SCICEX 2000: A Workshop To Plan For Submarine-Based Arctic Science after the Year 2000

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LONG-TERM GOAL

The goal was to hold a workshop entitled "SCICEX 2000" and to prepare a report to provide the framework for a well-conceived scientific program that makes unique use of U.S. Navy submarines in the next decade.

OBJECTIVES

The overall objective of the workshop, held on 6-8 October 1998, was to bring together scientists, program managers, and Navy representatives to outline the scientific objectives for submarine cruises beyond 1999. The workshop provided a forum for summarizing the results of past SCICEX cruises. Participants also suggested desirable new sensors to enhance the capabilities of future cruises. A Workshop Report was prepared that outlines sound scientific goals and describes a well reasoned approach to make use of the submarine as a unique observing platform.

APPROACH

An organizing committee was formed that consisted of two individuals to jointly head each of the five topical working groups. One of each pair is a past or present SCICEX investigator; the other is from outside the program, to provide a balanced set of ideas for the future program. The tasks of the Organizing Committee were:

- agree on the workshop format and speakers,
- personally invite people critical to their Working Groups,
- head their respective Working Groups at the Workshop,
- report the recommendations of their Working Group to the plenary group, and
- write the section of the Workshop Report pertaining to their topic.

WORK COMPLETED

The SCICEX 2000 Workshop Organizing Committee (D. Rothrock and W. Maslowski, co-chairs) convened a workshop in Warrenton, Virginia, 5 - 9 October 1998. Attendees included scientists, Navy, NSF and Arctic Submarine Laboratory, and other agency personnel.

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Since the Workshop, we published Arctic Ocean Science from Submarines, A Report Based on the SCICEX 2000 Workshop. A copy was mailed out to each workshop participant and other interested people. This report summarizes the workshop and provides a basis for an arctic scientific program that takes advantage of the unique capabilities of U.S. Navy submarines. Specifically, we

- Summarize SCICEX results.
- Outline the scientific objectives for possible submarine cruises beyond the original SCICEX program.
- Communicate funding agency assessments of a continuing SCICEX program, with stable funding and the requisite sensor capabilities.
- Communicate a U.S. Navy assessment of the likely submarine resources available for scientific observations.
- Recommend a management strategy for a future program.
- Identify needed sensor development.

This report represents the opinions of the workshop Organizing Committee. All attendees were invited to comment on the draft report, and many did, so it may be said to represent a consensus of the workshop. This report does not purport to represent the views of the U.S. Navy.

IMPACT/APPLICATIONS

SCICEX has had a major impact on the way we view both the arctic ocean and its geology. The submarine as a observational platform is unparalleled in a survey mode and for process studies that need a large area sampled in a relatively short time. Submarines should be a major logistical factor in a future Arctic Marine Science program.

RELATED PROJECTS

1. Our scientific investigation as part of SCICEX, entitled, "Ice Thickness Distribution Test -- Stage 2" is funded by the National Science Foundation and is aimed at using sequential submarine ice surveys to test how well an ice thickness distribution model can describe the change observed for a patch of ice over periods of a month to a year.

2. D. Rothrock and T. Tucker, Cold Regions Research and Engineering Laboratory, received a NSF 5-year, $1,282,498 grant to process critical historical ice draft data acquired by U.S. Navy submarines in the Arctic Ocean from 1958 to the present. At the conclusion of this work, there will be available for public use a record of Arctic Ocean sea-ice draft from some 60 submarine cruises covering the majority of the Arctic Ocean over 47 years (1958 to 2004). This record will be of immense importance to studies of climate variability in the Arctic Ocean and to testing and improving models.

3. Ice modeling work under a NASA funded Interdisciplinary Investigation "Polar Exchange at the Sea Surface" is using submarine ice thickness data to test model performance.

4. We have plans to collaborate with colleagues at the Mullard Space Science Laboratory to compare submarine ice draft data with ice thickness estimated from satellite-borne altimeters. A proposal has been submitted to the International Arctic Research Center.

PUBLICATIONS

Arctic Ocean Science From Submarines–A Report Based on the SCICEX 2000 Workshop, Warrenton, Virginia, 5-9 October 1998, SCICEX 2000 Workshop Organizing Committee, edited by D. Rothrock and W. Maslowski, April 1999. (Available at : http://psc.apl.washington.edu/scicex/scicex2000.html)

See a list of SCICEX publications at http://www.ldeo.columbia.edu/SCICEX/pubs/Bib.html
and a version grouped as reviewed and unreviewed at
http://www.ldeo.columbia.edu/SCICEX/pubs/SCICEXPublications.html