Antarctica: A Decisive Campaign to Reach 1.5-Million-Year-Old Ice

The fourth campaign of the Beyond EPICA - Oldest Ice project has begun in Antarctica. An international team of 16 scientists and logistics personnel continues drilling at the remote Little Dome C site, situated at an altitude of 3,200 meters with average summer temperatures of -35°C. The aim is to extract a 2,750-meter-deep ice core from the Antarctic ice sheet. Coordinated by the Institute of Polar Sciences of the Italian National Research Council, the project seeks to reconstruct climate and atmospheric history, thus gaining insights into glacial periods and addressing one of climate science's most complex mysteries

A research team from eight European scientific institutions has embarked on this fourth and decisive drilling campaign at the Little Dome C camp, located 35 kilometers from Concordia Station. This international endeavor, led by the Institute of Polar Sciences of the National Research Council (Cnr-Isp), aims to drill from the depth reached last season, 1,836 meters, down to 2,750 meters, where the bedrock is expected to be found. Ice at this depth could hold records of Earth's climate history dating back as far as 1.5 million years, revealing, for the first time, direct information on atmospheric temperature and greenhouse gas concentrations over such an extended period.

The team, consisting of 16 scientists and logistics staff, will work over a two-month period in Antarctic summer conditions, with average temperatures of -35°C, at the remote Little Dome C camp situated 35 kilometers from the Italian-French Concordia Station at an altitude of 3,200 meters above sea level.

"We face a very delicate and pivotal mission: our goal is to reach the bedrock within this campaign," explains Carlo Barbante, full professor at Ca' Foscari University of Venice, senior associate member of the Institute of Polar Sciences of the National Research Council of Italy, and coordinator of Beyond EPICA. "If the team succeeds, it will mark a historic moment for climate and environmental science. Additionally, this achievement will allow us to focus the next and final campaign on replicating the deeper part of the ice core and beginning the closure of Little Dome C camp."

"We are now in the sixth year of the project, and this campaign will be important in addressing the requests from the European Commission," says Chiara Venier, research technologist at Cnr-Isp and project manager of Beyond EPICA.

The ice core from Beyond EPICA will provide unprecedented information on past climate and atmospheric composition during the Mid-Pleistocene Transition, a period between 900,000 and 1.2 million years ago when glacial cycles shifted from a 41,000-year to a 100,000-year cycle. The reasons for this change remain one of science's mysteries, which this project aims to address.

"The isotopic analyses that will be directly performed in the field on the Beyond EPICA ice core, will be matched with the previous EPICA ice core drilled at Dome C, allowing a preliminary dating of the freshly drilled ice," says Barbara Stenni, full professor at Ca'Foscari University of Venice.

The Beyond EPICA (European Project for Ice Coring in Antarctica) - Oldest Ice project has been funded by the European Commission with €11 million and involves twelve European research institutes. In addition to the CNR and Ca' Foscari University of Venice, the National Agency for New Technologies, Energy, and Sustainable Economic Development (ENEA) is responsible, together with the French Polar Institute (IPEV), for managing the logistics.

Beyond EPICA - Oldest Ice activities benefit from synergy with research conducted under the National Antarctic Research Program (PNRA), funded by Italy's Ministry of University and Research (MUR) and managed by CNR for scientific coordination, ENEA for the logistical planning and organization of activities at Antarctic bases, and OGS for the technical and scientific management of the icebreaker Laura Bassi.

To learn more about Beyond EPICA Oldest Ice: http://www.linktr.ee/BeyondEpica_OldestIce

Photos:
Beyond EPICA Field Seasons Gallery: https://www.beyondepica.eu/en/gallery/field-seasons/
Videos: https://www.beyondepica.eu/en/outreach-communication/beyond-epica-on-youtube/

In brief

What: beginning of the fourth ice core drilling campaign for the European project Beyond EPICA - Oldest Ice

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