

ANDRILL NEWS RELEASE

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ANDRILL'S 2ND ANTARCTIC DRILLING SEASON EXCEEDS ALL EXPECTATIONS

ATTENTION: News, Education, Science Editors

EDITOR: Photos, video, scientists' reports, blogs and more information are available at the ANDRILL and Project Iceberg Web sites, <http://andrill.org> and <http://andrill.org/iceberg>.

CONTACT: Tom Simons, University Communications, University of Nebraska-Lincoln, (402) 472-8514 (tsimons1@unl.edu)

McMurdo Station, Antarctica, Nov. 28, 2007 -- A second season in Antarctica for the Antarctic Geological Drilling (ANDRILL) Program has exceeded all expectations, according to the co-chief scientists of the program's Southern McMurdo Sound Project.

One week ago (Nov. 21), the drilling team passed the 1,000-meter mark in rock core pulled from beneath the sea floor in McMurdo Sound, and with a remarkable recovery rate of more than 98 percent. The end of drilling is scheduled for this weekend, and only a few tens of meters of core remain to be recovered for an expected final total of more than 1,100 meters (3,600 feet). It's the second-deepest rock core drilled in Antarctica, surpassed only by the 1,285 meters (more than 4,215 feet) recovered by last year's ANDRILL effort, the McMurdo Ice Shelf Project.

As the job nears completion for the Southern McMurdo Sound Project drillers, the co-chief scientists, David Harwood of the University of Nebraska-Lincoln and Fabio Florindo of Italy's National Institute of Geophysics and Volcanology in Rome, said they couldn't be more pleased with the results. They said the efforts of the program's nearly 80 scientists, drillers, engineers, technicians, students and educators in Antarctica, with the operations and logistics support provided by Antarctica New Zealand, have given the world's scientists more than a kilometer of pristine rock core that records the history of climate and glacial fluctuations in Antarctica over the past 20 million years.

"It's everything we hoped for," Harwood said. "Combine the drill hole we recovered last year with this one, from a time period right below it, and it's more than 2 kilometers (1 1/4 miles) of geological history. It's phenomenal what we've recovered. There's a lot of diversity in the core, indeed more than we can digest right now. It will take some time to fully resolve the paleoenvironmental and dynamic paleoclimate information in the core."

The goal of this drilling project was sediment core retrieval from the middle Miocene Epoch when, for an extended period, Earth was warmer than today. Florindo and Harwood said they are especially pleased to have recovered such high-quality core from this target period.

"We now have a more complete core record from the middle Miocene and a step into a colder period of time, and that was one of our key targets," Florindo said. "It will tell an important story when we put together our recovery with the record of last season. This is exciting science and it will echo loudly in the scientific community."

The middle Miocene has long been held as one of the fundamental time intervals in development of the modern Antarctic ice sheets. It encompassed a change from a warm climate optimum approximately 17 million years ago to the onset of major cooling approximately 14 million years ago, and the formation of a quasi-permanent ice sheet on East Antarctica. Florindo and Harwood

said fossils and sediments deposited during this year's ANDRILL target interval suggest the persistence of warmer-than-present conditions over an extended period of the middle and late Miocene when the western Ross Sea and McMurdo Sound resembled the modern climate conditions of southernmost South America, southwestern New Zealand, and southern Alaska, rather than the cold polar climate of today.

"Until now, most climatic interpretations for this time period has been based on measurement of oxygen isotopes in the deep sea, far from Antarctica," Harwood said. "The cores we've recovered will give us a high resolution history of paleoclimate change directly from the Antarctic continent." The sediment cores reflect deposition close to or beneath grounded glaciers, alternating with fine-grained sediments, which provide clear evidence for ice advance and substantial retreat during main climate transitions, Florindo and Harwood said. They said programs like ANDRILL are extremely important because of the uncertainties about the future behavior of Antarctic ice sheets. This stratigraphic record will be used to determine the behavior of ancient ice sheets, and to better understand the factors driving past ice sheet, ice shelf and sea-ice growth and decay. This new knowledge will enhance our understanding of Antarctica's potential responses to future global climate changes.

After a seven-week setup period by Antarctica New Zealand during late winter in the Southern Hemisphere, drilling began Oct. 9 and continued until last week, with the drillers recovering 25 to 70 meters of core each day. There was only one major interruption, occurring in early November when sand and water flowed into the drill hole, but Harwood said the drill team "did an awesome job" of fixing the problem.

Following the planned drilling stoppage at the end of last week, scientists lowered a variety of scientific instruments into the deep drill hole over several days to get a better understanding of the physical properties of the geologic layers under pressure and to obtain an acoustic image of the inside of the borehole. Drilling resumed this week and will continue until probably Sunday to recover about 100 meters of additional core.

The first stop for each core section after recovery is the Crary Science and Engineering Center, operated by the U.S. National Science Foundation at McMurdo Station. After preliminary examination by on-ice scientists, the cores are shipped to Florida State University's Antarctic Marine Geology Research Facility in Tallahassee for storage and long-term study.

ANDRILL is a multinational collaboration comprised of scientists, students and educators from the four partner nations (Germany, Italy, New Zealand and the United States) to recover stratigraphic records from the Antarctic continental margin. ANDRILL is one of about 220 projects endorsed by the fourth International Polar Year, 2007-2009, one of the largest collaborative science programs ever attempted. For more information, visit <http://andrill.org>.

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