



Investigating the interaction between ocean current variability and glacier activity by Thrym glacier, SE-Greenland

David J. Wangner (1), Kristian K. Kjeldsen (2), Marie-Alexandrine Sicre (3), John M. Jaeger (4), Laurence M. Dyke (1), Vincent Klein (3), Flor Vermassen (1), Kurt H. Kjær (2), and Camilla S. Andresen (1)

(1) GEUS - Geological Survey of Denmark and Greenland, (2) Natural History Museum of Denmark, (3) LOCEAN - Laboratoire d'Océanographie et du Climat, France, (4) University of Florida - Dept. of Geological Sciences, USA

Heat transport via ocean currents can have a crucial impact on the melting of marine terminating glaciers in Greenland. To investigate the influence of ocean temperature changes on the glaciodynamics of Thrym glacier over longer timescales we present a marine sediment record from the Skjoldungen fjord by Thrym Glacier in SE Greenland. ^{210}Pb -dating combined with a radiocarbon date reveals that the core covers the past 220 years from 1790 AD until 2011 AD. High-resolution grainsize analyses representing the calving activity of Thrym glacier and sea surface temperature (SST) derived from alkenones were conducted. During the investigated timespan, the alkenone based SSTs vary between 5 and 12 °C. The high temperatures, in comparison with present SST in the fjord of 0-2 degree Celsius, indicate, in similarity with other alkenone reconstructions from SE Greenland, that the alkenones were produced further off shore in the Irminger Sea and advected with the inflow of surface waters into the fjord. We compare this record of Irminger SST variability with the reconstructed calving activity and furthermore with other similar studies in SE- Greenland. This will help to understand the regional sensitivity of Greenland Ice Sheet (GIS) melt resulting from heat transport associated with the subpolar gyre circulation and aid in our understanding of the future behavior of the GIS under a warming climate.