

"We can read these sediments like a history book," Brinkhuis says. "And this book goes back 53 million years, giving us an unprecedented record of how ice sheets form and interact with changes in the climate and the ocean.'

The new core samples collected during the expedition are unique because they provide the world's first direct record of waxing and waning of ice in this region of Antarctica.

Combined, the cores tell a story of Antarctica's transition from an ice-free, warm, greenhouse world to a cold, dry, "icehouse" world.

Sediments and microfossils preserved within the cores document the onset of cooling and the development of the first Antarctic glaciers, as well as the growth and recession of Antarctica's ice sheets.

Cores from one site resemble tree rings--alternating bands of light and dark sediment preserve seasonal variability of the last deglaciation, which began some 10,000 years ago.

Understanding the behavior of Antarctica's ice sheets plays an important role in our ability to build effective global climate models, say scientists, which are used to predict future climate.

"These models rely on constraints imposed by data from the field," the expedition co-chief scientists point out.

"Measurements of parameters such as age, temperature, and carbon dioxide concentration increase the accuracy of these models. The more we can constrain the models, the better they'll perform--and the better we can predict ice sheet behavior.'

What's next?

The science team now embarks on a multi-year process of on-shore analyses to further investigate the Wilkes Land cores.

Age-dating and chemistry studies, among other analyses, are expected to resolve questions about changes in Antarctica's climate over short timescales (50-20,000 years).

Data collected from the Wilkes Land Expedition will complement previous research from drilling operations conducted elsewhere in the Antarctic over the last 40 years.

The research will provide important age constraints for models of Antarctic ice sheet development and evolution, forming the basis for models of future ice sheet behavior and polar climate change.

IODP is an international marine research program dedicated to advancing scientific understanding of the Earth through drilling, coring, and monitoring the sub-seafloor.

The JOIDES Resolution is a drilling vessel managed by the U.S. Implementing Organization of IODP (USIO), and funded by the U.S. National Science Foundation (NSF). Together, Texas A&M University, Lamont-Doherty Earth Observatory of Columbia University and the Consortium for Ocean Leadership comprise the USIO.

IODP is supported by two lead agencies, NSF in the U.S. and Japan's Ministry of Education, Culture, Sports, Science and Technology.

Additional program support comes from the European Consortium for Ocean Research Drilling (ECORD), the Australian-New Zealand IODP Consortium (ANZIC), India's Ministry of Earth Sciences, the People's Republic of China (Ministry of Science and Technology), and the Korea Institute of Geoscience and Mineral Resources.

Kansas City Environment infoZine The lastest infoZine Environment articles. Oil Spill Halts Fishing Off U.S. Coast of Gulf of Mexico Harrisonville Man Lands Second State Record in Two Years Scientists Peer Into Antarctica's Past to See Future Climate EarthTalk: Offshore Oil Drilling and the BP Disaster Tools: 🔤 Print 🖾 Email to a friend 🖇 Link 💫 Comments (0)

Share this Article: 🚽 🟦 🔥 👰 🕒 🔂 🧕 🚺 😣 🛐 🚮 Related Source Profile: 🕴 National Science Foundation 🗧 🕻 ≶