries. 50 refs.
Ouzilleau, J.
Peat, Classifications, Canada—Quebec—James Bay.

36-1686
Contemporary pollen spectra in the James Bay lowland, Canada, and comparison with other forest-tundra assemblages.
Farley-Gill, L.D., *Géographie physique et quaternaire.* 1980, 34(3), p.321-334. In English with French and German summaries. 57 refs.
Pollen, Forest tundra, Classifications.

36-1687
Illustrated terminology of minor glacial erosion forms. [Terminologie illustrée des formes mineures d'érosion glaciaire].
Laverdière, C., et al. *Géographie physique et quaternaire.* 1980, 34(3), p.363-377. In French with English summary. 45 refs.
Guimont, P.
Glacial erosion, Terminology.

36-1688
Proceedings.
International Symposium on Renewable Resources and the Economy of the North, 1st, Banff, Alberta, May 1981. Ottawa, ACUNS, 1981, 268p., Refs. passim. For selected papers see 36-1689 through 36-1693.
Freeman, M.M.R., ed.
Ecosystems, Tundra, Landforms, Forest land, Ecology, Environmental protection.

36-1689
Land use—North: research on land use conflicts in northern Sweden.
Abrahamsson, K.V., International Symposium on Renewable Resources and the Economy of the North, 1st, Banff, Alberta, May 1981. Proceedings, Ottawa, ACUNS, 1981, p.131-132.
Landforms, Ecosystems, Forest land, Animals, Electric power, Sweden.

36-1690
Renewable resources of north-east Siberia.
Bogdanov, I.E., International Symposium on Renewable Resources and the Economy of the North, 1st, Banff, Alberta, May 1981. Proceedings, Ottawa, ACUNS, 1981, p.133-137.
Ecosystems, Forest land, Environmental protection, Animals, Preserving, USSR—Siberia.

36-1691
Is there potential for Canadian northern agriculture? A justification for research on northern native plants as potential foodcrops.
Romer, M.J., et al. International Symposium on Renewable Resources and the Economy of the North, 1st, Banff, Alberta, May 1981. Proceedings, Ottawa, ACUNS, 1981, p.161-165. 22 refs.
Cummins, W.R., Svoboda, J.
Tundra, Agriculture, Vegetation, Animals, Canada.

36-1692
Canadian High North: resource of renewal.
Svoboda, J., International Symposium on Renewable Resources and the Economy of the North, 1st, Banff, Alberta, May 1981. Proceedings, Ottawa, ACUNS, 1981, p.183-189, 14 refs.
Ecology, Tundra, Ecosystems, Canada.

36-1693
Proposed international networks for co-operation in northern science.
Harrison, J.M., et al. International Symposium on Renewable Resources and the Economy of the North, 1st, Banff, Alberta, May 1981. Proceedings, Ottawa, ACUNS, 1981, p.239-248.
Carter, E.
Ecosystems, Tundra, Taiga, Forest land, International cooperation, Mountains, Marine biology, Environmental protection, Polar regions.

36-1694
Road icing on different pavement structures.
Gustafson, K., *Sweden. Statens väg- och trafikinstitut. Rapport.* 1981, No.216A, 158p. + 5 appends., Refs. p.156-158.
Road icing, Pavements, Surface properties, Ice solid interface, Rubber ice friction, Thermal insulation, Ice formation, Heat transfer, Surface temperature, Thermal conductivity, Climatic factors, Tests.

36-1695
Soil temperatures under urban trees and asphalt.
Halverson, H.G., et al. *U.S. Forest Service. Research paper.* 1981, NE-481, 6p., 10 refs.
Heisler, G.M.
Soil temperature, Bitumens, Trees (plants), Heat balance, Heat transfer, Soil water.

36-1696
Deformation behaviour of ice-like materials in engineering applications.
Sinha, N.K., National Research Council, Canada. Division of Building Research. DBR paper No.992. International Symposium on the Mechanical Behaviour of Structured Media, Ottawa, Canada, May 18-21, 1981. Proceedings, 1981, p.419-430. With French summary. 15 refs.
Ice creep, Ice crystal structure, Ice deformation, Construction materials, Stress strain diagrams, Ice mechanics, Rheology, Grain size, Engineering, Analysis (mathematics).

36-1697
Microwave measurements of snowpack properties.
Stiles, W.H., et al. *Nordic hydrology.* 1981, Vol.12, p.143-166. Refs. p.164-166.
Ulaby, F.T., Rango, A.
Snow water equivalent, Snow water content, Microwaves, Remote sensing, Radiometry, Backscattering, Snowmelt, Runoff forecasting.

36-1698
Brine channel enlargement in sea ice during spring thaw.
Cox, J.C., et al. *American Society of Mechanical Engineers. Heat Transfer Division. Publication.* 1980, No.80-WA/HT-18, 4p., Presented at the ASME Winter Annual Meeting, Chicago, Ill., Nov. 16-21, 1980. 6 refs.
Schultz, L.A.
Sea ice, Ice melting, Brines, Ice water interface, Ice deterioration, Thermal conductivity, Channels (waterways), Oil spills, Ice cover thickness, Ice density, Porosity, Analysis (mathematics).

36-1699
Radar measurements of thickness of "warm" glaciers.
Czajkowski, R., *Polish polar research.* 1980, 1(4), p.21-41, 10 refs.
Glacier thickness, Radar echoes, Crevasses, Norway—Spitsbergen.

36-1700
Operation of airplanes and helicopters under difficult flight conditions. [Ekspluatatsiia samoletov i vertoletov v uslozhnennykh prirodnykh usloviiakh].
Volodko, A.M., Moscow, Transport, 1981, 158p., In Russian with abridged English table of contents enclosed. 50 refs.
Aircraft icing, Hail, Atmospheric disturbances, Airplanes, Helicopters, Cold weather performance.

36-1701
Residential microregion under severe climatic conditions. [Zhiloi mikroraion v usloviiakh surovogo klimata].
Blinov, V.A., Novoe v zhizni, nauke, tekhnike. Serna stroitel'stvo i arkhitektura. No.4, Moscow, Znanie, 1978, 63p., In Russian with English table of contents enclosed. 9 refs.
Urban planning, Residential buildings, Permafrost beneath structures, Snowdrifts, Microclimatology, Ventilation, Heating, Humidity, Wind factors, Solar radiation, Air temperature.

36-1702
Long range forecasting of water-cooling rate to freezing temperature in the Barents and Baltic seas. [Dolgosrochnyi prognoz skorosti okhlazhdeniia vody do temperatury zamerzaniia na Barentsevom, Belom i Baltiiskom moriakh].
Sheremetevskaia, O.I., *Leningrad. Gidrometeorologicheskii nauchno-issledovatel'skii tsentr SSSR. Trudy*, 1981, Vol.241, p.84-93, In Russian. 11 refs.
Sea ice, Ice formation, Ice forecasting, Sea water freezing, Freezing rate, Long range forecasting.

36-1703
Use of entropic ratio in estimating reliability of predictors in prognostic equations. [Primenenie entropicheskogo sootnosheniia dlia otsenki nadezhnosti prediktorov prognosticheskikh uravnenii].
Kutsuruba, A.I., *Leningrad. Gidrometeorologicheskii nauchno-issledovatel'skii tsentr SSSR. Trudy*, 1981, Vol.241, p.94-98, In Russian. 8 refs.
Sea ice, Ice conditions, Ice melting, Ice forecasting, Analysis (mathematics).

36-1704
Allowing for astronomic and geophysical data in long-range forecasting of ice conditions on the Baltic Sea. [Opyt ucheta astronomicheskikh i geofizicheskikh dannykh pri dolgosrochnom prognozirovanii ledovykh uslovii na Baltiiskom more].
Nikolaev, S.G., *Leningrad. Gidrometeorologicheskii nauchno-issledovatel'skii tsentr SSSR. Trudy*, 1981, Vol.241, p.99-105, In Russian. 7 refs.
Sea ice, Ice formation, Ice forecasting, Ice conditions, Drift.

36-1705
Structure and thermal regime of frozen rocks. [Stroenie i teplovoi rezhim merzlykh porod].
Katasonova, E.G., ed, Novosibirsk, Nauka, 1981, 89p., In Russian. For individual papers see 36-1706 through 36-1721.
Pavlov, A.V., ed.
Permafrost distribution, Permafrost structure, Permafrost thermal properties, Seasonal freeze thaw, Subsea permafrost, Active layer, Soil freezing, Earth *dams, Thermal regime, Mining, Lakes, Shores.*

36-1706
Cryolithologic peculiarities of small river deposits in Central Yakutia. [Kriolitologicheskie osobennosti otlozhenii malykh rek v Tsentral'noi IAkutii].
Katasonova, E.G., et al, Stroenie i teplovoi rezhim merzlykh porod (Structure and thermal regime of frozen rocks) edited by E.G. Katasonova and A.V. Pavlov, *Novosibirsk, Nauka, 1981, p.3-14, In Russian.*
Zigert, Kh.G.
Rivers, Sediments, Alluvium, Permafrost beneath rivers, Ground ice, Frozen fines, Cryogenic structures.

36-1707
Mineral formation in permafrost areas. [Mineraloobrazovanie v oblasti vechnoi merzloty].
Zigert, Kh.G., *Stroenie i teplovoi rezhim merzlykh porod (Structure and thermal regime of frozen rocks)* edited by E.G. Katasonova and A.V. Pavlov, Novosibirsk, Nauka, 1981, p.14-21, In Russian. 20 refs.
Permafrost origin, Sediments, Ground water, Geochemistry, Frost penetration, Minerals, Frozen rock temperature, Landscape types, River basins, Flood plains, Deltas, Frozen fines, Ground ice, Clay minerals.

36-1708
Cryogenic structure of slope deposits in the north of the Central Siberian Plateau. [Kriogennoe stroenie sklonovykh otlozhenii na severe Srednesibirskogo ploskogor'iia].
Kunitskii, V.V., Stroenie i teplovoi rezhim merzlykh porod (Structure and thermal regime of frozen rocks) edited by E.G. Katasonova and A.V. Pavlov, Novosibirsk, Nauka, 1981, p.21-25, In Russian. 8 refs.
Slope processes, Sediments, Fines, Gravel, Alluvium, Frost penetration, Cryogenic structures, Ground ice, Ice veins.

36-1709
Pereletoks and basic types of seasonally frozen rocks. [Pereletki i osnovnye tipy sezonnomerzlykh porod].
Vtiurina, E.A., Stroenie i teplovoi rezhim merzlykh porod (Structure and thermal regime of frozen rocks) edited by E.G. Katasonova and A.V. Pavlov, Novosibirsk, Nauka, 1981, p.26-35, In Russian. 14 refs.
Geocryology, Terminology, Pereletoks, Permafrost thickness, Permafrost depth, Frozen ground, Frozen rock temperature, Classifications.

36-1710
Peculiarities of coastal and shelf cryolithozone. [Osobennosti pribrezhno-shel'fovoi kriolitozony].
Fartyshev, A.I., Stroenie i teplovoi rezhim merzlykh porod (Structure and thermal regime of frozen rocks) edited by E.G. Katasonova and A.V. Pavlov, Novosibirsk, Nauka, 1981, p.35-38, In Russian. 17 refs.
Subsea permafrost, Permafrost origin, Permafrost distribution, Permafrost transformation.

36-1711
Subzero temperature extremes in the active layer rocks of Central Yakutia over a long period of years. [Mnogoletnie ekstremumy otritsatel'noi temperatury gruntov sezonnoprotaivaiushchego sloia v Tsentral'noi IAkutii].
Solov'ev, P.A., et al, Stroenie i teplovoi rezhim merzlykh porod (Structure and thermal regime of frozen rocks) edited by E.G. Katasonova and A.V. Pavlov, Novosibirsk, Nauka, 1981, p.39-46, In Russian.
Golubykh, L.P.
Active layer, Frozen rock temperature, Air temperature, Heat transfer.

36-1712
Intensity of seasonal frost penetration into soil and grounds of Zailiyskiy Alatau. [Intensivnost' sezonnogo promerzaniia pochvogruntov v Zailiiskom Alatau].
Severskii, E.V., et al, Stroenie i teplovoi rezhim merzlykh porod (Structure and thermal regime of frozen rocks) edited by E.G. Katasonova and A.V. Pavlov, Novosibirsk, Nauka, 1981, p.46-50, In Russian. 7 refs.
Popov, M.V.
Mountains, Slope orientation, Soil freezing, Frost penetration.

36-1713
Thermal conductivity of coarse clastic grounds in northern Tien Shan. [Teploprovodnost' krupnooblomochnykh gruntov v gorakh severnogo Tian'-Shania].
Mandarov, A.A., Stroenie i teplovoi rezhim merzlykh porod (Structure and thermal regime of frozen rocks) edited by E.G. Katasonova and A.V. Pavlov, Novosibirsk, Nauka, 1981, p.50-53, In Russian. 5 refs.
Mountains, Slope processes, Slope orientation, Seasonal freeze thaw, Soil profiles, Soil temperature, Heat transfer.

36-1714
Heat balance of a large lake and adjacent territories in Central Yakutia. [Teplovoi balans krupnogo ozera i prilegaiushchei territorii v Tsentral'noi IAkutii].
Pavlov, A.V., et al, Stroenie i teplovoi rezhim merzlykh porod (Structure and thermal regime of frozen rocks) edited by E.G. Katasonova and A.V. Pavlov, Novosibirsk, Nauka, 1981, p.53-63, In Russian. 17 refs.
Tishin, M.I.
Lake water, Water temperature, Permafrost beneath lakes, Heat balance, Seasonal variations.

36-1715
Geothermal parameters of the Urengoy deposit. [Geotermicheskie parametry Urengoiskogo mestorozhdeniia].
Levchenko, A.I., Stroenie i teplovoi rezhim merzlykh porod (Structure and thermal regime of frozen rocks) edited by E.G. Katasonova and A.V. Pavlov, Novosibirsk, Nauka, 1981, p.63-66, In Russian. 7 refs.
Petroleum industry, Drilling, Permafrost thickness, Frozen rock temperature, Temperature measurement, USSR—Tyumen'.

36-1716
Thermophysical properties of perennially frozen rocks in the Mastakh gas field. [Teplofizicheskie svoistva mnogoletnemerzlykh porod Mastakhskogo mestorozhdeniia gaza].
Kolushev, N.R., et al, Stroenie i teplovoi rezhim merzlykh porod (Structure and thermal regime of frozen rocks) edited by E.G. Katasonova and A.V. Pavlov, Novosibirsk, Nauka, 1981, p.66-70, In Russian. 2 refs.
Balobaev, V.T., Gavril'ev, R.I.
Petroleum industry, Gas wells, Permafrost thermal properties, Permafrost physics.

36-1717
Temperature and the SP field near the lower boundary of perennially frozen terrigenous deposits. [O nekotorykh osobennostiakh povedeniia temperaturnogo i elektricheskogo polia PS vblizi nizhnei granitsy merzloty v terrigennykh tolshchakh].
Volod'ko, B.V., Stroenie i teplovoi rezhim merzlykh porod (Structure and thermal regime of frozen rocks) edited by E.G. Katasonova and A.V. Pavlov, Novosibirsk, Nauka, 1981, p.70-76, In Russian. 17 refs.
Permafrost thermal properties, Permafrost physics, Electrical properties, Electrical logging, Frozen rock temperature, Temperature variations.

36-1718
Thermal properties of enclosing rocks in the "Mir" quarry of western Yakutia. [Teplovye svoistva vmeshchaiushchikh porod kar'era "Mir" (Zapadnaia IAkutiia)].
Deviatkin, V.N., et al, Stroenie i teplovoi rezhim merzlykh porod (Structure and thermal regime of frozen rocks) edited by E.G. Katasonova and A.V. Pavlov, Novosibirsk, Nauka, 1981, p.76-78, In Russian. 6 refs.
Gavril'ev, R.I.
Mining, Permafrost thermal properties, Quarries, Frozen fines, Rock salt, Limestones.

36-1719
Geothermal conditions of the Kurung-Uriakh and Khatat river basin (Western Yakutia). [Geotermicheskie usloviia basseina rek Kurung-Uriakh i Khatat (Zapadnaia IAkutiia)].
Deviatkin, V.N., Stroenie i teplovoi rezhim merzlykh porod (Structure and thermal regime of frozen rocks) edited by E.G. Katasonova and A.V. Pavlov, Novosibirsk, Nauka, 1981, p.78-80, In Russian. 6 refs.
River basins, Quaternary deposits, Permafrost distribution, Frozen rock temperature, Geothermometry.

36-1720
Thermal balance of irrigated grass fields in Central Yakutia. [Teplovoi balans orosiaemykh posevov kormovykh kul'tur v Tsentral'noi IAkutii].
Skriabin, P.N., et al, Stroenie i teplovoi rezhim merzlykh porod (Structure and thermal regime of frozen rocks) edited by E.G. Katasonova and A.V. Pavlov, Novosibirsk, Nauka, 1981, p.80-83, In Russian. 3 refs.
Alekseeva, O.I.
Grasses, Cryogenic soils, Irrigation, Soil water, Heat balance, Soil temperature, Heat flux.

36-1721
Calculating frost penetration into earth dams and their foundations. [Raschet promerzaniia namyvnoi nasypi i ee osnovaniia].
Votiakova, N.I., Stroenie i teplovoi rezhim merzlykh porod (Structure and thermal regime of frozen rocks) edited by E.G. Katasonova and A.V. Pavlov, Novosibirsk, Nauka, 1981, p.84-86, In Russian.
Earth dams, Earth fills, Frost penetration, Mathematical models.

36-1722
Snow and avalanches in the Swiss Alps, winter 1979-80. [Schnee und Lawinen in den Schweizer Alpen, Winter 1979-80].
Davos, Switzerland. Eidgenossisches Institut fur Schnee- und Lawinenforschung. Its Winterberichte, No.44, 1981, Davos, Switzerland, 1982. 152p., In German. For selected papers see 36-1723 through 36-1725.
Snow surveys, Avalanches, Snow accumulation, Snow depth, Mountains, Damage, Accidents, Switzerland - Alps.

36-1723
Snow and avalanches in the Davos area. [Schnee und Lawinen in der Region Davos].
Fohn, P., et al, Davos, Switzerland. Eidgenossisches Institut fur Schnee- und Lawinenforschung. Winterberichte, 1981, No.44, p.29-43, In German.
Beck, F.
Snow accumulation, Snow depth, Avalanche formation, Snow mechanics, Temperature effects, Seasonal variations, Climatic factors, Switzerland - Davos.

36-1724
Snow and avalanche conditions in the Swiss Alps. [Schnee und Lawinen in den Schweizer Alpen].
Schild, M., et al, Davos, Switzerland. Eidgenossisches Institut fur Schnee- und Lawinenforschung. Winterberichte, 1981, No.44, p.4-92, In German.
Gliott, S.
Snow accumulation, Snow depth, Snow water equivalent, Avalanche formation, Snow mechanics, Mountains, Seasonal variations, Statistical analysis, Switzerland.

36-1725
Accidents and damage due to avalanches. [Durch Lawinen verursachte Unfälle and Schäden].
Schild, M., et al. *Davos, Switzerland. Eidgenössisches Institut für Schnee- und Lawinenforschung. Winterberichte*, 1981, No.44, p.93-132. In German.
Etter, H.J., Gliott, S.
Avalanches, Accidents, Damage, Switzerland.

36-1726
Experimental study of the indentation of a floating ice sheet of the S2 type in the fragile range. [Etude expérimentale de l'indentation d'une plaque de glace flottante de type S2 dans le domaine fragile].
Blanchet, D., et al. Quebec (City) Université Laval, Département de génie civil, Laboratoire de mécanique des glaces, Nov. 1981, 345p., In French. 62 refs.
Michel, B.
Floating ice, Ice strength, Ice cracks, Piles, Ice loads, Ice pressure, Cracking (fracturing), Experimentation.

36-1727
Sterols and fatty acids of an antarctic sea ice diatom, *Stauroneis amphioxys*.
Gillan, F.T., et al. *Phytochemistry*, 1981, 20(8), p.1935-1937, 24 refs.
McFadden, G.I., Wetherbee, R., Johns, R.B.
Cryobiology, Sea ice.

36-1728
Frost action and risk assessment in soil mechanics. *Transportation research record*, 1981, No.809, 86p., Reports presented at the 60th annual meeting of the Transportation Research Board. Refs. passim. For selected papers see 36-1729 through 36-1735.
Frost action, Soil mechanics, Frozen ground mechanics, Freeze thaw tests, Soil freezing, Ground thawing, Soil temperature, Frost heave.

36-1729
Results from a mathematical model of frost heave.
Guymon, G.L., et al. Transportation research record, 1981, No.809, MP 1483, p.2-6, 13 refs.
Berg, R.L., Johnson, T.C., Hromadka, T.V., II.
Frost heave, Heat transfer, Soil water migration, Frost penetration, Temperature effects, Mathematical models.
A one-dimensional model for simulation of frost heave in a vertical soil column is presented. The model is based on simultaneous computation of heat and moisture transport in a freezing or thawing soil. Thermal processes at the freezing front are approximated by a lumped isothermal approach. The model accurately simulates frost heave, soil pore-water pressures, and temperatures when compared with a laboratory freezing column; however, to achieve adequate correlation certain model parameters must be determined by calibration. Because the model, like the frost-heave process itself, is highly sensitive to environmental and soil parameters that are variable in both time and space, purely deterministic simulations will not provide sufficiently accurate predictions. Consequently, further development of the model is required in order to include a statistical-probabilistic approach for estimating frost heave within specified confidence limits.

36-1730
Evaluation of a self-refrigerated unit for frost-heave testing.
Tomas, K.J., et al. *Transportation research record*, 1981, No.809, p.6-13, 18 refs.
Jones, R.H.
Frost heave, Measuring instruments, Soil freezing, Temperature effects, Refrigeration, Cold chambers, Time factor, Tests.

36-1731
Effect of variable-drainage freeze-thaw tests on post-thaw shear strength.
Akins, B.D. *Transportation research record*, 1981, No.809, p.13-18, 8 refs.
Freeze thaw tests, Drainage, Shear strength, Soil freezing, Ground thawing, Water content, Temperature effects.

36-1732
Effect of freezing and thawing on resilient modulus of a granular soil exhibiting nonlinear behavior.
Cole, D.M., et al. *Transportation research record*, 1981, No.809, MP 1484, p.19-26, 15 refs.
Irwin, L.H., Johnson, T.C.
Freeze thaw cycles, Subgrade soils, Soil strength, Soil freezing, Ground thawing, Elastic properties, Stresses, Density (mass/volume), Soil temperature.
Freeze-thaw cycles experienced in areas of seasonal frost can cause wide variations in the supporting capacity of subgrade materials. The U.S. Army Cold Regions Research and Engineering Laboratory is currently engaged in a program to assess these variations in a number of soils used in roadway and airfield construction. The complete testing and analysis procedure for one of these test soils is presented.

36-1733
Frost-susceptibility ratings and pavement structure performance.
Esch, D.C., et al. *Transportation research record*, 1981, No.809, p.27-34, 9 refs.
McHattie, R.L., Connor, B.
Frost heave, Frost resistance, Pavements, Roadbeds, Particles, Soil freezing, Structural analysis, Flexural strength, Tests.

36-1734
Simulating frost action by using an instrumented soil column.
Ingersoll, J., et al. *Transportation research record*, 1981, No.809, MP 1485, p.34-42, 6 refs.
Berg, R.
Frost action, Frozen ground mechanics, Freeze thaw tests, Soil water, Soil temperature, Water content, Mathematical models.
The use of an instrumented soil column in tests to develop a mathematical model of the frost-heave process is described. Tensiometers, heat-flow meters, thermocouples, and electrical resistivity gages were installed throughout a soil column filled with Fairbanks silt, Chena Hot Springs silt, or West Lebanon gravel. The column was 100 cm long and about 14 cm in diameter. An open system was used and absorption was monitored during the freezing process. Tests were conducted by using a constant rate of frost penetration, a constant heat-flow rate, or three sequentially lower temperature step changes at the soil surface. The soil column has provided critical data for verification of a one-dimensional mathematical model for estimating frost heave. As more soils are tested, this equipment will assist in improving and developing algorithms for the mathematical model and the most critical parameters that affect frost heave in a given soil-e.g., surcharge, free water level, and hydraulic conductivity. A procedure is also presented for determining the saturated and unsaturated hydraulic conductivity and moisture-retention characteristics of a soil.

36-1735
Comparative evaluation of frost-susceptibility tests.
Chamberlain, E.J., *Transportation research record*, 1981, No.809, MP 1486, p.42-52, 89 refs.
Soil freezing, Soil water, Frost resistance, Frost heave, Ground ice, Freeze thaw tests, Frost action, Grain size, Particle size distribution.
Methods of determining the frost susceptibility of soils are identified and presented. More than 100 criteria were found; the most common were based on particle-size characteristics. These particle size criteria are frequently augmented by information such as grain-size distribution, uniformity coefficients, and Atterberg limits. Other types of information, such as permeability, mineralogy, and soil classification, have also been required. More complex methods that require tests based on pore-size distribution, moisture tension, hydraulic conductivity, heave stress, and frost heave have also been proposed. However, none has proved to be a universal test for determining the frost susceptibility of soils. Based on this survey, four methods are proposed for further study: the U.S. Army Corps of Engineers Frost-Susceptibility Classification Systems, the moisture-tension/hydraulic-conductivity test, a new frost-heave test, and the California bearing ratio after-thaw test.

36-1736
Analysis of a heavy snowfall in the Peking area.
Beijing Shi Qi-xiang-tai [Peking Weather Station]. *Qi xiang: Meteorological monthly*, Oct. 1975, p.16-18, In Chinese.
Snowfall, Meteorological data, China—Peking.

36-1737
Preliminary investigation of the special characteristics of the periglacial on Qinghai-Xizang Plateau.
Cui, Z., *Kexue tongbao [Scientia]*, June, 1980, 25(11), p.509-512, In Chinese. 7 refs.
Periglacial processes, Rock glaciers, Geomorphology, China—Qinghai-Xizang Plateau.

36-1738
Batura Glacier of the Karakoram Mountains and its changes.
Batura Glacier Research Group. *Scientia sinica*, Dec 1978, No.6, p.657-670, In Chinese. 17 refs.
Glacier oscillation, China—Batura Glacier.

36-1739
Contamination of firn layers with radioactive fission products in the Alpine glaciers. [Zur Kontamination von Firnschichten auf Alpengletschern durch radioaktive Spaltprodukte].
Ambach, W., *Medizinische Welt*, 1981, 32(42), p.1574-1577, In German. 13 refs.
Fallout, Firn, Pollution, Ice composition, Glacier ice, Mountains.

36-1740
NPC sees big U.S. Arctic resources. *Oil and gas journal*, Nov. 23, 1981, 79(47), p.68-70.
Natural resources, Oil recovery, Ice conditions, Cost analysis, United States—Alaska.

36-1741
Proposal for transportation of Prudhoe Bay natural gas to market updated.
Dubetz, P.T., et al. *Oil and gas journal*, Nov. 23, 1981, 79(47), p.124-126, 8 refs.
Marsden, S.S.
Natural gas, Fuel transport, Transportation, United States—Alaska—Prudhoe Bay.

36-1742
Conserving resources remains the key to successful engineering in the rigorous Arctic.
Arnold, C.L., *Oil and gas journal*, Nov. 23, 1981, 79(47), p.133-143, 10 refs.
Natural resources, Cold weather construction, Engineering, Permafrost distribution, Patterned ground, Temperature effects, Wind chill, Active layer, Cold weather survival.

36-1743
Soviet norms for driving tanks in winter.
Baxter, W.P., *Military review*, Sep. 1980, 60(9), p.2-8.
Military operation, Tanks (combat vehicles), Cold weather operation, Military equipment.

36-1744
Winter desiccation of conifer needles simulated by artificial freezing.
Wardle, P., *Arctic and alpine research*, Nov. 1981, 13(4), p.419-423, 8 refs.
Trees (plants), Freezing, Damage, Plant physiology.

36-1745
Hydrochemical balance of an alpine watershed in southeast Alaska.
Stednick, J.D., *Arctic and alpine research*, Nov. 1981, 13(4), p.431-438, 21 refs.
Alpine landscapes, Watersheds, Water chemistry, Stream flow, Precipitation (meteorology), United States—Alaska.

36-1746
Numerical experiments on ice age climates.
Adem, J., *Climatic change*, 1981, Vol.3, p.155-171, 43 refs.
Ice age theory, Paleoclimatology, Glaciation, Climatic changes, Ice conditions, Snow cover distribution, Mathematical models.

36-1747
On the role of failure criterion of ice in determining ice loads.
Riska, K., *Finland Technical Research Centre Ship Laboratory. Report*, Mar. 1980, No.7, 31p., 29 refs.
Ice loads, Ice cover strength, Sea ice, Stresses, Ships, Ice crystal structure, Models, Analysis (mathematics).

36-1748
Mapping of water-saturated firn layers on Kesselwandferner using the EMR method. [Kartierung von wassergesättigten Firnschichten auf dem Kesselwandferner mit dem EMR-Verfahren].
Thyssen, F., et al. *Polarforschung*, 1980, 50(1-2), p.9-16, In German with English summary. 24 refs.
Eisner, H., Blindow, N., Ambach, W.
Firn, Glacial hydrology, Mapping, Electromagnetic prospecting, Water balance, Mountains, Water table.

36-1749
Identifying and determining halocarbons in water using gas chromatography.
Leggett, D.C., *U.S. Army Cold Regions Research and Engineering Laboratory*, Oct. 1981, SR 81-26, 15p., ADA-108 345, 50 refs.
Wastes, Water chemistry, Hydrocarbons, Chemical analysis.
Since the discovery that chloroform and other haloforms are produced during water chlorination, methods have been needed for their routine analysis. This report describes application of the multiple equilibration headspace technique for the determination of halocarbons in water. This method has certain advantages over solvent extraction and direct injection techniques, including greater sensitivity because of the favorable gas/liquid distribution ratios. It is simpler and faster than purge and trap and resin sorption methods and gives more information about compound identity than single headspace analysis because gas/liquid distribution ratios are determined experimentally. The method is absolute, unlike solvent extraction, resin sorption, purge and trap, and conventional headspace analysis, which require standard additions to correct for incomplete recovery. The use of the technique to analyze chlorinated water samples for haloforms revealed a potential problem in their analysis. Haloforms continued to form for 24 hours, even after destruction of chlorine residuals with thiosulfate. Maximum haloform concentrations were observed in unde-chlorinated samples only after a 48-hour aging period.

36-1750
Ship ice accretion.
Pafmukorn, N., Fairbanks, University of Alaska, Dept. of Civil Engineering, 1980, 83p., M.S. thesis. Refs. p.34-37.
Ship icing, Ice accretion, Ice solid interface, Ice adhesion, Ocean waves, Wind factors, Ice growth, Ice removal, Mathematical models.

36-1751
Effects of volcanism on the glaciers of Mount St. Helens.
Brugman, M.M., et al, *U.S. Geological Survey. Circular*, 1981, No.850-D, 11p.
Post, A.
Glacial erosion, Glacier melting, Glacier flow, Volcanoes, Floods, Snow melting, Mudflows, Glacier mass balance, United States—Washington—Mount Saint Helens.

36-1752
Methods of forecasting river drainage and ice regime. [Metody prognozov rechnogo stoka i ledovogo rezhima].
Afanas'ev, A.L., ed. *Leningrad. Gidrometeorologicheskii nauchno-issledovatel'skii tsentr SSSR. Trudy*, 1981, Vol.236, 113p., In Russian. For selected papers see 36-1753 through 36-1761. Refs. passim.
River basins, Landscape types, Taiga, Tundra, Runoff, Lakes, Alimentation, Snow hydrology, Snow water equivalent, Icebound lakes, Icebound rivers, Ice forecasting, Ice breakup, Flood forecasting.

36-1753
Forecasting the decade water-inflow into the Kama reservoir from hydrometric data, allowing for snowmelt and precipitation. [Prognoz dekadnogo pritoka vody v Kamskoe vodokhranilishche po gidrometricheskim dannym s uchetom snegotaianiia i osadkov].
Sapozhnikov, V.I., et al. *Leningrad. Gidrometeorologicheskii nauchno-issledovatel'skii tsentr SSSR. Trudy*, 1981, Vol.236, p.13-25, In Russian. 7 refs.
Rubtsova, Z.I.
Lakes, Alimentation, Snowmelt, Runoff, Snow water equivalent, Snow hydrology, Mathematical models.

36-1754
Long range forecasting of water inflow into the Vilyuy reservoir during spring flooding. [Dolgosrochnyi prognoz pritoka vody v Vilyuiskoe vodokhranilishche za period vesennego polovod'ia].
Popov, E.G., et al. *Leningrad. Gidrometeorologicheskii nauchno-issledovatel'skii tsentr SSSR. Trudy*, 1981, Vol.236, p.26-50, In Russian. 12 refs.
Kharchenko, P.IU.
River basins, Landscape types, Permafrost beneath rivers, Taiga, Tundra, Permafrost hydrology, Permafrost structure, Ice breakup, Floods.

36-1755
Long range forecasting of flood-water volume of the Don River. [Dolgosrochnyi prognoz ob"ema polovod'ia Dona].
Rakhmanov, V.V., *Leningrad. Gidrometeorologicheskii nauchno-issledovatel'skii tsentr SSSR. Trudy*, 1981, Vol.236, p.51-63, In Russian. 4 refs.
River basins, Snow depth, Snow density, Snow water equivalent, Soil freezing, Frost penetration, Snowmelt, Runoff.

36-1756
Long range forecasting of flood volume of small rivers (the Tsna River taken as an example). [Dolgosrochnyi prognoz ob"ema polovod'ia nebol'shikh rek (na primere r. Tsny)].
Rakhmanov, V.V., *Leningrad. Gidrometeorologicheskii nauchno-issledovatel'skii tsentr SSSR. Trudy*, 1981, Vol.236, p.64-71, In Russian. 4 refs.
Snow depth, Snow density, Snow water equivalent, Soil freezing, Frost penetration, Snow melting, Runoff.

36-1757
Natural components of river freezing and ice breakup time fields. [Estestvennye sostavliaiushchie polei srokov zamerzaniia i vskrytiia rek].
Gnatzburg, B.M., *Leningrad. Gidrometeorologicheskii nauchno-issledovatel'skii tsentr SSSR. Trudy*, 1981, Vol.236, p.72-82, In Russian. 9 refs.
River ice, Ice formation, Icebound rivers, Ice conditions, Ice breakup, Ice forecasting.

36-1758
Long range forecasting of the strength of melting ice cover on Gor'kiy and Kuybyshev reservoirs in the spring. [Metod dolgosrochnogo prognoza prochnosti taiushchego ledianogo pokrova vesnoi na Gor'kovskom i Kuibyshevskom vodokhranilishchakh].
Poliakova, K.N., *Leningrad. Gidrometeorologicheskii nauchno-issledovatel'skii tsentr SSSR. Trudy*, 1981, Vol.236, p.83-90, In Russian. 7 refs.
Icebound lakes, Ice melting, Ice cover strength.

36-1759
Short range forecasting of the freezeup of large rivers crossing the Baykal Amur railroad. [Metodika kratkosrochnogo prognoza zamerzaniia krupnykh rek peresekaiushchikh Baikalo-Amurskuiu magistral'].
Efremova, N.D., *Leningrad. Gidrometeorologicheskii nauchno-issledovatel'skii tsentr SSSR. Trudy*, 1981, Vol.236, p.91-100, In Russian. 6 refs.
River ice, Ice formation, Icebound rivers, Ice forecasting, Ice cover thickness.

36-1760
Calculating thickness of snow ice on the Bukhtarma reservoir. [Raschety tolshchiny snezhnogo l'da na Bukhtarminskom vodokhranilishche].
Konovalova, G.M., *Leningrad. Gidrometeorologicheskii nauchno-issledovatel'skii tsentr SSSR. Trudy*, 1981, Vol.236, p.101-106, In Russian. 7 refs.
Lake ice, Ice navigation, Ice conditions, Ice structure, Ice cover thickness.

36-1761
Computer plotting of snow cover maps. [K metodike mashinnogo postroeniia kart snezhnogo pokrova].
Popov, E.G., et al. *Leningrad. Gidrometeorologicheskii nauchno-issledovatel'skii tsentr SSSR. Trudy*, 1981, Vol.236, p.107-112, In Russian. 4 refs.
Kharchenko, P.IU.
River basins, Snow cover distribution, Snow water equivalent, Snow surveys, Maps, Computer applications.

36-1762
Satellite techniques of studying water resources and their pollution. [Aerokosmicheskie metody pri issledovanii vodnykh resursov i ikh zagriazneniia].
Kupriianov, V.V., ed. Leningrad, Gidrometeoizdat, 1981, 140p., In Russian. For selected papers see 36-1763 through 36-1772.
Usachev, V.F., ed.
Spaceborne photography, Snow surveys, Photointerpretation, Water supply, Snow cover distribution, Pollution, Dust, Snow water equivalent, Permafrost hydrology, Taliks, Naleds, Snow density, Albedo, Snow melting, Snow evaporation.

36-1763
Possibilities of microwave remote sensing in studying water resources and their pollution. [Vozmozhnosti mikrovolnovoi distantsionnoi indikatsii dlia izucheniia vodnykh resursov i ikh zagriazneniia].
Kondrat'ev, K.IA., et al. *Leningrad. Gosudarstvennyi gidrologicheskii institut. Trudy*, 1981, Vol.285, p.5-12, In Russian. 7 refs.
Rabinovich, IU.I., Shul'gina, E.M.
Remote sensing, Microwaves, Mapping, Sea ice, Land ice, Pollution.

36-1764
Determining characteristics of hydrologic objects by remote sensing techniques. [Opredelenie kharakteristik gidrologicheskikh ob"ektov distantsionnym metodom].
Tovize, G., *Leningrad. Gosudarstvennyi gidrologicheskii institut. Trudy*, 1981, Vol.285, p.25-28, In Russian.
Remote sensing, Aerial surveys, Spaceborne photography, Sea ice, Land ice, Mapping, Snow cover distribution.

36-1765
Using satellite information in estimating and forecasting meltwater runoff in mountain basins. [Primenenie sputnikovoi informatsii dlia rascheta i prognoza talogo stoka v gornom basseine].
Vostrakova, N.V., *Leningrad. Gosudarstvennyi gidrologicheskii institut. Trudy*, 1981, Vol.285, p.29-37, In Russian. 9 refs.
Alpine landscapes, Snow cover distribution, Glacial hydrology, Meltwater, Runoff, Spaceborne photography, Radar photography.

36-1766
Snow cover dynamics in mountain basin areas of the Aral Sea according to satellite photographs. [Dinamika snezhnogo pokrova v gornykh raionakh basseina Aral'skogo moria po sputnikovym snimkam].
Sitnikova, M.V., et al. *Leningrad. Gosudarstvennyi gidrologicheskii institut. Trudy*, 1982, Vol.285, p.38-44, In Russian. 8 refs.
Tsarev, B.K., Chernov, V.IU.
Snow cover distribution, Snow surveys, Aerial surveys, Spaceborne photography, Snow line, Snow water equivalent.

36-1767
Studying snow cover dynamics by remote sounding of the Earth. [Izuchenie dinamiki snezhnogo pokrova pri pomoshchi distantsionnogo zondirovaniia Zemli].
Kvitt, E., *Leningrad. Gosudarstvennyi gidrologicheskii institut. Trudy*, 1981, Vol.285, p.45-46, In Russian.
Spaceborne photography, Photointerpretation, Remote sensing, Snow cover distribution, Snow accumulation, Mapping, Radiation balance.

36-1768
Possibility of determining snow melting front in Kazakhstan from multizonal information of the "Meteor" satellite. [O vozmozhnosti opredeleniia fronta snegotaianiia po mnogozonal'noi informatsii s ISZ "Meteor" (na primere Kazakhstana)].
Pankratova, F.I., *Leningrad. Gosudarstvennyi gidrologicheskii institut. Trudy*, 1981, Vol.285, p.47-55, In Russian. 5 refs.
Steppes, Snow surveys, Spaceborne photography, Snow cover distribution, Snow melting, Snow evaporation, Snow depth, Snow line.

36-1769
Evaluating snow pollution in industrial areas from spaceborne TV images. [Otsenka zagriaznennosti snezhnogo pokrova promyshlennykh raionov po sputnikovym TV izobrazheniiam].
Vasilenko, V.N., et al. *Leningrad. Gosudarstvennyi gidrologicheskii institut. Trudy*, 1981, Vol.285, p.56-63, In Russian. 4 refs.
Prokacheva, V.G., Fridman, Sh.D.
Spaceborne photography, Snow depth, Pollution, Dust, Albedo, Snow density, Sampling.

36-1770
Albedo and brightness coefficients of snow covers. [Ob al'bedo i koeffitsientakh iarkosti snezhnogo pokrova].
Usachev, V.F., et al. *Leningrad. Gosudarstvennyi gidrologicheskii institut. Trudy*, 1981, Vol.285, p.64-69, In Russian. 4 refs.
Mikhailov, V.V., Prokacheva, V.G.
Spaceborne photography, Snow physics, Albedo, Brightness, Measuring instruments.

36-1771
Hydrologic investigations of the Lake Baykal area and Mongolia from spaceborne photographs. [Ispol'zovanie kosmicheskikh snimkov dlia gidrogeologicheskikh issledovanii raiona Pribaikal'ia i Mongolii].
Ob"edkov, IU.I., *Leningrad. Gosudarstvennyi gidrologicheskii institut. Trudy*, 1981, Vol.285, p.85-96, In Russian. 10 refs.
Spaceborne photography, Snow cover, Ice cover, Water supply, Permafrost hydrology, Thermokarst, Taliks, Ground ice, Naleds, Mapping.

36-1772
Analog computers for interpreting spaceborne photographs when studying water resources. [Ispol'zovanie analogovykh [illegible] pri issledovanii vodnykh resursov].
Mikhailov, V.V., et al. *Leningrad. Gosudarstvennyi gidrologicheskii institut. Trudy*, 1981, Vol.285, p.185-190, In Russian. 2 refs.
Usachev, V.F.
Spaceborne photography, Photointerpretation, Computerized simulation, Watersheds, Snow cover distribution, Snow water equivalent, Pollution.

36-1773
Crystallization kinetics of supercooled water droplets suspended in air. [O kinetike kristallizatsii pereokhlazhdennykh vodnykh kapel' [illegible] v vozdushnom srede].
Shlykov, V.V., et al. *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy*, 1981, Vol.445, p.29-38, In Russian. 5 refs.
Klugo, V.V.
Cloud seeding, Supercooled clouds, Cloud droplets, Phase transformations, Ice nuclei, Ice formation.

36-1774
Chemical composition and electric charging of droplets during phase transformations. [Khimicheskii sostav i zariazhenie kapel' pri fazovykh perekhodakh].
Nikandrov, V.IA., et al. *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy*, 1981, Vol.439, p.49-54. In Russian. 6 refs.
Svistov, P.F., Burchuladze, N.N., Turkin, IU.I.
Hailstones, Snowflakes, Hailstone electrification, Chemical composition, Electric charge.

36-1775
Shattering of freezing droplets. [K voprosu o razrushenii kapel' pri zamerzanii].
Bashkirova, G.M., et al. *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy*, 1981, Vol.439, p.55-68. In Russian. 20 refs.
Molotkova, I.A.
Cloud droplets, Phase transformations, Ice nuclei, Ice crystals, Ice deterioration.

36-1776
Methods and preliminary results of field experiments with convective cloud seeding with crystallizing aerosols from An-2 airplanes. [Metodika i predvaritel'nye rezul'taty naturnykh eksperimentov po vyzyvaniiu osadkov iz konvektivnykh oblakov pri vozdeistvii kristallizuiushchimi reagentami s samoletov An-2].
Kudashkin, G.D., et al. *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy*, 1981, Vol.439, p.74-83. In Russian. 2 refs.
Egorov, V.V., Vasil'ev, S.L.
Cloud seeding, Smoke generators, Aerosols, Nucleating agents, Freezing nuclei.

36-1777
Chemical composition of rain and hailstones obtained by cloud seeding for hail prevention. [O khimicheskom sostave dozhdia i grada vypavshikh iz oblakov pri provedenii vozdeistvii s tsel'iu gradozashchity].
Gromova, T.N., et al. *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy*, 1981, Vol.439, p.84-92. In Russian. 5 refs.
Skorodenok, I.A., Toropova, N.V., Ungerman, T.M.
Cloud seeding, Nucleating agents, Aerosols, Lead iodide, Hail prevention, Hailstones, Ice composition.

36-1778
Forecasting dates of a stable air temperature transition through zero and plus-minus 5 C in spring periods. [Prognoz dat ustoichivogo vesennego perekhoda temperatury vozdukha cherez 0 i plius-minus 5 C].
Chuvashina, I.E., *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy*, 1981, Vol.446, p.47-51. In Russian. 10 refs.
Air temperature, Temperature variations, Frost forecasting.

36-1779
Allowing for sea ice evolution in simplified climatic models. [K voprosu ob uchete evoliutsii morskogo l'da v uproshchennykh klimaticheskikh modeliakh].
Liapin, S.E., *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy*, 1981, p.99-108, In Russian. 6 refs.
Sea ice, Ice conditions, Ice forecasting, Climatic factors, Mathematical models.

36-1780
Non-linear theory of stabilized ice drift. [K nelineinoi teorii ustanovivshegosia dreifa l'dov].
Ponomarev, V.I., *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy*, 1981, Vol.446, p.109-115, In Russian. 11 refs.
Sea ice, Pack ice, Drift, Seasonal variations, Mathematical models.

36-1781
Liquid water in depths of the North. [Zhivaia voda v nedrakh Severa].
Shvetsov, P.F., Moscow, Nauka, 1981, 86p., In Russian with English table of contents enclosed. 7 refs.
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Geddes, F.E.
Ice conditions, Ice edge, Sea ice, Charts, Seasonal variations, Canada.

36-1851
Ice summary and analysis, 1971, eastern Canadian seaboard.
Canada. Department of the Environment. Ice Forecasting Central, Ottawa, Ontario, Atmospheric Environment Service, 1981, 61p., 11 refs.
Ice conditions, Ice formation, Ice breakup, Drift, Meteorological charts, Wind velocity, Air temperature, Oceanography, Seasonal variations, Forecasting, Canada.

36-1852
Ice summary and analysis, 1973, Eastern Canadian seaboard.
Canada. Atmospheric Environment Service. Ice Branch, Ottawa, Ontario, 1981, 50p., 11 refs.
Ice conditions, Ice formation, Ice breakup, Meteorological charts, Oceanography, Drift, Wind velocity, Air temperature, Seasonal variations, Forecasting, Canada.

36-1853
Site selection methodology for the land treatment of wastewater.
Ryan, J.R., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Nov. 1981, SR 81-28, 74p., ADA-108 636, Refs. p.46-49.
Lochr, R.C.
Waste disposal, Water treatment, Land reclamation, Site accessibility.
A methodology is presented that covers facets of site selection from preliminary screening to field data acquisition for the preparation of a final design for a land treatment system. The basic assumption underlying the methodology is an approach to site selection in which the entire study area is investigated for potential sites while considering the whole spectrum of land treatment processes. Due to the extensive nature of such a study, several iterations are required to determine the most feasible site and land treatment alternatives. The methodology is presented in three parts. Level I defines the technical feasibility of implementing land treatment for a particular wastewater problem. The boundaries of the study area are defined and available land areas are rated for their suitability for land treatment based on topography, land use, hydrogeology and soil

characteristics. A preliminary design for each suitable level I site candidate is prepared in the level II site analysis. The design is based on an evaluation of soil/waste interactions that considers responses to limiting soil conditions. A cost-effectiveness evaluation of waste treatment alternatives and site candidates is developed in level II. The most cost-effective site candidate is then selected for intensive level III field investigations. Data acquired in the level III field investigations will determine the design requirements of the land treatment system.

36-1854

American research in Greenland. [Amerikansk forskning i Grönland].
Taagholt, J., *Forskning/tusaut i Grönland*, 1981, No.1-2, p.24-35, In Greenlandic and Danish.
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36-1855

Physiography of the Far East. [Fizicheskaia geografiia Dal'nego Vostoka].
Nikol'skaia, V.V., Moscow, Vysshaia shkola, 1981, 165p., In Russian with English table of contents enclosed. 18 refs.
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36-1856

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36-1857

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Ice formation, Sea ice distribution, Oceanography, China Sea.

36-1858

Theoretical basis for thermal model experiments on frozen soils.
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Periglacial processes, Glacial geology, Geomorphology, China—Qinghai-Xizang Plateau.

36-1860

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Alter, A.J., et al, *Public works magazine*, Oct. 1969, n.p., 10 refs.
Cohen, J.B.
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Climatic background factors for testing an ice-surveillance system.
Lindqvist, S., et al, *Göteborg, Sweden. Universitet. Naturgeografiska institutionen. Rapport*, 1979, No.13, 35p., 18 refs.
Mattsson, J.O.
Road icing, Warning systems, Ice accretion, Ice formation, Hoarfrost, Sliding, Stations.

36-1862

Model for the migration of moisture during the freezing of wet sand.
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Churchill, S.W.
Frozen sand, Soil water migration, Heat transfer, Diffusion, Temperature effects, Soil physics, Mathematical models.

36-1863

One-dimensional transport from a highly concentrated, transfer type source.
O'Neill, K., *International journal of heat and mass transfer*, 1982, 25(1), MP 1489, p.27-36, With French, German and Russian summaries. 27 refs.
Heat transfer, Mass transfer, Flow rate, Analysis (mathematics).
In both heat and mass transfer, situations arise in which an entity considered as a source/sink has strength which can only be expressed in terms of an unknown rate of source—flow field transfer. This occurs when transfer between the source and medium is driven by a dependent variable difference which is unknown, because the responding medium value is unknown. Manifold mathematical complexities arise when in addition the source is highly concentrated spatially relative to the size of the overall domain. A 1-dim convective-diffusive transport equation suitable for this cause may be solved by simultaneous use of the Fourier transform and its inverse in the same equation, together with other transformation and manipulation. From the solution obtained for the case of constant source intensity, one may construct a general expression for the solution when source intensity varies arbitrarily in time. Explicit expressions are obtained for solution of the fundamental case of temporally sinusoidal source intensity.

36-1864

Distortion of model subsurface radar pulses in complex dielectrics.
Arcone, S.A., *Radio science*, Sep.-Oct. 1981, 16(5), MP 1472, p.855-864, 19 refs.
Sea ice, Ground ice, Ice electrical properties, Radar echoes, *Subsurface investigations, Wave propagation,* Electric fields, Mathematical models, Dielectric properties.
The propagation of subsurface radar pulses in complex dielectric media is studied numerically. The model waveform is a 10-ns sinusoidal cycle, and the media properties are similar to those of moist ground or sea ice. When the real part of the dielectric permittivity is frequency independent and the imaginary part is dominated by the dc resistivity, amplitudes of the positive and negative half cycles unbalance, and the sinusoidal zero crossing is delayed from its normal position. In these cases, if reflector depth is known, the dielectric constant can be measured from the time delay of the leading edge of the signal, and the dc resistivity can be estimated from a comparison of the input and output pulse power spectra. When dielectric permittivity is frequency dependent through a simple relaxation process, waveform distortion depends on relaxation frequency. In addition, if reflector depth is known, the dielectric relaxation parameters may be estimated when the medium relaxation frequency lies above and below the major portion of the pulse bandwidth, respectively.

36-1865

Rigid-plastic analysis of floating ice sheets under impact loads.
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Iyengar, K.J.
***Ice cover strength, Floating ice, Impact strength,* Ice loads, Ice deformation, Stresses, Tensile properties, Ice sheets, Analysis (mathematics), Loads (forces).**

36-1866

Tests of frazil collector lines to assist ice cover formation.
Perham, R.E., *Canadian journal of civil engineering*, Dec. 1981, 8(4), MP 1488, p.442-448, With French summary. 1 ref.
Frazil ice, Ice formation, Ice accretion, Ice growth, Water flow, Ice cover strength, River ice, Nucleating agents, Ice booms.
A preliminary investigation was made of the effect of frazil ice on arrays of lines positioned in flowing water under winter conditions. It was found that the lines would provide a stable basis for forming an ice cover on many stream reaches that would normally remain open because of high velocity and shallow depths. Tests were conducted in a refrigerated flume and in small mountain rivers. Flume depths varied from 2-22 cm and river depths varied from 33-50 cm. Average flow velocities had a range of 0.08-0.04 m/s in the flume and a range of 0.6-0.8 m/s in the rivers. Frazil ice would grow on a line quite rapidly achieving a diameter of 32 mm in 15 min, on a 3.2 mm dia. line in the flume. In the river, overnight accumulations reached 20 cm in depth. A few drag force measurements were made which yielded an average shear drag coefficient of 0.16. The results suggest methods of increasing our control over ice.

36-1867

Flow law for polycrystalline ice in glaciers: comparison of theoretical predictions, laboratory data, and field measurements.
Hooke, R.L., *Reviews of geophysics and space physics*, Nov. 1981, 19(4), p.664-672, 55 refs.
Glacier ice, Ice crystals, Ice mechanics, Ice creep.

36-1868

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Stigebrandt, A., *Tellus*, Dec. 1981, 33(6), p.604-609, 8 refs.
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36-1870

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Thorndike, A.S., et al, *Columbia University. Lamont-Doherty Geological Observatory. Technical report*, Feb. 1980, CU-2-80, 347p., ADA-082 211, 7 refs.
Manley, T.O.
Sea ice distribution, Ice mechanics, Drift, Velocity, Beaufort Sea.

36-1871

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Okada, M., *Refrigeration*, Nov. 1979, 54(625), p.891-898, In Japanese with English summary. 9 refs.
Water flow, Pipes (tubes), Freezing, Heat balance, Porosity, Water temperature.

36-1872

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36-1873

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Charles, C., *Revue de geographie alpine*, 1981, 69(4), p.607-615, In French. 15 refs.
Glacier oscillation, Glacial hydrology, Channels (waterways), Pakistan—Hunza Valley.

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Griselin, M., *Revue de geographie alpine*, 1981, 69(4), p.617-625, In French.
Subglacial drainage, Glacial rivers, Ice temperature, Water temperature, Glacier surfaces.

36-1875

Soil types and their distribution in the area of the forest limit at the northwestern edge of Finnmarksvidda, Norway. [Bodentypen und ihre Verbreitung im Bereich der Waldgrenze am NW-rand der Finnmarksvidda, Norwegen].
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36-1876

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36-1877

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Berthelsen, A.
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36-1878

***Prediction of minimum age for the* Weichselian *maximum* glaciation in North Iceland.**
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Glaciation, Paleoclimatology, Age determination, Glacial lakes, Ice dams, Ice cover distribution, Iceland.

36-1879

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Hendrey, G.R., *Natural history*, Feb. 1982, 90(2), p.58-64.
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36-1880

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36-1881
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36-1882
Constraints on the development of coal mining in Arctic Alaska based on review of Eurasian Arctic practices.
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Coal, Mining, Permafrost, Cold weather performance, Rock excavation, Environmental impact, Viability, United States—Alaska.

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Development of cosmic-ray snow gauge (2).
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36-1884
On the mechanics of the fast ice in the North Water area.
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36-1885
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36-1886
Remote sensing of water quality using an airborne spectroradiometer.
McKim, H.L., et al, MP 1491, International Symposium on Remote Sensing of the Environment, 14th, San Jose, Costa Rica, Apr. 23-30, 1980. Proceedings, [1980], p.1353-1362, 6 refs.
Merry, C.J., Layman, R.W.
Water chemistry, Remote sensing, Suspended sediments, Spectroscopy, Radiometry, Airborne equipment.
An airborne spectroradiometer with 500 parallel channels has been used to monitor water quality in various water environments. Field experiments were run to test and evaluate the instrument's response to various amounts of suspended materials in water. Procedures were evaluated in the laboratory to separate the various components from the total reflected radiance and to correlate the spectral distribution of the subsurface reflectance to the organic/inorganic materials in the water. It was concluded that qualitative and quantitative measurement of turbidity within a water body is possible using the airborne spectroradiometer. The accuracy of the quantitative measurement is still under investigation, but suspended sediment concentration of less than 5 ppm can be detected. Organic and inorganic constituents can be qualitatively differentiated.

36-1887
Simulation of the enrichment of atmospheric pollutants in snow cover runoff.
Colbeck, S.C., *Water resources research*, Oct. 1981, 17(5), MP 1487, p.1383-1388, 17 refs.
Air pollution, Snow impurities, Runoff, Meltwater, Water pollution, Snow melting, Freeze thaw cycles, Solubility, Snow depth.
The soluble impurities contained in a snow cover can be concentrated as much as five fold in the first fractions of snowmelt runoff. In addition, daily impurity surges are possible. Melt-freeze cycles concentrate the impurities in the lower portion of the snow cover, hence preparing the impurities for rapid removal. Environmental damage can occur due to the concentration and rapid release of atmospheric pollutants from the snow, especially in areas of 'acid precipitation.' The enrichment of the soluble impurities is explained and the results of laboratory experiments are given.

36-1888
Electrical resistivity-hydraulic conductivity relationships in glacial outwash aquifers.
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36-1889
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Martinec, J., et al, *Water resources research*, Oct. 1981, 17(5), p.1480-1488, 13 refs.
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LANDSAT, Snow water equivalent, Snow cover distribution, Snowmelt, Remote sensing, Runoff forecasting, Seasonal variations, Mountains.

36-1890
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36-1891
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Gotgel'f, A.K., *Transportnoe stroitel'stvo*, Jan. 1982, No.1, p.5-7, In Russian.
Embankments, Railroad tracks, Permafrost beneath structures, Residential buildings, Large panel buildings, Baykal Amur railroad.

36-1892
Construction of municipal road tunnels under difficult geological conditions. [Sooruzhenie gorodskogo avtodorozhnogo tonnelia v slozhnykh geologicheskikh usloviiakh],
Trupak, N.G., *Transportnoe stroitel'stvo*, Jan. 1982, No.1, p.50-51, In Russian.
Urban planning, Roads, Tunnels, Earthwork, Artificial freezing.

36-1893
Mechanical denudation of mountains in the Subarctic and temperate zones (according to suspended load analysis). [Mekhanicheskaia denudatsiia gor Subarktiki i umerennogo poiasa (po dannym analiza stoka vzveshennykh nanosov)],
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Mozzherin, V.I.
Subarctic landscapes, Mountains, Erosion, Streams, Suspended sediments.

36-1894
Geomorphological conditions of accumulation and reworking of the Edoma series in northern Yakutia. [Geomorfologicheskie usloviia nakopleniia i pererabotki edomnoi tolshchi na severe IAkutii],
Gravis, G.F., et al, *Geomorfologiia*, Apr.-June 1981, No.2, p.39-46, In Russian. 27 refs.
Sukhodrovskii, V.L.
Frozen fines, Loess, Clays, Ground ice, Permafrost structure, Slope processes, Solifluction, Geomorphology, Geocryology.

36-1895
Peculiarities of frozen rock strength. [Ob osobennostiakh prochnosti merzlykh porod],
Frolov, A.D., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Geologiia i razvedka*, Dec. 1981, No.12, p.135-137, In Russian. 9 refs.
Frozen ground strength, Mechanical properties, Ground ice, Cryogenic structures, Ice melting, Regelation, Frozen fines, Clays, Salt ice.

36-1896
Avalanche erosion in the northern Lake Baykal area compared to other regions of the USSR. [Lavinnaia denudatsiia v Severnom Pribaikal'e v sravnenii s drugimi raionami SSSR],
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Makarov, S.A.
Slope processes, Snow accumulation, Avalanche formation, Avalanche triggering, Avalanche erosion, Avalanche deposits.

36-1897
Formation of relief under periglacial conditions and climatic changes (central chernozem regions taken as an example). [Formirovanie rel'efa pod vliianiem izmenenii klimata v perigliatsial'nykh usloviiakh (na primere tsentral'nochernozemnykh oblastei)],
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36-1898
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36-1899
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Soil freezing, Earthwork, Frost protection, Clay soils, Thermal insulation, Cellular plastics, Trenching, Cold weather construction.

36-1900
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Swamps, Land reclamation, Soil freezing, Earthwork, Trenching, Embankments, Snow roads, Ice roads.

36-1901
Depth of pipeline laying into deeply freezing frost heaving soils. [Glubina zalozheniia truboprovodov v puchinistykh gruntakh pri glubokom promerzanii],
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Pipelines, Soil freezing, Pipe laying, Frost penetration, Frost heave.

36-1902
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Tundra, Thermokarst lakes, Algae, Permafrost beneath lakes, Plant ecology, Ecosystems.

36-1903
Flora of the southeastern part of the Byrranga mountains (Taymyr). [K flore iugo-vostochnoi chasti gor Byrranga (Taimyr)],
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36-1904
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Arctic landscapes, Deserts, Vegetation, Plant ecology, Ecosystems, Plant physiology.

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Plant ecology, Arctic landscapes, Ecosystems, Tundra, Mosses, Grasses, Lichens, Rivers, Estuaries.

36-1906
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Tundra, Lakes, Rivers, Algae, Plant ecology, Ecosystems.

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Plant physiology, Theories, Frost resistance, Plant ecology, Cryogenic soils, Soil freezing.

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Lazarev, A.M.
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36-1910
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Tundra, Swamps, Vegetation patterns, Plant ecology, Ecosystems.

36-1911
Sustained strength of polycrystalline ice. [Dlitel'naia prochnost' polikristallicheskogo l'da].
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Ice crystals, Grain size, Ice strength, Static loads.

36-1912
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Alpine landscapes, Taiga, Swamps, Cryogenic soils, Meadow soils, Mapping, Spaceborne photography.

36-1913
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36-1914
***Conductance of alkali metal ions* in supercooled water.**
Takisawa, N., et al, *Journal of physical chemistry*, Nov. 26, 1981, 85(24), p.3582-3585, 22 refs.
Osugi, J., Nakahara, M.
Supercooling, Water chemistry, Metals, Ions, Solutions, Conduction, Temperature effects.

36-1915
EPR investigation of the nonfreezing water/free water ratio in disperse systems.
Brüggeller, P., et al, *Journal of physical chemistry*, Dec. 24, 1981, 85(26), p.4135-4139.
Mayer, E.
Unfrozen water content, Ice crystal structure, Dispersions, Solutions, Freezing, Electron paramagnetic resonance, Temperature effects, Emulsions.

36-1916
Make plans before snow falls. *American city and county*, Dec. 1981, 96(12), p.17-20
Snow removal, Winter maintenance, Snowfall, Equipment.

36-1917
When snowstorms hit, this airport is ready. *American city and county*, Nov. 1981, 96(11), p.33-34.
Airports, Snow removal, Winter maintenance, Road maintenance, Snowstorms, Snow accumulation.

36-1918
Ferroelectric phase transition and anisotropy of dielectric constant in ice Ih.
Minagawa, I., *Physical Society of Japan. Journal*, Nov. 1981, 50(11), p.3669-3676, 19 refs.
Ice crystal structure, Ice electrical properties, Phase transformations, Anisotropy, Dielectric properties.

36-1919
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Richardson, A.S., et al, *IEEE transactions on power apparatus and systems*, Feb. 1981, PAS-100(2), p.646-652, 34 refs.
Smith, F.S.
Power line icing, Ice accretion, Fatigue (materials), Stresses, Tensile properties, Transmission lines, Temperature effects.

36-1920
Conductor galloping, Part 1: Den Hartog mechanism.
Nigol, O., et al, *IEEE transactions on power apparatus and systems*, Feb. 1981, PAS-100(2), p.699-707, 3 refs.
Buchan, P.G.
Wind tunnels, Ice growth, Ice accretion, Ice cover thickness, Wind velocity, Transmission lines, Analysis (mathematics), Dynamic properties, Damping, Conductors.

36-1921
Conductor galloping, Part 2: torsional mechanics.
Nigol, O., et al, *IEEE transactions on power apparatus and systems*, Feb. 1981, PAS-100(2), p.708-720, Includes discussions. 2 refs.
Buchan, P.G.
Wind tunnels, Ice accretion, Ice cover thickness, Transmission lines, Wind velocity, Air flow, Damping, Stresses, Conductors, Torsion.

36-1922
German polar research and supply ship. [Das deutsche Polar-Forschungs- und Versorgungsschiff].
Hansa, Sep. 1981, 118(17), p.1217-1220, In German.
Icebreakers, Ships, Research projects.
The history of the planning and construction of this ship is briefly traced including contacts with SCAR representatives. The factor having the greatest impact in the pre-construction phases was the requirement that the vessel function well at very low temperatures, -30 to -50C. The vital statistics of length, breadth, keel depth, tonnage, power plants, and crew and scientific personnel capacities are given. Working space for scientists in any of 11 disciplines, navigation and ice breaking capabilities are mentioned. Special equipment and facilities for working in cold environments are pointed out. The ship is expected to be a major element in carrying out the GFR antarctic research program.

36-1923
Development of new propulsion options for icebreakers. [Entwicklung neuer Antriebskonzepte für eisbrechende Schiffe].
Meier-Peter, H., *Hansa*, Sep. 1981, 118(17), p.1222-1225, In German. 4 refs.
Ships, Icebreakers, Propellers.

36-1924
Ice jams on the Dnestr and some proposals to prevent flooding caused by them.
Karnovich, V.N., et al, *Joint Publications Research Service. Meteorology and hydrology*, May 1973, No.5, p.78-87, JPRS-59580, N73-30620 (N73-30612). For Russian original see 29-325
Sinotin, V.I.
Ice jams, River ice, Ice control, Hydraulic structures, Floods.

36-1925
Wind-wave spectrum at the edge of the ice.
Zubakin, G.K., *Joint Publications Research Service. Meteorology and hydrology*, May 1973, No.5, p.88-92, JPRS-59580, N73-30621 (N73-30612). For Russian original see 28-326
Ocean waves, Wind factors, Sea ice, Ice edge.

36-1926
Staggered antarctic ice sheet formation supported.
Kerr, R.A., *Science*, July 24, 1981, 213(4506), p.427-428.
Ice sheets, Glaciology, Climatic changes, Antarctica—West Antarctica.
The results of an investigation by a group from the University of Georgia are discussed. The theory is proposed that, anchored by the Ross and Filchner ice shelves to prevent lateral slippage, the West Antarctic ice sheet formed about 9 mya. Arguments in support of this theory are presented. The relative merits and faults of drill coring vs piston coring are identified and a newer piece of boring equipment, the hydraulic piston corer is highly regarded. A link to the West Antarctic ice sheet of a 50 m drop in sea level about 5.5 mya is disclaimed.

36-1927
Rise of global mean sea level as an indication of climate change.
Etkins, R., et al, *Science*, Jan. 15, 1982, 215(4530), p.287-289, 8 refs.
Epstein, E.S.
Sea level, Climatic changes, Ice sheets, Ice melting.
Calculations indicate that thermal expansion cannot be the sole factor responsible for the observed rise in sea level over the last 40 years; significant discharges of polar ice must also be occurring. Global warming, due in some degree presumably to increasing atmospheric carbon dioxide, has been opposed by the extraction of heat necessary to melt the discharged ice. During the past 40 years more than 50,000 cubic kilometers of ice has been discharged and has melted, reducing the surface warming that might otherwise have occurred by as much as a factor of 2. The transfer of mass from the polar regions to a thin spherical shell covering all the oceans should have increased the earth's moment of inertia and correspondingly reduced the speed of rotation by about 1.5 parts in 100 million. This accounts for about three quarters of the observed fractional reduction in the earth's angular velocity since 1940. (Auth.)

36-1928
Essential features of the development of glacial landforms on Qinghai-Xizang plateau.
Cui, Z., *Acta geographica sinica*, June 1980, 35(2), p.137-147, 15 refs., In Chinese with English summary. 15 refs.
Glaciation, Landforms, Glacial erosion.

36-1929
Recent variations in the glacial termini along the Karakorum Highway.
Zhang, X., *Acta geographica sinica*, June 1980, 35(2), p.149-160, 24 refs., In Chinese with English summary. 24 refs.
Glaciation, Glaciers, Glaciology, China—Kunlun Mountains.

36-1930
Researches on snow and ice in Japan—a visit.
Shi, Y., et al, *Acta geographica sinica*, June 1980, 35(2), p.185, In Chinese.
Snow, Research projects, Ice, Japan.

36-1931
Soils. Laboratory testing of frozen soils by the ball stamp technique. [Grunty. Metod laboratornogo ispytaniia merzlykh gruntov sharikovym shtampom].
Russia. Gosudarstvennyi komitet po delam stroitel'stva, Gosudarstvennyi standard SSSR, GOST 21048-75 (State standard of the USSR, GOST 21048-75), Moscow, Izdatel'stvo standartov, 1975, 7p., In Russian.
Frozen ground, Frozen fines, Sands, Clays, Cohesion, Laboratory techniques, Tests.

36-1932
Soils. Preparation of frozen soil samples for laboratory tests. [Grunty. Podgotovka k laboratornym ispytaniiam obraztsov merzlykh gruntov].
Russia. Gosudarstvennyi komitet po delam stroitel'stva, Gosudarstvennyi standard SSSR, GOST 20885-75 (State standard of the USSR, GOST 20885-75), Moscow, Izdatel'stvo standartov, 1975, 5p., In Russian.
Tests, Soil freezing, Frozen ground, Laboratory techniques, Sampling, Frozen fines, Sands, Clays, Mechanical properties.

36-1933
Soils. Field test method by dynamic penetration. [Grunty. Metod polevogo ispytaniia dinamicheskim zondirovaniem].
Russia. Gosudarstvennyi komitet po delam stroitel'stva, Gosudarstvennyi standard SSSR, GOST 19912-74 (State standard of the USSR, GOST 19912-74), Moscow, Izdatel'stvo standartov, 1974, 8p., In Russian.
Frozen fines, Sands, Clays, Tests, Laboratory techniques.

36-1934
Soils. Laboratory technique of determining thawing and compressibility coefficients of frozen soils. [Grunty. Metod laboratornogo opredeleniia koefitsientov ottaivaniia i szhimaemosti pri ottaivanii merzlykh gruntov].
Russia. Gosudarstvennyi komitet po delam stroitel'stva, Gosudarstvennyi standard SSSR, GOST 19706-74 (State standard of the USSR, GOST 19706-74), Moscow, Izdatel'stvo standartov, 1974, 6p., In Russian.
Frozen fines, Sands, Clays, Ground thawing, Laboratory techniques.

36-1935
Very strong rhomboidal piles stable in frost heaving ground. [Zabivnye rombovidnye svai povyshennoi nesushchei sposobnosti ustoichivye protiv vypuchivaniia].
Tyumen' Nauchno-issledovatel'skii institut osnovanii i podzemnykh sooruzhenii, Tyumen', 1975, 5p. In Russian
Foundations, Piles, Pile driving, Boreholes, Frost heave.

36-1936
Ecologic-biologic peculiarities, productiveness and protection of phytocenoses in the western BAM zone. [Ekologo-biologicheskie osobennosti, produktivnost' i okhrana fitotsenozov zapadnogo uchastka zony BAM].
Kolesnichenko, V.T., ed. Irkutsk, 1979, 95p., In Russian. For selected papers see 36-1937 through 36-1939.
DLC QK375.E38
River basins, Estuaries, Deltas, Permafrost distribution, Cryogenic soils, Swamps, Peat, Plant ecology, Ecosystems, Alpine tundra.

36-1937
General features of vegetation in the Angara-Kichera delta. [Obshchaia kharakteristika rastitel'nosti Angaro-Kicherskoi del'ty].
Gramma, G.T., Ekologo-biologicheskie osobennosti, produktivnost' i okhrana fitotsenozov zapadnogo uchastka zony BAM (Ecologic-biologic peculiarities, productiveness and protection of phytocenoses in the western BAM zone) edited by V.T. Kolesnichenko, Irkutsk, 1979, p.15-17, In Russian.
DLC QK375.E38
Deltas, Cryogenic soils, Permafrost distribution, Swamps, Vegetation patterns, Plant ecology, Ecosystems, Rivers, Estuaries.

36-1938
Microclimatic regionalization of the western BAM zone. [Mikroklimaticheskoe raionirovanie v zone zapadnogo uchastka BAM].
Gostar', V.I., et al, Ekologo-biologicheskie osobennosti, produktivnost' i okhrana fitotsenozov zapadnogo uchastka zony BAM (Ecologic-biologic peculiarities, productiveness and protection of phytocenoses in the western BAM zone) edited by V.T. Kolesnichenko, Irkutsk, 1979, p.62-64, In Russian.
Fostik, N.I.
DLC QK375.E38
River basins, Valleys, Permafrost distribution, Microclimatology.

36-1939
Interrelations between soils and vegetation in the western BAM zone. [O vzaimosviazi rastitel'nogo pokrova i pochvogruntov na territorii zapadnogo uchastka BAM].
Ospova, O.V., et al, Ekologo-biologicheskie osobennosti, produktivnost' i okhrana fitotsenozov zapadnogo uchastka zony BAM (Ecologic-biologic peculiarities, productiveness and protection of phytocenoses in the western BAM zone) edited by V.T. Kolesnichenko, Irkutsk, 1979, p.91-94, In Russian.
Frolova, M.V.
DLC QK375.E38
Landscape types, Alpine tundra, Swamps, Peat, Cryogenic soils, Plant ecology, Mapping.

36-1940
Subglacial eroding velocities of streams in channels. [K voprosu o razmyvaiushchikh skorostiakh v kanalakh pri nalichii ledianogo pokrova].
Ros', L.S., et al, *Krasnodar. Kubanskii sel'skokhozyaistvennyi institut Trudy*, 1976, Vyp 122, p.67-75, In Russian. 7 refs
Saptsin, V.P.
DLC S13.K78
Land reclamation, Channels (waterways), Icebound rivers, Ice water interface, Ice friction, Flow rate, Water erosion.

36-1941
Variations of snow properties. [Ob izmenchivosti svoistv snega].
Kanaev, I.A., *Srednеaziatskii nauchno-issledovatel'skii gidrometeorologicheskii institut Trudy*, 1969, Vol.44, p.25-42, In Russian. 37 refs
Avalanch formation, Slope processes, Snow depth, Snow density, Snow cover stability, Snow strength, Avalanche triggering, Avalanche mechanics.

36-1942
Calculating the runoff of glacial rivers. [O raschete stoka rek s lednikovym pitaniem].
Kamalov, B.A., *Srednеaziatskii nauchno-issledovatel'skii gidrometeorologicheskii institut Trudy*, 1969, Vol.44, p.66-80, In Russian. 15 refs.
Glacial hydrology, Glacial rivers, Alimentation, Runoff.

36-1943
Some problems of the mechanics of glacier movements. [Nekotorye voprosy mekhaniki dvizheniia lednikov].
Litosh, V.A., *Srednеaziatskii nauchno-issledovatel'skii gidrometeorologicheskii institut Trudy*, 1969, Vol.44, p.89-98, In Russian. 18 refs
Mountain glaciers, Glacier flow, Glacier ice, Rheology.

36-1944
Classification and space variations of albedo of a homogeneous glacier surface during ablation. [Problema klassifikatsii i prostranstvennaia izmenchivost' al'bedo odnorodnoi poverkhnosti lednikov v period abliatsii].
Konovalov, V.G., *Srednеaziatskii nauchno-issledovatel'skii gidrometeorologicheskii institut Trudy*, 1969, Vol.44, p.102-107, In Russian. 5 refs.
Glacier ablation, Glacier surfaces, Albedo.

36-1945
Nonoptical method of revealing and recording the crystalline structure of ice. [Neopticheskii metod vyiavleniia i fiksirovaniia kristallicheskoi struktury l'da].
Cherepanov, N.V., *Srednеaziatskii nauchno-issledovatel'skii gidrometeorologicheskii institut Trudy*, 1969, Vol.44, p.108-113, In Russian.
Ice crystal structure, Ice sampling, Photography, Laboratory techniques, Equipment.

36-1946
History of large lakes in the Central Subarctic. [Istoriia bol'shikh ozer Tsentral'noi Subarktiki].
Vykhristiuk, L.A., et al, Novosibirsk, Nauka, 1981, 137p., In Russian with English table of contents enclosed. 150 refs.
Subpolar regions, Lakes, Lacustrine deposits, Soil formation, Bottom sediment, Algae, Permafrost beneath lakes, Cryogenic soils, Subarctic landscapes, Slope processes, Geocryology.

36-1947
Arctic ice and recent natural processes. [L'dy Arktiki i sovremennye prirodnye protsessy].
Zakharov, V.F., Leningrad, Gidrometeoizdat, 1981, 136p., In Russian with English table of contents enclosed. 150 refs.
Pack ice, Polar regions, Icebergs, Arctic landscapes, Sea ice, Ice formation, Land ice, Ice salinity, Ice volume, Glacier ice, Permafrost, Arctic Ocean.

36-1948
Engineering and geological investigations for tunnel construction. [Inzhenerno-geologicheskie issledovaniia pri stroitel'stve tunnelei].
Pashkin, E.M., Moscow, Nedra, 1981, 135p., In Russian with English table of contents enclosed. 88 refs.
Tunneling (excavation), Linings, Anchors, Supports, Steel structures, Concrete structures, Hydraulic structures, Drains, Railroads, Roads, Engineering geology, USSR—Far East, USSR—Caucasus, USSR—Central Asia.

36-1949
Pile construction on permafrost. [Proizvodstvo svainykh rabot na vechnomerzlykh gruntakh].
Goncharov, I.U.M., et al, Leningrad, Stroiizdat, 1981, 160p., In Russian with English table of contents enclosed. 40 refs.
Targulian, I.L.O., Vartanov, S.Kh.
Foundations, Piles, Permafrost bases, Drilling, Permafrost control, Artificial thawing, Pile driving.

36-1950
Mechanics of glaciers, snow avalanches and soils. [Mekhanika lednikov, snezhnykh lavin i gruntov].
Grigorian, S.S., ed, *Moscow Institut mekhaniki Nauchnye trudy*, 1975, No.42, 113p., In Russian. For selected papers see 36-1951 through 36-1955. Refs. passim
Glaciology, Glacier formation, Glacier flow, Glacier oscillation, Glacier surfaces, Snow cover distribution, Glacier alimentation, Ice mechanics, Ice crystal structure, Ice creep, Ice plasticity, Rheology, Avalanche formation, Avalanche triggering, Avalanche mechanics, Avalanche wind, Models, Simulation.

36-1951
Problems and methods of studying glacier oscillations. [Zadachi i metody izucheniia kolebanii lednikov].
Shumskii, P.A., *Moscow Institut mekhaniki Nauchnye trudy*, 1975, No.42, p.5-11, In Russian. 13 refs
Glaciology, Theories, Glacier formation, Glacier oscillation, Glacier surveys, Glacier alimentation, Glacier mass balance, Glacier heat balance, Meteorological factors, Models, Simulation.

36-1952
Studying regimes of glaciers from surface observations. [Izuchenie rezhima lednikov s pomoshch'iu nabliudenii na poverkhnosti].
Shumskii, P.A., *Moscow Institut mekhaniki Nauchnye trudy*, 1975, No.42, p.12-42, In Russian. 15 refs.
Glacier surfaces, Glacier surveys, Snow cover distribution, Firn stratification, Glacier flow, Flow rate, Glacial hydrology.

36-1953
Simple mathematical model of a three-dimensional nonstationary glacier. [Prosteishaia matematicheskaia model' trekhmernogo nestatsionarnogo lednika].
Grigorian, S.S., et al, *Moscow Institut mekhaniki Nauchnye trudy*, 1975, No.42, p.43-53, In Russian. 9 refs
Shumskii, P.A.
Glaciology, Mathematical models, Glacier oscillation.

36-1954
Law governing the flow of polycrystalline ice. [O zakone techeniia polikristallicheskogo l'da].
Shumskii, P.A., *Moscow Institut mekhaniki Nauchnye trudy*, 1975, No.42, p.54-68, In Russian. 43 refs
Ice crystals, Ice mechanics, Flow rate, Ice crystal structure, Ice creep, Ice plasticity, Rheology, Temperature effects, Theories.

36-1955
Nature of avalanche wind. [O prirode lavinnoi vozdushnoi volny].
Grigorian, S.S., et al, *Moscow Institut mekhaniki Nauchnye trudy*, 1975, No.42, p.74-82, In Russian. 13 refs.
Urumbaev, N.A.
Avalanche formation, Avalanche triggering, Avalanche mechanics, Avalanche wind, Impact strength.

36-1956
Frost resistance of subalpine *Eucaliptus* species. 2. Experiments using the resistance index method of damage assessment.
Harwood, C.E., *Australian journal of botany*, 1981, 29(2), p.209-218, 14 refs
Frost resistance, Vegetation, Damage, Subpolar regions, Experimentation.

36-1957
Wet and dry deposition of trace elements onto the Greenland ice sheet.
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Chu, L., Grimm, T.C., Nasta, M.A., Qamoos, M.P.
Snow composition, Precipitation (meteorology), Air pollution, Snowfall, Ice sheets, Chemical composition, Greenland.

36-1958
Scale of avalanche danger. [Une échelle du risque d'avalanches].
Marbouty, D., *Neige et avalanches*, Oct 1981, No.27, p.30-39, In French
Avalanche formation, ...cidents, Safety, Avalanche forecating.

36-1959
Laser, snow and avalanches. [Le laser, la neige et les avalanches].
Granier, D., et al, *Neige et avalanches*, Oct 1981, No.27, p.40-48, In French. 11 refs
Gramer, R., Coulon, R.
Avalanche formation, Snow optics, Ice optics, Lasers, Safety, Skis.

36-1960
Insulation retrofitting—a case history.
Strelka, C.S., et al, *National Research Council Canada Building practice note*, Sep 1981, No.21, 9p. + figs., 5 refs
Burn, K.N.
Thermal insulation, Residential buildings, Houses, Fuels.

36-1961
Urea formaldehyde foam insulation: problem identification and remedial measures for wood-frame construction.
Bowen, R.P., et al. *National Research Council, Canada. Building practice note*, Aug. 1981, No.23, 34p. + appends., 6 refs.
Shirtliffe, C.J., Chown, G.A.
Thermal insulation, Wooden structures, Houses, Urea, Safety, Buildings.

36-1962
Use of ice-liquid water potential temperature as a thermodynamic variable in deep atmospheric models.
Tripoli, G.J., et al. *Monthly weather review*, May 1981, 109(5), p.1094-1102, 12 refs.
Cotton, W.R.
Ice water interface, Thermodynamics, Phase transformations, Compressive properties, Mathematical models, Temperature variations.

36-1963
Traffic, roads and the community.
IRF (International Road Federation) World Meeting, 9th, Stockholm, June 1-5, 1981, Sweden. Statens vag- och trafikinstitut, 1981, 84p., Abstracts of the papers.
Road maintenance, Winter maintenance, Engineering, Trafficability, Noise (sound), Safety, Surface roughness, Meetings.

36-1964
Small landslide types and controls in glacial deposits: lower Skagit River drainage, northern Cascade Range, Washington.
Heller, P.L., *Environmental geology*, 1981, 3(4), p.221-228, 19 refs.
Landslides, Slope processes, Glacial deposits.

36-1965
Tests of effective pair potentials for water: predicted ice structures.
Morse, M.D., et al. *Journal of chemical physics*, Jan. 1, 1982, 76(1), p.650-660, 50 refs.
Rice, S.A.
Ice structure, High pressure ice, Ions, Water structure, Ice density, Tests.

36-1966
Subsurface currents in the Arctic Ocean. [Podpoverkhnostnye techeniia v Severnom Ledovitom okeane].
Beliakov, I.N., et al. *Problemy Arktiki i Antarktiki: sbornik statei*, 1981, Vol.56, p.12-19, In Russian. 16 refs.
Volkov, V.A.
Ocean currents, Drift stations.

36-1967
Sea ice regelation conditions in the Arctic. [Usloviia rezhelatsii morskogo l'da v Arktike].
Gorbunov, Iu.A., et al. *Problemy Arktiki i Antarktiki: sbornik statei*, 1981, Vol.56, p.23-28, In Russian. 2 refs.
Petrov, I.G.
Sea ice, Regelation, Ice temperature, Ice density, Water temperature, Freezing.

36-1968
Temperature shifts, stress and strain in fast ice. [O temnicheskikh peremeshcheniiakh, deformatsiiakh i napriazheniiakh pripaia].
Kulakov, M.Iu., et al. *Problemy Arktiki i Antarktiki: sbornik statei*, 1981, Vol.56, p.29-38, In Russian. 10 refs.
Tegenkov, V.P.
Fast ice, Thermal stresses, Strains, Ice deformation.

36-1969
Rheological model of ice pressure ridge formation. [Reologicheskaia model' torosheniia ledianogo pokrova].
Kolesov, S.V. *Problemy Arktiki i Antarktiki: sbornik statei*, 1981, Vol.56, p.39-45, In Russian. 12 refs.
Pressure ridges, Rheology, Mathematical models, Sea ice, Fast ice.

36-1970
Morphological features of the upper and lower surfaces of fast ice. [Nekotorye osobennosti morfologii nizhnei i verkhnei poverkhnosti pripainykh l'dov].
Ostrovskii, A.V., et al. *Problemy Arktiki i Antarktiki: sbornik statei*, 1981, Vol.56, p.46-50, In Russian.
Kovachigov, G.V.
Fast ice, Pressure ridges, Ice surface, Ice bottom surface, Ice water interface, Ice cover thickness.

36-1971
Measuring ice cover thickness in the Ob-Taz Bay. [K metodike izmereniu tolshchin ledianogo pokrova v Obsko-Tazovskoi gube].
Klimovich, V.M., et al. *Problemy Arktiki i Antarktiki: sbornik statei*, 1981, Vol.56, p.51-54, In Russian. 3 refs.
Chilingarov, A.N.
Sea ice, Ice cover thickness.

36-1972
Relationship of seasonal pressure variations in high latitudes of the northern and southern hemispheres. [Vzaimosviaz' sezonnykh kolebanii davleniia v vysokikh shirotakh severnogo i iuzhnogo polusharij].
Lutsenko, E.I., *Problemy Arktiki i Antarktiki: sbornik statei*, 1981, Vol.56, p.78-82, In Russian. 11 refs.
Atmospheric pressure, Synoptic meteorology.
Analysis of semiannual changes in 500-mb geopotential shows that in the mid-troposphere, as at sea level, maximum amplitude peaks of six-month variations occur in the same regions of the northern and southern hemispheres. Thus it appears that localization of maximum amplitude areas in the conjugate areas of the Laptev Sea and East Antarctica is the characteristic feature of semiannual wave formation at both levels of the atmosphere. Comparison of maps of 6-month pressure variations with geomagnetic activity maps shows that areas of maximum amplitude correspond to conjugate zones of greatest geomagnetic activity.

36-1973
Variability in temperature and depth of Pacific Ocean waters. [Ob izmenchivosti temperatury i glubiny zaleganiia tikhookeanskikh vod].
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Vorob'ev, V.N.
Ocean currents, Oceanography, Drift stations.

36-1974
Increase of atmospheric CO2 concentration and climatic changes: a possible effect on the Greenland ice sheet. [Anstieg der CO2-Konzentration in der Atmosphäre und Klimaänderung: Mögliche Auswirkungen auf den Grönländischen Eisschild].
Ambach, W., *Wetter und Leben*, 1980, Vol.32, p.135-142, In German with English summary. 17 refs.
Carbon dioxide, Ice sheets, Atmospheric composition, Heat balance, Glacier mass balance, Climatic changes, Glacier ablation, Air temperature, Greenland.

36-1975
Climate of planets. [Klimat planet].
Borisenkov, E.P., ed. Leningrad, Gidrometeoizdat, 1981, 96p., In Russian with English table of contents enclosed. 136 refs.
Kondrat'ev, K.IA., ed.
Extraterrestrial ice, Ice fog, Atmospheric composition, Water vapor, Mars (planet), Planetary environments.

36-1976
Glacial geomorphology of mountains (Siberia and the Far East taken as examples). [Gliatsial'naia geomorfologiia gor (na primere Sibiri i Dal'nego Vostoka)].
Ivanovskii, L.N., Novosibirsk, Nauka, 1981, 173p., In Russian with English table of contents enclosed. Refs. p.157-171.
Glaciation, Geomorphology, Theories, Rock glaciers, Mountain glaciers, Glacial hydrology, Glacial erosion, Glacial deposits, Moraines, Topographic features.

36-1977
Processes and products of soil formation in dark conifer forests. [Protsessy i produkty pochvoobrazovaniia v temnokhvoinykh lesakh].
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Korsunov, V.M., Shoba, V.N.
Taiga, Cryogenic soils, Soil microbiology, Mountain soils, Forest soils, Podsol, Soil formation, Soil profiles, Soil composition, Soil chemistry.

36-1978
Polarization of scattered and proper radio emissions of terrestrial covers. [Poliarizatsiia rasseiannogo i sobstvennogo radioizlucheniia zemnykh pokrovov].
Bogorodskii, V.V., et al. Leningrad, Gidrometeoizdat, 1981, 279p., In Russian with English table of contents enclosed. 165 refs.
Kanareikin, D.B., Kozlov, A.I.
Radar echoes, Radio echo soundings, Sea ice, Land ice, Sea water, Landforms, Surface properties, Radio waves, Polarization (waves), Scattering.

36-1979
Cryogenic arid steppe soils. [Stepnye kriaridnye pochvy].
Volkovintser, V.L., Novosibirsk, Nauka, 1978, 208p., In Russian with English table of contents enclosed. Refs. 197-207.
DLC S599.45.S5V64
Steppes, Cryogenic soils, Soil formation, Permafrost distribution, Active layer, Soil composition, Soil microbiology, Classifications.

36-1980
Road design for western Siberian towns with about one million population. [Voprosy proektirovaniia avtomobil'nykh dorog v gorodakh Zapadnoi Sibiri s naseleniem okolo milliona chelovek].
Mironov, M.S., Omsk, Zapadno-Sibirskoe knizhnoe izd-vo, 1977, 84p., In Russian with English table of contents enclosed. 30 refs.
DLC TE110.S52M57
Urban planning, Roads, Pavements, Design, Cost analysis.

36-1981
Temporary instructions for grouting seams and joints of large panel residential buildings without heating. [Vremennaia instruktsiia po bezobogrevnomu vypolneniiu shvov i stykov v krupnopanel'nykh zhilykh zdaniiakh].
Russia. Gosudarstvennyi komitet po grazhdanskomu stroitel'stvu i arkhitekture, Moscow, Stroiizdat, 1977, 31p., In Russian with English table of contents enclosed.
Samoshkin, IU.S., ed. Smelik, V.D., ed.
DLC TH1098.R88
Large panel buildings, Residential buildings, Panels, Joints (junctions), Grouting, Mortars, Cement admixtures, Winter concreting.

36-1982
Algae in cryoconite holes on Canada Glacier in southern Victoria Land, Antarctica.
Wharton, R.A., Jr., et al. *Phycologia*, June 1981, 20(2), p.208-211, 14 refs.
Vinyard, W.C., Parker, B.C., Simmons, G.M., Jr., Seaburg, K.G.
Cryobiology, Algae, Glacier ice, Wind factors, Antarctica—Canada Glacier.
Algae species from Canada Glacier in southern Victoria Land are identified and discussed. These species are found in small water filled depressions which form as heat, absorbed by wind-blown sediment, melts the underlying ice. Algal mats found in these holes are also carried onto the glacier by strong prevailing winds.

36-1983
Surveys for the International Antarctic Glaciological Project, Wilkes Land 1975-76.
Kros, M., *Australia. Department of National Development and Energy. Division of National Mapping. Technical report*, 1980, No.28, c40 leaves.
Expeditions, Geophysical surveys, Glaciers, Antarctica—Wilkes Land.
A narrative account is given of organizing, equipping, training, transporting, and executing the planned survey. Details are given of sledge caravan operation, procedures for gathering survey data, tellurometer measurements, navigation, field station locations; 19 photographs record the survey in various stages of operation and 15 annexes contain raw data accumulated during three field trips.

36-1984
Development and prospects in polar research. [Osnovnye etapy i perspektivy izucheniia poliarnykh oblastei Zemli].
Treshnikov, A.F., *Problemy Arktiki i Antarktiki: sbornik statei*, 1981, Vol.57, p.7-22, In Russian.
Research projects.
Soviet polar research is reviewed. In 1956 Soviet antarctic research began and in 1958 the AANII took over responsibility for antarctic and southern ocean investigations. A concise summary of results of research in glaciology, oceanography, meteorology, medicine and other fields is given.

36-1985
Sea ice research issues. [Problemy issledovaniia morskikh l'dov].
Gudkovich, Z.M., et al. *Problemy Arktiki i Antarktiki: sbornik statei*, 1981, Vol.57, p.52-59, In Russian.
Zakharov, V.F., Kurilov, V.V., Kruitskikh, B.V.
Sea ice, Research projects, Ice forecasting.

36-1986
Large-scale sea-air interactions. [Problemy krupnomasshtabnogo vzaimodeistviia okeana i atmosfery].
Nikolaev, IU.V., et al. *Problemy Arktiki i Antarktiki: sbornik statei*, 1981, Vol.57, p.60-64, In Russian.
Smirnov, N.P.
Air water interactions, Climatology, Sea ice, Research projects, Heat balance.

36-1987
Current methods and results in ice physics and physical oceanography. [Sovremennye metody i rezul'taty issledovanii fiziki l'da i okeana].
Bogorodskii, V.V., *Problemy Arktiki i Antarktiki: sbornik statei*, 1981, Vol.57, p.65-78, In Russian. 6 refs.
Ice physics, Ice cover thickness, Sea ice, Rheology, Radar.
Radar and radio methods and their use in measuring ice thickness and flow velocity, internal structure of glaciers and sea surface temperature in the Arctic are discussed. Results of new techniques for studying drifting ice dynamics are evaluated. Assessments are also given of results of water and snow-ice optics in the arctic basin and of new findings on micro- and mesoscale space-time variability in geophysical fields. A new pressure measuring method for determining rheological characteristics of ice is evaluated.

36-1988
Designing icebreakers and merchant ships for polar waters. [Obespechenie ledovykh kachestv ledokolov i transportnykh sudov ledovogo plavaniia].
Maksutov, D.D., *Problemy Arktiki i Antarktiki; sbornik statei*, 1981, Vol.57, p.112-115, In Russian.
Icebreakers, Ships.

36-1989
Freezing of a semi-infinite medium with linear initial temperature distribution.
Mikhailov, V.A., et al, *Akademiia nauk SSSR. Izvestiya. Physics of the solid earth*, 1980, 16(1), p.84-86, Translated from Its Izvestiia. Fizika Zemli.
Permiakov, P.P.
Stefan problem, Frost penetration, Frozen rock temperature, Temperature gradients, Permafrost thermal properties, Phase transformations.

36-1990
Proceedings.
Symposium/Research on Environmental Fate and Effects of Drilling Fluids and Cuttings, Lake Buena Vista, Florida, Jan. 21-24, 1980, Washington, D.C., [1980], 1122p., Refs. passim. For selected papers see 36-1991 through 36-1996.
Drilling fluids, Offshore drilling, Waste disposal, Permafrost, Sea ice, Drilling, Environmental impact, Meetings.

36-1991
Drilling fluids and disposal methods employed by ESSO Resources Canada Limited to drill in the Canadian Arctic.
Fricsen, G., Symposium/Research on Environmental Fate and Effects of Drilling Fluids and Cuttings, Lake Buena Vista, Florida, Jan. 21-24, 1980. Proceedings, Washington, D.C., [1980], p.53-69, 10 refs.
Drilling fluids, Waste disposal, Offshore drilling, Subsea permafrost, Permafrost preservation, Artificial islands, Beaufort Sea.

36-1992
Geothermal disturbance resulting from sump construction and use in permafrost terrain, Arctic Canada.
French, H.M., et al, Symposium/Research on Environmental Fate and Effects of Drilling Fluids and Cuttings, Lake Buena Vista, Florida, Jan. 21-24, 1980. Proceedings, Washington, D.C., [1980], p.139-165, 15 refs.
Smith, M.W.
Permafrost thermal properties, Geothermy, Drilling fluids, Waste disposal, Wells, Freeze thaw cycles, Soil temperature, Pits (excavations).

36-1993
Plant and soil changes resulting from exploratory oil and gas drilling in the Canadian high Arctic.
Smith, D.W., et al, Symposium/Research on Environmental Fate and Effects of Drilling Fluids and Cuttings, Lake Buena Vista, Florida, Jan. 21-24, 1980. Proceedings, Washington, D.C., [1980], p.166-190, 17 refs.
James, T.D.W.
Drilling fluids, Environmental impact, Plants (botany), Soil pollution, Slope processes, Snowmelt, Waste disposal, Damage, Soil chemistry, Wells, Vegetation.

36-1994
Surface and subsurface water quality implications of waste drilling fluid sump abandonment in permafrost regions.
Hrudey, S.E., Symposium/Research on Environmental Fate and Effects of Drilling Fluids and Cuttings, Lake Buena Vista, Florida, Jan. 21-24, 1980. Proceedings, Washington, D.C., [1980], p.191-222, 6 refs.
Drilling fluids, Waste disposal, Permafrost, Wells, Ground water, Surface waters, Suprapermafrost ground water, Water pollution.

36-1995
Physical aspects of disposal of drilling mud and cuttings in shallow ice covered Arctic seas.
Miller, R.C., et al, Symposium Research on Environmental Fate and Effects of Drilling Fluids and Cuttings, Lake Buena Vista, Florida, Jan. 21-24, 1980. Proceedings, Washington, D.C., [1980], p.670-690, 4 refs.
Britch, R.P., Shafer, R.V.
Drilling fluids, Waste disposal, Sea ice, Ocean bottom, Ice bottom surface, Ice surface, Offshore drilling, Analysis (mathematics).

36-1996
Toxicity of drilling fluids to marine organisms in the Beaufort Sea, Alaska.
Tornberg, L.D., et al, Symposium/Research on Environmental Fate and Effects of Drilling Fluids and Cuttings, Lake Buena Vista, Florida, Jan. 21-24, 1980. Proceedings, Washington, D.C., [1980], p.997-1016, 12 refs.
Thielk, E.D., Nakatani, R.E., Miller, R.C., Hillman, S.O.
Drilling fluids, Marine biology, Damage, Subglacial observations, Toxicity.

