SUMMER 2011

ICE BITS

U.S. Ice Drilling Program
Ice Drilling Program Office | Ice Drilling Design and Operations

Quarterly update of Ice Drilling Program Office (IDPO) and Ice Drilling Design and Operations (IDDO) activities

Overview of Activities

The third quarter FY2011 yielded success in science planning, agile drilling for multidisciplinary endeavors and drill development. IDDO successfully completed three field projects in Greenland: Rick Forster's Arctic Circle Traverse project, David Noone and David Schneider's isotope hydrology project, and Kent Anderson's Greenland Ice Sheet Monitoring Network (GLISN) project. See "Highlights" below for more information about these three completed projects. In addition, two field projects are still underway: one in North Greenland with P.I. Bob Hawley and one on McCall Glacier, Alaska with P.I. Matt Nolan. IDPO sponsored the Ice Drilling Science Community Planning Workshop in Herndon, VA, which enabled new scientific collaborations and plans for future interdisciplinary drilling projects, including ideas for clean agile drilling systems, development of rapid access drilling, and modular hot water drilling. The Long Range Science Plan and Long Range Drilling Technology Plan were updated. Several high-visibility educational outreach events to feature scientists from the ice coring and drilling community were planned, and work began on a revised Education and Outreach vision for the revised IDPO/IDDO Strategic Plan. Critical issues facing IDDO include repair and updating of the DISC Drill and the development and preparation of the DISC Drill Replicate Coring System for testing at WAIS Divide during the 2011-2012 field season. Problems with the DISC motor control boards and other repairs are expected to cost more than planned, and the diversion of resources from the Replicate System has impacted the schedule and, to a lesser extent, the cost of the Replicate Coring System. IDDO believes, however, that the projects will be completed as scheduled and within the total budget for the two projects combined.

Greenland Ice Sheet Monitoring Network (GLISN) team photo. Credit: Tanner Kuhl.

Lead Driller Beth Bergeron operates the winch from the 4-Inch Drill system. Credit: Tanner Kuhl

Highlights

Multidisciplinary Science on the Greenland Ice Sheet is Enabled by Agile Ice Core Drills

Despite battling bitter winds and cold April temperatures in Greenland, P.I. Rick Forster's Arctic Circle Traverse (ACT) field team successfully drilled and processed over 200 meters of ice core at four traverse sites in Greenland under the leadership of IDDO Lead Driller, Terry Gacke. The cores may yield insights on snow accumulation. Meanwhile, in the center of the ice sheet, the field team for P.I.'s David Noone and David Schneider drilled a shallow core array near Summit Station, Greenland using an IDDO PICO 4" hand auger system and Sidewinder kit. At Raven Camp on the ice sheet, activity focused on a detection system for ice sheet movement; a 300-meter borehole was drilled and a seismometer successfully deployed in May for P.I. Kent Anderson's Greenland Ice Sheet Monitoring Network (GLISN) project. Under the leadership of IDDO Lead Driller Bella Bergeron, IDDO driller Terry Gacke, IDDO engineer Tanner Kuhl and the GLISN science team utilized the 4-Inch drill system winch to control descent of the seismometer. In addition, three solar arrays were constructed, surface seismometers buried, wind turbines and GPS antennas erected, and interconnecting cables buried.

Interdisciplinary Community Workshop Examines the Future for Ice Coring and Drilling

The Ice Drilling Program Office (IDPO) sponsored an interdisciplinary ice community 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 new frontiers. The workshop, organized by Mary Albert, enabled community consensus on plans for future endeavors to tackle challenging questions using evidence from within and under glaciers and ice sheets, including rapid access to the base of the ice sheet, lightweight human-portable drills, agile horizontal clean drilling for biological studies, and modular hot water drills. Scientists from a variety of disciplines participated in the workshop, which was an open workshop with invited and contributed talks.

Education and Outreach

A new "Outreach Support" section for US scientists is available at www.icedrill.org. Accessed via the "For Scientists" drop-down tab, on this page you will be able to access a generic presentation for you to personalize and use (coming soon), discover how your already developed materials can be leveraged through IDPO outreach venues, ask for help with your Broader Impacts plans and find background information on educational standards and classroom practices. This location also provides an opportunity to leverage educational resources among projects and serves as a place to highlight the outreach efforts of scientists collaborating with IPDO…check out which of your colleagues have participated and join the list for upcoming opportunities!

IDDO Career Opportunity - Mechanical Engineer(s) Needed!

IDDO is currently searching for one or more mechanical engineers to add to its staff at the University of Wisconsin-Madison. The primary responsibilities of the Mechanical Engineer are to 1) design mechanical, electromechanical, and thermal equipment for ice coring and drilling applications, 2) coordinate procurement and fabrication of designed equipment, 3) assist with the fabrication of drill systems, 4) develop test plans, 5) assist in testing of ice drilling equipment, including testing in the field, 6) provide technical support and guidance for field operation of equipment, 7) perform technical

studies and prepare reports and 8) maintain communications with IDDO team and its customers and suppliers.

