Geophysical Research Abstracts, Vol. 7, 08265, 2005
SRef-ID: 1607-7962/gra/EGU05-A-08265

A multi-proxy record of Greenland climate variability over the past two thousand years

K. K. Andersen (1), M.-L. Siggaard-Andersen (1), H. B. Clausen (1), M. Hansson (2), T. E. Strømfeldt (1), J. P. Steffensen (1), S. J. Johnsen (1)

(1) Glaciology Group, Niels Bohr, Institute, University of Copenhagen, Juliane Maries Vej 30, 2100 Copenhagen Oe, Denmark, (2) Department of Physical Geography and Quaternary Geology, Glaciology, Stockholm University, SE-106 91 Stockholm, Sweden

D18O, accumulation rate and concentration of chemical impurities have been measured at seasonal to annual resolution over the uppermost 350 m of the NGRIP ice core corresponding to approximately 2000 years. The seasonal and annual signals of sea salt and desert dust have been extracted and their relationship to northern hemisphere climate has been investigated. Common long-term variations are seen for these two species pointing towards common transport and depositional features. The little ice age is seen in the records through increased levels in calcium and magnesium between 1400 and 1800 AD. Similar variations in calcium and magnesium of 2-300 years length are seen throughout the whole record.

Greenland winter time climate is generally heavily influenced by the North Atlantic Oscillation and over the past decades the seasalt concentration in the ice core is significantly correlated with the NAO index of NCEP reanalysis data.