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National Science Foundation Announces New Ice-Core Drilling Agreements

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DURHAM, N.H. -- The National Science Foundation (NSF) Office of Polar Programs (OPP) has announced the signing of cooperative agreements with teams from the University of New Hampshire, University of Wisconsin (UW), and Dartmouth College that create two new entities to support, advise, and conduct ice coring and drilling used in polar research.

Effective ice-core drilling is vital to NSF's polar research. Through the OPP the federal agency manages the U.S. Antarctic Program, which coordinates all U.S. research on the southernmost continent. OPP also oversees NSF's research and scientific stations in the Arctic.

The first entity created by the cooperative agreement is the Ice Drilling Program Office (IDPO) at Dartmouth College with collaborations at UNH and UW. The IDPO will provide scientific leadership and oversight of ice coring and drilling activities funded by NSF. Mary Albert, visiting professor of engineering at Dartmouth's Thayer School of Engineering, will coordinate the office.

Officials say the new collaboration will encourage innovation in ice-core drilling technologies while better serving the glaciological community's evolving needs.

At UNH, program manager Mark Twickler of the Institute for the Study of Earth, Oceans, and Space (EOS) will serve as IDPO's communications director, providing information and input from established community research groups to the IDPO office and establishing a web site that will provide information to the community and to the general public. Joseph Souney, a project director at EOS, will assist Twickler in the communications role.

"UNH has a long history of working with the ice core community and we look forward to the new collaboration with Dartmouth and Wisconsin to keep the community moving forward in the understanding of past climate and ice sheet dynamics," says Twickler.

The IDPO will also oversee the second entity created by the agreement - the Ice Drilling Design and Operations Group, led by Charles Bentley, emeritus professor of geophysics at UW. This new group will provide engineering design and construction support for new drilling systems and support the operation and maintenance of existing drilling systems.

The two new entities will replace the existing operation run by the Ice Coring and Drilling Services group at the University of Wisconsin as the principle supplier of ice drilling and coring support and expertise to NSF-funded research, and will interact with other research agencies and international partners as well.

Ice coring and drilling are critical components of scientific research in both polar regions and on high mountain glaciers, but they are not simple tasks. At high-altitude cold sites, the snow

never melts but piles up year upon year, burying in the older snow clues to the climate at the time that snow fell on the surface.

By collecting vertical cores from ice sheets, evidence of the past can be obtained. Designers and engineers must create heavy-duty equipment that can work in some of the most remote places on the planet in punishing conditions of extreme cold, wind, precipitation, and high altitude.

Explains Bentley, "Ice drills come in a surprisingly large variety of sizes, types, and purposes to satisfy the myriad needs of glaciological researchers."

High-quality ice core samples provide scientists a better understanding of past climate conditions, levels of pollution and even clues into the origins of the universe as well as boreholes that give scientists access to the insides of ice sheets and glaciers. "Ice coring science has led to many important discoveries," Albert said recently, "including the realization that climate can change dramatically in less than ten years."

The University of New Hampshire, founded in 1866, is a New England liberal arts college and a major research university with a strong focus on undergraduate-oriented research. A land, sea and space-grant university, UNH is the state's flagship public institution, enrolling 11,800 undergraduate and 2,400 graduate students.

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