# Algae and Pollen from the Antarctic Geologic Drilling Program Sediment Core show Sudden Antarctic Warming Occurred in the Past

10/1/2009

Credit: Peter West / NSF
A portion of the ANDRILL core

For **Sophie Warny**, an assistant professor of geology and geophysics at Louisiana State University (LSU) and curator at the LSU Museum of Natural Science, years of patience in analyzing Antarctic samples with low fossil recovery finally led to a scientific breakthrough. She and colleagues from around the world now have proof of a sudden, remarkably warm period in Antarctica that occurred about 15.7 million years ago and lasted for a few thousand years.

Last year, as Warny was studying samples sent to her from the latest Antarctic Geologic Drilling Program, or ANDRILL AND-2A, a multinational collaboration between the Antarctic Programs of the United States (funded by the National Science Foundation), New Zealand, Italy and Germany, one sample stood out as a complete anomaly. Microscopic image of the algae pediastrum.

“First I thought it was a mistake, that it was a sample from another location, not Antarctica, because of the unusual abundance in microscopic fossil cysts of marine algae called dinoflagellates. But it turned out not to be a mistake, it was just an amazingly rich layer,” said Warny. “I immediately contacted my U.S. colleague, **Rosemary Askin**, our New Zealand colleagues, **Michael Hannah** and **Ian Raine**, and our German colleague, **Barbara Mohr**, to let them know about this unique sample as each of our countries had received a third of the ANDRILL samples.”

Some colleagues had noted an increase in pollen grains of woody plants in the sample immediately above, but none of the other samples had such a unique abundance in algae, which at first gave Warny some doubts about potential contamination.

“But the two scientists in charge of the drilling, **David Harwood** of University of Nebraska - Lincoln, and **Fabio Florindo** of Italy, were equally excited about the discovery,” said Warny. “They had noticed that this thin layer had a unique consistency that had been characterized by their team as a diatomite, which is a layer extremely rich in fossils of another algae called diatoms.”

All research parties involved met at the Antarctic Research Facility at Florida State University in Tallahassee. Together, they sampled the zone of interest in great detail and processed the new samples in various labs. One month later, the unusual abundance in microfossils was confirmed.

**Read the rest of the story here.**