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A first CH_4-based tentative time scale for the new Talos Dome ice core

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The international project IPICS of the International Polar Year 2007/09 aims in particular to use new coastal drillings in Antarctica to study the regional variability of Antarctic climate, and its relationship with climatic changes in other regions of the Earth (especially Greenland, the North Atlantic and the East Pacific).

In the frame of this study, we investigate a new drilling conducted by a consortium of five european nations lead by Italy, on the coastal site Talos Dome (Antarctica), which has reached a depth of 1300 m during the field season 2006/2007.

A key objective of the project is to characterize the exact temporal evolution of climate in this site situated west of the Ross Sea, with respect to the East Antarctic plateau. During the last deglaciation, drillings performed on this plateau (Vostok, Dome C, Dronning Maud Land, Dome B and Dome Fuji) show a different pattern of teleconnexion with Greenland than coastal drilling such as the American drilling at Taylor Dome (situated 550 km south of Talos Dome) and the Australian drilling at Dome Summit South.

The ice covering the last deglaciation has not yet been retrograted to Europe (brittle zone). We thus started to measure the variability of the CH_4 mixing ratio in the Talos Dome core in the depth range from 73 to 1294 m in order to obtain a first tentative chronology and to evaluate the magnitude of glacial-interglacial accumulation rate

changes, and thus the time resolution that could be expected from the core.

We also investigated the isotopic composition of molecular oxygen (making another dating tool in the gas phase of the ice core). Comparing these two records with their counterpart in the EPICA/Dome C ice core, and using an ice flow model, we propose a preliminary age scale.

It suggests that the Talos Dome ice is 65 kyr old at 1300m of depth, implying a slightly larger glacial-interglacial accumulation rate change than for the other East Antarctic ice cores.