36-1997
Proceedings.
Symposium on Production and Transportation Systems for the Hibernia Discovery, St. John's, Newfoundland, Feb. 16-18, 1981, St. John's, Newfoundland, 1981, 522p., Includes discussions, p.393-508. Refs. passim. For selected papers see 36-1998 through 36-2019.
Offshore drilling, Offshore structures, Sea ice distribution, Icebergs, Ice scoring, Impact strength, Floating structures, Artificial islands, Hydrodynamics, Drift, Petroleum industry, Petroleum transportation, Ice pressure, Meetings, Canada—Newfoundland.

36-1998
Prestressed concrete fixed drilling and production platform for the Hibernia oil field development.
Jarlan, G.E., Symposium on Production and Transportation Systems for the Hibernia Discovery, St. John's, Newfoundland, Feb. 16-18, 1981. Proceedings, St. John's, Newfoundland, 1981, p.18-26.
Offshore structures, Offshore drilling, Hydrodynamics, Icebergs, Drift, Impact strength, Concrete structures, Artificial islands, Ice pressure, Oil recovery, Canada—Newfoundland.

36-1999
Potential concrete structures for Hibernia.
Lundrigan, H., et al, Symposium on Production and Transportation Systems for the Hibernia Discovery, St. John's, Newfoundland, Feb. 16-18, 1981. Proceedings, St. John's, Newfoundland, 1981, p.27-38.
Lindgren, J.
Offshore structures, Offshore drilling, Concrete structures, Ice pressure, Icebergs, Drift, Sea ice, Design, Canada—Newfoundland.

36-2000
Application of fixed platforms for the Hibernia development.
Lee, G.C., et al, Symposium on Production and Transportation Systems for the Hibernia Discovery, St. John's, Newfoundland, Feb. 16-18, 1981. Proceedings, St. John's, Newfoundland, 1981, p.39-51, 1 ref.
Bankston, C.L.
Offshore structures, Artificial islands, Icebergs, Drift, Ice pressure, Ice loads, Ocean waves, Pack ice, Canada—Newfoundland.

36-2001
Environmental forces on a fixed platform and the ability of the platform to resist them.
McIntyre, N.F., Symposium on Production and Transportation Systems for the Hibernia Discovery, St. John's, Newfoundland, Feb. 16-18, 1981. Proceedings, St. John's, Newfoundland, 1981, p.52-68
Offshore structures, Bearing strength, Icebergs, Drift, Impact strength, Environmental impact.

36-2002
Semi-submersible operating experience: rough seas and occasional icebergs.
Hammett, D.S., Symposium on Production and Transportation Systems for the Hibernia Discovery, St. John's, Newfoundland, Feb. 16-18, 1981. Proceedings, St. John's, Newfoundland, 1981, p.70-90
Offshore drilling, Hydrodynamics, Icebergs, Drift, Ocean waves, Ice conditions, Ocean currents, Sea ice.

36-2003
Tanker based oil production and storage system for the Hibernia field.
Borseth, K., et al, Symposium on Production and Transportation Systems for the Hibernia Discovery, St. John's, Newfoundland, Feb. 16-18, 1981. Proceedings, St. John's, Newfoundland, 1981, p.91-109, 4 refs.
Olsen, S.
Tanker ships, Oil storage, Petroleum industry, Offshore structures, Offshore drilling, Icebergs, Impact strength, Ice loads, Drift, Canada—Newfoundland.

36-2004
Performance of shuttle tankers in a hostile environment.
Abramovich, D., Symposium on Production and Transportation Systems for the Hibernia Discovery, St. John's, Newfoundland, Feb. 16-18, 1981. Proceedings, St. John's, Newfoundland, 1981, p.110-121, 6 refs.
Tanker ships, Offshore drilling, Petroleum industry, Petroleum transportation, Icebergs, Ice scoring, Drift, Loading, Moorings, Ice floes.

36-2005
Concrete production floating platforms.
Letourneur, O., Symposium on Production and Transportation Systems for the Hibernia Discovery, St. John's, Newfoundland, Feb. 16-18, 1981. Proceedings, St. John's, Newfoundland, 1981, p.122-133, 2 refs.
Floating structures, Concrete structures, Offshore structures, Stability, Floating ice, Impact strength, Ocean waves.

36-2006
Ability of floating platforms and tankers to operate in the Hibernia environment.
McIntyre, N.F., Symposium on Production and Transportation Systems for the Hibernia Discovery, St. John's, Newfoundland, Feb. 16-18, 1981. Proceedings, St. John's, Newfoundland, 1981, p.134-144.
Floating structures, Offshore structures, Tanker ships, Icebergs, Impact strength, Ice floes, Ice scoring, Canada—Newfoundland.

36-2007
Geological evidence of iceberg groundings and related seafloor processes.
Lewis, C.F.M., et al, Symposium on Production and Transportation Systems for the Hibernia Discovery, St. John's, Newfoundland, Feb. 16-18, 1981. Proceedings, St. John's, Newfoundland, 1981, p.146-177, Refs. p.175-177
Barrie, J.V.
Icebergs, Ice scoring, Ocean bottom, Bottom topography, Sediment transport, Grounded ice, Submarine geology.

36-2008
Estimates of iceberg scour depths.
Chari, T.R., et al, Symposium on Production and Transportation Systems for the Hibernia Discovery, St. John's, Newfoundland, Feb. 16-18, 1981. Proceedings, St. John's, Newfoundland, 1981, p.178-188, 7 refs.
Peters, G.R.
Ice scoring, Bottom topography, Bottom sediment, Icebergs, Ocean bottom, Ocean currents, Sediment transport, Soil strength, Shear strength, Hydrodynamics.

36-2009
Burial parameters: an integrated approach to limit overdesign.
Lewis, J.K.C., et al, Symposium on Production and Transportation Systems for the Hibernia Discovery, St. John's, Newfoundland, Feb. 16-18, 1981. Proceedings, St. John's, Newfoundland, 1981, p.189-206, 6 refs.
Benedict, C.P.
Icebergs, Impact strength, Ice control, Engineering, Ice conditions, Sea ice, Statistical analysis, Towing.

36-2010
Nature of iceberg seabed interactions.
Stacy, R.A., Symposium on Production and Transportation Systems for the Hibernia Discovery, St. John's, Newfoundland, Feb. 16-18, 1981. Proceedings, St. John's, Newfoundland, 1981, p.207-210
Icebergs, Ice scoring, Ocean bottom, Drift, Hydrodynamics, Ice mechanics, Sediment transport, Soil mechanics.

36-2011
Underwater trench production systems.
Gibson, C.E., Symposium on Production and Transportation Systems for the Hibernia Discovery, St. John's, Newfoundland, Feb. 16-18, 1981. Proceedings, St. John's, Newfoundland, 1981, p.223-237.
Trenching, Ocean bottom, Engineering, Ice scoring, Protection, Underwater pipelines, Ocean waves, Ocean currents.

36-2012
Design, installation and operation of gathering and transmission pipelines for the Hibernia field.
Timmermans, W.J., Symposium on Production and Transportation Systems for the Hibernia Discovery, St. John's, Newfoundland, Feb. 16-18, 1981. Proceedings, St. John's, Newfoundland, 1981, p.238-252, 3 refs.
Icebergs, Ocean bottom, Ice scoring, Underwater pipelines, Hot oil lines, Design, Canada—Newfoundland.

36-2013
Methods for protecting subsea pipelines and installations.
Rochelle, W.R., et al, Symposium on Production and Transportation Systems for the Hibernia Discovery, St. John's, Newfoundland, Feb. 16-18, 1981. Proceedings, St. John's, Newfoundland, 1981, p.253-269.
Simpson, D.M.
Engineering, Ocean bottom, Protection, Icebergs, Ice scoring, Trenching, Underwater pipelines, Human factors.

36-2014
Ability to protect oil/gas pipelines and subsea installations from icebergs in the Hibernia area.
Weir, F.V., Symposium on Production and Transportation Systems for the Hibernia Discovery, St. John's, Newfoundland, Feb. 16-18, 1981. Proceedings, St. John's, Newfoundland, 1981, p 279-290.
Ocean bottom, Hydraulic structures, Protection, Icebergs, Ice scoring, Trenching, Underwater pipelines, Submarine geology, Canada—Newfoundland.

36-2015
Safety evaluations of field development concepts.
Fjeld, S., Symposium on Production and Transportation Systems for the Hibernia Discovery, St. John's, Newfoundland, Feb. 16-18, 1981. Proceedings, St. John's, Newfoundland, 1981, p.292-302.
Icebergs, Ships, Impact strength, Safety, Accidents, Offshore structures, Oil spills, Drift, Damage, Design criteria.

36-2016
Operational risks in a harsh environment: the human element.
Sharples, B.P.M., et al, Symposium on Production and Transportation Systems for the Hibernia Discovery, St. John's, Newfoundland, Feb. 16-18, 1981. Proceedings, St. John's, Newfoundland, 1981, p.303-309
Jack, R.L., Miller, B.L.
Icebergs, Impact strength, Offshore structures, Accidents, Human factors.

36-2017
Functions and experience of a classification society in developing standards for offshore structures.
Hannan, W.M., et al, Symposium on Production and Transportation Systems for the Hibernia Discovery, St. John's, Newfoundland, Feb. 16-18, 1981. Proceedings, St. John's, Newfoundland, 1981, p.310-321, 2 refs.
Conlon, J.F.
Offshore structures, Ice conditions, Standards, Ships, Design criteria, Construction.

36-2018
Strength analysis of semi-submersible production platforms.
Bambridge, C.A., Symposium on Production and Transportation Systems for the Hibernia Discovery, St. John's, Newfoundland, Feb. 16-18, 1981. Proceedings, St. John's, Newfoundland, 1981, p.322-336.
Offshore structures, Offshore drilling, Floating structures, Impact strength, Ice pressure, Wind factors, Ocean waves, Buoyancy, Damage, Accidents, Computer applications.

36-2019
Comparative environmental risks associated with fixed platforms and floating platforms and with tankers and pipelines.
Weir, F.V., Symposium on Production and Transportation Systems for the Hibernia Discovery, St. John's, Newfoundland, Feb. 16-18, 1981. Proceedings, St. John's, Newfoundland, 1981, p.337-355.
Icebergs, Offshore structures, Impact strength, Floating structures, Tanker ships, Ocean bottom, Ice scoring, Underwater pipelines, Protection.

36-2020
Using new profile H-beams in cross-pieces of power line supports. [Primenenie dvutavrov novykh profilei pri izgotovlenii travers opor VL].
Sal'nikov, A.A., et al, *Energeticheskoe stroitel'stvo*, Dec. 1981, No.12, p.30-34, In Russian.
Tumanov, V.I., Karavaev, O.V., Vostretsov, O.K.
Power line supports, Steel structures, Frozen ground.

36-2021
Prospects for further development of concrete pumping technique in the eleventh five-year plan. [O nekotorykh perspektivakh razvitiia betononasosnogo transporta v XI piatiletke].
Zhadanovskii, B.V., et al, *Energeticheskoe stroitel'stvo*, Dec. 1981, No.12, p.42-44, In Russian.
Funikov, A.G., Chirkov, IU.B.
Winter concreting, Concrete placing, Pumps.

36-2022
Role of power-line supports and foundation design in environmental protection. [Rol' konstruktivnykh reshenii opor i fundamentov VL v voprosakh okhrany okruzhaiushchei sredy].
Gabliia, IU.A., *Energeticheskoe stroitel'stvo*, Dec. 1981, No.12, p.49-54, In Russian.
Foundations, Power line supports, Permafrost beneath structures, Soil erosion, Environmental protection.

36-2023
Using deep-seated sands as construction material in paluded areas. [Ispol'zovanie glubinnogo peska pri stroitel'stve v zabolochennoi mestnosti].
Shpak, D.N., *Neftepromyslovoe stroitel'stvo*, 1981, No.11, p.2-4, In Russian. 3 refs.
Swamps, Petroleum industry, Peat, Foundations, Pipelines, Roads, Sands.

36-2024
Regularities governing conditionally instantaneous deformations and consolidation of peat under triaxial compression. [Zakonomernosti uslovno-mgnovennykh deformatsii i osobennosti konsolidatsii torfianykh gruntov pri trekhosnom szhatii].
Kukushkin, V.A., *Neftepromyslovoe stroitel'stvo*, 1981, No.11, p.8-12, In Russian.
Swamps, Peat, Soil mechanics, Bearing strength, Sampling, Compressive properties.

36-2025
Using the method of outposts in economic development of the North. [Ispol'zovanie vakhtovogo metoda pri osvoenii prirodnykh resursov Severa].
Sapozhnikov, P.S., et al, *Neftepromyslovoe stroitel'stvo*, 1981, No.11, p.18-21, In Russian.
Chudnovskii, A.D.
Petroleum industry, Subpolar regions, Economic development, Cost analysis.

36-2026
Seismic method of studying elastic properties of peat soils. [Izuchenie uprugikh svoistv torfianykh gruntov seismicheskim metodom].
Kim, V.M., et al, *Neftepromyslovoe stroitel'stvo*, 1981, No.12, p.9-10, In Russian
Kukvenkin, V.A., Ter-Terian, S.A.
Swamps, Peat, Soil physics, Seismic surveys, Soil strength, Elastic properties, Petroleum industry.

36-2027
Geodetic service for pile construction in the North. [Osobennosti geodezicheskogo obespecheniia svainykh rabot v raionakh Severa].
Chizhevskii, IU.F., *Neftepromyslovoe stroitel'stvo*, 1981, No.12, p.12-14, In Russian.
Foundations, Piles, Drilling, Permafrost beneath structures, Artificial thawing, Permafrost control, Design.

36-2028
Forecasting ruptures of industrial pipelines. [Prognozirovanie razryvov promyslovykh truboprovodov].
Metel'kov, V.P., *Neftepromyslovoe stroitel'stvo*, 1982, No.1, p.6-9, In Russian. 1 ref.
Petroleum industry, Swamps, Pipelines, Permafrost beneath structures, Ground thawing, Accidents.

36-2029
Determining the index of technological effectiveness of modular structures. [Opredelenie kompleksnogo pokazatelia tekhnologichnosti blochno-komplektnykh ustroistv].
Sannikov, IU.V., *Neftepromyslovoe stroitel'stvo*, 1982, No.1, p.11-13, In Russian. 1 ref.
Petroleum industry, Modular construction, Permafrost beneath structures, Swamps, Cost analysis.

36-2030
Economic evaluation of special means used in transportation of modular structures. [Ekonomicheskaia otsenka ispol'zovaniia spetsial'nykh transportnykh sredstv dlia perevozki blochnykh ustroistv].
Arkova, E.A., *Neftepromyslovoe stroitel'stvo*, 1982, No.1, p.21-22, In Russian. 1 ref.
Petroleum industry, Modular construction, Swamps, Permafrost beneath structures, Transportation, Cost analysis.

36-2031
Determining economic effectiveness of the road-investment strategy in western Siberia. [Opredelenie dorozhno-investitsionnoi strategii v Zapadnoi Sibiri i otsenka ee ekonomicheskoi effektivnosti].
Chudinovskikh, A.G., *Neftepromyslovoe stroitel'stvo*, 1982, No.1, p.23-28, In Russian.
Petroleum industry, Roads, Earthwork, Snow roads, Ice roads, Mathematical models.

36-2032
Kinetics of concrete hardening at different temperatures when it contains fast-binding cements. [Kinetika tverdeniia betona na SBTTs pri raznykh temperaturakh].
Volzhenskii, A.V., et al, *Beton i zhelezobeton*, Mar. 1981, No.3, p.32-33, In Russian. 3 refs.
Winter concreting, Concrete freezing, Concrete hardening, Cement admixtures, Concrete strength.

36-2033
Water-impervious concrete used in freezing weather. [Zimnii napriagaiushchii beton].
Mikhailov, V.V., et al, *Beton i zhelezobeton*, Apr. 1981, No.4, p.13-14, In Russian. 3 refs.
Koroleva, G.P., Beilina, M.I., Kuznetsova, T.V.
Winter concreting, Concrete hardening, Concrete admixtures, Concrete freezing, Concrete strength.

36-2034
Cooling plate for skating rinks built of concrete containing nitrocellulose. [Okhlazhdaiushchaia plita katka iz betona na NTs].
Buts, N.K., et al, *Beton i zhelezobeton*, Apr. 1981, No.4, p.22-23, In Russian.
Concrete freezing, Concrete structures, Concrete admixtures, Skating rinks.

36-2035
Formation of concrete structure during freezing. [O mekhanizme formirovaniia struktury betona pri zam[illegible] razhivaniij.
Lagoida, A.V., *Beton i zhelezobeton*, July 1981, No.7, p.16-17, In Russian. 3 refs.
Winter concreting, Concrete freezing, Concrete hardening, Concrete strength, Structural changes.

36-2036
Cement for winter concreting. [Tsement dlia proizvodstva betonnykh rabot v zimnikh usloviiakh].
Shpynova, L.G., et al, *Beton i zhelezobeton*, July 1981, No.7, p.18, In Russian.
Winter concreting, Concrete aggregates, Cements, Cement admixtures, Concrete hardening, Concrete strength.

36-2037
Erection of monolith concrete structures on permafrost. [Vozvedenie monolitnykh konstruktsii v vechnomerzlykh gruntakh].
Petrov, A.V., et al, *Beton i zhelezobeton*, July 1981, No.7, p.27-28, In Russian.
Lukichev, R.A.
Foundations, Piles, Concrete structures, Permafrost beneath structures, Concrete freezing, Concrete strength.

36-2038
Ultimate strains of concretes subjected to cyclic freeze-thaw. [Predel'nye deformatsii betonov podvergnutykh tsiklicheskomu zamorazhivaniiu i ottaivaniiu].
Pinus, B.I., et al, *Beton i zhelezobeton*, Oct. 1981, No.10, p.19, In Russian. 3 refs.
Semenov, V.V., Guzeev, E.A.
Concrete freezing, Freeze thaw cycles, Concrete strength, Frost resistance.

36-2039
Cost of ice melting on 10 kv power lines. [Zatraty na plavku gololeda v setiakh 10 kV].
Kryzhov, G.P., et al. *Elektricheskie stantsii*, Apr. 1981, No.4, p.53-56, In Russian
Landa, M.L.
Power line icing, Ice melting, Electric heating, Cost analysis.

36-2040
Analyzing the reliability of 35-110 kv overhead lines on wooden supports in southern Yakutia. [Analiz nadezhnosti VL 35-110 kV na dereviannykh oporakh na iuge IAkutii].
Filippov, O.O., *Elektricheskie stantsii*, Apr. 1981, No.4, p.69, In Russian. 3 refs.
Wooden structures, Power line supports, Permafrost beneath structures, Discontinuous permafrost.

36-2041
Analyzing power line ruptures caused by icing and wind. [Obsledovanie i analiz gololedno-vetrovykh avarii na vozdushnykh liniiakh elektroperedachi].
Landa, M.L., et al, *Elektricheskie stantsii*, June 1981, No.6, p.44-48, In Russian.
Luk'ianenko, IU.D.
Power line icing, Wind factors, Ice loads.

36-2042
Permissible contact voltage in electrical installations of the Far North. [Obespechenie dopustimogo napriazheniia prikosnoveniia v elektroustanovkakh raionov Krainego Severa].
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Oil spills, Countermeasures, Ice conditions, Water pollution, Sea ice, Water spray barriers.

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Frost penetration, Subgrade soils, Pavements, Bearing strength, Freeze thaw cycles, Frost heave, Soil strength, Soil water, Freezing indexes, Design criteria, Dynamic loads, Deformation.
When properly designed and constructed, the Asphalt Institute full-depth pavement concept can be a viable design alternative for seasonal frost areas. The Corps of Engineers reduced subgrade strength frost design proved to be an upper bound or conservative design under these test conditions. For each design, two different thicknesses were studied in test sections placed over 12 in. of prepared subgrade and tested under light traffic conditions in Hanover, New Hampshire. After design traffic loading was exceeded, pavement failure occurred as expected in the thinner full-depth section. The thinner reduced subgrade strength section was still in good condition after experiencing twice its design loading. Frost penetrations, pavement n-factors (surface transfer coefficients), Benkelman Beam deflections, and the spring subgrade moisture contents are also compared for the two designs.

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Climate, Glacier mass balance, Glacier ablation, Physical properties, Bouvet Island.
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Freeze thaw tests, Ice physics, Heat transfer, Phase transformations, Water chemistry, Crude oil, Analysis (mathematics), Experimentation, Convection.

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Podgornyi, V.F.
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36-2105
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36-2108
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Stefan problem, Phase transformations, Heat transfer, Materials, Thermal properties.

36-2109
Heat balance of a pool under low temperature climatic conditions. [Osobennosti teplovogo balansa vanny pri svarke v usloviiakh nizkikh klimaticheskikh temperatur],
Larionov, V.P., et al, *Avtomaticheskaia svarka*, Oct. 1981, No.10, p.22-24, In Russian. 12 refs.
Pavlov, A.R., Ammosov, A.P.
Cold weather construction, Welding.

36-2110
Safety of helicopter flights. [Bezopasnost' poletov vertoletov],
Volodko, A.M., Moscow, Transport, 1981, 224p. (pertinent pp.166-186), In Russian with abridged English table of contents enclosed. 21 refs.
Helicopters, Aircraft icing, Accidents, Atmospheric disturbances.

36-2111
Preparation for sea navigation during fall-winter periods. [Podgotovka k plavaniiu v osenne-zimnii period], *Morskoĭ sbornik*, Sep. 1981, No.9, p.3-8, In Russian.
Military transportation, Ships, Winter maintenance, Storms, Ice navigation.

36-2112
Classifying naled areas in the southern cryolithozone for studying them by aerial and satellite methods. [Klassifikatsiia nalednykh uchastkov iuzhnoi chasti kriolitozony v tseliakh izucheniia naledeĭ aero- i kosmicheskimi metodami],
Gavrilov, A.V., *Moscow. Universitet. Vestnik. Seriia 4 Geologiia*, Jan.-Feb. 1981, No.1, p.73-85, In Russian. 10 refs.
Aerial surveys, Spacecraft, Spaceborne photography, Permafrost hydrology, Naleds, Taliks, Photointerpretation, Classifications, Mapping.

36-2113
New series of soil and geologic areal maps of the Nechernozemnaya zone in the RSFSR. [Novaia seriia obzornykh pochvenno-geologicheskikh kart Nechernozemnoi zony RSFSR],
Sergeev, E.M., et al, *Moscow. Universitet. Vestnik. Seriia 4 Geologiia*, May-June 1981, No.3, p.6-14, In Russian.
Tereshkov, G.M.
Geological maps, Geocryology, Soil mapping, Cryogenic soils, Permafrost distribution, Permafrost depth, Frozen rock temperature, Active layer, Seasonal freeze thaw, Frost penetration, Engineering geology.

36-2114
Problem of daily variations in high-precision aeromagnetic studies under Arctic conditions. [Problema sutochnykh variatsii pri provedenii vysokotochnykh aeromagnitnykh issledovanii v usloviiakh Arktiki],
Palamarchuk, V.K., et al, *Moscow. Universitet. Vestnik. Seriia 4 Geologiia*, May-June 1981, No.3, p.63-66, In Russian. 8 refs.
Balashov, I.Z., Fedorova, T.P., Popov, M.G.
Polar regions, Geophysical surveys, Magnetic surveys, Airborne equipment, Accuracy.

36-2115
Avalanches and mudflows in the central BAM zone. [Laviny i seli tsentral'nogo uchastka zony osvoeniia BAMa],
Afanasenko, V.E., et al, *Moscow. Universitet. Vestnik. Seriia 4 Geologiia*, May-June 1981, No.3, p.75-81, In Russian. 10 refs.
Laptev, M.N., Bol'shakova, N.P.
Landscape types, Slope processes, Mudflows, Avalanches, Snow accumulation, Avalanche formation, Avalanche triggering, Baykal Amur railroad.

36-2116
Methods of testing well plugging materials at low temperatures. [Metodika ispytaniia tamponazhnykh materialov pri nizkikh temperaturakh],
Titkov, N.I., et al, *Neftianoe khoziaĭstvo*, June 1981, No.6, p.27-31, In Russian. 7 refs.
Cements, Oil recovery, Permafrost, Drilling fluids, Oil wells, Plugging, Low temperature tests, Test equipment.

36-2117
Determining ultimate freezing length of moisture condensing in overground compressed air pipelines. [K opredeleniiu predel'noi dliny zamerzaniia kondensiruiushcheisia vlagi v nadzemnykh truboprovodakh szhatogo vozdukha],
Kolbasov, M.G., et al, *Promyshlennaia energetika*, Oct. 1981, No.10, p.49-50, In Russian. 2 refs.
Skutin, N.I., Petrov, M.A.
Pipelines, Water vapor, Condensation, Freezing, Compressed air.

36-2118
Glaciogeomorphological investigations in the Shackleton Range. [Gliatsiogeomorfologicheskie nabliudeniia v gorakh Shekltona].
Bardin, V.I., *Antarktika: doklady komissii*, 1981, No.20, p.73-81, In Russian. 6 refs.
Ice sheets, Glacial geology, Antarctica—Shackleton Range.
General features of relief and glaciation of the Shackleton Range are described. Forms of glacial relief (ice shelves, undifferentiated continental glacial cover, glaciers in large depressions, mountain valley glaciers, intermontane glacial plateaus, snow-free ice areas, etc.) and types of subglacial relief are discussed. An attempt is made to delineate basic stages in relief formation and glacial development for the area.

36-2119
Holocene changes in antarctic glaciation. [Izmeneniia oledeneniia Antarktidy v golotsene].
Miagkov, S.M., *Antarktika: doklady komissii*, 1981, No.20, p.82-88, In Russian. 32 refs.
Ice sheets, Paleoclimatology, Climatic changes.
A review of published findings and materials gathered by the author is done based on hypotheses about the mechanism of the reactions of various elements in antarctic glaciation to late glacial and Holocene changes in climate, sea level and coasts. Holocene variations in the edges of continental ice cover were not great and are now near completion; at the edges of oases and at places along the shelf ice ongoing changes may be quite different. The mountain glaciers around McMurdo are undergoing a gradual (tens of thousands of years) retreat but at least some of them in the last 4-6 thousand years have increased more than in the first half of the Holocene. There is no proof of synchronicity of variations in antarctic mountain glaciers and those of other parts of the world.

36-2120
Dynamics of the coastal ice sheet along a radial profile Mirnyy-100 km. [Dinamika kraevoĭ chasti antarkticheskogo lednikovogo pokrova na radial'nom profile Mirnyĭ-100 km].
Shumskiĭ, P.A., *Antarktika; doklady komissii*, 1981, No.20, p.93-105, In Russian. 15 refs.
Ice sheets, Glacier oscillation, Glacier flow, Ice cover thickness, Ice deformation, Basal sliding, Antarctica—Mirnyy Station.
Basic results of flow measurements at the ice sheet surface and a new analytical method are discussed. Features of stress deformation, ice movement and changes in thickness and form of the ice sheet are considered. Inland ice cover is frozen to the glacial bed and moves at the surface no more than 70 m/yr, but outlet glaciers slide at the base at velocities up to 50 m/yr and have surface velocities of up to 140-200 m/yr. The ice cover is nearly stationary but basins of outlet glaciers retreat as much as 40 m/yr. If conditions do not change, this process would produce a 40 km retreat and would cease after about 800 years. Similar conditions are apparently characteristic of other parts of East Antarctica.

36-2121
Role of oxygen and deuterium isotopes in antarctic glaciology. [Rol' izotopov kisloroda i deĭteriia v gliatsiologicheskikh issledovaniiakh Antarktidy].
Gordienko, F.G., et al, *Antarktika; doklady komissii*, 1981, No.20, p.106-134, In Russian. 69 refs.
Kotliakov, V.M.
Isotope analysis, Oxygen isotopes, Radioactive isotopes, Deuterium oxide ice, Stratigraphy, Precipitation (meteorology), Permafrost.
Results of both Soviet and foreign studies on stable oxygen and deuterium isotope concentrations in antarctic ice are reviewed. The conclusions are used to verify various models of the evolution of isotope composition of solid precipitation, of range of variations in isotopic concentrations in antarctic ice, of the influence of local factors such as altitude, temperature and wind on isotope distribution, the possibility of isotopic stratification of annual layers and of verifying these, of climatic conditions forming precipitation in the past, and of determining the structure of ice flow and formation.

36-2122
Theoretical analysis and experiments on borehole wall deformation in an ice sheet. [Teoreticheskiĭ analiz i eksperimental'noe issledovanie deformatsii stenok stvola skvazhiny v ledovom massive].
Salamatin, A.N., et al, *Antarktika; doklady komissii*, 1981, No.20, p.135-143, In Russian. 19 refs.
Chistiakov, V.K., Dmitriev, D.N., Pashkevich, V.M.
Boreholes, Drilling, Ice deformation, Plastic deformation, Rheology, Antarctica—Vostok Station.
An overall formulation of the problem of borehole wall deformation is given. The theoretical results are used to analyze and interpret experimental data from a constricted deep borehole near Vostok Station.

36-2123
Noncontact methods of measuring oceanographic parameters. Proceedings of the 3rd All-Union seminar, Leningrad, Jan. 17-19, 1978. [Nekontaktnye metody izmereniia okeanograficheskikh parametrov. Sbornik dokladov na 3-m Vsesoiuznom seminare, Leningrad 17-19 ianvaria, 1978 g.].
Vsesoiuznyĭ seminar po nekontaktnym okeanograficheskim izmereniiam, 3rd, Leningrad, Jan. 17-19, 1978, Moscow, Gidrometeoizdat, 1981, 123p., In Russian. For selected papers see 36-2124 through 36-2127. Refs. passim.
Viktorov, S.V., ed.
Remote sensing, Sea ice, Infrared reconnaissance, Ice surveys, Photointerpretation, Ice reporting, Microwaves, Airborne equipment, Radiometry.

36-2124
Experiments with combined use of infrared and microwave radiometers for remote sensing of sea ice characteristics. [Rezul'taty eksperimenta po sovmestnomu ispol'zovaniiu IK i mikrovolnovogo radiometrov dlia distantsionnogo opredeleniia kharakteristik morskogo l'da].
Bogorodskiĭ, V.V., et al, Nekontaktnye metody izmereniĭ okeanograficheskikh parametrov (Noncontact methods of measuring oceanographic parameters) edited by S.V. Viktorov, Moscow, Gidrometeoizdat, 1981, p.51-56, In Russian. 3 refs.
Darovskikh, A.N., Martynova, E.A., Spitsyn, V.A.
Sea ice, Microwaves, Infrared radiation, Radiometry, Airborne equipment, Ice cover thickness, Snow cover distribution, Remote sensing.

36-2125
Microwave radiation of sea ice. [O mikrovolnovom izluchenii morskogo l'da].
Nikitin, P.A., Nekontaktnye metody izmereniia okeanograficheskikh parametrov (Noncontact methods of measuring oceanographic parameters) edited by S.V. Viktorov, Moscow, Gidrometeoizdat, 1981, p.57-60, In Russian. 4 refs.
Sea ice, Pack ice, Microwaves, Radiometry, Airborne equipment, Models.

36-2126
Using infrared radiometry in studying time-variations of heat transfer between water and atmosphere in seas of the eastern Arctic. [Issledovanie vremennoĭ izmenchivosti teploobmena morei vostochnoĭ Arktiki s atmosferoĭ metodom IK radiometrii].
Paramonov, A.I., Nekontaktnye metody izmereniia okeanograficheskikh parametrov (Noncontact methods of measuring oceanographic parameters) edited by S.V. Viktorov, Moscow, Gidrometeoizdat, 1981, p.61-63, In Russian.
Polar regions, Sea water, Heat transfer, Infrared reconnaissance, Radiometry, Air water interactions.

36-2127
Data on movements and drift of ice at the tip of the Gulf of Finland obtained from aerial photographs and applied to hydraulic construction. [O podvizhkakh i dreife l'da v vershine Finskogo zaliva primenitel'no k zadacham gidrostroitel'stva (po materialam aerofotos"emki)].
Drabnin, V.V., et al, Nekontaktnye metody izmereniia okeanograficheskikh parametrov (Noncontact methods of measuring oceanographic parameters) edited by S.V. Viktorov, Moscow, Gidrometeoizdat, 1981, p.75-77, In Russian. 1 ref.
Monosov, M.L.
Sea ice, Drift, Ice conditions, Fast ice, Ice surveys, Ice reporting, Ice cover thickness, Hydraulic structures, Ice loads.

36-2128
Remote sensing of taiga landscape structures. [Distantsionnaia indikatsiia struktury taezhnykh landshaftov].
Kuzmichev, V.V., ed, Novosibirsk, Nauka, 1981, 239p., In Russian. For selected papers see 36-2129 through 36-2138. Refs. passim.
Taiga, Landscape types, Spaceborne photography, Geobotanical interpretation, Forest fires, Revegetation, Human factors, Cryogenic soils, Soil erosion, Swamps, Peat.

36-2129
Studying forest revegetation after fires from satellite photographs. [Izuchenie poslepozharnogo formirovaniia lesov po kosmicheskim snimkam].
Furiaev, V.V., et al, Distantsionnaia indikatsiia struktury taezhnykh landshaftov (Remote sensing of taiga landscape structures) edited by V.V. Kuzmichev, Novosibirsk, Nauka, 1981, p.5-21, In Russian. 29 refs.
Kireev, D.M.
Taiga, Forest fires, Revegetation, Spaceborne photography.

36-2130
Revegetation stages of dark coniferous forests after fires and their mapping from aerial photographs. [Poslepozharnye stadii formirovaniia temnokhvoĭnykh lesov i ikh kartografirovanie po aerofotosnimkam].
Furiaev, V.V., et al, Distantsionnaia indikatsiia struktury taezhnykh landshaftov (Remote sensing of taiga landscape structures) edited by V.V. Kuzmichev, Novosibirsk, Nauka, 1981, p.22-35, In Russian. 22 refs.
Zlobina, L.P.
Taiga, Forest fires, Revegetation, Aerial surveys, Photointerpretation.

36-2131
Remote sensing of the revegetation-age dynamics of cedar forests in the central Ob' River area. [Distantsionnaia indikatsiia vosstanovitel'no-vozrastnoĭ dinamiki kedrovykh lesov srednego Priob'ia].
Sedykh, V.N., Distantsionnaia indikatsiia struktury taezhnykh landshaftov (Remote sensing of taiga landscape structures) edited by V.V. Kuzmichev, Novosibirsk, Nauka, 1981, p.36-49, In Russian. 16 refs.
Taiga, Revegetation, Forest fires, Human factors, Aerial surveys, Remote sensing, Spaceborne photography, Photointerpretation.

36-2132
Studying dynamics of interrelationships between forest and swamp in western Siberia. [Izuchenie dinamiki vzaimootnosheniĭ lesa i bolota v Zapadnoĭ Sibiri].
Glebov, F.Z., et al, Distantsionnaia indikatsiia struktury taezhnykh landshaftov (Remote sensing of taiga landscape structures) edited by V.V. Kuzmichev, Novosibirsk, Nauka, 1981, p.49-72, In Russian. 26 refs.
Toleiko, I.S.
Taiga, Landscape types, Paludification, Swamps, Peat, Revegetation, Spaceborne photography, Geobotanical interpretation, Photointerpretation.

36-2133
Classification of biogeocenoses in studies of biogeocenotic covers from satellite photographs. [Klassifikatsiia biogeotsenozov pri distantsionnom izuchenii biogeotsenoticheskogo pokrova na osnove aerokosmicheskoĭ s"emki].
Gorozhankina, S.M., Distantsionnaia indikatsiia struktury taezhnykh landshaftov (Remote sensing of taiga landscape structures) edited by V.V. Kuzmichev, Novosibirsk, Nauka, 1981, p.72-98, In Russian. 12 refs.
Taiga, Spaceborne photography, Geobotanical interpretation, Classifications.

36-2134
Using morphogenetic indices of watersheds in forestry and in hydrological investigations. [Ispol'zovanie morfogeneticheskikh priznakov vodosborov pri lesogidrologicheskikh issledovaniiakh].
Konstantinov, V.D., Distantsionnaia indikatsiia struktury taezhnykh landshaftov (Remote sensing of taiga landscape structures) edited by V.V. Kuzmichev, Novosibirsk, Nauka, 1981, p.99-121, In Russian. 5 refs.
Taiga, Landscape types, Plant ecology, River basins, Watersheds, Paludification, Mapping, Remote sensing, Photointerpretation.

36-2135
Seasonal development of natural complexes in the landscape of the Kas-Yenisey plain. [Sezonnoe razvitie prirodnykh kompleksov Kas-Eniseĭskogo ravninnogo landshafta].
Elagin, I.N., Distantsionnaia indikatsiia struktury taezhnykh landshaftov (Remote sensing of taiga landscape structures) edited by V.V. Kuzmichev, Novosibirsk, Nauka, 1981, p.122-152, In Russian. 29 refs.
Taiga, Aerial surveys, Spaceborne photography, Vegetation, Seasonal variations, Cryogenic soils, Forest fires, Revegetation, Snow cover distribution, Plant ecology, Ecosystems.

36-2136
Forest phenology in the landscape of the central Khamar-Daban Range. [Fenologiia lesov srednegornogo landshafta Khamar-Dabana].
Lobanov, A.I., et al, Distantsionnaia indikatsiia struktury taezhnykh landshaftov (Remote sensing of taiga landscape structures) edited by V.V. Kuzmichev, Novosibirsk, Nauka, 1981, p.152-176, In Russian. 12 refs.
Elagin, I.N.
Alpine landscapes, Forest land, Slope orientation, Snow cover distribution, Taiga, Valleys, Vegetation, Plant ecology, Ecosystems, Cryogenic soils, Aerial surveys, Meteorological effects, Topographic factors.

36-2137
Using human activity indices in landscape studies of the Lake Baykal basin. [Ispol'zovanie antropogennykh priznakov v landshaftnykh issledovaniiakh (na primere basseĭna ozera Baĭkal)].
Rubtsov, N.I., Distantsionnaia indikatsiia struktury taezhnykh landshaftov (Remote sensing of taiga landscape structures) edited by V.V. Kuzmichev, Novosibirsk, Nauka, 1981, p.176-200, In Russian. 2 refs.
Taiga, Vegetation, Forest fires, Cryogenic soils, Human factors, Spaceborne photography, Photointerpretation, Mapping.

36-2138
Studying the relation of taiga landscapes to geological structures from spaceborne photography. [Distantsionnoe izuchenie sviazi taezhnykh landshaftov s geologicheskimi strukturami].
Kireev, D.M., et al, Distantsionnaia indikatsiia struktury taezhnykh landshaftov (Remote sensing of taiga landscape structures) edited by V.V. Kuzmichev, Novosibirsk, Nauka, 1981, p.200-238, In Russian. 24 refs.
Vittaz', V.I.
Taiga, Vegetation, Cryogenic soils, Landscape types, Geologic structures, Spaceborne photography, Photointerpretation, Mapping.

36-2139
Astronomical theory of climatic change on Mars.
Toon, O.B., et al. *Icarus*, Dec. 1980, 44(3), p.552-607, Refs. p.604-607.
Pollack, J.B., Ward, W., Burns, J.A., Bilski, K.
Climatic changes, Ice sheets, Mars (planet), Seasonal variations, Atmospheric pressure, Theories.

36-2140
***Theoretical predictions of deuterium abundances in* the Jovian planets.**
Hubbard, W.B., et al. *Icarus*, Dec. 1980, 44(3), p.676-682, 25 refs.
MacFarlane, J.J.
Planetary environments, Ice formation, Extraterrestrial ice, Chemical composition, Hydrogen bonds, Isotopes, Models, Deuterium.

36-2141
Ground ice on Mars: inventory, distribution and resulting landforms.
Rossbacher, L.A., et al. *Icarus*, Jan. 1981, 45(1), p.39-59, Refs. p.57-59.
Judson, S.
Ground ice, Mars (planet), Permafrost distribution, Landforms, Extraterrestrial ice, Mass balance, Thermokarst, Patterned ground.

36-2142
Ejecta emplacement and modes of formation of Martian fluidized ejecta craters.
Mouginis-Mark, P., *Icarus*, Jan. 1981, 45(1), p.60-76, 47 refs.
Periglacial processes, Mars (planet), Volcanoes, Craters.

36-2143
Measurements of water vapor in Mars' Antarctic.
Davies, D.W., et al. *Icarus*, Jan. 1981, 45(1), p.216-230, 13 refs.
Wainio, L.A.
Water vapor, Humidity, Mars (planet), Extraterrestrial ice, Polar regions, Dust.

36-2144
Weathering of Mars: Antarctic analog studies.
Berkley, J.L., et al. *Icarus*, Jan. 1981, 45(1), p.231-249, 42 refs.
Drake, M.J.
Permafrost weathering, Mars (planet), Ice sheets, Ice melting, Hydrothermal processes, Polar regions.
A report on weathering in Martian environment, an analog of which is Antarctica, is discussed. Weathering is geologically slow in the absence of liquid water, with zeolites predominating over clays as secondary minerals. On volumetric grounds it appears that hydrothermal alteration of impact melt sheets should be the most important time-averaged weathering mechanism, provided that H2O was present as liquid or frozen. Weathering products of younger subpermafrost or subaerially erupted basalts should be subordinate to hydrothermal alteration and gas-solid reactions. It appears that the present Martian regolith contains a major contribution from ancient crust as typified today by the southern cratered highlands. (Auth. mod.)

36-2145
Mars and Earth: comparison of cold-climate features.
Lucchitta, B.K., *Icarus*, Feb. 1981, 45(2), p.264-303, Refs. p.301-303.
Periglacial processes, Mars (planet), Geomorphology, Thermokarst development, Glacier flow, Patterned ground, Talus, Volcanoes.

36-2146
Mars water cycle.
Davies, D.W., *Icarus*, Feb. 1981, 45(2), p.398-414, 13 refs.
Ice sublimation, Water vapor, Ice sheets, Hoarfrost, Mars (planet), Ice accretion, Temperature effects.

36-2147
Uranian satellites: water ice on Ariel and Umbriel.
Cruikshank, D.P., et al. *Icarus*, Mar. 1981, 45(3), p.607-611, 10 refs.
Brown, R.H.
Frost, Extraterrestrial ice, Planetary environments, Infrared spectroscopy, Albedo, Ice, Celestial bodies.

36-2148
Emission from an inhomogeneous layer with irregular interfaces.
Fung, A.K., et al. *Radio science*, May-June 1981, 16(3), p.289-298, 12 refs.
Chen, M.F.
Microwaves, Solar radiation, Snow cover effect, Sea ice, Remote sensing, Interfaces, Surface roughness, Mathematical models.

36-2149
Decay in the Karakorum.
Muir Wood, R., *New scientist*, Mar. 26, 1981, 89(1246), p.820-823.
Ice erosion, Mudflows, Geomorphology, Glacier flow, Glacier melting, Water erosion, Wind factors, Talus, Mountains, Kashmir—Karakorum.

36-2150
Solar radiation and stability of the undersurface of sea ice governing ice algal proliferation.
Hoshiai, T., *Antarctic record*, Sep. 1981, No.73, p.23-29, 9 refs.
Algae, Sea ice, Colored ice, Solar radiation, Ice bottom surface, Ice optics, Lake ice.
Coloration of sea ice by algae occurred in austral autumn and spring at Showa Station, and in winter at Toetoko in Lake Saroma, Japan. Ice algal proliferation at both localities seemed to proceed by a similar process and under similar environmental conditions. Solar radiation and stability of the undersurface of sea ice as principal factors were compared between the two localities, particularly during the proliferation period of ice algae. Ordinarily it seemed that the ice algae proliferated between the beginning of March and the end of March at Showa and from the end of January to the end of February at Toetoko. Amount of solar radiation supplied during the algal proliferation period ranged from 1500 to 2500 cal/sq. cm/10 days. No significant difference in the amount of solar radiation was recognized between Showa and Toetoko. The mean air temperature ranged from -6 to -9 C at Showa Station. The sea ice did not grow or melt and its undersurface was stable during the algal proliferation period. (Auth. mod.)

36-2151
Soil respiration in the vicinity of Syowa Station, Antarctica 2. Estimation of carbon dioxide amount evolved from the naked part of West Ongul Island.
Ino, Y., et al. *Antarctic record*, Sep. 1981, No.73, p.124-133, 6 refs.
Oshima, Y., Ohyama, Y., Kanda, H., Matsuda, T.
Soil chemistry, Antarctica—Ongul Island.
In January and February 1979, 48 samples of surface sandy soil were taken at East and West Ongul Islands. The soil respiration rates, i.e. carbon dioxide evolution rates, of the samples were measured with the infrared gas analyzer. There were positive correlations between the soil respiration rate and the water content, the nitrogen content or the organic carbon content. Meshes of 5 mm x 5 mm squares were laid on the contour map of West Ongul Island on the scale of 1:5000. The soil respiration rate in each mesh was estimated from the geographical features. The carbon dioxide evolution amount in West Ongul Island was calculated from Dec. to Feb. and corresponds to 7.7 kg C/ha of the ice-free area without the moss community. (Auth.)

36-2152
Measurement of the velocities of P and S waves propagating in the surface layer of ice sheet at Mizuho Station, East Antarctica.
Ishizawa, K., *Antarctic record*, Sep. 1981, No.73, p.147-160, 16 refs.
Ice sheets, Ice density, Seismic refraction, Boreholes, Ice structure, Antarctica—Mizuho Station.
Measurements of P and S wave velocity in the surface layer down to a depth of 80 m were made at Mizuho Station in 1978 by borehole logging and refraction. The variation of the velocity with depth was obtained; velocity was approximately equal to that obtained experimentally in a laboratory using the core samples drilled at Mizuho Station. The data of P wave velocity measured in Antarctica and Greenland are summarized and the relationship between the P wave velocity at depth of 50 m, and the mean annual temperature is calculated. (Auth. mod.)

36-2153
Iceshocks observed at the ice sheet surface near Mizuho Station, East Antarctica.
Ishizawa, K., *Antarctic record*, Sep. 1981, No.73, p.161-177, 13 refs.
Ice surface, Ice sheets, Ice thermal properties, Stresses, Thermal stresses, Strains, Shock waves, Cracking (fracturing), Ice cracks, Crack propagation, Antarctica—Mizuho Station.
The seismological observation of iceshocks was carried out at Mizuho Station from May 1978 to January 1979. The condition of iceshock occurrence was expressed as a function of air temperature and changing rate of the temperature. The iceshock occurrence was explained by the fracture of the surface snow which was assumed to be a Maxwell substance. The focus positions of 45 iceshocks of a swarm were calculated by using the observed velocity of surface wave. Focus positions were concentrated at the glazed surface where snow accumulation did not take place for a long time and fracture cracks were observed. Therefore, iceshocks are defined as a vibration caused by the fracture crack formation at the glazed surface due to a rapid decrease in the air temperature. (Auth.)

36-2154
On the new icebreaker.
Honda, I., *Antarctic record*, Sep. 1981, No.73, p.178-188, In Japanese with English summary.
Ships, Icebreakers.
In April 1979, the Japanese Government decided to build a new icebreaker to take over the function of the icebreaker *Fuji*. The new ship also engages in such operations as the transportation of the personnel and cargo and in the onboard observations. The ship's capabilities are improved. The standard displacement is 11,000 ton, which is twice that of the *Fuji*, and the propulsion capacity is 30,000 SHP, which is about three times that of the *Fuji*. The ship's features and research facilities are described. (Auth. mod.)

36-2155
Activities of the wintering party of the 20th Japanese *Antarctic Research Expedition in 1979-80.*
Yamazaki, M., *Antarctic record*, Sep. 1981, No.73, p.189-209, In Japanese with English summary.
Research projects, Antarctica.
From Feb. 1, 1979 to Jan. 31, 1980, thirty men of the wintering party of the 20th Japanese Antarctic Research Expedition executed the observation and examination in many scientific projects, particularly laying emphasis on "Polar Experiment-South (POLEX-South)" as one of the subprograms of the Global Atmospheric Research Program (GARP) and on geological survey. At Showa Station, in addition to the routine observation of aurora, geomagnetism, ionosphere, meteorology, seismology and ocean tide, reception of data signals from scientific observation satellites and observation of ionospheric disturbance in the polar region by the upper atmosphere section, monitoring of minor constituents such as carbon dioxide and nitrogen oxides and sampling of rocks by the environmental science section, and medical research were performed throughout the year. (Auth. mod.)

36-2156
Numerical simulation of the effects of cooling tower complexes on clouds and severe storms.
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Cooling towers, Thermal effects, Hail clouds, Storms.

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Frost protection, Plants (botany), Helicopters, Temperature inversions, Air temperature, Temperature distribution, Profiles, Atmospheric circulation.

36-2158
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Ice crystal structure, Ionization, Ice spectroscopy, Ice formation, Surface properties, Low temperature research.

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Freeze thaw cycles, Stefan problem, Liquid solid interfaces, Latent heat, Boundary value problems, Phase transformations, Heat transfer, Temperature effects, Analysis (mathematics).

36-2160
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Morgenstern, N.R.
Soil freezing, Ice lenses, Frost heave, Temperature gradients, Thermodynamics, Heat balance, Mass balance, Water flow.

36-2161
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Sego, D.C.
Loads (forces), Pile load tests, Freeze thaw cycles, Soil pressure, Frozen ground physics, Temperature effects.

36-2162
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Frost heave, Freezing rate, Soil pressure, Soil mechanics, Temperature effects.

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Water chemistry, Snowmelt, Mass balance, Surface waters, Ground water, Precipitation (meteorology), Sulfates.

36-2164
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Calorimeters, Ice temperature, Temperature measurement, Measuring instruments, Ice melting, Ice friction, Heat sources.

36-2165
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Watt, J.R.
Wave propagation, Ice electrical properties, Sea water, Sea ice, Ice cover effect, Subglacial observations.

36-2166
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Maksutov, D.D., ed.
Ice navigation, Ships, Icebreakers, Propellers, Ice breaking, Ice conditions, Models, Ship icing, Ice cover strength, Ice floes, Impact strength, Ice loads.

36-2167
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Ships, Ice navigation, Experimentation, Models, Ice cover, Ice breaking, Research projects.

36-2168
Present state and prospects of icebreaker construction in the USSR. [Sovetskoe ledokolostroenie, ego sostoianie i perspektivy].
Maksutov, D.D., *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy*, 1981, Vol.376, p.14-21, In Russian. 8 refs.
Ice navigation, Icebreakers, Propellers, Ice breaking, Experimentation.

36-2169
Evaluating propulsive performance of icebreakers and transport ships in ice covered sea at the initial stage of design. [Otsenka ledoprokhodimosti ledokolov i transportnykh sudov ledovogo plavaniia v nachal'noi stadii proektirovaniia].
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Icebreakers, Ice navigation, Ice cover thickness, Marine transportation, Ships, Ice breaking.

36-2170
Developing and introducing rating certificates for ships navigating in ice. [Opyt razrabotki i vnedreniia ledovykh pasportov].
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Popov, IU.N.
Ships, Icebreakers, Performance, Ice navigation, Ice breaking, Ice conditions.

36-2171
Comparative testing of ship models with different hull lines. [Rezul'taty sravnitel'nykh ispytanii modelei sudov s razlichnoi formoi obvodov korpusa].
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Pozniak, I.I.
Ice navigation, Ships, Icebreakers, Models, Design.

36-2172
Propulsive performance of icebreakers in snow covered ice and in shallow water. [Ledovaia khodkost' ledokola v zasnezhennykh l'dakh i na melkovod'e].
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Ice navigation, Icebreakers, Ice cover thickness, Snow cover distribution, Snow depth, Snow density.

36-2173
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Ionov, B.P., *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy*, 1981, Vol.376, p.48-56, In Russian. 5 refs.
Ice cover, Simulation, Ice models, Ice cover thickness, Ice cover strength.

36-2174
Water resistance effect on magnitude of ice impact loads. [Vlianie soprotivleniia vody na velichinu ledovykh nagruzok].
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Ships, Ice loads, Ice floes, Impact strength, Ice navigation.

36-2175
Determining the permissible propulsion speed of ships moving in channels cut in continuous ice. [Opredelenie dopustimoi skorosti sudna pri dvizhenii v kanale prolozhennom v sploshnom l'du].
Popov, IU.N., et al, *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy*, 1981, Vol.376, p.61-66, In Russian. 2 refs.
[Arovaia, T.Kh.
Ice navigation, Ships, Pack ice, Ice breaking, Channels (waterways), Ice cover thickness, Velocity.

36-2176
Use and effectiveness of bubbling washoff devices on ships navigating in ice. [Ob effektivnosti pnevmoomyvaiushchego ustroistva i oblasti ego primeneniia na sudakh plavaiushchikh vo l'dakh].
Kashtelian, V.I., et al, *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy*, 1981, Vol.376, p.67-84, In Russian. 4 refs.
Popov, IU.N., Tsoi, L.G.
Ships, Velocity, Icebreakers, Ice navigation, Ice floes, Slush, Bubbling.

36-2177
Studying performance of icebreakers equipped with bubbling washoff devices (POU). [Issledovaniia raboty ledokola s sistemoi pnevmoobmyva (POU) pri forsirovanii torosistykh l'dov].
Svistunov, B.N., et al, *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy*, 1981, Vol.376, p.85-87, In Russian.
Il'chuk, A.N., Ionov, B.P.
Bubbling, Ice navigation, Icebreakers, Velocity.

36-2178
Frictional characteristics of icebreaker models. [Friktsionnye kharakteristiki modeli ledokola].
Pozniak, I.I., *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy*, 1981, Vol.376, p.88-94, In Russian. 2 refs.
Icebreakers, Ice navigation, Metal ice friction, Models.

36-2179
Statistical approach to the evaluation of strength of ships navigating in ice. [O veroiatnostnom podkhode k otsenke ledovoi prochnosti sudov].
Likhomanov, V.A., et al, *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy*, 1981, Vol.376, p.95-99, In Russian. 6 refs.
Kheisin, D.E.
Ships, Ice navigation, Ice loads, Metal ice friction, Impact strength, Statistical analysis.

36-2180
Uniform distribution of the strength of framing and of the ice strake plating. [O ravnoprochnosti nabora i obshivki ledovogo poiasa].
Kheisin, D.E., *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy*, 1981, Vol.376, p.100-107, In Russian. 4 refs.
Ships, Ice navigation, Ice loads, Design.

36-2181
Tensometric tests of hulls of ships navigating in ice. [Otechestvennye i zarubezhnye tenzometricheskie ispytaniia korpusa sudov vo l'dakh].
Likhomanov, V.A., *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy*, 1981, Vol.376, p.108-113, In Russian. 2 refs.
Ships, Ice navigation, Ice loads, Metal ice friction.

36-2182
Weight of hull reinforcements of ships navigating in ice. [Ves ledovykh usilenii korpusa sudna].
Dubov, A.A., et al, *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy*, 1981, Vol.376, p.114-116, In Russian. 2 refs.
Faddeev, O.V.
Ships, Ice navigation.

36-2183
Icebreaker performance in unbroken stationary ice. [Osobennosti raboty ledokolov v sploshnykh nepodvizhnykh l'dakh].
Smirnov, V.I., *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy*, 1981, Vol.376, p.117-121, In Russian. 3 refs.
Icebreakers, Ice navigation, Pack ice, Fast ice, Ice cover thickness, Ice breaking.

36-2184
Icing and ice sticking to ships during fall-winter navigation periods. [Obledenenie i oblipanie sudov v period osenne-zimnikh navigatsii].
Voevodin, V.A., et al, *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy*, 1981, Vol.376, p.122-128, In Russian. 7 refs.
Migulin, A.I., Panov, V.V.
Ice navigation, Ship icing, Ice adhesion, Ice cover thickness.

36-2185
Methods of determining the effectiveness of winter navigation. [Metodika opredelenia effektivnosti zimnikh plavanii sudov].
Chilingarov, A.N., *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy*, 1981, Vol.376, p.129-133, In Russian. 2 refs.
Ships, Ice navigation, Transportation, Cargo.

36-2186
Determining horizontal shifts of stable fast ice. [Issledovanie gorizontal'nykh podvizhek ustoichivogo pripaia].
Skokov, R.M., *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy*, 1981, Vol.376, p.134-140, In Russian. 3 refs.
Sea ice, Fast ice, Drift, Stability.

36-2187
Analytical method of calculating components of ice resistance and its experimental verification. [Analiticheskii sposob rascheta sostavliaiushchikh ledovogo soprotivleniia i ego eksperimental'naia proverka].
Ionov, B.P., *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy*, 1981, Vol.376, p.141-149, In Russian. 4 refs.
Ice navigation, Ships, Ice loads, Metal ice friction.

36-2188
Discussion on the classification of movement velocities of ships navigating in ice. [K voprosu o klassifikatsii skorostei dvizhenia sudov vo l'dakh (v poriadke diskussii)].
Buzuev, A.IA., et al, *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy*, 1981, Vol.376, p.150-156, In Russian. 8 refs.
Kashtelian, V.I., Sergeev, G.N.
Ships, Ice navigation, Ice conditions, Ice cover thickness.

36-2189
Snow physics, avalanches, mudflows. [Fizika snega, laviny, selj].
Zalikhanov, M.Ch., ed. *Nal'chik. Vysokogornyi geofizicheskii institut. Trudy*, 1981, Vol.49, 152p., In Russian. For individual articles see 36-2190 through 36-2203. Refs. passim.
Snow physics, Snow evaporation, Metamorphism (snow), Snow cover structure, Snow cover stability, Snow crystal growth, Avalanche formation, Avalanche triggering, Avalanche forecasting, Solar radiation, Snow melting, Moraines, Mudflows.

36-2190
Symmetry method of calculating snow structure. [Simmetrinye metody ischisleniia struktury snega].
Kolomyts, E.G., *Nal'chik. Vysokogornyi geofizicheskii institut. Trudy*, 1981, Vol.49, p.3-21, In Russian. 11 refs.
Avalanche forecasting, Snow physics, Snow evaporation, Metamorphism (snow), Snow cover structure, Snow crystal growth, Avalanche formation.

36-2191
Snow cover rheometry on slopes. [K voprosu reometrii snezhnogo pokrova na sklone].
Khakhokov, V.Z., et al. *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1981, Vol.49, p.22-26. In Russian. 11 refs.
Khalkechev, V.K.
Slope processes, Snow physics, Snow cover distribution, Snow cover structure, Snow strength, Shear strength, Rheology, Models, Laboratory techniques.

36-2192
Rupture of slab avalanches. [Rabota razryva snezhnoĭ doski].
Badakhov, Kh.I., *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1981, Vol.49, p.27-31, In Russian. 14 refs.
Slope processes, Snow cover structure, Snow strength, Rheology, Shear strength, Snow cover stability, Avalanche formation.

36-2193
Avalanches originating "from a point" and "slab avalanches". [K voprosu o lavinakh "iz tochki" i lavinakh "snezhnoĭ doski"].
Bolov, V.R., *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1981, Vol.49, p.32-38, In Russian. 13 refs.
Slope processes, Avalanches, Classifications, Terminology, Avalanche formation, Avalanche triggering.

36-2194
Genetic types of snow avalanches formed in the El'brus Mountain area. [Geneticheskie tipy lavin v Priel'brus'e].
Bolov, V.R., *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1981, Vol.49, p.39-51, In Russian. 22 refs.
Slope processes, Snow cover distribution, Avalanche formation, Avalanche triggering, Snowfall, Snowstorms, USSR—Caucasus.

36-2195
Experimental telemetering complex for studying moving avalanches. [Eksperimental'nyĭ kompleks dlia telemetricheskogo izucheniia parametrov dvizhushcheisia laviny].
Urumbaev, N.A., et al. *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1981, Vol.49, p.52-63, In Russian. 5 refs.
Strukov, B.B.
Slope processes, Avalanche formation, Avalanche triggering, Avalanche mechanics, Telemetering equipment.

36-2196
Evaluating danger of avalanche formation from new fallen snow in the El'brus Mountain area. [Otsenka stepeni lavinnoĭ opasnosti dlia lavin iz svezhevypavshego snega v Priel'brus'e].
Urumbaev, N.A., et al. *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1981, Vol.49, p.64-74, In Russian. 2 refs.
Urumbaeva, L.V., Khomeniuk, IU.V.
Snowfall, Slope processes, Snow cover stability, Avalanche formation, Avalanche forecasting, USSR—Caucasus.

36-2197
Methods of artificial triggering of snow avalanches. [Metody iskusstvennogo spuska lavin].
Badakhov, Kh.I., *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1981, Vol.49, p.75-89, In Russian. 35 refs.
Slope processes, Snowfall, Snow cover structure, Avalanche formation, Avalanche triggering.

36-2198
Avalanche and mudflow danger in the economic development areas of eastern Caucasus. [Lavinno-selevaia opasnost' osvoeniia gor Vostochnogo Kavkaza].
Zalikhanov, M.Ch., et al. *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1981, Vol.49, p.90-103, In Russian. 4 refs.
Akacva, L.A.
Slope processes, Avalanche formation, Avalanche triggering, Mudflows, Human factors.

36-2199
Scattered radiation on mountain slopes of Central Caucasus. [Rasseiannaia radiatsiia na sklonakh v usloviiakh Tsentral'nogo Kavkaza].
Samukashvili, R.D., *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1981, Vol.49, p.104-116, In Russian. 6 refs.
Alpine landscapes, Slope orientation, Solar radiation, Scattering, Meteorological data.

36-2200
Photosynthetically active radiation in the Caucasus. [Fotosinteticheski aktivnaia radiatsiia na Kavkaze].
Samukashvili, R.D., *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1981, Vol.49, p.117-124, In Russian. 4 refs.
Alpine landscapes, Slope processes, Snow cover distribution, Solar radiation, Plant ecology, Plant physiology, Photosynthesis.

36-2201
Direct solar radiation in the Caucasus. [Priamaia radiatsiia solntsa na Kavkaze].
Samukashvili, R.D., *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1981, Vol.49, p.125-132, In Russian. 2 refs.
Alpine landscapes, Altitude, Solar radiation, Radiation balance, Slope orientation, Slope processes.

36-2202
Scheme for forecasting glacial mudflows in the Gerkhozhansu River basin. [Skhema prognozirovaniia selevykh potokov v basseine r. Gerkhozhansu].
Gerasimov, V.A., *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1981, Vol.49, p.133-137, In Russian. 5 refs.
River basins, Slope processes, Solar radiation, Snow melting, Moraines, Mudflows.

36-2203
Intensity of mudflow formation in the Kabardino-Balkarskaya ASSR. [Intensivnost' proiavleniia selei v Kabardino-Balkarskoĭ ASSR].
Streshneva, N.P., *Nal'chik. Vysokogornyĭ geofizicheskiĭ institut. Trudy*, 1981, Vol.49, p.138-144, In Russian. 2 refs.
River basins, Slope processes, Slope orientation, Snow melting, Soil erosion, Mudflows.

36-2204
Effect of structure on the relief of the western slope of the Khentei Mountains and their forefield in the Sugnugurin-gol and Bayan-gol basins.
Zietara, T., *Polska Akademia Nauk. Bulletin. Série des sciences de la terre*, 1980, 28(2-3), p.93-105, With Russian summary. 8 refs.
Slope processes, Alpine tundra, Geocryology, Geomorphology, Climatic factors, Taiga, Topographic features, Mongolia—Khentei Mountains.

36-2205
Glacial forms in the Baga-Khentei Mts (Mongolia).
Klimek, K., *Polska Akademia Nauk. Bulletin. Série des sciences de la terre*, 1980, 28(2-3), p.107-113, With Russian summary. 16 refs.
Cirque glaciers, Geomorphology, Landforms, Glaciation, Mongolia—Khentei Mountains.

36-2206
Periglacial phenomena in the Baga-Khentei Mountain range.
Pekala, K., *Polska Akademia Nauk. Bulletin. Série des sciences de la terre*, 1980, 28(2-3), p.131-138, With Russian summary. 11 refs.
Periglacial processes, Alpine tundra, Geomorphology, Geocryology, Frost action, Nivation, Mountains, Mongolia—Khentei Mountains.

36-2207
Climatically controlled asymmetry of slopes in the central Mongolian uplands.
Kotarba, A., *Polska Akademia Nauk. Bulletin. Série des sciences de la terre*, 1980, 28(2-3), p.139-145, With Russian summary. 13 refs.
Alpine tundra, Slope processes, Periglacial processes, Climatic factors, Mountains, Mongolia.

36-2208
Effect of the thermal and humidity zone structure and of slope exposition on the differences in water relations in the western Khentei.
Glazik, R., *Polska Akademia Nauk. Bulletin. Série des sciences de la terre*, 1980, 28(2-3), p.173-188, With Russian summary. 14 refs.
Runoff, Thermal effects, Humidity, Slope orientation, Hydrology, Meltwater, Alpine tundra, Hydrology, River flow, Taiga, Snow depth, Mongolia—Khentei Mountains.

36-2209
***Soils of the mountain taiga of the western Khentei* Mts (Mongolia) and chief directions of pedogenesis.**
Skiba, S., *Polska Akademia Nauk. Bulletin. Série des sciences de la terre*, 1980, 28(2-3), p.223-231, With Russian summary. 13 refs.
Taiga, Soil formation, Podsol, Mountains, Mongolia—Khentei Mountains.

36-2210
Winter maintenance of major highways. [Viabilità invernale sulle grandi autostrade].
Murazio, S., *Neve internazionale*, Dec. 1981, 23(4), p.20-23, In Italian with French, German and English summaries.
Winter maintenance, Road maintenance, Air temperature, Climatic factors, Snow removal, Precipitation (meteorology).

36-2211
Planning and technology for winter maintenance. [Programmazione e tecnologia al servizio della viabilità invernale].
Scotto, G.E., *Neve internazionale*, Dec. 1981, 23(4), p.24-28, In Italian with French, German and English summaries.
Winter maintenance, Road maintenance, Meteorological factors, Computer applications, Cost analysis, Models.

36-2212
Active avalanche protection in the release zone: Swiss research and new technology. [La protezione attiva delle valanghe nella zona di distacco: ricerche e nuove tecnologie in Svizzera].
Heimgartner, M., *Neve internazionale*, Dec. 1981, 23(4), p.29-32, In Italian with French, German and English summaries.
Avalanche formation, Protection, Snow fences, Pile structures.

36-2213
Foothills eastern leg work moves at fast pace.
Rowland, L.O., *Pipeline and gas journal*, Jan. 1982, 209(1), p.40-47.
Pipe laying, Excavation, Dredging, Canada.

36-2214
Drift of a remarkable iceberg into the South Atlantic. [Trift eines bemerkenswerten Eisbergs in den Südatlantik].
Strübing, K., *Seewart*, 1978, 39(4), p.186-195, In German. 8 refs.
Icebergs, Drift.
The course of the *Trolltunga* iceberg is described, as observed from satellites and ships. The huge tabular iceberg (105 km long and 55 km wide) was first identified in Oct. 1967 in the easternmost Weddell Sea. It took a decade to cover the 2000 nautical miles to the northern tip of the Antarctic Peninsula. After several strandings it was last seen in Feb. 1979, moving at 5-6 mm/day in the westerly drift at about 50S, due north of South Georgia. At that time it was estimated to be 3774 sq. km in size with an average height of 20-30 m above the water level. In these warmer waters the iceberg was expected to deteriorate rapidly, especially because of strong wave activity. Nevertheless, it is believed possible that it would survive far enough north to be seen from the South African coast. Satellite observations are disturbed by heavy cloudiness in the westerly drift area.

36-2215
Thermohaline steps inducted by melting of the Erebus Glacier Tongue.
Jacobs, S.S., et al. *Journal of geophysical research*, July 20, 1982, 86(C7), p.6547-6555, 39 refs.
Huppert, H.E., Holdsworth, G., Drewry, D.J.
Glacier melting, Water temperature, Salinity, Thermal conductivity, Antarctica—McMurdo Sound.
A vertically stable, step-like thermohaline structure is observed throughout a continuous, 400 m conductivity-temperature-depth (CTD) profile taken near the Erebus Glacier Tongue, McMurdo Sound. The pattern is best developed between the sea surface and 250 m depth, the interval corresponding to that of the irregular underwater profile of the glacier tongue. The steps average 17 m in thickness and typically display discontinuities of 0.1 C in temperature, 0.04/mille in salinity and .00035 g/cu cm in density. The observations are compared with theory and laboratory experiments of cell development and lateral flow near ice melting into vertically stratified salt water. At this location, subsurface seawater is inferred to remain above the in situ freezing point year-round, and contains sufficient heat to account for much of the glacier tongue thinning by basal melting. An adequate volume of meltwater would result to produce the measured salinity steps. We discuss related observations and some implications of this process for ocean circulation and biological productivity in the Antarctic. (Auth.)

36-2216
High resolution radio echo sounding on Ellesmere Island, Northwest Territories.
Neal, C.S., *Polar record*, Jan. 1982, 21(130), p.61-64.
Firn stratification, Radio echo soundings, Ice structure, Ice cover thickness, Canada—Northwest Territories—Ellesmere Island.

36-2217
Polar research.
Turner, M.D., et al. *Geotimes*, Feb. 1982, 27(2), p.51-52.
McKenzie, G.D.
Ice cores, Paleoclimatology.

Recent research activity in earth sciences in both polar regions is reviewed. In Greenland, scientists recovered the longest ice core ever obtained in the Arctic. The 2000 m + core spans 130,000 years of snow accumulation. In the Antarctic, finding and recovering meteor fragments, some rare or unique, continues. Two shergottites, which, one hypothesis holds, came from Mars, have been recovered. A major field camp for 60 scientists has been built in northern Victoria Land. Significant publications are mentioned, major conferences scheduled for the next two years are noted, and some early effects of budget reductions on polar research programs are given.

36-2218

Supernovae and nitrate in the Greenland Ice Sheet.

Risbo, T., et al. *Nature*, Dec. 17, 1983, 294(5842), p.637-639, 17 refs.

Clausen, H.B., Rasmussen, K.L.

Ice cores, Ice composition, Impurities, Ice dating, Supernovae.

Nitrate concentration in the absolutely dated Greenland ice core from Crête has been measured for six time intervals, five surrounding the time of appearance of the well established historical supernovae during the past 1,000 yr and one during the Maunder minimum of solar activity, to look for a possible correlation between supernovae and nitrate concentration. A very regular annual variation of nitrate concentration is observed superimposed on a constant background. *It is shown that both* these signals seem unaffected by the known variations in the solar activity for the periods analyzed. The nitrate contents are unaffected by peaks in acidity caused by volcanic eruptions. The annual variation of nitrate concentration suggests it could be used for dating ice cores. Comparisons are made between Greenland and antarctic ice cores for dating and for nitrate *content.* (Auth.)

36-2219

Soil pattern of Campbell Island.

Campbell, I.B., *New Zealand journal of scienc* 1981, 24(2), p.111-135, 30 refs.

Peat, Soil erosion, Grazing, Campbell Island.

The broad pattern of soils on subantarctic Campbell Island is outlined. Organic soils (peat and peaty soils) cover most of the island. The soil pattern has a strong physiographic relationship and is controlled by thickness of peat, slope, and altitude. Deepest deposits of peat occur on gentle slopes at lower altitudes, but the peat becomes shallow as slope and altitude increase and the mineral content rises. The organic soils which form on the peat show a corresponding progressive development. Thick peat soils on the lower altitude slopes pass through thin peat soils into shallow peaty soils on the higher altitude surfaces. The extent and causes of erosion are discussed. Wind erosion is currently extensive on exposed fragile uplands and has been *aggravated by sheep grazing, trampling, and severe* depletion of tussock grassland and high altitude rush communities. The shallow peaty soils with their higher nutrient status appear to be preferential sites for grazing. On the north of the island where grazing has been eliminated by fencing, there are signs of erosion scar recovery. (Auth.)

36-2220

Numerical study on the effects of electric charges on the efficiency with which planar ice crystals collect supercooled cloud drops.

Martin, J.J., et al, *Journal of the atmospheric sciences*, Nov. 1982, 38(11), p.2462-2469 33 refs.

Wang, P.K., Pruppacher, H.R.

Cloud physics, Supercooled clouds, Ice crystals, Electric charge, Mathematical models.

36-2221

Deuterium contents of storm inflow and hailstone growth layers.

Knight, C.A., et al, *Journal of the atmospheric sciences*, Nov. 1981, 38(11), p.2485-2499, 15 refs.

Knight, N.C., Kime, K.A.

Hailstone growth, Temperature effects, Heavy water.

36-2222

Chena River Lakes Project revegetation study—three-year summary.

Johnson, L.A., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Oct. 1981, CR 81-18, 59p., ADA-108 909, 22 refs.

Rindge, S.D., Gaskin, D.A.

Revegetation, Grasses, Growth, Soil stabilization, Gravel, Vegetation, United States—Alaska—Fairbanks.

During the growing seasons of 1977, 1978 and 1979, revegetation techniques were studied on the Chena River Lakes Project, a flood control dam and levee near Fairbanks, Alaska, to find an optimal treatment for establishing permanent vegetation cover on the gravel structures. The treatments tested on plots at the dam and/or levee involved three main variables: 1) vegetation (grass and clover seed and/or willow cuttings), 2) mulch, mulch blanket, and/or sludge, and 3) substrate (gravel or fine-grained soil over the gravel base). The mulches were hay, wood-cellulose-fiber, peat moss, and Conwed Hydro Mulch 2000, which is a wood-cellulose-fiber mulch with a polysaccharide tackifier. A constant rate of fertilizer was applied to all plots except the control. A section of each plot was refertilized again in their third growing season to compare annual and biannual fertilization. The high fertilization rate produced above-average growth. Fescue, brome, and foxtail were the most productive species on the dam, while alsike clover was the most productive on the wetter levee site. When grass seed and willow cuttings were planted at the same time, willow survival and growth were reduced. Fertilization is required for at least two years to produce an acceptable permanent vegetation cover, although fine-grained soil or sludge reduces the amount of fertilizer needed in the second year. Third-year fertilization may be necessary since the benefits of the second fertilization continue for at least two years. A sludge treatment refertilized during its second growing season produces the highest biomass recorded in this study. Sludge from the Fairbanks treatment plant poses little, if any, danger of contamination from heavy metals or pathogens. Four-year-old seedlings of willow and native woody species growing on the dam do not have deeply penetrating root systems and therefore don't appear to pose an early threat of leakage through the dam.

36-2223

Glacial spillways in southwest Scania, southernmost Sweden. [Isälvsdalar i Sydvästskane].

Bergsten, K.E., *Svensk geografisk arsbok*, 1981, No.57, p.19-24, In Swedish with English summary. 7 refs.

Glacier tongues, Glacier melting, Periglacial processes, Sweden—Scania.

36-2224

Snow avalanche impact pits in Sunnylven and adjacent areas in Sunnmöre, western Norway. Preliminary results. [Groper danna av snöskred i Sunnylven og tilgrensande omrader pa Sunnmöre. Förebels resultat].

Hole, J., *Norsk geografisk tidsskrift*, 1981, 35(3), p.167-172, In Norwegian with English captions. 4 refs.

Avalanche formation, Impact strength, Landforms, Avalanche deposits, Topographic features, Lakes.

36-2225

Study of the factors affecting Arctic pipeline safety.

Black, W.T., et al, *U.S. Office of Pipeline Safety Regulation. Technical report*, Nov. 3, 1981, Final report, Woodward-Clyde Consultants, Project 14551A report, 82p., Refs. p.(A)I-(A)12.

Holloway, D.M., Luscher, U., Nyman, D.J., Thomas, H.P.

Pipelines, Safety, Permafrost physics, Construction, Maintenance, Thermal stresses, Frost heave, Soil creep.

36-2226

Engineering geology of the Svea Lowland, Spitsbergen, Svalbard.

Péwé, T.L., et al, Frost i jord, Dec. 1981, No.23, 11p., 9 refs.

Rowan, D.E., Péwé, R.H.

Engineering geology, Glacial deposits, Permafrost physics, Foundations, Mining, Structures, Coal, Ground ice, Frost action, Norway—Spitsbergen.

36-2227

Block-movement of glaciers. [Zur Blockbewegung der Gletscher].

Voigt, U., *Akademie des Wissenschaften, Berlin. Nationalkomitee für Geodäsie und Geophysik. Geodätische und geophysikalische Veröffentlichungen*, 1979, Ser.3, No.44, 128p., In German with English and Russian summaries. Refs. p.57-62.

Glacier flow, Ice mechanics, Strains, Glacier beds, Sliding, Photogrammetry, Subglacial observations, Tensile properties, Velocity, Crevasses.

36-2228

Drift characteristics of northeastern Bering Sea ice during 1980.

Pease, C.H., et al, *U.S. National Oceanic and Atmospheric Administration. NOAA technical memorandum*, July 1981, ERL PMEL-32, 78p., 11 refs.

Salo, S.A.

Sea ice, Drift, Ice conditions, Ocean currents, Wind velocity, Ice floes, Meteorological factors, Bering Sea.

36-2229

Remote sensing of stored precipitation, i.e., soil moisture and snow.

Schmugge, T., Precipitation Measurements from Space, April 28-May 1, 1981. Workshop report. Edited by D. Atlas and O.W. Thiele, Greenbelt, Md., NASA, Goddard Space Flight Center, Oct. 1981, p.(D)252-(D)260, 35 refs.

Snow accumulation, Soil water, Remote sensing, Precipitation (meteorology), Snow water equivalent, Microwaves, Temperature effects.

36-2230

Anchorage wetlands management plan. Anchorage, Alaska, Municipality, Planning Department, Oct. 1981, 9 sections + maps, Includes Supplement-plan revisions, Feb. 1982. 9p. of refs.

Hydrology, Environmental protection, Land reclamation, Land development, Urban planning, United States—Alaska—Anchorage.

36-2231

Fluvioglacial landforms and ice margin characteristics. An example from the Torneträsk area in northern Sweden.

Gretener, B., et al, *Geografiska annaler. Series A Physical geography*, 1981, 63A(3-4), p.161-168, 14 refs.

Strömquist, L.

Periglacial processes, Landforms, Moraines, Glacier oscillation, Geomorphology, Glacial deposits, Paleoclimatology, Sweden.

36-2232

Monitoring the World's glaciers—the present situation.

Wallén, C.C., *Geografiska annaler. Series A Physical geography*, 1981, 63A(3-4), p.197-200, 8 refs.

Glacier surveys, Glacier mass balance.

A review is given of the historic development of the Permanent Service of Fluctuations of Glaciers, started in 1968 and the World Glacier Inventory started in 1975. The present situation of global glacier surveillance, including Antarctica, is discussed and suggestions are presented for future activities, emanating from a recent meeting of experts. (Auth. mod.)

36-2233

Neoglacial fluctuations of glaciers, southeastern Ellesmere Island, Canadian Arctic Archipelago.

Blake, W., Jr., *Geografiska annaler. Series A Physical geography*, 1981, 63A(3-4), p.201-218, 27 refs.

Glacier oscillation, Remote sensing, Radioactive age determination, Paleoclimatology, Canada—Northwest Territories—Ellesmere Island.

36-2234

Net mass balance of Storglaciären, Kebnekaise, Sweden, related to the height of the equilibrium line and to the height of the 500 mb surface.

Schytt, V., *Geografiska annaler. Series A Physical geography*, 1981, 63A(3-4), p.219-223, 2 refs.

Glacier mass balance, Alpine glaciation, Altitude, Seasonal variations, Meteorological factors, Sweden—Stor Glacier.

36-2235

Radio-echo sounding maps of Storglaciären, Isfallsglaciären and Rabots glaciär, northern Sweden.

Björnsson, H., *Geografiska annaler. Series A Physical geography*, 1981, 63A(3-4), p.225-231, 3 refs.

Glacier surveys, Glacier beds, Radio echo soundings, Topographic maps, Subglacial observations.

36-2236

Seasonal variations in surface velocity of the lower part of Storglaciären, Kebnekaise, Sweden.

Brzozowski, J., et al, *Geografiska annaler. Series A Physical geography*, 1981, 63A(3-4), p.233-240, 36 refs.

Hooke, R.L.

Glacier flow, Glacier surfaces, Velocity, Seasonal variations, Mapping, Sweden.

36-2237

Equilibrium line altitudes of Late Pleistocene and recent glaciers in Central Mexico.

White, S.E., *Geografiska annaler. Series A Physical geography*, 1981, 63A(3-4), p.241-249, 17 refs.

Glacier oscillation, Alpine glaciation, Pleistocene, Mexico.

36-2238

Glaciation level in southern Alaska.

Östrem, G., et al, *Geografiska annaler. Series A Physical geography*, 1981, 63A(3-4), p.251-260, 15 refs.

Haakensen, N., Eriksson, T.

Alpine glaciation, Mountain glaciers, Distribution, Topographic maps, United States—Alaska.

36-2239

Lacustrine sediment studies.

Karlén, W., *Geografiska annaler. Series A Physical geography*, 1981, 63A(3-4), p.273-281, 20 refs.

Lacustrine deposits, Glacier oscillation, Meltwater, Lake water, Glacier melting, Paleoclimatology, Radioactive age determination.

36-2240

Effect of ice compression on unsteady flexural-gravity waves.

Bukatov, A.E., *Okeanology*, Feb. 1981, 20(4), p.394-397, Translated from Okeanologiia. 14 refs.

Ice cover, Oscillations, Compressive properties, Atmospheric disturbances, Sea ice, Stresses.

36-2241

Assessment of the possibility of using the radioseismoacoustic method to study large-scale ice cover deformations.

Bogorodskii, V.V., et al, *Okeanology*, Feb. 1981, 20(4), p.407-410, Translated from Okeanologiia. 12 refs.

Sea ice, Ice deformation, Echo sounding, Ice cover thickness.

36-2242
Oxygen and carbon dioxide exchange between the Arctic basin and the atmosphere.
Liakhin, IU.I., et al, *Oceanology*, Feb. 1981, 20(4), p.411-418, Translated from Okeanologiia. 26 refs.
Rusanov, V.P.
Air water interactions, Gases, Carbon dioxide, Oxygen, Ice cover effect, Arctic Ocean.

36-2243
Geomorphological signs of the action of the Scandinavian, Novaya Zemlya, and Spitsbergen ice sheets on the floor of the Barents Sea.
Matishov, G.G., *Oceanology*, Feb. 1981, 20(4), p.440-447, Translated from Okeanologiia. 30 refs.
Polar regions, Echo sounding, Glaciation, Marine deposits, Ice sheets, Bottom sediment, Moraines, Glacial erosion, Geomorphology, Theories.

36-2244
Recent sediments on the continental shelf of the Chukchi Sea.
Logvinenko, N.V., et al, *Oceanology*, Feb. 1981, 20(4), p.448-452, Translated from Okeanologiia. 10 refs.
Ogorodnikov, V.I.
Polar regions, Marine deposits, Shores, Ice rafting, Ice shelves.

36-2245
Landscape indication of some engineering-geological conditions in the northwestern part of Arkhangel'sk region. [Opyt landshaftnoi indikatsii nekotorykh inzhenerno-geologicheskikh uslovii v severo-zapadnoi chasti Arkhangel'skoi oblasti],
Bostrem, V.G., *Geograficheskoe obshchestvo SSSR. Izvestiia*, Jan.-Feb. 1982, 114(1), p.57-60, In Russian. 8 refs.
Forest land, Swamps, Landscape types, Engineering geology, Surveys, Moraines, Cryogenic soils, Soil water migration, Peat, Plant ecology, Ecosystems, Mosses.

36-2246
Determining snow depth for establishing the height of roadbed shoulders. [Opredelenie vysoty snezhnogo pokrova dlia naznacheniia vozvysheniia brovki zemlianogo polotna],
Zhukov, P.P., *Avtomobil'nye dorogi*, Dec. 1981, No.12, p.5-6, In Russian. 3 refs.
Roadbeds, Embankments, Snow accumulation, Snow depth, Design, Mountains, Roads.

36-2247
Construction machines for Siberia and the North. [Stroitel'nye mashiny dlia Sibiri i Severa],
Vasil'ev, A.A., *Avtomobil'nye dorogi*, Dec. 1981, No.12, p.27-28, In Russian.
Construction equipment, Transportation, Earthwork, Motor vehicles, Tracked vehicles, Snow depth, Trafficability, Permafrost, Excavation.

36-2248
Machines under severe climatic conditions. [Mashiny v surovykh usloviiakh],
Poliakov, V.I., et al, *Mekhanizatsiia stroitel'stva*, Jan. 1982, No.1, p.3-4, In Russian.
Kolesnichenko, V.V.
Construction equipment, Tractors, Motor vehicles, Tracked vehicles, Transportation, Construction materials, Earthwork, Excavation, Cold weather construction, Permafrost.

36-2249
Operation of MoAZ-546P-D357P scrapers at subzero temperatures. [Ekspluatatsiia skreperov MoAZ-546P-D357P pri otritsatel'nykh temperaturakh],
Maksimenko, A.N., et al, *Mekhanizatsiia stroitel'stva*, Jan. 1982, No.1, p.8-10, In Russian. 2 refs.
Surovegin, IU.V., Sidorov, N.A., Dubov, V.N.
Earthwork, Cold weather construction, Construction materials, Cold weather operation.

36-2250
Polymer foam as ground protection from freezing. [Zashchita grunta ot promerzaniia polimernoi penoi],
Dobkin, I.G., et al, *Mekhanizatsiia stroitel'stva*, Jan. 1982, No.1, p.10-12, In Russian.
Mashkov, A.I., Ratskevich, G.I., Chepelkin, V.K.
Cellular plastics, Polymers, Thermal insulation, Soil freezing, Frost penetration, Construction equipment.

36-2251
Machines and equipment for concreting. [Mashiny i oborudovanie dlia betonnykh rabot],
Zhadanovskii, B.V., et al, *Mekhanizatsiia stroitel'stva*, Jan. 1982, No.1, p.15-17, In Russian.
Winter concreting, Concrete aggregates, Construction equipment, Mixers, Electrical heating.

36-2252
Ice pillars may become "golden" pillars. [Ledianye kolonny okazhutsia "zolotymi"],
El'shanskii, I., *Izobretatel' i ratsionalizator*, Dec. 1981, No.12, p.14-15, In Russian.
Mining, Shafts (excavations), Supports, Permafrost.

36-2253
Stress amplification under a moving load on floating ice.
Bates, H.F., et al, *Journal of geophysical research*, July 1981, 86(C7), p.6638-6642, 12 refs.
Shapiro, L.H.
Sea ice, Floating ice, Ice mechanics, Dynamic loads.

36-2254
Flexural waves in the Ross Ice Shelf.
Williams, R.T., et al, *Journal of geophysical research*, July 20, 1981, 86(C7), p.6643-6648, 20 refs.
Robinson, E.S.
Ocean waves, Ice shelves, Antarctica—Ross Ice Shelf.
Flexural waves related to the ocean swell are identified more than 600 km from the open sea in the Ross Ice Shelf, Antarctica, where the ice cover is in places more than 500 m thick. An equation relating the power spectra of the flexural wave and the ocean swell is derived, based on the continuity of pressure in the fluid layer across the ice front. Correcting for the effect of the ice, the power spectrum of the wave in the ice compares to that of the ocean swell elsewhere in the Pacific Ocean. (Auth.)

36-2255
Observations of surface and bottom currents in the Beaufort Sea near Prudhoe Bay, Alaska.
Matthews, J.B., *Journal of geophysical research*, July 20, 1981, 86(C7), p.6653-6660, 21 refs.
Ocean currents, Wind factors, Beaufort Sea.

36-2256
Approximate solution to Neumann problem for soil systems.
Lunardini, V.J., et al, *Journal of energy resources technology*, Mar. 1981, 103(1), MP 1494, p.76-81, 12 refs.
Varotta, R.
Soil temperature, Heat balance, Freeze thaw cycles, Boundary layer, Phase transformations, Thermal properties, Temperature effects, Analysis (mathematics).
An approximate solution to the Neumann problem has been obtained by using the heat balance integral method. The accuracy of the solution is shown to be very good for all practical soil system cases. The thermal properties of soil systems are also expressed in terms of only the liquid volumetric fraction and combine with the approximate solution to give a rapid, accurate solution for freeze/thaw problems without using graphs, tables, or transcendental equations. A simple relation is also given for the analogous problem in cylindrical coordinates, but its range of validity is somewhat limited.

36-2257
Brief review of foundation construction in the Western Canadian Arctic.
Thomson, S., *Quarterly journal of engineering geology*, 1980, Vol.13, p.67-76, 12 refs.
Foundations, Cold weather construction, Permafrost depth, Permafrost thermal properties, Frozen ground strength, Frozen ground mechanics, Ground ice, Soil creep, Rheology, Pile structures, Roads.

36-2258
Comparison of codes concerning winter concreting in Finland and in the Soviet Union.
Miettinen, H., et al, *Finland. Technical Research Centre. Research notes*, 1981, No.11, 48p. + 3 appends., 15 refs.
Vuorinen, J., Kukko, H.
Winter concreting, Cold weather construction, Concrete strength, Concrete freezing, Concrete curing, Temperature effects, Finland, USSR.

36-2259
Glaciological investigations in Norway 1979. [Glasiologiske undersökelser i Norge 1979],
Haakensen, N., et al, *Norway. Vassdrags- og elektrisitetsvesen. Hydrologisk avdeling. Rapport*, July 1981, No.3-81, 80p., In Norwegian with extended English summary. Refs. p.78-80.
Glacier mass balance, Glacial hydrology, Meteorological data, Heat balance, Meltwater, Norway.

36-2260
Hydrogeology for land-use planning: the Potter Creek area, Anchorage, Alaska.
Emanuel, R.P., et al, *U.S. Geological Survey. Water Resources Investigations. Open-file report*, Feb. 1982, No.82-86, 2 sheets.
Cowing, D.J.
Maps, Water supply, Hydrogeology, Meltwater, Drainage, Soil erosion, Urban planning, United States—Alaska—Anchorage.

36-2261
Research annual report 1980-81.
Alaska. University, Fairbanks, 1981, 139p.
Research projects, Environments, United States—Alaska.

36-2262
Investigation of pressure changes in frozen soils during thermally induced moisture migration. Final report.
Williams, P.J., et al, Ottawa, Carleton University, July 1981, 131p. + appends., Refs. p.129-131.
Wood, J.A.
Frozen ground thermodynamics, Soil pressure, Soil water migration, Hydraulics, Permeability, Temperature effects, Measuring instruments.

36-2263
Water balance of a lichen tundra underlain by permafrost.
Wright, R.K., *McGill Subarctic Research Station. McGill subarctic research paper*, 1981, No.33, 110p., With French summary. Refs. p.106-110.
Tundra, Water balance, Lichens, Permafrost hydrology, Latent heat, Soil water migration, Active layer, Soil freezing, Thaw depth.

36-2264
Numerical analysis of freezing and melting with convection.
Morgan, K., *Computer methods in applied mechanics and engineering*, 1981, Vol.28, p.275-284, 23 refs.
Freeze thaw cycles, Heat transfer, Convection, Phase transformations, Mathematical models, Temperature effects, Liquid solid interfaces.

36-2265
Basic characteristics of runoff in contemporary glaciated areas of China.
Yang, Z., *Scientia sinica*, Oct. 1981, 24(10), p.1418-1430, 8 refs.
Runoff, Glacial hydrology, Alpine glaciation, Meltwater, Glacier ablation, Mountain glaciers, China.

36-2266
Freezing and drying: effects on the solubility of municipal solid waste leachate constituents.
Bitterli, R.J., Tucson, University of Arizona, 1981, 36p., M.S. thesis. 18 refs.
Waste treatment, Freeze thaw cycles, Drying, Solubility, Chemical composition, Leaching.

36-2267
Conduit flow of a fluid through its solid phase and its application to intraglacial channel flow.
Spring, U., et al, *International journal of engineering science*, 1982, 20(2), p.327-363, 17 refs.
Hutter, K.
Glacial hydrology, Subglacial drainage, Water flow, Liquid solid interfaces, Channels (waterways), Analysis (mathematics).

36-2268
Comprehensive analysis of the environment. Proceedings of the symposium. [Vsestoronnii analiz okruzhaiushchei prirodnoi sredy. Trudy simpoziuma], Sovetsko-amerikanskii simpozium, 4th, Jackson, Wyoming, Oct.22-27, 1979, Leningrad, Gidrometeoizdat, 1981, 317p., In Russian. For selected papers see 36-2269 through 36-2271. Refs. passim.
Izrael, IU.A., ed.
Mountains, Coal, Mining, Electric power, Environmental impact, Sporadic permafrost, Cryogenic soils, Soil pollution, Water pollution, Rivers, Ice conditions, Environmental protection.

36-2269
Environmental impact of the KATEK steam power plant. [Effekty vozdeistviia teplovykh elektrostantsii KATEK na okruzhaiushchuiu prirodnuiu sredu],
Boltneva, L.I., et al, Sovetsko-amerikanskii simpozium Vsestoronnii analiz okruzhaiushchei sredy, 4th, Jackson, Wyoming, Oct.22-27, 1979. Trudy (Soviet-American Symposium Comprehensive analysis of the Environment, 4th, Jackson, Wyoming, Oct 22-27, 1979. Proceedings) edited by IU.A. Izrael, Leningrad, Gidrometeoizdat, 1981, p.94-108, In Russian. 30 refs.
Mountains, Electric power, Coal, Mining, Environmental impact, Rivers, Ice conditions, Air pollution, Soil pollution, Water pollution.

36-2270
Ecologic aspects of mining the KATEK coal deposits and measures for preventing environmental pollution and degradation (air, water, soils). [Ekologicheskie aspekty ekspluatatsii ugol'nykh razrezov KATEK. Kompleks meropriiatiĭ po predotvrashcheniiu zagriazneniia i degradatsii okruzhaiushcheĭ sredy (vozdukh, voda, pochvy)].
Vitkovskiĭ, K.V., et al, Sovetsko-amerikanskiĭ simpozium Vsestoronniĭ analiz okruzhaiushcheĭ sredy, 4th, Jackson, Wyoming, Oct.22-27, 1979. Trudy (Soviet-American Symposium Comprehensive analysis of the Environment, 4th, Jackson, Wyoming, Oct.22-27, 1979. Proceedings) edited by IU.A. Izrael, Leningrad, Gidrometeoizdat, 1981, p.187-195, In Russian.
Nemkovskiĭ, B.B.
Coal, Mining, Environmental impact, Air pollution, Sporadic permafrost, Cryogenic soils, Soil pollution, Water pollution, Rivers, Ice conditions, Environmental protection.

36-2271
Allowing for environmental impact when designing fuel and power complexes, the KATEK coal and power industry project taken as an example. [Uchet trebovaniĭ po okhrane okruzhaiushcheĭ sredy pri sozdanii toplivno-energeticheskikh kompleksov na primere KATEK].
Attarova, N.N., et al, Sovetsko-amerikanskiĭ simpozium Vsestoronniĭ analiz okruzhaiushcheĭ sredy, 4th, Jackson, Wyoming, Oct.22-27, 1979. Trudy (Soviet-American Symposium Comprehensive analysis of the Environment, 4th, Jackson, Wyoming, Oct.22-27, 1979. Proceedings) edited by IU.A. Izrael, Leningrad, Gidrometeoizdat, 1981, p.215-224, In Russian.
Mountains, Coal, Mining, Sporadic permafrost, Electric power, Environmental impact, Cryogenic soils, Soil pollution, Rivers, Ice conditions, Water pollution, Air pollution.

36-2272
Estimating snowfall visibility from radar data. [Otsenka vidimosti v snegopadakh po dannym MRL].
Dinevich, V.A., Radiolokatsionnaia meteorologiia (Radar meteorology) edited by V.D. Stepanenko and G.B. Bryleva, Leningrad, Gidrometeoizdat, 1981, p.109-113.
Snowfall, Snowstorms, Visibility, Radar echoes.

36-2273
Formation and productivity of stands. [Formirovanie i produktivnost' drevostoev],
Polikarpov, N.P., ed, Novosibirsk, Nauka, 1981, 143p., In Russian. For selected articles see 36-2274 through 36-2277. Refs. passim.
***Taiga, Alpine landscapes, Cryogenic soils,* Plant ecology, Plant physiology, Forest fires, Revegetation.**

36-2274
Peculiarities of cedar and fir growth in altitude belts of the western Sayan Mountains. [Vysotno-poiasnye osobennosti rosta kedra i pikhty v Zapadnom Saiane],
Ermolenko, P.M., et al, Formirovanie i produktivnost' drevostoev (Formation and productivity of stands) edited by N.P. Polikarpov, Novosibirsk, Nauka, 1981, p.19-53, In Russian. 22 refs.
Ermolenko, L.G.
Alpine landscapes, Taiga, Cryogenic soils, Snow cover distribution, Soil temperature, Snow line, Plant ecology, Plant physiology, Roots.

36-2275
Formation of the composition of conifer-larch forests in felled areas of the Abies sibirica belt in the western Sayan Mountains. [Formirovanie sostava khvoĭno-listvennykh molodniakov na vyrubkakh kedrovnikov v chernevom podpoiase Zapadnogo Saiana],
Ermolenko, P.M., Formirovanie i produktivnost' drevostoev (Formation and productivity of stands) edited by N.P. Polikarpov, Novosibirsk, Nauka, 1981, p.53-71, In Russian. 6 refs.
Taiga, Forest fires, Revegetation, Cryogenic soils, Mosses.

36-2276
Formation and development of conifer-larch young growth in the Angara River area. [Formirovanie i rost sosnovo-listvennykh molodniakov Priangar'ia],
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Speed of artificial freezing of rocks. [O skorosti zamorazhivaniia gornykh porod].
Shparber, P.A., *Shakhtnoe stroitel'stvo*, July 1981, No.7, p.23, In Russian.
Mining, Excavation, Artificial freezing, Sands, Clays, Equipment.

36-2335
Artificial freezing of rocks when sinking vertical shafts. [Zamorazhivanie gornykh porod pri sooruzhenii vertikal'nogo stvola].
Voloshchuk, S.N., et al, *Shakhtnoe stroitel'stvo*, Aug. 1981, No.8, p.24-27, In Russian.
Mining, Excavation, Ground water, Artificial freezing, Construction equipment.