The individual(s) will also be required to work in remote field camps in the Arctic and Antarctic in support of the drilling operations of IDDO and these assignments may be for durations of several months at a time.

For more information about this exciting career opportunity, visit: http://www.ohr.wisc.edu/pvl/pv_070544.html

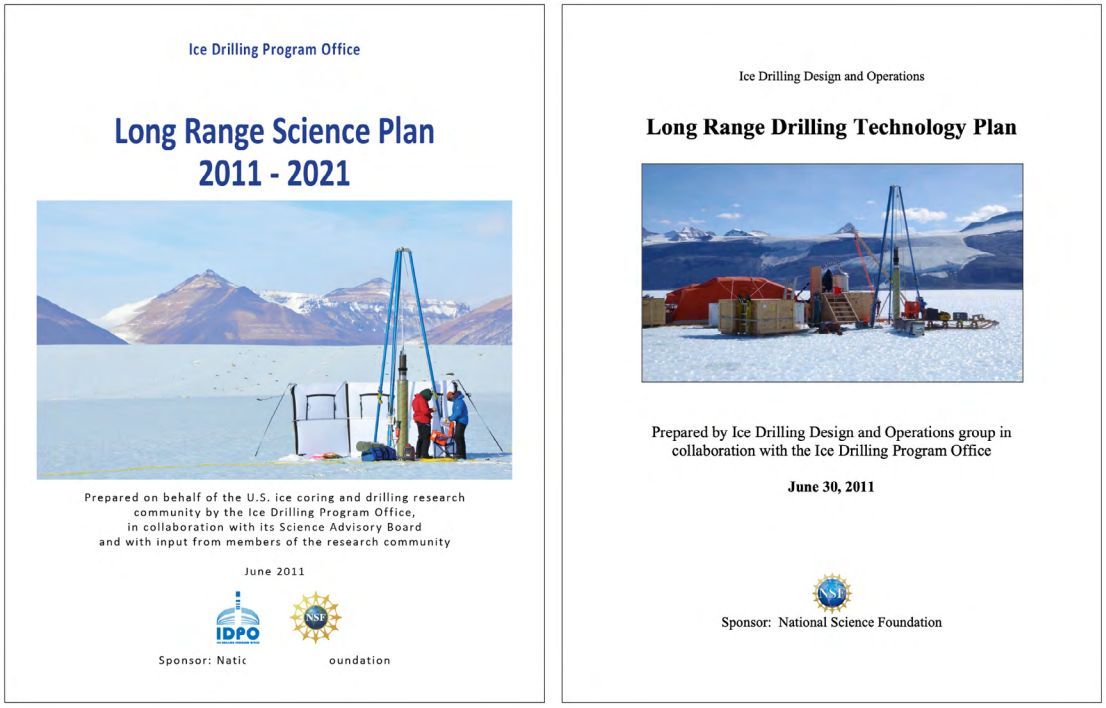
IPICS 2012 Open Science Conference

The first Open Science Conference of the International Partnerships in Ice Core Sciences (IPICS) will be held from 1-5 October 2012 at the beautiful setting of the Belembra club, situated on the border of the Mediterranean Sea in one of the best spots of the French Cote d'Azur.

The objective of the conference is to present, discuss and put into perspective the most recent results of past and current ice core drilling projects (deep drillings such as EPICA, WAIS Divide, NEEM, TALDICE,... but also shallow drillings) in Antarctica and Greenland. Other ice core drilling projects conducted in non-polar glaciers or in other Arctic sites are also welcome. For more information, please visit the conference web site at: http://www.ipics2012.org/ .

Long Range Science Plan 2011-2021 and Long Range Drilling Technology Plan

The revised Long Range Science Plan and Long Range Drilling Technology Plan are now available on the www.icedrill.org web site. As a reminder, both plans are updated yearly in the spring. Please have a look at the plans and if science from your community will need ice drilling or coring support in the coming decade, and it isn't already included in these plans, be sure to send a community-endorsed white paper describing the science and drilling needs to us at Icedrill@Dartmouth.edu before March 2012 so that it can be included in the next revision of the long range plans.



Covers of the Long Range Science Plan (left) and Long Range Drilling Technology Plan (right).

2011 Technical Advisory Board (TAB) Meeting

IDDO organized and conducted the annual TAB meeting in Madison, WI on April 20-21 with all eleven board members (six international) present along with two Chinese drilling engineers. Also attending were IDPO PIs and staff members, Eric Saltzman representing the IDPO Science Advisory Board, SSEC staff members, two contract drillers, and the IDDO staff. For more information about the TAB, visit: https://icedrill.org/about/technical-assistance-board

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/scientists.shtml#otheragencies.

This material is based upon work supported by the U.S. National Science Foundation under Continuing Agreements 0841308 (Dartmouth College), 0841225 (University of Wisconsin Madison), and 0841166 (University of New Hampshire) which support the work of the U.S. National Science Foundation Ice Drilling Program (IDP). Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the U.S. National Science Foundation.