



Sedimentary regime of deep submarine canyons around Fylla Banke, northeastern Labrador Sea

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The southern end of the Davis Strait, the comparatively shallow-water area separating the Labrador Sea from the Baffin Bay, is cut by two deep submarine canyons of west Greenland, on the western and eastern side of the Fylla Banke, respectively. The purpose of this study is to investigate Late Pleistocene sedimentary processes governing the area of the two canyons in order to test if gravity flows or ocean currents are the most important factors governing canyon sedimentary processes in this region. Furthermore, an account is given on the formation of the two canyons in order to explain the significant difference between them.

The study was carried out based on seismic profiles combined with bathymetric information, and a single sidescan sonar profile from one of the canyons (western canyon). Sedimentary information and an age model are derived from a 5-m long gravity core (TTR13-AT-479G) collected from the mouth of the western canyon (southern end).

The data indicates that the sedimentary regime is today highly affected by northward transport of the ocean currents and that gravity flows (southward from shallower to deep waters) are only of limited significance today. The deep southern end of the canyons are influenced by the upper parts of the deep North Atlantic Deep Water, but the majority of the sediment transport is linked to the strong northward flow of the lower parts of the West Greenland Current. For comparison the sediment transport is held up against earlier studies from the Davis Strait area, where 2D seismic profiles were carried out several places of the west coast of Greenland. These studies are from a contourite drift complex at the Davis Strait and north of Labrador Sea. A further possible process operating in maintaining active sediment transport through the canyon may be the cascading of dense winter water formed on the West Greenland shelf.