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Radiocarbon chronology of the last deglaciation in the Baffin Bay reveals asynchronous melting of Arctic and Laurentide ice sheets

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The transition from the last ice age into the Holocene interglacial was characterised by rapid retreat of North American ice sheets, discharging large quantities of meltwater into the Labrador Sea. Whereas the meltwater chronology of the Laurentide Ice Sheet is well documented, the deglacial history of the American Arctic ice sheets (Inuit Ice sheet and northern Greenland Ice Sheet) draining into the Labrador Sea via the Baffin Bay is less well constrained. Here we present the first high-resolution radiocarbon-dated deglacial records from the Canadian and Greenland margins of the central Baffin Bay. Sedimentological and geochemical data confirm the presence during Termination I of two events of enhanced delivery of detrital carbonate (Baffin Bay Detrital Carbonate Events) dated to 14.2-13.7 ka BP and 12.7-11 ka BP. The events are synchronous across the Baffin Bay and their mineralogical signature indicates a common source of detrital carbonate from the Canadian Arctic, with a synchronous clastic source proximal to Greenland. The events postdate Heinrich layers and their onset is not linked to Greenland temperature change. This indicates that the deglaciation of American Arctic ice sheets and associated meltwater discharge were decoupled from the dominant North Atlantic climate mode.