36-2336
Geoacoustic multiparameter control of frozen ground screens when using artificial freezing, in underground municipal construction. [Geoakusticheskii mnogoparametrovyi kontrol' ledogruntovogo ograzhdeniia pri podzemnom gorodskom stroitel'stve sposobom zamorazhivaniia].
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Mining, Excavation, Ground water, Artificial freezing.

36-2337
Correcting the curvature of artificial freezing boreholes. [Ispravlenie krivizny zamorazhivaiushchikh skvazhin].
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Mining, Excavation, Artificial freezing, Boreholes, Drilling.

36-2338
From Avtos to Novyy Urengoy. [Iz Avtosa v Novyy Urengoi].
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Polar regions, Residential buildings, Foundations, Permafrost beneath structures, Large panel buildings, Roofs, Walls, Thermal insulation, Concrete structures, Reinforced concretes, Construction materials, Prefabrication, Transportation.

36-2339
Basic methodology of studying engineering geology of Arctic shelves in the USSR. [Metodologicheskie osnovy izucheniia inzhenernoi geologii arkticheskikh shel'fov SSSR].
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Polar regions, Engineering geology, Subsea permafrost, Continental shelves, Models, Mapping, Arctic Ocean.

36-2340
Stabilization of clayey soils with activated blast-furnace slag. [Ukreplenie glinistykh gruntov aktivirovannym otval'nym domennym shlakom].
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Soil stabilization, Clay soils, Cements, Wastes.

36-2341
Scientific seminar on the upgrading of efficiency of engineering-geological research for construction in petroleum provinces of Siberia. [O nauchno-prakticheskom seminare "Povyshenie effektivnosti inzhenerno-geologicheskikh izyskanii dlia stroitel'stva v neftegazonosnykh raionakh Zapadnoi Sibiri"].
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Korobanova, I.G., Zykov, IU.D.
Petroleum industry, Engineering geology, Surveys, Permafrost distribution, Permafrost physics, Permafrost thermal properties, Polar regions, Geologic processes, Meetings.

36-2342
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Glaciology, Spaceborne photography, Spacecraft, Snow surveys, Ice surveys, Sea ice, Ice conditions, Ice reporting, Mountain glaciers, Maps.

36-2343
Device for electric heating of thermally insulated water pipelines. [Ustroistvo dlia poputnogo elektroobogreva teploizolirovannykh vodovodov].
Sonninskii, A.V., *Transport i khranenie nefti i nefteproduktov*, 1981, No.7, p.24-27, In Russian.
Water pipelines, Thermal insulation, Electric heating, Petroleum industry.

36-2344
Hydraulic hammers in frozen ground excavation. [Gidromoloty na vykhlopi merzlykh gruntov].
Kammerer, IU.IU., *Mekhanizatsiia stroitel'stva*, Feb. 1982, No.2, p.10-12, In Russian.
Earthwork, Excavation, Hammers.

36-2345
Mobile concrete mixing assemblies and ready-mix concrete plants. [Mobil'nye betonosmesitel'nye ustanovki i zavody tovarnogo betona].
Ogorodnikov, IU.G., et al, *Mekhanizatsiia stroitel'stva*, Feb. 1982, No.2, p.24-26, In Russian.
Kulikov, IU.D.
Winter concreting, Concrete aggregates, Mixers.

36-2346
Designing cottage doorways for the North. [Osobennosti resheniia vykhodnykh uzlov sel'skikh zhilykh domov dlia Severa].
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Residential buildings, Houses, Permafrost beneath structures.

36-2347
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Residential buildings, Forest land, Large panel buildings, Reinforced concretes, Panels, Winter concreting, Foundations, Formwork (construction), Electric heating.

36-2348
Hydrothermal regime of residential buildings in Krasnoyarsk. [Temperaturno-vlazhnostnyi rezhim zhilykh zdanii v Krasnoiarske].
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Residential buildings, Microclimatology, Thermal regime, Humidity, Fog, Icing, Permafrost beneath structures.

36-2349
Influence of external facing on moisture regime of walls. [Vliianie vida naruzhnoi oblitsovki na vlazhnostnyi rezhim stenovykh ograzhdenii].
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Large panel buildings, Residential buildings, Microclimatology, Humidity, Thermal regime, Walls, Linings, Concrete structures.

36-2350
Platform barges for large barge-tug systems. [Barzhiploshchadki dlia bol'shegruznykh tolkaemykh sostavov].
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Ships, Ice navigation, Transportation, Rivers, Barges.

36-2351
Winter docking of ships. [Opyt zimnego dokovaniia sudov].
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Ships, Docks, Icing, Ice loads, Ice removal.

36-2352
Design of a nuclear-powered icebreaker-type barge-container carrier. [Prokt atomnogo ledokol'nogo likhterovoza-kontceinerovoza].
Sytov, N.P., et al, *Sudostroenie*, Nov. 1981, No.11, p.3-7, In Russian.
Rodionov, N.N., Zinin, V.I.
Ships, Ice navigation, Icebreakers, Transportation, Barges, Design.

36-2353
Lighter carrier "Aleksey Kosygin". [Likhterovoz "Aleksei Kosygin"].
Bagnenko, F.M., et al, *Sudostroenie*, Dec. 1981, No.12, p.3-9, In Russian.
Pankov, V.A.
Ships, Transportation, Ice navigation, Design.

36-2354
Results of trial operation of plastic propellers under ice conditions. [Rezul'taty opytnoi ekspluatatsii plastmassovykh grebnykh vintov v ledovykh usloviiakh].
Kolotygin, V.V., *Sudostroenie*, Dec. 1981, No.12, p.39-40, In Russian. 2 refs.
Ships, Ice navigation, Propellers, Construction materials, Plastics.

36-2355
Some aspects of blasting in Antarctica.
Lewis, G.H., *New Zealand antarctic record*, 1981, 3(3), p.17-37, 4 refs.
Explosives, Polar regions.
Explosives were used in the Dry Valleys and at Scott Base during the 1979/80 summer season with the following applications: removal of seized augers from lake ice in the Dry Valleys; cutting granite in permafrost at Vanda Station; seismic shooting on Lake Vanda; cutting the tops out of empty oil drums; cutting symmetrical holes through thick sea ice near Scott Base; ice cliff demolition near Scott Base for emergency domestic winter water supply. The note includes basic instructions on the preparation and use of some explosives and some safety procedures. Information in parts of the note may also be useful for shooting in very hard ice such as that found in parts of Antarctica. (Auth.)

36-2356
Report on a new load loss stationary lead acid battery and solar charging panel use in McMurdo Sound area, Antarctica.
Holdsworth, R., *New Zealand antarctic record*, 1981, 3(3), p.39-42
Electric power, Solar radiation.
Power supply for measurement equipment in the Antarctic has commonly been the two or four stroke petrol motor/generator set ranging from a few watts to several kilowatts output. New low power semiconductor designed equipment can now utilise suitable load matched lead acid batteries of a new low loss design. A five ply box lagged with sheet cork ensures sufficient protection and heat retention within the cells to make charging current effective. A solar panel capable of a maximum 2.25 amperes at > 12 V DC provided a silent, non polluting charging unit in all weather conditions. (Auth.)

36-2357
Proceedings.
Specialty Conference on Construction Equipment and Techniques for the Eighties, West Lafayette, Indiana, March 28-31, 1981, New York, American Society of Civil Engineers, 1982, 393p., For selected papers see 36-2358 through 36-2360.
Schexnayder, C.J., ed.
Meetings, Construction equipment.

36-2358
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Atraghji, D., et al, Specialty Conference on Construction Equipment and Techniques for the Eighties, West Lafayette, Indiana, March 28-31, 1982, Proceedings, edited by C.J. Shexnayder, New York, American Society of Civil Engineers, 1982, p.228-240.
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Cold weather construction, Foundations, Heating, Frost protection, Canada—Quebec—James Bay.

36-2359
Winter construction at Coyote Station Unit 1.
Brown, G.F., Specialty Conference on Construction Equipment and Techniques for the Eighties, West Lafayette, Indiana, Proceedings, edited by C.J. Shexnayder, New York, American Society of Civil Engineers, 1982, p.241-244.
Cold weather construction, Protection, Inflatable structures.

36-2360
Considerations in the prevention of damage to concrete frozen at early ages.
Hoff, G.C., et al, Specialty Conference on Construction Equipment and Techniques for the Eighties, West Lafayette, Indiana, March 28-31, 1982, Proceedings, edited by C.J. Shexnayder, New York, American Society of Civil Engineers, 1982, p.245-258, 21 refs.
Buck, A.D.
Concrete freezing, Frost protection, Concrete strength, Damage.

36-2361
Snow cover and avalanches of the Altai Mountains. [Snezhnyi pokrov i laviny Altaia].
Reviakin, V.S., et al, Tomsk, Universitet, 1977, 215p., In Russian with English table of contents enclosed. 85 refs.
Kravtsova, V.I.
DLC GB2756.52.R48
Alpine landscapes, Snow cover distribution, Snowfall, Snow accumulation, Snow depth, Snow cover structure, Avalanche formation, Avalanche forecasting, Avalanche triggering, Avalanche mechanics, Avalanche deposits.

36-2362
Perennial grasses of the northeastern USSR. [Mnogoletnie travy na Severo-Vostoke SSSR].
Andreev, V.N., ed, Yakutsk, Izdanie IAkutskogo filiala SO AN SSSR, 1977, 162p., In Russian. For selected papers see 36-2363 through 36-2366. Refs. passim.
DLC QK495.G74M55
Subpolar regions, Introduced plants, Grasses, Plant ecology, Ecosystems, Permafrost depth, Cryogenic soils, Active layer, Soil temperature, Snow cover effect.

36-2363
Perennial grasses of Central Yakutia. [Mnogoletnie travy v Tsentral'noi IAkutii].
Petrov, A.M., et al, Mnogoletnie travy na Severo-Vostoke SSSR (Perennial grasses of the northeastern USSR) edited by V.N. Andreev, Yakutsk, Izdanie IAkutskogo filiala SO AN SSSR, 1977, p.5-52, In Russian. 17 refs.
IAkovenko, D.P.
DLC QK495.G74M55
Grasses, Cryogenic soils, Active layer, Permafrost depth, Plant ecology, Ecosystems, Introduced plants.

36-2364
Organogenesis of brome grass introduced to Central Yakutia. [Organogenez kostra bezostogo introdutsiruemogo v Tsentral'noi IAkutii].
Andreeva, T.V., Mnogoletnie travy na Severo-Vostoke SSSR (Perennial grasses of the northeastern USSR) edited by V.N. Andreev, Yakutsk, Izdanie IAkutskogo filiala SO AN SSSR, 1977, p.53-62, In Russian. 13 refs.
DLC QK495.G74M55
Introduced plants, Grasses, Cryogenic soils, Permafrost depth, Plant ecology, Plant physiology.

36-2365
Cultivation conditions and crops of perennial grasses in Kolyma. [Usloviia vozdelyvaniia i urozhai mnogoletnikh trav na Kolyme].
Denisov, G.V., et al, Mnogoletnie travy na Severo-Vostoke SSSR (Perennial grasses of the northeastern USSR) edited by V.N. Andreev, Yakutsk, Izdanie IAkutskogo filiala SO AN SSSR, 1977, p.63-74, In Russian. 8 refs.
Netrebov, V.P.
DLC QK495.G74M55
Subpolar regions, Grasses, Cryogenic soils, Permafrost hydrology, Soil temperature, Snow cover effect.

36-2366
Perennial grasses of the Okhotsk sea shores and Chukchi Peninsula. [Mnogoletnie travy na poberezh'e Okhotskogo moria i na Chukotke].
Denisov, G.V., et al, Mnogoletnie travy na Severo-Vostoke SSSR (Perennial grasses of the northeastern USSR) edited by V.N. Andreev, Yakutsk, Izdanie IAkutskogo filiala SO AN SSSR, 1977, p.75-154, In Russian. 21 refs.
Strel'tsova, V.S.
DLC QK495.G74M55
Subpolar regions, Introduced plants, Grasses, Cryogenic soils, Permafrost depth, Snow cover effect.

36-2367
Storage tanks with expansion bottoms. [Rezervuary s kompensatornym dnishchem].
Barskii, B.L., et al, *Stroitel'stvo truboprovodov*, Feb 1982, No.2, p.16-17, In Russian.
Sivash, S.M., Tkach, S.D.
Petroleum products, Oil storage, Storage tanks, Steel structures, Peat, Foundations, Concrete structures, Reinforced concretes, Design, Swamps, Permafrost.

36-2368
Testing pile foundations for oil pumping plants. [Ispytanie svai fundamentov pod nefteperekachivaiushchie agregaty].
Mongolov, B.V., et al, *Stroitel'stvo truboprovodov*, Feb. 1982, No.2, p.17-19, In Russian.
Shaevich, V.M., Chizhevskii, M.V., Kostoglodov, V.V.
Petroleum transportation, Pumps, Foundations, Piles, Tests, Swamps, Permafrost.

36-2369
Deformations of sand fills. [Deformatsionnye svoistva peschanykh podsypok].
Morozov, V.N., *Stroitel'stvo truboprovodov*, Feb. 1982, No.2, p.20-21, In Russian.
Swamps, Peat, Bearing strength, Foundations, Sands, Deformation.

36-2370
Construction of the Surgut-Polotsk oil line. [Organizatsiia stroitel'stva nefteprovoda Surgut-Polotsk].
Gushchin, V.I., *Stroitel'stvo truboprovodov*, Feb. 1982, No.2, p.27-28, In Russian.
Petroleum transportation, Pipelines, Permafrost beneath structures, Swamps, Earthwork.

36-2371
Reinforced ice crossings. [Primenenie usilennykh ledianykh perepravj.
Vislobitskii, P.V., et al, *Stroitel'stvo truboprovodov*, Feb. 1982, No.2, p.29-30, In Russian.
Klimenko, A.P., Titarenko, A.I., Shirikhin, B.N.
Swamps, Roads, Permafrost beneath roads, Snow roads, Ice roads, Ice crossings.

36-2372
Cutting-wheel snowplows ST-1. [Frezerno rotornyi snegoochistnoi agregat ST-1].
Cheskidov, V.B., et al, *Stroitel'stvo truboprovodov*, Feb. 1982, No.2, p.39, In Russian.
Skorntakov, S.V., Bykova, N.S.
Pipelines, Cold weather construction, Snowfall, Snow removal.

36-2373
Forestry and soil studies in the Far East. [Pochvenno-lesovodstvennye issledovaniia na Dal'nem Vostoke].
Man'ko, B.L., ed, Vladivostok, 1977, 118p., In Russian. For selected papers see 36-2374 and 36-2375. Refs. passim.
Voroshilov, V.P., ed, Sapozhnikov, A.P., ed.
DLC SD390.3.S65P6
Forest soils, Cryogenic soils, Forest fires, Taiga, Revegetation, Soil erosion, Meadow soils, Thermal regime, Frost penetration, Snow cover effect.

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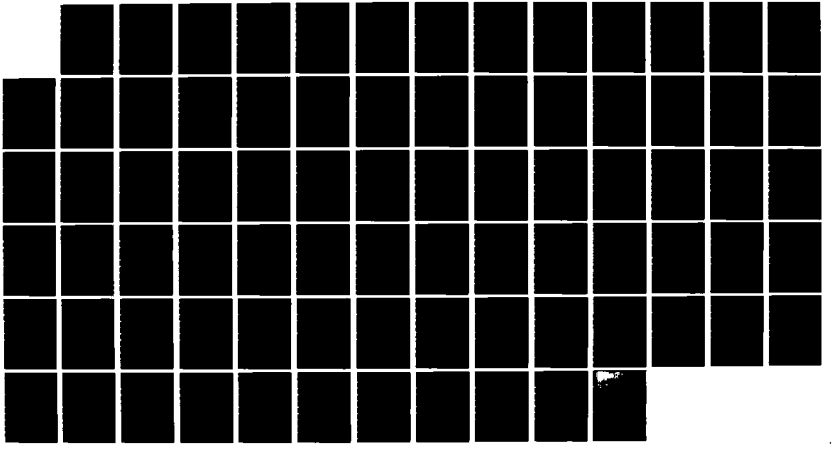

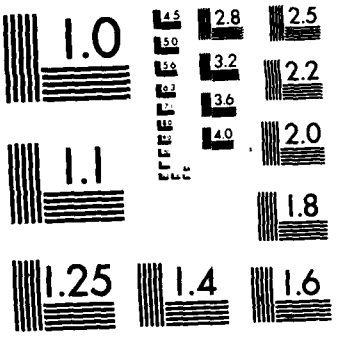

MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

36-2374

Ecologic aspects of forest fire effects on soils. (Ekologicheskie aspekty vliianiia lesnykh pozharov na pochvy).

Sapozhnikov, A.P., et al. Pochvenno-lesovodstvennye issledovaniia na Dal'nem Vostoke (Forestry and soil studies in the Far East) edited by I.I. Man'ko, V.P. Voroshilov and A.P. Sapozhnikov, Vladivostok, 1977, p.33-45, In Russian. 34 refs.

Kiseleva, G.A.

DLC SD390.3.S65P6

Cryogenic soils, Taiga, Forest fires, Revegetation, Soil erosion.

36-2375

Effect of forest on temperature and cryogenic conditions of soils in adjacent open lands. (Vliianie lesa na temperaturnyi i merzlotnyi rezhim pochv prilegaiushchikh otkrytykh prostranstv).

Zakharina, E.S., Pochvenno-lesovodstvennye issledovaniia na Dal'nem Vostoke (Forestry and soil studies in the Far East) edited by I.I. Man'ko, V.P. Voroshilov and A.P. Sapozhnikov, Vladivostok, 1977, p.64-73, In Russian. 17 refs.

DLC SD390.3.S65P6

Forest land, Landscape types, Meadow soils, Cryogenic soils, Soil temperature, Humidity, Frost penetration, Snow cover effect.

36-2376

Japanese Polar Experiment (POLEX) in the Antarctic in 1978-1982.

Kusunoki, K., *Tokyo. National Institute of Polar Research. Memoirs*, Oct. 1981, Special issue 19, Symposium on Polar Meteorology and Glaciology, 3rd. Proceedings, ed. by K. Kusunoki, p.1-7, 7 refs.

Research projects, Ice heat flux, Sea ice, Antarctica—Showa Station.

In conjunction with the polar sub-programme within the objectives and planning framework of the Global Atmospheric Research Programme (GARP), the Japanese Polar Experiment (POLEX) is designed to augment and contribute to the First GARP Global Experiment (FGGE) in 1978-1979. This paper outlines planning and implementation of the Japanese POLEX-South which is carried out in the Antarctic by the Japanese Antarctic Research Expedition from 1978 to 1982. At Showa Station in the Lützow-Holm Bay area of East Antarctica, routine weather observations, data acquisition from meteorological satellites, studies on the heat budget of sea ice, and radiation characteristics of atmosphere and cryosphere are carried out. Mizuho Station in the inland is occupied during the POLEX-South; the main subject of research for 1979 is the radiation budget and the air-ice sheet interactions; observations of surface inversion layer is the main subject for 1980; and regional weather and climate regime in a wide area is the main subject in 1981. Current status of data processing and numerical experiments are described briefly. (Auth.)

36-2377

Measurements of radiation components at Mizuho Station, East Antarctica in 1979.

Yamanouchi, T., et al, *Tokyo. National Institute of Polar Research. Memoirs*, Oct. 1981, Special issue 19, Symposium on Polar Meteorology and Glaciology, 3rd. Proceedings, ed. by K. Kusunoki, p.27-39, 14 refs.

Wada, M., Mae, S., Kawaguchi, S.

Snow optics, Albedo, Antarctica—Mizuho Station.

Radiation budget measurements were made at Mizuho Station under the program of POLEX-South. Global and reflected shortwave downward and upward longwave radiation was measured at the snow surface and at the top of a 30 m tower. Direct solar radiation was also measured at the snow surface. The spectral measurements of shortwave radiation divided into four wavelength regions were made. Diurnal and seasonal variations of radiation components are shown and those of the net radiation are also given. Daily totals of the net radiation remain negative even in the summer for the clear sky, on account of high albedo of the snow surface and large upward longwave radiation compared with the downward. Downward longwave radiation was much more sensitive than the global radiation to the cloud amount and controlled the daily variations of the net balance. (Auth. mod.)

36-2378

Measurement of the surface temperature at Mizuho Station, East Antarctica.

Mae, S., et al, *Tokyo. National Institute of Polar Research. Memoirs*, Oct. 1981, Special issue 19, Symposium on Polar Meteorology and Glaciology, 3rd. Proceedings, ed. by K. Kusunoki, p.40-48, 6 refs.

Yamanouchi, T., Wada, M.

Snow surface temperature, Antarctica—Mizuho Station.

In 1979, surface temperature was measured at Mizuho Station by a platinum resistance thermometer, a pyrgeometer and a radiation thermometer. These instruments were installed on the drift snow, on the sastrugi and on the glazed surface. In winter the surface temperature measured by these different methods is roughly similar, but in spring and summer the surface temperature depends upon the density of snow and the wind speed. (Auth. mod.)

36-2379

On the composition and origin of large and giant particles observed at Showa Station, Antarctica.

Iwai, K., et al, *Tokyo. National Institute of Polar Research. Memoirs. Special issue*, Oct. 1981, No.19, Symposium on Polar Meteorology and Glaciology, 3rd. Proceedings, ed. by K. Kusunoki, p.131-140, 11 refs.

Ono, A., Ito, T.

Aerosols, Blowing snow, Antarctica—Showa Station.

Large and giant aerosol particles were collected by means of a single-stage impactor at Showa Station and their composition was examined with scanning electron and optical microscopes, X-ray diffraction and phase transition methods. Large and giant particles in the winter season were found to consist mainly of components of sea salt origin. The increase of these sea salt particles was accompanied by cyclonic snowstorms (blizzard). On the other hand, their concentrations were smaller in the summer season than in the winter season, and another component besides those of the sea salt origin was found in the summer antarctic atmosphere. From the results of X-ray diffraction of the summer samples, this component is considered to be ammonium sulfate. (Auth.)

36-2380

Chemical composition of large and giant aerosols at Showa Station, Antarctica.

Koide, T., et al, *Tokyo. National Institute of Polar Research. Memoirs*, Oct. 1981, Special issue 19, Symposium on Polar Meteorology and Glaciology, 3rd. Proceedings, ed. by K. Kusunoki, p.152-159, 6 refs.

Ito, T., Yano, N., Kobayashi, T.

Aerosols, Blowing snow, Antarctica—Showa Station.

Atmospheric large and giant aerosol particles collected at Showa Station were analyzed by instrumental neutron activation analysis. A large part of the total mass concentration of aerosol particles could be attributed to sea salt particles, both in winter and summer. The weight ration Cl/Na for giant particles was larger than the bulk sea water ratio, whereas for large particles in summer it was smaller than that of bulk sea water. It may be that giant particles were blowing snow or drifting snow which was chlorine-enriched, and that large particles in summer were attacked by sulfuric acid droplets to release gaseous Cl to the atmosphere. (Auth.)

36-2381

On the frozen small raindrops observed at Showa Station, Antarctica.

Iwai, K., *Tokyo. National Institute of Polar Research. Memoirs*, Oct. 1981, Special issue 19, Symposium on Polar Meteorology and Glaciology, 3rd. Proceedings, ed. by K. Kusunoki, p.160-168, 11 refs.

Drops (liquids), Raindrops, Ice nuclei, Supercooling, Antarctica—Showa Station.

Frozen small raindrops of drizzle size (a few hundred microns in diameter) were observed at a surface temperature of -12C on April 16 and July 2, 1977 at Showa Station. The morphology and size distributions of these frozen raindrops were examined. The frozen particles were classified as having rugged surfaces, spikes, bulge and shattered. The mean diameter of these raindrops was 180 microns in both cases. Frozen small raindrops are considered to be produced by a coalescence of supercooled droplets in layer clouds, they froze after forming. (Auth.)

36-2382

On the precipitation intensity at Syowa Station, Antarctica.

Kikuchi, K., et al, *Tokyo. National Institute of Polar Research. Memoirs*, Oct. 1981, Special issue 19, Symposium on Polar Meteorology and Glaciology, 3rd. Proceedings, ed. by K. Kusunoki, 8 refs.

Sato, N., Kondo, G.

Snowfall, Snow crystal growth, Antarctica—Showa Station.

Precipitation intensities of snow crystals grown from sublimation and condensation processes in the free atmosphere at Showa Station were calculated. The peak value of the maximum precipitation intensity was 1.5 mm/hr in 1968 and 7.2 mm/hr in 1969. Therefore, the maximum precipitation intensity ranged from 0.01 to 1 mm/hr, and the peak values of the intensity from 1 to 10 mm/hr. Next, the peak values of the maximum precipitation intensities at Showa Station, Inuvik in December 1979, and South Pole Station in January 1975 and in November 1978 were compared. Further, using the average maximum precipitation intensity and the duration of precipitation at Showa Station, the annual amount of precipitation by snowfalls and snow storms except drifting and blowing snow was estimated and an approximate value of 430 mm was obtained. (Auth.)

36-2383

Stratospheric 'Cist' and water vapor budget in the stratosphere.

Iwasaka, Y., *Tokyo. National Institute of Polar Research. Memoirs*, Oct. 1981, Special issue 19, Symposium on Polar Meteorology and Glaciology, 3rd. Proceedings, ed. by K. Kusunoki, p.188-194, 15 refs.

Ice crystal growth.

The growth condition of ice crystal particles in the winter season of the polar stratosphere is discussed. Numerical calculation supports the idea that the formation of ice crystal particles in the polar stratosphere can affect the stratospheric water vapor budget on a global scale. (Auth.)

36-2384

Laser radar monitoring of the polar middle atmosphere.

Iwasaka, Y., et al, *Tokyo. National Institute of Polar Research. Memoirs*, Oct. 1981, Special issue 19, Symposium on Polar Meteorology and Glaciology, 3rd. Proceedings, ed. by K. Kusunoki, p.178-187, 10 refs.

Fujiwara, M., Hirasawa, T., Fukunishi, H.

Ice crystals, Antarctica--Showa Station.

The laser radar system used for the monitoring of the polar middle atmosphere is discussed. This system can emit laser pulses at three different wavelengths, 694 nm, 589 nm and 347 nm. The laser radar measurements make an important contribution to clarify the behavior of stratospheric aerosols, the formation of stratospheric "Cist", and the interaction between noctilucent cloud particles and charged particles in the lower ionosphere of the polar region. (Auth.)

36-2385

Records of production rate in the Little Ice Age of cosmic ray product Si-32 in the arctic ice cores.

Kato, K., *Tokyo. National Institute of Polar Research. Memoirs*, Oct. 1981, Special issue 19, Symposium on Polar Meteorology and Glaciology, 3rd. Proceedings, ed. by K. Kusunoki, p.234-242, 29 refs.

Ice cores, Solar radiation, Paleoclimatology, Climatic changes.

36-2386

Oxygen isotope profiles in adjacent cores from Mizuho Station, East Antarctica.

Kato, K., et al, *Tokyo. National Institute of Polar Research. Memoirs*, Oct. 1981, Special issue 19, Symposium on Polar Meteorology and Glaciology, 3rd. Proceedings, ed. by K. Kusunoki, p.243-252, Refs. p.250-252.

Watanabe, O.

Ice cores, Paleoclimatology, Antarctica—Mizuho Station.

Oxygen isotopic composition in the cores from the antarctic and Greenland ice sheets provides important information about paleoclimatic records. Oxygen isotopic composition values of thick and fine-grained layers with little-developed depth hoar were considered to provide the best information about paleotemperature records. The profile of such layers of one core agrees well with the profile of the long depth interval of another core, which is considered to provide information about the trend of variation of mean air temperature in the long term. (Auth. mod.)

36-2387

Dynamical behaviors of snow particles in the saltation layer.

Araoka, K., et al, *Tokyo. National Institute of Polar Research. Memoirs*, Oct. 1981, Special issue 19, Symposium on Polar Meteorology and Glaciology, 3rd. Proceedings, ed. by K. Kusunoki, p.253-263, 11 refs.

Maeno, N.

Blowing snow, Snow mechanics, Wind velocity, Snow surface.

36-2388

Some results on oxygen isotope and stratigraphic analyses of firn in Mizuho Plateau, East Antarctica.

Watanabe, O., et al, *Tokyo. National Institute of Polar Research. Memoirs*, Oct. 1981, Special issue 19, Symposium on Polar Meteorology and Glaciology, 3rd. Proceedings, ed. by K. Kusunoki, p.264-279, 19 refs.

Kato, K., Satow, K.

Ice cores, Firn, Firn stratification, Oxygen isotopes, Antarctica—Mizuho Station.

Oxygen isotope and stratigraphic analyses of 2 m deep pits and 10 m cores from the Mizuho Plateau were performed. A seasonal diagram of oxygen isotopes of drifting snow as related to elevation is obtained for fallen and drifted snow. The regional characteristics of the relations between oxygen isotope profiles and firn layering structures are examined. (Auth. mod.)

36-2389

Formation of surface snow layer at Mizuho Station, Antarctica.

Fujii, Y., *Tokyo. National Institute of Polar Research. Memoirs*, Oct. 1981, Special issue 19, Symposium on Polar Meteorology and Glaciology, 3rd. Proceedings, ed. by K. Kusunoki, p.280-296, 11 refs.

Snow surface, Snow erosion, Snow accumulation, Snow stratigraphy, Sublimation, Antarctica—Mizuho Station.

On the basis of year round observations of surface snow condition in 1977 and snow stake measurements carried out from 1972 to 1978 at Mizuho Station, seasonal and secular changes of surface condition and surface layer formation are studied. The surface level changes gradually by sublimation in summer and condensation in winter and rapidly by deposition and wind erosion of snow. Surface features change much in the intermediate seasons, when low pressure disturbances are active, between summer and winter. Formation of an annual layer occurs once in two or three years on the average. The absence

of annual layer or layers is mainly due to no deposition of snow and to sublimation of a pre-formed annual layer or layers. A model of transmigration of the surface condition is proposed. (Auth. mod.)

36-2390

Semiannual variation of microparticle concentration in snow drift at Mizuho Station, Antarctica in 1977.
Fujii, Y., *Tokyo. National Institute of Polar Research. Memoirs*, Oct. 1981, Special issue 19, Symposium on Polar Meteorology and Glaciology, 3rd. Proceedings, ed. by K. Kusunoki, p.297-306, Refs. p.305-306.

Aerosols, Particles, Snowdrifts, Ice cores, Antarctica—Mizuho Station.

The concentration of microparticles in snow drift collected at Mizuho Station in 1977 shows a semiannual variation with two maxima in January and February of the summer season and in May to July of the winter season, and two minima in March and August to October of the intermediate seasons. The semiannual cycle is probably due to the dilution of microparticles transported from the lower latitudes by fallen snow in the intermediate seasons and the semiannual cycle of stratospheric aerosol concentration and precipitation over Antarctica. (Auth.)

36-2391

Regional distribution of surface mass balance in Mizuho Plateau, Antarctica.
Yamada, T., et al, *Tokyo. National Institute of Polar Research. Memoirs*, Oct. 1981, Special issue 19, Symposium on Polar Meteorology and Glaciology, 3rd. Proceedings, ed. by K. Kusunoki, p.307-320, Refs. p.319-320.
Wakahama, G.

Glacier mass balance, Snow accumulation, Ablation, Antarctica—Mizuho Station.

Mizuho Plateau is classified into an ablation zone and three different accumulation zones from the regional distribution of thickness of the annual layer accumulated snow measured during ten years beginning in 1968 using the snow stake method, and from the locations of the ablation area provided by images of ERTS satellite. Stratigraphic data provided thicknesses and the density profile of the of the surface layers at a given place. Consequently, contours indicating the surface mass balance averaged over the ten years were obtained and delineated on the topographical map of Mizuho Plateau. It was then derived *from the contour map that the total mass* inputs in the Shirase and the Soya drainage basin are respectively 15.5 and 1.2 Gt/yr. It is suggested that the positive and the negative balance take place on the surface of the ice sheet in such a direction that the unilateral changes due to the perturbation deposition of solid precipitation and the vertical flow of the ice sheet cancel out, resulting in the maintenance of the morphological features of the ice sheet. (Auth. mod.)

36-2392

Ice: the ultimate human catastrophe.
Hoyle, F., New York, Continuum Publishing Co., 1981, 191p.
DLC QE697.H69

Ice age theory, Glaciation.

In eleven chapters the thesis is argued that the development of the earth and humankind is directly related to the various ice ages which have affected the earth at more or less regular intervals in the past. The technical ingenuity of the last 5000 years is a heritage from those ice ages. The thesis maintains that a new widespread ice age is certain to occur; that when it comes it will come quickly, possibly measured in decades; that it will endure for at least 50,000 years and will be disastrous for present day civilization. Some of the topics discussed include: astronomical theories of the causes of ice ages; cooling of the primordial earth; earth as a heat engine; how the engine stops; beginning of an ice age; end of an ice age; and man versus the Antarctic.

36-2393

Avalanche accidents in Canada. 1. A selection of case histories of accidents, 1955 to 1976.
Stethem, C.J., et al, *National Research Council, Canada. Division of Building Research. Paper*, Feb. 1979, No.834, 114p., With French summary.
Schaerer, P.A.

Avalanche formation, Accidents, Avalanche tracks, Avalanche deposits, Damage, Weather observations, Canada.

36-2394

Avalanche accidents in Canada. 2. A selection of case histories of accidents 1943 to 1978.
Stethem, C.J., et al, *National Research Council, Canada. Division of Building Research. Paper*, July 1980, No.926, 75p., With French summary.
Schaerer, P.A.

Avalanche formation, Accidents, Avalanche deposits, Avalanche tracks, Snow accumulation, Weather observations, Canada.

36-2395

Resistance of ice to flexure in situ: 1. Ha Ha Bay, Saguenay River; 2. Maritime channel of the St. Lawrence River, Montreal. [Résistance "in situ" de la glace en flexion: 1. Baie des Ha Ha, Riviere Saguenay 2 Chenal maritime du Saint-Laurent, Montreal].
Michel, B., et al, *Quebec (City) Universite Laval. Departement de genie civil. Laboratoire de mecanique des glaces. Rapport*, Mar. 1969, T-5, 29p. + figs., In French. 2 refs.
Drouin, M.

Ice strength, Flexural strength, Ice structure, Ice surface, Meteorological data.

36-2396

Structural and textural characteristics of river ice based on meteorological parameters.
Michel, B., et al, *Quebec (City) Universite Laval. Departement de genie civil. Section de mecanique des glaces. Rapport*, 1970, T-13, 14p.
Ramseier, R.O.

Ice growth, Ice crystal structure, River ice, Lake ice, Meteorological factors, Frazil ice, Ice cover.

36-2397

Study of the resistance of ice to impact on the St. Lawrence River at Rimouski. [Etude de la résistance à l'impact de la glace du St-Laurent à Rimouski].
Michel, B., et al, *Quebec (City) Universite Laval. Département de génie civil. Section de mécanique des glaces. Rapport*, 1970, T-14, 30p., In French. 10 refs.
Carter, D.

Ice mechanics, Ice strength, Impact strength, Ice loads, Ice crystal structure, Ice salinity, Ice deformation, Temperature effects.

36-2398

Technical guide for the formation and identification of ice cover. [Guide technique sur la formation et l'identification des couverts de glace].
Michel, B., et al, *Quebec (City) Université Laval. Faculté des sciences—Génie civil. Section mécanique des glaces. Rapport*, Oct. 1970, T-17, 47p., In French. 9 refs.
Drouin, M.

Ice cover, Ice formation, Ice structure, Manuals.

36-2399

Techniques of ice modeling including distortion.
Michel, B., *Quebec (City) Université Laval. Département de génie civil. Laboratoire de mécanique des glaces. Rapport*, Jan. 1975, GCT-75-01-01, 17p., 5 refs.

Ice models, Ice strength, Flexural strength, Shear strength, Ice breaking, Hydraulics, Analysis (mathematics), Distortion.

36-2400

Annual report No.13, Contract N00014-76-C-0234, NR 307-252.
Washington (State) University. Department of Atmospheric Sciences, Dec. 1, 1981, 26p., 12 refs.

Sea ice, Heat transfer, Heat balance, Mass balance, Ice growth, Ice edge, Thermodynamics, Ice melting, Solar radiation, Ocean waves, Ice optics, Snow optics, Research projects.

36-2401

Phase change around insulated buried pipes: quasi-steady method.
Lunardini, V.J., *Journal of energy resources technology*, Sep. 1981, Vol.103, MP 1496, p.201-207, 13 refs.

Freeze thaw tests, Underground pipelines, Heat transfer, Stefan problem, Phase transformations, Pipeline insulation, Thermal insulation, Analysis (mathematics).

The heat transfer problem for cylinders embedded in a medium with variable thermal properties cannot be solved exactly if phase change occurs. Approximate solutions have been found using the quasi-steady method. The temperature field, phase change location, and pipe surface heat transfer can be estimated using graphs presented for parametric ranges of temperature, thermal properties, burial depth, and insulation thickness. The accuracy of the graphs increases as the Stefan number decreases and they should be of particular value for insulated hot pipes or refrigerated gas lines.

36-2402

Acoustic emissions during creep of frozen soils.
Fish, A.M., et al, *American Society for Testing and Materials. Special technical publication*, 1982, No.750, MP 1495, p.194-206, 18 refs.
Sayles, F.H.

Frozen ground physics, Frozen ground strength, Soil creep, Acoustics, Rheology, Stresses, Compressive properties, Soil freezing, Deformation.

Deformation, time-dependent failure, and acoustic emissions during unconfined compression tests of frozen Fairbanks silt were studied. Acoustic emissions (AE) are detected when the applied stress exceeds a threshold level. This threshold stress is related to the limit of long-term strength of the frozen soil. Under stress exceeding the limit of the long-term strength, the accumulation of acoustic emissions with time can be correlated with creep deformation; that is, plots of the cumulative number of acoustic pulses versus time have shapes similar to those of creep curves with primary, secondary, and tertiary stages. Such correspondence made it possible to describe both phenomena from the viewpoint of the unified kinetic theory of strength. Experimental data are presented, and unified constitutive equations describing deformations, time-dependent failure, and the accumulation of the acoustic emissions during short-term creep of frozen soils are derived. The time to incipient failure, when the AE rate reaches a minimum, is considered to be the most important characteristic of a creep process. It is shown that this time can be predicted theoretically if the parameters of the AE process and the stress state of the frozen soil are known.

36-2403

Weather and deterioration of building materials.
Boyd, D.W., *American Society for Testing and Materials. Special technical publication*, 1980, No.691, p.145-156, With French summary. 7 refs.

Construction materials, Weathering, Freeze thaw cycles, Climatic factors, Corrosion, Humidity.

36-2404

Public utilities on perennially frozen ground. [Inzhenernye kommunikatsii na vechnomerzlykh gruntakh].
Liutov, A.V., Leningrad, Stroizdat, 1981, 144p., In Russian. 28 refs.

Utilities, Water pipelines, Sewage, Thermal insulation, Ducts, Permafrost beneath structures, Frost protection, Foundations, Permafrost control, Pipe laying, Earthwork, Pipeline freezing, Ice removal, Outlet works.

36-2405

Plankton bacteria of the Angara water reservoirs and methods of their statistical analysis. [Bakterio-plankton angarskikh vodokhranilishch i statisticheskie metody ego analiza].
Kozhova, O.M., et al, Leningrad, Gidrometeoizdat, 1979, 119p., In Russian. 169 refs.
Mamontova, L.M.

Swamps, Reservoirs, Plankton, Microbiology, Bacteria, Biomass, Permafrost beneath lakes, Lakes, Subpolar regions, Taiga.

36-2406

Theories and methods of landscape indication of hydrologic and engineering-geological conditions in areas of land reclamation by drainage. [Osnovy teorii i metodiki landshaftnoi indikatsii gidrogeologicheskikh i inzhenerno-geologicheskikh uslovii v rainonakh osushitel'noi melioratsii].
Viktorov, S.V., et al, Minsk, Nauka i tekhnika, 1979, 215p., In Russian. 176 refs.

Land reclamation, Drainage, Swamps, Forest land, Paludification, Aerial surveys, Spaceborne photography, Photointerpretation, Geobotanical interpretation, Mapping, Permafrost distribution, Hydrology, Engineering geology, Environmental protection, Cryogenic soils.

36-2407

Improving the performance of overhead lines in areas of difficult natural and climatic conditions. [O povyshenii effektivnosti sooruzhenia VL v slozhnykh prirodno-klimaticheskikh usloviakh].
Suleev, A.I., *Energeticheskoe stroitel'stvo*, Jan. 1982, No.1, p.26-28, In Russian. 2 refs.

Swamps, Power lines, Electrical grounding, Power line supports, Foundations, Polar regions, Cost analysis.

36-2408

Combined concretes for power engineering. [Kombinirovannyi beton dlia energostroitel'stva].
Chugunova, S.I., et al, *Energeticheskoe stroitel'stvo*, Jan. 1982, No.1, p.35-36, In Russian.

Concrete structures, Electric power, Lightweight concretes, Concrete aggregates, Concrete freezing, Frost resistance, Concrete strength.

36-2409

Increasing the service life of modified concretes. [Povyshenie dolgovechnosti modifitsirovannogo betona].
Voronin, V.V., *Energeticheskoe stroitel'stvo*, Jan. 1982, No.1, p.36-38, In Russian.

Concrete structures, Hydraulic structures, Reinforced concretes, Concrete freezing, Frost resistance, Concrete strength.

36-2410
Transportation of heavy cargo on ice crossings. [Dostavka tiazhelovesnykh gruzov po ledovym perepravam].
Arzamaskov, V.N., et al, *Energeticheskoe stroitel'stvo*, Jan. 1982, No.1, p.50-52. In Russian.
Kulikov, A.N.
Ice crossings, River crossings, Transportation, Cargo, Motor vehicles, Ice cover thickness, Ice strength.

36-2411
Designing the Lena-Kunerma section of the Baykal Amur railroad. [Iz opyta proektirovaniia uchastka BAMa *ot Leny do Kunermy*].
Bogatov, A.I., *Transportnoe stroitel'stvo*, Feb. 1982, No.2, p.3-6. In Russian.
Taiga, Permafrost beneath roads, Permafrost hydrology, Naleds, Avalanches, Earthquakes, Residential buildings, Industrial buildings, Baykal Amur railroad.

36-2412
Increasing the stability of embankments in paluded areas of the Baykal Amur railroad. [Puti povysheniia ustoichivosti nasypei vozvodimykh na marevykh uchastkakh BAMa].
Minallov, G.P., et al, *Transportnoe stroitel'stvo*, Feb. 1982, No.2, p.6-7. In Russian.
Guletskii, V.V.
Permafrost beneath roads, Embankments, Swamps, Earth fills, Baykal Amur railroad, Soil temperature.

36-2413
Large diameter sectional pillars. [Primenenie sbornykh stolbov bol'shogo diametra].
Pyshko, L.V., *Transportnoe stroitel'stvo*, Feb. 1982, No.2, p.8-9. In Russian.
Foundations, Bridges, Piers, Prefabrication, Reinforced concretes, Ice loads, Ice jams.

36-2414
Water wetting of explosives when using pneumatic chargers in freezing weather. [Smachivanie VV vodoi pri pnevmozariazhenii v zimnikh usloviiakh].
Semin, A.P., et al, *Transportnoe stroitel'stvo*, Feb. 1982, No.2, p.48, In Russian.
Basin, V.N., Glazkov, IU.V.
Earthwork, Blasting, Frozen ground, Boreholes, Explosives.

36-2415
Equipment for deicing hydraulic dredges. [Ledorez dlia ochistki zemsnariada]. *Transportnoe stroitel'stvo*, Feb. 1982, No.2, p.49, In Russian.
Earthwork, Dredging, Equipment, Icing, Ice cutting.

36-2416
Bathymetric chart of Atka Ice Port.
Wegner, G., *Deutsche hydrographische Zeitschrift*, 1981, 34(4), p.162-166, With German and French summaries. 2 refs.
Oceanography, Sea ice distribution, Echo sounding, Aerial surveys, Charts, Antarctica—Atka Iceport.
A bathymetric chart of Atka Iceport, Antarctica, is drawn, taken from the echo soundings made by MV *Polarsirkel* during the *Filchner-Schelfeis-Expedition 1980/81 der Bundesrepublik Deutschland*. The accuracy of the depth distribution thus shown is discussed. Some characteristic topographic phenomena, and their influence upon the ice front, are explained by means of aerial photographs. (Auth.)

36-2417
Changing nature of man's quest for food and water as related to snow, ice, and permafrost in the American Arctic.
Walker, H.J., Baton Rouge, Louisiana State University, 1960, 289p., University Microfilms order No.60-2985, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, 1960, Vol 21, p. 589-590.
Permafrost, Snow cover, Ice cover, Survival, Water supply, Human factors.

36-2418
Effect of snow, litter and soil compaction on the soil frost regime in a Minnesota oak stand.
Thorud, D.B., Minncapolis, University of Minnesota, 1964, 127p., Universtiy Microfilms order No.65-7820, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Aug. 1965, p.600.
Trees (plants), Snow cover effect, Soil freezing, Frost penetration, Thaw depth, Soil compaction, Litter, Vegetation.

36-2419
Forest snow accumulation factors in the Colorado Front Range.
Froehlich, H.A., Fort Collins, Colorado State University, 1969, 11p., University Microfilms order No.70-15,174, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Sep. 1970, p.1380.
Snow accumulation, Forest land, Climatic factors, Snowdrifts.

36-2420
Application of micrometeorological methods for estimating snow interception loss from forests.
Heisler, G.M., Syracuse, N.Y., Syracuse University, 1970, 154p., University Microfilms order No.71-7761, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Mar. 1971, p.5098.
Snow evaporation, Forest land, Microclimatology, Thermal regime, Wind factors, Solar radiation, Air temperature, Humidity.

36-2421
Laboratory and field studies on snow algae of the Pacific Northwest.
Hoham, R.W., Seattle, University of Washington, 1971, 240p., University Microfilms order No.71-28,423, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Nov. 1971, p.2557.
Algae, Snow impurities, Ecology, Meltwater.

36-2422
Seasonal snow surface energy balance at the Central Sierra Snow Laboratory.
Thorud, H.G., Tucson, University of Arizona, 1971, 120p., University Microfilms order No.71-15,925, Ph.D. thesis. For abstract see dissertation abstracts international, Sec. B, June 1970, p.7020.
Snow water equivalent, Snow surface, Snow evaporation, Heat balance, Meteorological factors, Runoff forecasting, Floods, Snowmelt, Heat transfer.

36-2423
Snow cover relationships of White Mountain alpine plants.
Tiffney, W.N., Durham, University of New Hampshire, 1972, 86p., University Microfilms order No.72-30,254, Ph.D. thesis. For abstract see Dissertation abstracts international, Sec. B, Nov. 1972, p.1963-1964.
Snow cover effect, Vegetation, Plants (botany), Wind factors, Temperature effects, Statistical analysis.

36-2424
Density-wave theory of first-order freezing in two dimensions.
Ramakrishnan, T.V., *Physical review letters*, Feb. 22, 1982, 48(8), p.541-545, 18 refs.
Freezing, Liquid solid interfaces, Wave propagation, Density (mass/volume), Analysis (mathematics), Theories.

36-2425
Principles for building ice platforms and ice islands. [Jäätasanteiden ja jääsaarien rakentamisen perusteet].
Oksanen, P., *Finland. Technical Research Centre. Research notes*, Nov. 1981, No.53, 58p., In Finnish with English summary. 12 refs.
Artificial islands, Floating ice, Floating structures, Thermal effects, Ice islands, Land ice, Ice melting, Protection, Computer programs, Ice platforms.

36-2426
Force exerted by a moving ice sheet on an offshore structure: 1. The creep mode.
Ponter, A.R.S., et al, Sep. 1981, c20p., Unpublished manuscript. 11 refs.
Offshore structures, Floating ice, Ice loads, Ice creep, Ice mechanics, Analysis (mathematics), Ice solid interface.

36-2427
BASIS—a data bank for Baltic sea ice and sea surface temperatures.
Udin, I., et al, *Helsinki/Stockholm. Winter Navigation Research Board. Research report*, 1981, No.34, 32p., With Swedish and Finnish summaries. 21 refs.
Sea ice distribution, Sea water, Ice conditions, Ice navigation, Water temperature, Glacial meteorology, Surface temperature, Mapping, Computer applications, Baltic Sea.

36-2428
Highly efficient, oscillation free solution of the transport equation over long times and large spaces.
O'Neill, K., *Water resources research*, Dec. 1981, 17(6), MP 1497, p.1665-1675, 28 refs.
Solutions, Fluid flow, Diffusion, Convection, Time factor, Analysis (mathematics).

36-2429
Circulation in small lakes.
Bengtsson, L., *Lulea, Sweden. University. Water Resources Engineering Ser A*, 1981, No.76, Meeting of the European Geophysical Society 8th, Aug. 24-29, 1981, 19p., Refs. p.17-19.
Lake water, Icebound lakes, Water flow, Water temperature, Temperature distribution, Wind factors, Meteorological data.

36-2430
Roof moisture survey: Reserve Center Garage, Grenier Field, Manchester, N.H.
Tobiasson, W., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec. 1981, SR 81-31, 18p., ADA-110 135, 6 refs.
Coutermarsh, B.A., Greatorex, A.
Roofs, Waterproofing, Moisture, Thermal insulation, Wettability, Bitumens, Infrared equipment, Drains, Temperature measurement, Measuring instruments.
An insulated roof with a badly blistered bituminous builtup membrane was surveyed with a hand-held infrared camera to locate areas of wet insulation. Several thermal patterns were observed. Core samples were taken to determine moisture contents. Core samples verified that one thermal anomaly was caused by the increased thickness of bitumen. All other anomalies were caused by wet urethaneperlite composite insulation. Some insulation boards contained much more moisture near the edges than at the center, but others were more uniformly wet. Dramatically different thermal patterns resulted. A few nuclear and capacitance readings, taken for comparison purposes, showed that extra bitumen adversely affects such sensing methods. Because of the amount of wet insulation and the condition of the membrane, both should be removed. The new roofing system for this building should have internal drains and be provided with a sloped surface.

36-2431
Near-infrared reflectance of snow-covered substrates.
O'Brien, H.W., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Nov. 1981, CR 81-21, 17p., ADA-110 868, 16 refs.
Koh, G.
Snow cover effect, Solar radiation, Reflection, Substrates, Ice crystal optics, Radiometry, Meteorological data.
The reflection of solar radiation by a snow cover in situ and the apparent influence of selected substrates were examined in wavelength bands centered at 0.81, 1.04, 1.10, 1.30, 1.50 and 1.80 micrometers. Substrates included winter wheat, timothy, corn, alfalfa, grass, concrete and subsurface layers of "crusty" snow and ice. Reasonable qualitative agreement between measurements and theoretical predictions was demonstrated, with indications of quantitative agreement in the definition of a "semi-infinite depth" of snow cover. It was concluded that ultimate quantitative agreement between theory and measurement will require that an "optically effective grain size" be defined in terms of physically measurable dimensions or meteorologically predictable characteristics of the ice crystals composing the snow pack.

36-2432
Ice distribution and winter surface circulation patterns, Kachemak Bay, Alaska.
Gatto, L.W., *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec. 1981, CR 81-22, 43p., ADA-110 806, 20 refs.
Ice conditions, Sea ice distribution, Ocean currents, Suspended sediments, Remote sensing, LANDSAT, United States—Alaska--Kachemak Bay.
Development of the hydropower potential of Bradley Lake, Alaska, would nearly double winter freshwater discharge from the Bradley River into upper Kachemak Bay, and the Corps of Engineers is concerned about possible subsequent increased ice formation and related ice-induced problems. The objectives of this investigation were to describe winter surface circulation in the bay and document ice distribution patterns for predicting where additional ice might be transported if it forms. Fifty-one Landsat MSS band 5 and 7 and RBV images with 70% cloud cover or less, taken between 1 November and 30 April each year, were analyzed for the eight winters from 1972 to 1980 with standard photointerpretation techniques. Results of this analysis showed that glacial sediment discharged into Kachemak Bay acts as a natural tracer in the water. Inner Kachemak Bay circulation in the winter is predominantly counterclockwise, with northeasterly nearshore currents along the south shore and southwesterly nearshore currents along the north shore. Most of the ice in the inner bay forms at its northeast end and is discharged by the Fox, Sheep and Bradley Rivers. Some ice becomes shorefast on the tidal flats at the head of the bay, while some moves southwestward along the north shore pushed by winds and currents.

36-2433
Techniques and analyses for conductivity measurements in Antarctica.
Ewing, R.E., et al, *Ohio State University, Columbus. Institute of Polar Studies. Report*, 1981, No.74, 35p., 25 refs.
Falk, R.S., Bolzan, J.F., Whillans, I.M.
Firn, Thermal properties, Heat transfer, Mathematical models, Glacier ice, Antarctica—Victoria Land.
An accurate knowledge of the thermal properties of firn and ice within a glacier is essential for any reliable mathematical model of heat transfer. This paper considers the problem of determining the thermal properties of firn at Dome C, Antarctica, for use in such a model. First the difficulties in accurately determining thermal properties are discussed. Then a physical experiment which can be performed under field conditions but which will yield a well-posed mathematical problem for determining the unknown properties is presented. Next, two different numerical techniques for solving the mathematical problem are discussed. Finally some numerical approximations and error estimates are presented for the results of applying our numerical

procedure to data from Dome C. Although insufficient data was obtained to fully test our methods, we have established a measurement procedure and a method of analysis which appear to be promising. (Auth.)

36-2434
Densification and recrystallization of firn at Dome C, East Antarctica.
Alley, R.B., *Ohio. State University, Columbus. Institute of Polar Studies. Report*, 1980, No.77, 62p., 37 refs.
Firn, Ice density, Ice structure, Ice loads, Ice temperature, Antarctica—Victoria Land.
The critical point in the firn depth-density profile at Dome C is less sharply defined than at other locations. The observed profile differs from log-linear densification expected for unconfined sintering of ceramics in a manner which is explicable if load has an important effect on densification. The relative behavior of the Dome C and South Pole age-density profiles also shows that load is an important parameter in firn densification. The core consists of dense, fine-grained wind crusts contained in more-extensive, less-dense, coarse-grained firn. Density ranges between superjacent coarse and fine layers decrease exponentially with depth. Load and mean annual temperature are probably the controlling factors in firn densification between 5 m and 50 m depth. The rate of growth of crystals in fine layers is almost three times that of crystals in coarse layers. Variations in crystal sphericity, internal free surface, and crystal boundary area with depth reveal that coarse-grained firn consists of several genetically-different types of firns. (Auth. mod.)

36-2435
New method for detection of preferential adsorption of metal cations at anionic micellar surfaces in frozen aqueous solutions by electron spin echo spectrometry.
Narayana, P.A., et al, *Journal of physical chemistry*, Jan. 7, 1982, 86(1), p.3-5, 17 refs.
Li, A.S.W., Kevan, L.
Ice crystal structure, Solutions, Solid phases, Ions, Adsorption, Electron paramagnetic resonance, Metals.

36-2436
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Earth dams, Hydraulic fill, Frost penetration, Thermal regime, Ice conditions, Freeze thaw cycles.

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Hydraulic structures, Spillways, Dams, Concretes, Concrete freezing, Frost resistance.

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Ice nuclei, Bacteria, Polar regions, Cloud physics.

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Large-scale variations in observed antarctic sea ice extent and associated atmospheric circulation.
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Sea ice distribution, Atmospheric circulation, Atmospheric pressure.
The 1974 3-day averaged sea ice extent data for the southern ocean determined from the Electrically Scanning Microwave Radiometer aboard Nimbus 6 have been compared with 1000 mb temperature and sea level pressure fields from the Southern Hemisphere meteorological data set of the Australian Bureau of Meteorology. A Fourier decomposition of each of these variables defines the dominant spacial scales during the course of the year. The first three harmonics are sufficient to explain most of the variance of the ice extent and temperature for any 3-day period during the year, with the pressure field generally requiring at least the first four. Three case studies are presented to illustrate ice/atmosphere associations for different times of the year. The results demonstrate an ice/atmosphere coupling of *varying strength throughout the year on time scales ranging* from weeks to months and on space scales ranging from synoptic to planetary. (Auth. mod.)

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Snow mechanics, Snow deformation, Wet snow, Snow melting, Pressure.

36-2531
Review of surface friction, surface resistance, and flow of snow.
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Wood snow friction, Metal snow friction, Plastic snow friction, Trafficability, Avalanches.

36-2532
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Blowing snow, Wind velocity, Sublimation.

36-2533
Overview of seasonal snow metamorphism.
Colbeck, S.C., *Reviews of geophysics and space physics*, Feb. 1982, 20(1), MP 1500, p.45-61, 43 refs., Presented at the U.S.-Canadian Workshop on the Properties of Snow, Snowbird, Utah, April 8-10, 1981.
Snow physics, Metamorphism (snow), Snow cover structure, Snow water content.
The grains in seasonal snow undergo rapid and radical transformations in size, shape, and cohesion. These grain characteristics affect all of the basis properties of snow. Snow is characterized as either wet or dry depending on the presence of liquid water. Wet snow is markedly different at low and high liquid contents. Dry snow is characterized as either an equilibrium form or a kinetic growth form; that is, it is either well rounded or faceted. Of course, many snow grains display either transitional features between two of these categories or features which arise from other processes. Snow is classified depending on the dominant processes of its metamorphism.

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Snow acoustics, Acoustic measurement.

36-2535
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Snow optics, Albedo, Snow cover structure, Solar radiation, Reflectivity.

36-2536
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Wolff, E.W., et al, *Analytical chemistry*, Sep 1981, 53(11), p.1566-1570, 21 refs.
Landy, M.P., Peel, D.A.
Snow composition, Laboratory techniques, Antarctica—Antarctic Peninsula.
Preconcentration of heavy metals from aqueous samples onto a tungsten wire loop prior to analysis by atomic absorption spectrometry has previously been tested at 000000001 g g level. The technique is evaluated at lower concentrations to assess its suitability for analysis of polar snow samples. By use of only 50-mL samples, satisfactory calibration curves were obtained at pH values down to 3, and at concentrations down to 000000000000 g g for copper, lead and zinc, and 000000000000 g g for cadmium. The influences of temperature, pH, and a range of competing ions have been investigated and found not to play an important role in the analysis of a typical polar snow matrix. Loops stored for a year showed full retention of response and adsorbing capacity. At typical polar snow concentrations, precision was approximately 10%, and the data agreed within about 20% with parallel analyses by anodic stripping voltammetry. Snow samples used in testing this equipment and method came from Antarctic Peninsula snow pits. (Auth.)

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36-2538
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Oceanography, Sea ice, Oil spills, Shoreline modification, Ocean currents, Meteorological data, Ice bottom surface, Wind factors.

36-2539
Current measurements in possible dispersal regions of the Beaufort Sea.
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Oceanography, Ocean currents, Freezing points, Water temperature, Salinity, Sea ice, Ice cover effect, Seasonal freeze thaw, Sea level, Tides, Wind factors, Beaufort Sea.

36-2540
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Cox, J.C., et al, Environmental assessment of the Alaskan continental shelf Vol. 3 Physical sciences studies Principal investigators' final reports, Rockville, Md., U.S. National Oceanic and Atmospheric Administration, Oct. 1981, p.427-597, 28 refs.
Schultz, L.A., Johnson, R.P., Shelsby, R.A.
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Pipe laying, Cold weather construction, Permafrost preservation, Route surveys, Hot oil lines, River crossings, Climatic factors, Design.

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Offshore structures, Permafrost preservation, Offshore drilling, Artificial islands, Pressure ridges, Ice pressure, Environmental impact, Fuel transport, Tundra.

36-2544
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Offshore structures, Offshore drilling, Artificial islands, Natural resources, Beaufort Sea.

36-2545
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Radar echoes, Snow cover distribution, Sea ice distribution, Vegetation, Scattering, Models.

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Aerosols, Ice formation, Nucleating agents, Cloud droplets, Particle size distribution, Storms.

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Tunneling (excavation), Permafrost, Mudflows, Rock mechanics, Mountains, USSR—Siberia.

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Pipeline insulation, Heat loss, Water pipelines, Mathematical models.

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Snow cover distribution, Snow hydrology, Snowmelt, Snow water content, Remote sensing, Mountains, Water supply, Runoff forecasting, United States—California.

36-2560
Applications Systems Verification and Transfer Project. Volume 4: Operational applications of satellite snow-cover observations— Colorado Field Test Center.
Shafer, B.A., et al, *U.S. National Aeronautics and Space Administration. Technical paper*, Dec. 1981, No.1825, 101p., 7 refs.
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Snow cover distribution, Snowmelt, Snow hydrology, Runoff forecasting, Remote sensing, Water supply, Models, United States—Colorado.

36-2561
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36-2562
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Schneider, S.R., *U.S. National Aeronautics and Space Administration. Technical paper*, Dec. 1981, No.1827, 63p., 19 refs.
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Goff, R.D.
Offshore drilling, Artificial islands, Offshore structures, Ice loads, Ice pressure, Ice mechanics, Exploration, Design, Construction, Sea ice, Beaufort Sea.

36-2567
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36-2569
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Glacial meteorology, Radiation balance, Snow melting, Thermal effects, China—Qinghai-Xizang Plateau.

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Glaciation, Glacial geology, Glacier surveys, Snow cover distribution, Solar radiation, Glacier oscillation, Geomorphology, China—Qomolangma Mountain.

36-2571
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Runoff, Snowmelt, Glacial hydrology, Glacier melting, Hydrology, China—Tien Shan.

36-2572
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Akerman, J., *Lund. Universitet. Geografiska institutionen. Avhandlingar*, 1980, No.89, 297p., Refs. p.289-297. Doctoral dissertation.
Periglacial processes, Geomorphology, Permafrost, Naleds, Vegetation, Wind factors, Human factors, Norway—Spitsbergen.

36-2573
Historical shoreline changes along the outer coast of Cape Cod.
Gatto, L.W., MP 1502. Environmental geologic guide to Cape Cod National Seashore. Edited by S.P. Leatherman. Amherst, University of Massachusetts, 1979, p.69-90, 9 refs.
Shoreline modification, Shore erosion, Photointerpretation, Water level, Aerial surveys, History.
The objectives of this investigation were to analyze past patterns of shoreline change, estimate the amounts of change in the positions of the high water line and sea cliff break and base, and estimate rates of accretion and erosion. Distances from selected reference points to the high water line, cliff break, and cliff base were measured using photointerpretation techniques on black and white 9 x 9 in. aerial photographs acquired in 1938, 1952, 1971 and 1974. The amounts and rates of change are calculated for the intervals between the dates of photo acquisition and for the total period from 1938 to 1974.

36-2574
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Electric power, Glacial rivers, Lakes, Environmental impact, Geomorphology, Mountains, United States—Alaska—Bradley Lake.

36-2575
Prediction of ice growth and circulation in Kachemak Bay, Bradley Lake Hydroelectric Project.
Daly, S.F., MP 1501, Bradley Lake Hydroelectric Project, Alaska; environmental impact statement – Appendixes, Anchorage, U.S. Army Corps of Engineers, March 1982, p.(C)1-(C)9.
Ice growth, Ocean currents, Sea ice distribution, Environmental impact, Electric power, Suspended sediments, United States—Alaska—Kachemak Bay.

36-2576
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Heat loss, Infrared reconnaissance, Airborne equipment, Underground pipelines, Roofs.

36-2577
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Gatto, L.W., MP 1503, Remote Sensing Symposium, Reston, Va., Oct. 29-31, 1979. Proceedings, U.S. Army Corps of Engineers, [1980], p.167-170.
Shoreline modification, Shore erosion, Photointerpretation, Aerial surveys, Photogrammetry.
The protection and preservation of shorelines and coastal areas along oceans, lakes, reservoirs and rivers have become increasingly important with more intensive use and development of these areas by the growing population. Shoreline erosion and subsequent shoreline recession are of primary concern since they cause property loss, changes in shoreline habitats and degraded water quality. USACRREL has been investigating many of the complex erosion processes, site specific rates of erosion and problems caused by shoreline erosion. As an integral part of these comprehensive investigations, historical and recent aerial photographs have been used to document historical shoreline characteristics and conditions, to determine past patterns of regional shoreline changes, to monitor the areal extent of shoreline erosion, and to estimate the historical rates of change in shoreline positions.

36-2578
Vegetation of the subantarctic islands Marion and *Prince Edward*.
Gremmen, N.J.M., The Hague, Netherlands, W. Junk, 1982, 149p., In English with Dutch summary. Includes subject, syntaxonomic, and systemic indexes. Refs. p.129-135.
DLC QK429.P74G74
Climatic factors, Vegetation patterns, Volcanic ash, Mosses, Lichens, Marion Island, Prince Edward Islands.
The islands are located about 110 miles SSE of southern Africa; their physical geography and climate are described. Three soil categories are present on the islands: peat; combined organic material over clay; and combined clay and rock. Soil nutrients are supplied through sea salt spray and by excreta and other deposits by sea going animals. Soil nutrients are supplied through sea salt spray and by excreta and other deposits by sea going animals. These soils produce 22 species of vascular plants, 72 mosses, 36 hepatics, and 50 lichens. Seal populations have recovered from the 19th and early 20th century sealing decimations. The dominant vegetation species are identified and their distributions are discussed in relation to the trampling and defecations by breeding bird and seal populations, to the various water courses on the islands, and to the mineral content of the soils.

36-2579
Immediate report of Victoria University of Wellington *Antarctic Expedition 1980-1981*.
Pyne, A., comp., Wellington, New Zealand, 1981, 73p. For selected papers see 36-2580 and 36-2581 or E-26079, E-26081, G-26082 and I-26080.
Marine geology, Sediments, Sea ice, Explosives, Ice blasting.
The account given in this preliminary report emphasizes highlights of the expedition; outlines expedition training procedures, planning, financing, administration, and logistics, identifies personnel by discipline and specific study area. Brief account with maps and photographs is given of major scientific achievements. Appendixes give additional details and raw data from various specific projects and field notes provide on the spot chronology of progress and problems encountered as the projects unfolded.

36-2580
Seismic refraction survey on sea ice near Butter Point, New Harbour, McMurdo Sound.
Iles, D., et al. Immediate report of Victoria University of Wellington Antarctic Expedition 1980-1981, compiled by A. Pyne, Wellington, New Zealand, 1981, p.10-13, 7 refs.
Dibble, R.R.
Seismic surveys, Seismic refraction, Sea ice, Antarctica—McMurdo Sound.
The purpose of the project was to provide data on sediment thickness for possible further drilling and to investigate the cause of a gravity anomaly reported earlier. Details are given in terms of survey location and dates accomplished; instruments, equipment, and materials and how they were used; position of survey lines; and a preliminary analysis and results of the survey.

36-2581
Explosives for Scott Base.
Pyne, A., Immediate report of Victoria University of Wellington Antarctic Expedition 1980-1981, compiled by A. Pyne, Wellington, New Zealand, 1981, p.28-30.
Explosives, Ice blasting, Antarctica—Scott Station.
Types of explosives and detonation practices are given for seismic studies and for making access holes in the sea ice for sea water and floor sampling. An ice quarry near Scott Base was blasted as a source of fresh water when the "reverse osmosis" water plant became inoperative. Details of the blasting are given.

36-2582
Review of the effect of ice storms on the power industry.
Bendel, W.B., et al. *Journal of applied meteorology*, Dec. 1981, 20(12), p.1445-1449, 10 refs.
Paton, D.
Ice storms, Electric power, Damage, Cost analysis.

36-2583
Possibility of detecting meteorites buried within the ice by radio echo sounding.
Nishio, F., et al. *Tokyo. National Institute of Polar Research. Memoirs*, Dec. 1981, Special issue 20, Symposium on Antarctic Meteorites, 6th. Proceedings, ed. by T. Nagata, p.9-16, 6 refs.
Wada, M., Mae, S.
Ice sheets, Radio echo soundings.
As the size distributions of diameter of meteorite pieces are given for the Yamato stony meteorites and the iron meteorites, the relation between the detectable diameter of meteorite pieces and the burial depth in the ice was obtained. It is concluded that the Yamato stony meteorites are detectable unless the burial depth exceeds 10m. For the iron meteorites, if the diameter is about 20 cm, the maximum frequency of diameter in size distribution, they are detectable within a depth of about 50m. (Auth. mod.)

36-2584
Radio echo sounding in the area of the Yamato Mountains.
Wada, M., et al. *Tokyo. National Institute of Polar Research. Memoirs*, Dec. 1981, Special issue 20, Symposium on Antarctic Meteorites, 6th. Proceedings, ed. by T. Nagata, p.17-24, 12 refs.
Yamanouchi, T., Mae, S., Kusunoki, K.
Glacier flow, Radio echo soundings, Ice sheets, Antarctica—Queen Fabiola Mountains.
In order to survey the bedrock topography in the bare ice area, airborne radio echo sounding was carried out in January 1980. Results of the survey are reported; ice flow near Motoi Nunatak, where the flow velocity and the ablation rate of ice were measured, is described. The bare ice area where a lot of meteorites were found is a flat surface area upstream of sub-surface mountains. (Auth. mod.)

36-2585
Methods of hydrogeological and engineering-geological investigations. [Metody gidrogeologicheskikh i inzhenerno-geologicheskikh issledovanii].
Frolov, N.M., ed. *Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut gidrogeologii i inzhenernoi geologii. Trudy*, 1979, Vol.132, 102p., In Russian. For selected papers see 36-2586 through 36-2590. Refs. passim.
River diversion, Permafrost transformation, Permafrost distribution, Mapping, Tundra, Forest tundra, Polar regions, Permafrost thermal properties, Hydrothermal processes, Surveys.

36-2586
Peculiarities of forecasting hydrothermal regime in northeastern Europe. [Osobennosti prognoza gidrogeotermicheskogo rezhima evropeiskogo Severo-Vostoka].
Frolov, N.M., *Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut gidrogeologii i inzhenernoi geologii. Trudy*, 1979, Vol.132, p.5-22, In Russian. 12 refs.
Permafrost distribution, Pollution, Permafrost hydrology, Frozen rock temperature, Mapping, Polar regions, Hydrothermal processes, Economic development, Soil water migration, Heat transfer.

36-2587
Regional forecasts of changes in hydrogeological and engineering-geological conditions due to river diversion. [Metodika regional'nykh prognozov izmenenia gidrogeologicheskikh i inzhenerno-geologicheskikh uslovii pod vliianiem perebroski stoka rek].
Antypko, B.E., et al. *Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut gidrogeologii i inzhenernoi geologii. Trudy*, 1979, Vol.132, p.23-26, In Russian.
Gol'dberg, V.M., Kiuntsel', V.V.
River diversion, Permafrost beneath rivers, Permafrost hydrology, Permafrost thermal properties, Polar regions, Frozen rock temperature, Hydrothermal processes.

36-2588
Landscape indication studies in the combined hydrogeological and engineering-geological surveys of the western BAM area. [Landshaftno-indikatsionnye issledovania pri kompleksnoi gidrogeologicheskoi i inzhenerno-geologicheskoi s"emke v zapadnoi chasti trassy BAMa].
Sokolovskii, L.G., et al. *Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut gidrogeologii i inzhenernoi geologii. Trudy*, 1979, Vol.132, p.54-59, In Russian. 4 refs.
Konukhova, T.A., Gostev, A.N.
Landscape types, Engineering geology, Surveys, Permafrost distribution, Permafrost hydrology, Mapping, *Baykal Amur railroad*.

36-2589
Landscape indication method used in mapping permafrost and hydrogeothermal conditions. [Merzlotno-gidrogeotermicheskoe kartirovanie s ispol'zovaniem landshaftno-indikatsionnogo metoda].
Frolov, N.M., et al. *Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut gidrogeologii i inzhenernoi geologii. Trudy*, 1979, Vol.132, p.60-74, In Russian. 6 refs.
Seleznev, A.N., Shkatunkin, V.N.
Mapping, Route surveys, Landscape types, Permafrost distribution, Tundra, Discontinuous permafrost.

36-2590
Interrelationship between the moisture regime and heat conductivity of rocks in the aeration zone of the Polar Tundra Zonal MGP Station (Vorkuta). [Vzaimosviaz' rezhima vlazhnosti i temperaturoprovodnosti porod v zone aeratsii na territorii Pripolarno-tundrovoi zonal'noi stantsii MGP (g. Vorkuta)].
Petrova, R.G., et al. *Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut gidrogeologii i inzhenernoi geologii. Trudy*, 1979, Vol.132, p.83-86, In Russian. 5 refs.
Kakunov, N.B.
Tundra, Permafrost thermal properties, Forest tundra, Cryogenic soils, Thermal conductivity, Hydrothermal processes, Aeration.

36-2591
Modern methods of studying the state and properties of rocks. [Sovremennye metody izuchenia svoistv i sostoianita gornykh porod].
Dem'ianova, I.A., ed. *Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut gidrogeologii i inzhenernoi geologii. Trudy*, 1979, Vol.133, 103p., In Russian. For selected papers see 36-2592 and 36-2593. Refs. passim.
Engineering geology, Surveys, Permafrost distribution, Permafrost depth, Permafrost structure, Active layer, Lithology, Frozen fines, Clays, Hygroscopic water, Penetration tests, Nuclear magnetic resonance.

36-2592
Determining lithologic composition of active layers in engineering-geological surveys. [Opredelenie litologicheskogo sostava sezonno-talogo sloia pri inzhenerno-geokriologicheskoi s"emke].
Chekrygina, S.N., *Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut gidrogeologii i inzhenernoi geologii. Trudy*, 1979, Vol.133, p.45-49, In Russian.
Engineering geology, Surveys, Permafrost distribution, Permafrost depth, Permafrost structure, Active layer, Lithology.

36-2593
NMR and penetration methods of studying the state and properties of bound water in clays. [Issledovanie sostoianiia i svoistv sviazannoi vody v glinakh metodami IAMR i penetratsii].
Fedodeev, V.I., et al, *Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut gidrogeologii i inzhenernoi geologii. Trudy*, 1979, Vol.133, p.91-97, In Russian. 4 refs.
Kul'chitskii, L.I., Savchenko, Z.A.
Frozen fines, Clays, Hygroscopic water, Penetration tests.

36-2594
Geocryological investigations. [Geokriologicheskie issledovaniia].
Shchur, IU.L., ed, *Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut gidrogeologii i inzhenernoi geologii. Trudy*, 1980, Vol.138, 93p., In Russian. For individual papers see 36-2595 through 36-2609. Refs. passim.
Geocryology, Frost penetration, Frozen ground thermodynamics, Soil water migration, Heat transfer, Ice formation, Frost heave, Frozen fines, Clay soils, Taiga, Forest tundra, Tundra.

36-2595
Thermodynamic conditions of pore water at the frost penetration boundary. [Termodinamicheskie usloviia v porovoi vlage na granitse promerzaniia].
Grechishchev, S.E., *Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut gidrogeologii i inzhenernoi geologii. Trudy*, 1980, Vol.138, p.4-9, In Russian. 7 refs.
Soil freezing, Frost penetration, Soil water, Porosity, Phase transformations, Ice formation, Water films, Minerals, Frozen ground thermodynamics.

36-2596
Theoretical and experimental studies of frost heave in clay soils at a steady frost penetration rate. [Teoreticheskie i eksperimental'nye issledovaniia kriogennogo pucheniia glinistykh gruntov pri postoiannoi skorosti promerzaniia].
Borozinets, V.E., et al, *Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut gidrogeologii i inzhenernoi geologii. Trudy*, 1980, Vol.138, p.9-14, In Russian. 4 refs.
Grechishchev, S.E.
Soil freezing, Frost penetration, Freezing rate, Phase transformations, Ice formation, Frost heave, Clay soils, Heat transfer.

36-2597
Influence of spring-summer precipitation on the seasonal thawing depth and temperature of soils. [Vliianie vesenne-letnikh osadkov na glubinu sezonnogo ottaivaniia i temperaturu pochvy].
Shvetsov, P.F., et al, *Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut gidrogeologii i inzhenernoi geologii. Trudy*, 1980, Vol.138, p.15-22, In Russian. 12 refs.
Shchur, IU.L.
Active layer, Soil temperature, Seasonal freeze thaw, Thaw depth, Rain, Heat transfer.

36-2598
Soil temperature distribution on the left shore of the Pur River (the interfluve of the Evo-Yakh and Yagenett rivers). [Osobennosti raspredeleniia temperatury gruntov na levoberezh'e p. Pur (mezhdurech'e pp.Evo-IAkha i IAgenetta)].
Goral'chuk, M.I., et al, *Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut gidrogeologii i inzhenernoi geologii. Trudy*, 1980, Vol.138, p.22-34, In Russian. 4 refs.
Kritsuk, L.N.
Cryogenic soils, Taiga, Active layer, Soil temperature, Thermal regime, Peat, Paludification, Frost penetration, Soil air interface, Heat transfer, Snow cover effect.

36-2599
Ice content of perennially frozen rocks in the northern part of the Urengoy structure. [L'distost' mnogoletnemerzlykh mineral'nykh porod severnoi chasti Urengoiskoi struktury].
Anan'eva, G.V., *Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut gidrogeologii i inzhenernoi geologii. Trudy*, 1980, Vol.138, p.34-39, In Russian. 2 refs.
Forest tundra, Permafrost distribution, Permafrost structure, Ground ice, Ice volume, Alluvium, Frozen fines.

36-2600
Relation of recent exogenic processes to landscape differentiation of the Urengoy structure. [Sovremennye ekzogennye protsessy i sviaz' ikh s landshaftnoi differentsiatsiei Urengoiskoi struktury].
Ukraintseva, N.G., *Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut gidrogeologii i inzhenernoi geologii. Trudy*, 1980, Vol.138, p.39-45, In Russian. 3 refs.
Forest tundra, Landscape types, Lakes, Swamps, Cryogenic soils, Thermokarst, Frost heave, Frost shattering.

36-2601
Frost heave during permafrost formation in northwestern Siberia. [Kriogennoe puchenie pri mnogoletnem promerzanii porod na severe Zapadnoi Sibiri].
Nevecheria, V.L., *Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut gidrogeologii i inzhenernoi geologii. Trudy*, 1980, Vol.138, p.45-49, In Russian.
Permafrost origin, Permafrost structure, Frost penetration, Frost heave, Permafrost heat balance, Permafrost heat transfer, Frozen rock temperature, Snow cover effect.

36-2602
Selection of observation sites for rock stream movements. [Vybor ploshchadok dlia nabliudenii za dvizheniem kurumov].
Gravis, G.F., *Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut gidrogeologii i inzhenernoi geologii. Trudy*, 1980, Vol.138, p.49-53, In Russian. 5 refs.
Alpine landscapes, Rock streams, Frost action, Flow rate, Meltwater, Ice formation, Freeze thaw cycles.

36-2603
Revegetation of disturbed surfaces in northwestern Siberia and its effect on permafrost conditions. [Vosstanovlenie rastitel'nogo pokrova na uchastkakh tekhnogennykh narushenii severa Zapadnoi Sibiri i vliianie ego na geokriologicheskie usloviia].
Moskalenko, N.G., *Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut gidrogeologii i inzhenernoi geologii. Trudy*, 1980, Vol.138, p.53-62, In Russian. 8 refs.
Active layer, Human factors, Soil erosion, Revegetation, Permafrost depth, Cryogenic soils, Taiga, Environmental protection.

36-2604
Palynological characteristics and vertical growth rate of Holocene peats in the Pur River basin. [Palinologicheskaia kharakteristika i vertikal'naia skorost' rosta golotsenovykh torfianikov basseina r. Pur].
Sheshina, O.N., *Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut gidrogeologii i inzhenernoi geologii. Trudy*, 1980, Vol.138, p.62-68, In Russian. 6 refs.
River basins, Paludification, Peat, Paleoecology, Palynology, Forest tundra.

36-2605
Long range air temperature variations and their relation to rock temperatures in northeastern Europe. [Vekovye izmeneniia temperatury vozdukha i ikh vzaimosviaz' s temperaturoi porod evropeiskogo Severo-Vostoka].
Bobov, N.G., et al, *Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut gidrogeologii i inzhenernoi geologii. Trudy*, 1980, Vol.138, p.68-73, In Russian. 12 refs.
Maksimov, V.V., Solov'eva, O.V.
Permafrost distribution, Active layer, Permafrost depth, Soil air interface, Heat transfer, Air temperature, Frozen rock temperature, Temperature variations.

36-2606
Variations in the strength of porous limestones during wetting and freezing. [Izmenenie prochnosti poristykh izvestniakov pri uvlazhnenii i promerzanii].
Zil'berbord, A.F., et al, *Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut gidrogeologii i inzhenernoi geologii. Trudy*, 1980, Vol.138, p.74-77, In Russian.
Beliaev, A.G.
Fines, Porosity, Grain size, Wettability, Frost penetration, Frozen rock strength.

36-2607
Experimental study of mass transfer coefficients of medium hardness rocks. [Eksperimental'noe izuchenie koeffitsientov massootdachi poluskal'nykh gornykh porod].
Vasil'ev, A.A., *Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut gidrogeologii i inzhenernoi geologii. Trudy*, 1980, Vol.138, p.78-82, In Russian. 3 refs.
Fines, Porosity, Moisture transfer, Heat transfer, Subsurface structures, Underground facilities.

36-2608
Seasonal thawing beneath sunlit surfaces. [Sezonnoe protaivanie pod osveshchennymi solntsem poverkhnostiami].
Slavin-Borovskii, V.B., *Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut gidrogeologii i inzhenernoi geologii. Trudy*, 1980, Vol.138, p.83-89, In Russian. 6 refs.
Active layer, Solar radiation, Thaw depth, Soil air interface, Heat transfer.

36-2609
Formation of nonhomogeneous fracture polygons in grounds of permafrost areas. [Usloviia obrazovaniia neodnorodnykh poligonov rastreskivaniia v gruntakh kriolitozony].
Li, V.Ch.-U., *Moscow. Vsesoiuznyi nauchno-issledovatel'skii institut gidrogeologii i inzhenernoi geologii. Trudy*, 1980, Vol.138, p.89-92, In Russian. 3 refs.
Geocryology, Frost shattering, Permafrost depth, Active layer, Patterned ground, Mathematical models.

36-2610
Ray Mountains, central Alaska: environmental analysis and resources statement.
Farquhar, N., ed. Middlebury, Vermont, Middlebury College Press, 1980, 390p., Refs. passim. For selected papers see 36-2611 through 36-2615.
Schubert, J., ed.
Environments, Natural resources, Geomorphology, Permafrost, Geology, Vegetation, Ecosystems, Alpine tundra, Cryogenic soils, Mountains, United States—Alaska—Ray Mountains.

36-2611
Geomorphology.
Tarlov, R., et al, Ray Mountains, central Alaska: environmental analysis and resources statement. Edited by N. Farquhar and J. Schubert, Middlebury, Vermont, Middlebury College Press, 1980, p.61-77, 11 refs.
Geomorphology, Ground ice, Frost action, Glaciation, Pleistocene, Periglacial processes, United States—Alaska—Ray Mountains.

36-2612
Soils.
Smith, T.W., Ray Mountains, central Alaska: environmental analysis and resources statement. Edited by N. Farquhar and J. Schubert, Middlebury, Vermont, Middlebury College Press, 1980, p.79-100, 5 refs.
Permafrost distribution, Soils, Cryogenic soils, Geocryology, Vegetation, Mountain soils, United States—Alaska—Ray Mountains.

36-2613
Floristics.
Kassler, T., Ray Mountains, central Alaska: environmental analysis and resources statement. Edited by N. Farquhar and J. Schubert, Middlebury, Vermont, Middlebury College Press, 1980, p.101-146, 24 refs.
Vegetation, Classifications, Alpine landscapes, Mountains, United States—Alaska—Ray Mountains.

36-2614
Vegetation.
Brock, S., et al. Ray Mountains, central Alaska: environmental analysis and resources statement. Edited by N. Farquhar and J. Schubert. Middlebury, Vermont, Middlebury College Press, 1980. p.147-202, 15 refs.
Burke, I.
Vegetation patterns, Remote sensing, Classifications, Alpine tundra, Trees (plants), Tundra, LANDSAT, Mountains, United States—Alaska—Ray Mountains.

36-2615
Ecosystems.
Schubert, J., Ray Mountains, central Alaska: environmental analysis and resources statement. Edited by N. Farquhar and J. Schubert. Middlebury, Vermont, Middlebury College Press, 1980. p.317-354. Refs. p.351-354.
Ecosystems, Tundra, Mountains, Forest land, Alpine tundra, Vegetation, United States—Alaska—Ray Mountains.

36-2616
Active layer growth, Illisarvik experimental drained lake site, Richards Island, Northwest Territories.
Mackay, J.R., *Canada. Geological Survey. Paper*, 1982, No.82-1A, Its Current research, Part A, p.123-126, 3 refs.
Frost heave, Active layer, Permafrost thickness, Lakes, Bottom sediment, Taliks, Drainage, Soil freezing.

36-2617
Research program 1980-1981.
National Research Council, Canada. Division of Building Research, Ottawa, June 1980, 54p. In English and French.
Cold weather construction, Buildings, Thermal properties, Research projects, Frost action, Frozen ground physics, Design, Fires, Heat loss.

36-2618
Reports of the 1980 glaciological program. [Relazioni della campagna glaciologica 1980], *Geografia fisica e dinamica quaternaria*, 1981, 4(2), p.138-191, In Italian.
Glaciology, Glacier oscillation, Glacier flow, Research projects.

36-2619
Phase change around a circular cylinder.
Lunardini, V.J., *Journal of heat transfer*, Aug. 1981, 103(3), MP 1507, p.598-600, 14 refs.
Phase transformations, Pipes (tubes), Heat transfer, Freeze thaw cycles, Frozen ground physics, Boundary layer, Heat balance, Analysis (mathematics).

36-2620
Geotechnical aspects of trans-Alaska pipeline system.
Luscher, U., International Conference on Soil Mechanics and Foundation Engineering, 9th, Tokyo, 1977. Proceedings. Case history volume, [Tokyo, 1977], p.83-106, 24 refs.
Cold weather construction, Pipe laying, Permafrost beneath structures, Permafrost preservation, Route surveys, Engineering, Freeze thaw cycles, Soil creep, Pipelines, Design, United States—Alaska.

36-2621
Evaluation of geothermal energy for heating highway structures.
Swanson, H.N., *Colorado Department of Highways. Division of Transportation Planning. Report*, May 1980, CDOH-DTP-R-80-6, 62p., 12 refs.
Geothermy, Ice prevention, Bridges, Road icing, Heat pipes, Water chemistry, Heating.

36-2622
Hydraulic conductivity of a glacial till in Alberta.
Hendry, M.J., *Ground water*, Mar-Apr. 1982, 20(2), p.162-169, 22 refs.
Glacial deposits, Hydrogeology, Drainage, Weathering, Ground water, Hydraulics.

36-2623
Ice point and triple point.
Nash, L.K., *Journal of chemical education*, Dec. 1981, 58(12), p.979, 5 Refs.
Freezing points, Ice physics, Water, Water vapor, Phase transformations, Temperature effects, Atmospheric pressure, Analysis (mathematics).

36-2624
Research and development for civil engineering in cold regions.
Hardy (R.M.) and Associates, Ltd., R.M. Hardy and Associates Ltd. Contract No.OSR77-00157, DBR CRP-2, Calgary, Alberta, Dec. 1978, 101p.
Cold weather construction, Engineering, Frozen ground strength, Construction materials, Drilling, Frost heave, Soil creep, Hydrology, Snow roads, Equipment, Earthwork.

36-2625
Development of high sensitive water monitor protected with ice layer.
Sasaki, T., et al, *American Nuclear Society. Transactions*, 1980, Vol.35, p.53-55, Extended summary.
Monitors, Ice cover thickness, Protection, Pipes (tubes), Radioactive wastes, Water pollution, Detection, Nuclear power, Scintillation.

36-2626
Physical aspects of remote sensing of the ocean-atmosphere system. [Fizicheskie aspekty distantsionnogo zondirovaniia sistemy okean-atmosfera],
Malkevich, M.S., ed. Moscow, Nauka, 1981, 216p., In Russian. For selected papers see 36-2627 through 36-2630. Refs. passim.
Spacecraft, Remote sensing, Infrared equipment, Oceans, Surface temperature, Ice conditions, Snow cover, Radiation measuring instruments, Supercooled clouds, Supercooled fog, Aircraft icing, Lasers, Pulse modulation.

36-2627
State of the problem of thermal monitoring of the ocean-atmosphere system from space. [Sostoianie problemy termicheskogo zondirovaniia sistemy okean-atmosfera iz kosmosa],
Malkevich, M.S., Fizicheskie aspekty distantsionnogo zondirovaniia sistemy okean-atmosfera (Physical aspects of remote sensing of the ocean-atmosphere system) edited by M.S. Malkevich, Moscow, Nauka, 1981, p.6-28, In Russian. 33 refs.
Spacecraft, Infrared equipment, Oceans, Surface temperature, Air water interactions, Ice conditions, Water temperature, Snow cover.

36-2628
Determining characteristics of radiance transformations in the visible and IR part of the spectrum. [Opredelenie kharakteristik transformatsii iarkosti v vidimoi i blizhnei IK-oblasti spektra],
Badaev, V.V., et al, Fizicheskie aspekty distantsionnogo zondirovaniia sistemy okean-atmosfera (Physical aspects of remote sensing of the ocean-atmosphere system) edited by M.S. Malkevich, Moscow, Nauka, 1981, p.84-99, In Russian. 27 refs.
Gorodetskii, A.K., Kozlov, E.M., Petrenko, B.Z.
Spacecraft, Radiation measuring instruments, Infrared equipment, Sea ice, Snow cover, Albedo, Brightness, Scattering, Reflection, Aerosols, Transparence.

36-2629
***Combined method of determining phase composition* of water in clouds.** [Kompleksnyi metod opredeleniia fazovogo sostoianiia vody v oblakakh],
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Cloud physics, Supercooled clouds, Ice crystals, Aircraft icing, Spacecraft.

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Snowflakes, Precipitation (meteorology), Radar echoes, Scattering, Ice air interface, Dielectric properties, Ice water interface, Particles, Wave propagation, Analysis (mathematics).

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Close interest in the work of CIB working commission W 40 on heat and moisture transfer has prompted the authors, who are scientists working with the US Army Cold Regions Research and Engineering Laboratory, to send us these two summaries of remedial work on houses in Alaska. The first indicates the scope for simple injection of urea formaldehyde foam to improve thermal insulation of old wood-frame buildings; the second shows how infra-red photography can cut the cost of repairs to leaking roofs.

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River flow, River ice, Ice cover thickness, Water temperature, Channels (waterways), Beaufort Sea, Canada—Northwest Territories—Mackenzie River.

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Models, Sea ice, Air water interactions, Heat transfer, Snow cover distribution, Ice conditions, Climatic changes.

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Ice conditions, Air water interactions, Heat transfer, Ice formation, Sea ice distribution, Drift, Climatic changes, Arctic Ocean.

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36-2666
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36-2667
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Alpine landscapes, Taiga, Soil formation, Soil water migration, Cryogenic soils.

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Petroleum industry, Environmental protection, Cryogenic soils, Soil erosion, Swamps, Human factors, Oil spills, Pollution.

36-2669
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Thermal conductivity, Phase transformations, Heat transfer, Freeze thaw cycles, Frozen ground physics, Stefan problem, Heat flux, Analysis (mathematics), Computer applications, Convection.
The problem of heat conduction with phase change--often called the Stefan problem--includes some of the most intractable mathematical areas of heat transfer. Exact solutions are extremely limited and approximate methods are widely used. This report discusses the collocation method for the heat balance integral approximation. The method is applied to some standard problems of phase change. Neumann's problem--and a new solution is presented for the case of surface convection for a semi-infinite body. Numerical results are given for soil systems and also for materials of interest in latent heat thermal storage.

36-2670
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Polar regions, Forest land, Paludification, Taiga, Forest tundra, Bibliographies, Vegetation.

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DLC S605.2.S65N47
Land reclamation, Swamps, Taiga, Paludification, Permafrost hydrology, Cryogenic soils, Permafrost depth, Peat, Bibliographies, Surface drainage, Subsurface drainage.

36-2672
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Forest fires, Taiga, Revegetation, Cryogenic soils, Spaceborne photography, Mapping, Bibliographies.

36-2673
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Il'in, B.N.
Railroads, Buildings, Bridges, Ice loads, Foundations, Permafrost beneath structures, Ground ice, Earthwork, Permafrost hydrology, Naleds, Baykal Amur railroad.

36-2674
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Peshekhonov, N.S., Putilin, E.I.
Railroads, Hydraulic structures, Buildings, Foundations, Embankments, Permafrost beneath structures, Construction equipment, Measuring instruments, Cold weather performance.

36-2675
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Earthquakes, Permafrost distribution, Tunnels, Baykal Amur railroad.

36-2676
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Roadbeds, Hydrothermal processes, Soil water migration, Permafrost beneath roads, Elastic properties, Thermal regime.

36-2677
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Dziubenko, L.F.
Mining, Tailings, Permafrost bases, Permafrost thermal properties, Thermal regime.

36-2678
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Petroleum industry, Gas pipelines, Pumps, Concrete structures, Piles.

36-2679
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Swamps, Pipelines, Anchors, Peat, Earthwork, Frozen ground.

36-2680
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Hydraulic structures, Concrete structures, Winter concreting, Frost action, Fracturing, Thermal stresses.

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36-2682
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36-2683
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Taiga, Cryogenic soils, Permafrost hydrology, Soil erosion, Landscape types, Wind erosion, Water erosion, Frost action, Slope processes, Solifluction, Thermokarst, Protective vegetation.

36-2684
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Soil erosion, Cryogenic soils, Landscape types, Permafrost depth, Slope processes, Thermokarst, Solifluction, Gullies.

36-2685
Wind erosion of soils and the application of agricultural-forest melioration methods in western Siberia. (Osobennosti vetrovoi erozii pochv i primenenia agrolesomeliorativnykh meropriatii v Zapadnoi Sibiri).
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Soil erosion, Cryogenic soils, Wind erosion, Landscape types, Protective vegetation.

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Taiga, Soil erosion, Slope processes, Cryogenic soils, Frost action, Snow depth, Snow water equivalent, Permafrost hydrology, Solifluction.

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Soil preservation in the Lake Baykal area. [Okhrana pochv Pribaikal'ia].
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Environmental protection, Soil erosion, Cryogenic soils, Human factors, Permafrost distribution, Permafrost hydrology, Slope processes, Baykal Amur railroad.

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Slope processes, Soil erosion, Cryogenic soils, Gullies, Snow cover distribution, Snow water equivalent, Runoff.

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Cryogenic soils, Soil erosion, Permafrost distribution, Permafrost hydrology, Snow cover effect, Topographic effects.

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Remote sensing, Spaceborne photography, Photointerpretation, Snow cover distribution, Snow line, Snow depth, Snow water equivalent, Water balance, Maps, Hydrologic cycle.

36-2692
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Hydrologic cycle, Snow cover distribution, Snow line, Glacial hydrology, Snow melting, Spaceborne photography.

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Aerial surveys, Spaceborne photography, LANDSAT, Photointerpretation, Swamps, Forest land, Taiga, Tundra, Permafrost distribution, Landscape types, Hydrologic cycle.

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Forest land, Landscape types, Hydrologic cycle, Hydrothermal processes, Paludification, Spaceborne photography, Snow cover distribution, Snow water equivalent, Maps.

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Remote sensing, Radar echoes, Soil water, Water balance, Snow depth, Snow cover distribution, Snow water equivalent, Hydrologic cycle.

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Using satellite photography in studying snow cover dynamics and evaluating average water discharge of the Amudar'ya River during the vegetation period. [Ispol'zovanie sputnikovykh snimkov dlia izucheniia dinamiki snezhnogo pokrova i otsenki srednego raskhoda vody Amudar'i za vegetatsionnyi period].
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Spaceborne photography, Snow cover distribution, Snow hydrology, Snow water equivalent, Runoff, Photointerpretation.

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Alpine landscapes, Nivation, Firn, Snow cover distribution, Snow line, Snow melting, Spaceborne photography, Photointerpretation.

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Compiling maps of snow melting in the central part of the European USSR, from satellite photographs. [Opyt sostavleniia kart skhoda snezhnogo pokrova tsentral'noi chasti ETS po dannym sputnikovoi informatsii].
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Pankratova, E.I., Babkina, I.P.
Spaceborne photography, Maps, Snow melting, Landscape types, Tundra, Taiga, Swamps, Land ice, Ice conditions.

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Comparing snow brightness curves measured from aircraft and theoretically calculated for separate atmospheric heights. [Sravnenie indikatris iarkosti snezhnogo pokrova izmerennykh s samoleta i rasschitannykh teoreticheski dlia otdel'nykh vysot atmosfery].
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Remote sensing, Aerial surveys, Snow physics, Albedo, Brightness, Hydrologic cycle.

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Snow melting, Glacial hydrology, Glacier surveys, Geomorphology, Glacial meteorology, China—Kunlun Mountains.

36-2705
Frozen ground research and the Four Modernizations Movement in China.
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Frozen ground, Agriculture, Frozen ground mechanics, Frozen ground strength.

36-2706
At the end of three oceans—Antarctica. [Nos confins dos três mares—A Antartida].
Pinto Coelho, A., Rio de Janeiro, Letras em Marcha Editora Ltda., 1982, 246p., In Portuguese. Numerous refs. passim.
Ice sheets, Icebergs.
This introduction to Antarctica is divided into the following chapters, each of which has its own bibliography for further reference: conquest of the continent, era of exploration, the continent itself, the surrounding ocean, flora and fauna, and Brazil's activity in the area. A number of helpful appendices on present-day activities, politics and treaty arrangements; safety; logistics, and other topics of current concern are attached.

36-2707
Floral phenology in the South Georgia vascular flora.
Walton, D.W.H., *British Antarctic Survey Bulletin*, Jan 1982, No.55, p.11-25, 41 refs.
Plants (botany), Vegetation patterns, South Georgia.
Flowering is described for 16 native taxa and three introduced species on South Georgia. Information is given on these species from other sub-Antarctic islands and the Falkland Islands. At least three species (*Poa flabellata*, *Festuca contracta* and *Deschampsia antarctica*) pre-form their inflorescences the previous season. Indirect evidence suggests that overwintering of inflorescences may occur in other species. Reproductive specializations include cleistogamy, self-fertilization and a preponderance of anemophilous flowers. (Auth.)

