The deglacial transition in the Canadian Arctic Archipelago: the marine perspective

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Satellite data during the last decades show a decline in sea ice extent in the Arctic. It is crucial to understand the processes of Arctic sea ice and thus deep water formation in the North Atlantic for future climate change. The Canadian Arctic Archipelago (CAA) plays an important role as it links the Arctic with the Atlantic Ocean, and influences freshwater and sea ice fluxes between the two. During the height of the last ice age (the "Last Glacial Maximum", $\sim$21000 years BP), the CAA was influenced by the Laurentide and Innuitian ice sheets. During and after the decay of these ice sheets, major environmental changes took place in this region, which is characterized by an extensive network of marine channels (the "Northwest Passage"; collectively $\sim$1.1 x 106 km2). Marine data from the CAA are, however, limited due to logistical constraints. This project aims to further the understanding of climate feedbacks in the CAA. It focuses on the transition from deglacial to postglacial environments in the eastern CAA (Lancaster Sound) and adjacent Baffin Bay. Using three long ($\sim$4-7m) marine sediment cores collected by the Geological Survey of Canada-Atlantic, these environments will be studied by means of a suite of proxies, including palaeontological, sedimentological and biogeochemical characteristics. Data gathered from these analyses will be used to determine sea ice conditions, oceanographic properties and water masses through time, providing a direct marine perspective of long-term environmental change.