Ocean Circulation and Marine Terminating Glaciers of the Canadian Arctic Archipelago and the Greenland Ice Sheet

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Higher latitudes have experienced a significant change in climate and physical processes within recent years. This study focuses on two regions that have experienced rapid change, the Canadian Arctic Archipelago and the Greenland Ice Sheet. It has been shown that relatively warm ocean waters may accelerate melt production of marine terminating glaciers. We explore and classify the pathways for the warmer Atlantic waters that reach the fjords along the coasts of Greenland as well as in the Canadian Arctic Archipelago. Additionally, given that the melt of these glaciers is accelerating, we look at the pathways of the low salinity melt waters from these coastal glaciers and where it is taken up in the surrounding basins. This analysis is carried out using an Arctic and North Atlantic configuration of the NEMO ocean/sea-ice general circulation model run at both 1/4 and 1/12 degree resolution. Pathways are determined using the Ariane Lagrangian float package using both forward and reverse trajectory analysis.