



Ice Drilling Program Office

Dartmouth College - University of New Hampshire - University of Wisconsin

Ice Bits Newsletter

Quarterly update of IDPO and Ice Drilling Design and Operations (IDDO) activities www.icedrill.org WINTER 2010-11

Science Planning Workshop

This spring the IDPO is sponsoring an interdisciplinary ice community planning workshop to identify future Arctic and Antarctic drilling/coring sites, the ice drilling technology that will be needed, and the timeline over the coming decade for conducting scientific endeavors important for advancing science on many frontiers. The 2-day workshop will be open to the entire community and is planned for April 15-16. The workshop will be held at a location near Washington D.C. so that NSF program managers will have an opportunity to attend, and will be located close enough to an airport so that people from the west coast can fly in and out easily.

Results from the workshop will be reflected in updates in the science descriptions, timeline, and planning matrices in the Long Range Science Plan and Long Range Drilling Technology Plan, so that we can ensure that the drilling technology will be ready when needed by your science.

More information about the workshop will be distributed shortly via the IceDrill.News email list and via the IDPO/IDDO web site (www.icedrill.org).

Drilling Support to Science Projects

A variety of Antarctic field projects were launched this austral field season, including the final season of deep drilling the main core at the WAIS Divide site, and shallow drilling endeavors at Allan Hills, WAIS, Taylor Glacier, and access through the ice at Lake Vida.

WAIS Divide Ice Core – Deep

Despite problems with noisy control boards and fluid leakage into the sonde, good progress was made. The DISC Drill continued to produce ice cores of excellent core quality and on

January 28, 2010 the season's depth goal of 3,330 meters was successfully reached.

Allan Hills Coring

Coring was successfully completed by driller Mike Waszkiewicz, with holes of 229 and 129 meters providing all the ice that PI Andrei Kurbatov needed.

WAIS Shallow Cores

Coring was successfully completed by driller Lou Albershardt, with three ice cores drilled (59, 112, and 62 meters) at three sites on the Pine Island and Thwaites Glaciers.

Taylor Glacier

Despite broken gearboxes early in season, PI Jeff Severinghaus reported that drillers Tanner Kuhl and Robb Kulin produced core with the newly designed Blue Ice Drill twice as fast as specified in the science requirements. In addition, the science goal of producing 7000 kg of ice with the drill was achieved.



Drillers with the Blue Ice Drill at Taylor Glacier, Antarctica. Photo: Jeff Severinghaus

Lake Vida Access

Driller Jay Kyne used the Prairie Dog drill to complete holes to 27 and 20.5 meters depth in ice thicker and dirtier than expected



Lake Vida ice core with a thick layer of sediment in the middle that appears to be laminated. This ice core was retrieved at a depth of ~21 meters. Photo: <http://www.dri.edu/2010-lake-vida-expedition>



Long section of core retrieved in the core room at Lake Vida. Chris Fritsen and Jay Kyne (from the left). Photo: <http://www.dri.edu/2010-lake-vida-expedition>

by PI Peter Doran. The drill was stuck in the second hole and, after discussions between RPSC and NSF, abandoned to avoid any potential environmental damage in recovery.

Intermediate Drill

IDPO continued to work with the science community to iterate between the community, IDPO, and IDDO on Science Requirements for an intermediate drill. IDDO continued to research capabilities of existing intermediate drills and suggested possible revisions/changes to the science requirements based on that research. IDPO provisionally approved the Science Requirements, which will be modified after the evaluation of capabilities of other drills, especially

the Danish Hans Tausen Drill. Existing intermediate drills are expected to provide the model for the US Intermediate Drill. IDDO engineer Tanner Kuhl submitted a report on his observations of a new NZ intermediate drill at the NEEM site in Greenland and Engineering and Research Director Alex Shturmakov and IDDO engineer Jay Johnson are scheduled to travel to Copenhagen in February to discuss the design of the Hans Tausen Drill with the Danes and to assess the availability of drawings and specifications for use in the U.S. effort.

