



Deglaciation and palaeoceanographic evolution of the Disko Bay and Uummanaq area of West Greenland

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The Disko Bay area of west Greenland has seen significant research in recent years. This research has identified links between Jakobshavns Isbrae, a major ice stream draining the West Greenland Ice Sheet, ocean circulation and climate change since the mid-Holocene. However, the history of earlier initial deglaciation of this area after the LGM remains poorly constrained. There are also several other significant ice streams along the west Greenland margin in this area (for example to the north in the Uummanaq Fjord complex) that have seen relatively little investigation.

During the summer of 2007 a major cruise of the RV 'Maria S. Merian' visited Disko Bay, the Uummanaq fjord complex to the north and the shelf to the west of this area. One of the aims of this cruise was to investigate the longer term history of deglaciation and oceanic evolution of the Disko Bay area and also the Uummanaq fjord complex to the north. Here we present the preliminary findings from this investigation based on gravity cores collected during the cruise.

Cores were collected from the extension of the deep water trough, Egedesminde Dyb, from the shelf west of Disko Bay. This trough is assumed to have been formed by an extension of Jakobshavns Isbrae to the shelf edge during late Pleistocene extreme

glaciation. Magnetic susceptibility and scanning XRF data from a transect of cores from this trough through Disko Bay to the current coastline identify periods of rapid fine grained sedimentation associated with the meltwater plume from the retreating ice front. A basal date from a core west of Disko Bay provides a minimum age for deglaciation of the outer trough (retreat of the ice stream) of *c.* 11 ka cal BP. Previous research has shown that the ice stream had retreated at least mid way across Disko Bay by *c.* 10.2 ka cal BP, retreating into the present day Jakobshavns Isfjord at *c.* 8 ka cal BP. These dates suggest a rather gradual deglaciation of the ice sheet from the shelf through Disko Bay, reaching the current coastline by the early Holocene.

To the north in the Uummannaq fjord complex a core collected midway to the continental shelf edge provides the first evidence for deglaciation of this important fjord complex. Preliminary foraminiferal data along with scanning XRF and magnetic susceptibility data from this core provide evidence for ocean warming and associated retreat of the ice margin back into the fjord system. A glaciomarine fauna preserved in the base of this core was succeeded by a fauna with a clear Atlantic water influenced component (West Greenland Current) associated with the retreat of the calving margin of the ice sheet across the core site. Further detailed work on these cores will produce a detailed picture of evolution of the ocean circulation since deglaciation and the interaction between the ocean, climate and deglaciation.