36-2708
Signy Island terrestrial reference sites: XIV. Population studies on the Collembola.
Block, W., *British Antarctic Survey Bulletin*, Jan 1982, No.55, p.33-49, 47 refs.
Plants (botany), Vegetation patterns, Tundra, Signy Island.
Field data for Collembola extracted from a series of 25 monthly samples of a moss turf and a moss carpet at Signy Island have been analysed to provide information on species composition, population density and biomass, size-class structure and field distribution. Three species were found: *Friesea grisea* (Schaffer), *Parisotoma octosoniata* (Willem) and *Cryptopygus*

antarcticus Willem, with the latter species being numerically dominant throughout the study at both sites. Population densities for all Collembola averaged 49,928 (moss turf) and 9,913 (moss carpet) individuals/sq m, of which *C. antarcticus* comprised almost 100%. Mean biomass equivalents were 688 and 154 mg live weight/sq m. Size-class analyses for *C. antarcticus* showed an almost stable distribution in the moss turf, whereas summer growth was evident in the moss-carpet population. A similar degree of aggregation was observed for *C. antarcticus* at the two sites. These findings are discussed in relation to the micro-climate and structure of the two habitats, and compared with data available for other Antarctic sites, the Arctic and temperate studies. (Auth.)

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Permafrost distribution, Freezing indexes, Thawing, Permafrost indicators.

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Hastenrath, S., Arnao, B.M.
DLC Q1.S35
Ice cores, Climate, Paleoclimatology, Precipitation (meteorology), Glacier mass balance, Peru—Quelccaya Ice Cap.

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Satellite observations of variations in Northern Hemisphere seasonal snow cover.
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Heim, R., Jr.
Snow cover, Seasonal variations, Spaceborne photography, Computer applications, Climatology.

36-2712
Field studies of eight first-year sea-ice pressure ridges in the southern Beaufort Sea.
Gladwell, R.W., *Arctic Petroleum Operators Association, Calgary, Alta. Report*. July 1976, APOA 75-1, 99p., IPRT-8ME-76, Refs. passim.
Pressure ridges, Ice physics, Floating ice, Grounded ice, Ice strength, Underwater ice, Design criteria, Profiles, Pack ice, Exploration, Beaufort Sea.

36-2713
Types of peat and peat-forming vegetation on South Georgia.
Smith, R.I.L., *British Antarctic Survey. Bulletin*. June 1981, No.53, p.119-139, 42 refs.
Vegetation patterns, Organic soils, Peat, South Georgia.
The principal peat-forming plant communities of South Georgia are described and the types of organic deposit, generally exceeding 0.5 m in depth, which they accumulate, are categorized into a broad basic classification. None of the South Georgian soils possesses a permafrost and five major peat types are recognized: 1. Mire peats developed on gentle seepage slopes on valley sides and hillsides. These are formed mainly by communities of rushes, a deciduous woody herb, and the moss *Tortula robusta*. 2. Bog peats with impeded drainage are formed by two distinct community types. One is dominated by *Rostkovia* and the other by *Deschampsia antarctica*. 3. Moss peat is developed mainly by deep banks of *Polytrichum alpestre*, with associated lichens and tussock grass to form an acid peat. Tussock peat is formed by the tall pedestalled grass *Poa flabellata* on hillsides and coastal flats. A ranker type of peat occasionally develops beneath *Acaena magellanica-Tortula robusta* herbfield stands on well-drained hillsides or gullies. It is considered here as a soligenous eutrophic peat with high calcium levels but with a low water-table. The development of peat in relation to deglaciation and plant-community development and distribution is discussed. Radiocarbon dating of organic deposits at various depths in several different community types indicates that peat formation has proceeded at a comparatively constant rate since the last major glaciation about 10,000 years ago. This suggests that no great changes in the climate have occurred during this period, since the vegetation does not appear to have been removed or its development arrested by resurgences of ice over the land, although there is geomorphological evidence of frequent advances and retreats of valley glaciers. (Auth. mod.)

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Polar regions, Water supply, Water treatment, Permafrost hydrology, Subpermafrost ground water, Suprapermafrost ground water, Surface waters, Bibliographies.

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Reviakin, V.S., Leningrad, Gidrometeoizdat, 1981, 288p., In Russian with English table of contents enclosed. 366 refs.
Glaciers, Alpine landscapes, Naleds, Land ice, Lake ice, Alpine glaciation, Nivation, Slope processes, Avalanches, Mapping, Bibliographies, Systems analysis, Ice caves, Computer applications, Ground ice, Snow cover distribution.

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Biologic cycle of mineral elements and soil formation in spruce forests of the Far North. [Biologicheskii krugovorot mineral'nykh elementov i pochvoobrazovanie v el'nikakh Krainego Severa].
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Frozen ground physics, Frozen ground temperature, Sound waves, Acoustic measurement, Velocity, Temperature effects, Analysis (mathematics), Loads (forces).

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Snow compaction, Snow hardness, Snow strength, Snow density, Temperature effects, Laboratories, Cutting.

36-2745
Fate of petroleum hydrocarbons in nearshore Arctic aquatic ecosystems.
Horowitz, A., Louisville, Ky., University, 1979, 206p., University Microfilms order No 8001328, Ph.D. thesis. For abstract see Dissertation abstracts international, Ser. B, Feb 1980, p.3561.
Hydrocarbons, Degradation, Oil spills, Ocean environments, Bacteria, Crude oil, Shores, Temperature effects, Microbiology.

36-2746
Aspects of the seed ecology of woody plants of the Alaskan taiga and tundra.
Densmore, R.V.E., Durham, N.C., Duke University, 1979, 300p., University Microfilms order No.8002644, Ph.D. thesis. For abstract see Dissertation abstracts international, Ser. B, Feb 1980, p.3558-3559.
Taiga, Tundra, Ecology, Trees (plants), Growth, Forest ecosystems, Vegetation, United States—Alaska.

36-2747
Guidelines for the design of aircraft windshield/canopy systems.
Lawrence, J.H., Jr., et al, Long Beach, Calif., Douglas Aircraft Co., Feb 1980, 1030p. ADB-060 094L
Beck, R.L., Coker, M.J., Hoffman, J.B., Koegebuehn, L.B.
Airplanes, Aircraft icing, Hoarfrost, Rain, Fog, Visibility, Design, Mannuals.

36-2748
Some field studies of the correlation between electromagnetic and direct current measurements of ground resistivity.
Arcone, S.A., *American Society for Testing and Materials. Special technical publication*, 1982, No.741, MP 1513, p.92-110, 11 refs.
Soil physics, Electrical resistivity, Electromagnetic prospecting, Permafrost physics, Magnetic surveys, Electric fields, Ground ice.
Electromagnetic (em) and direct-current (d-c) methods of measuring ground resistivity have been compared at permafrost and nonpermafrost sites. The em methods utilized the principles of magnetic induction and plane wave surface impedance. Layered ground models were derived from the d-c sounding data, and the theoretical values of the em methods for these models were compared with the em field results. Both em methods correlated well with the d-c data in the two cases of simple, multilayered ground of large extent. In several cases of resistive inhomogeneities, the magnetic induction data correlated well with the d-c data. In one case of a resistive inhomogeneity, the surface impedance responded well only qualitatively and may have given some false indications of resistive substructure. It appears that in all cases where the volume of exploration was comparable, there was reasonable correlation. It is estimated that the standard data analysis procedure which assumes layering of infinite extent will apply well for the surface impedance method when disturbances in the local layering are greater than a skin depth away from the point of measurement; and for the magnetic induction method when disturbances in the layering are at a distance from the interloop axis that is greater than the interloop separation.

36-2749
Vegetation selection and management for overland flow systems.
Palazzo, A.J., et al, MP 1511, Land treatment of municipal wastewater. Edited by F.M. D'Itri, Sevenoaks, England, Butterworths, 1982, p.135-154, 19 refs.
Jenkins, T.F., Martel, C.J.
Waste treatment, Water treatment, Land reclamation, Vegetation, Growth, Nutrient cycle, Agriculture.

36-2750
Ice pressure ridges: a bibliography.
Sater, J.E., ed, Arlington, Va., Arctic Institute of North America, May 1981, c200p
Pressure ridges, Ice pressure, Bibliographies, Ice conditions, Ice physics, Sea ice, Lake ice, River ice.

36-2751
Automotive cold-start carbon monoxide emissions and preheater evaluation.
Coutts, H.J., *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec 1981, SR 81-32, 37p., ADA-112 170, 7 refs
Engine starters, Vehicles, Cold weather operation, Air pollution, Temperature effects, Carbon monoxide.
Fairbanks and Anchorage, Alaska, experience high wintertime ambient levels of carbon monoxide (CO). Emissions from starting automobile engines in cold weather are thought to be a major source of CO. A quantitative procedure for determining startup CO was developed. The startup emissions were measured as a function of soak time at several low ambient temperatures. The performance of engine preheaters in reducing the startup CO at the various soak times and temperatures was estimated. The data scatter was too great to draw any firm conclusions; however, the length of cold-soak time appeared to have a stronger effect on cold-start CO emissions than did soak temperatures (0 to -30C). Compared to no preheat, continuous preheat during an overnight cold soak can reduce the cold-start CO emissions by 20 to 90%.

36-2752
Effect of soil temperature and pH on nitrification kinetics in soils receiving a low level of ammonium enrichment.
Parker, L.V., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec 1981, SR 81-33, 27p., ADA-112 171, Refs p.17-20
Iskandar, I.K., Leggett, D.C.
Soil chemistry, Soil temperature, Nutrient cycle, Waste treatment, Soil microbiology.
Two soil samples from an on-going field study of land application municipal wastewater were spiked with low levels of ammonium to determine the effect of temperature on nitrification kinetics. The concentrations of ammonium and nitrite-plus-nitrate, and the number of autotrophic ammonium and nitrite oxidizers were monitored periodically during the study. There was a lag period prior to nitrite-plus-nitrate production at all temperatures, and the length of this lag period was temperature-dependent, with the longest period occuring at the lowest temperature. The maximum rate of nitrification increased with temperature as expected. While nitrite-plus-nitrate production appeared logarithmic, suggesting a growing nitrifier population, the MPB counts of the nitrifiers did not exhibit logarithmic growth. To study the effect of soil pH on nitrification kinetics, soil samples from field plots having the same soil type but different pHs (4.5, 5.5, and 7.0) were spiked with low levels of ammonium and the rate of nitrite-plus-nitrate production was measured. The maximum rate of nitrification was greater at pH 5.5 than at 4.5. Unexpectedly rapid disappearance of ammonium, nitrite and nitrate, caused by immobilization, obscured the expected effects of pH on the nitrification rate at the highest pH.

36-2753
Transient analysis of heat transmission systems.
Phetteplace, G., *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec 1981, CR 81-24, 53p., ADA-112 365, Refs p.46-47
Heat loss, Underground pipelines, Heating, Pumps, Temperature effects, Analysis (mathematics, Cost analysis, Soil temperature, Computer programs.
This report develops a method of analysis for heat transmission systems operating under district heating load conditions. The use of thermal energy storage systems is outlined and advantages are given. The method accounts for the effects of heat source and load characteristics. The transmission model itself considers the following technical aspects: 1) frictional pressure losses in piping systems, 2) pump characteristics, 3) pump driver characteristics, and 4) heat losses from the buried piping. The capital costs considered are the piping system and necessary pumps. Operation and maintenance costs include cost of heat loss and cost of pumping energy input. Allowances are also made for system maintenance and repair over the assumed lifetime. The heat transmission problem is formulated in the forms of a two-dimensional optimization problem. The decision variables are pipe diameter and supply temperature. The problem is solved by direct search techniques using a Hooke-Jeeves pattern search algorithm. Parametric results are presented along with suggestions for further work.

36-2754
Sedimentological characteristics and classification of depositional processes and deposits in the glacial environment.
Lawson, D.E., *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec 1981, CR 81-27, 16p ADA-113 261, 33 refs
Glacial deposits, Glaciology, Sedimentation, Glacier oscillation, Periglacial processes, Glacier flow, Environments, Classifications.
Existing classifications for deposits in the glacial environment are inadequate and inconsistent. Deposits should be classified both descriptively and genetically; adequate descriptive classifications already exist. A major problem for previous genetic classifications has been that glacial deposition and the resulting deposits' properties were poorly understood. On the basis of three criteria: sediment source, uniqueness to the glacial environment, and preservation of glacier-derived properties, deposits in the glacial environment result from either of two groups of processes: primary or secondary. Primary processes release the debris of the glacier directly and form deposits that may bear properties related to the glacier and its mechanics. Their deposits are classified genetically as till and are the only deposits indicative of glaciation. In contrast, secondary processes mobilize, rework, transport and resediment debris and deposits in the glacial environment. They develop new, nonglacial properties in their deposits, while destroying or substantially modifying glacier-derived properties. Interpretation of their properties may provide information on the depositional process and/or the local depositional environment. Secondary deposits are resedimented and therefore not till. They are classified genetically according to the depositional process just as they are in other sedimentary environments. This genetic classification differs from previous classifications in that not all diamictons deposited in the glacial environment are classified as till; it is based strictly on process-related criteria. The origin of properties of glacial deposits in relation to glacier mechanics and environment must be recognized if the mechanisms and depositional processes of former glaciers are to be precisely understood.

36-2755

Design and use of the CRREL instrumented vehicle for cold regions mobility measurements.

Blaisdell, G.L., *SAE technical paper series*, 1982, No.820217, MP 1515, International Congress and Exposition, Detroit, Michigan, Feb.22-26, 1982, 11p., 2 refs.

Traction, Cold weather operation, Tires, Surface properties, Rubber snow friction, Interfaces, Vehicles, Tests, Computer applications.

The U.S. Army Cold Regions Research and Engineering Laboratory has recently acquired an instrumented vehicle for the measurement of forces at the tire/surface material interface. The CRREL instrumented vehicle (CIV) is equipped with moment-compensated triaxial load cells mounted in the front wheel assemblies. *Forces are measured in the vertical, longitudinal* (in the direction of motion) and side directions. In addition, accurate wheel and vehicle speeds and rear axle torque and speed are measured. Modifications to the vehicle to facilitate the performance of traction and motion resistance tests include four lock-out type hubs to allow front-, rear- or four-wheel drive and a dual brake system for front-, rear- or four-*wheel braking*. A *minicomputer*-based data acquisition system is installed in the vehicle to control data collection and for data processing, analysis, and display. Discussion of the vehicle includes its operation and use for the evaluation of the tire performance and surface material properties of motion resistance and traction.

36-2756

Measurement of snow surfaces and tire performance evaluation.

Blaisdell, G.L., et al, *SAE technical paper series*, 1982, No.820346, MP 1516, International Congress and Exposition, Detroit, Michigan, Feb. 22-26, 1981, 7p., 8 refs.

Harrison, W.L.

Rubber snow friction, Snow surface, Traction, Vehicles, Analysis (mathematics).

Research on vehicle mobility in snow has recently become significantly updated by the use of instrumented vehicles. Utilizing triaxial load cells in the front wheel assemblies, the vehicles are capable of measuring the traction and motion resistance forces located at the tire/snow interface. Based on these measured quantities, snow surface characterization parameters are developed. Also, using an energetics approach, a tire performance parameter is developed which offers a measure of the slip-shear energy expended by a tire moving a unit distance. This paper presents the methods, equipment and philosophy followed by the authors in evaluating tire performance in a shallow snow cover. Definitions of terms are contained in the Appendix.

36-2757

Biological nitrogen fixation in the alpine tundra of the Front Range of the Colorado Rocky Mountains.

Wojciechowski, M.F., Greeley, University of Northern Colorado, 1981, 108p., University Microfilms order No.8119812, Ph.D. thesis. For abstract see Dissertation abstracts international, Ser.B, Sep. 1981, p.923.

Alpine tundra, Ecosystems, Nutrient cycle, Bacteria, Vegetation, Soil water, Soil temperature, Lichens.

36-2758

Relationship of traffic safety and the use of sodium chloride as a deicing agent.

Anderson, H.O., *California. Department of Transportation. Highway research report*, May 1981, FHWA-CA-03-81-01, 27p., 4 refs.

***Road icing*, Safety, Salting, Trafficability, Chemical ice prevention, Snow removal, Ice removal, Mountains, Accidents.**

36-2759

Classification of changes in natural conditions for engineering-geocryological evaluation of sites for pipeline construction. [Tipizatsiia izmenenii prirodnykh uslovii dlia inzhenerno-geokriologicheskoi otsenki territorii pri stroitel'stve truboprovodov].

Garagulia, L.S., et al, *Inzhenernaia geologiia*, Mar.-Apr. 1982, No.2, p.106-113, In Russian. 4 refs.

Gorodeeva, G.I.

Albedo, Permafrost transformation, Vegetation factors, Permafrost forecasting, Pipelines, Permafrost beneath structures, Ground thawing, Soil erosion, Snow cover effect.

36-2760

Thermophysical studies of an experimental earth-fill embankment and underlying grounds in the Lena River flood plains. [Teplofizicheskie issledovaniia eksperimental'noi namyvnoi nasypi i podstilaiushchikh gruntov v poime r. Leny].

Pavlov, A.V., et al, *Inzhenernaia geologiia*, Mar.-Apr. 1982, No.2, p.114-120, In Russian. 4 refs.

Prokop'ev, V.N.

Earth dams, Hydrothermal processes, Thermal regime, Permafrost beneath structures, Permafrost beneath rivers, Flood plains.

36-2761

Forecasting ice action on the slopes of submerged embankments. [Prognozirovanie ledovykh vozdeistvii na otkosy podtoplennykh nasypei].

Sokolov-Batkov, O.V., et al, *Transportnoe stroitel'stvo*, Apr. 1982, No.4, p.3-4, In Russian.

Volodin, A.M., Tselikov, F.I., Iakovleva, E.A.

Embankments, Slope protection, Permafrost beneath structures, Flooding, Ice loads, Ice erosion, Baykal Amur railroad.

36-2762

Dynamics of embankment settlement on permafrost areas of the Baykal Amur railroad. [Dinamika osadok nasypei na zamerzlochennykh uchastkakh BAMa].

Orlov, E.P., et al, *Transportnoe stroitel'stvo*, Apr. 1982, No.4, p.4-6, In Russian.

Gordienko, A.A.

Railroads, Embankments, Active layer, Settlement (structural), Permafrost beneath structures.

36-2763

Analyzing the performance of excavators on construction sites of the Baykal Amur railroad. [Analiz vyrabotki ekskavatorov na stroitel'stve BAMa].

Tatts, V.V., *Transportnoe stroitel'stvo*, Apr. 1982, No.4, p.22-24, In Russian.

Permafrost beneath structures, Earthwork, Excavation, Construction equipment, Baykal Amur railroad.

36-2764

Shields for tunneling in weak grounds. [Prokhodcheskie shchity dlia slaboustoichivykh gruntov].

Auerbakh, V.M., et al, *Transportnoe stroitel'stvo*, Apr. 1982, No.4, p.57-59, In Russian.

Tunneling (excavation), Construction equipment, Linings, Cements, Waterproofing.

36-2765

***First order phase transformations* in nonlinearly elastic media.** [O fazovykh perekhodakh pervogo roda v nelineino-uprugikh sredakh].

Kondaurov, V.I., et al, *Akademiia nauk SSSR. Doklady*, 1982, 262(6), p.1348-1351, In Russian. 7 refs.

Nikitin, L.V.

***Phase transformations*, Theories, Mathematical models.**

36-2766

Stresses acting on pipelines under complicated conditions. [Napriazhennoe sostoianie truboprovodov v slozhnykh usloviiakh].

Pervushin, G.G., et al, *Neftepromyslovoe stroitel'stvo*, 1982, No.2, p.18-21, In Russian.

Sokolov, S.M., Bel'mas, O.M.

Pipelines, Stress strain diagrams, Permafrost beneath structures, Freeze thaw cycles, Swamps, Peat.

36-2767

Origin and age of the Edoma formation in the lower course of the Malyy Anyuy River. [Edomnaia svita nizovii r. Malyi Aniui (vozrast i proiskhozhdenie)].

Zamoruev, V.V., et al, *Akademiia nauk SSSR. Izvestiia. Seriia geologicheskaia*, Feb. 1982, No.2, p.27-35, In Russian. 17 refs.

Zhezhel', O.N.

Frozen fines, Loess, Clay soils, Ground ice, Permafrost structure, Ice wedges, Ice dating, Ice composition, Impurities.

36-2768

Geomorphology of the northern Lake Baykal area and the Stanovoy highlands. [Geomorfologiia Severnogo Pribaikal'ia i Stanovogo nagor'ia].

Bazarov, D.-D.B., et al, Moscow, Nauka, 1981, 198p., In Russian with English table of contents enclosed. 86 refs.

Alpine landscapes, River basins, Plains, Land ice, Ground ice, Permafrost distribution, Cryogenic soils, Permafrost weathering, Frost action, Topographic features, Geomorphology, Bibliographies.

36-2769

Formation of taiga soils under continental conditions in western Siberia. [Taezhnoe pochvoobrazovanie v kontinental'nykh usloviiakh (Zapadnaia Sibir')].

Dobrovol'skii, G.V., et al, Moscow, Universitet, 1981, 215p., In Russian with English table of contents enclosed. Refs. p.207-214.

Nikitin, E.D., Afanas'eva, T.V.

Taiga, Bibliographies, Cryogenic soils, Soil formation, Landscape types, Podsol, Clay soils, Loess, Soil composition, Soil chemistry, Paludification, Classifications.

36-2770

Reclamation of paluded soils in the Nonchernozem zone of the Russian Soviet Federated Socialist Republic. [Melioratsiia zabolochennykh pochv Nechernozemnoi zony RSFSR].

Zaidel'man, F.R., Moscow, Kolos, 1981, 168p., In Russian with English table of contents enclosed. Refs. p.160-162.

Polar regions, Subpolar regions, Tundra, Forest tundra, Taiga, Land reclamation, Cryogenic soils, Paludification, Drainage, Organic soils, Peat, Podsol, Mapping, Bibliographies.

36-2771

Flow of nonfreezing water interlayers and frost damage in porous solids.

Deriagin, B.V., et al, *Collod journal of the USSR*, Sep.-Oct. 1980(Publ. Mar. 81), 42(5), p.714-723, Translated from Kolloidnyi zhurnal. 42 refs.

Churaev, N.V.

Porous materials, Frost penetration, Soil water migration, Phase transformations, Frost heave.

36-2772

Investigation of the ice-forming activity of the coagulation products of two-component aerosols.

Tovbin, M.V., et al, *Collod journal of the USSR*, July-Aug. 1979(Publ. Jan. 80), 41(4), p.686-688, Translated from Kolloidnyi zhurnal. 9 refs.

Chesha, I.I., Nikeshina, I.V.

Aerosols, Coagulation, Nucleating agents, Ice nuclei.

36-2773

Role of gas adsorption on ice surface in capture of gases by crystallizing aqueous aerosol.

Seleznev, A.P., *Collod journal of the USSR*, Jan.-Feb. 1978(Publ. July 78), 40(1), p.58-61, Translated from Kolloidnyi zhurnal. 8 refs.

Ice surface, Gases, Aerosols, Drops (liquids), Phase transformations.

36-2774

Determination of the specific surface of finely dispersed ice from the adsorption of organic substances from solutions.

Fedoseeva, V.I., et al, *Collod journal of the USSR*, Sep.-Oct. 1977(Publ. Mar. 78), 39(5), p.894-896, Translated from Kolloidnyi zhurnal. 10 refs.

Nechaev, E.A., Strel'tsova, O.A.

Ice, Dispersions, Surface properties, Powder (particles).

36-2775

Study of thin interlayers between ice and the surface of quartz capillaries.

Barer, S.S., et al, *Collod journal of the USSR*, Nov.-Dec. 1977(Publ. May 78), 39(6), p.917-921, Translated from Kolloidnyi zhurnal. 9 refs.

Capillary ice, Ice solid interface, Water films, Supercooled water, Unfrozen water content.

36-2776

Influence of surface condition on crystallization of aqueous solutions in capillaries.

Barer, S.S., et al, *Collod journal of the USSR*, Nov.-Dec. 1977(Publ. May 78), 39(6), p.921-925, Translated from Kolloidnyi zhurnal. 13 refs.

Capillary ice, Ice formation, Ice adhesion, Capillarity, Surface roughness, Surfactants, Adsorption.

36-2777

Influence of the intrinsic structure of liquid water on ice nucleation in suspensions and porous media.

Filatova, E.V., et al, *Collod journal of the USSR*, Nov.-Dec. 1977(Publ. May 78), 39(6), p.1059-1063, Translated from Kolloidnyi zhurnal. 3 refs.

Filatov, A.O.

Supercooled water, Water structure, Clathrates, Ice formation, Ice nuclei, X ray diffraction, Porous materials, Interstitial ice, Frost heave, Concrete freezing.

36-2778

Crystallization rate of an aqueous aerosol in a gaseous medium under conditions which promote the formation of gaseous hydrates.

Seleznev, A.P., et al, *Collod journal of the USSR*, Jan.-Feb. 1977(Publ. July 77), 39(1), p.69-73, Translated from Kolloidnyi zhurnal. 10 refs.

Stupin, D.H.

Supercooled clouds, Cloud droplets, Freezing rate, Ice crystal nuclei.

36-2779
Effect of adsorption modification on the surface of crystalline substances on their ice-forming activity.
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Supercooled water, Phase transformations, Carbon black, Surface properties, Ice formation, Adsorption.

36-2780
Role of adsorption in the mechanism of heterogeneous crystallization of supercooled water. [Rol' adsorbtsii v mekhanizme geterogennoi kristallizatsii pereokhlazhdennoi vody].
Tovbin, M.V., et al. *Kolloidnyi zhurnal*, July-Aug. 1978, No.4, p.802-805. In Russian. 12 refs.
Tovbina, Z.M.
Supercooled clouds, Nucleating agents, Ice nuclei, Ice formation, Heterogeneous nucleation, Water films, Phase transformations.

36-2781
Analysis of oceanographic and meteorological conditions for central lower Cook Inlet, Alaska.
Rappeport, M.L., *U.S. Geological Survey. Open-file report*, [1982], 82-128, 47p., Refs. p.18-20.
Oceanographic surveys, Meteorological data, Bottom topography, Bottom sediment, Estuaries, Hydrodynamics, Ocean currents, Tides, Water waves, Wind factors, United States—Alaska—Cook Inlet.

36-2782
Frozen ground and ice pressure. [Bodenfrost und Eisdruck].
Jessberger, H.L., Grundbau Taschenbuch, Teil No.1. Edited by U. Smoltczyk, Berlin, Wilhelm Ernst und Sohn, 1980, p.489-520. In German. 3rd edition. 76 refs.
Frozen ground thermodynamics, Frozen ground strength, Ground ice, Ice pressure, Soil water, Heat transfer.

36-2783
Phase composition of water in peat at low temperatures.
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Peat, Frost penetration, Soil water, Phase transformations, Unfrozen water content.

36-2784
Heat loss from infiltration basin in winter.
Stefan, H.G., *American Society of Civil Engineers. Environmental Engineering Division. Journal*, Feb. 1982, 108(EE1), p.141-158, 11 refs.
Heat loss, Waste disposal, Water treatment, Ponds, Seepage, Ice cover effect, Freeze thaw cycles, Soil freezing, Ground thawing, Temperature variations, Analysis (mathematics).

36-2785
Elemental tracers for source regions of Arctic pollution aerosol.
Rahn, K.A., *Időjárás*, Jan.-Feb. 1982, 86(1), p.1-14, With Hungarian summary. 36 refs.
Aerosols, Air pollution, Haze, Air masses, Polar regions.

36-2786
Forecasting the ice phenomena on Danube and Tisza Rivers. [A Dunán és a Tiszán várható jégjelenségek előrejelzése].
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Ice forecasting, River ice, Ice formation, Freezeup, Ice breakup, Ice melting, Hungary—Danube River, Hungary—Tisza River.

36-2787
Ice-cored talus and subsurface drainage at Agardhbukta, east Spitsbergen.
Birkenmajer, K., *Studia geologica Polonica*, 1980, Vol.66, p.53-59, With Polish summary. 10 refs.
Thermokarst, Subsurface drainage, Talus, Ice cover effect, Snowdrifts, Moraines, Geomorphology, Norway—Spitsbergen.

36-2788
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Glacier alimentation, Stratigraphy, Crevasses, Measurement, Norway—Spitsbergen.

36-2789
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Clague, J.J., *Canadian journal of earth sciences*, May 1981, 18(5), p.959-971, 29 refs.
Landslides, Slope processes, Slope orientation, Glacial deposits, Talus, Rock mechanics.

36-2790
New Arctic rig part of construction program. *Oil and gas journal*, April 12, 1982, 80(15), p.115-116.
Offshore drilling, Cold weather operation, Equipment.

36-2791
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Neri, D.F., Kinney, J.A.S., Paulson, H.M.
Optical filters, Snow optics, Solar radiation, Protection, Fog, Visibility, Goggles.

36-2792
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Optical filters, Snow optics, Visibility, Protection, Goggles.

36-2793
Study on the freezing process of water droplet under supercooled conditions.
Suzuki, M., et al, *Heat transfer—Japanese research*, Oct.-Dec. 1978, 7(4), p.26-34, 6 refs.
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Freezing, Drops (liquids), Supercooling, Heterogeneous nucleation, Liquids, Temperature effects, Volume, Crystal growth, Tests.

36-2794
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Aoki, H., et al, *Heat transfer—Japanese research*, Oct.-Dec. 1979, 8(4), p.53-63, 10 refs.
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Heat transfer, Convection, Hoarfrost, Heat flux, Freezing points, Pipes (tubes).

36-2795
Simultaneous observation of cool cloud liquid by ground-based microwave radiometry and icing aircraft.
Hogg, D.C., et al, *Journal of applied meteorology*, July 1980, 19(7), p.893-895, 3 refs.
Guiraud, F.O.
Aircraft icing, Supercooled clouds, Radiometry, Microwaves, Remote sensing, Cloud droplets, Air temperature, Humidity, Experimentation.

36-2796
Dispersion of airborne-released silver iodide in winter orographic clouds.
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Cloud seeding, Silver iodide, Ice crystal nuclei, Cold weather performance.

36-2797
Balloonborne instrument for the measurement of vertical profiles of supercooled liquid water concentration.
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Woffinden, D.S.
Supercooled clouds, Ice crystal growth, Freezing, Water content, Ice formation, Meteorological instruments, Analysis (mathematics).

36-2798
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Hill, G.E., *Journal of applied meteorology*, Dec. 1980, 19(12), p.1371-1381, 18 refs.
Supercooled clouds, Cloud seeding, Water content, Aircraft icing, Cold weather performance, Temperature effects, Liquid phases, Precipitation (meteorology).

36-2799
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Koaze, T., Fukuda, M.
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36-2800
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Kayane, I., *GeoJournal*, 1980, 4(2), p.173-181, 15 refs.
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36-2801
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36-2802
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Snow surveys, Snow depth, Snow accumulation, Avalanche formation, Slope orientation, Aerial surveys, Photography.

36-2803
Main stratigraphic units of the Pleistocene Post-Eemian deposits from the area of the last Scandinavian glaciation.
Mojski, J.E., *Torun, Poland. Uniwersytet. Acta universitatis Nicolai Copernici. Geografia*, 1979, 14(46), p.61-82, With Polish summary. Refs. p.78-82.
Glacial deposits, Stratigraphy, Glaciation, Pleistocene.

36-2804
Facts and conclusion of the late Pleistocene development of river systems obtained from the results of economic reconnaissance. [Fakten und Schlussfolgerungen zur Jungpleistozanen Laufentwicklung eines Flusssystems als Ergebnis wirtschaftsgebundener Objekterkundungen].
Brose, F., et al, *Torun, Poland. Uniwersytet. Acta universitatis Nicolai Copernici. Geografia*, 1979, 14(46), p.83-97, In German with Polish summary. 32 refs.
Prager, F.
Glacial hydrology, Periglacial processes, Stream flow, Glacial erosion, Pleistocene, Sediments, Poland.

36-2805
Snow avalanche in Guxiang region of Xizang and its role in the physical geographic processes of high mountains.
Deng, Y., *Acta geographica Sinica*, Sep. 1980, 35(3), p.242-250, In Chinese with English summary. 5 refs.
Avalanche formation, Geomorphology, Slope processes, Mudflows, Glacier alimentation, Vegetation, Damage, Mountains, Meteorological factors.

36-2806
Foundation of the Glaciology and Cryopedology Subsociety of the Geographical Society of China and Symposium on the Test Techniques of Glacier and Cryopedology. *Acta geographica Sinica*, Sep. 1980, 35(3), p.270-271, In Chinese.
Glaciology, Geocryology, Organizations, Research projects, Meetings, Glacier surveys, Tests.

36-2807
Preliminary study on recent fluctuation of glaciers in the Qilian Shan.
Lanzhou Institute of Glaciology and Cryopedology, *Acta geographica Sinica*, 1980, 35(1), p.48-57, In Chinese with English summary. 7 refs.
Glacier oscillation, Glacier flow, Glacier mass balance, Glacier alimentation, Firn, Age determination, Air temperature, Mountains, China—Qilian Shan Mountains.

36-2808
Basic characteristics of periglacial landforms in the Qinghai-Xizang Plateau.
Cui, Z., *Scientia Sinica. Series B*, Jan. 1982, 25(1), p.79-91, For Chinese original see 36-1859. 15 refs.
Periglacial processes, Glacial geology, Geomorphology, Landforms, China—Qinghai-Xizang Plateau.

36-2809
Phase structures, water binding, and molecular dynamics in liquid crystalline and frozen states of the system Triton X-100—D2O.
Bevet, K., *Journal of colloid and interface science*, Mar. 1982, 86(1), p.79-89, 46 refs.
Heavy water, Freezing, Phase transformations, Molecular structure, Water chemistry, Frozen liquids, Crystals, Temperature effects.

36-2810
Ice-nucleating behavior of MAg4I5 (M = Rb,K,NH4) compounds.
Gobinathan, R., et al. *Journal of colloid and interface science*, Mar. 1982, 86(1), p.284-285, 14 refs.
Hariharan, K., Ramasamy, P.
Ice crystal nuclei, Ice crystal growth, Nucleating agents, Silver iodide.

36-2811
Floating processing plant readied for Cominco's Polaris mine. *Canadian mining journal*, Oct. 1980, 101(10), p.37.
Floating structures, Cold weather construction, Ice pressure, Ice loads, Mining.

36-2812
Prepare heavy machinery now for winter cold. *Canadian mining journal*, Oct. 1980, 101(10), p.89-93.
Cold weather operation, Equipment, Vehicles, Maintenance, Engines.

36-2813
Environmental assessment of the Alaskan continental shelf, Vol.10. Biological studies. Rockville, Md., U.S. National Oceanic and Atmospheric Administration, July 1981, 784p., PB82-124 975, Principal investigators' final reports. Includes 5 papers. Refs. passim. For selected paper see 36-8214.
Oil spills, Marine biology, Environmental impact, Ocean environments, Microbiology, Ice scoring.

36-2814
Reconnaissance of intertidal communities in the eastern Bering Sea and the effects of ice-scour on community structure.
O'Clair, C.E., et al. Environmental assessment of the Alaskan continental shelf, Vol.10. Biological studies. Principal investigators' final reports. Rockville, Md., U.S. National Oceanic and Atmospheric Administration, July 1981, p.109-415, Refs. p.331-339, 413.
Sea ice distribution, Ice scoring, Marine biology, Environmental impact, Oil spills, Bering Sea.

36-2815
Selection of basic parameters and the architectural and design types of large-capacity multipurpose dry-cargo vessels for ice navigation. [Vybor osnovnykh parametrov i arkhitekturno-konstruktivnogo tipa krupnotonazhnogo mnogotselevogo sukhogruznogo sudna ledovogo plavaniia].
Miroshnichenko, I.P., et al. *Leningrad. Tsentral'nyi nauchno-issledovatel'skii institut morskogo flota. Trudy*, 1981, Vol.265, p.3-11, In Russian. 5 refs.
Nikol'skii, B.I., Tsoi, L.G.
Ice navigation, Marine transportation, Ships, Icebreakers, Design, Arctic Ocean.

36-2816
Air cushion ferry boats for Estonian islands. [Parom na vozdushnoi podushke dlia ostrovov Estonii].
Amfilokhiev, L.B., et al. *Leningrad. Tsentral'nyi nauchno-issledovatel'skii institut morskogo flota. Trudy*, 1981, Vol.265, p.25-28, In Russian.
Kriazheva, L.IA., Simonov, IU.A.
Ice navigation, Marine transportation, Air cushion vehicles, Ferry boats.

36-2817
Evaluation of the effectiveness of heeling and trim systems in icebreakers. [Otsenka effektivnosti krenovykh i differentnykh sistem ledokolov].
Grechin, M.A., *Leningrad. Tsentral'nyi nauchno-issledovatel'skii institut morskogo flota. Trudy*, 1981, Vol.265, p.63-79, In Russian. 4 refs.
Marine transportation, Ships, Ice navigation, Icebreakers, Propellers, Ice loads.

36-2818
Diagrams for selecting the method of releasing ice-jammed and floating icebreakers. [Diagramma dlia vybora sposoba osvobozhdeniia ledokolov ot zaklinivaniia so vsplytiem].
Grechin, M.A., *Leningrad. Tsentral'nyi nauchno-issledovatel'skii institut morskogo flota. Trudy*, 1981, Vol.265, p.79-82, In Russian.
Marine transportation, Ice navigation, Icebreakers.

36-2819
Studying the effectiveness of pneumatic ice deflection systems on ships. [Issledovanie effektivnosti pnevmoomyvaiushchego ustroistva na sudakh ledovogo plavaniia].
Ierusalimskii, A.V., *Leningrad. Tsentral'nyi nauchno-issledovatel'skii institut morskogo flota. Trudy*, 1981, Vol.265, p.82-88, In Russian.
Ships, Ice navigation, Icebreakers, Ice pressure, Ice friction.

36-2820
Different structures of roads for oil fields of western Siberia. [Avtomobil'nye dorogi razlichnykh konstruktsii na mestorozhdeniiakh Zapadnoi Sibiri].
Chudinovskikh, A.G., et al. *Neftepromyslovoe stroitel'stvo*, 1982, No.3, p.3-5, In Russian.
Merkushev, M.I.
Roads, Roadbeds, Swamps, Permafrost beneath roads, Pavements.

36-2821
Construction of storage tanks on weak grounds of the Central Ob' River area. [Stroitel'stvo rezervuarov na slabykh gruntakh v raionakh Srednego Priob'ia].
Trofimov, V.L., et al. *Neftepromyslovoe stroitel'stvo*, 1982, No.3, p.6-8, In Russian.
Urovskaia, A.P.
Petroleum industry, Swamps, Peat, Storage tanks, Foundations, Settlement (structural), Earth fills.

36-2822
Principles of optimal design and construction of oil-gas complexes in western Siberia. [Printsipy optimal'nogo proektirovaniia i sooruzheniia neftegazovykh kompleksov Zapadnoi Sibiri].
Berezin, V.L., et al. *Neftepromyslovoe stroitel'stvo*, 1982, No.3, p.8-10, In Russian.
Permikin, IU.N., Sannikov, IU.V.
Petroleum industry, Buildings, Modular construction, Prefabrication, Permafrost beneath structures, Transportation, Air cushion vehicles.

36-2823
Forecasting ground thawing zones around pipelines. [Prognozirovanie zony ottaivaniia gruntov vokrug truboprovodov].
Danielian, IU.S., et al. *Neftepromyslovoe stroitel'stvo*, 1982, No.3, p.10-11, In Russian.
Anitskii, P.A., Nizovtseva, E.V., Varichenko, S.A.
Pipelines, Permafrost beneath structures, Ground thawing.

36-2824
Effectiveness of railroad construction for servicing groups of oil fields in western Siberia. [Effektivnost' stroitel'stva zheleznykh dorog dlia obsluzhivaniia grupp neftianykh mestorozhdenii Zapadnoi Sibiri].
Purtov, P.G., et al. *Neftepromyslovoe stroitel'stvo*, 1982, No.3, p.19-21, In Russian.
Sesin, N.A., Odintsova, L.A.
Petroleum industry, Swamps, Permafrost beneath structures, Transportation, Snow roads, Ice roads, Railroads.

36-2825
Geology and geophysics of the Amerasian Basin.
Clark, D.L., Ocean basins and margins, Vol.5. Edited by A.E.M. Nairn, M. Churkin, Jr. and F.G. Stehli, Plenum Publishing Corporation, 1981, p.599-634. For another source see Madison. Wisconsin University. Department of Geology and Geophysics. Report No.TR-39. ADA-111 052/7. Refs. p.631-634.
Geological surveys, Geophysical surveys, Paleoclimatology, Sedimentation, Tectonics, Paleoecology, Sea ice distribution, Marine geology, Bottom sediment, Origin, Arctic Ocean.

36-2826
HF radar technology transfer project—evaluation phase.
Butt, K.A., et al. *Memorial University of Newfoundland. Centre for Cold Ocean Resources Engineering. C-CORE publication*, Oct. 1981, No.81-14, 136p., Refs. p.55-56, 123-126.
Jeans, P.K.
Radar echoes, Floating ice, Natural resources, Remote sensing, Mapping, Wave propagation, Computer applications.

36-2827
Heat pump defrost problem.
Trask, A., Annual Heat Pump Technology Conference, 5th, Stillwater, Oklahoma, Apr. 14-15, 1980. Proceedings, [1980], p.(13)1-(13)8.
Pumps, Defrosting, Heating, Design, Temperature effects, Refrigeration.

36-2828
Asphalt concrete properties and performance in Alaska. Final report.
McHattie, R.L., *U.S. Federal Highway Administration. Report*, July 1981, No.FHWA-AK-RD-82-2, 207p., 17 refs.
Bituminous concretes, Pavements, Cold weather construction, Tensile properties, Climatic factors, Concrete strength, Cement admixtures, Fatigue (materials).

36-2829
Measurement and prediction of permafrost thickness, Arctic Canada.
Taylor, A.E., et al. Annual Meeting of the Society of Exploration Geophysicists, 51st, Los Angeles, Calif., Oct. 1981. Proceedings, [1981], 14p. (p.3964-3977), 17 refs.
Judge, A.S.
Permafrost thickness, Permafrost thermal properties, Permafrost forecasting, Permafrost depth, Canada.

36-2830
Sediment load and channel characteristics in subarctic upland catchments.
Slaughter, C.W., et al. *Journal of hydrology (New Zealand)*, 1981, 20(1), MP 1518, p.39-48, 12 refs.
Collins, C.M.
Discontinuous permafrost, Channels (waterways), Geomorphology, Sediment transport, Hydrology, Drainage, Suspended sediments, Watersheds, Statistical analysis.
Sediment load in low-order streams of the unglaciated Yukon-Tanana Uplands of central Alaska may be related to drainage basin characteristcs and to stream channel morphology. This has been investigated by analysis of selected physical hydrological and water quality data for the 104 sq km Caribou-Poker Creeks Research Watershed, located at 65 deg, 09 min N, 147 deg, 30 min W in a region of rolling to steep uplands and discontinuous permafrost. Channel morphology data are available for first-, second- and third-order streams. Sediment load for selected points was determined over 45 weeks during summer of 1978 and 1979. Consistent differences in sediment yield, hydrologic regime and channel morphology have been determined between permafrost and non-permafrost drainages.

36-2831
Heat rate control for railway track switch heaters. Part 2. Prototype performance, winter 1980/81.
Coveney, D.B., *National Research Council, Canada. Division of Mechanical Engineering. Report*, Mar. 1982, LTR-LT-130, 14p. + figs., 1 ref.
Railroad tracks, Railroad equipment, Heating, Cold weather operation, Low temperature tests, Railroad switches.

36-2832
Conversion of aircraft ice crystal measurements into terms of liquid water using simulated data.
Berthel, R.O., *U.S. Air Force Geophysics Laboratory. Technical report*, June 16, 1981, AFGL-TR-81-0173, 46p., 23 refs.
Ice crystal structure, Liquid phases, Water content, Airborne equipment, Cloud physics, Ice melting, Mathematical models, Computer applications.

36-2833
Brash ice behavior.
Greisman, P., *U.S. Coast Guard. Report*, May 1981, CG-D-30-81, 29p., 11 refs.
Ice breakup, Ice creep, Ice navigation, Floating ice, Rheology, Channels (waterways), Ice conditions, Brash ice.

36-2834
Suspended sediment beneath permanent and seasonal ice, Ross Ice Shelf, Antarctica.
Carter, L., et al. *New Zealand journal of geology and geophysics*, 1981, 24(2), p.249-262, 36 refs.
Mitchell, J.S., Day, N.J.
Sea ice, Ice shelves, Suspended sediments, Sediment transport, Antarctica—Ross Ice Shelf.
Time-series measurements of suspended particulate matter (SPM) concentrations over a tidal cycle at 7 sites in McMurdo Sound revealed little correlation with depth, current velocity, or salinity. Much of the homogeneity is attributed to vertical mixing that is possibly caused by the descent of wind-driven surface water near the edge of the Ross Ice Shelf. Current speeds preclude settling of all but the coarsest SPM particles on the sandy bottom of the Sound. Most particles remain in suspension to be swept by the mean flow towards the ice shelf. The main SPM components are terrigenous clay (44-74%), indeterminate biogenic particles (12-35%), diatoms (5-30%), and aggregates of mainly fecal origin (0-18%). Fecal pellets are abundant in plankton-rich waters near the seasonal ice edge, but diminish markedly to the south because of rapid settling and reduced plankton numbers. Terrigenous SPM also decreases proportionally southwards because of increasing biogenic SPM (including diatoms) accompanying intrusion of phytoplankton-bearing water from the Ross Sea and/or liberation of biogenic material from the melting seasonal ice. (Auth.)

36-2835
Seasonal mixing processes in an Arctic fjord system.
Lewis, E.L., et al. *Journal of physical oceanography*, Jan. 1982, 12(1), p.74-83, 8 refs.
Perkin, R.G.
Tidal currents, Sea ice, Ice growth, Water chemistry.

36-2836
On the differences in ablation seasons of arctic and antarctic sea ice.
Andreas, E.L., et al. *Journal of the atmospheric sciences*, Feb. 1982, 39(2), MP 1517, p.440-447, 41 refs.
Ackley, S.F.
Sea ice, Ice melting, Ablation, Meteorological factors.
Arctic sea ice is freckled with melt ponds during the ablation season, Antarctic sea ice has few, if any. On the basis of a simple surface heat budget, the authors investigate the meteorological conditions necessary for the onset of surface melting in an attempt to explain these observations. The low relative humidity associated with the relatively dry winds off the continent and an effective radiation parameter smaller than that characteristic of the Arctic are primarily responsible for the absence of melt features in the Antarctic. Together these require a surface-layer air temperature above 0C before Antarctic sea ice can melt. A ratio of the bulk transfer coefficients less than 1 also contributes to the dissimilarity in Arctic and Antarctic ablation seasons. The effects of wind speed and of the sea-ice roughness on the absolute values of bulk transfer coefficients seem to moderate regional differences, but final assessment of this hypothesis awaits better data, especially from the Antarctic. (Auth.)

36-2837
Coring in Antarctica.
Marshall, P.S., *Explorers journal*, Sep. 1981, 59(3), p.130-134.
Ice coring drills.
The author accompanied the American contingent of the International Antarctic Glaciological Program sent to drill at Dome Charlie. He describes his stay and the drilling.

36-2838
Alaska Good Friday earthquake of 1964.
Swinzow, G.K., *U.S. Army Cold Regions Research and Engineering Laboratory*, Feb. 1982, CR 82-01, 26p. ADA-113 800.
Earthquakes, Frozen ground strength, Damage, Ice sheets, Rock mechanics, Structures, Water waves, United States—Alaska—Anchorage.
On 27 March 1964, a major earthquake struck Southern Alaska. The city of Anchorage, which contained a large part of Alaska's population, suffered loss of life and destruction of property. The time of the day, the season, and ground conditions were such that loss of life and property was minimized. The frozen ground and the ice on fresh water bodies responded to the earthquake shocks in a seldom-observable pattern, which was noted and recorded. Changes of sea level and slides into the sea were responsible for waterfront destruction. It is concluded that the main factor that limited structural damage was the frozen state of the ground.

36-2839
Sea ice drag laws and simple boundary layer concepts, including application to rapid melting.
McPhee, M.G., *U.S. Army Cold Regions Research and Engineering Laboratory*, Feb. 1982, CR 82-04, 17p., ADA-113 542, 24 refs.
Sea ice, Drift, Boundary layer, Ice melting, Stresses, Turbulent flow, Velocity, Viscosity, Buoyancy, Mathematical models.
Several proposed methods for treating the momentum flux between drifting sea ice and the underlying ocean are interpreted in terms of simple planetary-boundary-layer (PBL) turbulence theory. The classical two-layer approach, in which the solution for a thin surface layer is matched to an Ekman solution for the outer layer, is used to derive several forms for the drag law. These forms range from linear (where stress is proportional to relative speed), through quadratic drag on geostrophic wind in the atmosphere. Only formulations which conform with Rossby-similarity scaling are consistent with free-drift data from the 1975 AIDJEX drift station experiment. We show how a two-layer model, in thickness, provides an analytic solution for the steady-state PBL equation quite similar to recent numerical solutions. The theory is extended to include drag reduction due to buoyancy from rapid melting and is shown to agree with atmospheric results for geostrophic drag under analogous conditions of radiational cooling. The theory provides a basis for estimating trajectories and melt rates of floes drifting into water warmer than the ice melting temperature.

36-2840
Charged dislocation in ice. 2. Contribution of dielectric relaxation.
Itagaki, K., *U.S. Army Cold Regions Research and Engineering Laboratory*, Mar. 1982, CR 82-07, 15p., ADA-113 936, 18 refs., The results indicate that the charged dislocation process can produce the observed audio frequency dielectric relaxation as well as the distribution of spectra.
Ice electrical properties, Ice relaxation, Dislocations (materials), Ice crystals, Dielectric properties, Electric charge, Relaxation (mechanics), Analysis (mathematics), Spectra.
The contribution of electrically-charged dislocation motion to dielectric relaxation was studied theoretically. Experimentally obtained data on charge density, dislocation density, and segment length and distribution described in Part 1 of this series were used to calculate dielectric relaxation spectra.

36-2841
Sea ice rubble formations in the Bering Sea and Norton Sound, Alaska.
Kovacs, A., *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec. 1981, SR 81-34, 23p., ADA-113 773, 22 refs.
Pressure ridges, Ice pressure, Sea ice, Offshore structures, Ice loads, Ice formation, Ice surface, Offshore drilling, Grounded ice, Floating ice.
The occurrence of large, compact, grounded pressure ridge formations up to 15 m high in the coastal waters of Norton Sound and the Bering Sea is discussed. These formations periodically float free and drift about, gouging the seabed. Their mass makes them a severe threat to both floating and bottom-founded structures in these waters.

36-2842
WREL—Water Resources Engineering Lulea, Sweden—the activity of the division.
Lulea, Sweden. University. Water Resources Engineering, [1981], 46p.
Bengtsson, L., ed.
Snow hydrology, Ice conditions, Ports, Waste treatment, Swamps, Heat transfer, Snowmelt, Hydrology, Icebound lakes, Temperature distribution, Atmospheric circulation, Land reclamation, Research projects, Rocks.

36-2843
Snow cover mapping in northern Maine using LANDSAT digital processing techniques.
Merry, C.J., et al, MP 1510, Satellite hydrology: Annual William T. Pecora Memorial Symposium, 5th, American Water Resources Association, June 1979, p.197-198, Summary only.
McKim, H.L., Bates, R.E., Ungar, S.G., Cooper, S., Power, J.M.
Vegetation, Snow cover distribution, Snow water equivalent, Snow depth, Mapping, LANDSAT.

36-2844
Proceedings.
Symposium: Surface Protection through Prevention of Damage (Surface Management); Focus: The Arctic Slope, Anchorage, Alaska, May 17-20, 1977, Anchorage, Alaska State Office, Bureau of Land Management, Mar. 1978, 296p., Refs. passim. For selected papers see 36-2845 through 36-2857.
Environmental protection, Permafrost preservation, Damage, Countermeasures, Ice roads, Revegetation, Exploration, Natural resources, United States—Alaska—North Slope.

36-2845
Surface protection requirements on State lands.
Copeland, W.H., Symposium: Surface Protection through Prevention of Damage (Surface Management); Focus: The Arctic Slope, Anchorage, Alaska, May 17-20, 1977. Proceedings. Edited by M.N. Evans, Anchorage, Alaska State Office, Bureau of Land Management, Mar. 1978, p.39-45.
Exploration, Environmental protection, Natural resources, Tundra, Sea ice, Legislation, Ice roads, Snow roads, Human factors, United States—Alaska—North Slope.

36-2846
Surface protection issues associated with public use of the haul road.
Parker, W.B., Symposium: Surface Protection through Prevention of Damage (Surface Management); Focus: The Arctic Slope, Anchorage, Alaska, May 17-20, 1977. Proceedings. Edited by M.N. Evans, Anchorage, Alaska State Office, Bureau of Land Management, Mar. 1978, p.55-59.
All terrain vehicles, Environmental protection, Legislation, Environmental impact, Countermeasures, Natural resources, Human factors, United States—Alaska—North Slope.

36-2847
Surface protection from an engineer's point of view.
Keyes, D., Symposium: Surface Protection through Prevention of Damage (Surface Management); Focus: The Arctic Slope, Anchorage, Alaska, May 17-20, 1977. Proceedings. Edited by M.N. Evans, Anchorage, Alaska State Office, Bureau of Land Management, Mar. 1978, p.95-102.
Pipe laying, Environmental protection, Cold weather construction, Waste disposal, Human factors, United States—Alaska—North Slope.

36-2848
Geological data requirements for efficient surface protection in the Arctic foothills and Arctic plain physiographic provinces.
Ferrians, O.J., Jr., Symposium: Surface Protection through Prevention of Damage (Surface Management); Focus: The Arctic Slope, Anchorage, Alaska, May 17-20, 1977. Proceedings. Edited by M.N. Evans, Anchorage, Alaska State Office, Bureau of Land Management, Mar. 1978, p.119-124.
Geological surveys, Environmental protection, Permafrost preservation, Soil erosion, Mudflows, Ice wedges, Natural resources, Exploration, Vegetation, Icebound rivers, United States—Alaska—North Slope.

36-2849
Soils and vegetation of the Arctic Slope of Alaska—an interim report.
Fibich, W.R., Symposium: Surface Protection through Prevention of Damage (Surface Management); Focus: The Arctic Slope, Anchorage, Alaska, May 17-20, 1977. Proceedings. Edited by M.N. Evans, Anchorage, Alaska State Office, Bureau of Land Management, Mar. 1978, p.125-140.
Soil surveys, Environmental protection, Vegetation, Permafrost, Remote sensing, Mapping, Soil classification, United States—Alaska—North Slope.

36-2850
Grasses for revegetation in the Arctic.
Mitchell, W.W., Symposium: Surface Protection through Prevention of Damage (Surface Management); Focus: The Arctic Slope, Anchorage, Alaska, May 17-20, 1977. Proceedings. Edited by M.N. Evans, Anchorage, Alaska State Office, Bureau of Land Management, Mar. 1978, p.141-147, 12 refs.
Grasses, Environmental protection, Revegetation, United States—Alaska—North Slope.

36-2851
Considerations for the use of hardwood stem cuttings in surface management programs.
Zasada, J.C., et al, Symposium: Surface Protection through Prevention of Damage (Surface Management); Focus: The Arctic Slope, Anchorage, Alaska, May 17-20, 1977. Proceedings. Edited by M.N. Evans, Anchorage, Alaska State Office, Bureau of Land Management, Mar. 1978, p.148-157, 4 refs.
Holloway, P., Densmore, R.
Revegetation, Environmental protection, Trees (plants), Propagation, Roots, United States—Alaska—North Slope.

36-2852
Snow gathering techniques on the Arctic Slope.
Gropp, D.L., Symposium: Surface Protection through Prevention of Damage (Surface Management); Focus: The Arctic Slope, Anchorage, Alaska, May 17-20, 1977. Proceedings. Edited by M.N. Evans, Anchorage, Alaska State Office, Bureau of Land Management, Mar. 1978, p.160-171.
Snow fences, Environmental protection, Snow (construction material), Snowdrifts, Snow roads, Cold weather construction, Wind factors, Precipitation gages, United States—Alaska—North Slope.

36-2853
Ice aggregate road construction.
Fisher, E.N., Symposium: Surface Protection through Prevention of Damage (Surface Management); Focus: The Arctic Slope, Anchorage, Alaska, May 17-20, 1977. Proceedings. Edited by M.N. Evans, Anchorage, Alaska State Office, Bureau of Land Management, Mar. 1978, p.176-189.
Ice roads, Environmental protection, Cold weather construction, Ice (construction material), Snow roads, United States—Alaska—North Slope.

36-2854
State air and water quality and solid waste disposal requirements.
Dietrick, L., Symposium: Surface Protection through Prevention of Damage (Surface Management); Focus: The Arctic Slope, Anchorage, Alaska, May 17-20, 1977. Proceedings. Edited by M.N. Evans, Anchorage, Alaska State Office, Bureau of Land Management, Mar. 1978, p.192-201.
Air pollution, Environmental protection, Water pollution, Waste disposal, Solids, Oil spills, Legislation, Standards, United States—Alaska—North Slope.

36-2855
Role of research in developing surface protection measures for the Arctic Slope of Alaska.
Johnson, P.R., MP 1519, Symposium: Surface Protection through Prevention of Damage (Surface Management); Focus: The Arctic Slope, Anchorage, Alaska, May 17-20, 1977. Proceedings. Edited by M.N. Evans, Anchorage, Alaska State Office, Bureau of Land Management, Mar. 1978, p.202-205.
Snow accumulation, Environmental protection, Snow roads, Ice roads, Snowdrifts, Wind factors, Snow fences, United States—Alaska—North Slope.
The U.S. Army Cold Regions Research and Engineering Laboratory (USA CRREL) has long conducted research in snow, ice, and permafrost. It also translates foreign language engineering papers and publishes research reports, monographs, and bibliographies. Snow and ice roads and construction pads have been used, primarily on the Arctic Slope, during the last few winters. Some have been successful but problems exist which will require further experience and research to solve. One problem is that of snow supply. Snowfall on the Arctic Slope is limited, particularly early in the season when it is most desired. Few good data are available on total quantities and the time pattern of snowfall but Wyoming Snow Gages, now being installed by a number of government agencies and private organizations, are beginning to provide some data which can be used with some confidence. The snow which falls is often blown off by the strong winds which are common in the area so it is not available where it is needed. Research is under way on equipment and techniques for collecting snow and inducing drifting.

36-2856
Winter off-road transport in northern Alaska.
Rhoads, E.M., Symposium: Surface Protection through Prevention of Damage (Surface Management); Focus: The Arctic Slope, Anchorage, Alaska, May 17-20, 1977. Proceedings. Edited by M.N. Evans, Anchorage, Alaska State Office, Bureau of Land Management, Mar. 1978, p.266-283, 14 refs.
All terrain vehicles, Environmental protection, Tracked vehicles, Cold weather operation, Snow roads, Exploration, Natural resources, Tundra, Environmental impact, United States—Alaska—North Slope.

36-2857
Ground pressures exerted by underground explosions.
Johnson, P.R., MP 1520, Symposium: Surface Protection through Prevention of Damage (Surface Management); Focus: The Arctic Slope, Anchorage, Alaska, May 17-20, 1977. Proceedings. Edited by M.N. Evans, Anchorage, Alaska State Office, Bureau of Land Management, Mar. 1978, p.284-290, 3 refs.
Frozen ground strength, Environmental protection, Soil pressure, Explosion effects, Shock waves, Wave propagation, Environmental impact, Blasting, Marine biology, Underground explosions, United States—Alaska—North Slope.
Peak shock pressures in frozen soil resulting from underground explosions of moderate size and their effect on fish populations are examined, based on current knowledge of shock pressure patterns and the sensitivity of fish eggs and young and adult fish to such pressures. The peak shock pressures attenuate rapidly with distance from explosion and it appears that moderate-sized explosions, such as those from standard seismic shots, can be fired within a few hundred feet of water bodies without exceeding allowable peak shock pressures in the water bodies. Experimental studies should be carried out to confirm the pattern of peak shock pressure attenuation and examine the effectiveness of shock transmission between frozen ground and the water bodies.

36-2858
Bentonite sealants in the pollution control of sanitary landfills. [Bentonittätning mot lakvatten].
Lundgren, T., et al. *Sweden. Statens geotekniska institut. Rapport*, 1982, No.14, 104p. + appends., In Swedish with English summary. Refs. p.102-104.
Karlqvist, L., Qvarfort, U.
Clay minerals, Soil freezing, Soil strength, Permeability, Sealing, Concrete admixtures, Leaching, Cracks, Frost action.

36-2859
Investigation of the high rate volumetric properties of snow.
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The configuration and fabrics of ice in frozen glass beads and sands with a low initial water content were observed. As suggested by Miller, the air-ice interface is convex, and pores seem to fill unstably. This produces an uneven ice distribution when the water supply is limited. Many different ice shapes and crystal distributions were observed, indicating a mixture of kinetic crystal growth processes and equilibrium constraints. Ice dendrites arose from rapid growth. Both single and multicrystalline structures were found. Clearly, a wide variety of situations is possible, depending on growth rates, nucleation sites, and local paths of heat and mass flow.

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The acoustic emission response from fine-grained polycrystalline ice subjected to constant compressive loads was examined. A number of tests were conducted with the nominal stress ranging from 0.8 to 3.67 MPa at a temperature of -5C. The acoustic emission response was recorded and the data are presented with respect to time and strain. The source of acoustic emissions in ice is considered in terms of the formation of both microfractures and visible fractures that develop without catastrophic failure of the ice. A model to describe the acoustic emission response is developed.

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This report summarizes the state of the art of the modeling of wastewater renovation by land treatment. The models discussed are classified based on their use for planning, site selection and cost analysis, and for predicting 1) water and salt transport in soils, 2) nitrogen transport and transformations, 3) phosphorus transport and transformations, 4) virus movement in soils, and 5) toxic metal and trace organic movement in soils. This report compares the different models as to their purpose, input and output data, and status of validation. In addition, the report includes a section on research needs for modeling land treatment of wastewater.

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36-2924
Frost resistance of haydite concretes containing coal ash and cinder. [Morozostoikost' keramzitozolobetonov na kamennougol'nykh zoloshlakovykh smesiakh].
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Concrete aggregates, Concrete strength, Frost resistance.

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Taiga, Vegetation, Biomass, Cryogenic soils, Bibliographies.

36-2926
Bases for the preparation of chemical ice prevention materials. [Bazy dlia prigotovleniia protivogололедnykh khimicheskikh materialov].
Bulgach, A.S., et al. *Avtomobil'nye dorogi*, Jan. 1982, No.1, p.18-20, In Russian.
Belialov, M.V.
Chemical ice prevention, Pavements, Roads, Winter maintenance.

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U.S. geological survey in Alaska, 1982 programs.
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Geological surveys, Natural resources, Water reserves, Research projects, Environments, Marine geology, Crude oil, Minerals, Mapping, United States—Alaska.

36-2928
Glaciological investigations in Johan Dahl Land, South Greenland, 1981. [Glaciologiske undersogelser i Johan Dahl Land, Sydgronland, 1981].
Clement, P., *Denmark Gronlands geologiske undersogelse Gletscher-hydrologiske meddelelser*, Mar. 1982, No.82/1, 73p., In Danish with English summary. *Refs. p.70-73.*
Glacial hydrology, Glacier mass balance, Snow water equivalent, Glacier flow, Water reserves, Runoff, Glacial lakes, Electric power.

36-2929
Simulation of ice-cover growth and decay in one dimension on the upper St. Lawrence River.
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Ice cover thickness, Ice growth, Ice deformation, Ice melting, Channels (waterways), Mathematical models, Computer programs.

36-2930
Performance of marine propellers in ice-clogged channels.
Kostilainen, V., *Finland Winter Navigation Research Board Research report*, [1981], No.23, 20p., 5 refs.
Ice navigation, Propellers, Ice loads, Channels (waterways), Ice pressure, Ice cover, Offshore structures.

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Weertman, J., Lunde, V.I.
Land ice, Ice sheets, Heat balance, Ice mechanics, Ice thermal properties, Snow thermal properties, Ice surface, Models, Albedo.

36-2932
Effect of soil fauna on *litter* mass loss and nutrient loss dynamics in Arctic tundra at Barrow, Alaska.
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Crossley, D.A., Jr.
Tundra, Soil microbiology, Soil composition, Litter, Decomposition, Nutrient cycle, Mass balance, Chemical analysis.

36-2933
Cutting ice with "high" pressure water jets.
Conachey, D.B., *National Research Council Canada, Mechanical Engineering Report*, July 1978, MD-57, NRC No.19643, 44p., *For preprint version see abs.288*
With French abstract, 10 refs.
Ice cutting, Hydraulic jets, Analysis (mathematics)

36-2934
Management of blowing snow on sagebrush rangelands.
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Tabler, R.D.
Snow retention, Snow fences, Meltwater, Water storage, Irrigation, Snowdrifts, Snow accumulation, Blowing snow.

36-2935
Pingo correlation and prediction study.
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Pingos, Marine geology, Geomorphology, Echo sounding, Frost heave, Origin, Forecasting, Subsea permafrost, Ocean bottom, Mapping, Beaufort Sea.

36-2936
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Aircraft icing, Ice control, Propellers, Ice prevention, Helicopters, Meteorological factors, Mathematical models.

36-2937
Alaska's glaciers.
Henning, R.A., ed. *Alaska geographic*. 1982, 9(1), 144p.
Glaciers, Glacier flow, Glacial lakes, Glacial rivers, Photography, Glacier tongues, Ecology.

36-2938
Geographic and elevation angle dependence of rain and ice-cloud depolarization in Canada along earth-space paths at 12 GHz.
Schlesak, J.J., et al. *IEEE International Conference on Communications. Record*. 1980, 3(3), p.40.2.1-40.2.4. 6 refs.
Strickland, J.I.
Cloud physics, Supercooled clouds, Polarization (waves), Attenuation, Ice crystals, Rain, Wave propagation, Radio waves.

36-2939
Passive microwave observations of snow, ice, and rain from satellites.
Staelin, D.H., et al. *IEEE International Conference on Communications. Record*. 1980, 3(3), p.49.1.1-49.1.2. 5 refs.
Rotman, S.R.
Microwaves, Snow cover, Ice cover, Rain, Remote sensing, Spectroscopy, Radiometry, Sea ice, Spacecraft.

36-2940
Surface effects on the microwave backscatter and emission of snow.
Fung, A.K., et al. *IEEE International Conference on Communications. Record*. 1980, 3(3), p.49.6.1-49.6.7. 12 refs.
Stiles, W.H., Ulaby, F.T.
Snow physics, Backscattering, Microwaves, Wave propagation, Radio waves, Surface roughness, Analysis (mathematics).

36-2941
Glaciology of the Ross Sea sector: contributions from the Scott Polar Research Institute.
Robin, G. de Q., *Royal Society of New Zealand. Journal*. Dec. 1981, 11(4), p.349-353. 22 refs.
Ice shelves, Glacier flow, Radio echo soundings, Antarctica—Ross Sea, Antarctica—Ross Ice Shelf.
Data from airborne radio-sounding programmes provide extensive information on the Ross Ice Shelf. The flow of ice from Marie Byrd Land glaciers is shown clearly. Study of the basal layers indicates the location of basal freezing and melting. The latter processes are controlled by oceanic circulation beneath the ice shelf and by bottom topography, rather than by conduction of heat. Basal melting appears sufficient to have a significant effect on the mass budget of the antarctic continent. Ice discharge from Marie Byrd Land takes place mainly through ice streams formed in shallow depressions in the continental shelf below sea level. Ice from the main inland ice sheet is discharged through trunk glaciers, while that entering the dry valleys is of local origin. Inward-trending valleys beneath the main ice sheet indicate an early extensive mountain glaciation preceding the formation of the main sheet. (Auth.)

36-2942
RISS, RISP and RIGGS: Post-IGY glaciological investigations of the Ross Ice Shelf in the U.S. programme.
Bentley, C.R., et al. *Royal Society of New Zealand. Journal*. Dec. 1981, 11(4), p.355-372. Refs. p.371-372.
Jezek, K.C.
Ice shelves, Glacier flow, Glaciation, Antarctica—Ross Ice Shelf.
Measurements over the last twenty years have revealed the following characteristics of the ice shelf. Sonic logging in a drill hole in the ice demonstrates a striking anomaly in wave velocity that may be associated with the passage of the ice over the grounding line. Seismic shear wave velocities show anisotropic characteristics that may reflect either crystal anisotropy or stress anisotropy, or both. The mass output from the ice shelf is only about half as great as the glacier input through the Transantarctic Mountains plus the surface accumulation on the shelf and its West Antarctic drainage basin, yet measurements on the ice shelf indicate that the mass balance is near zero. This could be consistent with recovery from a past surge of the West Antarctic inland ice. The submarine topography is dominated by broad ridges and valleys extending in an unbroken pattern from the open Ross Sea past the Ross Ice Shelf to the grid eastern part of the West Antarctic inland ice. Convolutions in the ice thickness suggest turbulent flow. Detailed examination of available data has led to a picture of Holocene retreat and fluctuations in grounding line positions during the last 1500 years. (Auth. mod.)

36-2943
Hydrology and climate in the Ross Sea area.
Chinn, T.J.H., *Royal Society of New Zealand. Journal*. Dec. 1981, 11(4), p.373-386. 22 refs.
Meltwater, Lakes, Glacial lakes, Glacier mass balance, Salt lakes, Antarctica—Ross Sea.
Glacial features in the Ross Sea area are a result of seaward fluctuations of outlet glaciers from the ice sheet, alpine glacier variations, and inland advances of a grounded Ross Ice Shelf. Mass balance changes measured on dry valley glaciers are very small, indicating conditions close to glacial equilibrium and emphasizing a low degree of glacial activity. Accumulation is greatest in summer, suggesting that in this region, a temperature increase may lead to a glacial advance. Hydrological studies include measurement of the Onyx River flow, and early- and late-summer levels of nine enclosed lakes. Levels of enclosed lakes lowered from early Holocene times, are currently rising. Results suggest that where a lake adjoins a glacier, in some cases the lake may rise over the winter due to ground water inflow from beneath the glacier. (Auth. mod.)

36-2944
Soil research in the Ross Sea region of Antarctica.
Campbell, I.B., et al. *Royal Society of New Zealand. Journal*. Dec. 1981, 11(4), p.401-410. Refs. p.409-410.
Claridge, G.G.C.
Soils, Desert soils, Cryogenic soils, Soil formation, Antarctica—Ross Sea.
The Ross Sea sector has been the focal point of most antarctic soil research, and since the early 1960's widespread chemical weathering, soil-biological, and pedological studies have been carried out. Chemical weathering of soils is slight and occurs at a very slow rate, but there are measurable differences among soils in the amount of iron oxides released, while in some instances clay mineral transformations can be detected. Differences can be related to various environmental factors. The biological component of the soil is effectively zero in most situations. Pedologically the soils are distinctive and have properties that characterize them as cold desert soils. With knowledge of the predictable differences in soil properties, the soils are used as a means of age correlation in antarctic glacial chronology studies. A consideration of polar soil relationships has shown that antarctic soils are the coldest and driest of a polar soil zonation system, but on a global basis they have many similarities with hot desert soils. Antarctic soils have formed over a very long time (>5 m.y.) and are part of one of the world's most fragile ecosystems. (Auth. mod.)

36-2945
Annual course of snow depth in the Alps in the region of Tyrol. [Ein Beitrag zur Kenntnis des Jahresganges der Schneehöhe im Alpenraum von Tirol].
Fliri, F., *Zeitschrift für Gletscherkunde und Glazialgeologie*. 1980, 16(1), p.1-9. In German with English summary. 20 refs.
Snow depth, Seasonal variations, Statistical analysis, Mapping, Austria—Alps.

36-2946
Crescentic fractures, crescentic gouges and lunate fractures in the area of confluence of Schwarzenstein and Horn Glaciers, Tyrol. [Parabelrisse, Sichelbruche und Sichelwannen im Vereinigungsbereich zweier Zillertaler Gletscher (Tirol)].
Wintges, T., et al. *Zeitschrift für Gletscherkunde und Glazialgeologie*. 1980, 16(1), p.11-23. In German with English summary. 10 refs.
Heuberger, H.
Glacier flow, Glacial geology, Glacial erosion, Ice scoring, Fracturing, Paleoclimatology, Glacier thickness, Statistical analysis, Cracking (fracturing).

36-2947
Attempts of the mechanical interpretation of the crack initiation of crescentic fractures and crescentic gouges on rock surfaces formed during the glacial epoch. [Ansätze zur mechanischen Deutung der Rissentstehung bei Parabelrissen und Sichelbruchen auf glazial geformten Felsoberflachen].
Ficker, E., et al. *Zeitschrift für Gletscherkunde und Glazialgeologie*. 1980, 16(1), p.25-43. In German with English summary. 12 refs.
Sonntag, G., Weber, E.
Fracturing, Ice scoring, Glacier flow, Glaciation, Paleoclimatology, Glacial erosion, Glacier beds, Cracking (fracturing), Theories.

36-2948
Predicted behavior of Griesgletscher, Wallis, Switzerland, and its possible threat to a nearby dam.
Bindschadler, R., *Zeitschrift für Gletscherkunde und Glazialgeologie*. 1980, 16(1), p.45-59. With German summary. 18 refs.
Glacier flow, Calving, Forecasting, Dams, Damage, Mathematical models, Statistical analysis.

36-2949
Studies on the glacial and vegetational history of the Val de Nendaz (Valais, Switzerland)—a contribution to the alpine Late Glacial chronology. [Gletscher- und vegetationsgeschichtliche Untersuchungen im Val de Nendaz (Wallis) - ein Beitrag zur alpinen Spatglazialchronologie].
Muller, H.-N., et al. *Zeitschrift für Gletscherkunde und Glazialgeologie*. 1980, 16(1), p.61-84. In German with English and French summaries. Refs. p.81-84.
Kerschner, H., Kuttel, M.
Glaciation, Vegetation, Moraines, History, Paleoclimatology, Pollen, Mountains, Mapping.

36-2950
Change in elevation of glaciers in the Eastern Alps, 1969-1979. [Zur Hohenanderung von Ostalpengletschern im Zeitraum 1969-1979].
Finsterwalder, R., et al. *Zeitschrift für Gletscherkunde und Glazialgeologie*. 1980, 16(1), p.111-115. In German with English summary. 2 refs.
Rentsch, H.
Glacier oscillation, Glacier surfaces, Photogrammetric surveys, Seasonal variations, Austria—Alps.

36-2951
Explanatory remarks to the map of Hintereisferner, 1979, scale 1:10.000. [Begleitworte zur Karte des Hintereisferners 1979, 1:10.000].
Kuhn, M., *Zeitschrift für Gletscherkunde und Glazialgeologie*. 1980, 16(1), p.117-124. In German with English summary. 19 refs.
Glacier surveys, Photogrammetric surveys, Snow line, Moraines, Mapping.

36-2952
Economical calorimeter for measuring water content of a snow cover.
Ohmura, A., *Zeitschrift für Gletscherkunde und Glazialgeologie*. 1980, 16(1), p.125-130. With German summary. 4 refs.
Snow water content, Snow temperature, Temperature measurement, Calorimeters, Snow cover, Accuracy, Theories.

36-2953
New results of measurements of total beta activity in deep profiles of Kesselwandferner (Otztaler Alps). [Neue Ergebnisse von Messungen der Gesamt-Beta-Aktivitat in Tiefenprofilen am Kesselwandferner (Otztaler Alpen)].
Ambach, W., et al. *Zeitschrift für Gletscherkunde und Glazialgeologie*. 1980, 16(1), p.[illegible] In German.
Eisner, H.
Glacier ice, Fallout, Radioactivity, Pollution, Profiles, Nuclear explosions.

36-2954
Report of the Symposium on the Qinghai-Xizang (Tibet) Plateau, 1980.
Pewe, T.L., *Zeitschrift für Gletscherkunde [illegible] Glazialgeologie*. 1980, 16(1), p.145-144.
Glacial geology, Meetings, Geomorphology, Stratigraphy, Paleoecology, Meteorology.

36-2955
Snow research in France. [Les recherches sur la neige en France].
Lliboutry, L., *Zeitschrift für Gletscherkunde [illegible] Glazialgeologie*. 1980, 16(1), p.145-146. In French.
Snow surveys, Research projects, Organizations, France.

36-2956
Total suspended solids in highway runoff in Washington State.
Asplund, R., et al. *American Society of Civil Engineers—Environmental Engineering Division. Journal*, Apr. 1982, 108(EE2), p.391-404, 25 refs.
Marr, B.W., Ferguson, J.F.
Runoff, Suspended sediments, Roads, Meltwater, Rain, Pollution, Ice melting.

36-2957
Glaciers, mountains probed to find Mt. Ogden moly.
Beley, M.J. *Canadian mining journal*, Apr. 1980, 101(4), p.55-57, 61-62.
Mining, Metals, Minerals, Glacial erosion, Mountains.

36-2958
Microwave approaches in hydrology.
Schmugge, T.J. *Photogrammetric engineering and remote sensing*, Apr. 1980, 46(4), p.495-507, 38 refs.
Snow depth, Snow water equivalent, Snow water content, Soil water, Microwaves, Dielectric properties, Backscattering, Remote sensing.

36-2959
Origin of polygonal troughs on the northern plains of Mars.
Pechmann, J.C. *Icarus*, May 1980, 42(2), p.185-210, 60 refs.
Permafrost distribution, Polygonal topography, Mars (planet), Origin.

36-2960
Glacial hydrology.
World Data Center A for Glaciology. *Glaciological data*, Mar. 1982, GD-12, 133p.
Glacial hydrology, Bibliographies, Snow hydrology, Ice surveys.

36-2961
Arctic concrete technology. Preliminary investigation. (Arktinen betonitekniikka. Esitutkimus).
Jokela, J., et al. *Finland. Technical Research Centre. Research reports*, Mar. 1982, No.75, 134p., In Finnish with English summary. 84 refs.
Kivekas, L., Kukko, H., Rissanen, E.
Concrete freezing, Cold weather construction, Concrete heating, Freezing points, Permafrost, Temperature variations, Climatic factors.

36-2962
Study for two-dimensional freezing in a horizontal circular cylinder passing through maximum density point.
Saitoh, T., et al. *Refrigeration*, Oct. 1979, 54(624), p.845-852, In Japanese with English summary. 12 refs.
Hirose, K.
Freezing, Heat transfer, Pipes (tubes), Phase transformations, Latent heat, Temperature variations, Photography, Convection.

36-2963
Hydrologic and geologic control of carbonate water chemistry in the subarctic Nahanni karst, Canada.
Brook, G.A., et al. *Earth surface processes and landforms*, 1982, Vol.7, p.1-16, 14 refs.
Ford, D.C.
Discontinuous permafrost, Karst, Water chemistry, Hydrogeology, Soil chemistry, Geology, Carbon dioxide.

36-2964
Winter maintenance—Department of Transportation spells out drill for motorways and trunk roads. *Highways and public works*, Dec. 1981-Jan. 1982, 49-50(1860-1), p.16-23
Winter maintenance, Road maintenance, Road icing, Ice removal, Snow removal, Vehicles.

36-2965
Rapid ice formation in hardened cement paste, mortar and concrete due to supercooling.
Grubl, P., et al. *Cement and concrete research*, May 1980, 10(3), p.333-345, With Russian summary. 12 refs.
Sotiriou, V.
Cements, Mortars, Freezing, Concrete freezing, Ice formation, Supercooling, Temperature effects, Experimentation.

36-2966
Relationship between an aggregate's pore size distribution and its freeze thaw durability in concrete.
Kaneuji, M., et al. *Cement and concrete research*, May 1980, 10(3), p.433-441, 7 refs.
Winslow, D.N., Dolch, W.L.
Concrete durability, Concrete freezing, Concrete aggregates, Freeze thaw tests, Porosity.

36-2967
Freezing as a method of study of early cement paste hydration.
Chandra, S., et al. *Cement and concrete research*, May 1980, 10(3), p.467-469, 1 ref.
Hedberg, B., Berntsson, L.
Cements, Freezing, Water content, Structural analysis, Temperature effects.

36-2968
Stress-strain-behaviour of concrete at extremely low temperature.
Rostasy, F.S., et al. *Cement and concrete research*, July 1980, 10(4), p.565-572, With German summary. 15 refs.
Wiedemann, G.
Concrete strength, Stress strain diagrams, Low temperature tests, Moisture, Temperature effects, Water content.

36-2969
***Rate of crystallization* and melting of ice in the laminar stream of liquid.**
Blaszczyk, R., et al. Symposium on Industrial Crystallization, 7th, Warsaw, Sep. 25-27, 1978. Proceedings. Edited by E.J. de Jong and S.J. Jančić. Amsterdam, North-Holland Publishing Company, 1979, p.527-528, 3 refs.
Michalski, H.
Ice crystal growth, Freeze thaw tests, Ice melting, Laminar flow, Liquids, Dendritic ice, Flow rate.

36-2970
Proceedings, Vol.3.
International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981, Québec, Canada, Université Laval, 1981, p.1135-1638, Refs. passim. Includes discussions of papers from Vol. 1 and 2, p.1412-1635. For selected papers see 36-2971 through 36-2989.
Offshore structures, Ice navigation, Ice loads, Ice pressure, Sea ice distribution, Marine transportation, Ice strength, Meetings, Icebreakers, Remote sensing.

36-2971
Dome petroleum operations in the Beaufort Sea.
Johansson, B., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Vol.3, Québec, Canada, Université Laval, 1981, p.1147-1153.
Offshore structures, Marine transportation, Sea ice distribution, Ice navigation, Tanker ships, Pack ice, Beaufort Sea.

36-2972
Performance of icebreaker *Ymer* on the Swedish Arctic Expedition "Ymer 80"—Appendix No.1—Strain measurements and hull damages.
Lindberg, K., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Vol.3, Québec, Canada, Université Laval, 1981, p.1154-1173.
Icebreakers, Bearing strength, Ice loads, Ice pressure, Strains, Damage.

36-2973
Development and implementation of ship ice certificates.
Maksutov, D.D., et al. International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Vol.3, Québec, Canada, Université Laval, 1981, p.1174-1181, Includes discussion and author's reply.
Popov, IU.N.
Ice navigation, Tanker ships, Bearing strength, Marine transportation, Ice conditions, Sea ice distribution.
Annual growth of cargo traffic and the lengthening of the navigation season in the Arctic, as well as the USSR participation in Antarctic research, demands a large number of cargo and research vessels suited for ice navigation, i.e. with adequate icebreaking capabilities and ice-strengthened hulls. Because of the possibility of ice damage, each ship should have, in addition to the usual documentation, an "Ice Certificate" containing the information which would facilitate a better choice of tactical and technical elements ensuring the fail-safe operation of the ship under ice conditions. This paper describes the background and requirements for "Ice Certificates" in the USSR. (Auth.)

36-2974
Remote measurement of sea ice thickness by radar. (La telemesure de l'epaisseur des glaces de mer a l'aide de radar).
Audette, M., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Vol.3, Québec, Canada, Université Laval, 1981, p.1182-1192, In French. 4 refs. Includes discussion and reply.
Sea ice distribution, Ice cover thickness, Remote sensing, Radar echoes, Beaufort Sea.

36-2975
Quantitative methods in remote surveillance.
Rossiter, J.R., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Vol.3, Québec, Canada, Université Laval, 1981, p.1193-1208, 25 refs.
Sea ice distribution, Remote sensing, Measuring instruments, Ice cover, Radar echoes, Bottom sediment, Acoustic measuring instruments, Sounding.

36-2976
Ridge statistics from aerial stereophotography.
Wheeler, J.D., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Vol.3, Québec, Canada, Université Laval, 1981, p.1209-1226, 10 refs.
Pressure ridges, Stereophotography, Aerial surveys, Ice surface, Statistical analysis, Profiles.

36-2977
Ice hazard detection system—preliminary investigations.
Jonasson, W.B., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Vol.3, Québec, Canada, Université Laval, 1981, p.1227-1238, 6 refs. Includes discussion and author's reply.
Sea ice distribution, Ice detection, Remote sensing.

36-2978
Design factors for rubble mound structures under ice and wave attack.
Czerniak, M.T., et al. International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Vol.3, Québec, Canada, Université Laval, 1981, p.1239-1258, 16 refs. Includes discussion and authors' reply.
Shak, A.T., Collins, J.I.
Offshore structures, Ice loads, Ice pressure, Ice pileup, Slope protection, Ports, Ice conditions, Design, Ocean waves, Ocean currents, Rubble.

36-2979
Basic science and its relation to Arctic marine engineering.
Roots, E.F., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Vol.3, Québec, Canada, Université Laval, 1981, p.1259-1287, 33 refs.
Offshore structures, Engineering, Sea ice distribution, Climatic factors, Human factors, Marine biology, Polar regions.

36-2980
Upper bounds of ridge pressure on structures.
Prodanovic, A., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Vol.3, Québec, Canada, Université Laval, 1981, p.1288-1302, 11 refs.
Pressure ridges, Offshore structures, Ice loads, Ice pressure, Ice strength, Impact strength, Ice breakup, Shear strength, Analysis (mathematics).

36-2981
Marine foundations.
Kivisild, H.R., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Vol.3, Québec, Canada, Université Laval, 1981, p.1303-1316, Includes discussion and author's reply.
Offshore structures, Foundations, Pile structures, Bearing strength, Ice pressure, Ice loads, Artificial islands, Sea ice, Erosion, Floating structures, Subsea permafrost, Engineering.

36-2982
On modeling mesoscale ice dynamics using a viscous plastic constitutive law.
Hibler, W.D., III, et al. MP 1526, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Vol.3, Québec, Canada, Université Laval, 1981, p.1317-1329, 9 refs. Includes discussion and authors' reply.
Udin, I., Ullerstig, A.
Ice mechanics, Viscosity, Ice plasticity, Rheology, Mathematical models, Plastic flow, Ice cover thickness, Velocity, Ice strength.
The behavior of an ice dynamics model employing a viscous plastic rheology is investigated. Time and space scales of the order of 3 hours and 20 km are emphasized. However, whenever possible the results are presented in a nondimensional form. Numerical parameter variations examined include the effect of the "rigid" creep rate on numerical convergence rate, the effects of ice strength on the numerical adjustment time needed to fully attain ideal plastic flow, and the effect of grid size on the behavior of simulated ice dynamics. Based on the results of these studies a viable numerical procedure for simulating mesoscale plastic flow is proposed.

36-2983
Numerical modeling of Labrador pack ice dynamics.
Denner, W.W., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Vol.3, Québec, Canada, Université Laval, 1981, p.1330-1347, 25 refs.
Keliher, T.E.
Ice mechanics, Pack ice, Rheology, Ice models, Ice cover thickness, Sea ice distribution, Mathematical models, Ocean currents, Ocean waves, Ice edge, Coastal topography features, Climatic factors.

36-2984
Sea ice rubble formations off the northeast Bering Sea and Norton Sound coasts of Alaska.
Kovacs, A., MP 1527, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Vol.3, Québec, Canada, Université Laval, 1981, p.1348-1363, 21 refs.
Sea ice, Pressure ridges, Ice surface, Ice formation, Grounded ice, Photography, Aerial surveys, United States—Alaska—Norton Sound, Bering Sea.

36-2985
Canadian ice services in the 1980's.
Markham, W.E., International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Vol.3, Québec, Canada, Université Laval, 1981, p.1364-1368.
Ice navigation, Icebreakers, Ice surveys, Sea ice, River ice, Canada.

36-2986
Environmental data requirements for a real time iceberg motion model.
Ball, P., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Vol.3, Québec, Canada, Université Laval, 1981, p.1369-1380, 10 refs. Includes discussion and authors' reply.
Gaskill, H.S., Lopez, R.J.
Icebergs, Drift, Ice mechanics, Ice forecasting, Velocity, Environments, Labrador Sea.

36-2987
Simulation of iceberg shapes and their impact probabilities.
Reddy, D.V., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Vol.3, Québec, Canada, Université Laval, 1981, p.1381-1392, 6 refs. Includes discussion.
Cheema, P.S.
Icebergs, Profiles, Impact, Forecasting.

36-2988
Arctic marine heat transfer experiment for the Polar Gas Project.
Smith, J.W., et al, International Conference on Port and Ocean Engineering under Arctic Conditions, 6th, Québec, Canada, July 27-31, 1981. Proceedings, Vol.3, Québec, Canada, Université Laval, 1981, p.1393-1411, 1 ref.
Kaustinen, O.M., Brennan, F.A., O'Callaghan, R.T.
Gas pipelines, Heat transfer, Ice formation, Bottom sediment, Pipeline freezing, Ocean bottom, Hydraulic structures, Underground pipelines.

36-2989
Ice-gouge data, Beaufort Sea, Alaska, 1972-1980.
Rearic, D.M., et al, *U.S. Geological Survey. Open-file report*, [1981], No.81-950, 22p. + figs., Refs. p.18-22.
Barnes, P.W., Reimnitz, E.
Ice scoring, Sea ice, Drift, Marine geology, Ocean currents, Ocean bottom, Wind factors, Statistical analysis, Beaufort Sea.

36-2990
Seasonal variations in water structure under fast ice near Syowa Station, Antarctica, in 1976.
Wakatsuchi, M., *Antarctic record*, Feb. 1982, No.74, p.85-108, 8 refs.
Fast ice, Salinity, Sea water freezing, Antarctica—Lützow-Holm Bay.
Formation of homogeneous water was observed in the surface layer above a depth of 400 m in the Ongul Strait in early September of 1976 when fast ice had the maximum thickness. The salinity of surface water in this strait increased from 33.93 ppt to 34.10 ppt by the convection process during the ice growth. Meanwhile in the Hovdebukta, water with maximum salinity of 35.03 ppt was observed at 300 m. The formation of the saline water is probably due to the exclusion of brine by the rapid freezing of sea water in cracks as well as by the gradual growth of fast ice. The saline water produced by the exclusion of brine was expected to remain near the bottom of glacial troughs until summer, but it was not observed there in summer. The interpretation is given that the saline water disappeared as a result of the advection of less saline water off the Soya Coast and/or the inflow of fresh water produced in the coast of the continent, probably from the bottom of glaciers from spring onward. (Auth.)

36-2991
Centric diatom communities found in antarctic sea ice.
Watanabe, K., *Antarctic record*, Feb. 1982, No.74, p.119-126, 14 refs.
Sea ice, Cryobiology, Algae.
It has been generally accepted that ice algal communities are dominated by pennate diatoms in the arctic and antarctic seas. However, two ice algal communities found near the antarctic continent were dominated by centric diatoms. One sample from the bottom layer of fast ice near Langhovde on 12 October, 1970, was dominated by *Porosira pseudodenticulata* (Hust.) Jousé. In another sample, *Coscinodiscus furcatus* Karsten was dominant, which was collected from the bottom layer of sea ice near Cape Bird on 21 December, 1971. The two centric diatom species formed a colony in a water mount and seemed to have the nature of sedentary species as well as planktonic characteristics. (Auth.)

36-2992
Mechanical properties of gypsum as the structural material with the advance of inflammability of building at Syowa Station.
Sato, T., et al, *Antarctic record*, Feb. 1982, No.74, p.163-248, In Japanese with English summary. Refs. p.247-248.
Hirayama, Z., Okada, M.
Construction materials, Cold weather construction, Fires, Antarctica—Showa Station.
On the occasion of selecting structural materials for constructions at Showa Station, the authors considered that gypsum was the most promising one as the main structural material and investigated its mechanical performance over a wide range of temperatures between -20 C (lowest) and +20 C (normal). The purpose of this paper is to confirm the possibility of applying gypsum to construction. Therefore, the test program was made for beams, columns and framed structures of gypsum. In addition to it, the same test program was made for concrete and reinforced concrete members in order to compare those results. Furthermore, a comparative study of test values and theoretical ones was conducted. (Auth.)

36-2993
Seismic stability of avalanche protection tunnels. [Seismostoikost' lavinozashchitnykh galerei].
Abduzhabarov, A.Kh., *Avtomobil'nye dorogi*, Oct. 1981, No.10, p.8-9, In Russian.
Avalanche engineering, Tunnels, Walls, Panels, Earthquakes.

36-2994
Stability of sand foundations beneath sectional pavements. [Obespechenie ustoichivosti peschanykh osnovanii pod sbornymi pokrytiiami].
Polunovskii, A.G., et al, *Avtomobil'nye dorogi*, Oct. 1981, No.10, p.11-12, In Russian. 2 refs.
Roads, Roadbeds, Pavements, Foundations, Sands, Plates, Concretes.

36-2995
Winter maintenance of roads in Finland. [Zimnee soderzhanie avtomobil'nykh dorog v Finliandii].
Khiarkiainen, K., *Avtomobil'nye dorogi*, Oct. 1981, No.10, p.26-28, In Russian.
Roads, Winter maintenance, Snow removal, Chemical ice prevention, Polar regions.

36-2996
Design of roads for oil fields. [Proektirovanie avtomobil'nykh dorog dlia neftianykh promyslov].
Braslavskii, V.D., *Avtomobil'nye dorogi*, Oct. 1981, No.10, p.29, In Russian.
Petroleum industry, Roads, Permafrost beneath structures, Swamps.

36-2997
Preventing ice formation on road pavements. [O sozdanii gololedobezopasnykh dorozhnykh odezhd].
Mikhailov, A.V., *Avtomobil'nye dorogi*, Nov. 1981, No.11, p.11-13, In Russian. 4 refs.
Pavements, Road icing, Ice prevention, Slope orientation, Albedo.

36-2998
Use of chemical waste for prevention of road icing in the Ukraine. [Ispol'zovanie khimicheskikh otkhodov dlia bor'by s gololedom na dorogakh Ukrainy].
Fleish, L.A., et al, *Avtomobil'nye dorogi*, Nov. 1981, No.11, p.13-14, In Russian. 3 refs.
Krivchenko, A.S.
Road icing, Ice prevention, Wastes.

36-2999
Improvement and further development of road construction in freezing weather. [Sovershenstvovat' i razvivat' dorozhno-stroitel'nye raboty zimoi].
Petrushin, A.K., *Avtomobil'nye dorogi*, Feb. 1982, No.2, p.1-3, In Russian.
Roads, Roadbeds, Earthwork, Frozen ground.

36-3000
Building roadbed foundations at subzero temperatures. [Ustroistvo osnovanii dorozhnykh odezhd pri otritsatel'noi temperature].
Mogilevich, V.M., et al, *Avtomobil'nye dorogi*, Feb. 1982, No.2, p.3-4, In Russian. 3 refs.
Belousov, B.V., Asmatulaev, B.A.
Roads, Pavements, Winter concreting, Concrete admixtures, Concrete strength.

36-3001
Dredging in road construction of western Siberia. [Gidromekhanizatsiia na stroitel'stve avtomobil'nykh dorog v Zapadnoi Sibiri].
Vavilov, N.G., et al, *Avtomobil'nye dorogi*, Feb. 1982, No.2, p.4-6, In Russian.
Gerasimov, A.G.
Roadbeds, Swamps, Earth fills, Dredging, Permafrost beneath structures, Roads.

36-3002
Freeze-out as a method of concentrating impurities in water. [Vymorazhivanie kak metod kontsentrirovaniia primesei v vodakh].
Stadnik, A.S., et al, *Khimiia i tekhnologiia vody*, May-June 1981, 3(3), p.227-233, In Russian. 44 refs.
Dedkov, Iu. M.
Sewage, Water treatment, Impurities, Artificial freezing.

36-3003
Low temperature effect on dehydration of organic-mineral sediments. [Vliianie nizkikh temperatur na protsess obezvozhivaniia organo-mineral'nykh osadkov].
Shkavro, Z.N., et al, *Khimiia i tekhnologiia vody*, May-June 1981, 3(3), p.247-251, In Russian. 10 refs.
Kul'skii, L.A., Medvedev, M.I., Frisherman, L.I.
Sewage treatment, Organic soils, Freeze thaw cycles.

36-3004
Prediction and evaluation of environmental changes resulting from diversion of northern rivers to the south. [Prognozirovanie i otsenka izmenenii prirodnoi sredy pri perebroske stoka severnykh rek na iug].
Finarov, D.P., *Gidrotekhnika i melioratsiia*, Nov. 1981, No.11, p.28-31, In Russian.
River diversion, Subpolar regions, Forest land, Cryogenic soils, Swamps.

36-3005
Consequences of partial diversion of the Ob' and Irtysh rivers on the natural conditions of western Siberia. [O nekotorykh posledstviiakh izlishnia chasti stoka iz rek Obi i Irtysha dlia prirody Zapadnoi Sibiri].
Malik, L.K., *Gidrotekhnika i melioratsiia*, Nov. 1981, No.11, p.31-35, In Russian. 6 refs.
Subarctic regions, Subpolar regions, Forest land, Paludification, Cryogenic soils.

36-3006
Forecasting the sinking of earth structures into silty bearing ground. [Prognoz pogruzhenia zemlianykh sooruzhenii v ilistye osnovaniia].
Krizskii, N.M., et al, *Gidrotekhnika i melioratsiia*, Dec. 1981, No.12, p.28-29, In Russian. 4 refs.
Markevich, V.P.
Earth dams, Foundations, Fines, Bearing strength, Settlement (Structural).

36-3007
Soils of non-chernozem areas as an object of land reclamation and cultivation. [Pochvy nechernozem'ia kak ob"ekt meliorativnogo stroitel'stva i okul'turivaniia].
Zaidel'man, F.R., *Gidrotekhnika i melioratsiia*, Feb. 1982, No.2, p.36-43, In Russian. 8 refs.
Subpolar regions, Landscape types, Tundra, Forest tundra, Taiga, Land reclamation.

