



WAIS Divide Ice Core Project

Climate, Ice Sheet History, Cryobiology

Welcome to the International Polar Year !!

For more information on IPY please visit the US website: <http://www.us-ipy.gov/>



Science Coordination Office (SCO)

The 2006-2007 field season at WAIS Divide has come to a close. After two flight cancellations due to bad weather, the SCO (Joe Souney) and ICDS (Bella Bergeron and Michael Jayred) made it to WAIS Divide in late November. We recovered a 130 m ice core located outside of the arch facility and a 114 m ice core from the pilot hole for the main deep core. Ben Smith and Jessica Drees (E. Waddington P.I.; University of Washington) were at WAIS Divide from mid-November to mid-December conducting optical borehole logging in shallow holes and also collected two short cores for collaborators in the U.S. A second crew from ICDS (Jay Johnson and Brent Folmer) arrived at WAIS Divide in mid-December to help install the surface casing for the main borehole and to erect the gantry crane that will be used to set up the Deep Ice Sheet Coring (DISC) Drill next season. Jihong Cole-Dai and Kevin Poenisch (South Dakota State University) were at WAIS Divide in late-December doing snowpit chemistry work. More information about this past season's science activities can be found at:

<http://www.waisdivide.unh.edu/fieldreports/index.html>



Bella Bergeron (left) and Michael Jayred (right), from ICDS, drill the 130 meter ice core. The tall arch in the background of the photo is the structure that will house the DISC Drill next year. The smaller arch on the right is the core-processing arch. Photo: J. Souney

The SCO has received more than 50 applications for the 10 science tech positions that will log the core and assist with the drilling during the 2007-2008 field season. We're in the process of selecting the crew and look forward to having a strong field team. Many thanks to everyone who applied and to those people who helped advertise the positions.

In June 2007 we will process the ~245 m of core that was collected during the 2006/2007 field season at the National Ice Core Laboratory. If you are a funded P.I. for the WAIS Divide project and are interested in samples from these cores, please contact Mark Twickler (mark.twickler@unh.edu).

The first WAIS Divide Ice Core Project science meeting is scheduled for 4-5 October 2007 in Lake Tahoe, Nevada. The meeting will be held at the North Tahoe Conference Center: <http://www.northlaketahoe.net/conference.html>. Motels are a 3 minute beach walk away and are about \$60/night. Motel information can be found at:

<http://www.tahocrown.com/>

Additional information about the science meeting will be released in the coming months.

-- WAIS Divide SCO

Raytheon Polar Services Company (RPSC)

The second field season for the WAIS Divide project ended on 07 February, 2007. The successful season focused on supporting 8 science groups and the second phase of construction on the arch interior. Science activities included regular twin otter and Basler Turbo 6 aircraft support from the camp. With many science teams traveling in and out of the camp, the average population tended to be around 21 persons including a camp staff of nine. However, the camp remained busy throughout the months with managing daily camp and flight operations scattered

(RPSC continued on page 2)

Ice Coring and Drilling Services (ICDS)

The DISC Drill test season at Summit Greenland was a huge success. Other than not being able to drill a full four-meter core in one run we fulfilled all our testing goals and in many cases exceeded them. Core quality and the drill's ability to drill brittle ice were excellent from the start. There were problems and challenges, but for a completely new drill system that had never been fully assembled and operated as a system the season went extremely well. A very large volume of test data and a good understanding of the strengths and weaknesses of the drill system were acquired.

At the current time, the DISC team is focused on implementing all the necessary improvements to the drill's systems to ensure a successful operation at WAIS Divide. The major task is to make the

winch not only capable to execute all the necessary commands, but also, to be user friendly and robust to survive 5-7 years of operation. The winch went through the substantial redesign - the only pieces that really left from the initial winch are the drum and the model tag. Extensive modifications are also being made in electronics and hardware/software areas.

Our team feels comfortable with all these changes and the time allocated to implement them. Along with the enhancements of the drill, ICDS has started the hiring process for the production drilling in 2007-2008.

-- Alex Shturmakov, DISC Drill Project Manager, ICDS, UW-Madison

RPSC continued from page 1

with many poor weather days.

