

ENVIRONMENT

Record-Breaking Ice Core May Hold Key to Climate Variation

By Sarah Graham on June 10, 2004

Scientists have successfully drilled through an Antarctic ice sheet to extract the longest ice core ever recovered, according to a report published today in the journal *Nature*. The cylinder of ice dates back nearly three quarters of a million years and will help researchers better understand our planets history of cyclical climate variation. "This has the potential to separate the human-caused impacts from the natural and place it in a much clearer context," explains James White of the Institute of Arctic and Alpine Research at the University of Colorado at Boulder, who was not involved in the research but penned a commentary on the find for this weeks issue of the journal *Science*.

An international collaboration known as the European Project for Ice Coring in Antarctica (EPICA) recovered the nearly three-kilometer-long core from a region of the East Antarctic ice sheet known as Dome C. The bottom of the 10-centimeter-wide cylinder dates to some 740,000 years ago and nearly doubles the reach of the next-longest ice core, which was drilled at Vostok, Antarctica, in the late 1990s and spanned the past 420,000 years. Temperature records for eight ice ages are documented in the new core. Of particular interest to climatologists is the complete record of the interglacial time period known as Marine Isotope Stage 11 (MIS11), which occurred around 400,000 years ago, a time when our planet's positioning was similar to its current orbital configuration. MIS11 lasted 28,000 years--considerably longer than the next three interglacial periods before present--and understanding its progression may help scientists better predict whats in store for the earths future climate.

The core also reveals that not all ice ages are created equal. From the Vostok core, scientists deduced that those that occurred in the last 400,000 years were very intense, lasting around 80,000 to 100,000 years each. The new data suggest that earlier ice ages were shorter and the longer-lasting interglacial periods had lower temperatures, a finding that agrees with lower-resolution marine sediment cores. Because they have not yet reached the bottom of the ice sheet, the researchers hope that they will be able to extend the climate record even further back in time through continued drilling at the same site. Notes White: "The possibility of a million-year ice

core is out there and a million years ago is a really significant period in the earth's climate history."

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