
**Recent palaeoceanography of the Mackenzie Trough
(Beaufort Sea) with comparisons to Lancaster Sound
(Baffin Bay) using foraminifers as proxies**

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Over the past 30 years, important temperature changes have been documented in the Arctic related to the extent and thickness of the ice cover. Sea ice plays a major role in regulating the ocean-atmosphere heat exchange. The observed decrease

of $\approx 14\%$ in sea ice extent has raised concerns in the scientific community, government and populations that live in those areas. General circulation model experiments suggest that global warming will be amplified in the polar regions due to the positive feedback induced by the reduction of sea ice cover.

There is a need for high resolution geological proxy data to provide realistic initial values for calibrating climate models. The sedimentary records of the western Beaufort Sea and eastern Lancaster Sound may provide a decadal-centennial scale record of the palaeoceanographic changes in the Canadian Arctic for the Holocene. By employing data from several microfossil proxies it will be possible to reconstruct the variations of sea ice cover, the influx of freshwater to the Mackenzie Canyon area, the influence of the Mackenzie plume in relation to the sea ice history, in comparison to the duration of Recent sea ice history in the North West Passage and the influence of Arctic Ocean water-NWP exchange into Baffin Bay.

Three piston cores were collected from the Mackenzie Trough (Canadian Beaufort Sea) in 2002 onboard the Japanese research vessel RV *Mirai* over a range of depths. A fourth core, 2004-804-850 (1054m) was collected in 2004 by the NGCC *Amundsen* at the tip of the Trough. The fifth piston core, 2004-804-009 (772m), was collected by the NGCC *Amundsen* in 2004, from the entrance of Lancaster Sound in the eastern Arctic.

The objective is to reconstruct the evolution of palaeoceanographic conditions in the area since the last glaciation ($\approx 11\,000$ y, or Holocene). The foraminiferal data gathered from these 5 sediment cores during CASES 2002-2004 help to provide a basis for these interpretations.