36-3008
Types of birch forests in the central part of southern taiga of the Russkaya plain. [Tipy berezniakov tsentral'noi chasti iuzhnoi taigi Russkoi ravniny].
Zvorykina, K.V., et al, *Lesovedenie*, Jan.-Feb. 1982, No.1, p.3-11, In Russian with English summary. 20 refs.
Abaturov, B.D., Il'iushenko, A.F.
Taiga, Cryogenic soils, Plant ecology, Ecosystems.

36-3009
State of young pine growth in felled areas of birch forests in southern taiga. [Sostoianie podrosta eli na sploshnykh vyrubkakh v berezniakakh iuzhnoi taigi].
Orlov, A.IA., et al, *Lesovedenie*, Jan.-Feb. 1982, No.1, p.18-25, *In Russian with English summary*. 8 refs.
Il'iushenko, A.F.
Taiga, Cryogenic soils, Revegetation, Forestry.

36-3010
Age dynamics in pine forests of northern Europe. [Vozrastnaia dinamika sosniakov evropeiskogo Severa].
Zlabchenko, S.S., *Lesovedenie*, Mar.-Apr. 1982, No.2, p.3-10, In Russian with English summary. 13 refs.
Taiga, Trees (plants), Cryogenic soils, Plant ecology, Ecosystems, USSR—Karelia, USSR—Murmansk.

36-3011
Water preservation and soil protection role of dark conifer mountain taiga on Khamar Daban. [K kharakteristike vodookhrannoi i pochvozashchitnoi roli gornoi temnokhvoinoi taigi Khamar-Dabana].
Molokov, V.A., et al, *Lesovedenie*, Mar.-Apr. 1982, No.2, p.57-62, In Russian with English summary. 17 refs.
Ziganshin, R.A.
Taiga, Slope processes, Slope orientation, Cryogenic soils, Soil erosion, Protective vegetation, Soil water.

36-3012
Snow cover, freezing and thawing of soils in the pine forest of northern Tien Shan. [Snezhnyi pokrov, promerzanie i ottaivanie pochvy v elovykh lesakh Severnogo Tian'-Shania].
Chernykh, Z.I., et al, *Lesovedenie*, Mar.-Apr. 1982, No.2, p.63-68, In Russian with English summary. 12 refs.
Cheshev, I.S.
Alpine landscapes, Snow water equivalent, Snow cover distribution, Cryogenic soils, Freeze thaw cycles, Frost penetration, Soil water, Soil temperature.

36-3013
Consolidation of glacial-lacustrine soils by filtration. [O fil'tratsionnoi konsolidatsii ozerno-lednikovykh gruntov].
Polishchuk, T.G., *Leningrad. Universitet. Vestnik*, Dec. 1981, 24(4), p.80-85, In Russian with English summary. 1 ref.
Clay soils, Soil compaction, Glacial deposits, Lacustrine deposits.

36-3014
Physiographic regionalization of the Taygonos Peninsula, a young mountain province, under subarctic climatic conditions (the northeastern USSR). [Fiziko-geograficheskoe raionirovanie molodoi gornoi provintsii v usloviiakh subarkticheskogo klimata na primere poluostrova Taigonos (Severo-Vostok SSSR)].
Zhulanov, B.G., *Leningrad. Universitet. Vestnik*, Dec. 1981, 24(4), p.87-91, In Russian with English summary. 6 refs.
Subarctic landscapes, Mapping, Okhotsk Sea.

36-3015
Friction and heat transfer between air and a surface with the transfer of sand, salt and ice particles. [Trenie i teploobmen vozdukha s poverkhnost'iu pri nalichii perenosa chastits peska, soli i l'da].
Zakharova, O.K., *Meteorologiia i gidrologiia*, Dec. 1981, No.12, p.36-40, In Russian with English summary. 5 refs.
Air flow, Turbulent flow, Sediment transport, Sands, *Ice friction, Heat transfer.*

36-3016
***Long range forecasts of maximum water levels during* ice jams on the Angara River near Kamenka Town.** [Dolgosrochnyi prognoz maksimal'nykh urovnei vody pri zatorakh l'da na Angare u g. Kamenka].
Karnovich, V.N., et al, *Meteorologiia i gidrologiia*, Dec. 1981, No.12, p.105-107, In Russian with English summary. 4 refs.
Kuleshova, T.V.
***Flood forecasting, Long range forecasting, Ice jams,* Water level, Ice breakup, Ice passing.**

36-3017
Snow evaporation and melting in Central Yakutia. [Vesennee snegotaianie i isparenie snega v Tsentral'noi IAkutii].
Are, A.L., et al, *Meteorologiia i gidrologiia*, Feb. 1982, No.2, p.91-96, In Russian with English summary. 5 refs.
Petropavlovskaia, M.S.
Snow melting, Snow evaporation, Snow cover structure, Snow depth, Depth hoar.

36-3018
Surface-based generators of ice-forming aerosols for artificial increase of precipitation in mountains. [Ob ispol'zovanii nazemnykh generatorov l'doobrazuiushchikh aerozolei v rabotakh po iskusstvennomu uvelicheniiu osadkov v gornykh raionakh].
Laktionov, A.G., *Meteorologiia i gidrologiia*, Mar. 1982, No.3, p.88-93, In Russian with English summary. 9 refs.
Weather modification, Artificial precipitation, Aerosols, Smoke generators, Ice nuclei, Cloud seeding.

36-3019
Proceedings, Vols.1 and 2.
IAHR International Symposium on Ice, Quebec, Canada, July 27-31, 1981, Québec, Canada, Université Laval, 1982, 952p., Refs. passim. For individual papers see 36-3020 through 36-3092.
Ice navigation, Ice conditions, Sea ice, River ice, Lake ice, Ice mechanics, Ice pressure, Hydraulic structures, Meetings, Offshore structures, Thermal regime, Water temperature, Ports.

36-3020
History of research on river and lake ice in Canada.
Michel, B., IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.1, Québec, Canada, Université Laval, 1982, p.1-10, 24 refs.
River ice, Lake ice, Ice formation, Ice breakup, History, Ice surveys, Canada.

36-3021
Experiences on winter thermal regimes of rivers and lakes with emphasis on Scandinavian conditions.
Bengtsson, L., IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.1, Québec, Canada, Université Laval, 1982, p.11-54, 27 refs. Includes discussions and replies.
Icebound rivers, Icebound lakes, Ice growth, Heat loss, Ice cover thickness, Water temperature, Degree days, Thermal regime, Analysis (mathematics).

36-3022
Heat losses from an open water surface at very low air temperature— a laboratory experiment.
Bengtsson, L., IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.1, Québec, Canada, Université Laval, 1982, p.55-64, 12 refs.
Heat loss, Water temperature, Surface temperature, Latent heat, Air temperature, Low temperature tests, Analysis (mathematics).

36-3023
River ice suppression by side channel discharge of *warm water*.
Ashton, G.D., MP 1528, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981 Proceedings, Vol.1, Québec, Canada, Universite Laval, 1982, p.65-80, 3 refs. Includes discussions and replies.
River ice, Ice conditions, Ice prevention, Channels (waterways), Water temperature, River flow, Ice *edge, Air temperature, Ice melting.*
Results are presented of a field study of the ice suppression caused by discharge of warm water at the side of the Mississippi River near Bettendorf, Iowa. Included in the results are measurements of lateral and longitudinal open water extents and lateral, longitudinal, and vertical water temperature profiles. Successive measurements were made on both very cold (-20C) and warm days (0C air temperature). The manner by which the ice cover extends during a change from warm to cold weather is described.

36-3024
Mathematical model of the discharge of frazil in rivers.
Matousek, V., IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.1, Québec, Canada, Universite Laval, 1982, p.81-100, 6 refs. Includes discussion and reply.
Frazil ice, River ice, Ice mechanics, Drift, River flow, Mathematical models.

36-3025
Acoustic detector for frazil.
Hanley, T.O., et al, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.1, Québec, Canada, Universite Laval, 1982, p.101-110, 3 refs. Includes discussions and replies.
Rao, S.R.
Ice acoustics, Ice detection, Frazil ice, Ice formation, Water temperature, Experimentation, Temperature effects, Acoustic measurement.

36-3026
Performance of a point source bubbler under thick ice.
Haynes, F.D., et al, MP 1529, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981 Proceedings, Vol.1, Québec, Canada, Universite Laval, 1982, p.111-124, 10 refs. Includes discussions and replies.
Ashton, G.D., Johnson, P.R.
Ice cover thickness, Bubbling, Ice prevention, Ice melting, Structures, Damage, Tests, Air temperature, Analysis (mathematics).
Air bubbler systems are used to suppress ice formation and prevent ice damage to structures. Injection of air into the slightly more dense, warm water at the bottom of a body of fresh water raises the warm water to the surface. A bubbler system provides a simple and inexpensive means of suppressing ice if the body of water has the necessary thermal reserve. A study was conducted with a point source bubbler to examine its performance when installed under an existing layer of thick lake ice.

36-3027
Ice formation on the walls of a water tunnel excavated through rock in permafrost.
Tryde, P., IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, *Vol.1*, Québec, Canada, Université Laval, 1982, p.125-140, 3 refs. Includes discussions and replies.
Ice formation, Walls, Tunnels, Permafrost heat transfer, Channels (waterways), Frozen rocks, Ice cover thickness, Analysis (mathematics).

36-3028
Relations between climatic conditions and winter *regime of water bodies.*
Votruba, L., IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.1, Québec, Canada, Université Laval, 1982, p.141-151, 5 refs.
Ice formation, Frazil ice, River ice, Reservoirs, Channels (waterways), Climatic factors, Air temperature, Winter.

36-3029
Peaking hydro generating stations in winter.
Foulds, D.M., IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.1, Québec, Canada, Université Laval, 1982, p.152-162, Includes discussions and replies.
River flow, Ice cover effect, Electric power, Pressure *ridges, Winter.*

36-3030
Problems of ice release and flow conditions upstream of low-head river dams.
Györke, O., et al, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.1, Québec, Canada, Universite Laval, 1982, p.163-177, 2 refs. Includes discussions and replies.
Deesi, E., Zsilak, E.
River ice, Ice breaking, Dams, Channels (waterways), Ice mechanics, Ice jams, Ice floes, Reservoirs, Ice-breakers.

36-3031
Wintertime flow and ice conditions in the upper St. Lawrence River.
Sken, H.T., et al, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, vol.1, Québec, Canada, Universite Laval, 1982, p.178-192, 10 refs. Includes discussions and authors' rev's.
Ackermann, N.L.
River ice, Ice conditions, River flow, Ice cover thickness, Frazil ice, Ice dams, Thermal regime, Climatic factors, Analysis (mathematics).

36-3032
Winter operations International Rapids Section of the St. Lawrence River.
Wigle, T.E., et al, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.1, Québec, Canada, Université Laval, 1982, p.193-210, Includes discussions and authors' reply.
Bartholomew, J., Lawrie, C.J.R.
Ice conditions, River ice, Ice navigation, Ice control, Channels (waterways), Freezeup, Ice breakup, Ice formation, Design criteria, Winter, Canada—Saint Lawrence River.

36-3033
Ice cover effect on salt and fresh water exchange in tidal estuaries: case of the Fort George River estuary at the beginning of filling up of the LG 2 reservoir. [Influence de la couverture de glace sur les échanges d'eau salée et d'eau douce dans un estuaire à marée: le cas de l'estuaire de La Grande Rivière, au début du remplissage du réservoir de LG 2].
Boivin, R., et al, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.1, Québec, Canada, Université Laval, 1982, p.211-223, In French. 6 refs. Includes discussions and replies.
Caron, O., Drouin, M.
Ice cover effect, Estuaries, Tides, Salt water, Water transport, Reservoirs, Canada—Quebec—Fort George River.

36-3034
Hydraulic resistance of ice cover.
Hirayama, K., IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.1, Québec, Canada, Université Laval, 1982, p.224-237, 12 refs. Includes discussions and replies.
Ice cover strength, Icebound rivers, Hydraulics, Water pressure, Surface roughness, Analysis (mathematics).

36-3035
Ice problems at Vittjärv Power Plant—measures and results.
Jensen, M., IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.1, Québec, Canada, Université Laval, 1982, p.238-251.
Ice conditions, River flow, Ice floes, Frazil ice, Countermeasures, Ice booms, Slush, Dams, Electric power, Air temperature, Water temperature.

36-3036
Field observations of ice conditions on the Liard-/Mackenzie River system.
Parkinson, F.E., IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.1, Québec, Canada, Université Laval, 1982, p.252-265, Includes discussions and replies.
Ice conditions, River ice, Ice cover thickness, Freezeup, Ice breakup, Ice jams, Thermal regime, Canada—Mackenzie River, Canada—Liard River.

36-3037
Research on the best solution to prevent floods caused by ice breakup on the Matapédia River. [Recherche sur les meilleures solutions contre les inondations de la Matapédia causées par les débâcles].
Gidas, N.K., IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.1, Québec, Canada, Université Laval, 1982, p.266-276, In French with English summary. 6 refs. Includes discussion and author's reply.
Ice breakup, River ice, Flood control, Flooding, Countermeasures, Canada—Quebec—Matapédia River.

36-3038
Flood waves caused by ice jam formation and failure.
Henderson, F.M., et al, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.1, Québec, Canada, Université Laval, 1982, p.277-297, 11 refs. Includes discussions and replies.
Gerard, R.
Ice jams, Floods, Water level, River flow, Dams, Analysis (mathematics).

36-3039
Stability of floes below a floating cover.
Tatinclaux, J.C., et al, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.1, Québec, Canada, Université Laval, 1982, p.298-311, 10 refs. Includes discussion and authors' reply.
Gogus, M.
Ice jams, Underwater ice, River ice, Ice floes, Ice cover effect, Ice bottom surface, Ice cover thickness, Floating ice, Stability, Velocity, Surface roughness.

36-3040
Regulating effect of reservoirs on the control of ice run on the Yellow River.
Chen, Z., et al, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.1, Québec, Canada, Université Laval, 1982, p.312-323, Includes discussion.
Sun, Z., Xu, J., Cai Lin, W.W.
River ice, Ice conditions, Ice control, Ice mechanics, River flow, Reservoirs, Ice jams, Freezeup, Air temperature, China—Yellow River.

36-3041
Computation of trajectories of ice floes movement on the rivers.
Gordeev, O.I., et al, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.1, Québec, Canada, Université Laval, 1982, p.324-332.
Degtiarev, V.V.
Ice floes, Ice mechanics, Flow rate, River ice, Mathematical models, Computer applications, Hydrodynamics.

36-3042
Transportation of ice in rivers.
Ackermann, N.L., et al, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.1, Québec, Canada, Université Laval, 1982, p.333-346, 5 refs. Includes discussions and replies.
Shen, H.T., Ruggles, R.W.
River ice, Ice mechanics, Ice floes, Ice conditions, Flow rate, Ice jams, River flow, Stresses, Analysis (mathematics).

36-3043
Effect of floating ice jams on the magnitude and frequency of floods along the Missisquoi River in northern Vermont.
Vogel, R.M., et al, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.1, Québec, Canada, Université Laval, 1982, p.347-360, 13 refs. Includes discussion.
Root, M.J.
Ice jams, Floating ice, Floods, River ice, Ice cover effect, Flow rate, Hydraulics, United States—Vermont—Missisquoi River.

36-3044
Port Huron ice control model studies.
Calkins, D.J., et al, MP 1530, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.1, Québec, Canada, Université Laval, 1982, p.361-373, 6 refs. Includes discussion and authors' reply.
Sodhi, D.S., Deck, D.S.
River ice, Ice control, Ice jams, Floods, Ice mechanics, Lake ice, Ice loads, Loads (forces), Ice floes, Wind pressure, Structures, Models, United States—Saint Clair River.
The Corps of Engineers, in its study of year-round navigation on the Great Lakes, recognized the problem of ice discharge into St. Clair River from Lake Huron. This study deals with the determination of force levels on, and the amount of ice discharge through the opening in, an ice control structure, using natural and synthetic ice floes.

36-3045
Force distribution in a fragmented ice cover.
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Stewart, D.M.
Floating ice, Ice floes, Loads (forces), Ice booms, Shear stress, Channels (waterways), Experimentation.

36-3046
Formation of ice jams in the Elbe River—a case study.
Garbrecht, G., et al, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.1, Québec, Canada, Université Laval, 1982, p.388-397.
Fahlbush, H., Mertens, W.
Ice jams, River ice, Ice mechanics, River flow, Ice conditions, Water level, Models, Germany—Elbe River.

36-3047
Dispersion in a covered channel with varying roughness at the top cover.
Elhadi, N.D., et al, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.1, Québec, Canada, Université Laval, 1982, p.398-411, 8 refs. Includes discussions and replies.
Davar, K.S.
Dispersions, Surface roughness, Channels (waterways), Ice cover effect, Hydrodynamics, Mathematical models, Stream flow, Velocity, Experimentation.

36-3048
Thermal regime of river ice—a case study. [Regime thermique des glaces en rivière - étude de cas].
Macotte, N., IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.1, Québec, Canada, Université Laval, 1982, p.412-425, In French with English summary. 9 refs. Includes discussion and author's reply.
River ice, Thermal regime, Ice growth, Ice conditions, Dams, Frazil ice, Ice cover, River flow, Heat transfer, Ice water interface, Air water interactions, Mathematical models, Electric power.

36-3049
Numerical modeling and predictability of ice regime in rivers.
Petryk, S., et al, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.1, Québec, Canada, Université Laval, 1982, p.426-435, 10 refs.
Panu, U.S., Kartha, V.C., Clement, R.
Ice conditions, Ice forecasting, River ice, River flow, Frazil ice, Ice formation, Ice breakup, Heat balance, Ice melting, Water level, Computer programs, Mathematical models.

36-3050
Model study of ice movement at Idylwyld traffic bridge.
Smith, C.D., IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.1, Québec, Canada, Université Laval, 1982, p.436-447, Includes general discussion of the session by D.J. Calkins.
River ice, Ice jams, Ice mechanics, Ice breakup, Ice conditions, Ice floes, Ice models, Bridges.

36-3051
Glacier mechanics.
Mellor, M., MP 1532, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.455-474, Includes discussion.
Glacier flow, Ice creep, Ice mechanics, Stress strain diagrams, Rheology, Engineering.

36-3052
Field investigations of a hanging ice dam.
Beltaos, S., et al, MP 1533, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.475-488, 19 refs. Includes discussions and replies.
Dean, A.M.
River ice, Ice dams, Ice breakup, Frazil ice, Shear strength, Underwater ice, Slush, Bearing strength, Ice jams, Damage, Flow rate, Porosity.
A hanging ice dam that forms annually in the lower Smoky River, Alberta, has been the object of continued investigation during the period 1975-1979. The study aims at documenting physical dimensions and material properties of the dam, elucidating the mechanisms of its formation and removal, and assessing its effects on the progress of breakup in the river. This paper presents a summary of the results obtained to date.

36-3053
Comparison of several chemically-doped types of model ice.
Timco, G.W., IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.489-502, 14 refs. Includes discussions and replies.
Doped ice, Ice models, Ice composition, Flexural strength, Ice growth, Ice strength, Strain tests, Chemical composition, Urea.

36-3054
Carbamide ice growth in a large test basin.
Sandell, D.A., IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.503-515, 8 refs. Includes discussion and reply.
Doped ice, Ice growth, Ice crystal structure, Ice strength, Heat transfer, Tests, Urea, Analysis (mathematics).

36-3055
Salinity of artificial built-up ice made by successive floodings of sea water.
Nakawo, M., et al. IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.516-525, 5 refs. Includes discussion and reply.
Frederking, R.
Artificial freezing, Ice cover thickness, Ice cover strength, Floating ice, Ice salinity, Flooding, Ice sheets, Offshore drilling, Sea water freezing, Ice mechanics, Floating structures, Ice platforms.

36-3056
Multiaxial compressive strength tests on saline ice with brush-type loading platens.
Hausler, F.U., IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.526-539, 10 refs. Includes discussions and replies.
Ice salinity, Compressive properties, Ice cover strength, Stresses, Loads (forces), Strain tests, Ice temperature, Anisotropy.

36-3057
Pressure due to expansion of ice sheet in reservoirs.
Xu, B., IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.540-550.
Ice pressure, Ice cover thickness, Reservoirs, Ice temperature, Ice sheets, Temperature variations, Air temperature, Expansion.

36-3058
Strain rate dependent fracture toughness (*K(IC)*) of pure ice and sea ice.
Urabe, N., et al, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.551-564, 13 refs. Includes discussion and reply.
Yoshitake, A.
Ice strength, Ice hardness, Strain tests, Stresses, Ice cracks, Fracturing, Ice breakup, Buoyancy, Ice microstructure.

36-3059
Scale effects in continuous crushing of ice.
Kry, P.R., IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.565-580, 17 refs. Includes discussion and reply.
Ice breaking, Ice cracks, Ice cover thickness, Strain tests, *Floating* ice, Ice strength, Stresses, Artificial islands, Brittleness.

36-3060
Comparative study of ice strength data.
Sinha, N.K., IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.581-595, 15 refs. Includes discussion and reply.
Ice strength, Strain tests, Compressive properties, Ice creep, Brittleness, Stress strain diagrams, Analysis (mathematics).

36-3061
Primary creep and experimental method for testing ice in various conditions of strain rates and stresses.
Duval, P., et al, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.596-606, 13 refs. Includes discussions and replies.
Maitre, M., Manouvrier, A., Marec, G., Jay, J.C.
Ice creep, Stress strain diagrams, Compressive properties, *Strain tests*, *Ice deformation*, *Shear stress*, Analysis (mathematics).

36-3062
Parametric studies of sea-ice beams under short and long term loadings.
Lainey, L., et al, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.607-627, 4 refs. Includes discussions and replies.
Tinawi, R.
***Sea ice*, *Flexural strength*, *Static loads*, *Ice creep*, Ice elasticity, Stresses, Time factor, Temperature effects, Rheology.**

36-3063
Friction and adhesion of ice.
Oksanen, P., IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.628-640, 7 refs. Includes discussions and replies.
Ice friction, Ice adhesion, Ice solid interface, Water films, Ice hardness, Ice temperature, Metal ice friction, Plastic ice friction, Wood ice friction, Coatings, Concretes.

36-3064
Mechanical properties of adhesion strenpth to pile structures.
Saeki, H., et al, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.641-649, 6 refs.
Toshiyuki, O., Akira, O.
Ice adhesion, Pile structures, Ice solid interface, Sea ice, Ice cover thickness, Ice temperature, Ice strength, *Surface roughness*, *Tests*.

36-3065
Formation of shore cracks in ice covers due to changes *in the water level*.
Billfalk, L., IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.650-662, 7 refs. Includes discussions and replies.
Fast ice, Ice cracks, Ice breakup, Water level, River ice, Lake ice, Ice cover strength, Flow rate, Ice elasticity, Structures, Shoreline modification, Cracking (fracturing), Experimentation.

36-3066
Estimation of crack pattern in ice by the new discrete model.
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Kamesaki, K.
Ice cracks, Ice breaking, Offshore structures, Flexural strength, Ice cover strength, Stresses, Ice loads, Boundary value problems, Mathematical models.

36-3067
Studies of ice action on pumped storage power plant structures.
Sokolov, I.N., et al, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.674-684, 10 refs.
Gotlib, IA.L., Dick, P.G., Riabkin, G.M.
***Ice loads*, *Ice pressure*, *Structures*, *Thermal regime*, Water temperature, Ice formation, Ice melting, Reservoirs, Climatic factors, Electric power.**

36-3068
Designing ice bridges and ice platforms.
Gold, L.W., IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.685-701, 25 refs. Includes discussion and reply.
Ice crossings, Ice elasticity, Ice cover strength, Strains, Loads (forces), Static loads, Dynamic loads, Stresses, Velocity, Design, Ice platforms.

36-3069
Fin boom ice gate for ice control and winter navigation.
Tsang, G., *IAHR International Symposium on Ice*, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.702-717, 3 refs. Includes discussions and replies.
Ice control, Ice navigation, Floating ice, River ice, Ice booms, Models, Analysis (mathematics).

36-3070
Lake Erie-Niagara River ice boom—an operational experience.
Yee, P., et al, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.718-727, 7 refs.
Wigle, T.E., Hollmer, A.
Lake ice, Ice booms, River flow, Ice conditions, Environmental impact, Damage, Electric power, Structures, Shores, Ice cover.

36-3071
Model tests of multi-year pressure ridges moving onto conical structures.
Abdelnour, R., IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.728-754, 5 refs. Includes discussions and replies.
Pressure ridges, Ice mechanics, Ice pressure, Ice friction, Ice solid interface, Floating structures, Offshore drilling, Ice elasticity, Flexural strength, Experimentation, Ice platforms.

36-3072
Ice forces on large marine structures.
Croasdale, K.R., et al, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.755-770, 8 refs. Includes discussions and replies.
Marcellus, R.W.
Offshore structures, Floating structures, Ice pressure, Ice loads, Ice cover thickness, Ice solid interface, Impact strength, Analysis (mathematics), Ice platforms.

36-3073
Estimation of ice forces from dynamic response.
Montgomery, C.J., et al, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.771-782, 7 refs. Includes discussions and replies.
Lipsett, A.W.
Ice pressure, Ice loads, Dynamic loads, Ice solid interface, Piers, Bridges, Strains, Offshore structures, *Mathematical models*.

36-3074
Ice-structure dynamic interaction—ice forces versus velocity, ice-induced damping.
Maattanen, M., IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.785-796, 4 refs. Includes discussions and replies.
Pile structures, Ice solid interface, Dynamic loads, Ice loads, Damping, Vibration, Velocity.

36-3075
Measurement of horizontal and vertical ice loads on pile type structures.
Karri, J., et al, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.797-808, 5 refs.
Jumppanen, P.
Ice loads, Pile structures, Ice adhesion, Measuring instruments, Tests.

36-3076
Thermal regime and ice forecasting for fresh-water bodies.
Starosolszky, O., IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.809-824, 27 refs.
Ice forecasting, Ice conditions, Thermal regime, River ice, Lake ice, Frazil ice, Ice formation, Ice breakup, Ice mechanics.

36-3077
Estimation of ice conditions and organization of shipping on rivers and reservoirs during the extended *period of navigation*.
Balanin, V., et al, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.825-835, 5 refs.
Tronin, V., Malinovskii, V., Sandakov, B., Ginzburg, B.
Ice conditions, Ice navigation, River ice, Lake ice, Ice breaking, Icebreakers, Transportation.

36-3078
Protection of hydraulic structures from icing.
Aleinikov, S.M., et al, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.836-846, 7 refs.
Liapin, B.E., Zhidkikh, M.I., Panushkin, A.V., Khrapatyi, N.G.
Hydraulic structures, Icing, Protection, Ice navigation, Ice adhesion, Ice prevention, Ice formation, Ice strength.

36-3079
Ice scars: are they reliable indicators of past ice breakup water levels.
Gerard, R., IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.847-859, 9 refs. Includes discussions and replies.
Ice solid interface, Abrasion, Trees (plants), Water level, Ice breakup.

36-3080
Determination of ice rubble shear properties.
Weiss, R.J., et al, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.860-872, 4 refs. Includes discussion and reply.
Prodanovic, A., Wood, K.N.
Salt ice, Ice structure, Ice surface, Shear properties, Ice cover thickness, Shear rate, Shear strength, Pressure, Tests.

36-3081
Ice hydraulics stability analysis; experimental determination of pressure distribution under ice floes.
Mayer, I., IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.873-880.
Ice floes, Ice mechanics, Stability, Ice jams, Ice pressure, Hydraulics, Ice cover thickness, Surface roughness, Wind tunnels, Flow rate.

36-3082
Underside configuration of ice covers.
Chee, S.P., et al, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.881-883.
Meyer, L.P., Haggag, M.R.
Ice bottom surface, Ice cover, River ice, Floating ice, Thermal effects, Hydraulics, Analysis (mathematics).

36-3083
Ice growth in rivers.
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Karlekar, B.V., Kandlikar, S.G.
River ice, Ice growth, Ice cover thickness, Heat loss, Heat transfer, Mathematical models, Convection, Evaporation, Solar radiation, Frazil ice, Heat balance.

36-3084
Elastic creep bending analysis of floating ice covers.
Hamza, H., et al, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.889-893, 4 refs.
Muggeridge, D.B., Laidley, T.E.
Floating ice, Ice elasticity, Ice creep, Ice cover strength, Bearing strength, Loads (forces), Analysis (mathematics).

36-3085
Heat transfer during freezing in calm water.
Hanley, T.O., IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.894-899, 6 refs.
Ice formation, Water temperature, Freezing, Heat transfer, Ice cover thickness, Temperature effects, Heat flux, Degree days.

36-3086
Response of floating ice sheets under impact loads.
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Iyengar, K.J.
Floating ice, Loads (forces), Impact strength, Ice deformation, Ice sheets, Time factor, Analysis (mathematics).

36-3087
On the theoretical modelling of floating ice sheets which exhibit a composite structure.
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Floating ice, Ice structure, Ice mechanics, Ice elasticity, Ice models, Loads (forces), Mathematical models.

36-3088
Technique for chemically simulating a snow cover on model ice.
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Snow ice interface, Ice cover strength, Doped ice, Ice models, Ice breaking, Metal ice friction, Icebreakers, Friction.

36-3089
Numerical modeling of dentritic ice formation in supercooling conditions.
Vasseur, P., et al, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.913-916, 4 refs.
Robillard, L., Shekar, B.C.
Dendritic ice, Ice formation, Heat transfer, Supercooling, Mathematical models, Convection, Density (mass/volume), Water.

36-3090
Fifty years of experience in the field of ice problems for river engineering, 1930-1980.
Kanavin, E.V., IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.917-931, 9 refs.
River ice, Engineering, Ice formation, Ice breakup, Ice melting, River flow, Ice conditions, Icebound rivers, Ice cover.

36-3091
Remarks to the buckling analyses of floating ice sheets.
Kerr, A.D., IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.932-937, 5 refs.
Floating ice, Floating structures, Ice pressure, Ice loads, Plates, Compressive properties, Analysis (mathematics), Tests.

36-3092
IAHR—recommendations on testing methods of ice; 3rd report of Working Group on Testing Methods in Ice.
Frederking, R., et al, IAHR International Symposium on Ice, Québec, Canada, July 27-31, 1981. Proceedings, Vol.2, Québec, Canada, Université Laval, 1982, p.938-952, 18 refs.
Ice cover strength, Ice mechanics, Ice friction, Stresses, Tests, Measuring instruments, Meetings, Organizations.

36-3093
Construction of container-type modular buildings in the BAM Area. [Sooruzhenie inventarnykh zdanii konteinernogo tipa na BAMe].
Gol'dguber, B., *Na stroĭkakh Rossii*, Feb. 1982, No.2, p.50-52, In Russian.
Modular construction, Residential buildings, Prefabrication, Panels, Baykal Amur railroad.

36-3094
Erection of large panel buildings in Siberia. [Vozvedenie krupnopanel'nykh zdanii v Sibiri].
Kuzin, IU., *Na stroĭkakh Rossii*, Apr. 1982, No.4, p.4-7, In Russian.
Large panel buildings, Residential buildings, Permafrost beneath structures.

36-3095
Mass-construction of residential buildings in the North. [Massovoe zhilishchnoe stroitel'stvo v raĭonakh Severa].
Kotlovoĭ, A., *Na stroĭkakh Rossii*, Apr. 1982, No.4, p.7-11, In Russian.
Residential buildings, Standards, Permafrost beneath structures, Earthquakes, Modular construction.

36-3096
Improved design of residential houses for severe climatic conditions. [Uluchshenie konstruktsiĭ zhilykh domov dlia surovogo klimata].
Zonov, V., et al, *Na stroĭkakh Rossii*, Apr. 1982, No.4, p.11-15, In Russian.
Aronov, A.
Residential buildings, Houses, Subarctic landscapes, Permafrost beneath structures, Earthquakes, Prefabrication, Large panel buildings, Construction materials.

36-3097
Prospects for the development of modular construction in the eastern USSR. [Perspektivy razvitiia sbornogo domostroeniia na vostoke strany].
Vodovozov, V., *Na stroĭkakh Rossii*, Apr. 1982, No.4, p.15-17, In Russian.
Meetings, Modular construction, Subarctic landscapes, Prefabrication, Large panel buildings.

36-3098
Map of erosion affected lands in the non-chernozem zone of the RSFSR. [Karta erozionno-opasnykh zemel' Nechernozemnoĭ zony RSFSR].
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Podsol, Cryogenic soils, Water erosion, Meltwater, Frost action, Freeze thaw cycles, Gullies, Maps, Soil mapping.

36-3099
Electromagnetic emissions of snow avalanches and glaciers. [Elektromagnitnye izlucheniia snezhnykh lavin i lednikov].
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Gribov, V.A.
Avalanches, Avalanche mechanics, Snow physics, Glacier surges, Glacier ice, Seismic surveys, Ice physics, Electromagnetic properties.

36-3100
New problems in avalanche engineering (experience in engineering geography of mountainous areas). [Novye zadachi lavinovedeniia (opyt dlia inzhenernoĭ geografii gornykh stran)].
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Avalanche engineering, Avalanche formation, Avalanche triggering, Avalanche mechanics.

36-3101
Effect of soil pH on the distribution of plants in arid broken-stone Alpine tundras of southeastern Chukotskiy Peninsula. [Vliianie pH pochvy na raspredelenie rastenii v sukhikh shchebnistykh gornykh tundrakh iugo-vostoka Chukotskogo Poluostrova].
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Alpine tundra, Vegetation patterns, Plant ecology, Cryogenic soils, Soil chemistry, Soil water.

36-3102
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Tankaev, R.U.
Ice melting, Nuclear magnetic resonance, Dispersions, Quartz glass.

36-3103
Snow plow used in trimming railroad tracks. [Snegouborshchik otdelyvaet put'].
Lebedev, V.G., *Put' i putevoe khoziaĭstvo*, 1982, No.2, p.28-29, In Russian.
Railroad tracks, Construction equipment, Snow removal, Railroads.

36-3104
Technical equipment conquer the elements. [Stikhiiu pobezhdaet tekhnika].
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Teklin, V.G.
Snow removal, Equipment, Railroads, Winter maintenance.

36-3105
Controlling parameters of electrical grounding systems in perennially frozen and hard rocks. [Ekspluatatsionnyĭ kontrol' parametrov zazemliaiushchikh ustroĭstv v usloviiakh mnogoletnemerzlykh i skal'nykh gruntov].
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Budnikov, V.V., Tsirer, A.A.
Mining, Electrical grounding, Permafrost.

36-3106
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Sazhin, O.B., Radovitskiĭ, I.V., Khoturtsev, L.I.
Mining, Coal, Frozen cargo, Chemical ice prevention.

36-3107
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Korkhov, V.N., Kuvaldin, A.B., Kovalenko, P.M.
Frozen cargo, Transportation, Ice adhesion, Electric heating.

36-3108
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Takeuchi, S., Muto, M.
Heat recovery, Electric power, Antarctica—Showa Station, Antarctica—Mizuho Station.
At Showa Station two diesel electric generators were installed, one of which was always operated as the main energy source

The electric capacity of each generator has been increased from 20 kVA to 110 kVA. In order to save fuel, waste heat recovery systems of the diesel engines were developed. By fully utilizing the waste heat of diesel engines, i.e., their exhaust-gas energy and coolant energy, cold and hot water was made from ice or snow even in winter. At Mizuho Station a system for recovering coolant heat of a diesel electric generator was installed. The hot water is supplied to a bathtub and to a fan-coil unit in a trench living room. The heating by utilizing the waste coolant can ensure the safety of the personnel living in the trench room against fire, carbon monoxide and dioxide contamination, and lack of oxygen. The technical problems and experiences on waste heat recovery, especially on exhaust-gas heat exchangers are described. (Auth. mod.)

36-3109

Thermal regime of permafrost at Prudhoe Bay, Alaska.

Lachenbruch, A.H., et al. *U.S. Geological Survey, Open-file report*, 1982, 82-535, 77p., Refs. p.38-41.

Sass, J.H., Marshall, B.V., Moses, T.H., Jr.

Permafrost thermal properties, Permafrost depth, Thermal conductivity, Heat transfer, Ground ice, Temperature gradients, Geothermy, Subsea permafrost, Interstitial ice, Shoreline modification, Mathematical models.

36-3110

Mechanics of cutting and boring. Part 7: Dynamics and energetics of axial rotation machines.

Mellor, M., *U.S. Army Cold Regions Research and Engineering Laboratory*, Dec. 1981, CR 81-26, 38p., ADA-113 931, 10 refs.

Drills, Permafrost, Rock drilling, Equipment, Thermal effects, Drilling fluids, Analysis (mathematics), Cutters.

This report deals with force, torque, energy and power in machines such as drills and boring devices, where the cutting head rotates about a central axis while penetrating parallel to that axis. Starting from a consideration of the forces developed on individual cutting tools, or segments of cutters, the thrust and torque on a complete cutting head is assessed, and simple relationships between thrust and torque are derived. Similarly, the energy and power needed to drive the cutting head are estimated and related to tool characteristics. Design characteristics of existing machines are compiled and analyzed to give indications of thrust, torque, power, effective tool forces, nominal thrust pressure, power density, and specific energy.

36-3111

Model study of Port Huron ice control structure; wind stress simulation.

Sodhi, D.S., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Apr. 1982, CR 82-09, 27p., ADA-115 417, 14 refs.

Calkins, D.J., Deck, D.S.

Ice control, Lake ice, Water pressure, Wind pressure, Water flow, Shear stress, Ice navigation, Ports, Models.

This study deals with the distribution of forces along the converging boundaries of the Port Huron, Michigan, region where unconsolidated ice in Lake Huron is held against wind and water stresses. An experimental basin was built to induce uniform shear stress on the model ice cover by flowing water beneath the ice. The boundary segments, which held the ice cover in the region, were instrumented to measure force in the normal and tangential directions. The distribution of normal forces along the boundary was compared with a distribution derived by using a theoretical model. An ice control structure (ICS) was installed in the basin and experiments were conducted to measure the forces on the ICS and the ice release through the opening in the ICS during simulated ship passages. The experimental results are presented in a nondimensional form. In addition, the force per unit length on the ICS and the area of ice released through its opening were estimated for the expected wind conditions at the Port Huron site.

36-3112

Preliminary assessment of the nutrient film technique for wastewater treatment.

Bouzoun, J.R., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, Mar. 1982, SR 82-04, 15p., ADA-115 425, 12 refs.

Palazzo, A.J.

Waste treatment, Water treatment, Sanitary engineering, Plants (botany), Growth, Statistical analysis.

An experiment was conducted to determine the feasibility of using a solar powered, self-regenerating plant growth system, called the nutrient film technique (NFT), to treat primary effluent (average temperature, 11 C). Primary effluent was pumped onto the elevated end of a sloping waterproof 2-x40-ft plywood tray and trickled through the root mat of reed canarygrass. The quantity of influent and effluent was measured as well as temperature, pH, total suspended solids, volatile suspended solids, BOD5, total nitrogen, ammonia nitrogen, nitrate nitrogen, total phosphorus, phosphate phosphorus, and fecal coliform organisms. The quantity and quality of the reed canarygrass was determined from samples taken from six harvests. Mass balances are presented for BOD5, total suspended solids, total nitrogen, ammonia nitrogen, total phosphorus, and phosphate phosphorus. The removal of several volatile trace organic compounds was determined on two separate dates.

36-3113

Plant growth and management for wastewater treatment in overland flow systems.

Palazzo, A.J., *U.S. Army Cold Regions Research and Engineering Laboratory*, Apr. 1982, SR 82-05, 21p., 25 refs.

Waste treatment, Water treatment, Land reclamation, Plants (botany), Growth, Grasses.

Domestic wastewater was applied over a four-year period at various rates to three overland flow test slopes to study forage grass growth and nutrient removal. The annual application rates of nitrogen and phosphorus ranged up to 2026 and 226 kg/ha, respectively. The forage grasses were harvested three times per season. Plant yields, composition and uptake of nutrients were determined. The results show that reed canarygrass, quackgrass and Kentucky bluegrass were the most persistent grasses on the slope over the four years.

36-3114

Description of an extremely low frequency loop-loop geophysical system.

Cooke, J., et al, *U.S. Geological Survey, Open-file report*, 1981, No.1130, 63p., 1 ref.

Bradley, J., Mitchell, C., Lescelius, R.

Geophysical surveys, Electromagnetic prospecting, Electric equipment, Antarctica—Dufek Massif.

The system described is designed for use in making geophysical measurements of the Dufek Massif to determine the depth of pluton beneath the ice, its thickness, eastern boundary, and electrical properties. The various components of the system are described, some are shown in photos, and many schematic diagrams are included.

36-3115

Cyclone climatology of the Bering Sea and its relation to sea ice extent.

Overland, J.E., et al, *Monthly weather review*, Jan 1982, 110(1), p.5-13, 35 refs.

Pease, C.H.

Climatology, Sea ice distribution, Storm tracks, Bering Sea.

36-3116

Forecasting the development of natural phenomena. [Prognozy razvitiia prirodnykh iavlenii].

Druzhinin, I.P., ed, Novosibirsk, Nauka, 1982, 157p., In Russian. For selected papers see 36-3117 through 36-3124. Refs. p.149-156.

Kukushkina, V.P., ed.

Avalanche engineering, Avalanche forecasting, Earthquakes, Engineering geology, Earth fills, Earth dams, Clay soils, Loess, Cryogenic soils, Slope stability, Permafrost beneath lakes, Shore erosion, Ground ice.

36-3117

Possibilities of forecasting atmospheric conditions in the western BAM area. [Vozmozhnosti prognoza sostoianiia atmosfery na Zapadnom BAMe].

Lut, L.I., et al, Prognozy razvitiia prirodnykh iavlenii (Forecasting the development of natural phenomena) edited by I.P. Druzhinin and V.P. Kukushkina, Novosibirsk, Nauka, 1982, p.56-61, In Russian.

Panova, G.P.

Atmospheric disturbances, Air temperature, Wind velocity, Baykal Amur railroad, Cold weather construction.

36-3118

Snow avalanches in the western part of the BAM area. [Snezhnye laviny Zapadnogo uchastka BAMa].

Gulevich, V.P., et al, Prognozy razvitiia prirodnykh iavlenii (Forecasting the development of natural phenomena) edited by I.P. Druzhinin and V.P. Kukushkina, Novosibirsk, Nauka, 1982, p.61-68, In Russian.

Kara, E.G.

Snow accumulation, Avalanche forecasting, Avalanche formation, Avalanche engineering, Avalanche triggering, Baykal Amur railroad.

36-3119

Seismic oscillations of earth fills. [Seismicheskie kolebaniia nasypnykh gruntov].

Pavlenov, V.A., Prognozy razvitiia prirodnykh iavlenii (Forecasting the development of natural phenomena) edited by I.P. Druzhinin and V.P. Kukushkina, Novosibirsk, Nauka, 1982, p.80-84, In Russian.

Earthquakes, Earth dams, Embankments, Earth fills, Seismic velocity, Engineering geology, Geocryology.

36-3120

Forecasting the settlement of loess. [K prognozu prosadochnosti lessovykh porod].

Riashchenko, T.G., et al, Prognozy razvitiia prirodnykh iavlenii (Forecasting the development of natural phenomena) edited by I.P. Druzhinin and V.P. Kukushkina, Novosibirsk, Nauka, 1982, p.84-90, In Russian.

Danilova, T.F., Siutkina, V.D., IAkovenko, I.V.

Clay soils, Loess, Cryogenic soils, Settlement (structural), Models.

36-3121

Cave-ins and their formation in traps during economic development of the Vilyuy reservoir area. [Provaly i ikh formirovanie v lovushkakh pri osvoenii Vilyuiskogo vodokhranilishcha].

Spesivtsev, V.I., Prognozy razvitiia prirodnykh iavlenii (Forecasting the development of natural phenomena) edited by I.P. Druzhinin and V.P. Kukushkina, Novosibirsk, Nauka, 1982, p.90-96, In Russian.

Lakes, Cracking (fracturing), Ice veins, Shore erosion, Permafrost beneath lakes, Hydrothermal processes, Ground ice, Ice melting, Igneous rocks.

36-3122

Salt composition of erosional debris cones as an index of dynamics of erosional processes in the shores of the Bratsk water reservoir. [Solevoi sostav eroziono-vynosnykh konusov kak pokazatel' dinamiki erozionnykh iavlenii na poberezh'e Bratskogo vodokhranilishcha].

Nikiforova, G.P., et al, Prognozy razvitiia prirodnykh iavlenii (Forecasting the development of natural phenomena) edited by I.P. Druzhinin and V.P. Kukushkina, Novosibirsk, Nauka, 1982, p.97-101, In Russian.

Aleshina, Z.K.

Lakes, Shore erosion, Permafrost beneath lakes, Gullies, Cryogenic soils, Soil composition.

36-3123

Geochemical indices of the stability of landslide slopes. [Geokhimicheskie pokazateli ustoichivosti opolznevykh sklonov].

Dem'ianovich, N.I., et al, Prognozy razvitiia prirodnykh iavlenii (Forecasting the development of natural phenomena) edited by I.P. Druzhinin and V.P. Kukushkina, Novosibirsk, Nauka, 1982, p.102-109, In Russian.

Volynets, G.P.

Lacustrine deposits, Shores, Clay soils, Cryogenic soils, Slope processes, Landslides, Soil composition, USSR—Baykal Lake.

36-3124

Bacterio-plankton of the Ust'-Ilim water reservoir and the quality of water. [Bakterioplankton Ust'-Ilimskogo vodokhranilishcha i kachestvo vody].

Putiatina, T.N., et al, Prognozy razvitiia prirodnykh iavlenii (Forecasting the development of natural phenomena) edited by I.P. Druzhinin and V.P. Kukushkina, Novosibirsk, Nauka, 1982, p.110-119, In Russian.

Triamkina, N.E.

Lake water, Sporadic permafrost, Plankton, Bacteria.

36-3125

Short time creep of ice. [Kratkovremennaia polzuchest' l'da].

Zaretskii, IU.K., et al, Novosibirsk, Nauka, 1982, 119p., In Russian with English table of contents enclosed. 85 refs.

Chumichev, B.D.

Ice physics, Ice mechanics, Ice creep, Rheology, Ice crystal structure, Ice deformation, Fracturing, Ice acoustics.

36-3126

Influence of ice on hydraulic resistance of water flow in rivers and channels. [Vliianie ledovykh obrazovanii na gidravlicheskoe soprotivlenie potokov reki i kanalov].

Matusenko, I.V., Lvov, Vyscha shkola, 1981, 159p., In Russian with English table of contents enclosed. 126 refs.

River ice, Stream flow, Ice floes, Drift, Fast ice, Bottom ice, Icebound rivers, Ice jams, Subglacial drainage, Ice bottom surface, Ice friction, Rivers, Channels (waterways).

36-3127

Large diameter caissons. [Opusknye kolodtsy bol'shogo diametra].

Igotov, I.I., et al, *Transportnoe stroitel'stvo*, No.11, 1982, No.5, p.[illegible], In Russian.

Tobach, I.S., Sabodash, V.V.

Concrete structures, Reinforced concretes, Caissons, Foundations, Earthwork, Ground water, Artificial freezing, Frost penetration.

36-3128

Antarctic geoscience.

Craddock, C., ed. International Union of Geological Sciences. Series B, No.4. Madison, University of Wisconsin Press, 1982. 1172p. For individual papers see 9E-18089, 9L-19161, 10E-20201, 10L-20085, D-26199, E-26200 through E-26330 (with gaps), F-26310, J-26207 and L-26203 through L-26322 (with gaps), or 36-3128 through 36-3141.

Symposium on Antarctic Geology and Geophysics.

DLC QE350.S95 1977

Glacial geology, Paleoclimatology, Age determination, Ice sheets.

This volume contains the proceedings of the Symposium held in Madison Aug. 22-27, 1977. The 151 papers and abstracts included are classed in twelve categories: Gondwanaland; Scotia Arc Region; East Antarctica Shield; Upper Precambrian Paleozoic Rocks; Paleontology; Igneous Rocks; Structural Geology and Tectonics; Mineral Deposits; Crustal Structure; Subglacial Morphology; Marine Geology; and Cenozoic History. A location map on the front endsheets matches each paper with the major geographic area treated and a 1:5,000,000 geologic map of Antarctica prepared by the American Geographical Society are included. The address delivered at the Symposium banquet is also included.

36-3129

Gravity and magnetic anomalies across Jutulstraumen, a major geologic feature in western Dronning Maud Land.

Decleir, H., et al. International Union of Geological Sciences. Publication. Series B, No.4. Antarctic geoscience: Symposium on Antarctic Geology and Geophysics, University of Wisconsin, Aug. 1977, edited by C. Craddock, Madison, University of Wisconsin Press, 1982, p.941-948, 26 refs.

Autenboer, T. van.

DLC QE350.S95 1977

Glacier flow, Glacier thickness, Gravimetric prospecting, Ice sheets, Antarctica—Jutulstraumen Glacier.

Geophysical measurements were carried out over Jutulstraumen, a 50 km wide ice stream forming the geographical continuation of the Penck trough to which it is probably structurally linked, and extended over Viddalen, a tributary. The gravity anomalies are related to the existence of the ice streams. Jutulstraumen has an asymmetric subglacial relief with its deepest part, more than 1000 m below sea level, near the confluence with Viddalen. The considerable mass transport is related to the Trolltunga ice tongue and, compared to other discharge values, confirms the importance of the removal of ice by ice streams in the total mass balance of the Antarctic. Ice thicknesses were obtained by fitting computed anomalies of theoretical cross sections to the observed values. (Auth. mod.)

36-3130

Isostatic gravity anomalies in West Antarctica.

Bentley, C.R., et al. International Union of Geological Sciences. Publication. Series B, No.4. Antarctic geoscience: Symposium on Antarctic Geology and Geophysics, University of Wisconsin, Aug. 1977, edited by C. Craddock, Madison, University of Wisconsin Press, 1982, p.949-954, 18 refs.

Robertson, J.D.

DLC QE350.S95 1977

Isostasy, Ice sheets, Antarctica—West Antarctica.

Using a three-dimensional computer gravity modeling procedure, a correction for the finite size and lateral distribution of compensating masses at depth is applied to a 1 deg x 1 deg mean free-air gravity map of West Antarctica to produce an isostatic anomaly map. Extensive regions of West Antarctica, including the Byrd Subglacial Basin and the basin between the Ellsworth and Pensacola Mountains, are not detectably out of isostatic equilibrium. There are six significant isostatic anomalies on the map. The anomalies are variously attributed to uncompensated crustal thinning, to downward extension of upper crustal rocks into the lower crust, to crustal rifting, and to a combination of recent retreat of ice and unknown tectonic forces. (Auth. mod.)

36-3131

Source properties of the Oates Land earthquake, October 1974.

Adams, R.D. International Union of Geological Sciences. Publication. Series B, No.4. Antarctic geoscience: Symposium on Antarctic Geology and Geophysics, University of Wisconsin, Aug. 1977, edited by C. Craddock, Madison, University of Wisconsin Press, 1982, p.955-958, 12 refs.

DLC QE350.S95 1977

Seismology, Calving, Antarctica—Oates Coast.

An earthquake near the northern coast of Oates Coast on 15 October, 1974, was the first to be located on the antarctic continent by the Preliminary Determination of Epicenters Service of the U.S. Geological Survey. The earthquake had a magnitude of about 5, and from analysis of long-period seismograms recorded at Scott Base, had a seismic moment of 5 x 10 sup 23 dyne-cm. This relation between magnitude and moment is near the middle of the range found for tectonic earthquakes in New Zealand, and if the source were in normal crustal rock would imply a source radius of about 6 km, a stress drop of about 1 bar, and a source dislocation of about 1.5 cm. Although there is nothing unusual in these source parameters, the earthquake's location near the mouth of the Rennick Glacier suggests that, like smaller events previously located near glaciers in southern Victoria Land, it might be associated with ice movement or the calving of icebergs. (Auth.)

36-3132

Radio-echo sounding investigations of Wilkes Land, Antarctica.

Steed, R.H.N., et al. International Union of Geological Sciences. Publication. Series B, No.4. Antarctic geoscience: Symposium on Antarctic Geology and Geophysics, University of Wisconsin, Aug. 1977, edited by C. Craddock, Madison, University of Wisconsin Press, 1982, p.969-975, 15 refs.

Drewry, D.J.

DLC QE350.S95 1977

Ice sheets, Topographic features, Radio echo soundings, Geological surveys, Geologic structures, Geological maps, Antarctica—Wilkes Land.

Radio-echo soundings along 23 tracks, spaced 50-100 km apart and forming an orthogonal grid in Wilkes Land, have been used to determine ice-sheet surface and bedrock surface configurations. Three principal, and several subsidiary, bedrock terrain zones are recognized. Precambrian basement appears to comprise the bedrock inland for as far as 200 km from the Adelie Coast. A very rugged province inland of the Mertz Glacier is attributed to a granite batholith which crops out at Cape Bage and Cape Webb. A prominent trench and escarpment have been detected along 135 E, and the structure is interpreted as sediment-filled half-graben. Ice more than 4.67 km thick fills the trough which reaches 2230 m below sea level. The existence of a postulated large meteorite crater in Wilkes Land is questioned. (Auth.)

36-3133

Ice flow, bedrock, and geothermal studies from radio-echo sounding inland of McMurdo Sound, Antarctica.

Drewry, D.J., International Union of Geological Sciences. Publication. Series B, No.4. Antarctic geoscience: Symposium on Antarctic Geology and Geophysics, University of Wisconsin, Aug. 1977, edited by C. Craddock, Madison, University of Wisconsin Press, 1982, p.977-983, 18 refs.

DLC QE350.S95 1977

Sea ice, Geothermal prospecting, Radio echo soundings, Glacial geology, Antarctica—McMurdo Sound.

Systematic airborne radio-echo sounding has been conducted along 10 subparallel lines 10-15 km apart, inland of the McMurdo Sound ice-free valley region to 156 E and between 76.25 and 78.25 S. Information on ice surface and bedrock surface configurations, presence or absence of subice water bodies, and bedrock reflectivity characteristics has been obtained continuously along all flight tracks. Careful analysis of profiling data has enabled the compilation of an ice-surface contour map at an interval of 50 m. This clearly defines the pattern of ice flow, which is dominated by drainage into Mulock and Mawson Glaciers. An ice dome inland of Taylor Glacier restricts the catchment of Taylor and several other glaciers. This conclusion, supported by stable-isotope measurements, has important implications for glacial geologic studies because it casts doubt on the validity of the use of such glaciers in investigations of fluctuations of the East Antarctic ice-sheet. (Auth. mod.)

36-3134

Radio-echo studies of bedrock in southern Marie Byrd Land, West Antarctica.

Rose, K.E., International Union of Geological Sciences. Publication. Series B, No.4. Antarctic geoscience: Symposium on Antarctic Geology and Geophysics, University of Wisconsin, Aug. 1977, edited by C. Craddock, Madison, University of Wisconsin Press, 1982, p.985-992, 22 refs.

DLC QE350.S95 1977

Radio echo soundings, Ice sheets, Subglacial observations, Topographic maps, Antarctica—Marie Byrd Land.

Maps depicting the ice-sheet surface and the bedrock topography of 500,000 sq km of Marie Byrd Land between the Ross Ice Shelf, Byrd Station, and the Transantarctic Mountains have been compiled from 15,000 km of radio-echo profiles obtained during the 1974-75 season. Five major ice streams are defined, and they are separated by ridges and domes in the ice surface near the Ross Ice Shelf. Further inland the ice sheet shows the typical convex-upward form. The bedrock surface is generally below sea level, being smooth near the ice shelf and becoming rougher inland. A deep channel, aligned with the Shimizu Ice Stream, is evidence of erosion by ice flowing from East Antarctica prior to formation of the West Antarctic Ice Sheet. On the basis of topography, the area is subdivided into five parts, the geology of which is discussed with the help of existing seismic, gravity, and magnetic data. (Auth. mod.)

36-3135

Sedimentation on the west antarctic continental margin.

Anderson, J.B., et al. International Union of Geological Sciences. Publication. Series B, No.4. Antarctic geoscience: Symposium on Antarctic Geology and Geophysics, University of Wisconsin, Aug. 1977, edited by C. Craddock, Madison, University of Wisconsin Press, 1982, p.1003-1012, 17 refs.

Kurtz, D., Weaver, F., Weaver, M.

DLC QE350.S95 1977

Sedimentation, Floating ice, Ice shelves, Ocean currents, Ice rafting, Antarctica.

Terrigenous deposits of the West Antarctic continental margin reflect deposition from both grounded and floating ice shelves. These glaciogenic sediments are differentiated on the basis of size frequency data, stratification, pebble fabric, and frost content. Glacial sedimentation probably occurs over relatively short intervals of geologic time and is followed by long periods of extensive reworking and redeposition of sediments by normal marine agents. In those regions where floating ice covers the inner continental shelf, such as in the southern Ross and Weddell Seas, bottom current activity is limited to thermohaline circulation, which is only moderately effective at reworking bottom sediments. Thick, laminated muds of the continental slope and rise may result from variations in contour-current intensity. These variations are due to changes in thermohaline circulation, which is a function of sea ice production on the continental shelf. Where the volume of sea-ice produced is sufficient to increase the density of shelf water above that of circumpolar deep waters, mixing occurs at the continental slope and contour currents are diminished. (Auth. mod.)

36-3136

Antarctic glacial history using spatial and temporal variations of ice-rafted debris and abyssal sediments of the southern ocean.

Watkins, N.D., et al. International Union of Geological Sciences. Publication. Series B, No.4. Antarctic geoscience: Symposium on Antarctic Geology and Geophysics, University of Wisconsin, Aug. 1977, edited by C. Craddock, Madison, University of Wisconsin Press, 1982, p.1013-1016, 19 refs.

Ledbetter, M.T., Huang, T.-C.

DLC QE350.S95 1977

Ice rafting, Drill core analysis, Marine deposits, Sediment transport.

From piston cores collected during cruises of the USNA *Eltanin*, ice-rafted debris (IRD) deposited on the floor of the southern ocean is used as an index of long-term antarctic glacial history. The latitudinal gradient of decreasing IRD accumulation rates with increasing distance from Antarctica expected from the earlier study has been obscured in this region by active bottom currents which produced lag deposits of IRD that are not true indices of antarctic glacial activity. We have corrected for the effect of lag deposits of IRD by using the accumulation rate of manganese micronodules as an index of bottom-current winnowing capacity. The latitudinal distribution of the resulting primary IRD shows a general decrease in IRD accumulation rates with distance from the source, but upon this is superimposed a maximum that corresponds to the Antarctic Convergence. The northern limit of icebergs as reconstructed from the zone of IRD deposition was, on the average, no greater during the past 0.74 m.y. than at present. (Auth. mod.)

36-3137

Estimates of Antarctic Ocean seasonal sea-ice cover during glacial intervals.

Cooke, D.W., et al. International Union of Geological Sciences. Publication. Series B, No.4. Antarctic geoscience: Symposium on Antarctic Geology and Geophysics, University of Wisconsin, Aug. 1977, edited by C. Craddock, Madison, University of Wisconsin Press, 1982, p.1017-1025, 23 refs.

Hays, J.D.

DLC QE350.S95 1977

Sea ice distribution, Climatic changes, Ice rafting.

The past seasonal extent of antarctic sea ice is estimated through the use of lithologic changes, sedimentation rate changes, and the distribution of ice-rafted detritus in antarctic deep-sea sediments. Summer sea ice 18,000 years ago was greatly expanded (25 million sq km) compared with today's summer coverage (2.5 million sq km). Winter ice cover 18,000 years ago (40 million sq km) was probably double present winter ice cover (20 million sq km). Changes in sea-ice cover are reflected in antarctic deep-sea sediments by changes from relatively slowly accumulating diatomaceous ooze with small amounts of ice-rafted detritus (sea-ice conditions like today). Detailed biostratigraphic analysis indicates that the lithologic changes are synchronous throughout the Antarctic. Study of the sedimentary contacts in cores with accumulation rates of about 30 cm/1000 years indicates that seasonal ice cover changes within 200 years from relatively ice-free summers like today to summers characterized by approximately as much ice as today's winter. The disappearance of large amounts of summer sea ice was similarly rapid. The last onset of extensive sea ice began 80,000 years ago and ended 14,000 years ago. These changes in Southern Hemisphere sea ice either just precede or occur at the beginning stages of important changes of Northern Hemisphere ice volume. (Auth.)

36-3138

Isostatic gravity anomalies on the Ross Ice Shelf.

Bentley, C.R., et al, International Union of Geological Sciences. Publication. Series B, No.4, Antarctic geoscience: Symposium on Antarctic Geology and Geophysics, University of Wisconsin, Aug. 1977, edited by C. Craddock, Madison, University of Wisconsin Press, 1982, p.1077-1081, 9 refs.

Robertson, J.D., Greischar, L.L.

DLC QE350.S95 1977

Gravity anomalies, Isostasy, Ice shelves, Antarctica—Ross Ice Shelf.

Gravity observations covering the Ross Ice Shelf have been reduced to isostatic anomalies assuming perfect local Airy compensation. *Roosevelt Island, Crary Ice Rise, and Discovery* Deep appear to be isostatically in balance with the surrounding regions. The main ridge-trough submarine topography characteristic of the grid western two-thirds of the ice shelf, however, does not appear balanced, suggesting that tectonic structure, not glaciation, is the fundamental control of that topography. Anomalies have been smoothed by averaging over 2 x 2 deg squares. The resulting map shows relative highs in the grid southeastern and southwestern corners of the shelf, with a minimum along the Siple Coast. All anomalies are moderate to strongly negative, but not so negative as the 4th order harmonic field of the Earth. (Auth. mod.)

36-3139

Sea-bottom topography and crustal structure below the Ross Ice Shelf, Antarctica.

Robertson, J.D., et al, International Union of Geological Sciences. Publication. Series B, No.4, Antarctic geoscience: Symposium on Antarctic Geology and Geophysics, University of Wisconsin, Aug. 1977, edited by C. Craddock, Madison, University of Wisconsin Press, 1982, p.1083-1090, 19 refs.

Bentley, C.R., Clough, J.W., Greischar, L.L.

DLC QE350.S95 1977

Bottom topography, Tectonics, Gravity anomalies, Seismic prospecting, Antarctica—Ross Ice Shelf.

Seismic and gravity measurements were made at more than 150 stations on the Ross Ice Shelf during the austral summers of 1973-74, 1974-75, and 1976-77 as part of the Ross Ice Shelf Geophysical and Glaciological Survey (RIGGS). The data have been used to construct maps of sea-bottom topography and gravity anomalies and to calculate seismic velocity columns. The gravity anomalies are inconsistent with seismically derived thicknesses of glacial till, suggesting that tectonic structure and *not glaciation is the fundamental determinant of sea-bottom* topography. (Auth. mod.)

36-3140

Paleohydrology inferred from salinity measurements on Dry Valley Drilling Project cores from Taylor Valley, Antarctica.

McGinnis, L.D., et al, International Union of Geological Sciences. Publication. Series B, No.4, Antarctic geoscience: Symposium on Antarctic Geology and Geophysics, University of Wisconsin, Aug. 1977, edited by C. Craddock, Madison, University of Wisconsin Press, 1982, p.1133-1137, 9 refs.

Osby, D.R., Kohout, F.A.

DLC QE350.S95 1977

Ground water, Permafrost hydrology, Drill core analysis, Antarctica—Taylor Valley.

Pore-ice salinity curves, derived from permafrost samples collected in three boreholes drilled as part of the Dry Valley Drilling Project in Taylor Valley, indicate three distinct paleohydrologic environments. The variable salinity curves are explained by a grounded ice shelf advancing westward into Taylor Valley, with the ice margin resting for a long time between boreholes 10 and 11. Sediment beneath the ice remained frozen, but a deep, ice-marginal lake in the valley was heated by solar radiation and produced a permeable window through the permafrost (talik) at borehole 11. Water from the lake percolated downward through the unfrozen sediments, producing a relatively homogeneous groundwater system. Farther to the west, shallower impermeable basement rock prevented deep-water circulation, and alpine glaciers isolated the deep freshwater lake marginal to the Ross Ice Sheet from the inland lakes where more saline terrestrial conditions prevailed. (Auth.)

36-3141

Pressure fluctuations in an antarctic aquifer: the freight-train response to a moving rock glacier.

Harris, H.J., et al, International Union of Geological Sciences. Publication. Series B, No.4, Antarctic geoscience: Symposium on Antarctic Geology and Geophysics, University of Wisconsin, Aug. 1977, edited by C. Craddock, Madison, University of Wisconsin Press, 1982, p.1139-1149, 48 refs.

Cartwright, K.

DLC QE350.S95 1977

Hydrogeology, Ground water, Glacial geology, Geologic structures, Antarctica—Victoria Land.

Don Juan Pond, an unfrozen pond in southern Victoria Land, receives very cold, highly saline groundwater from a confined aquifer. Rapid, transient fluctuations of fluid pressure in the aquifer were recorded at a borehole drilled in the Don Juan basin. The fluctuations were natural hydrogeologic phenomena of a kind which have not been reported. They are explained in terms of existing theories for the behavior of fluids in stressed porous media and are considered to be analogous to the effects commonly produced by trains passing over confined aquifers. The fluctuations are interpreted as evidence of movements in a rock glacier lying near the pond. The characteristics of the fluctuations suggest that the causative movements were small and abrupt and involved a large part of the rock glacier. (Auth.)

36-3142

Electrical grounding in areas with high specific ground resistivities. [Zazemlenie v raionakh s vysokim udel'nym soprotivleniem grunta].

Kostenko, M.V., ed, Apatity, 1981, 102p. In Russian. For selected papers see 36-3143 through 36-3149. Refs. passim.

Electrical grounding, Permafrost beneath structures, Permafrost physics, Electrical properties, Design.

36-3143

Fundamentals of calculations and design of electrical grounding systems in permafrost areas. [Osnovy proektirovaniia i rascheta zazemlitelei v raionakh mnogoletnemerzlykh gruntov].

Al'tshuler, E.B., Zazemlenie v raionakh s vysokim udel'nym soprotivleniem grunta (Electrical grounding in areas with high specific ground resistivities) edited by M.V. Kostenko, Apatity, 1981, p.5-12, In Russian. 9 refs.

Electrical grounding, Permafrost beneath structures, Permafrost physics, Electrical properties.

36-3144

Methods of evaluating the working capacity of electrical grounding systems. [Metodika otsenki rabotosposobnosti *zazemliaiushchikh sistem*].

Tselebrovskii, IU.V., Zazemlenie v raionakh s vysokim udel'nym soprotivleniem grunta (Electrical grounding in areas with high specific ground resistivities) edited by M.V. Kostenko, Apatity, 1981, p.13-18, In Russian. 5 refs.

Electric power, Stations, Permafrost beneath structures, Electrical grounding.

36-3145

Balancing the resistance of electrical grounding of mining installations in ground with high ohmic resistance. [Normirovanie soprotivleniia zazemleniia rudnichnykh elektroustanovok v raionakh vysokoomnykh gruntov].

Shutskii, V.I., et al, Zazemlenie v raionakh s vysokim udel'nym soprotivleniem grunta (Electrical grounding in areas with high specific ground resistivities) edited by M.V. Kostenko, Apatity, 1981, p.26-29, In Russian. 4 refs.

Naidenov, A.I., Kleerov, IU.M., Shkirpa, K.I.

Mining, Electric power, Electrical grounding, Permafrost.

36-3146

Experimental studies of electrical groundings of substations in permafrost areas. [Rezul'taty eksperimental'nykh issledovanii zazemliatiushchikh ustroistv podstantsii v zone mnogoletnei merzloty].

Prokhorenko, S.V., et al, Zazemlenie v raionakh s vysokim udel'nym soprotivleniem grunta (Electrical grounding in areas with high specific ground resistivities) edited by M.V. Kostenko, Apatity, 1981, p.53-57, In Russian.

Shavrin, L.A.

Electric power, Stations, Permafrost beneath structures, Electrical grounding, Electrical grounding.

36-3147

Electric parameters of exposed electrical groundings in permafrost. [Elektricheskie parametry poverkhnostnykh zazemlitelei v mnogoletnemerzlykh gruntakh].

Kostikov, V.I., Zazemlenie v raionakh s vysokim udel'nym soprotivleniem grunta (Electrical grounding in areas with high specific ground resistivities) edited by M.V. Kostenko, Apatity, 1981, p.57-65, In Russian. 2 refs.

Electrical grounding, Permafrost structure, Active layer, Design.

36-3148

Using loop sources of electromagnetic fields in studying geoelectric parameters of permafrost. [Ispol'zovanie petlevykh istochnikov elektromagnitnogo polia dlia issledovaniia geoelektricheskikh parametrov *mnogoletnemerzlykh struktur*].

Kartavtsev, A.S., Zazemlenie v raionakh s vysokim udel'nym soprotivleniem grunta (Electrical grounding in areas with high specific ground resistivities) edited by M.V. Kostenko, Apatity, 1981, p.83-86, In Russian. 2 refs.

Permafrost physics, Electrical logging, Geoelectricity, Permafrost structure.

36-3149

Electric parameters of cables and strands under permafrost conditions. [Elektricheskie parametry kabelei i trosov v usloviiakh vechnoi merzloty].

Bazhenov, N.N., et al, Zazemlenie v raionakh s vysokim udel'nym soprotivleniem grunta (Electrical grounding in areas with high specific ground resistivities) edited by M.V. Kostenko, Apatity, 1981, p.90-94, In Russian. 7 refs.

Mitrokhin, V.E.

Lightning, Electrical grounding, Permafrost beneath structures, Permafrost physics, Electric properties.

36-3150

Geography and cartography of forest soils (methods, geographic and genetic analysis). [Geografiia i kartografiia lesnykh pochv (metody, geografo-geneticheskii analiz)].

Korsunov, V.M., ed, Novosibirsk, Nauka, 1982, 129p. In Russian. For individual papers see 36-3151 *through 36-3155*. Refs. *passim*.

Landscape types, Alpine tundra, Taiga, Cryogenic soils, Mapping, Aerial surveys, Vegetation patterns, Photointerpretation, Soil formation, Podsol, Permafrost hydrology, Thermokarst.

36-3151

Using aerial photographs in large scale mapping of taiga soils. [Krupnomasshtabnoe kartografirovanie taezhnykh pochv s primeneniem aerofotos"emki].

Konstantinov, V.D., Geografiia i kartografiia lesnykh pochv (metody, geografo-geneticheskii analiz) (Geography and cartography of forest soils (methods, geographic and genetic analysis)) edited by V.M. Korsunov, Novosibirsk, Nauka, 1982, p.6-31, In Russian. 18 refs.

Taiga, Cryogenic soils, Mapping, Vegetation patterns, Maps, Aerial surveys, Airborne equipment, Photointerpretation.

36-3152

Peculiarities of structure, the cover of soil and soils in the northern part of the Yenisey Range. [Osobennosti struktury pochvennogo pokrova i pochv severnoi chasti Eniseiskogo kriazha].

Korsunov, V.M., et al, Geografiia i kartografiia lesnykh pochv (metody, geografo-geneticheskii analiz) (Geography and cartography of forest soils (methods, geographic and genetic analysis)) edited by V.M. Korsunov, Novosibirsk, Nauka, 1982, p.32-66, In Russian. 12 refs.

Krasekha, E.N., Simonychev, V.V.

Alpine landscapes, Cryogenic soils, Permafrost depth, Soil formation, Vegetation patterns, Taiga, Swamps, Permafrost distribution.

36-3153

Podsolized soils in the southern part of the Yenisey plain. [Opodzolennye pochvy iuzhnoi chasti Eniseiskoi ravniny].

Korsunov, V.M., et al, Geografiia i kartografiia lesnykh pochv (metody, geografo-geneticheskii analiz) (Geography and cartography of forest soils (methods, geographic and genetic analysis)) edited by V.M. Korsunov, Novosibirsk, Nauka, 1982, p.66-88, In Russian. 22 refs.

Vedrova, E.F.

Plains, Taiga, Cryogenic soils, Podsol, Frost penetration, Soil formation, Soil profiles, Vegetation patterns, Topographic effects.

36-3154

Geography of forest soils in Priangar'e. [Geografiia lesnykh pochv Priangar'ia].

Gorbachev, V.N., Geografiia i kartografiia lesnykh pochv (metody, geografo-geneticheskii analiz) (Geography and cartography of forest soils (methods, geographic and genetic analysis)) edited by V.M. Korsunov, Novosibirsk, Nauka, 1982, p.88-110, In Russian. 25 refs.

Forest soils, Taiga, Cryogenic soils, Vegetation patterns, Peat, Soil formation, Thermokarst, Permafrost hydrology, USSR—Angara River.

36-3155

Soil cover of high altitude belts of the Lake Baykal basin. [Pochvennyi pokrov vysotno-poiasnykh kompleksov basseina oz. Baikal].

Krasnoshchekov, IU.N., et al, Geografiia i kartografiia lesnykh pochv (metody, geografo-geneticheskii analiz) (Geography and cartography of forest soils (methods, geographic and genetic analysis)) edited by V.M. Korsunov, Novosibirsk, Nauka, 1982, p.111-128, In Russian. 34 refs.

Babintseva, R.M., Chekmenkova, IU.S.

Alpine landscapes, Cryogenic soils, Vegetation patterns, Taiga, Alpine tundra.

36-3156
Landscape-geophysical investigations in the Far East. [Landshaftnye geofizicheskie issledovaniia na Dal'nem Vostoke].
Gasanov, Sh.Sh., ed. Vladivostok, 1981, 88p., In Russian. For selected papers see 36-3157 through 36-3162. Refs. passim.
Krylov, I.I., ed.
Permafrost distribution, Landscape types, Snow cover distribution, Plains, Mountains, Soil temperature, Slope orientation, Rock streams, Frost penetration, Seasonal freeze thaw, Snow cover effect.

36-3157
Thermal regime and seasonally freezing layer of soils and ground in plains of the eastern BAM area (the Evoron-Chukchagir basin). [Kharakteristika temperaturnogo rezhima i sezonnomerzlogo sloia pochvogruntov ravninnykh territorii vostochnogo uchastka BAM (na primere iugo-zapadnoi chasti Evoron-Chukchagirskoi depressii)].
Marin, A.V., et al. Landshaftnye geofizicheskie issledovaniia na Dal'nem Vostoke (Geophysical investigations of landscapes in the Far East) edited by Sh.Sh. Gasanov and I.I. Krylov, Vladivostok, 1981, p.8-18, In Russian. 5 refs.
Rosman, A.P., Nikulin, S.F.
Landscape types, Permafrost distribution, Snow cover distribution, Cryogenic soils, Soil temperature, Seasonal freeze thaw, Peat, Organic soils, Frost penetration.

36-3158
Seasonal freezing of rocks in low mountain areas of the Central Sikhote-Alin'. [Sezonnoe promerzanie porod v nizkogornykh raionakh srednei chasti Sikhote-Alinia].
Vtiurina, E.A., et al. Landshaftnye geofizicheskie issledovaniia na Dal'nem Vostoke (Geophysical investigations of landscapes in the Far East) edited by Sh.Sh. Gasanov and I.I. Krylov, Vladivostok, 1981, p.19-54, In Russian.
Bogomolova, L.F., Marin, A.V.
Mountains, Slope orientation, Soil temperature, Frost penetration, Snow cover effect.

36-3159
Permafrost distribution in Sikhote-Alin' Mountains and its dynamics in late Würm-Holocene. [Vechnaia merzlota Sikhote-Alinia i ee dinamika v pozdnem Viurme-Golotsene].
Korotkii, A.M., et al. Landshaftnye geofizicheskie issledovaniia na Dal'nem Vostoke (Geophysical investigations of landscapes in the Far East) edited by Sh.Sh. Gasanov and I.I. Krylov, Vladivostok, 1981, p.45-57, In Russian. 16 refs.
Vysochin, V.I., Gvozdeva, I.G.
Alpine landscapes, Taiga, Permafrost structure, Paleoclimatology, Permafrost depth, Permafrost thickness, Snow cover effect.

36-3160
Cryolithologic aspect of the correlation between physical and geologic time. [Problema sootnosheniia fizicheskogo i geologicheskogo vremeni (kriolitologicheskii aspekt)].
Gasanov, Sh.Sh., Landshaftnye geofizicheskie issledovaniia na Dal'nem Vostoke (Geophysical investigations of landscapes in the Far East) edited by Sh.Sh. Gasanov and I.I. Krylov, Vladivostok, 1981, p.58-66, In Russian. 21 refs.
Geocryology, Permafrost origin, Permafrost dating, Geochronology.

36-3161
Length of snow cover persistence in the southeastern part of Primor'e. [Prodolzhitel'nost' zaleganiia snezhnogo pokrova v iugo-vostochnoi chasti Primorskogo kraia].
Rosman, A.P., et al. Landshaftnye geofizicheskie issledovaniia na Dal'nem Vostoke (Geophysical investigations of landscapes in the Far East) edited by Sh.Sh. Gasanov and I.I. Krylov, Vladivostok, 1981, p.72-83, In Russian. 5 refs.
Nikulin, S.F.
Snow cover distribution, Snow depth, Snow surface temperature, Heat transfer, Mass transfer, Topographic effects.

36-3162
Thermal regime of the Myao-Chan rock streams (a scientific report). [O termicheskom rezhime kurumov khrebta Miao-Chan (nauchnoe soobshchenie)].
Govorushko, S.M., Landshaftnye geofizicheskie issledovaniia na Dal'nem Vostoke (Geophysical investigations of landscapes in the Far East) edited by Sh.Sh. Gasanov and I.I. Krylov, Vladivostok, 1981, p.84-85, In Russian. 3 refs.
Alpine landscapes, Slope orientation, Rock streams, Thermal regime, Ground ice, Snow cover effect.

36-3163
Water and thermal regimes of drained soils in Karelia. [Vodnyi i teplovoi rezhim osushaemykh pochv Karelii].
Nesterenko, I.M., ed. Petrozavodsk, 1981, 112p., In Russian. For selected papers see 36-3164 through 36-3170. Refs. passim.
Land reclamation, Forest land, Swamps, Drainage, Peat, Cryogenic soils, Thermal regime, Heat balance.

36-3164
Factors affecting biologic productiveness of meadows developed on drained peat soils. [O faktorakh bioproduktivnosti lugovykh soobshchestv na osushennykh torfianykh pochvakh].
Kozlov, L.G., et al. Vodnyi i teplovoi rezhim osushaemykh pochv Karelii (Water and thermal regimes of drained soils in Karelia) edited by I.M. Nesterenko, Petrozavodsk, 1981, p.6-20, In Russian. 6 refs.
Nesterenko, I.M., Veinberg, L.N., Konovalova, L.M.
Swamps, Drainage, Organic soils, Peat, Cryogenic soils, Meadow soils, Grasses, Biomass.

36-3165
Changes in thermal balance of drained soils in southern Karelia. [Izmenenie teplovogo balansa osushaemykh pochv v iuzhnoi Karelii].
Klyputo, V.S., Vodnyi i teplovoi rezhim osushaemykh pochv Karelii (Water and thermal regimes of drained soils in Karelia) edited by I.M. Nesterenko, Petrozavodsk, 1981, p.20-32, In Russian. 9 refs.
Swamps, Drainage, Peat, Cryogenic soils, Soil temperature, Heat balance.

36-3166
Controlling thermal regime of drained soils in northern Karelia. [Temperaturnyi rezhim osushaemykh pochv severnoi Karelii i metody ego regulirovaniia].
Germanov, V.P., Vodnyi i teplovoi rezhim osushaemykh pochv Karelii (Water and thermal regimes of drained soils in Karelia) edited by I.M. Nesterenko, Petrozavodsk, 1981, p.32-39, In Russian. 1 ref.
Swamps, Peat, Cryogenic soils, Thermal regime, Hydrothermal processes, Ground ice, Freeze thaw cycles, Drainage, Snow cover effect.

36-3167
Subsurface drainage of heavy mineral clay soils in the glacial lake plains of the Karelian ASSR (Olonetskaya plain taken as an example). [Osushenie tiazhelosuglinistykh mineral'nykh pochv ozerno-lednikovykh ravnin Karel'skoi ASSR zakrytym drenazhem (na primere Olonetskoi ravniny)].
Groznov, E.D., Vodnyi i teplovoi rezhim osushaemykh pochv Karelii (Water and thermal regimes of drained soils in Karelia) edited by I.M. Nesterenko, Petrozavodsk, 1981, p.39-46, In Russian. 11 refs.
Plains, Glacial deposits, Lacustrine deposits, Clay soils, Cryogenic soils, Subsurface drainage.

36-3168
Formation of runoff and its separate phases during drainage of forest lands. [Osobennosti formirovaniia stoka i ego otdel'nykh faz pri lesoosushenii].
Chesnokov, V.A., Vodnyi i teplovoi rezhim osushaemykh pochv Karelii (Water and thermal regimes of drained soils in Karelia) edited by I.M. Nesterenko, Petrozavodsk, 1981, p.75-87, In Russian. 8 refs.
Forest land, Paludification, Drainage, Cryogenic soils, Land reclamation, Runoff.

36-3169
Accounting for peculiarities of ground water alimentation of swamps in draining paluded forests. [Osobennosti gruntovogo pitaniia bolot i ego uchet pri lesoosushenii].
Orlov, E.D., Vodnyi i teplovoi rezhim osushaemykh pochv Karelii (Water and thermal regimes of drained soils in Karelia) edited by I.M. Nesterenko, Petrozavodsk, 1981, p.88-98, In Russian.
Swamps, Forest land, Drainage, Land reclamation.

36-3170
Role of lakes in the formation of minimum winter runoff. [Rol' ozer v formirovanii zimnego minimal'nogo stoka].
Karpechko, V.A., et al. Vodnyi i teplovoi rezhim osushaemykh pochv Karelii (Water and thermal regimes of drained soils in Karelia) edited by I.M. Nesterenko, Petrozavodsk, 1981, p.102-107, In Russian. 6 refs.
Karpechko, V.A.
Runoff, Lakes, Seasonal variations, Subsurface drainage.

36-3171
Influence of extreme winter conditions in 1978-79 on seasonal development of plants in the non-chernozem zone in 1979. [Vliianie ekstremal'nykh uslovii zimy 1978-1979 gg. na sezonnoe razvitie prirody Nechernozem'ia v 1979 godu].
Kibal'chich, O.A., ed. Moscow, 1981, 53p., In Russian. For selected papers see 36-3172 through 36-3176.
Plains, Trees (plants), Frost action, Introduced plants, Frost resistance, Cryogenic soils, Plant ecology, Plant physiology.

36-3172
Influence of extreme winter conditions in 1978-79 on woody plants of the Russkaya plain. [O vliianii ekstremal'noi zimy 1978-79 gg. na sostoianie drevesnykh rastenii Russkoi ravniny].
Aksenova, N.A., Vliianie ekstremal'nykh uslovii zimy 1978-1979 gg. na sezonnoe razvitie prirody Nechernozem'ia v 1979 godu (Influence of extreme winter conditions in 1978-79 on seasonal development of plants in the non-chernozem zone in 1979) edited by O.A. Kibal'chich, Moscow, 1981, p.14-21, In Russian.
Plains, Trees (plants), Frost action, Frost resistance.

36-3173
Comparative evaluation of frost resistance of introduced trees after severe winters. [Sravnitel'naia otsenka zimostoikosti drevesnykh introdutsentov posle surovykh zim].
Aksenova, N.A., et al. Vliianie ekstremal'nykh uslovii zimy 1978-1979 gg. na sezonnoe razvitie prirody Nechernozem'ia v 1979 godu (Influence of extreme winter conditions in 1978-79 on seasonal development of plants in the non-chernozem zone in 1979) edited by O.A. Kibal'chich, Moscow, 1981, p.22-27, In Russian.
Frolova, L.A.
Introduced plants, Trees (plants), Frost action, Plant ecology, Plant physiology, Cryogenic soils, Snow cover effect.

36-3174
Overwintering of woody plants in the collection of the Main Botanical Garden of the Academy of Sciences USSR in 1978-1979. [Perezimovka drevesnykh rastenii SSSR v kollektsii glavnogo botanicheskogo sada AN SSSR v 1978-1979 gg.].
Plotnikova, L.S., Vliianie ekstremal'nykh uslovii zimy 1978-1979 gg. na sezonnoe razvitie prirody Nechernozem'ia v 1979 godu (Influence of extreme winter conditions in 1978-79 on seasonal development of plants in the non-chernozem zone in 1979) edited by O.A. Kibal'chich, Moscow, 1981, p.27-33, In Russian.
Introduced plants, Frost action, Frost resistance, Plant ecology, Plant physiology.

36-3175
Influence of anomalous weather conditions in 1978-79 on seasonal development of woody plants in the Botanical Garden of the Academy of Sciences of the USSR. [Vliianie anomal'nykh pogodnykh uslovii 1978-79 gg. na sezonnoe razvitie drevesnykh rastenii GBS AN SSSR].
Aleksandrova, M.S., et al. Vliianie ekstremal'nykh uslovii zimy 1978-1979 gg. na sezonnoe razvitie prirody Nechernozem'ia v 1979 godu (Influence of extreme winter conditions in 1978-79 on seasonal development of plants in the non-chernozem zone in 1979) edited by O.A. Kibal'chich, Moscow, 1981, p.33-43, In Russian.
Introduced plants, Trees (plants), Frost action, Plant physiology.

36-3176
Effect of extreme winter conditions in 1978-79 on seasonal development of fruit trees and berry plants in the botanical garden of the Moscow State University. [Vliianie ekstremal'nykh uslovii zimy 1978-79 gg. na sezonnoe razvitie plodovo-iagodnykh *rastenii v* usloviiakh botanicheskogo sada MGU].
Guseva, I.N., et al. Vliianie ekstremal'nykh uslovii zimy 1978-1979 gg. na sezonnoe razvitie prirody Nechernozem'ia v 1979 godu (Influence of extreme winter conditions in 1978-79 on seasonal development of plants in the non-chernozem zone in 1979) edited by O.A. Kibal'chich, Moscow, 1981, p.43-47, In Russian.
Kocheshkova, T.V.
Introduced plants, Plant ecology, Frost action, Plant physiology.

36-3177
Climate, relief and human activities. [Klimat, rel'ef i deiatel'nost' cheloveka].
Aseev, A.A., ed. Moscow, Nauka, 1981, 279p., In Russian. For selected papers see 36-3178 through 36-3182. Refs. passim.
Dedkov, A.P., ed.
Plains, Periglacial processes, Glacial erosion, Moraines, Geomorphology, Frost weathering, Permafrost distribution, Patterned ground, Slope processes, Solifluction.

36-3178
Influence of alternating humid and periglacial climatic conditions on fluvial morpho- and lithogenesis on plains. [Fliuvial'nyi morfo- i litogenez na ravninakh pod vliianiem cheredovaniia gumidnykh i perigliatsial'nykh morfoklimaticheskikh uslovii].
Aseev, A.A., Klimat, rel'ef i deiatel'nost' cheloveka (Climate, relief and human activities) edited by A.A. Aseev and A.P. Dedkov, Moscow, Nauka, 1981, p.128-135, In Russian. 17 refs.
Plains, Periglacial processes, Paleoclimatology, Glacial erosion, Glacial deposits, Permafrost origin, Permafrost distribution, Geocryology, Patterned ground, Solifluction.

36-3179
Periglacial morphogenesis in the eastern part of the Russkaya plain. [Perigliatsial'noe rel'efoobrazovanie na vostoke Russkoi ravniny].
Babanov, IU.V., et al. Klimat, rel'ef i deiatel'nost' cheloveka (Climate, relief and human activities) edited by A.A. Aseev and A.P. Dedkov, Moscow, Nauka, 1981, p.135-142, In Russian. 15 refs.
Butakov, G.P., Mozzherin, V.I.
Periglacial processes, Geomorphology, Frost weathering, Patterned ground, Geocryology.

36-3180
Varieties of slope shapes depending on their formation under interglacial and in periglacial conditions. [Raznovidnosti sklonov v zavisimosti ot ikh formirovaniia v mezhlednikovykh i perigliatsial'nykh usloviiakh].
Khrutskii, S.V., et al. Klimat, rel'ef i deiatel'nost' cheloveka (Climate, relief and human activities) edited by A.A. Aseev and A.P. Dedkov, Moscow, Nauka, 1981, p.148-155, In Russian. 7 refs.
Kostsova, E.V.
Plains, Slope processes, Frost action, Periglacial processes, Slope stability, Frost weathering, Solifluction, Permafrost distribution.

36-3181
Phases in periglacial transformations of rolling morainal topography of the Myadininkay and Eyshishkes uplands devoid of lakes (Lithuanian SSR). [Fazovost' perigliatsial'nogo preobrazovaniia rel'efa bezozernykh kholmisto-morennykh vozvyshennostei (na primere Miadininkskoi vozvyshennosti i Eishishkskogo plato Litovskoi SSR)].
Basalikas, A.B., et al. Klimat, rel'ef i deiatel'nost' cheloveka (Climate, relief and human activities) edited by A.A. Aseev and A.P. Dedkov, Moscow, Nauka, 1981, p.155-163, In Russian. 9 refs.
Shviadas, K.I.
Periglacial processes, Geomorphology, Slope processes, Glacial deposits, Morsines, Cryoplanation, Solifluction.

36-3182
Theory and methods of forecasting the development of exogenic processes on slopes. [Teoriia i metody prognozirovaniia razvitiia ekzogennykh protsessov (na primere sklonovykh protsessov)].
Titov, E.E., Klimat, rel'ef i deiatel'nost' cheloveka (Climate, relief and human activities) edited by A.A. Aseev and A.P. Dedkov, Moscow, Nauka, 1981, p.231-241, In Russian. 26 refs.
Slope processes, Frost action, Solifluction, Snow cover effect, Ground thawing, Slope stability, Classifications.

36-3183
Complex construction in the non-chernozem zone. [Nechernozem'iu—kompleksnuiu zastroiku].
Bukin, IU.K., ed. Moscow, Strolizdat, 1982, 198p., In Russian. For selected papers see 36-3184 through 36-3186.
Kapskii, S.K., ed.
Residential buildings, Houses, Building codes, Standards, Construction materials, Prefabrication, Permafrost beneath structures, Design.

36-3184
Modern design of residential houses and public buildings. [Sovremennye tipovye proekty zhilykh domov i zdanii obshchestvennogo naznacheniia].
Mozhaitsev, N.P., Nechernozem'iu—kompleksnuiu zastroiku (Complex construction in the non-chernozem zone) edited by IU.K. Bukin and S.K. Kapskii, Moscow, Strolizdat, 1982, p.95-107, In Russian.
Residential buildings, Houses, Construction materials, Building codes, Frozen ground.

36-3185
Standard construction project is given second chance. [Tipovoi proekt priobretaet vtoruiu zhizn'].
Saburov, V.S., et al, Nechernozem'iu—kompleksnuiu zastroiku (Complex construction in the non-chernozem zone) edited by IU.K. Bukin and S.K. Kapskii, Moscow, Strolizdat, 1982, p.143-159, In Russian.
Avdeenko, V.F.
Residential buildings, Houses, Standards, Prefabrication, Panels.

36 3186
Engineering provisions for rural residential points in the non-chernozem zone. [Inzhenernoe obespechenie sel'skikh naselennykh punktov Nechernozemnoi zony RSFSR].
Korneev, V.A., Nechernozem'iu—kompleksnuiu zastroiku (Complex construction in the non-chernozem zone) edited by IU.K. Bukin and S.K. Kapskii, Moscow, Strolizdat, 1982, p.159-167, In Russian.
Residential buildings, Water pipes, Sewage, Heating, Permafrost beneath structures.

36-3187
All-Union conference on adaptation of woody plants to extreme environmental conditions. *Abstracts of* reports. [Vsesoiuznoe soveshchanie po voprosam adaptatsii drevesnykh rastenii k ekstremal'nym usloviiam sredy. Tezisy dokladov].
Volkov, A.D., ed. Petrozavodsk, 1981, 160p., In Russian with abridged English table of contents enclosed.
Introduced plants, Subarctic landscapes, Stations, Cryogenic soils, Research projects, Plant ecology, Plant physiology, Frost resistance.

36-3188
Design of deeply embedded foundations. [Proektirovanie fundamentov glubokogo zalozheniia].
Silin, K.S., et al, Moscow, Transport, 1981, 252p., In Russian with abridged English table of contents enclosed. 69 refs.
Glotov, N.M., Zavriev, K.S.
Foundations, Footings, Concrete structures, Piles, Caissons, Piers, Permafrost beneath structures, Permafrost bases, Earthquakes.

36-3189
Climatic variations and variability: facts and theories. Berger, A., ed. Dordrecht, Holland, D. Reidel Publishing Co., 1981, 795p., Refs. passim. For selected papers see 36-3190 through 36-3193, or F-26408 and F-26409
Climatic changes, Paleoclimatology, Ice cores, Albedo, Glacier mass balance, Theories.

36-3190
Surface albedo.
Kukla, G.J., Climatic variations and variability: facts and theories. Edited by A. Berger, Dordrecht, Holland, D. Reidel Publishing Co., 1981, p.85-109, 65 refs.
Albedo, Snow optics, Ice optics, Water, Soils, Vegetation, Surface roughness, Reflectivity, Solar radiation.

36-3191
Glacial and interglacial changes in ocean and atmosphere chemistry.
Broecker, W.S., Climatic variations and variability: facts and theories. Edited by A. Berger, Dordrecht, Holland, D. Reidel Publishing Co., 1981, p.111-121, 9 refs.
Carbon dioxide, Ice cores, Paleoclimatology, Ocean water, Water chemistry, Atmospheric composition, Drill core analysis, Theories.
Carbon dioxide content of the atmosphere increases between glacial and interglacial times, have been postulated from gas content studies of long ice cores from Greenland and Antarctica. A hypothesis for this increase involves the loss of phosphorus from the sea to the shelf sediments during the early postglacial transgression of sea level, reducing the amount of plant matter formed per unit of upwelled water and thereby increasing the CO_2 pressure in surface water and the atmosphere. (Auth. mod.)

36-3192
Paleo-climatic studies on ice cores.
Dansgaard, W., Climatic variations and variability: facts and theories. Edited by A. Berger, Dordrecht, Holland, D. Reidel Publishing Co., 1981, p.193-206, 17 refs.
Ice cores, Ice creep, Drill core analysis, Glaciation, Paleoclimatology, Glacier flow, Precipitation (meteorology), Oxygen isotopes, Air temperature, Volcanoes.
Geophysical and geochemical parameters were obtained from ice cores of Antarctica and Greenland. Data contain paleoatmosphere composition, including CO_2 content, mean annual precipitation, air temperature, volcanic activity, etc. Long lasting volcanic activity may be the primary cause for climatic fluctuations of mid and high latitudes.

36-3193
Glacier behaviour and recent changes in alpine climate.
Pagliari, M., Climatic variations and variability: facts and theories. Edited by A. Berger, Dordrecht, Holland, D. Reidel Publishing Co., 1981, p.317-330, 22 refs.
Glacier mass balance, Glacier flow, Alpine glaciation, Glacier oscillation, Glacier heat balance, Italy—Marmolade Glacier.

36-3194
Snowstorm protection.
Goto, K., *Permanent way*, Dec. 1979, No.83, p.4-9.
Snowstorms, Protection, Snow fences, Snow removal, Railroads, Vegetation, Snowdrifts, Avalanche formation, Equipment.

36-3195
Three avalanche cases on Tadami Line.
Shimogaki, T., *Permanent way*, Dec. 1979, No.83, p.10-15.
Avalanche formation, Countermeasures, Protection, Roads, Railroads, Snow fences.

36-3196
Snow-melting equipment on Joetsu Shinkansen.
Hatano, T., et al, *Permanent way*, Dec. 1979, No.83, p.16-24.
Yamane, S.
Snow melting, Artificial thawing, Equipment, Railroads, Protection, Computer applications.

36-3197
Snow-protective measures for Tohoku Shinkansen.
Hasegawa, Y., *Permanent way*, Dec. 1979, No.83, p.25-32.
Railroads, Protection, Snow accumulation, Snowfall, Snow melting, Artificial thawing, Snow removal, Winter maintenance.

36-3198
Dose rate dependence of the yield of trapped electrons in crystalline ice. An evaluation of the reaction rates of the mobile electrons.
Nilsson, G., et al, *Chemical physics letters*, Aug. 15, 1980, 74(1), p.119-124, 22 refs.
Pagsberg, P.
Ice crystal structure, Ions, Temperature effects, Velocity, Electrons.

36-3199
Solidification of a low Peclet number fluid flow in a round pipe with the boundary condition of the third kind.
Lee, S.L., et al, *Canadian journal of chemical engineering*, Apr. 1980, 58(2), p.177-184, 20 refs.
Hwang, G.J.
Liquid solid interfaces, Solid phases, Liquid phases, Heat transfer, Laminar flow, Pipes (tubes), Temperature effects, Boundary value problems.

36-3200
Icelandic subglacial volcanism: thermal and physical studies.
Allen, C.C., *Journal of geology*, Jan. 1980, 88(1), p.108-117, 29 refs.
Subglacial observations, Volcanoes, Heat transfer, Ice melting, Magma, Meltwater, Glaciology, Mountains.

36-3201
Rock glaciers in northern Spitsbergen.
Swett, K., et al, *Journal of geology*, July 1980, 88(4), p.475-482, 11 refs.
Hambrey, M.J., Johnson, D.B.
Rock glaciers, Glacier surfaces, Talus, Meltwater, Freezing, Terraces, Temperature variations, Interstitial ice, Ice wedges, Norway—Spitsbergen.

36-3202
Elastic diffuse neutron scattering due to D-D correlation functions seen in Ih ice.
Schneider, J., et al, *Journal of physics C: solid state physics*, Aug. 10, 1980, 13(22), p.4121-4126, 13 refs.
Zeyen, C.
Ice crystal structure, Neutron scattering, Ion diffusion, Mathematical models.

36-3203
Heat capacity of water at extremes of supercooling and superheating.
Angell, C.A., et al, *Journal of physical chemistry*, Mar. 18, 1982, 86(6), p.998-1002, 25 refs.
Oguni, M., Sichina, W.J.
Water, Supercooling, Heavy water, Heat capacity, Temperature effects, Pressure, Experimentation.

36-3204
Seepage and heat flow in soil freezing.
Frivik, P.E., et al, *Journal of heat transfer*, May 1982, 104(2), p.323-328, 15 refs.
Comini, G.
Soil freezing, Artificial freezing, Heat transfer, Freeze thaw cycles, Mass transfer, Permafrost heat transfer, Soil temperature, Seepage, Mining, Frozen ground physics, Mathematical models, Computer programs.

36-3205
On the prediction of pipe freeze-shut in turbulent flow.
Epstein, M., et al, *Journal of heat transfer*, May 1982, 104(2), p.381-384, 7 refs.
Cheung, F.B.
Turbulent flow, Pipeline freezing, Forecasting, Temperature effects, Analysis (mathematics).

36-3206
Piling in frozen ground.
Crory, F.E., *American Society of Civil Engineers. Technical Councils. Journal*, May 1982, 108(TC1), p.112-124, 30 refs.
Pile structures, Frozen ground strength, Permafrost thermal properties, Freeze thaw cycles, Cold weather construction, Loads (forces), Foundations, Frost heave, Bearing strength.

36-3207
Holarctic alpine and Arctic vegetation: circumpolar relationships and floristic-sociological, high-level units.
Komárková, V., Syntaxonomie. Edited by H. Dierschke, Vaduz, Liechtenstein, J. Cramer, 1981, p.451-475, With German summary. Refs. p.471-475.
Vegetation, Alpine landscapes, Classifications, Mountains, Polar regions.

36-3208
Correlation between fragipans and permafrost with special reference to silty Weichselian deposits in Belgium and northern France.
Van Vliet, B., et al, *Catena*, Apr. 1981, 8(2), p.137-154, With French summary. Refs. p.152-154
Langohr, R.
Soil compaction, Permafrost, Sediments, Paleoclimatology, Drainage, Ice formation, Freeze thaw cycles, Microstructure, Weathering, Ice wedges, Belgium, France.

36-3209
Public firms in winter maintenance sector. [Le Aziende municipalizzate al servizio della viabilità invernale].
Baiano, G., *Neve international*, Mar. 31, 1982, 24(1), p.24-28, In Italian with French, German and English summaries.
Ice removal, Winter maintenance, Road maintenance, Snow removal, Road icing.

36-3210
Winter maintenance and environmental protection. [Viabilità invernale e tutela dell'ambiente].
Bertolotti, C.G., *Neve international*, Mar. 31, 1982, 24(1), p.29-34, In Italian with French, German and English summaries.
Winter maintenance, Road maintenance, Environmental protection, Salting, Chemical ice prevention, Snow removal, Road icing, Snow melting, Artificial melting, Pollution.

36-3211
Choice of where to place storage silos of saline solutions by cost/benefit analysis. [La scelta della dislocazione dei sili per lo stoccaggio di soluzioni saline con il metodo benefici/costi].
Abruzzese, F., *Neve international*, Mar. 31, 1982, 24(1), p.35-39, In Italian with French, German and English summaries.
Road maintenance, Winter maintenance, Waste disposal, Solutions, Salting, Road icing, Snow removal, Ice removal, Cost analysis.

36-3212
Machines and lectures at Davos. [Macchine e conferenze a Davos]. *Neve international*, Mar. 31, 1982, 24(1), p.40-48, In Italian with French, German and English summaries.
Winter maintenance, Road maintenance, Salting, Environmental impact, Ecology, Ice removal, Snow removal, Equipment.

36-3213
Investigation of the electronic structure of ice by high resolution X-ray spectroscopy.
Gilberg, E., et al, *Journal of chemical physics*, May 15, 1982, 76(10), p.5093-5097, 15 refs.
Hanus, M.J., Foltz, B.
Ice crystal structure, X ray analysis, Ice spectroscopy, Molecular structure.

36-3214
Resistance of Beauharnois Canal in winter.
Tsang, G., *American Society of Civil Engineers. Hydraulics Division. Journal*, Feb. 1982, 108(HY2), p.167-186, 11 refs.
River ice, River flow, Ice cover effect, Hydraulics, Flow rate, Frazil ice, Analysis (mathematics), Channels (waterways).

36-3215
Undisturbed sampling of saturated sands by freezing.
Singh, S., et al, *American Society of Civil Engineers. Geotechnical Engineering Division. Journal*, Feb. 1982, 108(GT2), p.247-264, 44 refs.
Seed, H.B., Chan, C.K.
Soil freezing, Sampling, Sands, Freeze thaw cycles, Saturation, Stress strain diagrams, Temperature effects, Fines, Drainage, Loads (forces), Pipes (tubes), Tests.

36-3216
Shallow foundations on frozen soil: a bibliography.
Committee on Shallow Foundations of the Geotechnical Engineering Division. *American Society of Civil Engineers. Geotechnical Engineering Division. Journal*, Feb. 1982, 108(GT2), p.285-291.
Frozen ground strength, Foundations, Bibliographies, Permafrost beneath structures, Bearing strength, Heat flux, Rheology, Soil creep.

36-3217
Snow crystal observations in summer season at Amundsen-Scott South Pole Station, Antarctica.
Kikuchi, K., et al, *Hokkaido Daigaku, Sapporo, Japan. Rigakubu. Journal of the Faculty of Science, Hokkaido University. Series VII Geophysics*, 1976, 5(1), p.1-20, 21 refs.
Hogan, A.W.
Snow crystals, Antarctica—Amundsen-Scott Station.
Some crystal observations were carried out, using a polarizing microscope, at Amundsen-Scott Station, during January, 1975. Upper air analysis indicated that on all the days with snowfalls there were inversion layers aloft, lower than 550 mb, typically around 600 mb. Saturation or subsaturation was present within these layers. Generally, there are no visible clouds corresponding to the saturation layers aloft around 600 mb. For this reason, these snowfalls are called cloudless or "clear sky" precipitation. It was hypothesized that the presence of saturated layers aloft was a necessary but not a sufficient condition for clear sky precipitation. Naturally occurring ice crystals were collected on precipitation days, and rapidly examined before appreciable sublimation occurred. Several "peculiar" shapes of snow crystals were detected. The c-axis of these crystals, and their crystal structure were defined by polarization microscopy. (Auth. mod.)

36-3218
Remeasurement of the axial angle between spatial branches of natural polycrystalline snow crystals.
Uyeda, H., et al, *Hokkaido Daigaku, Sapporo, Japan. Rigakubu. Journal of the Faculty of Science, Hokkaido University. Series VII Geophysics*, 1976, 5(1), p.21-28, 13 refs.
Kikuchi, K.
Snow crystals, Snow crystal structure.

36-3219
Characteristics of debris flows in Xizang.
Tang, B., et al, Ni shi liu lun wen ji (1) (Collected papers on debris flows, No.1), Chungqing, Kexue jishu wenxian chubanshe, 1981, p.6-12, In Chinese with English summary. 1 ref.
Rock streams, Slope processes, Glaciers, Snowmelt, Glacial erosion, Avalanches, Water supply, China—Xizang.

36-3220
Characteristics of movement, erosion and deposition of debris flows in Jiamaqimei gully, Bomi, Xizang.
Tian, L., Ni shi liu lun wen ji (1) (Collected papers on debris flows, No.1), Chungqing, Kexue jishu wenxian chubanshe, 1981, p.90-93, In Chinese with English summary.
Snow melting, Rock streams, Snow accumulation, Avalanches, Slope processes, Roads, Snow, Permafrost, China—Xizang.

36-3221
Debris flows along some highways of Qinghai-Xizang plateau and their prevention and control.
Li, D., Ni shi liu lun wen ji (1) (Collected papers on debris flows, No.1), Chungqing, Kexue jishu wenxian chubanshe, 1981, p.101-107, In Chinese with English summary. 4 refs.
Slope processes, Snow melting, Glacial lakes, Damage, Roads, Rock streams.

36-3222
Surface air flow over East Antarctica.
Parish, T.R., *Monthly weather review*, Feb. 1982, 110(2), p.84-90, 15 refs.
Air flow, Ice sheets, Wind speed, Topographic effects, Antarctica—East Antarctica.
Surface winds over the Antarctic interior occur mainly due to the strong radiational cooling of the ice slopes. As a consequence, such winds exhibit a high degree of persistence with a predominant direction closely related to the terrain orientation. Using detailed contour maps of the interior ice topography and representative values of the mean wintertime strength of the temperature inversion, it is possible to infer the terrain-induced accelerations. A simple diagnostic equation system is formulated, from which a time-averaged surface airflow pattern of East Antarctica is generated. The results appear consistent with observations. The occurrence of localized, anomalously strong katabatic winds is explained as a result of topographically forced patterns of cold-air convergence depicted in the airflow analysis. (Auth.)

36-3223
Alluvial fan development at Franklin Bluffs, Alaska.
Anderson, G.S., et al, *Iowa Academy of Science Proceedings*, 1962, Vol.69, p.310-322, 5 refs.
Hussey, K.M.
DLC Q11 I5
Alluvium, Tundra, Surface drainage, Mass flow, United States—Alaska—Franklin Bluffs.

36-3224
Unusual case of stream piracy.
Reckendorf, F., et al, *Iowa Academy of Science Proceedings*, 1962, Vol.69, p.322-326
Hussey, K.M.
Ground thawing, Streams, Coastal topographic features, United States—Alaska—Arctic Coastal Plain.

36-3225
Ground patterns as keys to photointerpretation of Arctic terrain.
Hussey, K.M., *Iowa Academy of Science Proceedings*, 1962, Vol.69, p.332-341, 9 refs.
Patterned ground, Slope orientation, Photointerpretation.

36-3226
Nucleation rates of ice in undercooled water and aqueous solutions of polyethylene glycol.
Michelmore, R.W., et al, *Cryobiology*, Apr. 1982, 19(2), p.163-171, 16 refs.
Franks, F.
Nucleation rate, Ice formation, Solutions.

36-3227
Numerical analysis of freezing domain around in-ground storage tanks for cryogenic liquids using integrated penalty, and finite difference, methods.
Yanagisawa, I., et al. *Cold regions science and technology*, Nov. 1981, 5(2), p.79-94, 9 refs.
Yoshikawa, H.
Soil freezing, Underground storage, Storage tanks, Thermal conductivity, Thermal diffusion, Phase transformations, Temperature effects, Latent heat, Cryogenic structures, Analysis (mathematics).

36-3228
Importance of water migration in the measurement of the thermal conductivity of unsaturated frozen soils.
Kay, B.D., et al. *Cold regions science and technology*, Nov. 1981, 5(2), p.95-106, 29 refs.
Fukuda, M., Izuta, H., Sheppard, M.I.
Frozen ground physics, Soil water migration, Thermal conductivity, Heat transfer, Latent heat, Ground ice, Ice mechanics, Water content, Temperature gradients.

36-3229
Wind tunnel study of the aerodynamic roughness associated with drifting snow.
Kikuchi, T., *Cold regions science and technology*, Nov. 1981, 5(2), p.107-118, 22 refs.
Snowdrifts, Wind tunnels, Wind velocity, Surface roughness, Mass flow, Air flow.

36-3230
Albedo and flux extinction coefficients of impure snow for diffuse short-wave radiation.
Choudhury, B.J., et al, *Cold regions science and technology*, Nov. 1981, 5(2), p.119-125, 24 refs.
Mo, T., Wang, J.R., Chang, A.T.C.
Albedo, Snow optics, Snow impurities, Solar radiation, Grain size, Analysis (mathematics), Spectra.

36-3231
Probabilistic-deterministic analysis of one-dimensional ice segregation in a freezing soil column.
Guymon, G.L., et al, *Cold regions science and technology*, Nov. 1981, 5(2), MP 1534, p.127-140, 14 refs.
Harr, M.E., Berg, R.L., Hromadka, T.V., II.
***Frost heave*, Soil freezing, Heat transfer, Soil water migration, Ice formation, Water content, Mathematical models, Separation.**
A deterministic model of frost heave based upon simultaneous analysis of coupled heat and moisture transport is cascaded with a probabilistic model of parameter variations. The multiparameter, deterministic model is based upon submodels of moisture transport, heat transport, and lumped isothermal freezing processes. The probabilistic model is based upon Rosenblueth's method which only requires knowledge of parameter means and their coefficients of variation.

36-3232
Viscous relations for the steady creep of polycrystalline ice.
Smith, G.D., et al, *Cold regions science and technology*, Nov. 1981, 5(2), p.151-156, 8 refs.
Morland, L.W.
***Ice crystal structure*, Ice creep, Rheology, Stress strain diagrams, Viscous flow, Temperature effects, Analysis (mathematics).**

36-3233
Method for evaluating shockwave propagation in snow.
Brown, R.L., *Cold regions science and technology*, Nov. 1981, 5(2), p.151-156, 8 refs.
Snow physics, Shock waves, Wave propagation, Stresses, Analysis (mathematics).

36-3234
Visible and infrared obscuration effects of ice fog.
Seagraves, M.A., *Cold regions science and technology*, Nov. 1981, 5(2), p.157-162, 13 refs.
Ice fog, Ice optics, Visibility, Water vapor, Particle size distribution.

36-3235
Modes of ice formation and flow blockage that occur *while filling a cold pipe.*
Gilpin, R.R., *Cold regions science and technology*, Nov. 1981, 5(2), p.163-171, 18 refs.
Water pipes, Ice formation, Water flow, Dendritic ice, Water pressure, Supercooling, Freezing points, Ice nuclei, Temperature effects.

36-3236
Note on the solar elevation dependence of clear-sky snow albedo.
Choudhury, B., *Cold regions science and technology*, Nov. 1981, 5(2), p.173-176, 17 refs.
Snow optics, Albedo, Reflection, Solar radiation, Altitude.

36-3237
Comment on "Radiative properties of snow for clear sky solar radiation".
Warren, S.G., et al, *Cold regions science and technology*, Nov. 1981, 5(2), p.177-179, 14 refs. For original paper see 35-3667. Author's reply, Ibid., 5(3), p.275-276, 2 refs.
Wiscombe, W.J.
Snow optics, Solar radiation, Albedo, Reflection, Radiation absorption, Snow density, Spectra, Grain size, Heating.

36-3238
***Joint studies on physical and biological environments* in the permafrost, North Canada; July to August 1980 and February to March 1981.**
Kinoshita, S., ed. Sapporo, Japan, Hokkaido University, 1981, 121p., With Japanese summaries. Refs passim. For individual papers see 36-3239 through 36-3246.
Tundra, Permafrost physics, Environments, Thermal regime, Pingos, Vegetation, Freeze thaw cycles, Canada.

36-3239
Microclimatic investigations of the Arctic tundra.
Aburakawa, H., Joint studies on physical and biological environments in the permafrost, North Canada; July to August 1980 and February to March 1981. Edited by S. Kinoshita, Sapporo, Japan, Hokkaido University, 1981, p.1-11, With Japanese summary, 7 refs.
Tundra, Microclimatology, Permafrost, Albedo, Thaw depth, Heat balance, Patterned ground, Measuring instruments, Snow accumulation, Air temperature.

36-3240
Oxygen isotopic composition of massive ice at Tuktoyaktuk, North Canada.
Kato, K., et al, Joint studies on physical and biological environments in the permafrost, North Canada; July to August 1980 and February to March 1981. Edited by S. Kinoshita, Sapporo, Japan, Hokkaido University, 1981, p.13-20, With Japanese summary. 6 refs.
Fujino, K.
Ground ice, Ice composition, Oxygen isotopes, Ice *formation, Pingos, Polygonal topography, Climatic* factors, Ice crystal structure.

36-3241
Thermal regime of the uppermost layer of tundra and its effect on microtopography.
Fujino, K., Joint studies on physical and biological environments in the permafrost, North Canada; July to August 1980 and February to March 1981. Edited by S. Kinoshita, Sapporo, Japan, Hokkaido University, 1981, p.21-36, With Japanese summary. 3 refs.
Tundra, Thermal regime, Topographic features, Freeze thaw cycles, Thaw depth, Soil water, Thermal conductivity, Thermal diffusion, Soil temperature, Vegetation, Hummocks, Statistical analysis.

36-3242
Observations of pingo growth near Tuktoyaktuk, N.W.T., Canada.
Fukuda, M., Joint studies on physical and biological environments in the permafrost, North Canada; July to August 1980 and February to March 1981. Edited by S. Kinoshita, Sapporo, Japan, Hokkaido University, 1981, p.37-44, *With Japanese summary*. 5 refs.
Pingos, Growth, Permafrost physics, Ground ice, Freeze thaw cycles, Soil water migration, Ice formation, Lake water, Bottom topography, Thaw depth, Canada—Northwest Territories—Tuktoyaktuk.

36-3243
Field observations of ice wedge cracking in the permafrost area near Tuktoyaktuk, N.W.T., Canada.
Fukuda, M., Joint studies on physical and biological environments in the permafrost, North Canada; July to August 1980 and February to March 1981. Edited by S. Kinoshita, Sapporo, Japan, Hokkaido University, 1981, p.45-60, With Japanese summary. 12 refs.
Ice wedges, Cracking (fracturing), Permafrost physics, Patterned ground, Tundra, Temperature gradients, Shear strength, Frozen ground strength.

36-3244
Collections of soil mesofauna in Arctic Canada.
Toda, M.J., et al, Joint studies on physical and biological environments in the permafrost, North Canada; July to August 1980 and February to March 1981. *Edited by S. Kinoshita, Sapporo, Japan, Hokkaido* University, 1981, p.61-72, With Japanese summary, 1 ref.
Kikuchi, Y.
Tundra, Animals, Biogeography, Ecology, Classifications.

36-3245
Vegetational changes in relation to topography and soil environments in Arctic tundra.
Yoshie, F., et al, Joint studies on physical and biological environments in the permafrost, North Canada; July to August 1980 and February to March 1981. Edited by S. Kinoshita, Sapporo, Japan, Hokkaido University, 1981, p.73-93, With Japanese summary, 10 refs.
Fujino, K.
Tundra, Vegetation, Ecology, Active layer, Soil water, Soil microbiology, Topographic effects, Pingos, Thaw depth, Water content.

36-3246
Water status and freezing resistance of arctic plants.
Yoshie, F., et al, Joint studies on physical and biological environments in the permafrost, North Canada; July to August 1980 and February to March 1981. Edited by S. Kinoshita, Sapporo, Japan, Hokkaido University, 1981, p.95-110, With Japanese summary, 11 refs.
Sakai, A.
Tundra, Vegetation, Freezing, Plant physiology, Plants (botany), Cold tolerance.

36-3247
Climate impact assessment, April 1982; U.S. economic impact of the severe winter of 1982.
U.S. Environmental Data and Information Service, Center for Environmental Assessment Services, 1982, 47p.
Air temperature, Precipitation (meteorology), Snowfall, Floods, Records (extremes), Economic analysis, *Environmental impact, United States.*

36-3248
Empirical probabilities of the ice limit and fifty percent ice concentration boundary in the Chukchi and Beaufort Seas.
Webster, B.D., *U.S. National Oceanic and Atmospheric Administration. NOAA technical memorandum*, May 1982, NWS AR-34, 9p. + figs., Refs p.7-9
Sea ice distribution, Ice conditions, Ice formation, Ice melting, Ice forecasting, Climatic factors, Maps, Statistical analysis, *Chukchi Sea, Beaufort Sea.*

36-3249
Hydrogeology of glacial deposits from aerial photographs.
Sauer, E.K., *Photogrammetric engineering and remote sensing*, June 1981, 47(6), p.811-822, 28 refs.
Hydrogeology, Glacial deposits, Ground water, Glacial processes, Aerial surveys, Photography, Landforms, Moraines.

36-3250
Across Canada's Arctic. *Marine engineering log*, Oct. 1980, 85(11), p.82-86.
Icebreakers, Ice navigation, Exploration, Design.

36-3251
Perils of iceberg alley. *Marine engineering log*, Oct. 1980, 85(11), p.88-90.
Icebergs, Drift, Ice conditions, Ice detection, Ice navigation, Remote sensing.

36-3252
Results of hydrometeorological research and their climatological significance to the solution of water management problems. [Hydrometeorologische Arbeitsergebnisse und ihre klimatologische Bewertung als Grundlage für die Lösung wasserwirtschaftlicher Aufgaben].
Rachner, M., et al, *Zeitschrift für Meteorologie*, 1981, 31(2), p.98-106, In German with English summary, 26 refs.
Richter, D., Schönermark, E. von, Schumann, D.
Hydrology, Meltwater, Snow melting, Rain, Meteorological factors, Evaporation, Precipitation (meteorology).

36-3253
Role of meteorology in river flow forecasting models. [Die Rolle der Meteorologie in Durchflussvorhersagemodellen].
Hoffmeyer-Zlotnik, H.-J., et al, *Zeitschrift für Meteorologie*, 1981, 31(2), p.107-116, In German with English summary, 18 refs.
Wernstedt, J., Kornevl, H., Vogt, F.
River flow, Forecasting, Snowmelt, Thermal regime, Meteorological data, Models, Precipitation (meteorology), Evapotraspiration, Water supply, Snow cover.

36-3254
Application of a numerical sea ice model to the East Greenland area.
Tucker, W.B., MP 1535, Monterey, California, Naval Postgraduate School, Dec. 1981, 109p., M.S. thesis. Refs. p.104-106.
Sea ice distribution, Drift, Ice growth, Thermodynamics, Mathematical models, Greenland.
A dynamic-thermodynamic sea ice model which employs a viscous-plastic constitutive law has been applied to the East Greenland area. The model is run on a 40-km spatial scale at 1/4-day time steps for a 60-day period with forcing data beginning on Oct. 1, 1979. Results tend to verify that the model predicts reasonable thicknesses and velocities within the ice margin. Thermodynamic ice growth produces excessive ice extent, however, probably due to inadequate parameterization of oceanic heat flux.

36-3255
Climate and energy balance on Arctic tundra.
Ohmura, A., *Zurcher geographische Schriften*, 1981, No.3, 448p., With extended German summary. Refs. p.418-437.
Tundra, Heat balance, Climate, Snow cover effect, Solar radiation, Latent heat, Heat flux.

36-3256
Bathymetry of Alaskan Arctic lakes: a key to resource inventory with remote sensing methods.
Mellor, J.C., College, University of Alaska, May 1982, 342p., Ph.D. thesis. Refs. p.256-266.
Lake water, Ice cover thickness, Ice electric properties, Snow electrical properties, Lake ice, Remote sensing, Natural resources, Side looking radar, Computer programs, Surface properties, LANDSAT, United States—Alaska.

36-3257
Cold regions engineering in Norway.
Flaate, K., *Civil engineering*, Apr. 1982, 52(4), p.68-69.
Cold weather construction, Frost resistance, Thermal insulation, Frost action, Roads, Tunnels, Railroads, Pipelines, Pavements, Crack propagation, Road icing, Frost heave, Norway.

36-3258
Snowfall rate obtained from radar reflectivity within a 50 km range.
Boucher, R.J., Conference on Radar Meteorology, 20th, Boston, Mass, Dec. 3, 1981, Proceedings; Preprint volume, Boston, Mass., American Meteorological Society, [1982], p.271-275, ADA-109 010, 9 refs.
Snowfall, Snow accumulation, Radar echoes, Reflectivity, Snow optics, Measuring instruments.

36-3259
Deuterium and O-18 variations in the lakes of Schirmacher Oasis (East Antarctica). [Deuterium- und 18-O-Variationen in Seen der Schirmacher-Oase (Ostantarktika)].
Richter, W., et al, *Geodätische und geophysikalische Veröffentlichungen*, 1981, Series I, No.8, p.21-40, In German with English and Russian summaries. 25 refs.
Strauch, G.
Ice dams, Lake ice, Geochemistry, Hydrology, Antarctica—Schirmacher Ponds.
A snow and icefree rock area, the Schirmacher Oasis is situated on the coast of the Antarctic continent, between inland and shelf ice. The geography is characterized by a great number of lakes. In the glacier and icefree area of the oasis different exogenic conditions have produced multiform lake basins. The ice dammed lakes have been described as new, not connected with glaciers. In spite of their direct connection with the ocean, the shelf lakes are unusually closely associated with the inland lakes. In contrast to salt lakes of the coast oasis, the lakes of Schirmacher Oasis from earlier investigations can be described hydrochemically as being fresh water lakes. In the present report first results about isotope hydrological relations in the lakes of the oasis are discussed. The lakes can be classified by isotope hydrological parameters into different groups, the classification depending on in- and outflow, evaporation processes, nature of inflow, and location. The first O-18 measurements suggest a higher differentiation of the water bodies of the polar lakes in the Schirmacher Oasis than was observed using natural deuterium variation. (Auth. mod.)

36-3260
Summer sea ice variations in Prydz Bay. [Sommerliche Eisvariationen in der Olaf-Prydz-Bucht].
Gernandt, H., *Geodätische und geophysikalische Veröffentlichungen*, 1981, Series I, No.8, p.52-67, In German with English, German, and Russian summaries. 10 refs.
Sea ice distribution, Ice volume, Seasonal variations, Antarctica—Prydz Bay.
The variation of sea ice covering in the region of the antarctic coasts has considerable effect on heat exchange between atmosphere and southern polar ocean. Specific morphological, hydrological and meteorological conditions exist in the Olaf Prydz Bay, which affect the sea ice cover in the summer time. Considerable differences occur in this region as to the extent of sea ice from year to year. At the same time the variation of sea ice margins, particularly off the Ingrid Christensen Coast, points to a relatively stable behavior. (Auth.)

36-3262
Snow cover as an additional thermal insulation of above-ground pipelines. [Ispol'zovanie snezhnogo pokrova v kachestve dopolnitel'noi teploizoliatsii truboprovodov nadzemnoi prokladki].
Nosov, V.L., *Promyshlennaia energetika*, Mar. 1982, No.3, p.43-44, In Russian.
Pipeline insulation, Utilities, Thermal insulation, Snow cover effect.

36-3263
Snowdrift protection on northern construction sites. [Protivometelevye meropriiatiia pri stroitel'stve na Severe].
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Snowstorms, Snowdrifts, Countermeasures.

36-3264
Device for winter slipping of ships. [Ustroistvo dlia zimnego slipovaniia sudov].
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Docks, Polynyas, Frost protection, Winter maintenance, Ice navigation.

36-3265
Structures on weak grounds. [Sooruzheniia na slabykh gruntakh].
Gurevich, V., *Rechnoi transport*, 1981, No.12, p.37-38, In Russian.
Ports, Docks, Hydraulic structures, Permafrost beneath structures, Active layer, Foundations, Slope protection, Piles.

36-3266
Ice-navigation strength of diesel boats. [Ledovaia prochnost' teplokhoda].
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Potapov, O., Poliakov, A., Starosel'skii, V.
Ships, Ice navigation, Ice loads, Propellers.

36-3267
Reliability of propulsion-steering systems under ice navigation conditions. [Nadezhnost' DRK vo l'dakh].
Ratner, E., *Rechnoi transport*, 1982, No.1, p.29-30, In Russian.
Propellers, Ice navigation, River ice, Ice loads, Steering gear.

36-3268
Testing ships in ice-navigation conditions. [Rezul'taty ispytanii sudov v ledovykh usloviiakh].
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Burygin, L., Botsan, M.
Ships, Cargo, Ice navigation.

36-3269
Propelling systems of ice cutting machines. [Dvizhiteli ledorezhnykh mashin].
Nikolaev, A., et al, *Rechnoi transport*, 1982, No.2, p.30-31, In Russian.
Kuliashov, A., IAnkovich, A., Khudiakov, V.
Icebound rivers, Ice navigation, Ice cutting.

36-3270
Improving navigation conditions on the Pur River. [Uluchshenie sudokhodnykh uslovii na reke Pur].
Znikin, E., et al, *Rechnoi transport*, 1982, No.2, p.39, In Russian.
Kozhinov, N.
Rivers, Polar regions, Ice conditions, Ice navigation.

36-3271
Winter storms over the San Juan Mountains. Part 1: Dynamic processes.
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Snowstorms, Snow accumulation, Runoff, Cloud seeding, Dynamic properties, Mapping, Mountains, United States—Colorado—San Juan Mountains.

36-3272
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Saunders, C.P.R.
Snowstorms, Ice crystal structure, Microstructure, Ice nuclei, Supercooling, Airborne surveys, Mountains, United States—Colorado—San Juan Mountains.

36-3273
Winter storms over the San Juan Mountains. Part 3: Seeding potential.
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Marwitz, J.D.
Snowstorms, Snowfall, Cloud seeding, Mountains, United States—Colorado—San Juan Mountains.

36-3274
Reexamination of cloud-top temperatures used as criteria for stratification of cloud seeding effects in experiments on winter orographic clouds.
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Cloud seeding, Stratification, Ice nuclei, Temperature distribution, Humidity, Winter, Supercooled clouds.

36-3275
New, icebreaking CN ferry.
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Ice breaking, Icebreakers, Bubbling, Ice navigation.

36-3276
Highway maintenance—during and after the freeze.
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Road maintenance, Winter maintenance, Bridges, Frost action, Damage, Salting, Chemical ice prevention, Frost heave.

36-3277
Arctic Ice Dynamics Joint Experiment 1975-1976 physical oceanography data report: profiling current meter data—Camp Blue Fox. Vol.2.
Manley, T.O., et al, *Columbia University, Lamont-Doherty Geological Observatory, Technical report*, Feb. 1980, No.5, 453p., 13 refs.
Hunkins, K., Tiemann, W.
Velocity, Ice mechanics, Sea ice, Drift, Ocean currents, Drift stations, Wind factors, Computer programs, Statistical analysis, Flow rate, Arctic Ocean.

36-3278
Arctic Ice Dynamics Joint Experiment 1975-1976 physical oceanography data report: profiling current meter data—Camp Snowbird. Vol.3.
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Hunkins, K., Tiemann, W.
Ocean currents, Drift, Ice mechanics, Sea ice, Drift stations, Wind factors, Velocity, Computer programs, Flow rate, Statistical analysis, Arctic Ocean.

36-3279
Arctic Ice Dynamics Joint Experiment 1975-1976 physical oceanography data report: profiling current meter data, Camp Big Bear. Vol.4.
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Hunkins, K., Tiemann, W.
Ocean currents, Drift, Drift stations, Oceanography, Ice mechanics, Sea ice, Wind factors, Velocity, Computer programs, Statistical analysis, Arctic Ocean.

36-3280
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Hunkins, K., et al, *Columbia University, Lamont-Doherty Geological Observatory, Technical report*, Dec. 1981, No.3, 106p., 5 refs.
Tiemann, W., Jackson, R.
Geophysical surveys, Drift stations, Ice floes, Oceanography, Ocean bottom, Seismic reflection, Statistical analysis.

36-3281
Mechanics of ice jam formation in rivers. Final report.
Ackermann, N.L., et al, Potsdam, N.Y., Clarkson College of Technology, May 1982, 33p. + supplement, Project No.: USEAD, Detroit, No.NCE-IA-78-133, 11 refs. For selected papers from Supplement see 36-3042 and 36-3282.
Shen, H.T.
Ice jams, Ice mechanics, River ice, River flow, Channels (waterways), Mathematical models, Computer programs.

36-3282
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Ice jams, River ice, River flow, Ice conditions, Shear stress, Surface roughness, Channels (waterways), Computer programs.

36-3283
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Chu, T.S., *Bell system technical journal*, Jan. 1980, 59(1), p.987-1007, 20 refs.
Microwaves, Polarization (waves), Ice physics, Supercooled clouds, Particles, Analysis (mathematics).

36-3284
Combined ground-thawing technique for increasing earthwork efficiency. [Povyshenie effektivnosti zimnikh zemlianykh rabot pri kombinirovannom sposobe utepleniia].
Filippov, G.S., *Promyshlennoe stroitel'stvo*, Mar. 1982, No.3, p.32-33, In Russian. 6 refs.
Soil freezing, Frozen ground, Earthwork, Artificial thawing, Thermal insulation, Cellular plastics.

36-3285
Glacier outburst floods from "Hazard Lake", Yukon Territory, and the problem of flood magnitude prediction.
Clarke, G.K.C., *Journal of glaciology*, 1982, 28(98), p.3-21, With French and German summaries. 16 refs.
Glacial hydrology, Flood forecasting, Subglacial drainage, Lake water, Glacier melting, Water temperature, Channels (waterways), Mathematical models.

36-3286
Surging of Fisher Glacier, eastern Antarctica: evidence from geomorphology.
Wellman, P., *Journal of glaciology*, 1982, 28(98), p.23-28, With French and German summaries. 10 refs.
Glacier surges, Glacial hydrology, Geomorphology, Moraines, Mountains, Climatic changes, Antarctica—Fisher Glacier.
A study of the geomorphology of the Prince Charles Mountains using color vertical air photographs shows well-preserved old moraines throughout much of the outcrop area. Along Fisher Glacier, lower Lambert Glacier and the Amery Ice Shelf, within the altitude range 50-2,000 m, the old moraines show that none of the other glaciers had risen significantly in their upper parts; the rise of their lower parts was caused by the rise of lower Lambert Glacier and the Amery Ice Shelf. The changes in ice level are unlikely to be due to climatic change because this would not repeatedly affect only one glacier draining central Antarctica. It is thought that the changes in ice level are caused by repeated surges of Fisher Glacier. (Auth.)

36-3287
Estimate of glacier ablation under a debris layer from surface temperature and meteorological variables.
Nakawo, M., et al, *Journal of glaciology*, 1982, 28(98), p.29-34, With French and German summaries. 13 refs.
Young, G.J.
Glacier ablation, Glacial deposits, Glacier mass balance, Surface temperature, Meteorological data.

36-3288
Melting-refreezing at the glacier sole and the isotopic composition of the ice.
Jouzel, J., et al, *Journal of glaciology*, 1982, 28(98), p.35-42, With French and German summaries. refs.
Souchez, R.A.
Glacier melting, Freezing, Subglacial observations, Ice composition, Isotope analysis, Glacier beds, Ice water interface, Ice solid interface, Phase transformations, Basal sliding, Models.

36-3289
Oxygen-isotope and total beta-radioactivity measurements on 10 m ice cores from the Antarctic Peninsula.
Peel, D.A., et al, *Journal of glaciology*, 1982, 28(98), p.43-55, With French and German summaries. 29 refs.
Clausen, H.B.
Ice cores, Oxygen isotopes, Radioactivity, Drill core analysis, Ice temperature, Climatic changes, Air temperature, Air masses, Antarctica—Antarctic Peninsula.
As part of the Glaciology of the Antarctic Peninsula (GAP) program, the snow cover at 25 stations was sampled to 10 m depth for oxygen-isotope and total *beta*-radioactivity analysis. The mean annual oxygen-isotope ratio correlates satisfactorily with 10 m temperature despite the complex topography of the area and suggests on average that climatic trends in the region are fairly systematic. The relationship with temperature is similar to that derived from a simple model in which an air mass initially of maritime subtropical characteristics is progressively cooled as it moves towards the region. The detailed isotope profiles show that for future deep drilling the most easily interpretable climatic information will be found in the more continental areas—on the east coast and on the plateau in the south of the region. The degree of continentality of particular sites is reflected in the amplitude of the annual wave in the upper portion of the isotope-ratio profile as well as in the accumulation rate. (Auth.)

36-3290
Geophysical investigations of the tropical Quelccaya ice cap, Peru.
Thompson, L.G., et al, *Journal of glaciology*, 1982, 28(98), p.57-69, With French and German summaries. 28 refs.
Geophysical surveys, Glacier thickness, Glacier oscillation, Ice dating, Geodetic surveys, Gravity, Mountains, Drill core analysis, Photogrammetry.

36-3291
Effects of bed inclination and topography on steady isothermal ice sheets.
Morland, L.W., et al, *Journal of glaciology*, 1982, 28(98), p.71-90, With French and German summaries. 15 refs.
Johnson, J.B.
Ice sheets, Ice temperature, Ice flow, Basal sliding, Slope orientation, Topographic effects, Surface properties, Mass balance, Gravity, Ice cover thickness, Viscosity, Isostasy, Analysis (mathematics).

36-3292
Radiometric chronology of Neh-Nar Glacier, Kashmir.
Nijampurkar, V.N., et al, *Journal of glaciology*, 1982, 28(98), p.91-105, With French and German summaries. 22 refs.
Bhandari, N., Vohra, C.P., Krishnan, V.
Mountain glaciers, Glacier flow, Radioactivity, Radioactive age determination, Distribution, Profiles, History, Models.

36-3293
Geomorphology of the Gor Garang Glaciers, Himachal Pradesh, India.
Kaul, M.K., et al, *Journal of glaciology*, 1982, 28(98), p.107-115, With French and German summaries. 1 ref.
Sharma, A.R., Bhattacharya, D.N.
Glacier surveys, Mountain glaciers, Geomorphology, Glacial lakes, Mapping, India—Gor Garang Glaciers.

36-3294
On the temperature regime of continental-type glaciers in China.
Maohuan, H., et al, *Journal of glaciology*, 1982, 28(98), p.117-128, With French and German summaries. 18 refs.
Zhongxiang, W., Jiawen, R.
Mountain glaciers, Ice temperature, Glacier heat balance, Profiles, China.

36-3295
Ice movement through Smith Sound in northern Baffin Bay, Canada, observed in satellite imagery.
Ito, H., et al, *Journal of glaciology*, 1982, 28(98), p.129-143, With French and German summaries. 6 refs.
Müller, F.
Pack ice, Ice mechanics, Drift, Remote sensing, LANDSAT, Wind factors, Velocity, Canada—Northwest Territories—Baffin Bay.

36-3296
Steady-state preferred orientation of ice deformed in plane strain at -1C.
Wilson, C.J.L., et al, *Journal of glaciology*, 1982, 28(98), p.145-160, With French and German summaries. 12 refs.
Russell-Head, D.S.
Ice deformation, Ice crystal structure, Strains, Microstructure, Loads (forces), Ice plasticity, Grain size, Temperature effects, Experimentation.

36-3297
Fracture criterion for ice using a dislocation model.
Parameswaran, V.R., *Journal of glaciology*, 1982, 28(98), p.161-169, With French and German summaries. 23 refs.
Ice crystal structure, Ice cracks, Crack propagation, Dislocations (materials), Mathematical models.

36-3298
Confined compressive strength of polycrystalline ice.
Jones, S.J., *Journal of glaciology*, 1982, 28(98), p.171-177, With French and German summaries. 17 refs.
Ice crystal structure, Compressive properties, Ice strength, Stress strain diagrams, Pressure, Tests.

36-3299
Inversion for physical characteristics of snow using passive radiometric observations.
Rotman, S.R., et al, *Journal of glaciology*, 1982, 28(98), p.179-185, With French and German summaries. 13 refs.
Fisher, A.D., Staelin, D.H.
Snow accumulation, Microwaves, Radiometry, Remote sensing, Snow melting, Spectroscopy, Snow optics, Firn, Temperature effects, Analysis (mathematics).
The Nimbus-6 Satellite's Scanning Microwave Spectrometer (SCAMS) mapped the terrestrial surface continuously for eleven months at 22.2 and 31.6 GHz. A semi-empirical method was devised to process these observations of Greenland and Antarctica and to infer long-term snow accumulation rates; comparison with *in situ* data suggests the method is generally successful except in certain locations where re-melting is more likely. (Auth.)

36-3300
Shear tests on snow explained by fast metamorphism.
Montmollin, V. de, *Journal of glaciology*, 1982, 28(98), p.187-198, With French and German summaries. 28 refs.
Metamorphism (snow), Shear properties, Shear rate, Snow compression, Shear stress, Viscosity, Brittleness.

36-3301
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Perla, R., *Journal of glaciology*, 1982, 28(98), p.199-204, With French and German summaries. 15 refs.
Snow physics, Microstructure, Porosity, Microscope slides.

36-3302
Further results on studies of temperature-gradient metamorphism.
Adams, E.E., et al, *Journal of glaciology*, 1982, 28(98), p.205-210, With French and German summaries. 5 refs.
Brown, R.L.
Metamorphism (snow), Snow temperature, Snow strength, Temperature gradients, Thermodynamics.

36-3303
Naled ice in front of some Spitsbergen glaciers.
Baranowski, S., *Journal of glaciology*, 1982, 28(98), p.211-214, With French and German summaries. 6 refs.
Naleds, Glaciers, Outwash, Plains, Geomorphology, Norway—Spitsbergen.

36-3304
Moisture flow measurements through the frozen soil monitored by the dual-gamma attenuation method.
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Soil freezing, Frozen ground thermodynamics, Soil water migration, Unfrozen water content, Water flow, Frost heave, Heat transfer, Moisture transfer.

36-3305
Numerical analysis of heat-moisture flow during soil freezing.
Fukuda, M., et al, *Seppyo*, Mar. 1982, 44(1), p.13-21, In Japanese with English summary. 23 refs.
Nakagawa, S.
Soil freezing, Heat transfer, Moisture transfer, Soil water migration, Frozen ground temperature, Unfrozen water content, Phase transformations, Mathematical models.

36-3306
Cryptomeria afforesting between pilings on the avalanche-hazardous slope.
Ozeki, Y., et al, *Seppyo*, Mar. 1982, 44(1), p.25-26, In Japanese. 1 ref.
Watanabe, S., Nawa, S.
Avalanche deposits, Avalanche formation, Slope orientation, Protective vegetation, Forestry.

36-3307
Symposium on Urban Snow Problems, Tokyo, 26 May 1981. *Seppyo*, Mar. 1982, 44(1), p.27-42, In Japanese. 26 refs.
Snow surveys, Roofs, Streets, Snow removal, Meeting.

36-3308
Study tour abroad on the snow accretion on transmission lines.
Kurowa, D., *Seppyo*, Mar. 1982, 44(1), p.43-47, In Japanese. 5 refs.
Transmission lines, Snow accumulation, Power line icing.

36-3309
Scientific basis for reclamation and utilization of soils in the non-chernozem zone of the RSFSR. [Nauchnye osnovy meliorat-sii i ispol'zovaniia pochv Nechernozemnoi zony RSFSR].
Vedrov, N.N., et al, Moscow, Izd-vo Nauka, 1982, 302p., In Russian.
Dobrovol'skii, G.V., Zanadvorov, I.R.
Forest soils, Cryogenic soils, Podsol, Soil temperature, Paludification, Land reclamation, Landscape types, Taiga, Tundra.

36-3310
Podbur-podsol soil series in northern spurs of the Stanovoy Range. (O pochvakh riada podbur-podzol severnykh otrogov Stanovogo khrebta).
Vasilenko, V.I. *Moscow. Universitet. Vestnik. Seriia 17 Pochvovedenie*, Jan.-Mar. 1982, No.1, p.14-19. In Russian. 2 refs.
Alpine landscapes, Taiga, Cryogenic soils, Soil formation, Rock streams, Soil profiles, Freeze thaw cycles, Frost penetration.

36-3311
Variegation of soil covers in the green-moss-spruce forests of southern taiga in relation to their parcellar structure. (Pestrota pochvennogo pokrova zelenomoshnykh el'nikov tuzhnoi taigi v sviazi s ikh partsellarnoi strukturoi).
Remezova, G.L., et al. *Moscow. Universitet. Vestnik. Seriia 17 Pochvovedenie*, Jan.-Mar. 1982, No.1, p.19-26. In Russian. 14 refs.
Stroganova, M.N.
Taiga, Cryogenic soils, Landscape types, Microrelief, Vegetation patterns, Geobotanical interpretation, Classifications.

36-3312
Gleying effect on chemical properties of soils developed on varved clays. (Izmenenie khimicheskikh svoistv pochv na lentochnykh glinakh pod vliianiem ogleeniia).
Sanzharov, A.I. *Moscow. Universitet. Vestnik. Seriia 17 Pochvovedenie*, Jan.-Mar. 1982, No.1, p.46-50. In Russian. 7 refs.
Glacial deposits, Clays, Lacustrine deposits, Soil formation, Cryogenic soils, Podsol, Soil chemistry.

36-3313
Vertical climatic, structural and geomorphological conditions of mudflow formation. (Vertikal'nye klimaticheskie i strukturno-geomorfologicheskie usloviia formirovaniia selei).
Kostenko, N.P., et al. *Moscow. Universitet. Vestnik. Seriia 4 Geologiia*, Jan.-Feb. 1982, No.1, p.26-33. In Russian.
Seimova, I.B.
Mountain glaciers, Snow cover distribution, Glacial erosion, Glacial hydrology, Slope processes, Moraines, Meltwater, Thermokarst lakes, Mudflows.

36-3314
Ice wedges in the western part of Bol'shezemel'skaya tundra. (Povtorno-zhil'nye l'dy zapadnoi chasti Bol'shezemel'skoi tundry).
Kaznacheeva, E.A., et al. *Moscow. Universitet. Vestnik. Seriia 4 Geologiia*, Jan.-Feb. 1982, No.1, p.88-92. In Russian. 6 refs.
Shaposhnikova, E.A.
Tundra, Peat, Frozen fines, Permafrost structure, Ice wedges, Ice formation, Polygonal topography, Patterned ground.

36-3315
Attenuation of narrowly directed beams in snow and sea-ice layers. (Oslablenie uzkonapravlennykh puchkov sveta v sloiakh snega i morskogo l'da).
Bogorodskii, V.V., et al. *Akademiia nauk SSSR. Doklady*, 1982, 263(3), p.591-594. In Russian. 4 refs.
Volodin, E.S.
Sea ice, Ice physics, Snow physics, Ice optics, Snow optics, Light transmission, Attenuation.

36-3316
Migration of iron in the soils of taiga-forest landscapes.
Nikitin, E.D. *Soviet soil science*, Sep.-Oct. 1980, No.5, p.476-486. Translated from Pochvovedenie. 31 refs.
Taiga, Landscape types, Soil composition, Chemical composition, Soil formation, Cryogenic soils, Soil water migration.

36-3317
***Time* of formation of organic matter in the second humus horizon of secondary podzolic soils.**
Tochel'nikov, R.S., et al. *Soviet soil science*, Sep.-Oct. 1980, No.5, p.520-523. Translated from Pochvovedenie. 14 refs.
Kostarev, V.S., Tereshchenkova, I.A.
Cryogenic soils, Soil dating, Podsol, Soil profiles, Soil composition, Soil formation.

36-3318
Mobile manganese in superficially gleyey tundra soils.
Tsypanova, V.M. *Soviet soil science*, Sep.-Oct. 1980, No.5, p.538-544. Translated from Pochvovedenie. 18 refs.
Tundra, Cryogenic soils, Soil composition, Seasonal variations.

36-3319
Protective screens of oil and gas pipelines. (Zashchitnyi ekran neftegazoprovodov).
Metel'kov, V.P., *Neftepromyslovoe stroitel'stvo*, 1982, No.4, p.2, In Russian.
Petroleum industry, Pipeline insulation, Thermal insulation, Permafrost beneath structures.

36-3320
Reinforced concrete pipe foundations with sand pillows for vertical steel reservoirs. (Osnovaniia iz zhelezobetonnykh svai s peschanoi podushkoi dlia vertikal'nykh stal'nykh rezervuarov).
Barskii, B.L., et al. *Neftepromyslovoe stroitel'stvo*, 1982, No.4, p.3, In Russian.
Sivash, S.M., Tkach, S.D.
Petroleum industry, Steel structures, Reservoirs, Storage tanks, Foundations, Permafrost beneath structures.

36-3321
Reinforcing ice crossings with freeze-on supports. (Usilenie ledianykh pereprav namorozhennymi oporami).
Vislobitskii, P.A., et al. *Neftepromyslovoe stroitel'stvo*, 1982, No.4, p.4-5, In Russian.
Titarenko, A.I., Shirikhin, IU.N.
Icebound rivers, Ice crossings, Ice (construction material), Supports, Artificial freezing, Construction equipment.

36-3322
Plastic pipelines for gas and oil transfer. (Primenenie plastmassovykh truboprovodov v gazoneftepromyslovykh kommunikatsiiakh).
Zaitsev, K.I., et al. *Neftepromyslovoe stroitel'stvo*, 1982, No.4, p.6-7, In Russian.
Lur'e, I.V.
Petroleum industry, Pipelines, Plastics, Pipeline freezing, Petroleum transportation.

36-3323
Helicopters used in surveying routes of overhead lines. (Primenenie vertoletov pri s"emke trassy VL).
Azimov, A.A., *Energeticheskoe stroitel'stvo*, Apr. 1982, No.4, p.26-27, In Russian.
Taiga, Swamps, Route surveys, Power lines, Aerial surveys, Helicopters.

36-3324
Embedment depth of horizontal groundings at substations. (O glubine ukladki gorizontal'nykh zazemlitelei na podstantsiiakh).
Katigrob, N.P., *Energeticheskoe stroitel'stvo*, Apr. 1982, No.4, p.33-34, In Russian. 2 refs.
Electrical grounding, Permafrost beneath structures.

36-3325
Complexity—an important factor of lowering working costs (construction equipment used in Bratsk and Ust'-Ilimsk). (Kompleksnost'- vazhnyi faktor snizheniia trudovykh zatrat (Iz opyta mekhanizatsii stroitel'stva promyshlennykh ob"ektov v Bratske i Ust'-Ilimske)).
Petrukhno, E.P., *Mekhanizatsiia stroitel'stva*, May 1982, No.5, p.11-14, In Russian.
Construction equipment, Cranes (hoists), Railroad tracks, Permafrost beneath structures, Transportation, Concrete structures, Steel structures.

36-3326
Effective excavation equipment. (Effektivnoe rykhlitel'noe oborudovanie).
Balovnev, V.I., et al. *Mekhanizatsiia stroitel'stva*, May 1982, No.5, p.20-21, In Russian. 1 ref.
Khmara, L.A., Shatov, S.V., Khmelevskii, V.A.
Earthwork, Tractors, Excavation, Equipment, Frozen fines.

36-3327
Causes of foundation destruction in permafrost regions and measures for its prevention.
Poluektov, V.E., et al. *Soil mechanics and foundation engineering*, Sep.-Oct. 1981(publ. Mar 1982), 18(5), p.176-179, Translated from Osnovaniia, fundamenty i mekhanika gruntov.
Mezhenskii, V.I., Rumiantsev, S.F.
Foundations, Frost action, Permafrost beneath structures, Concrete structures.

36-3328
Numerical approximations of the thermophysical characteristics of soils.
Gur'ianov, I.E., *Soil mechanics and foundation engineering*, Sep.-Oct. 1981(publ. Mar 1982), 18(5), p.187-193, Translated from Osnovaniia, fundamenty i mekhanika gruntov. 21 refs.
Soil freezing, Soil water migration, Phase transformations, Heat transfer, Mass transfer.

36-3329
Construction of pile holes in permafrost soils with boulders.
Kolosov, I.E., et al. *Soil mechanics and foundation engineering*, Sep.-Oct. 1981(publ. Mar 1982), 18(5), p.194-197, Translated from Osnovaniia, fundamenty i mekhanika gruntov. 4 refs.
Foundations, Piles, Permafrost beneath structures, Drilling.

36-3330
Chemical stratigraphy of polar ice sheets: a method of dating ice cores.
Wilson, A.T., et al. *Journal of glaciology*, 1981, 27(95), p.3-9, 6 refs. In English with French and German summaries.
Hendy, C.H.
Ice cores, Age determination, Chemical composition, Stratigraphy, Antarctica—East Antarctica.
Studies of the chemical stratigraphy in the snow near Vostok station, which is near the centre of the East Antarctic ice sheet, show that sodium exhibits annual concentration differences up to a factor of ten. Similar work on the 952 m Vostok ice core enabled accumulation rates along selected parts of the core to be determined. This in turn enables the core to be dated. The accumulation rate is this central region of the East Antarctic ice sheet for the last 50,000 years has been determined and is presented. An interesting result is that the accumulation rate during the last glacial period is only half that in post-glacial times. Results from the bottom of the core provide some evidence of a past surge in the East Antarctic ice sheet. (Auth.)

36-3331
Large salt beds on the surface of the Ross Ice Shelf near Black Island, Antarctica.
Brady, H.T., et al. *Journal of glaciology*, 1981, 27(95), p.11-17, 20 refs. In English with French and German summaries.
Batts, B.
Ice shelves, Salt ice, Antarctica—Ross Ice Shelf.
An extensive system of mirabilite beds has been mapped on the Ross Ice Shelf near Black Island. The salt beds are normally underlain by a thin layer of mud and their surface is covered by a non-marine algal mat and boulder lag. These authors suggest the salt has been formed by the displacement of sub-ice-shelf brines to the ice-shelf surface. Evidence also suggests that other terrestrial mirabilite beds in the McMurdo Sound area were formed in the same manner and deposited by the Ross Ice Shelf durings its Wisconsin retreat from McMurdo Sound. Mirabilite salt in the dry valleys, southern Victoria Land, may have also originated from melt waters which dissolved ice-shelf mirabilite beds. (Auth.)

36-3332
Variational methods for glacier mechanics problems.
Oakberg, R.G., *Journal of glaciology*, 1981, 27(95), p.19-24, 9 refs. In English with French and German summaries.
Glacier flow, Mechanical properties.

36-3333
Steady profile of an axisymmetric ice sheet.
Johnson, I.R., *Journal of glaciology*, 1981, 27(95), p.25-37, 4 refs. In English with French and German summaries.
Ice sheets, Ice mechanics, Analysis (mathematics).

36-3334
Effect of longitudinal strain on the shear stress in an ice sheet: in defense of using stretched coordinates.
Hutter, K., *Journal of glaciology*, 1981, 27(95), p.39-56, 16 refs. In English with French and German summaries.
Ice sheets, Ice mechanics, Shear stress, Ice cover thickness, Analysis (mathematics).

36-3335
Radiation transmittance through lake ice in the 400-700 nm range.
Bolsenga, S.J., *Journal of glaciology*, 1981, 27(95), p.57-66, 13 refs. In English with French and German summaries.
Lake ice, Solar radiation, Photosynthesis.

36-3336
Application of the gravity flow theory to the percolation of melt water through firn.
Ambach, W., et al. *Journal of glaciology*, 1981, 27(95), p.67-75, 14 refs. In English with French and German summaries.
Blumenthaler, M., Kirchlechner, P.
Water flow, Meltwater, Firn.

36-3337
Numerical simulation study of avalanches.
Brugnot, G., et al. *Journal of glaciology*, 1981, 27(95), p.77-88, 6 refs. In English with French and German summaries.
Pochat, R.
Mathematical models, Environment simulation, Avalanches.

36-3338
Analysis of multiple-angle microwave observations of snow and ice using cluster-analysis techniques.
Rotman, S.R., et al. *Journal of glaciology*, 1981, 27(95), p.89-97, 28 refs.. In English with French and German summaries.
Fisher, A.D., Staelin, D.H.
Microwaves, Radiometry, Brightness, Sea ice, Firn.
The Nimbus-6 satellite carries the Scanning Microwave Spectrometer experiment (SCAMS) which continuously maps the Earth's surface at two frequencies (22.235 and 31.65 GHz) and at six angles besides nadir. Cluster analysis was applied to these observations to determine the influence of various geophysical parameters on the radiometric brightness temperatures. Characteristic microwave signatures for a variety of terrain were obtained by this method; discrete clusters were distinguished for sea ice (with sub-classes for ice age and fractional ice cover) and firm (with accumulation-rate sub-classes). The availability of the angular data greatly facilitated separate determinations of the extent of continuous sea ice and mixtures of sea ice and water. (Auth.)

36-3339
Altitude effect on the isotopic composition of snow in high mountains.
Niewodniczański, J., et al. *Journal of glaciology*, 1981, 27(95), p.99-111, 14 refs.. In English with French and German summaries.
Grabczak, J., Barański, L., Rzepka, J.
Snow composition, Mountains, Isotope analysis.

36-3340
Some mechanisms of controlled moraine development, Antarctica.
Rains, R.B., et al. *Journal of glaciology*, 1981, 27(95), p.113-128, 17 refs.. In English with French and German summaries.
Shaw, J.
Moraines, Landscape development, Hummocks, Glacier oscillation, Antarctica—Wright Lower Glacier, Antarctica—Webb Glacier.
Contemporary processes of moraine development at the margins of polar glaciers encompass a wide range of subtly different mechanisms. Two types of "controlled" moraine evolution, applicable to hummocks and transverse moraine ridges, are identified from Wright Lower Glacier and Webb Glacier, southern Victoria Land, Antarctica. Type 1 moraine complexes involve a relatively abundant supply of supraglacial debris, the development of transverse thrust blocks in the ablation-zone ice and the subsequent re-arrangement of ablation debris in ablation cusps and on inactive thrust blocks. Relict landform suites, apparently formed in this manner, reveal large coarse-grained hummocks inset behind moraine ridge remnants. Type 2 moraines may develop where the supply of supraglacial debris is meagre but the growth of ablation cusps concentrates primarily englacial debris into small irregular hummocks. The gravel component of this debris is usually of finer texture than for type 1 deposits, reflecting abrasion/attrition effects of prior englacial transportation. Transverse moraine ridges may or may not be associated with type 2 hummocks, depending on local variations of ice motion, ice decay, and debris supply. (Auth.)

36-3341
Creep and fabrics of polycrystalline ice under shear and compression.
Duval, P. *Journal of glaciology*, 1981, 27(95), p.129-140, 27 refs.. In English with French and German summaries.
Ice mechanics, Ice creep, Shear strain, Compressive properties.

36-3342
Preliminary experiments on the formation of elongated air bubbles in glacier ice by stress.
Nakawo, M., et al. *Journal of glaciology*, 1981, 27(95), p.141-146, 18 refs.. In English with French and German summaries.
Wakahama, G.
Glacier ice, Bubbles, Compressive properties.

36-3343
Triaxial testing of frozen sand.
Parameswaran, V.R., et al. *Journal of glaciology*, 1981, 27(95), p.147-155, 20 refs.. In English with French and German summaries.
Jones, S.J.
Frozen sand, Mechanical properties, Mechanical tests, Strain tests.

36-3344
Inexpensive remote snow-depth gauge based on ultrasonic wave reflection from the snow surface.
Gubler, H. *Journal of glaciology*, 1981, 27(95), p.157-163, 3 refs.. In English with French and German summaries.
Measuring instruments, Precipitation gages, Ultrasonic tests.

36-3345
Electronic remote snow-drift gauge.
Gubler, H. *Journal of glaciology*, 1981, 27(95), p.164-174, 10 refs.. In English with French and German summaries.
Electronic equipment, Snowdrifts, Avlanche forecasting.

36-3346
Field measurement of the liquid-water content of snow.
Morris, E.M. *Journal of glaciology*, 1981, 27(95), p.175-178, 6 refs.. In English with French and German summaries.
Snow water content, Temperature measurement.

36-3347
Inverse problem for valley glacier flow.
Hantz, D., et al. *Journal of glaciology*, 1981, 27(95), p.179-184, 6 refs.. In English with French and German summaries.
Lliboutry, L.
Glacier flow, Valleys, Velocity.

36-3348
Note on the morphology of the Baspa Glacier, Kinnaur District, Himachal Pradesh, India.
Bassi, U.K., et al. *Journal of glaciology*, 1981, 27(95), p.185-189, In English with French and German summaries.
Chopra, S., Tewari, A.P.
Glaciers, Geomorphology, India—Baspa Glacier.

36-3349
Flutes on bare bedrock.
Karlén, W. *Journal of glaciology*, 1981, 27(95), p.190-192, 4 refs.. In English with French and German summaries.
Glacial geology, Geologic structures.

36-3350
Evidence of the bedrock beneath the Greenland ice *sheet near Camp Century, Greenland.*
Fountain, J., et al. *Journal of glaciology*, 1981, 27(95), p.193-197, 5 refs.. In English with French and German summaries.
Usselman, T.M., Wooden, J., Langway, C.C., Jr.
Glacial geology, Geologic structures, Ice sheets, Rocks, Greenland—Camp Century.

36-3351
Structure control on cirque-like features in south-east New York state, U.S.A.
Liebling, R.S., et al. *Journal of glaciology*, 1981, 27(95), p.198-200, 3 refs.. In English with French and German summaries.
Scherp, H.S.
Cirques, Geologic structures.

36-3352
Active rock glacier, Wavbal Pass, Jammu and Kashmir Himalaya, India.
Mayewski, P.A., et al. *Journal of glaciology*, 1981, 27(95), p.201-202, In English with French and German summaries.
Jeschke, P.A., Ahmad, N.
Rock glaciers, Geologic structures, India—Wavbal Pass.

36-3353
Reflection coefficient at a dielectric interface.
Paren, J.G. *Journal of glaciology*, 1981, 27(95), p.203-204, 2 refs.
Reflection, Dielectric properties, Ice sheets, Analysis (mathematics).

36-3354
"Global dynamics" of a temperate valley glacier, Mer de Glace, and past velocities deduced from Forbes' bands.
Lliboutry, L., et al. *Journal of glaciology*, 1981, 27(96), p.207-226, 35 refs.. In English with French and German summaries.
Reynaud, L.
Wave propagation, Velocity, Glaciers, Dynamic properties.

36-3355
First-order stresses and deformations in glaciers and ice sheets.
Hutter, K., et al. *Journal of glaciology*, 1981, 27(96), p.227-270, 24 refs.. In English with French and German summaries.
Legerer, F., Spring, U.
Ice sheets, Glaciers, Ice mechanics, Ice deformation, Shear stress, Analysis (mathematics).

36-3356
Mass balance of "Vesper" Glacier, Washington, U.S.A.
Dethier, D.P., et al. *Journal of glaciology*, 1981, 27(96), p.271-282, 24 refs.. In English with French and German summaries.
Frederick, J.E.
Glacier mass balance, Glacier alimentation, Precipitation (meteorology), United States—Washington—Vesper Glacier.

36-3357
Field and laboratory study of wave damping by grease ice.
Martin, S., et al. *Journal of glaciology*, 1981, 27(96), p.283-313, 18 refs.. In English with French and German summaries.
Kauffman, P.
Ocean waves, Sea ice, Ice formation, Meteorological factors.

36-3358
Growth rate and salinity profile of first-year sea ice in the High Arctic.
Nakawo, M., et al. *Journal of glaciology*, 1981, 27(96), p.315-330, 23 refs.. In English with French and German summaries.
Sinha, N.K.
Sea ice, Ice growth, Ice salinity, Canada—Northwest Territories—Baffin Island.

36-3359
Laboratory studies of the optical properties of young sea ice.
Perovich, D.K., et al. *Journal of glaciology*, 1981, 27(96), p.331-346, 26 refs.. In English with French and German summaries.
Grenfell, T.C.
Sea ice, Ice optics, Ice salinity, Temperature effects, Laboratory techniques.

36-3360
Estimating ratios of snow accumulation in Antarctica by chemical methods.
Warburton, J.A., et al. *Journal of glaciology*, 1981, 27(96), p.347-357, 17 refs.. In English with French and German summaries.
Young, L.G.
Snow accumulation, Firn, Snow composition, Snow impurities, Antarctica—Ross Ice Shelf.
Snow and firn samples from 2 and 5 m deep pits were analyzed for seven sites on the Ross Ice Shelf, Antarctica. Na, Mg, Ca, and K concentrations change with depth, the range of concentrations being approximately 10:1 for all four elements. The changes in concentration for the four elements at any one site are highly correlated, suggesting that the impurities are introduced into the snow-pack simultaneously by the same mechanisms. Pronounced periodic structure of the vertical chemical profiles leads to strong correlations of the chemical features from site to site separated by distances up to 440 km. It is suggested that the chemical variations with depth are caused by meteorological events which may have seasonal changes in frequency and intensity. It is also suggested that the most-favored season for the production of chemical-concentration maxima is autumn because of the documented higher frequency of precipitating storms on the Ross Ice Shelf and the minimum in sea-ice extent at that time of year. (Auth. mod.)

36-3361
Neoglacial to Recent glacier fluctuations on the volcano Popocatepetl, Mexico.
White, S.E., *Journal of glaciology*, 1981, 27(96), p.359-363, 10 refs.. In English with French and German summaries.
Glacier oscillation, Volcanoes, Mexico—Popocatepetl.

36-3362
Ice motion on deformable sediments.
Haeberli, W., *Journal of glaciology*, 1981, 27(96), p.365-366, 18 refs.
Glacier oscillation, Sediments, Subglacial observations.

36-3363
Atmospheric effects on electro-optical, infrared, and millimeter wave systems performance.
Gomez, R.B., ed. *Society of Photo-Optical Instrumentation Engineers, Proceedings*, 1981, Vol.305, 283p., Refs. passim. For selected papers see 36-3364 through 36-3368.
Infrared reconnaissance, Light transmission, Optical properties, Microwaves, Snow physics, Snowfall, Meetings, Backscattering, Measuring instruments.

36-3364
Visible and infrared transmission through snow.
Seagraves, M.A., et al. *Society of Photo-Optical Instrumentation Engineers. Proceedings.* 1981, Vol.305, p.93-98, 13 refs.
Ebersole, J.F.
Snow optics, Light transmission, Blowing snow, Snowfall, Infrared reconnaissance, Electromagnetic properties, Particle size distribution, Snowflakes.

36-3365
Measurements of infrared and visible extinction in adverse weather.
Gimmestad, G.G., et al. *Society of Photo-Optical Instrumentation Engineers. Proceedings.* 1981, Vol.305, p.99-105, 4 refs.
Winchester, L.W., Jr., Lee, S.M.
Infrared reconnaissance, Light transmission, Snowfall, Rain, Fog.

36-3366
Measurements of the phase function of natural particles.
Winchester, L.W., Jr., et al. *Society of Photo-Optical Instrumentation Engineers. Proceedings.* 1981, Vol.305, p.106-118, 20 refs.
Gimmestad, G.G., Lee, S.M.
Snowflakes, Blowing snow, Snowfall, Light transmission, Light scattering, Snow optics, Experimentation, Analysis (mathematics).

36-3367
Near millimeter wave (NMMW) snow extinction: Atmospheric Sciences Laboratory—MMTRN model and data review.
Brown, D.R., *Society of Photo-Optical Instrumentation Engineers. Proceedings.* 1981, Vol.305, p.235-243, 11 refs.
Snow physics, Microwaves, Wave propagation, Backscattering, Attenuation, Rain, Models.

36-3368
Characteristics of near-millimeter wave propagation in snow.
Nemarich, J., et al. *Society of Photo-Optical Instrumentation Engineers. Proceedings.* 1981, Vol.305, p.261-267, 8 refs.
Wellman, R.J., Rocha, D., Wetzel, G.B.
Snow physics, Wave propagation, Microwaves, Attenuation, Backscattering, Snow water equivalent.

36-3369
Synthesis report: environmental geology of lower Cook Inlet, Alaska.
Hampton, M.A., *U.S. Geological Survey. Open-file report.* [1982], No.82-197, 55p., Refs. p.17-20.
Marine geology, Oceanographic surveys, Bottom sediment, Bottom topography, Seismic surveys, United States—Alaska—Cook Inlet.

36-3370
Gravels from the Alaska continental shelf, Beaufort Sea, Arctic Ocean: petrological character and implications for sediment source and transport.
Mowatt, T.C., et al, *Alaska. Division of Geological and Geophysical Surveys. Open file report.* [1982], No.43, 70p., Refs. p.13-17.
Naidu, A.S.
Ocean bottom, Bottom sediment, Marine geology, Gravel, Bottom topography, Ice rafting, Beaufort Sea.

36-3371
Direct implementation of latent heat of fusion for a permafrost problem.
Ng, Y.M., *Texas. University at Austin. Texas Institute for Computational Mechanics. Report.* Sep. 1981, No.81-7, 94p., 18 refs.
Permafrost thermal properties, Latent heat, Heat transfer, Ground thawing, Thermal conductivity, Melting points, Phase transformations, Models, Analysis (mathematics).

36-3372
Colloquium on subantarctic ecosystems. [Colloque sur les ecosystèmes subantarctiques].
Jouventin, P., ed. *Comité national français des recherches antarctiques. CNFRA.* 1982, No.51, 540p., Numerous refs. In French and English.
Massé, L., ed, Tréhen, P., ed.
Ecology, Ecosystems, Introduced plants, Animals, Kerguelen Islands, Crozet Islands.
The papers in this volume are classified under the following headings: biogeography—structure of plant communities; biogeography—structure of animal communities; adaptive strategies of invertebrates; adaptive strategies of plants; introduced species and the impact of man; penguin ecology and physiology; acclimatization of Salmonidae; and adaptive strategies leading to coexistence or segregation of species. Abstracts of a number of short presentations are included.

36-3373
Soviet glaciological studies in 1980. [Sovetskie gliatsiologicheskie issledovaniia v 1980 godu].
Kotliakov, V.M., et al. *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia.* 1981, Vol.41, p.6-13, In Russian.
Seregina, M.IU.
Research projects, Ice physics, Snow physics, Mountain glaciers, Ice dating, Radioactive age determination, Avalanche formation, Avalanche engineering, Glacial hydrology, Aerial surveys, Radar echoes, Mapping, Antarctica.
Activities of the Leningrad Arctic and Antarctic Institute included snow surveys along the routes Pionerskaya-Dome C and Mirnyy-Vostok-Dome B. Velocities and direction of ice surface movement were determined by radio echo sounding. A subglacial lake area of 30 square km. was discovered at the depth of 3560 m. Ice drilling and geophysical studies continued at the Vostok and Pionerskaya Stations and at a 40 km distance from Mirnyy. Core samples of ice were obtained for oxygen-isotope analyses. Snow accumulation and melting were studied at several stations and seasonal geocryologic and glaciologic processes at the Bellingshausen Station. A solution was obtained for numerical modeling of the Antarctic ice-cover thermodynamics, based on the analysis of a two-dimensional nonstationary equation of heat transfer accounting for vertical energy dissipation.

36-3374
Symposium on the processes of glacial erosion and sedimentation in Norway. [Simpozium po protsessam erozii i sedimentatsii lednikov v Norvegii].
Macheret, IU.IA., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia.* 1981, Vol.41, p.14-20, In Russian.
Glacial erosion, Glacial deposits, Moraines, Soil freezing, Frost penetration.

36-3375
Glaciology in Switzerland; compilation of the World Glacier Inventory. [Gliatsiologiia v Shveitsarii; rabota nad vsemirnym katalogom lednikov].
Krenke, A.N., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia.* 1981, Vol.41, p.20-30, In Russian. 6 refs.
Ice physics, Isotope analysis, Ice dating, Radioactive age determination, Ice composition, Microelement content, Glacier ice, Avalanche engineering, Aerial surveys.

36-3376
Conference on global climatic models. [Konferentsiia po global'nym modeliam klimata].
Krenke, A.N., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia.* 1981, Vol.41, p.30, In Russian.
Meetings, Climatology, Models.

36-3377
Main problems of glaciology in the eleventh five-year plan. [Glavnye zadachi gliatsiologii v XI piatiletke].
Avsiuk, G.A., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia.* 1981, Vol.41, p.31-36, In Russian with English summary.
Kotliakov, V.M.
Research projects, Glaciology, Climatic changes, Polar regions, Alpine landscapes, Construction, Transportation.

36-3378
Application of radioglaciology to the studies of polar regions. [Primenenie radiogliatsiologii v issledovanii poliarnykh raionov].
Bogorodskii, V.V., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia.* 1981, Vol.41, p.37-38, In Russian with English summary.
Trepov, G.V., Sheremet'ev, A.N.
Polar regions, Glacier ice, Ice shelves, Icebergs, Glacial lakes, Ground ice, Airborne radar, Radar echoes, Antarctica.
Results of radio-echo soundings of ice covers, shelf glaciers, icebergs, glacial lakes and ground ice in Antarctica, Severnaya Zemlya, Yamal and the drifting Arctic ice islands are briefly discussed.

36-3379
Experience in plotting ES-computerized systems for glaciological data processing. [Opyt postroeniia sistemy obrabotki gliatsiologicheskikh dannykh na ES EVM].
Grakovich, V.F., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia.* 1981, Vol.41, p.39-45, In Russian with English summary. 6 refs.
Glaciology, Computer applications, Data processing.

36-3380
Engineering glaciology problems related to the development of the Arctic Shelf. [Problemy inzhenernoi gliatsiologii sviazannye s osvoeniem arkticheskogo shel'fa].
Voitkovskii, K.F., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia.* 1981, Vol.41, p.46-49, In Russian with English summary. 5 refs.
Kamenskii, R.M.
Drilling, Subsea permafrost, Natural resources, Economic development, Petroleum industry, Mining, Construction, Continental shelves, Arctic Ocean.

36-3381
Similarity versions and methods of modeling snow, ice and permafrost deformation and deterioration processes. [Varianty podobiia i metody modelirovaniia protsessov deformirovaniia i razrusheniia snega, l'da i merzlykh porod].
Iofik, V.Z., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia.* 1981, Vol.41, p.49-51, In Russian with English summary. 1 ref.
Snow deformation, Snow deterioration, Ice deformation, Ice deterioration, Permafrost transformation, Models.

36-3382
Ground ice and methods of studying it. [Podzemnye l'dy i prikladnye aspekty ikh izucheniia].
Vtiurin, B.I., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia.* 1981, Vol.41, p.52-55, In Russian with English summary.
Vtiurina, E.A.
Land ice, Ground ice, Ice formation, Permafrost structure, Permafrost distribution, Mapping.

36-3383
Flow deformation of permafrost. [Deformatsii techeniia vechnomerzlykh l'do-gruntovykh sistem].
Gasanov, Sh.Sh., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia.* 1981, Vol.41, p.55-58, In Russian with English summary. 10 refs.
Slope processes, Permafrost depth, Ground ice, Ice deformation, Permafrost structure, Active layer, Solifluction.

36-3384
Ground ice in the Central Asia mountains. [Podzemnye l'dy gor Srednei Azii].
Gorbunov, A.P., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia.* 1981, Vol.41, p.59-62, In Russian with English summary. 4 refs.
Ermolin, E.D.
Moraines, Ground ice, Rock glaciers, Alpine landscapes.

36-3385
Origin of ground ice sheets in northern West Siberia. [O proiskhozhdenii plastovykh zalezhei podzemnogo l'da na severe Zapadnoi Sibiri].
Koreisha, M.M., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia.* 1981, Vol.41, p.62-66, In Russian with English summary. 7 refs.
Khimenkov, A.N., Bryksina, G.S.
Permafrost structure, Ground ice, Ice sheets, Ice formation.

36-3386
New data on the thick layers of ground ice in the northern Yenisey River area. [Novye dannye o moshchnykh plastovykh zalezhakh podzemnogo l'da na Eniseiskom Severe].
Karpov, E.G., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia.* 1981, Vol.41, p.67-70, In Russian with English summary. 1 ref.
Permafrost structure, Ground ice, Ice sheets, Ice formation.

36-3387
Buried ice of Stanovoy Mountains and its engineering and geological studies. [Pogrebennye podzemnye l'dy Stanovogo nagor'ia i nekotorye aspekty ikh inzhenerno-geologicheskogo izucheniia].
Gravis, G.F., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia.* 1981, Vol.41, p.70-75, In Russian with English summary. 9 refs.
Konchenko, I.A.
Engineering geology, Alpine landscapes, Permafrost distribution, Ground ice, Permafrost structure, Ice wedges, Glacier ice.

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Alpine landscapes, Topographic maps, Mapping, *Mountain glaciers.*

36-3447
Peculiarities of development and structures of high altitude hummocks in Tien Shan. [Osobennosti stroeniia i razvitiia kochek v vysokogor'e Tian'-Shania].
Tarakanov, A.G., Gliatsiologicheskie issledovaniia v Kirgizii (Glaciological studies in Kirgizia) edited by R.D. Zabirov and A.N. Dikikh, Frunze, Ilim, 1981, p.120-134, In Russian. 21 refs.
Alpine landscapes, Rock streams, Cryogenic soils, Hummocks, Ground ice, Frost heave, Microrelief, Geocryology, Patterned ground.

36-3448
Cataloging the USSR glaciers (opinion of a topographer). [Katalogizatsiia lednikov SSSR (mnenie topografa)].
Kuz'michenok, V.A., Gliatsiologicheskie issledovaniia v Kirgizii (Glaciological studies in Kirgizia) edited by R.D. Zabirov and A.N. Dikikh, Frunze, Ilim, 1981, p.134-143, In Russian. 17 refs.
Topographic maps, Mountain glaciers, Classifications, Geodetic surveys, Aerial surveys, Photointerpretation, Maps, Measuring instruments.

36-3449
Omissions in the cataloging of Kirgiz glaciers. [Propusk pri katalogizatsii lednikov Kirgizii].
Kuz'michenok, V.A., Gliatsiologicheskie issledovaniia v Kirgizii (Glaciological studies in Kirgizia) edited by R.D. Zabirov and A.N. Dikikh, Frunze, Ilim, 1981, p.143-146, In Russian. 4 refs.
Mountain glaciers, Classifications, Aerial surveys, Spaceborne photography, Photointerpretation, Stereomapping.

36-3450
Peculiarities of synoptic processes development in the Arctic and their application to medium-range weather forecasts. [Osobennosti razvitiia sinopticheskikh protsessov v Arktike i ikh ispol'zovanie v prognozakh *na srednie sroki*].
Dydina, L.A., Leningrad, Gidrometeoizdat, 1982, 224p., In Russian with English summary and an abridged English table of contents enclosed. 288 refs.
Meteorology, Climate, Records (extremes), Air temperature, Atmospheric disturbances, Precipitation (meteorology), Snowstorms, Snowfall, Weather forecasting, *Long range forecasting, Polar regions,* Subpolar regions, Meteorological charts, Meteorological data.

36-3451
Structure and functioning of southern taiga geosystems in the Irtysh River area. [Struktura i funktsionirovanie iuzhnotaezhnykh geosistem Priirtysh'iia].
Nechaeva, E.G., et al, Novosibirsk, Nauka, 1982, 121p., In Russian with English table of content enclosed. 111 refs.
***Taiga, Landscape types, Cryogenic* soils, Podsol, Clays, Forest ecosystems, Plant ecology, Forest canopy, Litter, Microrelief, Vegetation patterns, Paludification, Peat.**

36-3452
Measurements of snowdrifts and wind profiles around the huts of Syowa Station in Antarctic
Mitsuhashi, H., *Antarctic record,* Mar. 1982, No.75, p.37-56, 20 refs.
Snowdrifts, Wind factors, Antarctica—Showa Station.
The author joined in the 19th Japanese Antarctic Research Expedition and measured the forms and quantities of snowdrifts around high floor huts located in the major part of Showa Station. *He also investigated the characteristics of the wind* profile near the huts selectively on days when strong wind was blowing by obtaining the roughness length and power index of mean wind profile on the snow-covered ground. Snowdrifts around *the high floor huts formed a wind-scoop and changed* into U type with a sharp ridge line on the lee side. The annual accumulation of snowdrifts, measured on the lee side, was 78.3 cu. m. and 181.7 cu. m. around Observation Hut and Ionosphere *Hut respectively.*

36-3453
Progress report of POLEX-South programme in 1980 *by the 21st Japanese Antarctic Research Expedition.*
Kobayashi, S., et al, *Antarctic record,* Mar. 1982, No.75, p.57-74, In Japanese with English summary. 12 refs.
Ishikawa, N., Ohata, T., Kawaguchi, S.
Glacial meteorology.
The 21st Japanese Antarctic Research Expedition carried out *glacial-meteorological* observations at Mizuho Station and Showa Station as the second year program of the Japanese POLEX-South. At Mizuho Station projects included observations of surface boundary layer by a 30 m high observation tower, radiation budget, low level radio-sondes, sonic-wave sounder, measurements of sensible heat flux by sonic-anemometer, blowing snow, snow accumulation by sonic-wave snow depth meter, and surface synoptic weather. In the vicinity of Showa Station, the following studies were carried out: heat budget of sea ice, observation of surface inversion layer by sonic-wave sounder, meteorological observations by an unmanned weather station, airborne survey of radiation budget, surface radiation temperature and surface morphology, and observations of frazil ice. This paper describes the installation and performance of the measurement system and preliminary results. (Auth.)

36-3454
SCUBA ice diving along the coast of East Ongul Island, Antarctica.
Watanabe, K., et al, *Antarctic record,* Mar. 1982, No.75, p.75-92, In Japanese with English summary. 11 refs.
Nakajima, Y., Naito, Y.
Cryobiology, Antarctica—Ongul Island.
Biological surveys of benthic and ice-associated communities by SCUBA diving were performed on 15-31 January, 1981, at three points near Showa Station. Three biologists of the 21st and 22nd Japanese Antarctic Research Expedition participated in the surveys. Fifteen dives were made and the average duration of a dive was 45 min (max. 55 min). Maximum diving depth was 18 m. Diving gear including the dry suit proved to be sufficient for the cold in the summer season of Antarctica. About 200 specimens were collected including benthic animals *which were new to Showa Station. Underwater pictures were* also taken to record the aspects of benthic and ice-associated communities, and the recorded films amounted to about 250 frames of 35 mm color filmslides and about 400 feet of 8 mm color cinefilm. Some observations of divers in the antarctic shallow waters are offered. (Auth.)

36-3455
Surface reflectance measurements in the ultraviolet from an airborne platform. Part 2.
Doda, D.D., et al, *Applied optics,* Feb. 15, 1981, 20(4), p.636-642, 5 refs.
Green, A.E.S.
Snow cover, Airborne equipment, Optical properties, *Ultraviolet radiation, Surface properties, Reflection,* Spectra, Sands, Backscattering, Attenuation.

36-3456
***Sea-ice topography of the Arctic Ocean in the region* 70W to 25E.**
Wadhams, P., *Royal Society of London. Philosophical Transactions. Series A,* 1981, Vol.302, p.45-85, 39 refs.
Sea ice, Ice surface, Ice bottom surface, Pressure ridges, Topographic surveys, Statistical analysis.

36-3457
Microspheres cut density of cement slurry.
Harms, W.M., et al, *Oil and gas journal,* Feb. 2, 1981, 79(5), p.59-66, 6 refs.
Lingenfelter, J.T.
Admixtures, Cements, Microstructure, Permafrost, *Thermal conductivity,* Density (mass/volume), Offshore structures, Temperature effects.

36-3458
Offshore drilling in hostile environments:* depth, *waves, wind, current, and ice.
Albers, J.C., et al, *Journal of petroleum technology,* Jan. 1980, 32(1), p.111-115, 3 refs.
Hammett, D.S.
Offshore drilling, Floating structures, Ice conditions, Ocean waves, Ocean currents, Wind factors, Sea ice distribution, Fast ice.

36-3459
Simultaneous passive and active microwave observations of near-shore Beaufort Sea ice.
Campbell, W.J., et al, *Journal of petroleum technology,* June 1980, 32(6), p.1105-1112, 10 refs.
Gloersen, P., Zwally, H.J., Ramseier, R.O., Illachi, C.
Sea ice distribution, Fast ice, Microwaves, Remote sensing, Radar photography, Beaufort Sea.

36-3460
Fjord oceanography.
Nato Conference on Fjord Oceanography, Victoria, B.C., 1979, New York, Plenum Press, 1979, 715p., Refs. passim. For selected papers see 36-3461 through 36-3465.
Freeland, H.J., ed, Farmer, D.M., ed, Levings, C.D., ed.
DLC GC28.N37 1979
Oceanography, Sedimentation, Meltwater, Glacier melting, Marine deposits, Coastal topographic features.

36-3461
Unusual polynya in an Arctic fjord.
Sadler, H.E., et al, Nato Conference on Fjord Oceanography, Victoria, B.C., 1979, Fjord oceanography edited by H.J. Freeland, D.M. Farmer, C.D. Levings, New York, Plenum Press, 1979, p.299-304, 5 refs.
Serson, H.V.
Polynyas, Springs (water), Water temperature, Coastal topographic features, Oceanography.

36-3462
Flocculation, agglomeration, and zooplankton pelletization of suspended sediment in a fjord receiving glacial meltwater.
Syvitski, J.P.M., Nato Conference on Fjord Oceanography, Victoria, B.C., 1979. Fjord oceanography, edited by H.J. Freeland, D.M. Farmer and C.D. Levings, New York, Plenum Press, 1979, p.615-623, 8 refs.
Suspended sediments, Limnology, Glacier melting, Meltwater, Runoff, Sedimentation, Coastal topographic features, Plankton, Oceanography.

36-3463
Observations of the sedimentary environments of fjords on Cumberland Peninsula, Baffin Island.
Gilbert, R., Nato Conference on Fjord Oceanography, Victoria, B.C., 1979. Fjord oceanography, edited by H.J. Freeland, D.M. Farmer and C.D. Levings, New York, Plenum Press, 1979, p.633-638, 6 refs.
Sedimentation, Marine deposits, Glacier melting, Snow melting, Runoff, Coastal topographic features, Oceanography.

36-3464
Remote sampling device for under-ice water, bottom biota, and sediments.
King, E.W., et al, *Limnology and oceanography*, Sep. 1980, 25(5), p.935-938, 4 refs.
Everitt, D.A.
Sampling, Bottom sediment, Limnology, Ice cover effect, Ice drills, Marine biology.

36-3465
Dispersity effects on the ice nucleation activity of copper acetyl acetonate.
Baklanov, A.M., et al, *Journal of aerosol science*, 1980, 11(5/6), p.495-504, 16 refs.
Ice nuclei, Nucleating agents, Dispersions, Temperature effects, Nucleation.

36-3466
Theoretical treatment of the sliding of glaciers in the absence of cavitation.
Fowler, A.C., *Royal Society of London. Philosophical Transactions. Series A*, 1980, Vol.298, p.637-681, 44 refs.
Glacier flow, Basal sliding, Cavitation, Glacier beds, Water films, Boundary layer, Stresses, Strains, Surface roughness, Analysis (mathematics).

36-3467
Modular construction for the Arctic.
Lawrence, S.A., Risers, Arctic design criteria, equipment reliability in hydrocarbon processing: a workbook for engineers. Edited by T.J. Kozik, New York, American Society of Mechanical Engineers, 1981, p.199-201, Presented at the 37th Petroleum Mechanical Engineering Workshop and Conference, Dallas, Texas, Sep. 13-15, 1981.
Modular construction, Cold weather construction, Design.

36-3468
Preliminary analysis of meteorological and seasonal influences on crustal gas emission relevant to earthquake prediction.
Klusman, R.W., et al, *Seismological Society of America Bulletin*, Feb. 1981, 71(1), p.211-222, 23 refs.
Webster, J.D.
Earth crust, Earthquakes, Freeze thaw cycles, Soil temperature, Gas inclusions, Meteorological factors, Seasonal variations, Forecasting.

36-3469
Electron spin resonance studies of OH and O-radicals in irradiated ice.
Symons, M.C.R., *Chemical Society, London. Journal Faraday transactions I*, June 1982, 78(6), p.1953-1959, 24 refs.
Ice crystal structure, Low temperature tests, Ions, Cooling, Electron paramagnetic resonance, Ice spectroscopy, Heavy water.

36-3470
Operational net shortwave radiation model for glacier basins.
Munro, D.S., et al, *Water resources research*, Apr. 1982, 18(2), p.220-230, 24 refs.
Young, G.J.
Glacier surveys, Glacial hydrology, Glacier ablation, Glacier melting, Solar radiation, Meltwater, Spectra, Snow line, Topographic maps, Mathematical models.

36-3471
Evaporation from the surface of the Arctic tundra on Axel Heiberg Island.
Ohmura, A., *Water resources research*, Apr. 1982, 18(2), p.291-300, 18 refs.
Tundra, Evaporation, Heat balance, Seasonal variations, Diurnal variations, Surface properties.

36-3472
Regional water balance on the Arctic tundra in summer.
Ohmura, A., *Water resources research*, Apr. 1982, 18(2), p.301-305, 5 refs.
Tundra, Water balance, Runoff, Altitude, Evaporation, Precipitation (meteorology).

36-3473
Reorientation during the freezing of supercooled droplets on ice substrates.
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Macklin, W.C.
Ice crystal growth, Freezing, Drops (liquids), Supercooling, Ice accretion, Ice surface, Ice water interface, Substrates, Ice physics, Temperature effects.

36-3474
Don't be a roadway salt-aholic.
Wedel, J.J., *American city and county*, Apr. 1982, 97(4), p.31-33.
Snow removal, Ice removal, Salting, Equipment, Ice control, Chemical ice prevention.

36-3475
On the difference in ablation seasons of arctic and antarctic sea ice.
Andrea, E.L., et al, *Journal of the atmospheric sciences*, Feb. 1982, 39(2), MP 1537, p.440-447, 41 refs.
Ackley, S.F.
Sea ice, Seasonal ablation, Meteorological factors, Ponds.
Arctic sea ice is freckled with melt ponds during the ablation season; Antarctic sea ice has few, if any. On the basis of a simple surface heat budget, we investigate the meteorological conditions necessary for the onset of surface melting in an attempt to explain these observations. The low relative humidity associated with the relatively dry winds off the continent and an effective radiation parameter smaller than that characteristic of the Arctic are primarily responsible for the absence of melt features in the Antarctic. Together these require a surface-layer air temperature above 0 C before Antarctic sea ice can melt. A ratio of the bulk transfer coefficients CH/CE less than 1 also contributes to the dissimilarity in Arctic and Antarctic ablation seasons. The effects of wind speed and the sea-ice roughness on the absolute values of CH and CE seem to moderate regional differences, but final assessment of this hypothesis awaits better data, especially from the Antarctic. (Auth.)

36-3477
Thermodynamical effects on the Qinghai-Xizang Plateau from the radiation balance and heat balance of the Earth's surface.
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Xie, Y.
Permafrost thermal properties, Radiation balance, Heat balance, Thermodynamics, Air temperature, Surface temperature, China—Qinghai-Xizang Plateau.

36-3478
Preliminary study on some characteristic features of periglacial phenomena on Qinghai-Xizang Plateau.
Cui, Z., *Kexue tongbao*, Aug. 1980, 25(8), p.700-705, 7 refs.
Periglacial processes, Permafrost distribution, Landforms, Rock glaciers, Glacial deposits, Climatic factors, Frozen ground mechanics, Pingos, China—Qinghai-Xizang Plateau.

36-3479
Studies on snow depth and snow runoff with images from NOAA-5 satellite.
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Zeng, Q., Chen, X., Jin, D.
Snow depth, Snow hydrolog,, Runoff, Remote sensing, Photometry, Radiometry, Mapping, China.

36-3480
On the structure and mechanics of pack ice in the Bothnian Bay.
Leppäranta, M., *Finnish marine research*, 1981, No.248, p.3-86, Refs p.82-86
Pack ice, Sea ice, Ice mechanics, Ice cover thickness, Ice deformation, Ice floes, Drift, Analysis (mathematics), Bothnia, Gulf.

36-3481
Basic characteristics of periglacial landforms in the Qinghai-Xizang Plateau.
Cui, Z., *Scientia Sinica (Series B)*, Jan. 1982, 25(1), p.79-95, 15 refs.
Periglacial processes, Permafrost distribution, Landforms, Frost action, Rock glaciers, Frozen ground mechanics, Climatic factors, Pingos, Stratification, China—Qinghai-Xizang Plateau.

36-3482
Effects of ice caps on the global climate in two-dimensional energy balance model. Part 1. Analysis on the stability of the solution.
Chen, Y., *Acta meteorologica Sinica*, Feb. 1982, 40(1), p.1-12, In Chinese with English summary. 15 refs.
Glacial meteorology, Climatology, Heat balance, Analysis (mathematics).

36-3483
On the microclimatological characteristics of icing on wires.
Tan, G., *Acta meteorologica Sinica*, Feb. 1982, 40(1), p.13-23, In Chinese with English summary. 13 refs.
Power line icing, Microclimatology, Ice loads, Icing rate, Wind direction.

36-3484
Co-operative and quadrupole effects in order-disorder transitions in crystalline ices.
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Bliss, D.V., Finney, J.L.
Ice crystal structure, High pressure ice, Ions, Models.

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Glacial meteorology, Climate, Forecasting, Greenland.

36-3486
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Overgaard, S.
Glacier surveys, Radio echo soundings, Glacier thickness, Greenland.

36-3487
Vegetation studies in sheep pastures in southern Greenland. [Vegetationsundersøgelser i fareavlsområderne i Sydgrönland].
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Egede, K.
Vegetation, Grazing, Grasses, Greenland.

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Snow surveys, Statistical analysis, United States—New York.

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Snow cover surveys, 1980-81.
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Snow surveys, Statistical analysis, United States—New York.

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Road icing, Ice control, Snow removal, Chemical ice prevention.

36-3491
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Snow removal, Equipment.

36-3492
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Snow removal, Equipment, Cost analysis.

36-3493
Harrisburg airports lauded for winter runway tactics. *Rural and urban roads*, May-June 1982, 20(3), p.22
Snow removal, Airports, Equipment, Aircraft landing areas.

36-3494
Town's snow plan works all year. *Rural and urban roads*, May-June 1982, 20(3), p.24
Snow removal, Equipment.

36-3495
Research in glacial, glacio-fluvial, and glacio-lacustrine systems.
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Davidson-Arnott, R., ed. Nickling, W., ed. Fahey, B.D., ed.
Glacial deposits, Glacial erosion, Geomorphology, Landforms, Glacier flow.

36-3496
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Glacier beds, Glacier flow, Glacial deposits, Glacial erosion, Geomorphology, Landforms, Subglacial caves.

36-3497
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Hummocks, Glacial deposits, Glacier beds, Glacier flow, Ice solid interface, Subglacial caves, Glacier thickness.

36-3498
Formation of glacial flutings in east-central Alberta.
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Glacial deposits, Landforms, Origin, Glacier flow, Geomorphology, Theories.

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Batterson, M.J.
Moraines, Glacial deposits, Glacier flow, Ice mechanics, Models.

36-3500
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Boothroyd, J.C.
Glacier flow, Subglacial drainage, Glacial hydrology, Glacial erosion, Glacial deposits, Sedimentation, Geomorphology, United States—Alaska—Malaspina Glacier.

36-3501
Optimization of heat supply systems in Yakutia. [Optimizatsiia sistem teplosnabzheniia v IAkutii].
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Heating, Heat sources, Coal, Nuclear power, Natural gas, Wood, Electric power, Heat pipes, Residential buildings, Industrial buildings, Permafrost beneath structures, Tundra, Subpolar regions, Heat transfer, Construction materials, Walls, Cost analysis.

36-3502
Trends in the development of heat supply systems and the role of nuclear heat sources. [Osnovnye napravleniia razvitiia sistem teplosnabzheniia i rol' iadernykh istochnikov tepla].
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Heat sources, Nuclear power, Coal, Wood, Electric power, Heating, Heat pipes, Residential buildings, Industrial buildings, Permafrost beneath structures.

36-3503
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Heat sources, Coal, Wood, Electric power, Heating, Heat pipes, Residential buildings, Industrial buildings, Permafrost beneath structures.

36-3504
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Tundra, Residential buildings, Houses, Industrial buildings, Permafrost beneath structures, Heat sources, Coal, Wood, Environmental protection.

36-3505
Determining the optimal district heating coefficient for atomic heat and power plants. [Opredelenie optimal'nogo koeffitsienta teplofikatsii dlia atomnykh TETs].
Petrova, N.A., et al, Optimizatsiia sistem teplosnabzheniia v IAkutii (Optimization of heat supply systems in Yakutia) Edited by A.P. Shadrin, Yakutsk, SO AN SSSR, 1981, p.36-43, In Russian. 4 refs.
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Heating, Heat sources, Nuclear power, Residential buildings, Industrial buildings, Permafrost beneath structures.

36-3506
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Kapitonov, V.N., Optimizatsiia sistem teplosnabzheniia v IAkutii (Optimization of heat supply systems in Yakutia) Edited by A.P. Shadrin, Yakutsk, SO AN SSSR, 1981, p.44-51, In Russian. 4 refs.
Heat sources, Electric power, Buildings, Heating, Permafrost beneath structures, Subpolar regions.

36-3507
Effectiveness of using natural gas in district heating in western Yakutia. [Effektivnost' ispol'zovaniia prirodnogo gaza dlia teplosnabzheniia v Zapadnoi IAkutii].
Popov, V.E., Optimizatsiia sistem teplosnabzheniia v IAkutii (Optimization of heat supply systems in Yakutia) Edited by A.P. Shadrin, Yakutsk, SO AN SSSR, 1981, p.52-59, In Russian. 2 refs.
Buildings, Permafrost beneath structures, Heating, Heat sources, Natural gas, Subpolar regions.

36-3508
***Determining* enlarged heat consumption norms for residential buildings.** [Metod opredeleniia ukrupnennykh norm raskhoda tepla na otoplenie zhilykh zdanii].
Li, G.S., et al, Optimizatsiia sistem teplosnabzheniia v IAkutii (Optimization of heat supply systems in Yakutia) Edited by A.P. Shadrin, Yakutsk, SO AN SSSR, 1981, p.79-86, In Russian. 1 ref.
Fedorova, T.K.
Residential buildings, Permafrost beneath structures, Heating, Walls, Heat transfer, Construction materials, Cost analysis.

36-3509
Variations in nitration intensity of cryogenic meadow-chernozem soils due to decomposition of litter. [Izmenenie aktivnosti azotfiksatsii v lugovo-chernozemnoi merzlotnoi pochve pri razlozhenii rastitel'nykh ostatkov].
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Forest soils, Meadow soils, Cryogenic soils, Nutrient cycle, Soil microbiology, Litter, Decomposition.

36-3510
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Hydraulic structures, Dynamic loads, Earthquakes, Ice cover effect.

36-3577
Application limits of the premise on the accounting for ice at the water surface, when calculating oscillations of hydraulic structures. (Granitsy primenimosti predposylki ob uchete l'da na poverkhnosti vodoema pri raschete kolebaniĭ konstruktsiĭ gidrotekhnicheskikh sooruzheniĭ).
Shames, M.P., Seĭsmicheskie vozdeĭstviia na zdaniia i sooruzheniia (Earthquake effect on buildings and structures) edited by V.T. Rasskazovskiĭ, Tashkent, Fan, 1981, p.72-87, In Russian. 5 refs.
Hydraulic structures, Dynamic loads, Earthquakes, Icebound lakes, Ice loads, Design.

36-3578
Stress-strains in massive swelling and sagging grounds. (K prognozu napriazhenno-deformirovannogo sostoianiia massivov nabukhaiushchikh i prosadochnykh gruntov).
Ter-Martirosian, Z.G., et al, Seĭsmicheskie vozdeĭstviia na zdaniia i sooruzheniia (Earthquake effect on buildings and structures) edited by V.T. Rasskazovskiĭ, Tashkent, Fan, 1981, p.88-96, In Russian. 14 refs.
Karapetov, G.IA., Mirzaev, A.G.
Soil compaction, Porosity, Capillarity, Soil water migration, Thermal stresses, Settlement (structural), Earthquakes.

36-3579
Lightning protection of trunk cables in permafrost areas. (Grozozashchishchennost' kabeleĭ sviazi v raionakh vechnoĭ merzloty).
Kostikov, V.U., et al, Grozozashchita v raionakh s vysokim udel'nym soprotivleniem grunta (Lightning protection in regions with high specific resistance of ground) edited by M.V. Kostenko, Apatity, 1981, p.117-124, In Russian. 6 refs.
Bazhenov, N.N., Mitrokhin, V.E.
Thunderstorms, Lightning, Transmission lines, Electrical grounding, Permafrost beneath structures.

36-3580
Hydraulic power and complex utilization of water resources in the USSR. (Gidroenergetika i kompleksnoe ispol'zovanie vodnykh resursov SSSR).
Neporozhnii, P.S., ed. Moscow, Energoizdat, 1982, 599p., In Russian with abridged English table of contents enclosed. 146 refs.
Electric power, Hydraulic structures, Buildings, Concrete structures, Dams, Earth dams, Permafrost beneath structures, Foundations.

36-3581
West German polar icebreaker "Polarstern" takes shape. *Shipbuilding and marine engineering international*, May 1982, 105(1258), p.226-228.
Icebreakers, Oceanographic ships.
Engineering and operational details are presented of the new German antarctic icebreaker being fitted out for delivery later in 1982.

36-3582
Highway beneath the Ghulkin.
Derbyshire, E., et al, *Geographical magazine*, July 1981, 53(10), p.626-635.
Miller, K.
Mountain glaciers, Roads, India—Ghulkin Glacier.

36-3583
Stochastically-driven climatic fluctuations in the sea-ice, ocean temperature, CO2 feedback system.
Saltzman, B., *Tellus*, Apr. 1982, 34(2), p.97-112, 23 refs.
Climatic changes, Sea ice, Water temperature, Carbon dioxide.

36-3584
Controls on CO2 gas exchange in Arctic *Polytrichum* mosses.
Sveinbjörnsson, B., Montreal, McGill University, Jan. 1979, 190p., Canadian Theses on Microfiche, No.47450, Ph.D. thesis. With French summary. Refs. passim.
Mosses, Tundra, Carbon dioxide, Photosynthesis, Microclimatology, Vegetation, Temperature effects.

36-3585
Arctic data buoy program.
Untersteiner, N., et al, *Polar record*, May 1982, 21(131), p.127-135, 11 refs.
Thorndike, A.S.
Drift stations, Electronic equipment, Meteorological data.

36-3586
Experiences of Scott's northern party; evidence for a relationship between winter katabatic winds and the Terra Nova Bay polynya.
Bromwich, D.H., et al, *Polar record*, May 1982, 21(131), p.137-146, 24 refs.
Kurtz, D.D.
Wind direction, Wind velocity, Polynyas, Antarctica—Terra Nova Bay.
The experiences of Scott's northern party in 1912/1913 are briefly reviewed. Meteorological records for Inexpressible Island which were maintained by the northern party through the period of their stranding are examined and analyzed. The strong, constant katabatic winds which swept over the Island from Reeves Glacier then and now are regarded as a major factor which kept and keeps Terra Nova Bay free of winter ice. This correlation strongly supports the author's model for polynya formation.

36-3587
Farthest south and highest occurrences of vascular plants in the Antarctic.
Smith, R.I.L., *Polar record*, May 1982, 21(131), p.170-173, 13 refs.
Plants (botany), Vegetation patterns, Tundra biome.
The arctic and antarctic biomes are compared: 100 vascular plants occur to 84 N, while only 2 survive south of 56 S. The two species occur only in the maritime Antarctic in the region of the Antarctic Peninsula around Marguerite Bay. The region and its soils are described and the growth pattern of vascular plants is shown along with other vegetation types.

36-3588
Grounded iceberg in Fram Strait.
Vinje, T., *Polar record*, May 1982, 21(131), p.174-175, 1 ref.
Icebergs, Grounded ice, Polynyas, Greenland—Fram Strait.

36-3589
Source and climatic implication of the reactive iron and reactive silicate concentration found in a core from Meserve Glacier, Antarctica.
Mayewski, P.A., et al, *Geophysical research letters*, Mar. 1982, 9(3), p.190-192, 18 refs.
Lyons, W.B.
Glacier ice, Ice cores, Geochemistry, Climate, Antarctica—Meserve Glacier.
Glaciochemistry has recently provided a useful tool in the study of accumulation rates and the elucidation of long-term climatic change as well as the definition of aerosol/precipitation source areas. Recent glaciochemical work from Antarctica has suggested that although cations associated with sea salt (Na, Mg, Ca and K) decrease in concentration as one proceeds inland, crustally-derived chemical species such as Al and Fe remain relatively constant in snow and ice. This paper presents the first data suggesting that there is in some cases a local source for the crustally-derived material that enters Antarctic precipitation. (Auth.)

36-3590
Frost heaved formations in the Laurentian Shield. (Formes d'éjection périglaciaires dans le Bouclier laurentidien, Québec).
Dionne, J.C., *Revue de géomorphologie dynamique*, 1981, 30(4), p.113-124, In French with English summary. 33 refs.
Frost heave, Permafrost, Periglacial processes, Wind factors, Seasonal freeze thaw.

36-3591
Icebreaking capabilities of the German polar research vessel. (Die Eisbrecheigenschaften des deutschen Polar-Forschungsschiffes).
Schwarz, J., *Hansa*, Oct. 1980, 117(19), p.1580-1585, In German with English summary. 6 refs.
Icebreakers, Oceanographic ships, Polar regions.
In order to fulfil the requirements for becoming a full member of the Antarctic Treaty Countries, the Government of the Federal Republic of Germany has decided to build a polar research vessel. This ship will be used for research purposes in ice-covered waters as well as for the supply of the German Antarctic Station (Filchner Station). The hull form of the research vessel has been designed by the Hamburg Ship Model Basin. This report covers ice-technological aspects of the ship and reports on model test results in ice. The most important achievement was the development of ship lines which prevent the ingestion of ice into the propellers. Propeller damage is avoided and propeller efficiency is increased. Extrapolation of the model test results to fullscale predicts that the polar research vessel will be able to break 1.0 m thick level ice at 5.2 knots. (Auth.)

36-3592
Glaciology of mountainous regions. (Gliatsiologiia gornykh oblastei).
Suslov, V.F., ed. *Sredneaziatskiĭ regional'nyĭ nauchno-issledovateľskiĭ institut. Trudy*, 1982, Vol.84, 148p., In Russian. For selected papers see 36-3593 through 36-3604. Refs. passim.
Getker, M.I., ed.
Mountain glaciers, Glacier ice, Ablation, Climatology, Ice air interface, Ice cracks, Snow cover distribution, Snow surveys, Aerial surveys, Gamma irradiation, Helicopters, Spacecraft, Snow water equivalent, Mathematical models.

36-3593
Physico-statistical model of the summary-melting process in a glacial area. (Fiziko-statisticheskaia model' protsessa summarnogo taĭaniia v gliatsial'noĭ oblasti).
Konovalov, V.G., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovateľskiĭ institut. Trudy*, 1982, Vol.84, p.3-20, In Russian. 13 refs.
Mountain glaciers, Glacier ice, Melting, Heat balance, Mass balance, Mathematical models.

36-3594
Mountain glacier effect on the mesoclimate. (Otsenka vliianiia gornykh lednikov na mezoklimat).
Glazyrin, G.E., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovateľskiĭ institut. Trudy*, 1982, Vol.84, p.21-24, In Russian. 14 refs.
Mountain glaciers, Climatology, Ice air interface, Heat transfer.

36-3595
Surface runoff and its effect on glacier ablation. (Lednikovye vodnye potoki i ikh vliianie na abliatsiiu).
Akbarov, A.A., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovateľskiĭ institut. Trudy*, 1982, Vol.84, p.25-29, In Russian. 8 refs.
Glacial hydrology, Glacier surfaces, Runoff, Ice cracks, Ice melting, Glacier ablation, Water balance.

36-3596
Evaluating statistical structure of snow cover field in Central Asia mountains. (Otsenka kharakteristik statisticheskoĭ struktury polia snezhnogo pokrova v gorakh Srednei Azii).
Getker, M.I., et al, *Srednea'iatskiĭ regional'nyĭ nauchno-issledovateľskiĭ institut. Trudy*, 1982, Vol.84, p.48-58, In Russian. 10 refs.
Shentsis, I.D.
Alpine glaciation, Snow cover distribution, Snow surveys, Aerial surveys, Helicopters, Snow water equivalent.

36-3597
Variations in snow cover distribution over the Abramov glacier. (Issledovanie izmenchivosti raspredeleniia snezhnogo pokrova na ledn. Abramova).
Neuprokov, V.V., *Sredneaziatskiĭ regional'nyĭ nauchno-issledovateľskiĭ institut. Trudy*, 1982, Vol.84, p.59-66, In Russian. 5 refs.
Glacier ice, Snow cover distribution, Snow water equivalent, Snow surveys, Mapping.

36-3598
Errors in calculating snow reserves in mountains from aerial snow survey data. [O pogreshnostiakh rascheta snegozapasov pri ispol'zovanii aerosnegos"emki v gorakh].
Kolesnikov, E.I., et al. *Srednеaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1982, Vol.84, p.67-76. In Russian. 5 refs.
Popov, V.I.
Alpine landscapes, Snow cover distribution, Snow surveys, Aerial surveys, Snowdrifts, Snow depth, Snow density, Snow water equivalent.

36-3599
Improving the gamma-surveying technique for snow cover in mountains. [Razrabotka i usovershenstvovanie metodiki gamma-s"emki snezhnogo pokrova v gorakh].
Getker, M.I., *Srednеaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1982, Vol.84, p.77-96. In Russian. 11 refs.
Alpine landscapes, Snow cover distribution, Snow water equivalent, Snow surveys, Gamma irradiation, *Data processing.*

36-3600
Using helicopters in gamma surveys of snow cover for establishing snow water equivalent in mountain basins. [Rezul'taty i perspektivy primeneniia metoda vertoletnoi gamma-s"emki snezhnogo pokrova dlia opredeleniia snegozapasov v gornom basseine].
Getker, M.I., *Srednеaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1982, Vol.84, p.97-108. In Russian. 10 refs.
Snow surveys, Aerial surveys, Helicopters, Gamma irradiation, Airborne equipment, Snow water equivalent.

36-3601
***Aerial gamma surveys in mountains when both the* snow cover and the atmosphere are regarded as ir-radiation-absorption media.** [Gamma-snegomernaia acros"emka v gorakh pri izluchaiushche-pogloshchaiushchikh snezhnom pokrove i atmosfere].
Moskalev, IU.D., *Srednеaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1982, Vol.84, p.109-117. In Russian. 10 refs.
Snow surveys, Mountains, Aerial surveys, Gamma irradiation, Data processing.

36-3602
Calculating route-network for gamma surveys of snow cover in mountains. [Metod rascheta seti marshrutov gamma-s"emki snezhnoge pokrova v gorakh].
Getker, M.I., et al, *Srednеaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1982, Vol.84, p.118-130. In Russian. 11 refs.
Shentsis, I.IU.
Mountains, Snow surveys, *Aerial surveys, Gamma ir-radiation,* Helicopters, Snow water equivalent.

36-3603
Evaluating parameters of the flow of pertinent satellite information for analyzing snow cover dynamics in mountains. [Ob otsenke parametrov potoka informatsii s ISZ prigodnoi k analizu dinamiki snezhnogo pokrova v gorakh].
Tsarev, B.K., *Srednеaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1982, Vol.84, p.131-135. In Russian. 7 refs.
Snow surveys, Aerial surveys, Spacecraft, Mountains, *Snow cover distribution.*

36-3604
Forecasting runoff hydrographs for the Amudar'ya River from satellite information on the dynamics of snow covered areas. [Prognoz gidrografa stoka r. Amudar'i na osnove sputnikovoi informatsii o dinamike ploshchadei zasnezhennosti].
Tsarev, B.K., *Srednеaziatskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1982, Vol.84, p.136-141. In Russian. 2 refs.
River basins, Snow surveys, Aerial surveys, Spacecraft, River flow, Snow water equivalent.

36-3605
Construction equipment for overhead power lines. [Mekhanizatsiia stroitel'stva vozdushnykh linii elektroperedachi].
Malkov, E.S., *Energeticheskoe stroitel'stvo*, May 1982, No.5, p.5-9. In Russian.
Power lines, Foundations, Piles, Permafrost beneath structures, Earthwork, Construction equipment.

36-3606
Equipment for power line construction in mountains. [Mekhanizatsiia rabot pri stroitel'stve linii elektroperedachi v gornykh usloviiakh].
Frolov, I.D., et al, *Energeticheskoe stroitel'stvo*, May 1982, No.5, p.9-11. In Russian.
Chestnokov, N.A.
Alpine landscapes, Slope processes, Avalanches, Power lines, Construction equipment.

36-3607
Monocable transportation. [Monokanatnye transportnye ustroistva].
Gvelesiani, K.Sh., et al, *Energeticheskoe stroitel'stvo*, May 1982, No.5, p.12-14, In Russian.
Tskvitinidze, A.Sh.
Alpine landscapes, Power lines, Construction equipment, Transportation, Cable railways.

36-3608
Universal tractor-crane trailer. [Universal'nyi pritsepnoi traktornyi kran].
Komarov, L.L., et al, *Energeticheskoe stroitel'stvo*, May 1982, No.5, p.14-16, In Russian.
Vinogradov, D.E.
Construction equipment, Cranes (hoists), Tractors.

36-3609
Combined workshops for the construction of the Kama-Achinsk fuel and energy complex. [Ob"edinennyi korpus masterskikh UPTK RPKB KATEKa].
Kuzin, E.G., et al, *Energeticheskoe stroitel'stvo*, May 1982, No.5, p.29-30, In Russian.
Zemtsov, A.F., Gutrov, A.S., Ivanova, L.N.
Electric power, Fuels, Buildings, Foundations, Snow loads, Frozen ground, Construction materials.

36-3610
Determining frost resistance of concrete from the degree of its critical water saturation. [Otsenka morozostoikosti betona po kriticheskoi stepeni vodonasyshcheniia].
Glebova, F.Kh., et al, *Energeticheskoe stroitel'stvo*, May 1982, No.5, p.75-77, In Russian.
Denisov, A.I., Korableva, L.A.
***Concrete freezing, Frost resistance, Freeze thaw cycles,* Water content.**

36-3611
Railroad of the century under construction. [Strana stroit magistral' veka], *Transportnoe stroitel'stvo*, June 1982, No.6, p.3-6, In Russian.
Taiga, Railroad tracks, Permafrost beneath structures, Residential buildings, Industrial buildings, Urban planning, Baykal Amur railroad, Economic development.

36-3612
Tynda-Urgal section of the Baykal Amur railroad. [Uchastok BAMa ot Tyndy do Urgala].
Pozin, V.A., *Transportnoe stroitel'stvo*, June 1982, No.6, p.7-9, In Russian.
Taiga, Permafrost distribution, Swamps, Aerial surveys, Railroad tracks, Buildings, Foundations, Baykal Amur railroad.

36-3613
Calculating the efficiency of scrapers designed for frozen ground. [Prognozirovanie proizvoditel'nosti rykhlitelei merzlogo grunta].
Pronin, A.I., *Transportnoe stroitel'stvo*, June 1982, No.6, p.51, In Russian.
Earthwork, Excavation, Equipment, Frozen ground.

36-3614
Dielectric measurements of ice at low frequencies.
Takei, I., et al, *Low temperature science (Teion kagaku). Series A Physical sciences*, 1981, Vol.40, p.1-10. In Japanese with English summary. 7 refs.
Maeno, N.
Ice electrical properties, Ice physics, Electrical resistivity, Temperature effects, Ions, Dielectric properties.

36-3615
Structure and orientation of frozen droplets on ice surfaces.
Mizuno, Y., *Low temperature science (Teion kagaku) Series A Physical sciences*, 1981, Vol.40, p.11-25, In Japanese with English summary. 16 refs.
Ice crystal structure, Drops (liquids), Freezing, Supercooling, Ice surface, Microstructure, Orientation, Temperature effects, Experimentation, Photography.

36-3616
Studies of the behavior of a snow cover on mountain slope; Pt.8—a supplement to paper 7.
Yoshida, Z., *Low temperature science (Teion kagaku) Series A Physical sciences*, 1981, Vol.40, p.25-35, In Japanese with English summary. 4 refs.
Snow cover stability, Slope orientation, Snow creep, Strains, Stresses, Snow stratigraphy, Mountains.

36-3617
Studies of the behavior of a snow cover on mountain slope; Pt.9—a reformed method for calculating internal stresses from the strain rates measured in a snow cover on mountain slope.
Yoshida, Z., *Low temperature science (Teion kagaku) Series A Physical sciences*, 1981, Vol.40, p.37-49, In Japanese with English summary. 9 refs.
Snow cover stability, Slope orientation, Stresses, Strains, Surface properties, Viscoelasticity, Analysis (mathematics), Mountains.

36-3618
Characteristics of the snow cover in melting season in Hokkaido.
Akitaya, E., et al, *Low temperature science (Teion kagaku). Series A Physical sciences*, 1981, Vol.40, p.51-59, In Japanese with English summary. 8 refs.
Endo, Y.
Snow cover, Snow melting, Snow density, Snow water content, Snow hardness, Calorimetry, Freeze thaw cycles, *Temperature effects,* Analysis *(mathematics).*

36-3619
***Time lag between the centroid of snowmelt and the* peak runoff rate.**
Kobayashi, D., *Low temperature science (Teion kagaku). Series A Physical sciences*, 1981, Vol.40, p.61-66, In Japanese with English summary. 11 refs.
Snowmelt, Runoff, Snow depth, Watersheds, Time factor.

36-3620
***Effect of climatic change on ablation of mountain* snow and estimated annual accumulation during the Ice Age in Hokkaido, Japan.**
Naruse, R., et al, *Low temperature science (Teion kagaku). Series A Physical sciences*, 1981, Vol.40, p.67-81, In Japanese with English summary. 48 refs.
Takahashi, S., Fujiki, T.
Ablation, Snow cover, Climatic changes, Snow accumulation, Mountains, Latent heat, Pleistocene, Solar radiation, Wind factors, Humidity, Japan—Hokkaido.

36-3621
Nonsteady motion of drifting sea ice.
Nohguchi, Y., *Low temperature science (Teion kagaku). Series A Physical sciences*, 1981, Vol.40, p.83-99, In Japanese with English summary. 6 refs.
Sea ice, Drift, Ice mechanics, Radar echoes, Wind velocity, Ocean currents, Velocity, Ice water interface, Mathematical models.

36-3622
Studies on wind stress on sea ice.
Shirasawa, K., *Low temperature science (Teion kagaku). Series A Physical sciences*, 1981, Vol.40, p.101-118, In Japanese with English summary. 17 refs.
Sea ice, Drift, Ice mechanics, Wind pressure, Surface properties, Ice surface, Wind velocity, Anemometers.

36-3623
On sea ice near Syowa Station, Antarctica; Pt.2—salinity profile of sea ice.
Wakatsuchi, M., *Low temperature science (Teion kagaku). Series A Physical sciences*, 1981, Vol.40, p.119-125, In Japanese with English summary. 7 refs.
Fast ice, Sea ice, Ice salinity, Ice cover thickness, Snow cover effect, Snow ice interface, Ice growth, Seasonal variations, Antarctica—Showa Station.
Seasonal variations in salinity profile of a fast ice were observed near Showa Station, Antarctica, in 1976. The thickness of the fast ice was about 1 m in late April and it increased during the winter season to about 2 m. Therefore, the fast ice was composed of two layers: the one from the last summer and the other was formed under it in the current winter. An interface between these two layers of the ice cover can be identified clearly by the presence of a layer where the ice salinity increases remarkably. The results of observations are described. (Auth. mod.)

36-3624
On the extinction coefficient of sea ice.
Aota, M., et al, *Low temperature science (Teion kagaku). Series A Physical sciences*, 1981, Vol.40, p.127-135, In Japanese with English summary. 7 refs.
Ishikawa, M.
Sea ice, Ice optics, Solar radiation, Transmissivity, Snow cover effect, Ice cover thickness, Ice structure.

36-3625
Note on an "ice sandwich" permeameter.
Horiguchi, K., et al. *Low temperature science (Teion kagaku). Series A Physical sciences*, 1981, Vol.40, p.137-145, In Japanese with English summary. 4 refs.
Miller, R.D.
Ice water interface, Mass transfer, Hydraulics, Temperature gradients, Ice physics.

36-3626
Moisture migration in soils during freezing monitored by the neutron-scattering method.
Fukuda, M., *Low temperature science (Teion kagaku). Series A Physical sciences*, 1981, Vol.40, p.147-154, In Japanese with English summary. 11 refs.
Soil freezing, Soil water migration, Frost heave, Neutron scattering, Analysis (mathematics).

36-3627
Peculiar shapes of ice crystals formed in a cloud chamber.
Aburakawa, H., *Low temperature science (Teion kagaku). Series A Physical sciences*, 1981, Vol.40, p.155-157, In Japanese. 5 refs.
Ice crystal structure, Artificial ice, Cloud chambers, Cloud droplets, Freezing.

36-3628
Tapping compression of snow collected from a surface layer during the blowing of snow.
Kobayashi, S., *Low temperature science (Teion kagaku). Series A Physical sciences*, 1981, Vol.40, p.159-163, In Japanese. 6 refs.
Snow compression, Blowing snow, Snow density, Snow hardness.

36-3629
Avalanche in Niseko ski area, Hokkaido.
Akitaya, E., et al, *Low temperature science (Teion kagaku). Series A Physical sciences*, 1981, Vol.40, p.165-169, In Japanese. 4 refs.
Endo, Y., Onodera, H., Sakatani, Y.
Avalanche formation, Slope orientation, Snow mechanics, Temperature effects.

36-3630
Freezing-thawing experiments of recently erupted pumices from Mt. Usu.
Fukuda, M., *Low temperature science (Teion kagaku). Series A Physical sciences*, 1981, Vol.40, p.171-174, In Japanese. 3 refs.
Freeze thaw tests, Soil freezing, Volcanoes, Ground thawing, Pumices.

36-3631
High-speed avalanches at Shiai-Dani, Kurobe Canyon in winter of 1980-1981.
Kawada, K., et al, *Low temperature science (Teion kagaku). Series A Physical sciences*, 1981, Vol.40, p.175-179, In Japanese. 3 refs.
Avalanche formation, Avalanche mechanics, Velocity, Snow depth, Mountains.

36-3632
Freeze crystallization: new water-processing tool.
Iammartino, N.R., *Chemical engineering*, June 23, 1975, 82(13), p.92-93.
Water treatment, Freezing, Crystals, Waste treatment, Desalting, Equipment, Water pollution.

36-3633
Greenland ice sheet evidence of post-glacial volcanism and its climatic impact.
Hammer, C.U., et al, *Nature*, Nov. 20, 1980, 288(5788), p.230-235, 37 refs.
Clausen, H.B., Dansgaard, W.
Ice sheets, Ice composition, Volcanoes, Climatic changes, Ice cores, Drill core analysis, Temperature effects, Greenland.

36-3634
Soil moisture and texture controls of selected parameters of needle ice growth.
Meentemeyer, V., et al, *Earth surface processes and landforms*, Mar.-Apr. 1981, 6(2), p.113-125, 27 refs.
Zippin, J.
Soil freezing, Soil water, Soil texture, Ice needles, Ice growth, Grain size, Soil temperature, Fines.

36-3635
Ice-lobe formation and function during the deglaciation in Finland and adjacent Soviet Karelia.
Kurimo, H., *Boreas*, 1982, 11(1), p.59-78, Refs. p.75-78
Glacier flow, Ice mechanics, Glacier oscillation, Landforms, Paleoclimatology, Finland, USSR—Karelia.

36-3636
Sedimentology of glacial and glacial marine deposits on the George V-Adelie continental shelf, East Antarctica.
Domack, E.W., *Boreas*, 1982, 11(1), p.79-97, Refs. p.96-97.
Sedimentation, Glacial deposits, Glacial erosion, Marine deposits, Glacier oscillation, Glacier beds, Subglacial observations, Antarctica—George V Coast, Antarctica—Adelie Coast.
Mineralogic and textural data suggest that glacial ice derived from the region of the present day Cook Ice Shelf extended to the edge of the d'Urville Sea continental shelf. As part of this glacial maximum, basal tills and glacial marine sediments were deposited over an irregular subglacial surface. Extensive redeposition of eroded material took place in the middle and outer portions of the continental shelf. Retreat of glacial ice was relatively rapid and was associated with widespread deposition of a thin residual glacial marine unit and turbidity current deposits in the far western and eastern parts of the region. Today, sedimentation of the continental shelf of the d'Urville Sea is controlled by biogenic and physical oceanographic processes. Deposition of ice-rafted detritus from icebergs undoubtedly occurs but is relatively insignificant. Glacial advances along this periphery of East Antarctica appear to be regulated by adjacent outlet glaciers rather than direct advance of the grounded ice sheet.

36-3637
Offshore theater dominates action along the West Coast.
Williams, B., *Oil and gas journal*, June 21, 1982, 80(25), p.130-132.
Natural resources, Exploration, Offshore drilling, Beaufort Sea, United States—Alaska—North Slope.

36-3638
Hydrologic and glaciologic investigations in Caucasian mountains. [Gidrologicheskie i gliatsiologicheskie issledovaniia v gorakh Kavkaza].
Tsomaia, V.Sh., ed, *Zakavkazskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1982, Vol.77, 136p., In Russian. For selected papers see 36-3639 through 36-3646. Refs. passim.
Alpine landscapes, Snow cover distribution, Avalanche formation, Avalanche triggering, Avalanche forecasting, Glacial rivers, Alimentation, Runoff, Glacier ablation, Snow water equivalent, Mathematical models, Computerized simulation.

36-3639
Avalanche forecasts based on the distribution-free discriminant analysis method. [Prognoz skhoda snezhnykh lavin na osnove neparametricheskogo diskriminantnogo analiza].
Simoniia, T.K., *Zakavkazskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1982, Vol.77, p.3-9, In Russian. 7 refs.
Avalanche forecasting, Avalanche triggering, Avalanche formation, Mathematical models.

36-3640
Influence of human activities on the discharge of Kura and Rioni rivers. [Vliianie antropogennoi deiatel'nosti na stok rek Rioni i Kury].
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Alpine landscapes, Glacial rivers, Drainage, Alimentation, Glacier ablation, Human factors, Irrigation.

36-3641
Forecasting winter drainage of glacial rivers in Transcaucasia. [Zimnii stok lednikovykh rek Zakavkaz'ia i ego prognozirovanie].
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Alpine landscapes, Glacial rivers, Runoff forecasting.

36-3642
Snow cover compaction. [K voprosu ob uplotnenii snezhnogo pokrova].
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Alpine landscapes, Snow cover distribution, Snow density, Snow compaction, Mathematical models.

36-3643
Subdivision of an area according to the degree of avalanche danger. [Raionirovanie territorii po stepeni lavinnoi opasnosti].
Kaldani, L.A., *Zakavkazskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1982, Vol.77, p.53-61, In Russian. 18 refs.
Avalanche forecasting, Avalanche formation, Mapping, Snow surveys, Aerial surveys, Avalanche triggering.

36-3644
Peculiarities of avalanche differentiation according to altitude zones of Georgia. [Osobennosti differentsiatsii lavin po vysotnym zonam na territorii Gruzii].
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Kaldani, L.A., Salukvadze, M.E.
Avalanche formation, Snowfall, Snow accumulation, Avalanche triggering, Avalanche mechanics, USSR—Caucasus.

36-3645
Characteristics of snowfalls during the period of mass descent of snow avalanches in Georgia. [Kharakteristika snegopadov pri massovom skhode snezhnykh lavin na territorii Gruzii].
Salukvadze, M.E., *Zakavkazskiĭ regional'nyĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1982, Vol.77, p.68-72, In Russian. 15 refs.
Snowfall, Snow accumulation, Avalanche formation, Avalanche triggering, Avalanche forecasting.

36-3646
Snow transfer during snowstorms in the mountain pass areas of Caucasus. [Perenosy snega pri metelekh v raionakh perevalov Kavkaza].
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Kharbediia, I.V.
Alpine landscapes, Snowstorms, Snowdrifts, Snow accumulation, Roads, Snow retention.

36-3647
Some problems of geocryological forecasting. [Nekotorye problemy geokriologicheskogo prognoza].
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Geocryology, Periglacial processes, Cryogenic soils, Permafrost structure, Ground ice, Permafrost transformation, Engineering geology, Human factors, Environmental protection, Models, Statistical analysis, Computerized simulation.

36-3648
Mapping of soils. [Gruntovye tolshchi i ikh otobrazhenie na kartakh].
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Fadeev, P.I.
Engineering geology, Cryogenic soils, Ground ice, Permafrost structure, Organic soils, Peat, Mapping, Classifications.

36-3649
Replacing "criopegs" (unfrozen brines) with fresh water during the ground level construction phase. [O zameshchenii kriopegov presnoi vodoi pri sooruzhenii nulevogo tsikla].
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Gubanov, B.A., Konosavskiĭ, P.K.
Foundations, Permafrost beneath structures, Ground ice, Brines, Unfrozen water content, Artificial freezing, Permafrost control.

36-3650
Hardening of concretes containing alkaline slag cements at subzero temperatures. [Issledovanie tverdeniia shlakoshchelochnykh betonov pri otritsatel'nykh temperaturakh].
Glukhovskiĭ, V.D., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura*, 1982, No.3, p.78-81, In Russian. 5 refs.
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Winter concreting, Concrete aggregates, Cements, Concrete hardening, Concrete strength.

36-3651
Determining rational technology of frozen ground excavation. [K opredeleniiu ratsional'noi tekhnologii razrabotki merzlykh gruntov].
Beliakov, B.I., et al, *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedeniĭ. Stroitel'stvo i arkhitektura*, 1982, No.3, p.88-92, In Russian. 3 refs.
Galimullin, V.A., Ovcharenko, V.V.
Earthwork, Excavation, Equipment.

36-3652
Studying and calculating the warming of frozen bases with elastic electric heating devices. [Issledovaniia i raschet obogreva merzlogo osnovaniia gibkimi elektronagrevatel'nymi ustroistvami].
Zubkov, V.I., *Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura*, 1982, No.3, p.106-111, In Russian. 3 refs.
Winter concreting, Foundations, Permafrost bases, Artificial thawing, Permafrost control, Electric heating.

36-3653
Origin and properties of sandy soils in Karelia. [Genezis i svoistva peschanykh pochv Karelii].
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Morozova, R.M., ed.
Taiga, Soil formation, Cryogenic soils, Podsol, Soil profiles, Swamps, Peat, Hydrothermal processes, Nutrient cycle.

36-3654
Studying space-time aspects of soil formation in Karelia. [K voprosu *izucheniia prostranstvenno-vremennykh* aspektov pochvoobrazovaniia na territorii Karelii].
Erukov, G.V., Genezis i svoistva peschanykh pochv Karelii (Origin and properties of sandy soils in Karelia) edited by L.S. Kozlovskaia and R.M. Morozova, Leningrad, Nauka, 1982, p.5-21, *In Russian*. 22 refs.
Taiga, Soil formation, Podsol, Cryogenic soils, Soil profiles, Forest soils, Swamps, Peat.

36-3655
Hydrothermal regime of pine forest soils. [Gidrotermicheskii rezhim pochv sosnovykh lesov].
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Vlaskova, G.V.
Taiga, Cryogenic soils, Forest soils, Hydrothermal processes.

36-3656
Seasonal variations in the content of mineral elements in pine forest soils. [Sezonnaia izmenchivost' soderzhaniia elementov mineral'nogo pitaniia v pochvakh sosnovykh lesov].
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Leont'eva, R.V., Kharin, V.N.
Taiga, Cryogenic soils, Nutrient cycle.

36-3657
Plant communities of Tuva. [Rastitel'nye soobshchestva Tuvy].
Kuminova, A.V., ed. Novosibirsk, Nauka, 1982, 208p., In Russian. For selected papers see 36-3658 through 36-3663. Refs. passim.
Alpine landscapes, Alpine tundra, Taiga, Cryogenic soils, Plant ecology, Ecosystems, Plant physiology.

36-3658
Vegetation of the Ulug-Khem region in the Tuva ASSR. [Rastitel'nyi pokrov Ulug-Khemskogo raiona Tuvinskoi ASSR].
Kuminova, A.V., Genezis i svoistva peschanykh pochv Karelii (Origin and properties of sandy soils in Karelia) edited by L.S. Kozlovskaia and R.M. Morozova, Leningrad, Nauka, 1982, p.5-28, In Russian. 13 refs.
Alpine landscapes, Landscape types, Alpine tundra, Taiga, Cryogenic soils, Plant ecology, Ecosystems.

36-3659
Vegetation of the Ulug-Khem River valley. [Rastitel'nost' doliny r. Ulug-Khem].
Mal'tseva, T.V., *Genezis i svoistva peschanykh pochv* Karelii (Origin and properties of sandy soils in Karelia) edited by L.S. Kozlovskaia and R.M. Morozova, Leningrad, Nauka, 1982, p.28-45, In Russian. 4 refs.
River basins, Valleys, Landscape types, Forest land, Meadows, Swamps, Cryogenic soils, Frost penetration, *Plant ecology, Ecosystems.*

36-3660
Alpine steppe vegetation of western Tuva. [K kharakteristike stepnoi rastitel'nosti gor Zapadnoi Tuvy].
Ershova, E.A., *Genezis i svoistva peschanykh pochv* Karelii (Origin and properties of sandy soils in Karelia) edited by L.S. Kozlovskaia and R.M. Morozova, Leningrad, Nauka, 1982, p.109-121, In Russian. 20 refs.
Alpine landscapes, Steppes, Cryogenic soils, Frost penetration, *Alpine tundra, Forest soils, Plant ecology, Ecosystems.*

36-3661
Vegetation of the Kantegir River basin, western Sayan. [Rastitel'nost' bassein r. Kantegir (Zapadnyi Saian)].
Maskaev, IU.M., Genezis i svoistva peschanykh pochv Karelii (Origin and properties of sandy soils in Karelia) edited by L.S. Kozlovskaia and R.M. Morozova, Leningrad, Nauka, 1982, p.174-183, In Russian. 12 refs.
River basins, Landscape types, Taiga, Cryogenic soils, Meadows, Plant ecology, Ecosystems.

36-3662
Geobotanical characteristics of dwarf shrub tundras in western part of the Sangilen highlands. [Geobotanicheskaia kharakteristika ernikovykh tundr zapadnoi chasti nagor'ia Sangilen].
Sedel'nikova, N.V., et al, Genezis i svoistva peschanykh pochv Karelii (Origin and properties of sandy soils in Karelia) edited by L.S. Kozlovskaia and R.M. Morozova, Leningrad, Nauka, 1982, p.183-194, In Russian. 11 refs.
Sedel'nikov, V.P.
Alpine tundra, Plant ecology, Plant physiology, Ecosystems.

36-3663
Phytocenotic role of the species in the dryad and dwarf shrub tundras. [O fitotsenoticheskoi roli vidov driadovykh i ernikovykh tundr].
Boguslavskaia, L.S., Genezis i svoistva peschanykh pochv Karelii (Origin and properties of sandy soils in Karelia) edited by L.S. Kozlovskaia and R.M. Morozova, Leningrad, Nauka, 1982, p.194-200, In Russian. 11 refs.
Alpine tundra, Plant ecology, Plant physiology, Ecosystems.

36-3664
Cycle of chemical substances in forests. [Krugovorot khimicheskikh veshchestv v lesu].
Molchanov, A.A., ed. Moscow, Nauka, 1982, 110p., In Russian. For selected papers see 36-3665 through 36-3668. Refs. passim.
Taiga, Landscape types, Cryogenic soils, Forest fires, Revegetation, Litter, Biomass, Nutrient cycle, Plant physiology, Photosynthesis.

36-3665
Larch forests of northern Europe. [Listvennichniki Evropeiskogo Severa].
Molchanov, A.A., Krugovorot khimicheskikh veshchestv v lesu (*Cycle of chemical substances in forests*) edited by A.A. Molchanov, Moscow, Nauka, 1982, p.5-20, In Russian.
Taiga, Cryogenic soils, Landscape types, Biomass, Soil formation, Soil chemistry, Soil composition.

36-3666
Nitrogen and mineral element cycle in low-productivity spruce forests of northern taiga. [Krugovorot azota i mineral'nykh elementov v nizkoproduktivnykh el'nikakh severnoi taigi].
Vakurov, A.D., et al, Genezis i svoistva peschanykh pochv Karelii (*Origin and properties of sandy soils in* Karelia) edited by L.S. Kozlovskaia and R.M. Morozova, Leningrad, Nauka, 1982, p.20-43, In Russian. 12 refs.
Poliakova, A.F.
Taiga, Cryogenic soils, Biomass, Nutrient cycle, Soil chemistry.

36-3667
Dynamics of nutrient reserves in young growth of pine under the northern taiga conditions. [Dinamika zapasnykh pitatel'nykh veshchestv v pobegakh sosny v usloviiakh severnoi taigi].
Gaidukova, L.V., Krugovorot khimicheskikh veshchestv v lesu (Cycle of chemical substances in forests) edited by A.A. Molchanov, Moscow, Nauka, 1982, p.54-68, In Russian. 9 refs.
Taiga, Cryogenic soils, Nutrient cycle, Plant physiology, Photosynthesis.

36-3668
Decomposition of conifer litter in two basic types of taiga forests and on burned-out areas. [Razlozhenie khvoinogo opada v dvukh tipakh kornevykh taezhnykh lesov i na gariakh].
Kudriasheva, I.V., et al, Krugovorot khimicheskikh veshchestv v lesu (Cycle of chemical substances in forests) edited by A.A. Molchanov, Moscow, Nauka, 1982, p.68-80, In Russian. 18 refs.
Poliakova, A.F.
Forest soils, Taiga, Forest fires, Revegetation, Cryogenic soils, Litter.

36-3669
Structural peculiarities, testing results and problems of improving devices for ultrasonic control of welded seams in main gas pipelines in the Far North. [Osobennosti konstruktsii, rezul'taty ispytanii i zadachi sovershenstvovaniia ustanovki ul'trazvukovogo kontrolia svarnykh soedinenii trub].
Bobrov, V.T., et al, Netrazrushaiushchie metody ispytanii svarnykh soedinenii (Nondestructive methods of testing welded joints) edited by V.A. Troitskii, Kiev, IES, 1981, p.49-52, In Russian. 4 refs.
Zabarovskii, O.R., Fal'kevich, S.A., Ushchak, P.T.
Gas pipelines, Welding, Joints (junctions), Test equipment.

36-3670
Mesoclimatic studies for evaluating the representativeness of meteorological stations under complicated geomorphologic conditions. [Mezoklimaticheskie issledovaniia pri otsenkakh reprezentativnosti meteorologicheskikh stantsii v slozhnykh geomorfologicheskikh usloviiakh].
Romanova, E.N., et al, *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy*, 1982, Vol.461, p.8-18, In Russian. 8 refs.
Kalashnikov, A.V.
Mountains, Permafrost distribution, Weather stations, Meteorological instruments, Topographic effects, Baykal Amur railroad.

36-3671
Methods and results of calculating radiation balance and its characteristics in northern West Siberia. [Metodika i rezul'taty raschetov radiatsionnogo balansa i opredeliaiushchikh ego kharakteristik severa Zapadnoi Sibiri].
Lazareva, N.A., et al, *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy*, 1981, Vol.454, p.45-58, In Russian. 12 refs.
Malevskii-Malevich, S.P.
Petroleum industry, Permafrost forecasting, Active layer, Thaw depth.

36-3672
Mountain forest soils of the Bashkir ASSR. [Gornolesnye pochvy Bashkirskoi ASSR].
Mukatanov, A.Kh., Moscow, Nauka, 1982, 148p., In Russian with abridged English table of contents enclosed. Refs. p.140-147.
Alpine landscapes, Permafrost distribution, Cryogenic soils, Nutrient cycle, Soil chemistry, Microelement content, Soil microbiology.

36-3673
Conditions for ore deposit development in the Far North. [Usloviia ekspluatatsii mestorozhdenii tverdykh poleznykh iskopaemykh Krainego Severa].
Skuba, V.N., et al, Novosibirsk, Nauka, 1982, 144p., In Russian with abridged English table of contents enclosed. 37 refs.
Mining, Coal, Excavation, Permafrost physics, Permafrost thermal properties, Subsea permafrost, Placer mining, Dredging.

36-3674
Operation and maintenance of equipment in gas industry. [Opyt ekspluatatsii i remonta oborudovaniia v gazovom khoziaistve].
Alekseev, N.S., et al, Saratov, Privolzhskoe knizhnoe izd-vo, 1981, 127p. (Pertinent p.22-27), In Russian. 5 refs.
Lozovoi, V.D.
Gas pipelines, Permafrost beneath structures, Earthwork, Equipment, Abrasion, Winter maintenance.

36-3675
Automorphic soils of mountain taiga in southern Transbaikal. [Avtomorfnye pochvy gornoi taigi IUzhnogo Zabaikal'ia].
Vtorushin, V.A., Novosibirsk, Nauka, 1982, 176p., In Russian with English table of contents enclosed. Refs. p.161-176.
Alpine landscapes, Landscape types, Taiga, Cryogenic soils, Soil formation, Podsol, Organic soils.

36-3676
Determining bearing strength of elevated gas pipelines in naled formation areas. [Opredelenie nesushchei sposobnosti nadzemnogo gazoprovoda na naledenpasnykh uchastkakh].
Kharionovskii, V.V., et al. *Stroitel'stvo truboprovodov*, June 1982, No.6, p.28-29. In Russian.
Nikolaev, V.N., Podkol'zin, V.P., Usin, A.A.
Gas pipelines, Icing, Ice accretion, Ice loads, Bearing strength.

36-3677
Installing thermal insulation under adverse weather conditions. [Vypolnenie izoliatsionno-ukladochnykh rabot v slozhnykh pogodnykh usloviiakh].
Mukhametdinov, Kh.K., *Stroitel'stvo truboprovodov*, June 1982, No.6, p.32-33. In Russian.
Pipelines, Thermal insulation, Cold weather construction, Construction materials.

36-3678
Soil moisture control on oil fields during roadbed construction. [Regulirovanie vlazhnosti grunta pri stroitel'stve zemlianogo polotna neftepromyslovykh avtomobil'nykh dorog].
Semenov, V.A., et al. *Neftepromyslovoe stroitel'stvo*, 1982, No.5, p.3-4. In Russian.
Lebedev, A.A.
Roadbeds, Soil moisture migration, Frost penetration, Thermal insulation, Snow cover effect.

36-3679
Deformations of storage tanks built on weak soils as observed in models and in the field. [Deformatsii model'nykh i naturnykh rezervuarov na slabykh gruntakh].
Konovalov, P.A., et al. *Neftepromyslovoe stroitel'stvo*, 1982, No.5, p.7-9. In Russian.
Usmanov, R.A.
Petroleum industry, Storage tanks, Settlement (structural), Peat, Clays.

36-3680
Contemporary sedimentary environments on Baffin Island, N.W.T., Canada: glaciomarine processes in fiords of eastern Cumberland Peninsula.
Gilbert, R., *Arctic and alpine research*, Feb. 1982, 14(1), p.1-12, 37 refs.
Sedimentation, Glacial deposits, Marine deposits, Sediment transport, Suspended sediments, Echo sounding, Canada—Northwest Territories—Cumberland Peninsula.

36-3681
Pingos in the Brooks Range, northern Alaska, U.S.A.
Hamilton, T.D., et al. *Arctic and alpine research*, Feb. 1982, 14(1), p.13-20, 15 refs.
Obi, C.M.
Pingos, Distribution, Paleoclimatology, Altitude, United States—Alaska—Brooks Range.

36-3682
Formation of vertical edges on antarctic moss peat banks.
Fenton, J.H.C., *Arctic and alpine research*, Feb. 1982, 14(1), p.21-26, 18 refs.
Mosses, Peat, Permafrost, Active layer, Growth, Distribution, Radioactive age determination, Antarctica.
Moss peat banks, which can be up to 3 m deep, greater than 2500 sq m in area, and up to 5000 yr old, occur in the Antarctic. Radiocarbon dates show that the peat accumulation rate has varied from 0.25 to 2.00 mm/yr. These peat banks have an abrupt vertical edge of exposed peat, which does not appear to be due to erosion of a once-larger peat bank. These edges seem to have arisen because, as peat accumulates and the moss banks become deeper, increased snow-lie prevents outward growth of the banks at their edges. (Auth.)

36-3683
Carbon dioxide flux from three Arctic tundra types in north-central Alaska, U.S.A.
Poole, D.K., et al. *Arctic and alpine research*, Feb. 1982, 14(1), p.27-32, 21 refs.
Miller, P.C.
Tundra, Carbon dioxide, Lichens, Vegetation, Ecosystems, Seasonal variations.

36-3684
Distribution of ephemeral herbaceous plants near treeline in the Sierra Nevada, California, U.S.A.
Jackson, L.E., et al. *Arctic and alpine research*, Feb. 1982, 14(1), p.33-42, 25 refs.
Bliss, L.C.
Vegetation, Distribution, Alpine landscapes, Forest lines, Mountains, Altitude, Classifications.

36-3685
Comparative study of metabolic activities of bacteria in three ecoregions in the Colorado Front Range, U.S.A.
Shulls, W.A., et al. *Arctic and alpine research*, Feb. 1982, 14(1), p.53-58, 14 refs.
Mancinelli, R.L.
Soil microbiology, Bacteria, Alpine tundra, Mountains.

36-3686
Non-cored hot point drills on Hans Glacier (Spitsbergen), method and first results.
Grzes, M., *Polish polar research*, 1980, 1(2-3), p.75-85, 22 refs.
Ice drills, Ice coring drills, Glacier ice, Thermal drills, Norway—Spitsbergen.

36-3687
Construction and work of magnetic observatory Arctowski (King George Island, South Shetland Islands).
Szymański, A., *Polish polar research*, 1980, 1(2-3), p.105-115, 3 refs.
Construction, Cold weather construction, King George Island.
In summer 1978 a geophysical laboratory was constructed with a magnetic station Arctowski. Construction of two magnetic pavilions, instruments for registration of changes of a magnetic field and other instruments for registration are described. Parameters of registration instruments as well as geographic and geomagnetic co-ordinates of the observatory are presented as well as values of D, H, Z and F(T) of geomagnetic field at the beginning of the station's work. Examples of magnetic registrations of magnetically quiet, and disturbed days are included. (Auth.)

36-3688
Seismic observatory at Arctowski's Station (King George Island, South Shetland Islands).
Kowalski, T.J., *Polish polar research*, 1980, 1(2-3), p.117-128.
Construction, King George Island.
The Laying foundations for a seismic observatory at Arctowski Station in the beginning of 1978 is discussed. Descriptions of registration of seismic instruments are included. Conditions of registration and parameters of instruments are noted. Registration sequence of seismic tremors from March 1978 to October 1979 is described. Preliminary statistics of tremors are also given. (Auth.)

36-3689
Last stages of Trolltunga drift in the Weddell Sea, Antarctica.
Birkenmajer, K., et al, *Polish polar research*, 1980, 1(2/3), p.235-237, 4 refs.
Kumoch, L., Zubek, K.
Icebergs, Drift, Weddell Sea.
The Trolltunga iceberg, long drifting in the Weddell Sea, was tracked one last time in March of 1978 before it entered the southern ocean. This report on the berg traces its progress since its formation in 1967; further tracking may be difficult since the heavier seas of the ocean will cause it to break up.

36-3690
Energy balance of crystallization front.
Vodák, F., *Physica A Europhysics journal*, May 1982, 112A(1/2), p.256-264, 13 refs.
Crystals, Stefan problem, Heat balance, Liquid solid interfaces, Phase transformations, Mathematical models.

36-3691
Butane is nearly "ideal" for direct slurry freezing.
Randall, C.W., *Water and wastes engineering*, May 1978, 15(3), p.43-49.
Sludges, Waste treatment, Freezing, Sewage treatment, Latent heat, Chemistry, Experimentation, Dehydration.

36-3692
Freeze treatment of alum sludge.
Wilhelm, J.H., et al, *American Water Works Association Journal*, June 1976, 68(6), p.312-314, 1 ref.
Silverblatt, C.E.
Sludges, Waste treatment, Freeze thaw cycles, Waste disposal, Cost analysis, Dehydration.

36-3693
Persistence of poliovirus 1 during the freezing-thawing of hydroxide sludges from a water treatment plant under laboratory conditions.
Block, J.C., et al. *European journal of applied microbiology and biotechnology*, 1978, Vol.5, p.331-340, 16 refs.
Jofre, J.C., Morlot, M., Fouguet, J.M.
Sludges, Waste treatment, Freeze thaw cycles, Water treatment, Microbiology, Solids, Pollution, Bacteria, Dehydration.

36-3694
Experimental investigation of natural convection in the melted region around a heated horizontal cylinder.
Bathelt, A.G., et al. *Journal of fluid mech...*, v.s. 1-79, 90(2), p.227-239, 24 refs.
Viskanta, R., Leidenfrost, W.
Freeze thaw tests, Liquid solid interfaces, Melting, Convection, Phase transformations, Pipes (tubes), Surface temperature, Heat transfer.

36-3695
Effect of petroleum products on the snow-ice cover of the Arctic.
Izmailov, V.V., *Polar geography and geology*, Oct.-Dec. 1981, 5(4), p.235-241. For Russian original see 34-2848. 4 refs.
Oil spills, Snow cover, Ice cover, Pollution, Petroleum products, Polar regions.

36-3696
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Gordienko, F.G., et al. *Polar geography and geology*, Oct.-Dec. 1981, 5(4), p.242-251. Translated from Izvestiia Vsesoiuznogo geograficheskogo obshchestva SSSR, 1980, No.5, p.394-401. 9 refs.
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Glacial meteorology, Glacier ice, Drill core analysis, Glacier mass balance, Ice temperature, Paleoclimatology, Isotope analysis, Oxygen isotopes, Seasonal variations, Norway—Spitsbergen.

36-3697
Ten year construction program planned for 3,100 mile line.
Kaustinen, O.M., *Pipeline*, June 1982, 54(4), p.14-16.
Gas pipelines, Cold weather construction, Route surveys.

36-3698
Sponsors certain Alaska gas line will be built.
Klinger, O., *Pipeline*, June 1982, 54(4), p.19-20.
Gas pipelines, Cold weather construction, Route surveys, United States—Alaska, Canada.

36-3699
Alaska Waterflood Projects need 200 miles of pipeline.
Edmondson, C., *Pipeline*, June 1982, 54(4), p.22-24, 60, 63.
Pipe laying, Water pipelines, Cold weather construction, Floods, Countermeasures, Cost analysis, United States—Alaska—Prudhoe Bay.

36-3700
Foothills Pipeline Project prebuild being completed.
Stewart, M.E., *Pipeline*, June 1982, 54(4), p.26-35.
Cold weather construction, Gas pipelines, United States—Alaska, Canada.

36-3701
Preprints.
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Meteorology, Mountains, Snowstorms, Supercooled clouds, Icing, Precipitation (meteorology).

36-3702
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Schaub, W.R., Jr., Conference on Mountain Meteorology, 2nd, Steamboat Springs, Colorado, Nov. 9-12, 1981. Preprints, Boston, Mass., American Meteorological Society, 1981, p.41-45, 1 ref.
Icing, Ice accretion, Towers, Ice loads, Meteorological data, Mountains, Telecommunication, Italy—Monte Cimone.

36-3703
Winter drought in the Colorado mountains.
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Snow accumulation, Snow water content, Snowmelt, Water supply, Stream flow, Runoff, Climatic factors, Mountains, Winter, United States—Colorado.

36-3704
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Snowfall, Water balance, Climatic factors, Mountains, Rain, Hydrology, Precipitation (meteorology), Seasonal variations, Altitude.

36-3705
Doppler radar observations of upslope snowstorms.
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Snowstorms, Slope orientation, Radar echoes, Mountains, Meteorological data, Wind factors, Temperature effects.

36-3706
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Williams, K.
Snowfall, Forecasting, Mountains, Precipitation (meteorology), Models, United States—Colorado.

36-3707
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Grant, L.O.
Supercooled clouds, Aircraft icing, Cloud droplets, Liquid phases, Mountains, Spectra, Storms, Models, United States—Colorado.

36-3708
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Grant, L.O.
Hoarfrost, Supercooled clouds, Icing, Cloud droplets, Freezing, Measurement.

36-3709
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36-3710
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Kostrzewski, A., Marks, L.
Moraines, Geomorphology, Maps, Glacial geology, Norway—Spitsbergen.

36-3711
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Wojcik, C., *Polish polar research*, 1981, 2(1-2), p.63-72, 4 refs.
Periglacial processes, Deformation, Geomorphology, Sediments, Norway—Spitsbergen.

36-3712
Degree of tundra degradation in the surroundings of the Hornsund Polar Station (Spitsbergen)—reaction of the environment to human impact.
Krzyszowska, A., *Polish polar research*, 1981, 2(1-2), p.73-86, 15 refs.
Tundra, Pollution, Water pollution, Soil pollution, Fuels, Norway—Spitsbergen.

36-3713
Tracer techniques in hydrology. [Tracermethoden in der Hydrologie].
Leibundgut, C., ed, *Beiträge zur Geologie der Schweiz—Hydrologie*, 1982, 28(1), 552p. In German and English. For selected papers see 36-3714 through 36-3717.
Weingartner, R., ed.
Hydrology, Glacial hydrology, Isotopic labeling, Runoff, Meltwater, Alpine landscapes, Switzerland.

36-3714
Quantitative dye tracing in a glacierised alpine karst.
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Ford, D.C.
Karst, Alpine landscapes, Alpine glaciation, Ground water, Meltwater, Surveys, Isotopic labeling.

36-3715
Tritium and oxygen-18 as natural tracers in the complex hydrology of the alpine basin of Grindelwald (Switzerland).
Schotterer, U., *Beiträge zur Geologie der Schweiz—Hydrologie*, 1982, 28(1), p.435-444, With German summary. 7 refs.
Alpine landscapes, Hydrology, Isotopic labeling, Ground water, Snowmelt, Surveys, Switzerland—Grindelwald.

36-3716
Contribution of ground water in meltwater and rain runoff in the Swiss catchment basin Dischma. [Bestimmung des Grundwasseranteils im Schnee- und Regenabfluss im Einzugsgebiet Dischma].
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Runoff, Meltwater, Ground water, Rain, Alpine landscapes, Isotopic labeling.

36-3717
Flow-routing of meltwater in an alpine glacier as indicated by dye tracer tests.
Collins, D.N., *Beiträge zur Geologie der Schweiz—Hydrologie*, 1982, 28(1), p.523-534, 11 refs.
Glacial hydrology, Glacial rivers, Meltwater, Water flow, Isotopic labeling, Alpine glaciation, Runoff.

36-3718
Economic criteria for the formation of populated areas in the North. [Ekonomicheskie kriterii formirovaniia severnykh naselennykh mest].
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Economic development, Urban planning, Natural resources.

36-3719
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Polar regions, Cold weather construction, Construction equipment, Winter maintenance, Cold weather operation, Fuels, Lubricants.

36-3720
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Antonov, V.S., Gidrometeoizdat, 1970, 11p., In Russian.
DLC GB1355.A57
Polar regions, Transportation, Ice navigation, Ice-bound rivers, River diversion, Environmental impact, Arctic Ocean.

36-3721
Computer calculation of the mean strength of artificially frozen rocks, depending on freezing schemes and temperatures. [Raschet srednei prochnosti zamorozhennykh porod s pomoshch'iu elektronnykh tsifrovykh mashin v zavisimosti ot skhemy i temperatury zamorazhivaniia].
Man'kovskii, G.I., et al, Moscow, 1966, 21p., In Russian with English table of contents enclosed. 5 refs.
Stepanova, E.M.
DLC TN292.M63
Artificial freezing, Frozen rock temperature, Frozen rock strength.

36-3722
Long range forecasting of ice conditions in the southern Barents Sea. [Metod dolgosrochnogo ledovogo prognoza dlia iuzhnoi chasti Barentseva morja].
Sobchenko, E.A., *Murmarsk. Polarnyi nauchno-issledovatel'skii institut morskogo rybnogo khoziaistva i okeanografii. Trudy*, 1973, Vol.34, p.125-138, In Russian. 6 refs.
DLC SH1.M8
Polar regions, Sea water freezing, Ice conditions, Ice forecasting, Long range forecasting.

36-3723
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Melamed, V.G., Chizhov, A.B.
DLC GB1004.P76
Permafrost formation, Ground ice, Permafrost hydrology, Phase transformations, Classifications, Theories.

36-3724
Register of snow avalanches in the Teberda River basin. [Katalog snezhnykh lavin basseina reki Teberdy].
Zarudnev, V.M., Leningrad, Gidrometeoizdat, 1970, 59p., In Russian with English table of contents enclosed. 30 refs.
DLC QC929.A8Z37
River basins, Slope processes, Avalanches, Charts.

36-3725
General description of studies of the 1975-76 season. [Sezonnye issledovaniia 1975-76 g. obshchee opisanie].
Sovetskaia antarkticheskaia ekspeditsiia, Novolazarevskaia stantsiia. *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1981, No.73, p.9-72, In Russian.
Sedov, O.K., ed.
Research projects, Antarctica.
This report on the 1975-76 Soviet Antarctic Expedition covers organization and conduct of the expedition, ship observations, establishment of Druzhnaya Base, and a summary of research and other activities at Soviet stations and by teams on traverse operations.

36-3726
Features of the ice in the eastern Weddell Sea. [Osobennosti ledovogo rezhima vostochnoi chasti moria Ueddella].
Kozlovskii, A.M., *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1981, No.73, p.73-78, In Russian. 2 refs.
Sea ice, Pack ice, Weddell Sea.
A description of the eastern and southern edges of the Weddell Sea ice pack is given. Conclusions about the nature of ice dynamics are also offered on the basis of observations from Nov. 1975 until Feb. 1976.

36-3727
Characteristics of coastal features of the eastern and southern portions of the Weddell Sea. [Kharakteristika beregovoi cherty vostochnoi i iuzhnoi chasti moria Ueddella].
Grikurov, G.E., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1981, No.73, p.79-82, In Russian.
Kozlovskii, A.M.
Pack ice, Ice wharves, Sea ice distribution, Weddell Sea.
Data on the coastline along the eastern and southern sections of the Weddell Sea gathered by reconnaissance flights and shipboard observations in 1975-76 are presented. They can be used to plan station and camp sites, loading docks and other temporary installations.

36-3728
Morphological features of the edges of the Filchner and Ronne ice shelves. [Morfologicheskie osobennosti kraevoi zony shel'fovykh lednikov Filchnera i Ronne].
Kozlovskii, A.M., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1981, No.73, p.83-88, In Russian. 2 refs.
Tret'iakov, N.D.
Ice wharves, Ice shelves, Glacier flow, Antarctica—Filchner Ice Shelf, Antarctica—Ronne Ice Shelf.
A description of the morphology of the Filchner and Ronne ice shelves, their rate of flow at various points, data on thickness and depth of the sea below are given. Recommendations on likely cargo unloading areas are made.

36-3729
Iceberg drift in the southern ocean. [Dreif aisbergov v Iuzhnom okeane].
Botnikov, V.N., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1981, No.73, p.98-98, In Russian. 5 refs.
Drift, Icebergs, Antarctica.
Analysis of iceberg drift in the Indian and Atlantic sectors of the southern ocean is provided based on the example of a giant tabular iceberg which calved from the Amery Ice Shelf in 1964 and was tracked until 1975.

36-3730
Destruction of the ice island Pobeda. [Razrushenie ledianogo ostrova Pobeda].
Botnikov, V.N., et al, *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1981, No.73, p.99-100, In Russian. 3 refs.
Matveev, V.I., Sychev, O.K., Cherepanov, I.V.
Icebergs, Drift, Ice islands, Antarctica.

Results of analysis of the position of the ice island Pobeda until March 1976 are given. The island underwent considerable movement. Reasons for this shifting and the periods during which it occurred are discussed.

36-3731
Using satellite data for ice navigation in the Antarctic (1975/76) on board the *Mikhail Somov*. (Ispol'zovanie ledovoi informatsii so sputnikov dlia provodki vo l'dakh Antarktiki nes 'Nikhail Somov' v navigatsiiu 1975-76 g.g.).
Botnikov, V.N., et al. *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1981, No.73, p.101-103. In Russian.
Sedov, O.K.
Ice navigation, Spaceborne photography.
Use of satellite television pictures for navigation on the *Mikhail Somov* in antarctic waters is described. Recommendations for fixing the coordinates of such satellite photographs are offered.

36-3732
Results of radiosounding to determine thickness and flow rate of ice cover, summer 1975/76. (Rezul'taty radiolokatsionnykh izmerenii tolshchiny i skorosti dvizheniia lednikovogo pokrova v letnii sezon 1975/76 g.g.).
Bogorodskii, V.V., et al. *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1981, No.73, p.104-111. In Russian. 2 refs.
Trepov, G.V., Sheremet'ev, A.N., Stepanov, V.N.
Glacier thickness, Glacier flow, Antarctica—Hayes Glacier, Antarctica—Shinnan Glacier, Antarctica—Campbell Glacier.
Results of measuring flow rate and thickness of the Hayes, Campbell and Carnebreen Glaciers using radiosondes are presented. The technique is also briefly described.

36-3733
Thermal core drilling at Vostok-1 station. (Burenie-protaivanie skvazhiny na stantsii Vostok-1).
Kovalenko, V.I., et al. *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1981, No.73, p.112-116. In Russian.
Moiseev, B.S., Zagrivnyi, E.A.
Ice drills, Ice sheets, Thermal drills, Ice coring drills, Antarctica—Vostok Station.
The logistics and execution of thermal core drilling of the ice sheet at Vostok are described. Optimal working ranges for such drilling at all stages of the process are given.

36-3734
Arctic marine commerce study; executive summmary.
Arctic Institute of North America, Aug 1973, 37p., 13 refs
Marine transportation, Pipelines, Economic development, Natural resources, Ports, Polar regions.

36-3735
Colorado snow-avalanche area studies and guidelines for avalanche-hazard planning.
Mears, A.I. *Colorado Geological Survey. Special publication*, 1979 No.7, 123p., 6 refs
Avalanche formation, Avalanche tracks, Avalanche mechanics, Countermeasures, Snow fences, Mapping.

36-3736
Air photo interpretation of Great Lakes ice features.
Marshall, E.W. *Michigan University. Great Lakes Research Division. Special report*, 1966, No.25, 92p., 15 refs
Lake ice, Ice formation, Aerial surveys, Photointerpretation, Freezeup, Ice structure, Ice sheets, Snow cover effect, Water, Turbulent flow, Wind factors, United States—Great Lakes.

36-3737
Geomorphological reconnaissance in the extreme north of Labrador and New Quebec: a contribution to the study of basement-rock landforms in cold environments. (Reconnaissance dans l'extrémité nord du Labrador et du Nouveau Québec. Contribution à l'étude geomorphologique des socles des milieux froids).
Godard, A. *Revue de geomorphologie dynamique*, 1979, 28(4), p.125-142. In French with English summary
Periglacial processes, Landforms, Weathering, Frost shattering, Geomorphology, Frost heave.

36-3738
Characteristics of air-bubble systems in hardened concrete produced by three types of air entraining agent-plasticizer combination.
Chatterji, S., et al. *Silicates industriels (Solid and liquid state ceramics)*, July-Aug. 1978, 43(7-8), p.153-156, 9 refs
Gudmundsson, H., Jensen, A.D.
Concrete hardening, Air entrainment, Bubbling, Freeze thaw cycles.

36-3739
Satellite-based study of sea ice dynamics in the central Canadian Arctic Archipelago.
Marko, J.R., Contractor report series 77-4, Victoria, B.C., Institute of Ocean Sciences, July 1977, 106p., 6 refs.
Sea ice distribution, Drift, Ice mechanics, Remote sensing, Ice conditions, Ice breakup, Ice floes, Wind factors, Canada—Arctic Archipelago.

36-3740
Evaluation of sonar equipment and techniques for application in the Beaufort Sea. Final report.
Hutchins, R., Contractor report series 80-4, Sidney, B.C., Institute of Ocean Sciences, 1980, 4 vols., 64 refs.
Pingos, Acoustic measurement, Ocean bottom, Subsea permafrost, Detection, Frost mounds, Mapping, Mathematical models, Statistical analysis, Beaufort Sea.

36-3741
Study of pingo-like features detected in the Beaufort Sea.
Coast Pilot Ltd., Contractor report series 80-6, Sidney, B.C., Institute of Ocean Sciences, 1980, 20p.
Pingos, Ocean bottom, Subsea permafrost, Echo sounding, Detection, Statistical analysis, Beaufort Sea.

36-3742
Study on the acoustic target strength of the PLF's found in the Beaufort Sea.
Simpkin, P.G., Contractor report series 80-7, Sidney, B.C., Institute of Ocean Sciences, 1980, 60p., 31 refs.
Pingos, Detection, Acoustic measurement, Ocean bottom, Remote sensing, Backscattering, Models, Subsea permafrost, Beaufort Sea.

36-3743
Frost action effects on pavements. Volume 1—Technical report; Volume 2—Data summary.
Hoffman, G.L., et al. *Pennsylvania. Department of Transportation. Bureau of Materials, Testing and Research. Report*, May 1979, 1970-1978, FHWA-PA-RD-68-30-2, 377p., PB80-198 559, PB80-198 567. For extensive summary see 36-1313. 22 refs.
Cumberledge, G., Bhajandas, A.C.
Frost action, Pavements, Freeze thaw cycles, Frost heave, Frost penetration, Freezing indexes, Subgrades, Forecasting.

36-3744
CRREL 2-inch frazil ice sampler.
Rand, J., *U.S. Army Cold Regions Research and Engineering Laboratory*, May 1982, SR 82-09, 8p.
Frazil ice, Samplers, Antarctica—Weddell Sea.
The CRREL 2-inch frazil ice sampler is a tubular device for obtaining undisturbed samples of frazil ice from beneath a floating ice cover. It fits through a 2 1/2 in.-diameter hole drilled in the ice. A liquid-tight seal at the bottom of the sampler prevents the loss of frazil ice and/or water from the tube while the unit is being raised. The sampler was used for the first time in the floes in the Weddell Sea, Antarctica in austral summer, 1980-1981. (Auth. mod.)

36-3745
Multi-year pressure ridges in the Canadian Beaufort Sea.
Wright, B., et al. *Coastal engineering*, Oct. 1981, 5(2-3), MP 1514, p.125-145. For another source of the article and abstract see 33-4609 (MP 1229). 16 refs.
Hnatiuk, J., Kovacs, A.
Sea ice, Pressure ridges, Ice structure, Models.

36-3746
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Kovacs, A., et al. *Coastal engineering*, Oct. 1981, 5(2-3), MP 1538, p.247-273. For another source of the article and abstract see 33-4610 (MP 1230). 22 refs
Sodhi, D.S.
Sea ice, Pressure ridges, Ice push.

36-3747
Development and present status of German periglacial research in the polar and subpolar regions.
Karte, J. *Polar geography and geology*, Jan.-Mar. 1982, 6(1), p.1-24. For German original see 35-2640. Refs. p.20-24
Periglacial processes, Altiplanation, Nivation, Research projects, Polar regions, Terminology, Germany.

36-3748
Seasonal distribution and numbers of waterfowl on the Malozemel'skaya tundra.
Mineev, Iu.N. *Polar geography and geology*, Jan.-Mar. 1982, 6(1), p.41-46. Translated from Akademiia nauk SSSR. Izvestiia. Seriia geograficheskaia, 1981, No.4, p.119-122. 1 ref.
Tundra, Ecosystems, Animals, Seasonal variations, Birds.

36-3749
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Cork, H.F., et al. *Journal of hydrology*, Aug. 1980, 48(1/2), p.41-51, 10 refs.
Loijens, H.S.
Snow surveys, Snowdrifts, Blowing snow, Snow water equivalent, Gamma irradiation, Attenuation, Radiation measuring instruments, Analysis (mathematics).

36-3750
Measurement of tensile strength of concrete at very low temperatures.
Elices, M., et al. *American Concrete Institute. Journal*, May-June 1982, No.3, p.195-200, 12 refs.
Planas, J.
Concrete strength, Concrete aggregates, Tensile properties, Compressive properties, Low temperature tests, Cryogenics, Prestressed concretes, Liquefied gases, Analysis (mathematics).

36-3751
Influence of riverbed processes on flood plain landscapes (the Vilyuy River). (Vliianie ruslovykh protsessov na landshafty rechnykh poim (na primere Nizhnego Viliuia)).
Dronin, N.M., et al. *Moscow. Universitet. Vestnik. Seriia 5 Geografiia*, May-June 1982, No.3, p.48-53. In Russian. 8 refs.
Chernov, A.V.
River basins, Landscape types, Valleys, Polygonal topography, Permafrost beneath rivers, Cryogenic soils, Plant ecology, Permafrost structure, Ice wedges, Flood plains, Soil temperature.

36-3752
Freezing of moist ground. (Promerzanie vlazhnogo grunta).
Palagin, E.G., *Leningrad. Gidrometeorologicheskii institut. Trudy*, 1975, Vol.52, p.74-85. In Russian. 7 refs.
Soil freezing, Frost penetration, Soil water migration, Phase transformations, Ground ice, Ice formation, Mathematical models.

36-3753
Calculating freezing depth of water bodies and coarse-grained grounds. (Raschet glubiny promerzaniia vodoemov i krupnozernistykh gruntov).
Natanzon, G.A., et al. *Leningrad. Gidrometeorologicheskii institut. Trudy*, 1975, Vol.52, p.86-92.
Palagin, E.G.
Icebound lakes, Ice growth, Ice cover thickness, Soil freezing, Soil water migration, Frost penetration.

36-3754
Utilization of floating nuclear power plants in northern regions.
Golovin, A.I., et al. *Soviet atomic energy*, Aug. 1981 (Publ. Feb. 82), 51(2), p.497-501. Translated from Atomnaia energiia. 5 refs.
Petroleum industry, Floating structures, Electric power, Nuclear power, Plants (industries), Polar regions.

36-3755
Heat balance of taiga geosystems in western Siberia. (Teplovoi balans taezhnykh geosistem Zapadnoi Sibiri).
Anan'ev, I.P. *Akademiia nauk SSSR. Institut geografii. Materialy meteorologicheskikh issledovanii*, 1982, No.5, p.100-111. In Russian. 17 refs.
River diversion, Taiga, Swamps, Landscape types, Heat balance, Forest canopy, Litter, Heat transfer, Wind factors.

36-3756
Radiation balance of the forest and swamp geosystems of taiga in western Siberia. (Radiatsionnyi rezhim lesnykh i bolotnykh geosistem zapadnosibirskoi taigi).
Abdullaev, V.V. *Akademiia nauk SSSR. Institut geografii. Materialy meteorologicheskikh issledovanii*, 1982, No.5, p.112-118. In Russian. 13 refs.
Forest land, Swamps, Taiga, Solar radiation, Radiation absorption, Albedo, Radiation balance.

36-3757
Urban influence on the formation of snow reserves. (Vliianie goroda na formirovanie snegozapasov).
Mikhailov, I.V. *Akademiia nauk SSSR. Institut geografii. Materialy meteorologicheskikh issledovanii*, 1982, No.5, p.151-154. In Russian. 5 refs.
Municipal engineering, Snow cover distribution, Pollution, Buildings, Roads, Snow surveys, Snow melting, Snow water equivalent, Urban areas.

36-3758
Sixth meeting of the editorial board of the World Atlas of Snow and Ice Resources. [Shestoe zasedanie redkollegii Atlasa snezhno-ledovykh resursov miraj.
Dreier, N.N., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1981, Vol.42, p.5-7, In Russian.
Meetings, Maps, Avalanches, Snow cover distribution, Glacial hydrology, Spaceborne photography, Glacier surveys, Snow surveys.

36-3759
Working session of the authors of avalanche maps of the World Atlas of Snow and Ice Resources. [Rabochee soveshchanie avtorov lavinnykh kart Atlasa snezhno-ledovykh resursov miraj.
Miagkov, S.M., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1981, Vol.42, p.8-9, In Russian.
Glazovskaia, T.G.
Meetings, Maps, Avalanches, Glaciology.

36-3760
Peculiarities of compiling the maps of glacier morphology for the World Atlas of Snow and Ice Resources. [Osobennosti sostavleniia kart morfologii lednikov v Atlase snezhno-ledovykh resursov miraj.
Vinogradov, O.N., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1981, Vol.42, p.9-12, In Russian with English summary. 3 refs.
Mountain glaciers, Glacier surfaces, Glacier surveys, Snow surveys, Mapping.

36-3761
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Mountain glaciers, Mapping, Charts.

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Use of space images in mapping mountain glaciers. [Ispol'zovanie kosmicheskikh snimkov v kartografirovanii gornogo oledeneniia].
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Mountain glaciers, Mapping, Spaceborne photography.

36-3763
Results of experimental studies of Karakorum glaciers from board of the orbital station "Saliut-6". [Rezul'taty eksperimenta po izucheniiu oledeneniia Karakoruma s borta orbital'noi stantsii "Saliut-6"].
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Mountain glaciers, Spaceborne photography, Spacecraft.

36-3764
Compiling maps of heat resources of the alpine zone. [Nekotorye problemy sostavleniia kart teplovykh resursov vysokogornoi zony].
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Mountain glaciers, Ice surface, Air temperature, Maps.

36-3765
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Mountain glaciers, Ablation, Snowmelt, Runoff, Mapping.

36-3766
Morphological characteristics of the Heilo Patagonico Sur. [Morfologicheskaia kharakteristika IUzhnogo Patagonskogo lednikovogo plato].
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Glaciation, Glacial lakes, Glacial hydrology, Spaceborne photography, Andes.

36-3767
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Alpine landscapes, Glaciation, Paleoclimatology.

36-3768
Using space photographs of Arctic glaciated regions for compiling the World Atlas of Snow and Ice Resources. [Ispol'zovanie kosmicheskikh snimkov na lednikovye raiony Arktiki pri rabotakh po Atlasu snezhno-ledovykh resursov miraj.
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Glaciation, Spaceborne photography, Polar regions.

36-3769
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Meetings, Ecology, Polar regions.

36-3770
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Mountain glaciers, Glacier ice, Ice structure, Ice cracks.

36-3771
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Mountain glaciers, Glacial hydrology, Runoff, Mapping.

36-3772
Analyzing snow conditions in mountainous regions of the USSR for forecasting avalanche danger. [Analiz uslovii snezhnosti v gornykh raionakh SSSR dlia otsenki lavinnoi opasnosti].
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Snow surveys, Snow cover stability, Avalanche formation, Avalanche forecasting.

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Avalanche formation, Snow cover stability, Avalanche triggering, Avalanche forecasting, Synoptic meteorology.

36-3774
Holocene glaciation of Spitsbergen from palaeobotanical data. [Ob istorii oledeneniia Shpitsbergena v golotsene po dannym paleobotanicheskikh issledovanii].
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Troitskii, L.S., Punning, IA.-M.K.
Ice dating, Paleobotany, Palynology.

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Mountain glaciers, Glacier ice, Glacial erosion, Glacial deposits, Moraines.

36-3776
Thermal stability of ice sheets. [Teplovaia ustoichivost' lednikovykh pokrovov].
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Glacier ice, Ice sheets, Ice thermal properties, Glacier surfaces, Friction, Ice temperature.
The ice sheet steady state depends on the temperature of the basal ice layer. The solution of stationary one-dimensional problem may not exist for some combinations of the defining parameters, owing to the nonlinear production of heat. The advection nonlinearly dependent on temperature plays the essential role. The solution of non-stationary thermal problem under the conditions of phase transition permits to evaluate the thickness of layer heated up to the melting point and the volume of water produced within it. The "warmed" system has a stationary thermal regime. A model of numerical parameters of climatic warming effect is developed and applied to several localities in Antarctica, Greenland and the Laurentide ice sheet

36-3777
Interaction of temperature and hydrodynamic fields in stationary dome-like glaciers. [Vzaimodeistvie temperaturnykh i gidrodinamicheskikh polei v statsionarnykh kupolovidnykh lednikakh].
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Glacier ice, Ice temperature, Heat transfer, Ice mechanics, Mathematical models.

36-3778
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Ice mechanics, Glacier flow.

36-3779
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Mountain glaciers, Glacier alimentation, Glacier ablation, Mass balance.

36-3780
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Glacier oscillation, Glacier tongues, Glacial erosion, Moraines.

36-3781
Forms of glacial tectonics as indicators of glacier surges and their use in forecasts. [Formy ledovoĭ tektoniki kak indikator mekhanizma dvizheniia pul'siruiushchikh lednikov i ikh ispol'zovanie v tseliakh prognoza].
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Glacier tongues, Glacier surges, Spaceborne photography, Glacier surveys, Antarctica.
Reflections of glacier dynamics in ice surface morphology and the forms of ice tectonics visible on aerial and spaceborne photographs of the antarctic ice cover were studied. Photographs of faults in peripheral parts of the cover were used in estimating ice movement rates and directions. Mean annual flow rates of 100 floating glacier tongues were determined from fractures and pressure ridges. Deviations in the results of aerial observations, compared to land surveying data, did not exceed 4-8 percent. Analyses of data on the morphology and dynamics of surging glaciers, obtained in different parts of the world, sustained the direct relationship between ice tectonics and flow mechanism of surging glaciers.

36-3782
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Mountain glaciers, Glacier ice, Ice structure, Glacier flow, Mass balance, Environmental impact.

36-3783
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Lakes, Glacier ablation, Runoff, Water storage.

36-3784
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Mountain glaciers, Glacier surveys, Ice volume, Ice (water storage), Glacier alimentation, Ablation, Mass balance.

36-3785
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Murav'ev, I.A.D.
Volcanoes, Glaciation, Glacier ice, Glacier tongues, Ice growth, Glacier oscillation, Glacier alimentation.

36-3786
Interpretation of long-term glacier mass balance measurements. [Rezul'taty analiza mnogoletnikh riadov izmerenii balansa massy lednikov].
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Mountain glaciers, Glacier mass balance, Alimentation, Ablation, Mass balance.

36-3787
Recent climatic fluctuations and ice cover dynamics in the Arctic Ocean. [Sovremennye kolebaniia klimata i dinamika ledianogo pokrova Severnogo Ledovitogo okeana].
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Petrov, L.S.
Sea ice, Ice conditions, Climatic changes.

36-3788
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Steklenkov, A.P.
Meetings, Glacial deposits, Paleoecology, Moraines, Ground ice.

36-3789
Data assembled for the World Atlas of Snow and Ice Resources in France, Switzerland and Austria. [Sbor materialov dlia Atlasa snezhno-ledovykh resursov mira vo Frantsii, Shveĭtsarii i Avstrii].
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Kotliakov, V.M.
Meetings, Glaciology, Mountain glaciers, Snow cover, Maps.

36-3790
Mathematical reconstructions of paleoclimates from deep drilling data obtained in the antarctic ice sheet. [O matematicheskoĭ rekonstruktsii paleoklimatov po dannym glubokogo bureniia Antarkticheskogo lednikovogo pokrova].
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Govorukha, L.S., Evseev, M.P.
Ice sheets, Ice coring drills, Paleoclimatology, Ice dating, Antarctica.
Preliminary outline of reconstructions of atmospheric temperature and pressure fields of basic climatic epochs in the southern hemisphere involved studies of a global atmospheric circulation model, data from deep ice drilling and the stratigraphy of some antarctic ice outcrops. There were two main mathematical problems: analytical extension of solutions over the whole globe, and the mathematical description of evaporation from open ocean surfaces in relation to the state of the atmosphere modelled. Comparison of ice drilling data from Antarctica and Greenland showed the synchronism of climatic changes during main epochs.

36-3791
Variations in the position of the Filchner ice shelf barrier during 1912-1976. [Osobennosti izmeneniĭ polozheniia bar'era shel'fovogo lednika Fil'khnera za 1912-1976 gg.].
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Ice shelves, Glacier flow, Aerial surveys, Glacier ice, Stress concentration, Calving, Icebergs, Antarctica—Filchner Ice Shelf.
Dynamics of the Filchner ice shelf is discussed in the light of recent satellite data. Space images of the Weddell Sea coast showed considerable variations in the position of its front and area due to iceberg calving, the irregularity of its frontal advance, changes in the tension-compression zones south of the shoreline narrowing in the glacier bay, and possible periodic iceberg calving in the western Gould Bay. Cyclic fluctuations of the Filchner ice front at about 90 year intervals are considered possible.

36-3792
Water-ice balance of Spitsbergen glaciers in the 1978-79 balance year. [Vodno-ledovyĭ balans lednikov Shpitsbergena v 1978-79 balansovom godu].
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Glacier mass balance, Seasonal variations, Glacier surveys, Mountain glaciers.

36-3793
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Shchepin, G.B.
Mountain glaciers, Glacier mass balance, Seasonal variations, Glacier surveys.

36-3794
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Glazovskiĭ, A.F.
Alpine landscapes, Snow cover distribution, Snow composition, Microelement content.

36-3795
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Sea ice, Ice cover strength, Ice physics, Ice mechanics.

36-3796
Workshop on glaciology in the Institute of Geography, the USSR Academy of Sciences. [Nauchnyĭ seminar po gliatsiologii v Institute geografii AN SSSR], *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1981, Vol.42, p.210, In Russian.
Meetings, Glaciology, Mapping.

36-3797
Glaciological observations along the the route Mirnyy-Dome C in 1981. [Gliatsiologicheskie nabliudeniia v pokhode ot stantsii Mirnyĭ do kupola C v 1981 g.].
Diurgerov, M.B., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1981, Vol.42, p.211, In Russian with English summary.
Korolev, P.A.
Snow surveys, Glacier surveys, Expeditions, Ice coring drills, Ice cores, Sampling, Antarctica.
Glaciological observations along the Mirnyy-Dome C route started in 1977 and continued according to the program of the International Antarctic Glaciological Project. Automatic equipment and instruments were installed at selected proving grounds on the route for year-round monitoring of the Earth's magnetic field variations. There were also facilities for snow and ice surveys, observations and sampling in shafts. Seven proving grounds were established over a 1150 km distance starting from the Pionerskaya Station. A special thermoelectric core-drilling assembly was installed 670 km from Mirnyy for a well 500 m deep and 168 mm in diameter. Ice core samples were obtained to the depth of 305 m, the remaining distance to be completed in the summer 1982.

36-3798
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36-3799
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36-3800
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36-3801
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36-3802
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36-3803
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36-3804
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Aircraft icing, Ice accretion, Temperature effects, Wind tunnels, Tests.

36-3805
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36-3806
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36-3807
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Hydrates, Natural gas, Exploration, Meetings, Offshore drilling, Permafrost, Subsea permafrost, United States—Alaska.

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36-3810
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36-3813
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Fuels, Hydrates, Natural resources, Natural gas, Coal, United States—Alaska.

36-3814
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Research projects.
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36-3818
***Long-term impacts of increasing atmospheric carbon* dioxide levels.**
MacDonald, G.J., ed. Cambridge, Mass., Ballinger Publ. Co., 1981, 252p., Refs. passim.
DLC TD885.5.C3L66
Ice sheets, Glacier flow, Rheology, Glacier melting, Climate, Climatic changes, Sea ice, Ocean currents, Antarctica—West Antarctica.
Two chapters in this book relate to the Antarctic. Chapter 11 is concerned with deep ocean currents and polar warming. Chapter 12, The Effect of Climatic Warming on West Antarctic Ice Sheets, considers the following questions: ice cover; literature review; creep models of ice stream flow; mass-conservation model of ice sheet disintegration; possible consequences of warming; recent instabilities; and the effect of disintegration of West Antarctica on climate. An appendix applies the basic equation to a floating ice shelf.

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36-3821
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Natural resources, Shores, Economic development, Environmental protection, Exploration, Sea ice, Offshore structures, Management, United States—Alaska—North Slope.

36-3822
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36-3823
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36-3824
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36-3825
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36-3835
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36-3836
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Glacial geology, Glaciology, Frozen ground, Mountain glaciers, Fossil ice, Glacial till, China—Ala Gou River, China—Toksun Basin.

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36-3861
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DLC G860.B73
Pollution, Ice sheets, Oil spills, Radioactive wastes, Economic development, Antarctica.
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Meetings, Ice physics, Land ice, Sea ice, Glaciology, Ice shelves.
Objectives of the 3rd International Symposium on Antarctic Glaciology were discussions of new ideas, concepts and results on all aspects of the antarctic glaciology, including ice cover stability, modeling, sea ice, shelf glaciers, history of glaciation, glacial geology, stratigraphy, atmospheric and surface processes. Several special sessions were devoted to the International Antarctic Glaciological Project. A list of all the reports heard at the symposium is presented with short accounts of papers on the physics of continental and sea ice.

36-3863
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36-3864
Glaciological investigations on North East Land. [Gliatsiologicheskie raboty na Severo-Vostochnoi Zemle].
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Zinger, E.M.
Glaciation, Snow surveys, Glacier surveys, Glacier ice, Ice coring drills, Thermal drills, Norway—Svalbard.

36-3865
Snow cover stability on mountain slopes. [Ustoichivost' snezhnogo pokrova na sklonakh gor].
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Slope processes, Snow cover stability, Snow depth, Avalanche formation.

36-3866
Calculating avalanche parameters in the zone of slowdown and stopping. [Raschet parametrov lavin v zone tormozheniia i ostanovki].
Eglit, M.E., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1982, Vol.43, p.35-39. In Russian with English summary. 2 refs.
Avalanche triggering, Avalanche mechanics, Avalanche engineering.

36-3867
Calculating avalanche ejection distances. [O raschetakh obespechennosti dal'nosti vybrosa lavin].
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Avalanche mechanics, Avalanche forecasting, Avalanche engineering.

36-3868
Determining design values of avalanche pressure against protective structures. [Opredelenie raschetnykh davlenii snezhnykh lavin na zashchitnye sooruzheniia].
Isaenko, E.P., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1982, Vol.43, p.44-46. In Russian with English summary. 1 ref.
Avalanche forecasting, Avalanche mechanics, Impact strength, Avalanche engineering.

36-3869
Methods and efficiency of avalanche protection in economically developed areas of Kirgizia. [Metody i effektivnost' protivolavinnogo obespecheniia narodnogo khoziaistva Kirgizii].
Maksimov, N.V., et al. *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1982, Vol.43, p.47-49. In Russian with English summary. 3 refs.
Solodkov, P.A., Shaikhutdinov, R.Sh., Aizin, V.B.
Slope processes, Snow cover distribution, Snow depth, Avalanche formation, Avalanche forecasting, Avalanche triggering, Avalanche engineering.

36-3870
Snow structure and its relation to avalanche formation. [Struktura snega i ee sviaz' s lavinoobrazovaniem].
Bolov, V.R., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1982, Vol.43, p.49-55. In Russian with English summary. 16 refs.
Snow cover structure, Snow crystal structure, Snow cover stability, Avalanche formation, Avalanche triggering.

36-3871
Forecasting time of avalanche formation in the Baykal Amur railroad area. [Prognozirovanie vremeni lavinoobrazovaniia v raionakh Baikalo-Amurskoi magistrali].
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Avalanche forecasting, Snow cover distribution, Snow cover stability, Avalanche formation, Snowdrifts, Baykal Amur railroad.

36-3872
Long range forecasting of glacial mudflows in Tien Shan. [Dolgosrochnoe prognozirovanie gliatsial'nykh selei Tian'-Shania].
Kubrushko, S.S., et al. *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1982, Vol.43, p.60-62. In Russian with English summary. 3 refs.
Shatravin, V.I.
Alpine landscapes, Glacial hydrology, Slope processes, Mudflows.

36-3873
Forecasting glacial mudflows in Zailiyskiy Alatau. [Gliatsial'nye seli Zailiiskogo Alatau i puti ikh prognoza].
Tokmagambetov, G.A., et al. *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1982, Vol.43, p.63-68. In Russian with English summary. 4 refs.
Sudakov, P.A., Plekhanov, P.A.
Alpine landscapes, Mountain glaciers, Glacial hydrology, Mudflows.

36-3874
Regime of the Kayarta glacier—an active source of mudflows in Central Caucasus. [Rezhim lednika Kaiarty na Tsentral'nom Kavkaze aktivnogo selevogo ochaga].
Zolotarev, E.A., et al. *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1982, Vol.43, p.69-75. In Russian with English summary. 3 refs.
Popovnin, V.V., Seinova, I.B.
Alpine landscapes, Mountain glaciers, Glacial hydrology, Mudflows.

36-3875
Protecting high voltage and traction substations by artificial melting of snow. [Metod iskusstvennogo snegotaiania v sisteme mer snegoborot'by na tiagovykh i vysokovol'tnykh podstantsiiakh].
Al'tshuler, Z.E., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1982, Vol.43, p.76-79. In Russian with English summary. 2 refs.
Electric power, Buildings, Snow loads, Snowdrifts, Snow removal, Artificial melting.

36-3876
Solid precipitation and snow transfer under arctic conditions. [Tverdye osadki i snegoperenos v arkticheskikh usloviiakh].
Briazgin, N.N., et al. *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1982, Vol.43, p.79-85. In Russian with English summary. 4 refs.
Voskresenskii, A.I.
Snowfall, Snowdrifts, Snow accumulation, Polar regions.

36-3877
Mapping snow depth in the southeastern Primor'e. [Kartografirovanie vysoty snezhnogo pokrova iugo-vostoka Primor'ia].
Rosman, A.P., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1982, Vol.43, p.85-92. In Russian with English summary. 12 refs.
Snow surveys, Snow depth, Mapping, Snow cover distribution, Mountains.

36-3878
Hydroacoustic method of mass transfer control at the bottom surface of ice shelves and icebergs. [Gidroakusticheskii metod kontrolia massoobmena na nizhnei poverkhnosti shel'fovykh lednikov i aisbergov].
Zagorodnov, V.S., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1982, Vol.43, p.93-103. In Russian with English summary. 41 refs.
Ice shelves, Ice drills, Ice bottom surface, Ice water interface, Ice accretion, Ice melting, Ice acoustics, Heat transfer, Mass transfer, Antarctica—Ross Ice Shelf.
Special conditions of heat and mass transfer between ice and sea are found at the bottom surfaces of continental glaciers extending into shelf ice, and icebergs. Drilling of wells through the ice permitted direct observations of thermophysical processes at the ice-sea water interface. Hydroacoustic instruments were designed for observing ice accretion and melting at the bottom of icebergs and shelf glaciers. Combinations of such instruments were used in the central part of the Ross glacier for direct measurements and control of ice growth and thawing processes. Such instruments can perform at high hydrostatic pressures and provide high resolution. Two scanning istruments, used on the Ross Ice Shelf in 1978-79, are described in detail.

36-3879
Develping methods for studying structure and properties of glacier ice. [Metodicheskie razrabotki dlia izucheniia struktury i svoistv lednikovogo l'da].
Zagorodnov, V.S., et al. *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1982, Vol.43, p.103-108. In Russian with English summary. 41 refs.
Samoilov, O.IU.
Glacier ice, Ice coring drills, Drill core analysis, Thin sections.

36-3880
Mathematical and numerical modeling of glacial processes. [Matematicheskoe i chislennoe modelirovanie lednikovykh protsessov].
Krass, M.S., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1982, Vol.43, p.108-113. In Russian with English summary. 13 refs.
Glacier ice, Mathematical models, Computer programs.

36-3881
Computer calculation of some characteristics of melting and its thermal sources. [Raschety nekotorykh kharakteristik taianiia i ego teplovykh resursov s pomoshch'iu EVM].
Barbash, V.R., et al. *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1982, Vol.43, p.114-119. In Russian with English summary. 5 refs.
Bocharova, N.G., Davidovich, N.V., Krenke, A.N.
Glacier surfaces, Glacier ablation, Air temperature, Mathematical models, Antarctica—Mirnyy Station.
Computer programming of standard glaciological computations is illustrated by several examples including Antarctica. Data

obtained at the Mirnyy Station is used in plotting a curve of the dependence of summary ablation of glacier surfaces on the mean summer air temperature, using the Khodakov-Krenke empirical formula. Better approximation of the formula is obtained by varying several parameters according to the gradient lowering method.

36-3882
Studying pollen morphology of Spitsbergen plants for paleoglaciologic purposes. [Primenenie palinomorfologicheskikh issledovanii rastenii Shpitsbergena dlia tselei paleogliatsiologii].
Surova, T.G., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1982, Vol.43, p.119-124, In Russian with English summary. 6 refs.
Paleoclimatology, Glaciology, Paleobotany, Pollen, Paleoecology.

36-3883
Thermal mechanism of secondary layering processes in mountain glaciers. [Teplovoi mekhanizm obrazovaniia vtorichnoi sloistosti v gornykh lednikakh].
Mazo, V.L., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1982, Vol.43, p.125-128, In Russian with English summary. 9 refs.
Mountain glaciers. Glacier ice, Ice structure, Layers, Ice temperature, Thermal regime, Analysis (mathematics).

36-3884
Glaciological observations in Mongolia in April 1981. [Gliatsiologicheskie nabliudeniia v Mongol'skoi Narodnoi Respublike v aprele 1981 g.].
Khodakov, V.G., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1982, Vol.43, p.129-131, In Russian with English summary. 2 refs.
Mountain glaciers, Glacier surveys, Naleds, Spaceborne photography, Snow cover distribution.

36-3885
Using jet sprinklers in experiments with artificial accretion of ice. [Eksperimenty po fakel'nomu namorazhivaniiu l'da].
Gordeichik, A.V., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1982, Vol.43, p.131-135, In Russian with English summary. 5 refs.
Sosnovskii, A.V.
Ice (construction material), Ice dams, Ice accretion, Hydraulic jets.

36-3886
Naleds in the Baksan Valley, Central Caucasus. [Naledi v Baksanskoi doline na Tsentral'nom Kavkaze].
Kirpichenkov, S.IA., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1982, Vol.43, p.135-139, In Russian with English summary. 2 refs.
Seinova, I.B.
River basins, Valleys, Naleds, Ice growth, Alimentation.

36-3887
Possible mechanism of inclined ice wedge formation in the Edoma deposits of northern Yakutia. [O vozmozhnom mekhanizme formirovaniia naklonnykh ledianykh zhil v edomnoi tolshche Severnoi IAkutii].
Bozhinskii, A.N., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1982, Vol.43, p.139-143, In Russian with English summary. 8 refs.
Konishchev, V.N.
Loess, Clay soils, Frozen fines, Permafrost structure, Ice wedges.

36-3888
Moscow glaciation in southern Timan. [O kharaktere moskovskogo oledeneniia na IUzhnom Timane].
Ostanin, V.E., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1982, Vol.43, p.143-146, In Russian with English summary. 2 refs.
Glacial deposits, Moraines, Aerial surveys, Photointerpretation.

36-3889
Chemical composition and microelement migration in the Marukh glacier, Caucasus. [Khimicheskii sostav i migratsiia mikroelementov v lednike Marukh na Kavkaze].
Korkina, N.M., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1982, Vol.43, p.146-153, In Russian with English summary. 15 refs.
Filitsiian, E.S.
Mountain glaciers, Glacier ice, Ice composition, Chemical composition, Microelement content.

36-3890
Chemical studies of snow and ice of the Dzhankuat glacier, Caucasus. [Rezul'taty khimicheskogo issledovaniia snega i l'da lednika Dzhankuat na Kavkaze].
Evseev, A.V., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1982, Vol.43, p.153-156, In Russian with English summary. 4 refs.
Boiarskaia, T.D., Sukhova, T.G.
Mountain glaciers, Glacier ice, Ice composition, Snow composition, Impurities.

36-3891
Recent spore-pollen spectra of glaciated areas of Spitsbergen. [Subretsentnye sporovo-pyl'tsevye spektry lednikovykh raionov Shpitsbergena].
Surova, T.G., *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1982, Vol.43, p.157-160, In Russian with English summary. 10 refs.
Paleoclimatology, Arctic landscapes, Glaciology, Plant ecology, Pollen, Paleoecology.

36-3892
Annotated list of Soviet publications on glaciology (1979). [Annotirovannyi spisok sovetskoi literatury po gliatsiologii za 1979 god].
Kotliakov, V.M., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1982, Vol.43, p.161-229, In Russian. 585 refs.
Chernovaia, L.P.
Bibliographies, Glaciology.
This list contains Soviet publications on glaciology, published in Russian (or having summaries in Russian) in periodicals, proceedings and transactions of conferences for 1979. It is the continuation of similar bibliographies for 1956-1978. In addition to literature for 1979 the list comprises some publications of previous years omitted in earlier bibliographies. The annotated papers are organized in the following sections: Organization of studies, scientific meetings, conferences (1-26), Methods of studies (27-61), General problems of glaciology (62-104), Physics and chemistry of ice (105-129), Sea ice (130-204), River and lake ice (205-247), Underground ice and aufeis (248-282), Paleoglaciology (283-328), The Antarctic and the Arctic (329-364), The Caucasus (365-373), Central Asia and Kazakhstan (374-422), Siberia and Soviet Far East (423-436), Snow avalanches and glacial mudflows (437-502), Snow cover, hail, hoar frost and glaze (503-561), Seasonal snow cover outside the areas of the present-day glaciers (562-585), Name index. (Auth.)

36-3893
Symposium on the antarctic climate. [Simpozium po klimatu Antarktidy].
Aver'ianov, V.G., et al, *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia*, 1982, Vol.43, p.229-230, In Russian.
Briazgin, N.N., Petrov, L.S.
Climatology, Meetings, Antarctica.
The symposium, dedicated to the 25th anniversary of Soviet studies in Antarctica, was organized by the Arctic and Antarctic Scientific Research Institute together with the Interdepartmental Commission on Antarctic Research, the Academy of Sciences of the USSR, the Commission of Polar Meteorology of the Interdepartmental Geophysical Committee of the Academy of Sciences, USSR, and the Geographic Society of the USSR. Scientists from 24 research organizations presented 80 papers, most on the formation and regime of antarctic snow and ice covers. Some of the authors are mentioned and topics of their papers briefly discussed.

