



PP13A-2045: A High-Resolution Record of Warm Water Inflow and Iceberg Calving in Upernavik Isfjord During the Past ~150 Years.

Monday, 12 December 2016

13:40 - 18:00

Moscone South - Poster Hall

There is a growing body of evidence demonstrating that changes in warm water inflow to Greenlandic fjords are linked to the rapid retreat of marine-terminating outlet glaciers. This process is thought to be responsible for a substantial component of the increased mass loss from the Greenland Ice Sheet over the last two decades. Sediment cores from glaciated fjords provide high-resolution sedimentological and biological proxy records which can be used to evaluate the interplay of warm water inflow and glacier calving over recent time-scales.

In this study, multiple short cores (~2 m) from Upernavik Isfjord, West Greenland, were analysed to establish a multi-proxy record of glacier behaviour and oceanographic conditions that spans the past ~150 years. The down-core variation in the amount of ice-rafted debris reveals periods of increased glacier calving, and biomarker proxies are used to reconstruct variability in the inflow of warm, Atlantic-sourced water to the fjord. Measurements of the sortable silt grain size are used to reconstruct bottom-current strength; periods of vigorous current flow are assumed to be due to enhanced warm water inflow. Finally, a record of glacier terminus position changes, derived from historical observations and satellite imagery, allows comparison of our new proxy records with the retreat of the ice margin from 1849 onwards. We use these data to assess the relative importance of mechanisms controlling the (rapid) retreat of marine-terminating glaciers in Upernavik Isfjord.

Authors

Flor Vermassen *

Geological Survey of Denmark and Greenland

Camilla S Andresen

Geological Survey of Denmark and Greenland

Schmidt Sabine

University of Bordeaux

Jens Holtvoeth

University of Bristol

Amalie Elisabeth Cordua

University of Hamburg

David Johannes Wangner

Geological Survey of Denmark and Greenland

Laurence M Dyke

Geological Survey of Denmark and Greenland

Kurt Henrik Kjaer

Natural History Museum of Denmark

Ulla Kokfelt

Geological Survey of Denmark and Greenland

Konstanze Haubner

Geological Survey of Denmark and Greenland

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