Arch interior work started soon after the camp was up and running. Activities included hand excavating with electric chainsaws the main drill tower slot, winch pit, and the core storage basement. As the excavation at each location was concluded, the construction crew, lead by Billy Texter, installed floor footings and floor panels. Lighting and ventilation ductwork was also installed; however, a delay in receiving the fans and electrical distribution panels as scheduled will push their installment to next season. Four air conditioning units for the core processing area were installed but were not tested due to lagging electrical panels. Cursory temperature monitoring prior to closing the arch for the winter showed the core storage basement lingering around -14 F and upper core processing area around +4 F on nicer days. The core processing arch was insulated with R-12 fire resistant blankets. The smaller arch is now showing signs of snow drifting reaching its arch peak, which will greatly add to the insulation for maintaining a cold work area. During December, two ICDS team members arrived at camp to install the two large gantry cranes in the drilling arch area. These cranes will provide them with immediate heavy lifting support when the main drill is installed. There will be a moderate punch list of remaining items to construct

or install in conjunction with installing the drill and core processing equipment scheduled for next season. RPSC is currently working on next season's schedule. Fortunately, despite the tremendous danger and effort of hand excavating over 15,500 cubic feet of firn, block by block, the construction crew only reported several muscle strains and pains.



Arch construction crew installing the floor in the core-processing arch. Directly beneath this floor is the core storage trench where all brittle ice will be stored for a year before being shipped to NICL. Photo: J. Souney

Towards the end of the season, the NSF approved four additional LC-130 missions above plan that flew

(RPSC continued on page 3)

RPSC continued from page 2

in the first shipments of drilling fluids that were previously staged in McMurdo Station. There is currently enough drilling fluid on site to conduct the first season's goals. A total of 28 LC-130 Hercules missions brought in approximately 435,000 lbs. of cargo, passengers, and fuel. After two seasons, a total of 1,356,181 lbs. of cargo, passengers, and fuel have been flown to the field camp. A major challenge for this season was winterizing the camp. Since the arch is into it's interior construction phase and not available as a large storage shed as last season, all camp cargo and equipment was winterized outside on a 400' snow berm. As one can guess, it is very time consuming building such a large snow berm and the process

begins a month before needed.

As the camp was closing, the annual resupply vessel, the American Tern, arrived at McMurdo Station with several milvans of WAIS Divide items. These items consisted of the third bulk purchase of both drilling fluids, a second aircraft cargo sled, aluminum ice core trays, and ISC boxes pre-loaded with core tubes. These items will remain in McMurdo Station during the winter months until the following field season begins.

-- Matthew Kippenhan, WAIS Divide Project Manager, RPSC

National Ice Core Laboratory (NICL)

During this reporting period, the staff at the NICL have focused on completing the design and construction of the core-handling system that will occupy the core-processing arch at WAIS Divide. Design advances are being incorporated into this system in order to create a consistent approach that minimizes the possibility of damage to the core during handling by eliminating moving cores, core trays, or core boxes by hand, and by minimizing thermal and mechanical stresses on the core. Features of the core handling system include a fluid evacuation device to remove drill fluid from the core as it is pushed out of the core barrel, a plastic netting system designed specifically for capturing and retaining the integrity of brittle ice, utilization of a high-speed circular saw for cutting cores, and high-rigidity extruded aluminum core trays. In an effort to reduce the possibility of length measurement errors, NICL is also designing a semi-automated measurement system and a self-checking database.

Core trays, insulated shipping containers, and core tubes sufficient for the first season of operation at WAIS Divide along with several other processing line components were purchased and shipped on the resupply vessel last year. NICL is also currently working with Raytheon Polar Services (RPSC) and the WAIS Divide Science Coordination Office (WSD-SCO) to finalize the floor plan for the processing arch and is starting planning for the 2007 core processing line for cores drilled at WAIS Divide during this past season. In order to ensure good communication with their cooperators, NICL has also instituted a weekly written update for the WSD-SCO and RPSC.

-- Joan Fitzpatrick, NICL



WAIS Divide Ice Core Project - Science Coordination Office (SCO)

Photo: J. Souney

Kendrick Taylor, Chief Scientist, Desert Research Institute
 Mark Twickler, University of New Hampshire
 Joe Souney, University of New Hampshire
 Trevor Popp, Desert Research Institute