

Successful completion of deep ice coring in the Antarctic

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An international team of scientists and technical staff under the leadership of the Alfred Wegener Institute for Polar and Marine Research has successfully completed the deep ice coring at the Alfred Wegener Institute's Kohnen Station in Dronning Maud Land, Antarctica. Reaching a depth of 2774 metres, first on-site examinations of the ice core indicate that the ice cored at the deepest 200 metres is very old.

The investigations, carried out as part of the EPICA program (European Program for Ice Coring in Antarctica), were designed to gain detailed information about historic climate. Scientists are expecting the data to

enhance the understanding of global climate events significantly. A detailed analysis in home laboratories will generate climate data with a very high temporal resolution in the core's upper 2400 metres, covering the last glacial cycle. The cores retrieved from greater depths are presumably up to 900,000 years old. Such insights into the distant climate history of the Antarctic facilitate a deeper understanding of the significance of polar regions for global climate events, both in the past and at present.



Deep ice coring projects represent long-term research programs. Exploratory work for EPICA, to determine a suitable drill site in Dronning Maud Land, began in 1996. It included extensive geophysical and glaciological investigations, both from the air and on the ground, in a previously unexplored region of the Antarctic.

After establishment of the drill site, construction of Kohnen summer

station commenced in 1999 at 75°S and 0° 4'E, 2900 metres above sea level. During the final construction stages of the station in 2001, establishment of the drill site had already begun. The deep coring started in 2001/2002, and the core was sunk over four coring seasons. Throughout the entire depth, ice cores of remarkable quality could be retrieved.

Field work in the Antarctic creates not only scientific challenges. The operating conditions for people and technical equipment are extreme: during the summer months of December and January, prevailing temperatures at Kohnen Station range from minus 35°C to minus 20°C, and at the beginning of the current field season in November of 2005, temperatures below minus 50°C were recorded.

The EPICA project is carried out by a consortium of research teams from ten European countries (Belgium, Denmark, Germany, Great Britain, France, Italy, the Netherlands, Norway, Sweden and Switzerland). EPICA is coordinated by the European Science Foundation (ESF) and financed through national contributions and EU funds. Currently, the lead management rests with Professor Heinrich Miller of the Alfred Wegener Institute. As early as December 2004, the first deep coring of the project, at Dome Concordia Station located on the inland ice plateau of the Eastern Antarctic, was completed five metres above bedrock at a depth of 3270 metres. Hence, after analysis of the core from Kohnen Station, two data sets will be available for comparison, enabling much better interpretation of the records.

Source: Alfred Wegener Institut fuer Polar und Meeresforschung

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