Geophysical Research Abstracts,
Vol. 10, EGU2008-A-05760, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-05760
EGU General Assembly 2008

Added value to the Greenland ice core records: Status of the GICC05 time scale effort

S.O. Rasmussen, K.K. Andersen, M. Bigler, D. Dahl-Jensen, S.J. Johnsen, I.K. Seierstad, J.P. Steffensen, A. Svensson, B. Vinther

Centre for Ice and Climate, Niels Bohr Institute, University of Copenhagen, Denmark (olander@gfy.ku.dk / +45 35 32 05 90)

Greenland ice core profiles provide continuous high resolution information about the glacial climate, and have for decades been used as authoritative templates for correlation with other palaeoclimatic records. The advent of a new stratigraphic ice core time scale, common to the NorthGRIP, GRIP, and GISP2 ice core profiles, raises the question of which features in the Greenland ice core profiles can be used for correlation and synchronization with other palaeoclimatic profiles, and which features must be regarded as more local phenomena. Comparison of the these three key records of the past climate shows that even sites located no more than a few tens of kilometers apart experienced significantly different climatic conditions during parts of the late glacial, indicating that spatial gradients changed abruptly also within relatively stable climatic periods.

The presentation will describe the current status of the Greenland Ice Core Chronology 2005 (GICC05) time scale, which now covers the interval from present day back to about 60 ka b2k (before A.D. 2000). Whereas the Holocene part of the time scale is based on records from both the DYE-3, the GRIP and the NorthGRIP ice cores, the glacial part is solely based on records from the NorthGRIP ice core. Well-resolved glacial profiles from Greenland are available from the NorthGRIP, GRIP, and GISP2 ice cores, and in order to apply the GICC05 time scale to the combined records from these three cores, the cores have been synchronized in detail using impurity signals of non-climatic origin. The combined climate records of the three cores can therefore now be studied on a common time scale, making it possible to identify differences

between the records on a decadal scale or better. The presentation will briefly describe the method used for synchronization of the cores and discuss how the new time scale fits with previous Greenland ice core chronologies. Commonalities and differences between the synchronized profiles will be identified and discussed, and the use of the records for defining an event stratigraphy for the last glacial termination will be reviewed.