Sedimentary environments beneath the Amery Ice Shelf, East Antarctica throughout the Holocene

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The sediments deposited beneath the floating ice shelves around the Antarctic margin provide important clues regarding the nature of sub-ice shelf circulation and the imprint of ice shelf dynamics and marine incursions on the sedimentary record. Understanding the nature of sedimentary deposits beneath ice shelves is important for reconstructing the icesheet history from shelf sediments. In addition, down core records from beneath ice shelves can be used to understand the past dynamics of the ice sheet. Six sediment cores have been collected from beneath the Amery Ice Shelf in East Antarctica, at distances from the ice edge of between 100 and 300 km. The sediment cores collected beneath this ice shelf provide a record of deglaciation on the Prydz Bay shelf following the last glaciation. Diatoms and other microfossils preserved in the cores reveal the occurrence and strength of marine incursions beneath the ice shelf, and indicate the varying marine influence between regions of the sub-ice shelf environment. Variations in diatom species also reveal changes in sea ice conditions in Prydz Bay during the deglaciation. Grain size analysis indicates the varying proximity to the grounding line through the deglaciation, and the timing of ice sheet retreat across the shelf based on \textsuperscript{14}C dating of the cores. Two of the cores contain evidence of cross-bedding towards the base of the core. These cross-beds most likely reflect tidal pumping at the base of the ice shelf at a time when these sites were close to the grounding line of the Lambert Glacier.