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# New temperature profile measurement in the EPICA Dome C borehole

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The temperature field within ice sheets results from the interactions between heat transfert, ice dynamics and boundary conditions such as geothermal heat flux and surface temperature. Therefore information concerning these factors can be inferred from the observed temperature profile in deep boreholes drilled in ice.

A major difficulty to obtain reliable temperature profiles in ice comes from the fact that the holes are filled with fluid and that convection cells occur. This problem is supposed to be more crucial in locations such as Dome C with very low accumulation rate because the vertical temperature gradient is important even in the upper part.

We present here a new temperature profile measured in january 2008 in the EPICA Dome C borehole with a borehole-temperature logging system developped on the basis of the one described by Claw et al. (1996). The high-resolution of the measurements obtained with this probe (1 mK) allow to estimate the amplitude, temporal and spatial characteristics of temperature perturbation due to fluid convection. We expect that the better knowledge of this process and the estimation of the resultant uncertainty will improve the glaciological interpretation of the temperature profile through inversion methods.

The measurements were performed from the surface to 3135 m deep (-3°C) with 13 minutes stops every 5 m and longer stops in chosen depths. The temperature between the stops was recorded as well to assess the reaction time of the whole system at every depth. We could not reach the bottom of the drilled hole (3270 m) because the probe did not go down anymore and we do not exclude a partial closure of the hole at that depth.

At the stage of this abstract, no interpretation of the ice temperature profile has been done except that a simple extrapolation to the bottom indicates the melting point should be reached at the ice-bed interface.