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The Last Glacial Maximum in northern Baffin Bay

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Little is known about climate and ocean conditions during the Last Glacial Maximum in Baffin Bay, Greenland. This is partly due to the dissolution of biogenic carbonates in the central Baffin Bay, preventing reliable ^{14}C-chronologies. We present the results from a transect of gravity cores retrieved during the 2019 BIOS cruise on the HDMS Lauge Koch in the northern Baffin Bay. Core LK19-ST8-14G has been analyzed for grain size variations, sea-ice biomarkers, XRF, and color spectrophotometry. A preliminary chronology based on radiocarbon dates from foraminifera show that the bottom of the core is approximately 35.000 cal. years BP while the top sediments are of Late Holocene age. The sediment archive thus covers the full extent of the LGM and the last deglaciation. High-resolution photography and CT scans allowed the identification of distinctly different lithofacies in the sediment archive. The lower sections of the core are characterized by laminated mud with no IRD and absence of microfossils indicating a sub ice-shelf environment during the glacial period. The laminated sequence is interrupted by several coarser, detrital-carbonate (DC) rich layers which are interpreted as episodes of glacial retreat or ice-shelf collapse. The youngest of these DC layers immediately precedes the Holocene, which is represented by approximately 40 cm of bioturbated sediments with some IRD. This interpretation is supported by the concentrations of HBIs and sterols throughout the core, which indicate near perennial ice cover in the glacial northern Baffin Bay and more open water conditions during the Holocene.