



Integrating terrestrial and marine archives of Late Wisconsinan ice stream dynamics in the Canadian Arctic Archipelago

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During Late Wisconsinan glaciation the northern Laurentide and Innuitian ice sheets converged over the Canadian Arctic Archipelago. This ice sheet complex included several major ice streams, which constituted important dynamical components. Discharging into the Beaufort Sea and Baffin Bay, these ice streams were a primary control on ice sheet mass balance and ice age sedimentation on adjacent continental margins, including the Arctic Ocean basin. This study presents a new compilation of multibeam echosounder data, sub-bottom profiler data, radiocarbon ages, and marine sediment cores acquired primarily during regional surveys with the CCGS Amundsen. These data characterize the nature and thickness of seafloor sediments in Parry Channel (and many of its connecting channels) and Amundsen Gulf. When combined with the results of terrestrial geomorphological mapping of the adjacent islands, this dataset constrains the maximum extent, chronology, and behaviour of former ice streams in M'Clure Strait, Viscount Melville Sound, Lancaster Sound, and Amundsen Gulf. Importantly, these data highlight complex patterns of past ice stream flow during regional deglaciation. These results contribute to a better understanding of the causal mechanisms that occasioned retreat of the terrestrial and marine sectors of the Laurentide and Innuitian ice sheets. As well, this study helps to quantify past iceberg fluxes to the Arctic Ocean, which has implications for assessing past climate, and the origin of ice-rafted sediment and deep iceberg scours in the Arctic Ocean basin.