



PP13A-2046: A 1700 Year Record of Oceanic Influence on Jakobshavn Isbræ calving Activity Based on Marine Sediment Cores from Disko Bay

Monday, 12 December 2016

13:40 - 18:00

Moscone South - Poster Hall

The Greenland Ice Sheet has experienced significant mass loss in recent years. A substantial component of this is attributable to the retreat of marine-terminating outlet glaciers; these lost mass through increased calving and meltwater discharge.

Jakobshavn Isbræ is the most productive marine-terminating glacier in Greenland, yet relatively little is known about its history. Instrumental observations of local climatic conditions only cover the last 140 years. Similarly, reliable observations of glacier changes are mainly limited to the past 40 years. Consequently, assessing the importance of recent glaciological changes is challenging.

Three marine sediment cores were collected from locations near the mouth of Jakobshavn Isfjord in Disko Bay. These cores were analyzed to reconstruct changes in glacier behavior in response to past climatic and oceanographic changes; this provides context against which to assess the significance of recent changes. The sediments deposited at this site reflect oceanographic and climatic changes as well as ice discharge from Jakobshavn Isbræ.

Preliminary radiocarbon dating of plant material indicates that the cores cover a time span of ~1700 years. High-resolution grain size analyses, X-Ray, XRF, and magnetic susceptibility measurements show a clear change in the sedimentation regime and a distinct decrease in ice-rafted debris (IRD) at around 80 cm sediment depth. Additional dating will constrain the timing of this sedimentation change, but we tentatively date it to sometime between 500 and 900 years ago. Interestingly, we also note a marked multi-decadal variability in the proxy glacier calving record. Further analyses of grain size and additional proxies like foraminifera assemblage and biomarkers will allow us to link changes in the sedimentation regime to climatic and/or oceanographic changes.

Authors

David Johannes Wangner*

Geological Survey of Denmark and Greenland

Camilla S Andresen

Geological Survey of Denmark and Greenland

Anne E Jennings

Institute of Arctic and Alpine Research

Mads Faurschou Knudsen

Aarhus University

Flor Vermassen

Geological Survey of Denmark and Greenland

Laurence M Dyke

Swansea University

Kurt Henrik Kjaer

Natural History Museum of Denmark

Ulla Kokfelt

Geological Survey of Denmark and Greenland

[Find Similar](#)

View Related Events

Day: [Monday, 12 December 2016](#)