36-3894
Icebreakers of Canada and the USA. [Ledokoly SShA i Kanady].
Arikainen, A., et al, *Morskoi flot*, 1982, No.6, p.56-59, In Russian.
Chubakov, K.
Ice navigation, Icebreakers.

36-3895
Weakening frozen rocks with superhigh frequency fields. [Oslovy razuprochneniia merzlykh porod SVCh-poliami].
Misnik, IU.M., Leningrad. Universitet, 1982, 210p., In Russian with English table of contents enclosed. 101 refs.
Frozen rocks, Electric fields, Electromagnetic properties, Frozen fines, Excavation, Equipment, Electric heating.

36-3896
New evidence for multiglaciation in the high mountains of Japan. 1. New observations in Hakuba (Shirouma)-dake.
Schlüchter, C., et al, *Nihon Gakushiin. Proceedings. Series B*, Oct. 1981, 57(8), p.296-299, 2 refs.
Heuberger, H., Horie, S.
Mountain glaciers, Alpine glaciation, Glacial geology, Geomorphology, Paleoclimatology, Japan—Hakuba-dake Mountain.

36-3897
New evidence for multiglaciation in the high mountains of Japan. 2. New observations in Tateyama.
Schlüchter, C., et al, *Nihon Gakushiin. Proceedings. Series B*, Oct. 1981, 57(8), p.300-303, 3 refs.
Heuberger, H., Horie, S.
Alpine glaciation, Mountain glaciers, Glacial geology, Geomorphology, Paleoclimatology, Japan—Tateyama Mountain.

36-3898
Formation of ice crystals and dissipation of supercooled fog by artificial nucleation, and variations of crystal habit at early growth stages.
Kumai, M., *Journal of applied meteorology*, Apr. 1982, 21(4), MP 1539, p.579-587, 14 refs.
Fog dispersal, Ice crystal nuclei, Artificial nucleation, Supercooled fog, Microstructure, Electron microscopy, Plates, Ice formation, Water vapor, Temperature effects.
The early stages of ice crystal formation in supercooled fogs were studied in detail by electron microscopy, and ice nucleation experiments using liquid propane seeding were conducted in a thermostatically controlled coldroom. Ice crystals, formed by rapid cooling created by the evaporation of liquid propane from a fine nozzle at temperatures from -0.1 to -40C, were collected and replicated on filmed grids for electron microscope examinations. Most of the ice crystals formed immediately after the liquid propane seedings were spherical (although approx. 20% were hexagonal) with diameters ranging from 0.3 to 3 micrometer and with a mean diameter of 1.5 micrometer. Electron microscopy revealed a grain boundary in some of the ice crystals.

36-3899
Physical scale modelling of electrothermic thawing of permafrost for alleviation of frost heave problems in chilled gas pipelines.
Vermeulen, F.E., et al, *Journal of Canadian petroleum technology*, July-Sep. 1981, 20(3), p.102-111, 5 refs.
Chute, F.S., Cervenan, M.R.
Artificial thawing, Permafrost thermal properties, Permafrost beneath structures, Gas pipelines, Electric heating, Frost heave, Ground thawing, Models.

36-3900
Variability of the annual maximum ice extent of the Baltic Sea.
Alenius, P., et al, *Archiv für Meteorologie, Geophysik und Bioklimatologie. Ser. B*, 1981, Vol. 29, p.393-398, With German summary. 18 refs.
Makkonen, L.
Sea ice distribution, Ice conditions, Statistical analysis, Periodic variations, Baltic Sea.

36-3901
Study of the de-icing properties of the ASDE-3 rotodome.
Goulding, M.K., *U.S. Federal Aviation Administration. Report*, Apr. 1982, DOT-FAA-RD-81-112, c75p., 29 refs.
Antennas, Aircraft icing, Ice prevention, Ice detection, Thermal analysis, Ice adhesion, Walls, Forecasting, Electric heating, Equipment.

36-3902
Temperature and salinity cycles at the Marine Sciences Research Laboratory, Logy Bay, Newfoundland.
Steele, D.H., *Memorial University of Newfoundland. Marine Sciences Research Laboratory. Technical report*, July 1974, No.12, 21p., 12 refs.
Sea water, Salinity, Water temperature, Icebergs, Surface temperature, Drift, Seasonal variations, Canada—Newfoundland.

36-3903
Cold weather masonry construction: contemporary bearing wall buildings. *Brick Institute of America, McLean, Va. Technical notes on brick construction.* July 1981, No.1C, 5p., Originally published in Oct. 1968
Cold weather construction, Masonry, Walls, Buildings, Bearing strength.

36-3904
***Physics of the mechanically-driven* atmospheric boundary layer as an example of air-sea ice interactions.**
Joffre, S.M., *Helsinki University. Department of Meteorology. Report*, 1981, No.20, 75p., Refs. p.73-75
Ice air interface, Sea ice, Ice sheets, Boundary layer, Mechanical properties, Wind factors, Temperature distribution, Pressure ridges, Heat transfer, Flow rate.

36-3905
Theoretical and empirical study of the atmospheric boundary layer dynamics over a frozen sea.
Joffre, S.M., *Helsinki University. Department of Meteorology. Report*, 1981, No.21, 7p., 5 refs.
Sea ice, Ice sheets, Ice air interface, Boundary layer, Dynamic properties, Wind factors, Heat flux.

36-3906
Geographic problems in the redistribution of Siberian water resources. [Geograficheskie problemy pri pereraspredelenii vodnykh resursov Sibiri].
Saks, V.N., ed, Novosibirsk, Nauka, 1982, *200p., In* Russian. For selected papers see 36-3907 through 36-3912. Refs. passim.
River basins, River diversion, Aerial surveys, Spaceborne photography, Water reserves, Snow water equivalent, Mapping, Engineering geology.

36-3907
Using satellite data in studying variations in natural conditions of western Siberia. [Ispol'zovanie sputnikovoi informatsii dlia izucheniia dinamiki prirodnykh uslovii Zapadnoi Sibiri].
Beirom, S.G., et al, Geograficheskie problemy pri pereraspredelenii vodnykh resursov Sibiri (Geographic problems in the redistribution of Siberian water resources) edited by V.N. Saks, Novosibirsk, Nauka, 1982, p.11-15, In Russian. 7 refs.
Vostriakova, N.V.
Spaceborne photography, Water reserves, River basins, Snow cover distribution, Snow water equivalent, Ice cover, Landscape types, Mapping.

36-3908
Mineralization of meltwaters, snow and river waters in western Siberia in spring. [Osobennosti formirovaniia mineralizatsii talykh, snegovykh i rechnykh vod v Zapadnoi Sibiri vesnoi].
Panin, P.S., et al, Geograficheskie problemy pri pereraspredelenii vodnykh resursov, Novosibirsk, Nauka, 1982, p.40-47, In Russian. 6 refs.
Kazantsev, V.A.
Snow water equivalent, Meltwater, Minerals, Landscape types, Taiga, Cryogenic soils, Snow accumulation, Snow composition.

36-3909
Engineering-geological regionalization of the Novosibirsk area. [K voprosu inzhenerno-geologicheskogo raionirovaniia Novosibirskoi oblasti].
Chernousov, S.I., et al, *Geograficheskie problemy* pri pereraspredelenii vodnykh resursov Sibiri (Geographic problems in the redistribution of Siberian water resources) edited by V.N. Saks, Novosibirsk, Nauka, 1982, p.47-56, In Russian. 13 refs.
Shevchenko, A.A.
Mapping, Engineering geology, Landscape types, Geocryology, Permafrost hydrology, Cryogenic soils.

36-3910
Inflow of salts with atmospheric precipitation and their distribution by meltwaters in Baraba. [Postuplenie solei s atmosfernymi osadkami i ikh pereraspredelenie snegotalymi vodami v Barabe].
Melesk, Kh.Kh., Geograficheskie problemy pri pereraspredelenii vodnykh resursov Sibiri (Geographic problems in the redistribution of Siberian water resources) edited by V.N. Saks, Novosibirsk, Nauka, 1982, p.90-97, In Russian. 4 refs.
Precipitation (meteorology), Snow composition, Salinity, Meltwater, Water chemistry.

36-3911
Thermal regime of the Krasnoyarsk water reservoir. [Termicheskii rezhim Krasnoiarskogo vodokhranilishcha].
Kosmakov, I.V., Geograficheskie problemy pri pereraspredelenii vodnykh resursov Sibiri (Geographic problems in the redistribution of Siberian Water resources) edited by V.N. Saks, Novosibirsk, Nauka, 1982, p.159-164, In Russian. 2 refs.
Lake water, Water temperature, Icebound lakes, Heat transfer, Seasonal variations.

36-3912
Characteristics of soils in the northern part of the Ob'-Irtysh interfluve. [K kharakteristike pochv severnoi chasti Ob'-Irtyshskogo mezhdurech'ia].
Ovchinnikov, S.M., et al, *Geograficheskie problemy* pri pereraspredelenii vodnykh resursov Sibiri (Geographic problems in the redistribution of Siberian water resources) edited by V.N. Saks, Novosibirsk, Nauka, 1982, p.178-186, In Russian. 7 refs.
Kul'shin, V.A.
River basins, Flood plains, Cryogenic soils, Podsol, Moraines, Lacustrine deposits, Swamps, Frost penetration, Sporadic permafrost, Soil formation, Taiga.

36-3913
Attenuation and scattering of infrared radiation by 8-12 micron ice flakes and circular cylinders. [Oslablenie i rasseianie infrakrasnogo izlucheniia 8-12 mkm ledianymi plastinkami i krugovymi tsilindrami].
Petrushin, A.G., *Leningrad. Institut eksperimental'noi meteorologii. Trudy*, 1981, Vol.26, p.107-113, In Russian. 15 refs.
Ice physics, Ice crystals, Infrared radiation, Attenuation, Scattering.

36-3914
Possibility of determining sea ice age according to radio-frequency emissions. [K vozmozhnosti opredeleniia vozrastnykh kharakteristik morskogo l'da po radioizlucheniiu].
Zhukov, A.V., et al, *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy*, 1981, Vol.448, p.94-99, In Russian. 4 refs.
Shul'gina, E.M.
Ice physics, Sea ice, Microwaves, Ice dating, Radio waves, Telemetering equipment.

36-3915
Pipeline for the Arctic.
Dixon, C., *Geos*, Spring 1976, p.13-15.
Gas pipelines, Pipes (tubes), Steels, Low temperature tests, Microstructure, Brittleness, Aluminum, Cold weather performance.

36-3916
Building islands in the Beaufort Sea.
Brown, A.D., *Geos*, Spring 1976, p.19-20.
Artificial islands, Offshore landforms, Cold weather construction, Offshore drilling, Beaufort Sea.

36-3917
Features of Peyto Glacier. [Traits du glacier Peyto].
Tremblay, J.D., *Geos*, Fall 1976, p.8-9, In French.
Glacier flow, Glacial erosion, Mountain glaciers, Climatic factors.

36-3918
Measuring Arctic ice—a joint experiment.
Hobson, G., *Geos*, Fall 1976, p.15-17
Ice surveys, Research projects, Ice pressure, Structures, Measurement, Polar regions.

36-3919
Surveying in periglacial regions. [Pour maitriser le pergélisol].
Veillette, J., et al, *Geos*, Fall 1979, p.15-17, In French
Nixon, M.
Permafrost, Drilling, Geological surveys, Cores, Equipment.

36-3920
Avalanche deflection wall. [Muro deviatore di valanghe].
Grava, L., Esperienze di difesa del suolo e di sistemazione idraulico-forestale nel veneto (Experience in soil protection and development of a hydraulic and forestry system for Venezia. Edited by M. Crespi and S. Lacedelli, Padova, Italy, Regione del Veneto, Dipartimento Foreste, 1982, p.34-37, In Italian
Avalanche formation, Avalanche tracks, Walls, Protection, Deflection, Italy.

36-3921
Geometry and permittivity of snow at high frequencies.
Colbeck, S.C., *Journal of applied physics*, June 1982, 53(6), MP 1545, p.4495-4500, 37 refs.
Snow electrical properties, Snow density, Porosity, Snow crystal structure, Snow physics, Temperature gradients, Liquid phases, Wet snow, Dielectric properties.
The geometry and porosity of dry snow varies widely depending on the history of conditions. The permittivity of dry snow increases with increasing ice content but is not greatly affected by the shapes of the ice particles. In wet snow the permittivity increases with liquid content and the geometry is very important. However, the liquidlike layer has little effect on permittivity. The permittivity is described using Polder and van Santen's mixing formulae and approximations of the geometries at high and low liquid contents. It is shown that the common assumption of liquid shells over ice spheres is both physically incorrect and leads to large errors.

36-3922
Emission from a Rayleigh layer with irregular boundaries.
Fung, A.K., et al, *Journal of quantitative spectroscopy and radiative transfer*, Nov. 1981, 26(5), p.397-409, 18 refs.
Eom, H.J.
Snow electrical properties, Boundary layer, Scattering, Microwaves, Analysis (mathematics), Electromagnetic properties.

36-3923
Does the concept of the ice-like structure of water agree with its radial distribution function.
Korsunskii, V.I., et al, *Journal of structural chemistry*, Mar. 1981, 21(5), p.624-629, Translated from Zhurnal strukturnoi khimii, Sep.-Oct. 1980, 21(5), p.76-81, 29 refs.
Naberukhin, Iu. I.
Hydrogen bonds, Water, Ice crystal structure, Molecular structure.

36-3924
Moisture detection in roofs with cellular plastic insulation—West Point, New York, and Manchester, New Hampshire.
Korhonen, C.J., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, May 1982, SR 82-07, 22p., ADA-117 872, 6 refs.
Coutermarsh, B.A.
Moisture detection, Roofs, Cellular plastics, Thermal insulation, Thermal regime, Infrared photography.
New roofs with cellular plastic insulation and a bituminous built-up membrane were surveyed with a hand-held infrared camera to determine its effectiveness in detecting damp and wet insulation. Wet areas were found and defined with the help of 2-in.-diam. core samples. The results of the tests showed the infrared camera can be useful and effective as an inspection tool within the time constraints of the typical one-year warranty period. The tests also underlined the importance of core samples for verification.

36-3925
Snowpack profile analysis using extracted thin sections.
Harrison, W.L., *U.S. Army Cold Regions Research and Engineering Laboratory*, May 1982, SR 82-11, 15p., ADA-117 839, 5 refs.
Snow survey tools, Profiles, Equipment.
A method is presented for obtaining snow profiles for analysis. The method and required equipment replace former methods such as the "roaring bonfire" technique and the use of dyes.

36-3926
Aggregate clast form characteristics of deposits near the margins of four glaciers in the Jotunheimen Massif, Norway.
Ballantyne, C.K., *Norsk geografisk tidsskrift*, 1982, 36(2), p.105-114, 27 refs.
Glacial deposits, Periglacial processes, Geomorphology, Aggregates, Weathering, Glacier flow.

36-3927
Availability and utilization of resources in tundra ecosystems.
Miller, P.C., ed, *Holarctic ecology*, Apr. 1982, 5(2), p.82-220, Refs. passim.
Workshop on the Availability and Utilization of Resources in Tundra Ecosystems, San Diego, Calif., Oct. 9-12, 1978.
Tundra, Ecosystems, Vegetation, Snow cover effect, Alpine tundra, Plant physiology, Meetings, Evapotranspiration, United States—Alaska.

36-3928
Analysis of freeze-up ice jams on the Peace River near Taylor, British Columbia.
Keenhan, T., et al. *Canadian journal of civil engineering.* June 1982. 9(2), p.176-188. With French summary. 7 refs.
Panu, U.S., Kartha, V.C.
Ice jams, Freezeup, River ice, Ice cover thickness, Dams, Water level, Air temperature, Models.

36-3929
Resistance coefficients from velocity profiles in ice-covered shallow streams.
Calkins, D.J., et al. *Canadian journal of civil engineering.* June 1982. 9(2), MP 1540, p.236-247. With French summary. 7 refs.
Deck, D.S., Martinson, C.R.
Ice cover strength, Stream flow, Velocity, Shear stress, Analysis (mathematics).

36-3930
Surges from ice jam releases: a case study.
Beltaos, S., et al. *Canadian journal of civil engineering.* June 1982. 9(2), p.276-284. 11 refs.
Krishnappan, B.G.
Ice jams, Ice mechanics, River flow, Ice breakup, Velocity.

36-3931
Countermeasures against snow for the Tohoku Shinkansen.
Emoto, Y., *Japanese railway engineering.* 1981. 21(1), p.21-23
Snow removal, Railroads, Ice control, Heating, Snow melting, Snow accumulation, Countermeasures.

36-3932
Dewatering sludges by a freezing-melting process.
Terada, T., *Japan. Patent Office. Patent.* June 26, 1979. No.79684, p.537-540. In Japanese.
Sludges, Freeze thaw cycles, Waste treatment, Equipment, Dewatering.

36-3933
Unit operations for treatment of hazardous industrial wastes—suspension freezing.
Tratnyek, J.P., *Pollution technology review.* 1978. Vol.47, p.581-589, 13 refs.
Sludges, Waste treatment, Freeze thaw cycles, Solids, Environmental impact, Economic analysis, Dewatering.

36-3934
Progress in radar snow research.
Stiles, W.H., et al, *Kansas. University. Space Technology Center. Remote Sensing Laboratory. Technical report.* Feb. 1981. RSL TR 410-1, 167p., N82-12510, NASA CR 166709. Refs. p.86-87.
Ulaby, F.T., Fung, A.K., Aslam, A.
Remote sensing, Snow cover effect, Snowdrifts, Microwaves, Radar echoes, Snow water equivalent, Water content, Diurnal variations, Surface roughness.

36-3935
Roads and avalanches. [Strade e valanghe].
Jaccard, C.F., *Neve international.* 1982. 24(2), p.21-23. In Italian with French, German and English summaries.
Avalanche formation, Countermeasures, Roads, Snow fences, Avalanche deposits.

36-3936
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Salting, Chemical ice prevention, Damage, Vegetation, Road icing, Environmental impact.

36-3937
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Glacier flow, Glacier oscillation, Strains, Glacier surfaces, Surface migration, China—Batura Glacier.

36-3938
Potholes: the problem and solutions.
Eaton, R.A., *Military engineer.* Apr. 1982. 74(479), MP 1504, p.160-162.
Pavements, Damage, Road maintenance, Freeze thaw cycles, Drainage, Frost heave, Fatigue (materials), Precipitation (meteorology), Cracks, Potholes.

36-3939
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Mazzacurati, V., et al. *Molecular physics.* Dec. 10, 1981. 44(5), p.1163-1175. 26 refs.
Ice crystal structure, Ice optics, Spectra, Light scattering, Ice acoustics, Models.

36-3940
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Glaciology, Ecology, Oceanography, Meteorology, Research projects, Polar regions.

36-3941
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Extraterrestrial ice, Ice water interface, Heat balance, Phase transformations, Ice crystal structure, Temperature effects.

36-3942
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Ice optics, Spectra, Ice crystal structure, Molecular structure, Temperature effects, Ice volume, Reflectivity, Radio waves, Analysis (mathematics).

36-3943
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Lehtinen, H., et al, *Antonie van Leeuwenhoek.* Dec. 1981. 47(5), p.405-410. 14 refs.
Mäntsälä, P.
Tundra, Soil microbiology, Nutrient cycle, Finland.

36-3944
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Supercooled clouds, Ice crystal growth, Ice crystal structure, Ice crystal nuclei, Cloud droplets, Air temperature, Water vapor.

36-3945
Study on ice faulting and icequake activity in the Lake Suwa; 3) Icequake activity and thermal stresses in ice plate.
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Lake ice, Icequakes, Thermal stresses, Ice elasticity, Air temperature, Ice temperature, Compressive properties, Tensile properties, Ice cracks, Experimentation.

36-3946
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Koerner, R.M., et al, *Nature.* Jan. 14-20, 1982. 295(5845), p.137-140, 16 refs.
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Snow composition, Pollution, Chemical properties, Snow accumulation, Seasonal variations, Ice composition, Polar regions.

36-3947
Studies of ice conditions in Arctic seas and methods of calculation and forecasting. [Issledovanie ledovykh uslovii arkticheskikh morei i metody rascheta i prognoza].
Kuznetsov, I.M., ed. *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy.* 1981. Vol.384, 139p., In Russian. For individual papers see 36-3948 through 36-3965. Refs. passim
Smetannikova, A.V., ed.
Ice navigation, Sea ice, Pollution, Ice cover strength, Compressive properties, Pressure ridges, Wind factors, Icebreakers, Ice loads, Ice surveys, Ice forecasting, Ice deterioration.

36-3948
Allowing for ice diffusion processes in numerical models of ice cover redistribution. [Uchet protsessa diffuzii l'da v chislennoi modeli pereraspredeleniia ledianogo pokrova].
Appel', I.L., et al. *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy.* 1981. Vol.384, p.4-11, In Russian. 17 refs.
Gudkovich, Z.M.
Sea ice distribution, Turbulent diffusion, Pack ice, Ice cover thickness, Mathematical models, Drift.

36-3949
Numerical calculation of ice distribution in the western Soviet Arctic section in summer. [Rezul'taty chislennykh raschetov raspredeleniia l'da v zapadnom rajone sovetskoi Arktiki v letnii period].
Appel', I.L., et al. *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy.* 1981. Vol.384, p.12-20. In Russian. 3 refs.
Gudkovich, Z.M.
Ice navigation, Ice conditions, Ice cover thickness, Models.

36-3950
Development and evaluation of operational calculations and forecasting ice distribution in the Kara Sea. [Opyt razrabotki i otsenki operativnykh raschetov i prognozov raspredeleniia l'da v Karskom more (1977-1978 gg.)].
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Ice navigation, Sea ice distribution, Ice forecasting, Ice cover thickness, Pack ice, Ice conditions.

36-3951
Method of short range computer forecasting of ice cover compression. [Metodika kratkosrochnogo chislennogo prognoza szhatiia l'dov].
Voevodin, V.A., et al, *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy.* 1981. Vol.384, p.28-33. In Russian. 3 refs.
Kolesov, S.A., Kulakov, I.IU., Timokhov, L.A.
Sea ice distribution, Drift, Ice cover thickness, Compressive properties, Pack ice, Ice conditions, Ice forecasting, Computerized simulation.

36-3952
Computer forecasting of ice compression in the southwestern Kara Sea. [Opyt chislennogo prognozirovaniia szhatiia l'dov v iugo-zapadnoi chasti Karskogo moria].
Kolesov, S.A., et al. *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy.* 1981. Vol.384, p.34-37. In Russian. 2 refs.
Pavlova, G.A.
Ice navigation, Sea ice, Drift, Pack ice, Ice cover thickness, Computerized simulation.

36-3953
Automatic system "Pegas" for long range forecasting of ice conditions. [Ispol'zovanie avtomatizirovannoi sistemy "Pegas" dlia dolgosrochnykh ledovykh prognozov].
Kovalev, E.G., *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy.* 1981. Vol.384, p.38-44. In Russian. 2 refs.
Ice navigation, Ice forecasting, Sea ice, Ice conditions, Computerized simulation.

36-3954
Presentation of ice edge position by means of splitting into natural orthogonal components (the Davis Strait). [Predstavlenie polozheniia kromki l'da posredstvom razlozheniia na estestvennye ortogonal'nye sostavliaiushchie (na primere Devisova proliva)].
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Ice navigation, Ice conditions, Ice edge.

36-3955
Using statistical analyses for evaluating the depnendence of ice conditions in the Kara Sea on river drainage. [Primenenie statisticheskogo analiza dlia otsenki zavisimosti ledovykh uslovii Karskogo moria ot rechnogo stoka].
Gudkovich, Z.M., et al, *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy.* 1981. Vol.384, p.53-60. In Russian. 8 refs.
Karklin, V.P., Romantsova, I.F., Tettel'baum, K.A.
Ice navigation, Sea ice, Ice forecasting, Statistical analysis.

36-3956
Evaluating the balance of sea ice volume in the northern hemisphere. [Otsenka balansa ob"ema morskogo l'da v severnom polusharii Zemli].
Lebedev, A.A., et al, *Leningrad. Arkticheskii i antarkticheskii nauchno-issledovatel'skii institut. Trudy.* 1981. Vol.384, p.61-77. In Russian. 48 refs.
Uraiov, N.N.
Sea ice, Ice volume, Mass balance, Seasonal variations.

36-3957

Evaluation of annual ice exchange cycle between the Arctic basin and the seas of northern Atlantic. [Rezul'taty otsenki godovogo tsikla ledoobmena Arkticheskogo basseina s moriami Severnoi Atlantiki].

Lebedev, A.A., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.384, p.78-89, In Russian. 19 refs. Uralov, N.S.

Ice conditions, Ocean currents, Water transport, Sea ice, Drift, Ice forecasting, Arctic Ocean.

36-3958

Evaluating the phase transformation heat of sea ice in the northern hemisphere. [Rezul'taty otsenki tepla fazovykh prevrashchenii morskogo l'da v severnom polusharii Zemli].

Lebedev, A.A., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.384, p.90-98, In Russian. 8 refs. Uralov, N.S.

Sea ice, Ice physics, Phase transformations, Ice water interface, Heat transfer.

36-3959

Twenty-two year cycle of solar activity and air temperature in the northern hemisphere. [Dvadtsatidvukhletnii tsikl solnechnoi aktivnosti i temperatura vozdukha v severnom polusharii Zemli].

Sleptsov-Shevlevich, B.A., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.384, p.99-104, In Russian. 8 refs.

Climatic changes, Solar activity, Air temperature, Records (extremes), Meteorological charts.

36-3960

Wind effect on ice cover compression in Arctic seas. [O vliianii vetra na szhatie l'dov v arkticheskikh moriakh].

Voevodin, V.A., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.384, p.105-111, In Russian. 16 refs. Gudkovich, Z.M.

Ice conditions, Ice cover thickness, Drift, Wind factors, Arctic Ocean.

36-3961

Snow cover effect on fast ice melting in Arctic seas. [O vliianii snezhnogo pokrova na taianie pripainogo l'da v arkticheskikh moriakh].

Kuznetsov, I.M., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.384, p.112-116, In Russian. 8 refs.

Ice conditions, Fast ice, Ice melting, Snow cover effect, Arctic Ocean.

36-3962

Changes in the quantity of ice as a result of thawing. [Ob izmenenii kolichestva l'dov v rezul'tate taianiia].

Kuznetsov, I.M., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.384, p.117-122, In Russian. 20 refs.

Sea ice, Ice melting, Ice navigation, Ice cover thickness, Ice deterioration.

36-3963

Deterioration of sea ice. [K voprosu o razrushennosti morskikh l'dov].

Kuznetsov, I.M., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.384, p.123-129, In Russian. 11 refs.

Sea ice, Ice surveys, Ice deterioration, Ice cover strength, Ice temperature.

36-3964

Formation of polluted ice in Arctic seas. [Obrazovanie zagriaznennykh l'dov v arkticheskikh moriakh].

Komov, N.I., et al, *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.384, p.130-134, In Russian.

Spichkin, V.A.

Sea ice, Pollution, Icebound rivers, Water pollution, Runoff, River ice, Impurities.

36-3965

Effect of ice cover compression on ice navigation. [K voprosu o vliianii szhatiia l'dov na sudokhodstvo].

Voevodin, V.A., *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1981, Vol.384, p.135-138, In Russian. 4 refs.

Ice navigation, Sea ice, Ice conditions, Icebreakers, Ice cover thickness, Pressure ridges, Compressive properties, Ice loads.

36-3966

Tectonic studies in the Scotia Arc region and West Antarctica.

Dalziel, I.W.D., *Antarctic journal of the United States*, 1981, 16(5), p.7-8, 1 ref.

Radio echo soundings, Subglacial observations, Ice sheets, Glacier ice, Antarctica—West Antarctica.

Two major tectonic field studies carried out in the Scotia Arc region and in West Antarctica during the 1980-81 austral summer are described. The first involved a detailed structural traverse in the Ultima Esperanza district of the Andean Cordillera from the outcrop of the Upper Jurassic Tobifera Formation through the folded and thrusted Lower and Upper Cretaceous strata of the foreland fold and thrust belt to the outcrop of the Tertiary. The structures in the area are briefly described. The second was a cooperative Lamont-Doherty-British Antarctic Survey geophysical study involving radar ice-echo sounding by a BAS "Twin Otter" aircraft. The main objective was to improve knowledge of the morphology and interrelationships of the obvious continental blocks of the Antarctic Peninsula, Ellsworth Mountains, and Thurston I. areas. Profiles were also obtained across major glaciers and along gravity traverses. The survey delimited the catchment area of Pine Island Glacier and gave valuable information on the nature of the sub-ice surface as well as the sub-ice topography itself.

36-3967

McMurdo Sound upper crustal geophysics.

Wilson, D.D., et al, *Antarctic journal of the United States*, 1981, 16(5), p.31-33, 3 refs.

McGinnis, L.D., Burdelik, W.J., Fasnacht, T.L.

Sea ice, Subsea permafrost, Seismic refraction, Antarctica—McMurdo Sound.

This article describes field operations, instrumentation, and preliminary interpretations of gravity and seismic measurements made from sea ice 2.8 m thick during Nov. and Dec. 1980 along an east-west profile crossing McMurdo Sound. Excellent reflections from sledgehammer blows struck on the sea ice were obtained from the seafloor, due to the high velocities and consequent large acoustic impedance of the seafloor sediments. The large range of seafloor velocities, from 1.81 to 3.06 km/sec, indicates a variety of sediment characteristics, possibly including differential overconsolidation, cementation, or perhaps permafrost. A sub-seafloor refractor having a P-wave velocity averaging 3.25 km/sec probably represents the top of the oldest glaciomarine sequence in the McMurdo Basin. An unusual characteristic of this sequence is the apparent lack of a vertical velocity gradient normally present in clastic sediments. The deepest layer of sediment characterized by average velocities of 4.00 km/sec is interpreted as Beacon sandstone. A geologic cross section based on seismic refractors is illustrated, which is suggestive of a rift-graben structure centered beneath Ross I.

36-3968

Magnetostratigraphy and sedimentology of late Cenozoic glaciogenic deposits, eastern Taylor Valley.

Elston, D.P., et al, *Antarctic journal of the United States*, 1981, 16(5), p.39-41, 4 refs.

Bressler, S.L., Robinson, P.H.

Glacial geology, Antarctica—Taylor Valley.

A joint U.S.-New Zealand stratigraphic, paleomagnetic, and sedimentologic study was undertaken in eastern Taylor Valley to investigate the nature, age, and distribution of deposits underlying a veneer of drift that accumulated during incursion of the Ross Sea ice in late Pleistocene time. The Ross Sea drift appears to consist of two units where it is exposed along Commonwealth Stream. A silty commonly well-sorted fine-grained lower unit about 5-13 m thick is overlain by a coarser, poorly sorted deposit that contains boulder-size detritus and locally is as much as 10 m thick. A relatively thick sand body, informally called the "Coral Ridge sand," underlies Ross Sea drift in the floor of Taylor Valley. The source and age of the sand have not yet been resolved. Except for a 2-m-thick section of reversely polarized sand near the top of hole DVDP-11, all of the ice-cemented sand in cores of DVDP-11 and ETV-12, and in outcrops in Wales and Commonwealth Streams has been found to be normally polarized which suggests a Bruhnes (less than 730,000 yr old) age.

36-3969

Soil development in the Quartermain Range and the Wright Upper Glacier region.

Bockheim, J.G., et al, *Antarctic journal of the United States*, 1981, 16(5), p.41-42, 6 refs.

Wilson, S.C.

Soil science, Weathering.

Field observations are reported on soils examined at three locations in the Quartermain Range—upper Arena Valley, Beacon Valley, and an unnamed cirque north of Tabular Mountain—and on Mount Fleming the Wright Upper Glacie, region. The primary objectives of the study were to use soils as relative-age indicators for studying the behavior of local alpine glaciers and the east antarctic ice sheet, and to determine the nature, distribution, and origin of salts in soil profiles, snow, and ice in the McMurdo Sound area. Surface-boulder weathering features were recorded at 17 sites; 26 soil descriptions were taken; 100 soil samples were collected for analyses of ion chemistry of soil water extracts, particle-size distribution, and clay mineralogy; 12 samples of salt encrustations were obtained for chemical and mineralogical characterization; and samples of snow and glacial ice were collected for chemical analysis. Soil data from the unnamed cirque and Mount Fleming suggest that the elevation of the east antarctic ice sheet has not changed significantly in the upper Taylor and Wright Valleys region in approx the past 7-10 m.y. Soil chronosequences in the upper Arena Valley, Beacon Valley, and on Mount Fleming contain member soils that range in age from 3,100 to possibly 7-10 m.y. Based on analyses of 1,000 soils and salt encrustations to date for water-soluble salts, a regional picture of salt distribution is evolving for the McMurdo Sound region which relates to precipitation patterns.

36-3970

Partial geochemical analysis of the Onyx River.

Green, W.J., et al, *Antarctic journal of the United States*, 1981, 16(5), p.42-45, 10 refs.

Canfield, D.E.

Glacier ice, Ice composition, Antarctica—Onyx River.

As part of a study of the transport, speciation, and fate of biologically important trace metals and nutrients in the Vanda-Onyx system, a number of chemical constituents in the river have been determined under a range of flow conditions. Tables list the concentrations of major ions and silica in the Onyx River, concentrations of nutrients and selected trace elements, and major ions and nutrients determined at various locations along the river and in the ice of Wright Lower Glacier. The waters of the Onyx were found to be slightly basic and generally saturated with dissolved O2. The ionic content of the Onyx is considerably lower than that of average world river water and there is little change in ionic concentration with flow rate change. High concentrations of Cl ion and Fe were noted, while total pH values were low. High nitrate nitrogen values obtained early in the season fell rapidly with time. The probable derivations of various chemical constituents are discussed.

36-3971

Provenance of feldspar in till on Mount Fleming, southern Victoria Land.

Faure, G., et al, *Antarctic journal of the United States*, 1981, 16(5), p.45-46, 4 refs.

Taylor, K.S.

Glacial deposits, Glacial geology, Antarctica—Victoria Land.

Feldspar in till samples from the southeast flank of Mount Fleming have been analyzed for dating by the rubidium-strontium (Rb-Sr) method. The feldspar has a skewed distribution with an abundance peak in the 63- to 125-micron fraction. The ratio of potassium-feldspar to plagioclase of the Mount Fleming till increases with grain size. Feldspar plus quartz concentrates were separated from four size-fractions of till: 1) 500-1,000 micron, 2) 250-500 micron 3) 125-250 micron, and 4) 67-125 micron. Fractions 1 and 2 fit a 400-m.y.-old reference isochron, whereas the finer fractions 3 and 4 plot significantly above it. The oldest date derivable from feldspar fraction 4 is 1,460 m.y. However, this date is being checked. The abundance of quartz grains and sandstone clasts in the till suggests that a large portion of the feldspar in the sand-size fractions of the Mount Fleming till originated from rocks of the Beacon Supergroup, even though the abundance of feldspar in these rocks is generally less than 5%.

36-3972

Geomorphic processes in Victoria Valley.

Miotke, F.-D., *Antarctic journal of the United States*, 1981, 16(5), p.50-52, 3 refs.

Weathering, Sands, Salinity, Antarctica—Victoria Valley.

Geomorphological fieldwork within the dune area at Packard Glacier is discussed. Temperature profiles of dune and slope sand, daily temperature variations in sand and rocks, and sand moisture and salt concentrations in different depths were measured. The temperature of dune sand declines within the upper meter to below -20C. Migration rates of dune crests depend on wind velocity and dryness of the sand. Average wind velocities measured 6 to 8 m/sec. During one month, dune crests migrated from 2 to more than 6 m from east to west. Measurements of ion concentrations within the Packard Glacier River showed little variation along the river course from the glacier snout to the main valley floor, but during low discharge, concentrations nearly doubled.

36-3973

Antarctic search for meteorites, 1980-1981.

Cassidy, W.A., et al, *Antarctic journal of the United States*, 1981, 16(5), p.61-62, 2 refs.

Annexstad, J.O.

Ice sheets, Ablation, Ice sampling, Antarctica—Allan Hills, Antarctica—Reckling Peak.

Meteorites were collected furing the 1980-81 austral summer at the Allan Hills site and the ice-core moraine at 16 km west of Reckling Peak. Recoveries at the latter site were sparse and the majority of specimens were small and concentrated in or near firn areas at the northern edge (i.e., the downwind margin) of the ice patch. The absence of meteorite finds in the Dry Valleys suggests that these valley surfaces are quite young. The terrestrial ages of the Allan Hills meteorites are apparently no greater than about 800,000 yr. Ablation values resulting from remeasurement of the triangulation network for ice movement and ablation at Allan Hills are tabulated. Most ablation values are substantially lower than those for the previous year. Surface ice samples were collected for various measurements, including measurement for C136, a cosmogenic isotope that is assuming importance in determining the terrestrial ages of antarctic meteorites.

36-3974

Glacial geology of Seymour Island.

Elliot, D.H., *Antarctic journal of the United States*, 1981, 16(5), p.66-67, 11 refs.

Glacial geology, Glacial deposits, Seymour Island.

Seymour Island lies southeast of the northern end of the Antarctic Peninsula. The island can be divided into two physiographic provinces: 1) in the northeast a meseta that is the remnant of an erosion surface and is covered by glacial drift, and 2) in the southwest a ridge and valley topography underlain by a homoclinal sequence of Cretaceous sediments and lacking a

cover, or evidence of a former cover, of glacial drift. Pebble counts of clasts in the drift on top of the meseta show a range of rock types that can be matched with the bedrock exposed in the northern Antarctic Peninsula. Large glacial erratics, first noted by Andersson (1906), are scattered over the top of the meseta and on the meseta flanks. The occurrence of these large erratics around the flanks suggests that the northern part of Seymour I. has a glacial history different from the southern part. The composition of the clasts in the glacial drift on the northern part of Seymour I. implies transport by ice from the mainland.

36-3975

Glacial geology in the McMurdo Sound region: 1980-1981.

Denton, G.H., *Antarctic journal of the United States*, 1981, 16(5), p.68-69, 5 refs.

Glacial geology, Ice sheets, Moraines, Antarctica—McMurdo Sound.

Studies of two aspects of antarctic glacial history made in the McMurdo Sound region during the 1980-81 summer field season are discussed. First, a long-term project involving detailed geologic mapping and soil studies of moraines adjacent to blue ice margins in uppermost Taylor and Wright Valleys, as well as on Mount Fleming and elsewhere along the inland mountain flank was nearly completed. Combined with similar mapping in the middle and lower reaches of the valleys, the results indicate that all moraines representing advances of Taylor Glacier within the last 3.9 m.y. approach the present ice surface near the inland margin of the mountains. Also, inland of the McMurdo Sound area the east antarctic ice sheet has not been significantly thicker than it is now since Pliocene time. The second aspect of these studies involved continued mapping of the Quartermain, Asgard, and Olympus Ranges. Two basic imprints of glacier erosion antedate 4.2 m.y. The oldest is a system of fjords and valleys, with associated cirques, in inter-valley mountain blocks. The younger imprint records two episodes of strong overriding ice flow and mountain submergence. The features of the younger imprint correlate with the glacial stratigraphy on the floor of Wright Valley.

36-3976

Ice mass fluctuations in Victoria Land, Antarctica.

Mayewski, P.A., et al, *Antarctic journal of the United States*, 1981, 16(5), p.74-75, 4 refs.

Hassinger, J.M.

Mass balance, Glacial deposits, Glacier oscillation, Rock glaciers, Antarctica—Victoria Land.

Work on this program during the 1980-81 field season included completion of glacio-geomorphic mapping in the Morozumi Range region of northern Victoria Land, implantation of experiments designed to assess the responsiveness of Rennick Glacier and two alpine glaciers, and studies of the relative age and origin of glacio-geomorphic deposits located in the North Fork of Wright Valley and of rock glaciers found throughout the ice-free valleys. Data from 15 sites were used to summarize the weathering of deposits found in the North Fork. A total of 32 seismic refraction profiles and 52 resistivity profiles were used to characterize the subsurface structure of the rock glaciers in the ice-free valleys, as well as the glacial deposits found in the North Fork region. The dynamics of nine rock glaciers have been examined in detail by means of velocity/strain networks and micromovement studies, and environmental variables associated with rock glacier sites have been investigated.

36-3977

Analysis of air bubble composition, crystal size, and pore shape in firn from South Pole Station, 1980-1981.

Stauffer, B., *Antarctic journal of the United States*, 1981, 16(5), p.76-78, 1 ref.

Ice composition, Gas inclusions, Firn, Antarctica—Amundsen-Scott Station.

In connection with the Polar Ice Coring Office (PICO) core-drilling project at South Pole Station, the following work was undertaken: 1) sample collection and analysis of air that fills the pore space in firn; 2) investigation of variations in the size of ice crystals with depth; and 3) observations of the evolution of the shape of pores in firn as depth increases. The experiments and some preliminary results are described.

36-3978

Ice core drilling, 1980-1981.

Kuivinen, K.C., *Antarctic journal of the United States*, 1981, 16(5), p.78, 1 ref.

Drilling, Ice coring drills, Ice cores, Antarctica—Amundsen-Scott Station.

The Polar Ice Coring Office (PICO) conducted field tests of an intermediate-depth ice core drill at Amundsen-Scott South Pole Station during Dec. 1980. Ice cores collected from two test holes of 49 m and 108 m were logged, packaged, and stored at the station for future sampling by other investigators. The objective during this season was to test a drill, designed, built, and previously tested in Greenland by the U.S. Army Cold Regions Research and Engineering Lab. (CRREL) to a depth of 500 m. Drilling proceeded to a depth of 49 m; beyond that the drill could not penetrate vertically. Four days of drilling produced promising results. However, repeated incidents of cable damage necessitated returning the drill to the PICO workshop for further engineering research. The PICO core-drilling program at South Pole Station was augmented by studies conducted by the Physics Inst., Univ. of Bern, of the process of gas enclosures in ice and the composition of air enclosed in bubbles in cold ice.

36-3979

Nitrogenous chemical composition of antarctic ice and snow.

Parker, B.C., et al, *Antarctic journal of the United States*, 1981, 16(5), 74P 15041, p.79-81, 10 refs.

Zeller, E.J., Gow, A.J.

Ice composition, Snow composition, Firn, Chemical analysis, Antarctica—Amundsen-Scott Station, Antarctica—Vostok Station.

This report emphasizes nitrate ion (NO_3) concentrations in antarctic snow and firn from pits and cores. Chemical analyses conducted or planned on antarctic snow, firn, and ice are outlined. Computer curves compare the variation in NO_3 over the past 1,000 yr in firn cores from South Pole Station and Vostok and present the NO_3 concentration record for the entire Vostok core over the past 3,000 yr. South Pole firn core dates have been calculated using data which date back to 1750. Fourier analysis of the NO_3 data from both South Pole and Vostok cores reveals strong periodicities in the NO_3 concentration occurring at approx 11-, 22-, and 66-yr intervals. Data have previously been reported supporting the hypothesis that the 11-yr fluctuations in NO_3 either coincide with the solar activity max or the auroral max. A table lists 14 potential sources or mechanisms for NO_3 in antarctic snow or firn. Solar-mediated phenomena appear to be the more likely sources. The results of NO_3 sampling in a 10-m-deep snowpit are discussed.

36-3980

Analysis of Dome C data, 1980-1981.

Bentley, C.R., et al, *Antarctic journal of the United States*, 1981, 16(5), p.81-82, 5 refs.

Blankenship, D.D., Gassett, R.M., Shabtaie, S.

Ice cover thickness, Seismic prospecting, Antarctica—Dome C.

The detailed bedrock map of Dome C, determined from profiling on the surface shows that the area is characterized by a rugged subglacial topography. The dominant feature is a central plateau with an elevation of -400 m. In some areas, radar profiling shows abnormally strong bottom echoes from a smooth, flat surface 300 m below sea level, suggesting reflections from subglacial water channels. Preliminary results yield velocities in the firn layers that are 20 m/microsec or more higher than previously assumed. Ground-based magnetic and gravity measurements were made at many points on the local 100-sq-km grid. In an effort to determine the extent of crystalline anisotropy in the ice sheet, a seismic wide-angle reflection experiment was performed during the 1979-80 field season. Preliminary results for one of the three lines shot—a plot of average wave speed over the travel path vs angle of incidence—are shown. Seismic short refraction data from Dome C are being reduced and analyzed.

36-3981

Dome C glaciology.

Whillans, I.M., *Antarctic journal of the United States*, 1981, 16(5), p.82-83, 1 ref.

Ice cores, Firn, Ice temperature, Snow stratigraphy, Antarctica—Dome C.

Data collected during the 1978-79 and 1979-80 field seasons at Dome C have been analyzed, and most results were presented at the Third International Symposium on Antarctic Glaciology in Sep. 1981. This article summarizes the studies of several authors. The studies include snow stratigraphy, grain size and firn-structural variations in cores, temperature profiles, and the interpretation of stable oxygen isotopic ratio data.

36-3982

Airborne radio-echo sounding Ellsworth Land and Ronne Ice Shelf.

Doake, C.S.M., et al, *Antarctic journal of the United States*, 1981, 16(5), p.83-84, 5 refs.

Crabtree, R.D., Dalziel, I.W.D.

Ice sheets, Radio echo soundings, Aerial surveys, Ice shelves, Glacier ice, Antarctica—West Antarctica, Antarctica—Ronne Ice Shelf.

A Twin Otter belonging to the British Antarctic Survey (BAS) carried out 60 hr of airborne radio-echo sounding in Feb. 1981 as part of a joint National Science Foundation (NSF)/BAS program to study the tectonics of West Antarctica and the geological relationship between East and West Antarctica. A total of 12,000 km of track was flown in ten flights, covering the half-million sq km area of Ellsworth Land between Pine Island Glacier in the west and the base of the Antarctic Peninsula in the east. Ten flights were made between 6 and 17 Feb. 1981. Five flights were over the previously unsounded area of Ellsworth Land to the north and west of the Ellsworth Mountains. Two of these flights ranged as far as Pine Island Glacier, measuring transverse and longitudinal profiles of an outlet glacier thought to play an important role in determining the stability of the west antarctic ice sheet. Soundings were also made of an area to the east of Siple Station, the Newcomer, Nimitz, Minnesota, and Union Glaciers within the Ellsworth Mountains, and the Ronne Ice Shelf.

36-3983

Analysis of RIGGS data, 1980-1981.

Bentley, C.R., et al, *Antarctic journal of the United States*, 1981, 16(5), p.84-85, 14 refs.

Greischar, L.L., Lingle, C.S., Shabtaie, S.

Ice shelves, Ice sheets, Iceberg towing, Gravimetric prospecting, Antarctica—Ross Ice Shelf.

Analysis of gravity data from the Ross Embayment continues at the U. of Wisconsin Geophysical and Polar Research Center. Sea-shelf gravity data from cruises 32, 51, and 52 of the USNS *Eltanin* have been used to extend the Ross Ice Shelf Geophysical and Glaciological Survey (RIGGS) gravity data to the edge of the Ross Sea continental shelf. A free-air gravity anomaly map of the Ross Embayment is presented. Except for a few isolated anomalies, free-air gravity anomaly values in the area are negative. A spectral analysis technique described by Lewis and Dorman (1970), applied to the free-air anomaly, Bouguer anomaly, and bathymetry maps of Ross Embayment, reveal that topographic loads with wave lengths greater than 500 km appear to be overcompensated. Models of the 204 km of local gravity profiling done in the vicinity of the three RIGGS base camps, Q-13, C-16, and J-9, were computed using the Talwani method. Many of the complexities in the ice shelf that have been revealed by recent geophysical and glaciological investigations could be important in iceberg structure. Many features could substantially modify the hydraulics of iceberg towing, or lead to disintegration in the course of transport. As part of a project to study the history of the ice sheet in the Ross Embayment, a program has been developed to solve Mahaffy's (1974, 1976) equations for computation of time-dependent thickness changes in ice sheets and has been applied to a digitized version of the Hughes and others (1981) reconstruction of the antarctic ice sheet as it existed during the late Wisconsin glacial maximum.

36-3984

Byrd Glacier: 1978-1979 field results.

Hughes, T., et al, *Antarctic journal of the United States*, 1981, 16(5), p.86-89, 4 refs.

Fastook, J.L.

Glacier oscillation, Glacier surfaces, Photogrammetry, Antarctica—Byrd Glacier.

The ultimate objective of this study is to combine photogrammetric determinations of the surface velocity and elevation of Byrd Glacier with radio-echo determinations of ice thickness and basal grounding to provide data for a finite-element analysis of the Byrd Glacier-Ross Ice Shelf interaction. This report illustrates and discusses the 1978-79 field results. Figures show the survey work on Byrd, Hatherton, and Darwin Glaciers, surface velocities of these glaciers determined from ground surveys, surface elevations and velocities along centerline targets, five transverse velocity profiles from the north fiord wall to the centerline of Byrd Glacier, and the changing tidal rise and fall of Byrd Glacier with distance up Byrd Glacier fiord.

36-3985

Microparticle record from Q-13: Preliminary report.

Mosely-Thompson, E., et al, *Antarctic journal of the United States*, 1981, 16(5), p.89-90, 7 refs.

Thompson, L.G.

Drill core analysis, Ice shelves, Particle size distribution, Ice cores, Antarctica—Ross Ice Shelf.

A total of 2,611 samples representing the entire length of a 100-m core drilled on the Ross Ice Shelf at site Q-13 were analyzed for microparticle concentration and size distribution. A figure illustrates the concentration of total particles, including estimated annual accumulation rate and the data for each 5-m increment. Much of the material deposited at Q-13 today is locally derived and most of it is thought to be transported in association with the cyclonic storm systems that move into the Ross Sea. A very substantial increase in particle concentrations is noted between 1920 and 1940. Size distribution data indicate that the material is locally derived and consists of great quantities of large (greater than 1.0 micron) fragments. The mechanism proposed to account for the transport of this great quantity of poorly sorted material to site Q-13 is either an increase in the annual frequency of storms entering the Ross Sea or deeper penetration of the depressions onto the Ross Ice Shelf.

36-3986

Gas in Allan Hills and Byrd Station core ice.

Fireman, E.L., et al, *Antarctic journal of the United States*, 1981, 16(5), p.90-92, 13 refs.

Norris, T.

Ice composition, Gas inclusions, Geochronology, Antarctica—Allan Hills, Antarctica—Byrd Station.

Gas extracted from 5- to 30-kg samples of Allan Hills and Byrd core ice was analyzed and its carbon-14 content measured to date the ice and obtain information on its history and the composition of the ancient atmosphere. Table 1 gives the amounts of gas, the percentage of CO_2, the C-14 activity, and the C 14 ages of four Allan Hills ice samples, a frozen distilled water sample, and seven Byrd core samples. A second table gives the nitrogen and argon abundances, the variation of nitrogen-15 relative to room-air nitrogen, and the argon-40 to argon-36 ratios. The surface ice at stakes 12 and 18 in the Allan Hills showed a high CO_2 content which is indicative of melting and refreezing. Very high CO_2 abundances were obtained in gas from frozen distilled water. The Byrd core had gas contents ranging from 58 cu cm to 118 cu cm/kg. The highest gas contents were in the 1,068-, 1,071-, and 1,469-m samples from the Byrd core. High C-14 specific activities in the surface ice at Allan Hills indicate the presence of nuclear debris.

36-3987

Micrometeorites from antarctic ice cores.

King, E.A., et al, *Antarctic journal of the United States*, 1981, 16(5), p.92-93, 4 refs.

Wagstaff, J.

Ice cores, Particles.

The most abundant particles in the ice cores consist of irregular particles, shards, and spheres with the major elements Si-Al-Fe-Ca-K-S-O or Si-Al-Fe-Ca-K-O that almost certainly are derived from terrestrial volcanoes. Particles assigned to an extraterrestrial origin include Fe-S and Fe-O spheres and also irregular particles with various proportions of Al-Mg-Fe-Ni-S-P-Al-O

and Fe-Cr-Ni-SO with overall appearances and textures similar to particles described by Brownlee et al (1976) and others. Several classes of particles of problematic origin have been found. These are described. A long range goal of this work is to attempt to correlate the populations of particles in certain core intervals with the apparitions of dusty comets or particularly spectacular cometary meteor displays to try to identify populations of extraterrestrial particles that originated from comets. In the most micrometeoroid-rich sample intervals, the cores contain approx 1 extraterrestrial particle in 10,000 terrestrial ones. The possibility of concentrating volumes of extraterrestrial particles by various separation techniques is anticipated.

36-3988

Physical and structural characteristics of sea ice in McMurdo Sound.

Gow, A.J., et al, *Antarctic journal of the United States*, 1981, 16(5), MP 1542, p.94-95, 5 refs.

Weeks, W.F., Govoni, J.W., Ackley, S.F.

Sea ice, Ice structure, Physical properties, Calving, Antarctica—McMurdo Sound.

This season's study of the physical and structural properties of sea ice in McMurdo Sound was restricted to sea ice that had formed since Apr. 1980. Multiyear ice was observed and sampled at only one location, near Cape Chocolate on the western edge of McMurdo Sound. The locations of the sample sites are shown. The sampling program included an over-ice traverse of the bay-fast ice in McMurdo Sound. Extensive recent calving of the Koettlitz Glacier ice tongue was observed in the vicinity of the Dailey Is. Preliminary investigations of the crystal structure of samples from 28 locations revealed widespread formation of congelation ice but only minimal amounts of frazil ice. Formation of a sub-ice platelet layer with individual plates measuring up to several cm in length was observed at the majority of sampling sites. Petrographic studies revealed crystalline structures and c-axis orientations that exhibited much in common with shore-fast ice of the arctic coast of Alaska.

36-3989

***High-resolution impulse radar measurements* for detecting sea ice and current alinement under the Ross Ice Shelf.**

Morey, R.M., et al, *Antarctic journal of the United States*, 1981, 16(5), MP 1543, p.96-97, 5 refs.

Kovacs, A.

Sea ice, Radar echoes, Ice shelves, Antarctica—Ross Ice Shelf.

The objectives of the Jan. 1981 field season were (1) to evaluate the feasibility of using a high-resolution impulse radar profiling system to detect the existence of sea ice which coring had revealed on the bottom of the Ross Ice Shelf at J-9, and 2) if successful in that effort, to try to detect the preferred horizontal C-axis azimuthal direction of the sea ice crystals using the voltage amplitude of the radar reflection. The instrumentation used is described. A table lists the radar parameters used for calculating the maximum radar range, and the maximum radar range for the two antennas used is plotted. The results obtained with the radar system were inconclusive, and several possible explanations are outlined. Brine infiltration into the McMurdo Ice Shelf was also investigated.

36-3990

Observations of the antarctic east wind drift current, 1980-1981.

Tchernia, P., *Antarctic journal of the United States*, 1981, 16(5), p.98, 1 ref.

Icebergs, Drift, Ocean currents.

The radio beacon N-Argos 1068 was set up, from the USCGC *Polar Sea*, atop a tabular iceberg drifting at 75 deg 33 min S 160 deg 48 min W. The track of the drift was recorded fron Jan. 21, 1980 until Feb. 22, 1981. The drift track is very briefly outlined.

36-3991

Weddell deep water: source and variability.

Gordon, A.L., *Antarctic journal of the United States*, 1981, 16(5), p.99-100, 6 refs.

Polynyas, Water temperature, Weddell Sea.

This investigation is concerned with the source of the warm-saline signal within the Weddell oceanic regime and the alteration of Weddell deep water which apparently occurred during the middle 1970's. Differences in the conditions of the WDW in 1973 and in 1977-78 are compared. The warm-saline deep water west of Maud Rise showed more cooling and freshening during the middle 1970's. The most intensive cooling and freshening occurred in a region about the size and position of the winter Weddell polynya, as observed in satellite images made during the middle 1970's. The position of this "cold spot" drifted westward at a rate of 1.4 cm/sec between the austral summers of 1976-77 and 1977-78; this is also the rate of drift of the polynya. It is suggested that the heat deficit within the WDW of 1977-78 is caused by excess oceanic heat loss that must have been associated with the polynya. Further differences between the 1977 and 1973 conditions are explored. The process that initiated the polynya condition during the mid-1970's is not known, though some speculation is offered.

36-3992

Growth of the antarctic ice sheets and the Neogene paleoenvironment of the Maurice Ewing Bank.

Ciesielski, P.F., et al, *Antarctic journal of the United States*, 1981, 16(5), p.114-117, 38 refs.

Ledbetter, M.T., Ellwood, B.B.

Ice sheets, Ice shelves, Ice growth, Glacial geology.

A micropaleontologic, magnetostratigraphic, and sedimentologic analysis of 56 piston cores was the basis of a geologic study of the late Miocene to Recent depositional and erosional history of the intermediate-depth Maurice Ewing Bank located at the eastern extremity of the Falkland (Malvinas) Plateau, southwest Atlantic Ocean. This article presents the major conclusions of this study. Fluctuations through time in the position of the Polar Front and in the intensity of the ACC probably have been the dominant influence on the depositional history of the Maurice Ewing Bank since the initiation of the ACC flow over the bank during the Miocene. The depositional and erosional history of the Maurice Ewing Bank may be correlated with globally significant paleoceanographic events and episodes. Extensive ice shelves formed in the Ross and Weddell Seas during the late Miocene in response to expansion of the east antarctic ice sheet and further reductions in ocean and atmospheric temperatures. During the late Miocene, the west antarctic ice shelf rapidly thickened by basal and surface accretion until it grounded below sea level to form the west antarctic ice sheet. Formation of the west antarctic ice shelf and subsequent formation of the west antarctic ice sheet, with floating and partially grounded extensions in the Ross and Weddell embayments, led to the first major production of antarctic bottom water (AABW) with characteristics similar to those of the present-day AABW.

36-3993

Early Miocene to Pleistocene fluctuations in ice-rafted debris at DSDP site 274.

Judson, M.H., et al, *Antarctic journal of the United States*, 1981, 16(5), p.120-121, 14 refs.

Williams, D.F., Ehrlich, R.

Ice sheets, Glacial deposits.

Since the reocvery of ice-rafted debris (IRD) off Antarctica during the H.M.S. *Challenger* expedition (Murray and Renard 1981), attempts have been made to distinguish IRD in deep-sea sediments from other terrigenous components. Guidelines have been set forth for recognizing individual grains of glacial origin by correlating surface microfeatures on quartz (determined by scanning electron microscopy) with source environment and modes of transport. In this study Fourier grain shape analysis is used to determine the deposition of IRD onto the antarctic continental rise at Deep Sea Drilling Project (DSDP) site 274 since the early Miocene. Fourier analysis of quartz from the 45- to 63-micron size fraction from DSDP site 274 identifies several major fluctuations in the IRD during the time interval 11.0 to 3.1 m.y.a. The peaks in IRD can be related to previous paleoclimatic reconstructions of the west antarctic ice sheet. This study shows that the shape variation within a specified size fraction of quartz can be used to distinguish the ice-rafted component, rather than the size range of particles found within each sample or surface microfeatures.

36-3994

Sea-ice microbial communities in McMurdo Sound.

Sullivan, C.W., et al, *Antarctic journal of the United States*, 1981, 16(5), p.126-127, 5 refs.

Palmisano, A.C.

Sea ice, Microbiology, Cryobiology, Antarctica—McMurdo Sound.

The population and physiological ecology of the sea-ice microbial communities in McMurdo Sound were studied. Among the factors investigated were the distribution and abundance of sea-ice organisms, interactions between members of the community, adaptation to low light and low temperature conditions, and the capacity of ice microalgae to survive the antarctic winter. No significant differences were found between chlorophyll *a* levels associated with the oligotrophic West Sound area and the eutrophic East Sound. The lower sections of ice cores contained high bacterial concentrations. The bacteria were relatively large, often occurred as paired or dividing cells, and frequently were found in chains of cells. In the upper sections, the bacterial concentrations were lower, and the size and morphology of the bacteria were strikingly different. Bacterial cells were also frequently found in close physical association with certain dominant species of the genus Amphiprora. The results of the controlled light experiments are currently being analyzed. Survivorship of cells subjected to a 30-day summer-winter transition, then kept in complete darkness at 0C for 6 mo, ranged from 0.1 to 10 percent of the population. Studies have indicated that the sea ice-microbial community is very rich and active.

36-3995

Endolithic microorganisms in the dry valleys of Antarctica.

Friedmann, E.I., *Antarctic journal of the United States*, 1981, 16(5), p.174-175, 1 ref.

Cryobiology, Freeze thaw cycles.

The microorganisms and microclimate in the mountainous regions of the dry valleys are discussed. On the basis of their infrequent sexual stages, three genera of cryptoendolithic lichens *(Buellia, Lecidea, and Acarospora)* could be identified. These genera are unrelated and belong to different families, yet their cryptoendolithic stages are morphologically similar and distinguishable only on the basis of chemical characteristics. Studies of the microclimatological parameters of rock showed a rapid alternation of freezing and thawing on the rock surface which limits life forms. The cryptoendolithic life inside porous rocks pre-supposes a morphogenetic adaptation that enables organisms to penetrate the rock substrate, thus evading the extreme and stressful conditions on the surface.

36-3996

Antarctic data at the World Data Center-A for Glaciology (Snow and Ice).

MacKinnon, P.K., et al, *Antarctic journal of the United States*, 1981, 16(5), p.229-230, 1 ref.

Barry, R.G.

Ice, Snow, Glaciology, Research institutions.

The World Data Center-A for Glaciology (Snow and Ice) (WDC-A) is responsible, under international exchange agreements, for storing and disseminating data and information relating to all forms of snow and ice. Several data sets of particular antarctic interest are outlined. Flyers describing the data and procedures for acquiring data are available from the Center. The WDC-A sponsors workshops and maintains an extensive glaciological library. Investigators and institutions are encouraged to communicate information on potential new data or data needs to the Center.

36-3997

Programs for antarctic mapping, 1978-1981.

Southard, R.B., *Antarctic journal of the United States*, 1981, 16(5), p.230-231.

Glacier ice, Ice shelves, Mapping, Geodetic surveys, Topographic surveys.

During the austral summers of 1978-79 and 1979-80, topographers from the U.S. Geological Survey (USGS) were involved in efforts to map Byrd Glacier, the Darwin Glacier-Hatherton Glacier area, areas in and around the Ronne-Filchner Ice Shelf, and peaks in the Sentinel Range. This article describes their activities and other USGS activities in Antarctica. During 1981, a revised *Index to Topographic Maps, Antarctica*, was published. Work is continuing on the Ronne Ice Shelf, Berkner I., and Filchner Ice Shelf satellite image maps (scale 1:1,000,000), the Shackleton Mountains topographic reconnaissance map (scale 1:250,000), several sheets for a map of the Antarctic Peninsula (scale 1:250,000), and the newly named Deep Freeze Range International Map of the World (IMW) at 1:1,000,000 scale. The USGS maintains the antarctic cartographic and air photo library and assists antarctic investigators, both foreign and domestic, who need such materials.

36-3999

Public works, Deep Freeze 81.

Fulgham, J.G., *Antarctic journal of the United States*, 1981, 16(5), p.241-243.

Ice roads, Heat transfer, Fuels, Ice runways, Waste disposal, Antarctica—McMurdo Station.

Improvements made in energy conservation, environmental protection, industrial safety, waterfront facilities, aviation facilities, and ice roads during Deep Freeze 81 are summarized. Deep Freeze energy conservation efforts contributed to an overall 20% reduction in diesel fuel consumption over Deep Freeze 80. Water pollution and ocean dumping related to disposal of McMurdo solid waste were halted with the closing of the McMurdo dump and construction of the Fortress Rocks sanitary landfill. Occupational safety, health awareness, and safety records in McMurdo were improved markedly over Deep Freeze 80. The use of wooden "deadmen" as tie-off points for securing the ice wharf to shore proved unreliable. Long-term parking of a C-141 aircraft at the ice runway parking apron provided experience with ice load-bearing capacity and creep in the ice when subjected to a consistent load. The survivability of the transition ramp between land and the annual sea ice was improved with installation of the ramp at the ice wharf instead of at its usual location.

36-4000

Search for cosmic materials in antarctic ice. (Suche nach kosmischer Materie im antarktischen Eis), *Naturwissenschaftliche Rundschau*, p.259-260, In German.

Ice sheets, Chemical analysis, Cosmic dust.

Briefly reviewed here is recent work on analysis of chemicals found in the "Blue Ice Field" as a result of cosmic dust deposits and on meteorites collected by Japanese and U.S. geologists. After completing installations at the German antarctic station it is planned to conduct helicopter-aided searches for meteorites in the blue ice fields.

36-4001

Late Miocene-Earliest Pliocene glaciation in southern Argentina: Implications for global ice-sheet history.

Mercer, J.H., et al, *Palaeogeography, palaeoclimatology, palaeoecology*, July 1982, 38(3/4), p.185-206, Numerous refs.

Sutter, J.F.

Ice sheets, Paleoclimatology.

Between 7 m.y. and 4.6 m.y. ago widespread cooling of the ocean surface in middle latitudes, worldwide marine regression and change in the oxygen isotopic composition of ocean water occurred. From these events, major late Miocene expansion of the Antarctic Ice Sheet has been inferred, on the assumption that the history of North Atlantic ice rafting precludes the existence of Northern Hemisphere ice sheets until 3 m.y. ago. This is disputed, first because precipitation in Antarctica would probably have decreased at temperatures below today's, second because the Antarctic Ice Sheet cannot expand appreciably until buildup of Northern Hemisphere ice sheets has lowered sea level, third because virtually no late Miocene sediments are presented at the Labrador Sea DSDP sites that are critical to the reconstruction of North Atlantic ice rafting history, and fourth because the scale of late Miocene glaciation in Alaska is at least permissive for simultaneous buildup of ice at similar latitudes further east. (Auth. mod.)

36-4002

Effects of inundation on six varieties of turfgrass.

Erbisch, F.H., et al, *U.S. Army Cold Regions Research and Engineering Laboratory*, May 1982, SR 82-12, 25p., ADA-117 838, Refs. p.17-25.

Stark, K.L.

Grasses, Growth, Flooding, Damage, Plant physiology, Tests.

Six cold-adapted grasses were given ten-day dark and inundation stress treatments. Nugget Kentucky bluegrass grown in soil or gravel exhibited the best survival. Sydsport bluegrass did well in gravel. Meadow foxtail and manchar brome survived the treatments when grown in silt soil, but did not when grown on gravel soil. Rhizomes were regenerated by most of the grasses. Root transverse sections did not show any stress-related damage, but leaf sections did. The damage in the sections paralleled that observed macroscopically. Electrophoretic analysis for the peroxidase enzyme complex showed significant banding pattern differences before external damage was visible. This technique may prove to be a diagnostic tool for determining stress damage. Seedlings of all grasses except sydsport bluegrass survived a 15-day inundation.

36-4003
Electric heating of buildings in the North. [Elektrootoplenie zdanii na Severe],
Orlov, V.A., et al, Leningrad, Stroĭizdat, 1981, 64p., In Russian with English table of contents enclosed. 20 refs.
Kvach, I.K., Krotov, IU.G.
Residential buildings, Industrial buildings, Electric heating.

36-4004
Frozen zone in the lithosphere of western Siberia and trends in its development. [Merzlaia zona litosfery Zapadnoĭ Sibiri i tendentsii ee razvitiia],
Shpolianskaia, N.A., Moscow, Universitet, 1981, 168p., In Russian with English table of contents enclosed. Refs. p.158-166.
Permafrost distribution, Permafrost thickness, Permafrost depth, Frozen rock temperature, Active layer, Seasonal freeze thaw, Paleoclimatology.

36-4005
Underground mining of perennially frozen placer deposits. [Podzemnaia razrabotka mnogoletnemerzlykh rossypeĭ],
Emel'ianov, V.I., et al, Moscow, Nedra, 1982, 240p., In Russian with abridged English table of contents enclosed. 50 refs.
Mamaev, IU.A., Kudlaĭ, E.D.
Placer mining, Shaft sinking, Permafrost physics, Permafrost structure, Frozen fines, Drilling, Blasting, Excavation, Transportation.

36-4006
Main underground pipelines (design and construction). [Podzemnye magistral'nye truboprovody (proektirovanie i stroitel'stvo)],
Borodavkin, P.P., Moscow, Nedra, 1982, 384p., In Russian with abridged English table of contents enclosed. 7 refs.
Underground pipelines, Permafrost beneath structures, Swamps, River crossings, Construction equipment, Transportation.

36-4007
Possibility of using the method of space derivatives in the polar cap for depth sounding.
Volkomirskaia, L.B., et al, *Geomagnetism and aeronomy*, 1981, 20(5), p.685-687, Translated from Geomagnetizm i aeronomiia. 5 refs.
Vanian, L.L.
Electromagnetic prospecting, Arctic Ocean.

36-4008
Modular construction in Siberia. [Vnedrenie komplektno-blochnogo metoda na sibirskikh stroĭkakh],
Smirenko, V.P., *Stroitel'stvo truboprovodov*, July 1982, No.7, p.21, In Russian.
Petroleum industry, Modular construction, Transportation, Buildings, Pipelines, Construction equipment.

36-4009
Transportation means for large modular construction elements. [Vybor transportnykh sredstv dlia perevozki krupnogabaritnykh blochno-komplektnykh ustroĭstv],
Rastorguev, G.V., *Stroitel'stvo truboprovodov*, July 1982, No.7, p.23-24, In Russian. 3 refs.
Modular construction, Construction equipment, Prefabrication, Buildings, Pipelines, Transportation, River crossings.

36-4010
Overland flow: an alternative for wastewater treatment.
Martel, C.J., et al, *Military engineer*, Apr. 1982, 47(479), MP 1506, p.181-184, 6 refs.
Lee, C.R.
Waste treatment, Water treatment, Runoff, Land reclamation, Slope orientation.

36-4011
Roof moisture surveys.
Tobiasson, W., *Military engineer*, Apr. 1982, 47(479), MP 1505, p.163-166, 4 refs.
Roofs, Waterproofing, Moisture detection, Drainage, Infrared photography, Leakage.

36-4012
Geostrophic adjustment in highly dispersive media: an application to the marginal ice zone.
Röed, L.P., et al, *Geophysical and astrophysical fluid dynamics*, 1981, 18(3/4), p.263-278, 15 refs.
O'Brien, J.J.
Ice mechanics, Ice edge, Pack ice, Geophysical surveys, Velocity, Pressure.

36-4013
Mineral resources of the Trans-Alaska pipeline corridor.
Mulligan, J.J., *U.S. Bureau of Mines. Information circular*, 1974, No.8626, 24p. + 3 maps, 30 refs.
Natural resources, Minerals, Pipelines, Route surveys, United States—Alaska.

36-4014
Snowmelt, glacier melt, and high arctic streamflow regimes.
Marsh, P., et al, *Canadian journal of earth sciences*, Aug. 1981, 18(8), p.1380-1384, With French summary. 6 refs.
Woo, M.
Snowmelt, Glacier melting, Stream flow, Runoff, Nival relief, Rain, Air temperature.

36-4015
Traffic and parking control for snow emergencies. *Institute of Transportation Engineers, Washington, D.C. Journal*, Jan. 1982, 52(1), p.9-10.
Roads, Snow removal, Trafficability, Snow accumulation.

36-4016
Process for chemical ice destruction and its application to northern mining problems.
Parsons, R.C., *Canadian mining and metallurgical bulletin*, Mar. 1982, 75(839), p.164-166.
Chemical ice prevention, Structures, Mining, Cold weather operation, Ice accretion, Icing, Antifreezes.

36-4017
Polymer/concrete composites—a review.
Kirlikovali, E., *Polymer engineering and science*, Mid-June, 1981, 21(8), p.507-509, 2 refs.
Concrete aggregates, Concrete strength, Polymers, Freeze thaw cycles, Shear strength, Temperature effects, Microstructure, Cement admixtures.

36-4018
Where is the ice in comets.
A'Hearn, M.F., et al, *Astrophysical journal*, Sep. 15, 1981, 248(3), p.L147-L151, 22 refs.
Dwek, E., Tokunaga, A.T.
Extraterrestrial ice, Spectra, Photometry, Particles, Comets.

36-4019
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Snow removal, Ice control, Ice removal, Streets, Road maintenance, Winter maintenance, Equipment.

36-4020
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Snow removal, Winter maintenance, Road maintenance, Safety, Cost analysis.

36-4021
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Snow removal, Chemical ice prevention, Ice control, Winter maintenance, Road maintenance, Ice removal, Streets, Salting.

36-4022
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Nydahl, J.
Bridges, Ice control, Heat pipes, Heating, Thermal effects, Ice removal, Road icing.

36-4023
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Meyer, R.
Snow removal, Winter maintenance, Road maintenance, Human factors, Cost analysis.

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Litter, Microbiology, Hydrocarbons, Lake water, Plant ecology, United States—Alaska—Toolik Lake.

36-4025
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Embankments, Earth fills, Frost resistance, Soil strength, Construction materials, Earthwork.

36-4026
Calculating shear stresses of a mudflow mass. [K metodike rascheta staticheskogo napriazheniia sdviga selevoĭ massy],
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Slope processes, Glacial hydrology, Sands, Clays, Shear stress, Flow rate, Mathematical models.

36-4027
Calculating rhe resistance to the movement of a body in a viscoplastic medium. [K opredeleniiu soprotivleniia dvizheniiu tela v viazko-plastichnoi srede],
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Stepanov, B.S.
Slope processes, Mudflows, Viscosity, Plastic flow, Flow rate, Aggregates.

36-4028
Calculating mudflow-arrest slopes. [K opredeleniiu uklona ostanovki selevykh potokov],
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Stepanov, B.S.
Slope processes, Mudflows, Countermeasures, Design.

36-4029
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Talus, Creep, Slope processes, Solifluction, Mudflows.

36-4030
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Elistratova, G.P., *Selevye potoki*, 1982, Sbornik 6, p.30-34, In Russian. 4 refs.
Slope processes, Mudflows, Aggregates, Viscosity, Plastic flow, Rocks, Mathematical models.

36-4031
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Mochalov, V.P., et al, *Selevye potoki*, 1982, Sbornik 6, p.34-50, In Russian. 42 refs.
Tsukerman, I.G.
Glacial lakes, Flood control, Mudflows, Aggregates, Bibliographies.

36-4032
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Seinova, I.B.
Slope processes, Avalanches, Mudflows, Snow water equivalent, Glacial hydrology, USSR—Caucasus.

36-4033
Large scale models for studying stress-strain states of latticed reinforced concrete mudflow-intercepting structures. [Issledovanie napriazhenno-deformirovannogo sostoianiia zhelezobetonnogo seleulovitelia skvoznogo tipa na krupnomasshtabnykh modeliakh],
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Bainatov, Zh.B., Kuziutin, A.D., Esenov, U.E.
Mudflows, Countermeasures, Concrete structures, Reinforced concretes, Models.

36-4034
Mudflows on Putarana mountains. [Selevye iavleniia na Putarane],
Keremkulov, V.A., *Selevye potoki*, 1982, Sbornik 6, p.88-96, In Russian. 4 refs.
Subarctic landscapes, Slope processes, Aerial surveys, Photointerpretation, Mudflows, Permafrost distribution, Glacial hydrology.

36-4035
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Khonin, R.V., et al, *Selevye potoki*, 1982, Sbornik 6, p.97-126, In Russian. 72 refs.
Glacial lakes, Arctic landscapes, Glacial hydrology, Slope processes, Mudflows, Maps, Bibliographies.

36-4036
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Electric power, Hydraulic structures, Dams, Concrete structures, Frost resistance, Winter concreting.

36-4037
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Ivannikov, V.M.
Swamps, Earth dams, Embankments, Foundations, Clays, Soil compaction.

36-4038
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Power line icing, Thermal insulation, Glaze, Ice accretion, Artificial freezing, Cold chambers, Cold weather tests.

36-4039
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Slope processes, Climatic factors, Mudflows, Avalanches, Solifluction, Permafrost distribution, Taiga, Soil erosion, Glacial erosion, Nivation, Periglacial processes, Shore erosion, Fast ice, Subsea permafrost.

36-4040
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Skryl'nik, G.P.
Floods, Slope processes, Mudflows, Avalanches, Permafrost distribution, Records (extremes), Climatic factors.

36-4041
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Skryl'nik, G.P., Surova, N.A.
Mountains, Taiga, Weathering, Water erosion, Glacial erosion, Nivation, Periglacial processes, Soil freezing, Frost penetration, Hydrothermal processes.

36-4042
Trends in sea shore development in Far Eastern seas. [Tendentsii razvitiia beregov dal'nevostochnykh *morei*],
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Sea ice distribution, Shoreline modification, Sea level, Ice loads, Shore erosion, Fast ice, Ground ice, Permafrost distribution, Subsea permafrost.

36-4043
Asymmetry of small mountain stream valleys in subpolar areas and problems in searching for placers. [Asimmetriia dolin malykh gornykh vodotokov v usloviiakh subpoliarnogo klimata i nekotorye voprosy poiskov rossypeĭ],
Lebedev, S.A., *Klimomorfogenez i regional'nyĭ geograficheskiĭ prognoz* (Climatic geomorphology and regional geographic forecasts) edited by G.P. Skryl'nik, Vladivostok, 1980, p.140-145, In Russian.
Subpolar regions, Placer mining, Mountains, River basins, Valleys, Continuous permafrost, Active layer, Solifluction.

36-4044
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36-4045
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Kamyshev, M.A.
Offshore structures, Pipelines, Bibliographies, Ice conditions, Sea ice, Ice loads, Construction equipment, Underwater welding, Underwater excavation.

36-4046
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Roads, Protective vegetation, Road icing, Chemical ice prevention, Soil pollution.

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Slope processes, Soil erosion, Freeze thaw cycles, Frost shattering, Snowmelt.

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MacFeely, K.I.
Snow optics, Reflection, Radar echoes, Snow water content, Grain size, Albedo, Analysis (mathematics).

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Meier, M.F.
Glacier oscillation, Glacier flow, Radio echo soundings, Glacier mass balance, Models, Velocity, Glacier surfaces, Glacier thickness, United States—Alaska—Columbia Glacier.

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Frost forecasting, Freeze thaw cycles, Climatology, Diurnal variations, Air temperature, USSR, Europe.

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Andrews, J.T.
Permafrost depth, Vegetation, Carbon dioxide, Climatic changes, Ground thawing, Soil temperature.

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Tunneling (excavation), Rock excavation, Roads, Site selection, Frost protection, Thermal insulation, Heat transfer, Norway.

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36-4054
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Ice breaking, Icebreakers, Air cushion vehicles, Cold weather operation, Ice cover thickness, Ice jams, Countermeasures, Frazil ice.

36-4055
River icebreaking for flood control conducted by CCG Voyageur CH-CGA (Quebec Region), March 26 to April 3, 1976.
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River ice, Ice breaking, Flood control, Air cushion vehicles, Icebreakers, Ice jams, Canada—Saint Lawrence River.

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Snow optics, Whiteout, Protection, Optical filters, Visibility, Eyeglasses.

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Field, R.C., Railway Association of Canada.
Snow removal, Railroads, Equipment, Japan, Sweden, Norway.

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Urjohn, I.K., FENCO Consultants Ltd.
Bridges, Road icing, Ice control, Ice removal, Ice detection, Ice forecasting, Countermeasures, Road maintenance, Meteorological data, Canada.

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Taiga, Paludification, Swamps, Forest fires, Ground water, Water level, Remote sensing, Litter, Mosses, Lichens, Models, Forecasting.

36-4060
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Forest fires, Litter, Water content, Models, Measuring instruments, Wind factors, Meteorological factors, Mountains, Slope orientation.

36-4061
Complex statistical model of the edge of surface forest fires. [Statisticheskaia mnogofaktornaia model' kromki nizovogo lesnogo pozhara],
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Ivanova, G.A.
Taiga, Forest fires.

36-4062
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Kisiliakhov, E.K., Sukhinin, A.I.
Taiga, Paludification, Swamps, Forest fires, Ground water, Water level, Remote sensing, Radio waves, Brightness.

36-4063
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Bibliographies, Taiga, Litter, Water content, Forest fires, Mosses, Lichens.

36-4064
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Taiga, Cryogenic soils, Grasses, Forest fires.

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Baranov, N.M.
Taiga, Mosses, Litter, Forest fires, Forecasting.

36-4066
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Taiga, Forest fires, Models, Countermeasures.

36-4067
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Taiga, Forest fires, Mapping, Soil erosion, Revegetation, Forest canopy, Litter, Water content, Moisture detection, Remote sensing, Measuring instruments, Design, Classifications, Forecasting, Mathematical models.

36-4068
Basic concepts, classifications and requirements for mathematical modeling of forest fires. [Matematicheskie modeli lesnykh pozharov: osnovnye poniatiia, klassifikatsiia, trebovaniia],
Dorrer, G.A., et al, Prognozirovanie lesnykh pozharov (Predicting forest fires) edited by M.A. Sofronov, Krasnoyarsk, 1978, p.5-26, In Russian. 32 refs.
Kurbatskii, N.P.
Forest fires, Computerized simulation, Mathematical models, Systems analysis, Accuracy.

36-4069
Remote sensing of moisture content in forest litter from its SHF emission. [Distantsionnaia otsenka vlagosoderzhaniia rastitel'nogo napochvennogo pokrova po ego SVCh izlucheniiu],
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Bogomolov, A.A.
Forest soils, Litter, Moisture detection, Remote sensing, Forest fires, Forecasting, Measuring instruments, Design.

36-4070
Intensity of forest fires. [Ob intensivnosti lesnogo pozhara],
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Isakov, R.V.
Forest soils, Taiga, Litter, Mosses, Lichens, Forest fires, Analysis (mathematics).

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Ivanova, G.A.
Taiga, Forest soils, Litter, Forest fires, Grasses.

36-4072
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Taiga, Litter, Water content.

36-4073
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Taiga, Forest canopy, Forest fires.

36-4074
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Taiga, Mapping, Forest fires, Classifications.

36-4075
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Taiga, Forest fires, Bibliographies, Countermeasures.

36-4076
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Stefin, V.V.
Mountains, Taiga, Forest soils, Forest fires, Soil erosion, Revegetation.

36-4077
Spacing of fire-preventing barriers. [O gustote protivopozharnykh bar'erov],
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Taiga, Forest fires, Countermeasures.

36-4078
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Taiga, Landscape types, Forest canopy, Litter, Albedo, Radiation balance, Soil temperature, Cryogenic soils, Petroleum industry, Natural gas, Continuous permafrost, Exploration, Drilling.

36-4079
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Taiga, Landscape types, Soil temperature, Radiation balance, Forest canopy, Litter, Albedo, Cryogenic soils, Microclimatology, Baykal Amur railroad.

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Electric power, Hydraulic structures, Dams, Permafrost beneath structures, Continuous permafrost, Lake ice, Permafrost beneath lakes, Climatic changes.

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Natural gas, Petroleum industry, Continuous permafrost, Exploration.

36-4082
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Permafrost distribution, Permafrost structure, Ground ice, Ice temperature, Permafrost thermal properties.

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Taiga, Cryogenic soils, Soil formation, Litter, Soil composition.

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Alpine landscapes, Taiga, Cryogenic soils, Soil erosion, Soil composition, Forest fires.

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Alpine landscapes, Slope processes, Soil erosion, Slope protection, Soil composition, Revegetation, Environmental protection.

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Oceanographic surveys, Water temperature, Sea water freezing, Ice conditions, Sea level, Brines, Chemical composition.

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Waste treatment, Water treatment, Soil chemistry, Forecasting, Land reclamation, Mathematical models.
This report evaluates a simple P balance model to predict site longevity with respect to P removal during land treatment of wastewater. The model is based on measured inputs and outputs of P at the treatment site and on an estimate of the P storage capacity of the soil profile. Sorption of P by three soils used for land treatment conformed to the P sorption model based on a generalized isotherm. Laboratory sorption tests were used to predict P storage capacity of the soil profiles at a solution P concentration equivalent to that in the effluent applied to the soil. For two soil profiles the P balance model predicted site longevities of approximately 50 and 210 years. The existing depth of P enrichment in these profiles predicted from the model agreed closely with measurements of P enrichment based on amounts of NaOH-extractable P and on measured soil solution P concentrations.

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Alpine landscapess, Taiga, Landscape types, Snow cover distribution, Snow surveys, Snow stratigraphy, Snow depth, Snow cover structure.

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Subpolar regions, Construction materials, Earthwork, Construction equipment, Transportation, Permafrost beneath structures, Permafrost hydrology, Buildings, Roads, Hydraulic structures, Concrete structures, Steel structures, Reinforced concretes, Cost analysis.

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Petroleum industry, Transportation, Construction materials, Construction equipment, Residential buildings, Industrial buildings, Pipelines, Permafrost beneath structures, Earthwork.

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36-4165
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Snow accumulation, Radio echo soundings.
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36-4167
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Weather modification, Cloud physics, Cloud seeding, Aerosols, Nucleating agents, Ice nuclei, Ice crystal growth, Cold chambers, Laboratory techniques.

36-4168
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Cloud physics, Weather modification, Cloud seeding, Aerosols, Ice nuclei, Nucleating agents.

36-4169
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Weather modification, Aerosols, Cloud seeding, Ice nuclei, Nucleating agents, Mathematical models.

36-4170
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Supercooled clouds, Cloud droplets, Water vapor, Phase transformations, Freezing nuclei, Ice crystal growth, Mathematical models.

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Hailstones, Ice nuclei, Supercooled water, Ice crystal growth, Aerosols.

36-4172
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Hail clouds, Weather modification, Nucleating agents, Ice nuclei, Hailstone growth.

36-4173
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Weather modification, Cloud seeding, Aerosols, Ice nuclei, Nucleating agents.

36-4174
Studying conditions favorable for extinguishing forest fires by artificial precipitation in western Siberia. [K issledovaniiu uslovii blagopriiatnykh dlia tusheniia lesnykh pozharov iskusstvenno vyzyvaemymi osadkami na territorii Zapadnoi Sibiri].
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Taiga, Forest fires, Artificial precipitation, Cloud seeding, Artificial nucleation.

36-4175
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Cloud droplets, Freezing points, Electric fields, Ice crystal growth.

36-4176
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36-4177
Studying freezing temperatures of droplets during the introduction of ice forming particles into the droplet and on its surface. [Issledovanie temperatury kristallizatsii kapel' pri vvedenii l'doobrazuiushchikh chastits vnutr' i na poverkhnost' kapli].
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Cold chambers, Laboratory techniques, Drops (liquids), Distilled water, Freezing points.

36-4178
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Nikandrov, V.IA.
Experimentation, Drops (liquids), Supercooling, Aerosols, Freezing points.

36-4179
Experimental studies of the role of cloud element freezing and disintegration in the electrification of convective clouds. [Eksperimental'nye issledovaniia roli zamerzaniia i razrusheniia oblachnykh elementov v elektrizatsii konvektivnogo oblaka].
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Cold chambers, Laboratory techniques, Cloud droplets, Freezing points, Evaporation, Electric charge.

36-4180
Using piezoresonant quartz scales in studying water vapor adsorption on ice forming substances. [K issledovaniiu adsorbtsii parov vody na l'doobrazuiushchikh veshchestvakh metodom p'ezorezonansnykh kvartsevykh vesov].
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Aerosols, Water vapor, Adsorption, Ice formation, Ice crystal growth.

36-4181
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Snow cover distribution, Snowdrifts, Snowstorms, Snow water equivalent, Alpine landscapes.

36-4182
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Snow composition, Air pollution, Municipal engineering.

36-4183
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Bel'chikov, V.A.
Meltwater, Runoff, Water balance, Mathematical models.

36-4184
Water vapor effect on hydrothermal regimes of frozen soils and ground. [Otsenka vliianiia vodianogo para na gidrotermicheskiĭ rezhim merzlykh pochvogruntov],
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Frozen ground physics, Hydrothermal processes, Water vapor, Soil water migration, Frozen ground temperature, Heat transfer, Mathematical models.

36-4185
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Mining, Air pollution, Snow composition, Metals, Snow samplers, Water pollution.

36-4186
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Tundra, Deserts, Plant ecology, Ecosystems, Vegetation patterns.

36-4187
Ground lichens and their habitat on the Cape Chelyuskin (Taymyr). [Napochvennye lishaĭniki i ikh mestoobitaniia na myse Cheliuskin (Taĭmyr)],
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Tundra, Deserts, Lichens, Plant ecology, Vegetation patterns, Ecosystems.

36-4188
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Snow cover distribution, Snow depth, Snow water equivalent, Meteorological charts, Meteorological data.

36-4189
Relations between damages of power and communication lines and quantities of wet snow deposits. [Zavisimost' povrezhdeniĭ liniĭ sviazi i elektroperedachi ot velichiny otlozheniĭ mokrogo snega],
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Beshkirova, L.E.
Power line icing, Transmission lines, Ice accretion, Snow accumulation, Wet snow, Loads (forces).

36-4190
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Verkhozina, V.M.
Glacial lakes, Naleds, Ice composition, Ion density (concentration), Ice formation, Lake water, Water chemistry, Mongolia.

36-4191
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Large panel buildings, Prefabrication, Walls, Panels, Residential buildings, Permafrost beneath structures, Thermal insulation.

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DLC QC320.16.P77
Models, Frozen ground, Soil freezing, Hydrothermal processes, Ice formation, Phase transformations, Buildings, Wells, Walls, Pipelines, Thermal insulation, Heat transfer, Mass transfer.

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Frozen fines, Clays, Sands, Unfrozen water content, Soil colloids, Capillarity, Hygroscopic water, Adsorption, Frost penetration.

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Fines, Clays, Sands, Soil water migration, Frost penetration, Freeze thaw cycles, Microscope slides, Laboratory techniques.

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Natural gas, Phase transformations, Water vapor, Vapor diffusion, Cooling, Hydrates, Moisture transfer, Heat transfer.

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Water pipelines, Pipeline freezing, Water flow, Flow rate, Cooling rate, Phase transformations, Mathematical models.

36-4224
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Pipelines, Permafrost beneath structures, Ground thawing, Freeze thaw cycles, Well casings, Soil pressure, Mathematical models.

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Soil freezing, Soil moisture migration, Freeze thaw cycles, Phase transformations, Stefan problem, Ice formation, Unfrozen water content, Heat transfer.

36-4227
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Freeze thaw cycles, Phase transformations, Frozen fines, Boundary value problems.

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36-4229
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Walls, Thermal insulation, Heat transfer.

36-4230
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Residential buildings, Walls, Thermal insulation, Design, Subpolar regions.

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36-4232
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Slope stability, Supports, Landslides, Concrete piles, Reinforced concretes.

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Waste disposal, Tailings, Permafrost beneath structures, Waterproofing, Plastics, Films, Electric power.

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Dredging, Tailings, Ponds, Permafrost beneath structures, Subarctic regions, Hydrothermal processes.

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Soil mechanics, Rheology, Geocryology, Engineering geology, Foundations, Permafrost beneath structures, Piles, Deformation, Models.

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Foundations, Clay soils, Rheology, Basal sliding, Creep.

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Simonian, S.S.
Cryogenic soils, Soil mechanics, Soil creep, Mathematical models.

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Clay soils, Rheology, Soil creep, Sliding, Analysis (mathematics).

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Ice physics, Ground ice, Static loads, Ice cracks, Crack propagation, Permafrost structure.

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Soil creep, Cryogenic soils, Deformation, Rheology.

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Slope processes, Permafrost physics, Ground water, Phase transformations, Clay soils, Frozen fines, Compaction, Foundations, Settlement (structural).

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Gerasimov, A.S.
Permafrost physics, Ground ice, Permafrost structure, Foundations, Deformation, Bearing strength, Creep.

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Frozen fines, Sands, Clays, Sliding, Frost heave.

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Slope processes, Cryogenic soils, Clays, Rheology, Landslides.

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Sheinkman, D.R.
Permafrost structure, Ground ice, Compressive properties, Viscosity.

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Mining, Shafts (excavations), Permafrost structure, Ground ice, Permafrost physics, Compressive properties.

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Organic soils, Peat, Soil freezing, Ground ice, Unfrozen water content, Frozen ground mechanics, Creep.

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Clays, Water content, Rheology, Soil strength, Compressive properties, Deformation.

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Engineering geology, Geocryology, Foundations, Permafrost beneath structures, Research projects, Subsea permafrost, Permafrost control, Ground thawing, Frost heave.

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Residential buildings, Industrial buildings, Foundations, Permafrost bases, Permafrost hydrology, Permafrost thermal properties.

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Buildings, Foundations, *Permafrost beneath* structures, Ground thawing, Settlement (structural).

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Permafrost physics, Permafrost thermal properties, Deformation, Frozen fines, Permafrost samplers.

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Buildings, Roads, Pipelines, Permafrost beneath structures, Frost heave, Frozen ground strength, Shear strength.

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Slope processes, Permafrost thermal properties, Active layer, Soil creep.

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Foundations, Piles, Permafrost beneath structures, Plastic properties, Deformation.

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Fedoseev, IU.G.
Piles, Foundations, Permafrost beneath structures, Settlement (structural).

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Frozen fines, Permafrost thermal properties, Slope processes, Slope stability.

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Foundations, Concrete piles, Reinforced concretes, Permafrost beneath structures.

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Permafrost structure, Buildings, Foundations, Permafrost beneath structures, Active layer.

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Buildings, Foundations, Permafrost beneath structures, Permafrost control.

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Industrial buildings, Foundations, Earth fills, Ventilation, Ducts, Permafrost control.

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Water storage, Tanks (containers), Walls, Permafrost beneath structures, Floors, Heat transfer.

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Grishin, P.A.
Soil freezing, Porosity, Soil water, Water chemistry, Freezing points.

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Stochastic calculation of foundation deformations of structures built in water-saturated clay soils. [Veroiatnostnyĭ raschet deformatsiĭ osnovanii sooruzhenii na vodonasyshchennykh glinistykh gruntakh],
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Foundations, Clay soils, Soil water, Soil creep, Deformation.

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Thermomechanical models of frozen grounds and cryogenic processes. [Termomekhanicheskie modeli merzlykh gruntov i kriogennykh protsessov],
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Models, Frozen ground, Soil freezing, Frost penetration, Ground thawing, Geocryology, Hydrothermal processes.

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Lebedenko, IU.P., Ershov, V.D.
Soil freezing, Frost penetration, Freeze thaw cycles, Ground thawing, Soil water migration, Ice formation.

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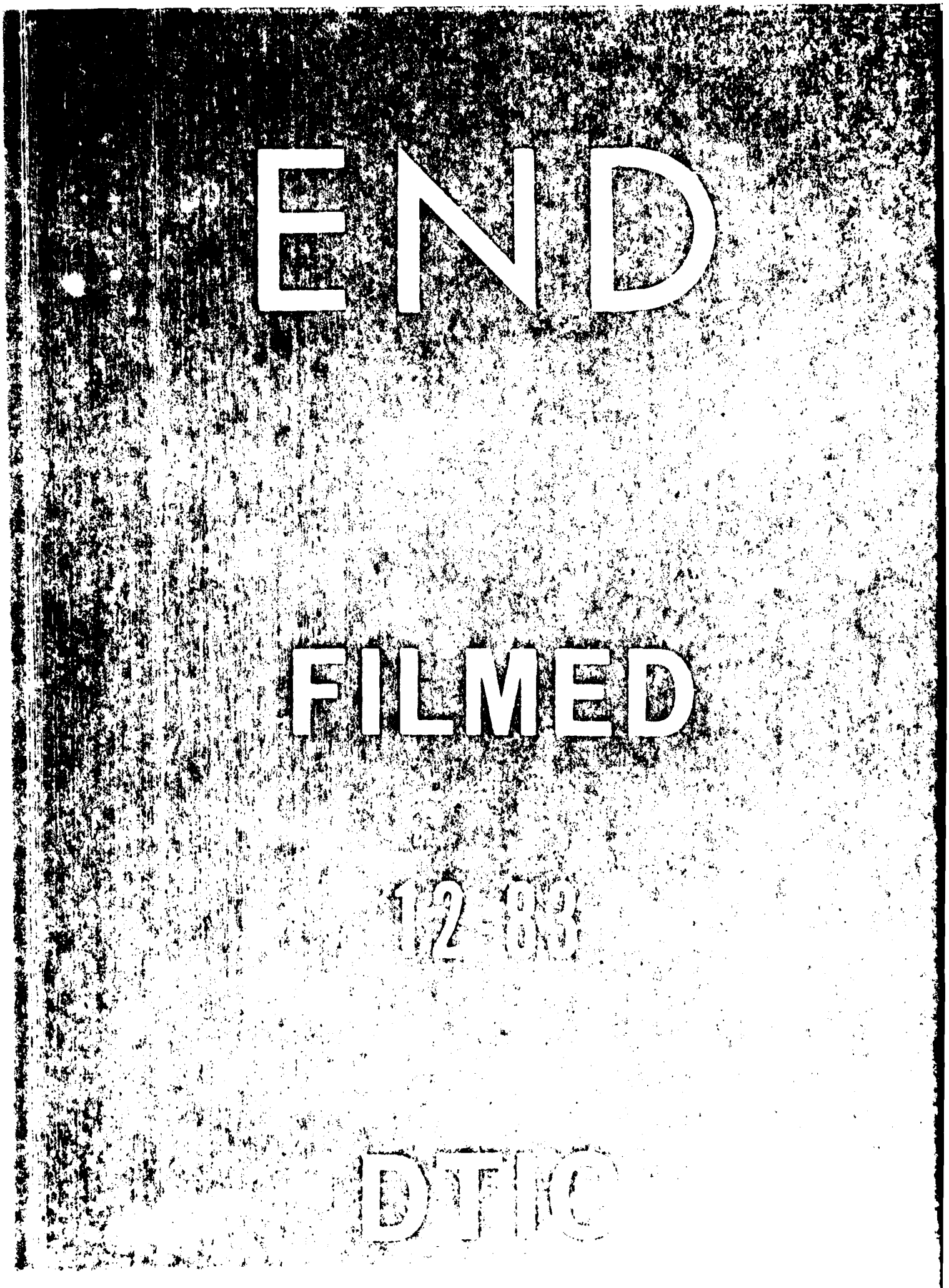
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