DISC Drill

A number of problems with the DISC Drill sondes (primarily the motor controllers and leaking housings) manifested themselves at WAIS Divide this season. While problems that require correction after the season are expected, these appear to be more serious than normal and are expected to require more effort to correct. The additional effort needed to make the repairs and modifications cannot be estimated until the drillers and the equipment return from the field and the equipment is assessed.

Replicate Coring System

The mechanical design and testing of the Replicate Coring system is a little ahead of schedule. The electronics design is somewhat delayed due to the problems with not completing the DISC motor controllers prior to the start of the 2010-11 WAIS Divide field season. This delay plus the need to correct the problems experienced with the DISC motor controllers at WAIS Divide will impact the cost of completing the design, fabrication, and testing of the electronics systems for the Replicate Coring system. However, IDDO feels confident that the Replicate Coring system will still be ready for use at WAIS Divide during the 2011-12 field season.

Educational Outreach

The first quarter of this year was an active period, where multiple events that were planned last spring came to fruition.

In October, Linda Morris, Mary Albert and graduate researcher Kaitlin Keegan manned a *Polar Detectives* booth

for two days during the US Science Festival on the DC mall, an event attended by half a million people. Albert was broadcast live talking about the significance of ice core research and Fernando Silva-Pinto, Washington correspondent for Globo International TV, interviewed Keegan.

In November, Morris presented a hands-on teachers' workshop at the National Science Teachers Association's regional conference in Baltimore. Albert stepped in to give a science presentation for Zoe Courville, who was unable to make it home from Antarctica in time. She met with an NSTA leader

concerning potential integration of IDPO research into a proposal for developing formal education activities centered on the Climate Literacy Principles.

And in December, Joe McConnell and Linda Morris co-presented *Hot Topics: Natural and Anthropogenic Climate Impacts as Evidenced in Ice Cores* during the AGU teachers' GIFT (Geographical Information for Teachers) workshop in December. Fifty-three teachers attended the event, which was co-sponsored by AGU and the National Earth Science Teachers Association.

Requesting Ice Drilling Support

If you are preparing a proposal that includes any kind of ice drilling or ice coring support from IDPO/IDDO, you must complete a Field Project Requirement Form (www.icedrill.org/scientists/scientists.shtml) and submit it to IDPO/IDDO via icedrill@dartmouth.edu at least six weeks before your proposal deadline.

Once IDPO/IDDO receives your Field Project Requirement Form we will provide you with a cost estimate and a letter of support that MUST be included with your proposal. If you are submitting a proposal to NSF the cost estimate and letter of support should be included as Supplemental Information in your proposal, and it is recommended that you also notify your relevant NSF Program Manager that your proposal requires support from the IDPO/IDDO.

If you are preparing a non-NSF proposal, it is recommended that you familiarize yourself with the Policy for Ice Drilling for Organizations other than NSF available at www.icedrill.org/scientists/.

Subscribe to Icedrill.News

IceDrill.News is an electronic mailing list maintained by IDPO/IDDO. The list is used to communicate important news and announcements by IDPO/IDDO to members of the ice drilling and ice coring science and technology communities. To subscribe to IceDrill.News, visit www.icedrill.org/listserv.shtml.

About IDPO/IDDO

The IDPO/IDDO is a collaborative effort between three institutions: Dartmouth College, the University of Wisconsin, and the University of New Hampshire. The IDPO was established to articulate and maintain long term and short term goals and plans in conjunction with the ice coring and drilling research community, enhance communication and information exchange within the research community and beyond to the public, and oversee the IDDO. The IDDO is an organization of engineers with expertise in ice drilling who develop and provide appropriate drilling technology and expertise for ice coring and drilling research projects.

Ice Drilling Program Office (IDPO)

Mary Albert - Executive Director

Charles Bentley - Director of Drilling Technology

Mark Twickler - Director of Communications

Ice Drilling Design and Operations (IDDO)

Charles Bentley - Principal Director

Don Lebar - Program Director

Alex Shturmakov - Engineering and Research Director