

[AGU Abstract Browser](#)

- [About](#)
- [Meetings](#)
- [Virtual Posters](#)
- [Sections](#)
- [Index Terms](#)

## Outlet glaciers of southeast Greenland: rapid, synchronised regional retreat at the start of the Holocene?

### Details

**Meeting** [2012 Fall Meeting](#)

**Section** [Cryosphere](#)

**Session** [Reconstructing Ice Sheet Behavior on Millennial Timescales: Integrating High-Resolution Geological Data With Model Simulations I Posters](#)

**Identifier** C51C-0786

**Authors** [Dyke, L M\\*](#), [Glaciology Group, Swansea University, Swansea, United Kingdom](#)  
[Hughes, A L](#), [Department of Earth Science, University of Bergen, Bergen, Norway](#)  
[Murray, T](#), [Glaciology Group, Swansea University, Swansea, United Kingdom](#)  
[Ródes](#), [NERC Cosmogenic Isotope Analysis Facility, Scottish Universities Environmental Research Centre, East Kilbride, United Kingdom](#)

**Index Terms** [Ice sheets \[0726\]](#)  
[Quaternary geochronology \[1105\]](#)  
[Cosmogenic-nuclide exposure dating \[1150\]](#)

### Abstract

We report new in-situ cosmogenic isotope ( $^{10}\text{Be}$ ) exposure dates from two major fjord systems in southeast (SE) Greenland. Low elevation erratic pairs from Kangerdlugssuaq Fjord reveal the onset of coastal deglaciation at ~11 ky BP. Overlapping exposure ages from a fjord axis transect show this was followed by a period of rapid deglaciation to a position at least 50 km from the mouth. The rapid deglaciation of Kangerdlugssuaq Fjord taken together with similar dates from Sermilik Fjord situated ~350 km southwards (Hughes et al., 2012), shows synchronous coastal deglaciation. This regional synchronicity implies a common regional driving mechanism. Ice sheet retreat from the continental shelf was underway by 15 ky BP, probably in response to long term climate amelioration following the Last Glacial Maximum (LGM). We suggest that the 'fjord phase' of deglaciation occurred rapidly due to significant climatic amelioration and changing oceanic conditions at the end of the Younger Dryas stadial. To test the synchronicity of regional deglaciation further, we will report exposure ages and retreat rates from Bernstorffs Isfjord, 650 km south of Kangerdlugssuaq and 300 km south of Sermilik Fjord. Bathymetric data and geomorphological evidence from Bernstorffs Isfjord hint at a still-stand or re-advance during the Holocene: exposure dates will be used to test this hypothesis. Widespread changes have been reported in the marine terminating glaciers of the southeast sector of the Greenland Ice Sheet (GrIS) during the early 2000s. Our results show retreat rates that are either significantly faster or persist for much longer than those observed recently, and demonstrate the great sensitivity of these marine-terminating glaciers to climatic change. References: Hughes, A.L.C., Rainsley, E., Murray T., Fogwill, C.J., Schnabel, C. and Xu, S. (2012) Rapid response of Helheim Glacier, southeast Greenland, to early Holocene climate warming. *Geology*, 40, 427-430.

**Cite as:** Author(s) (2012), Title, Abstract C51C-0786 presented at 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec.