



WAIS retreat in eastern Ross Sea during Meltwater Pulse-1a

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The timing of MWP are well constrained from dated coral successions. However, the temporal linkage between ice sheet retreat and MWPs remains controversial partly due to the difficulty of generating reliable deglacial chronologies from proximal Antarctic marine basins. Here we show an exceptional set of foraminiferal radiocarbon dates produced from ice-proximal deposits in the eastern Ross Sea that are well-constrained by seafloor geomorphology and core sedimentology. These radiocarbon ages demonstrate that an initial short distance retreat of ~ 50 km had begun by $\sim 14,700 \pm 400$ years ago, corresponding to the onset of MWP-1a. The WAIS paused for $\sim 3,200$ years to deposit a series of Grounding Zone Wedges, or sub-aqueous terminal moraines. Ice shelf collapse at $12,400 \pm 300$ years ago preceded a 200 km retreat of the WAIS at $11,500 \pm 300$ years ago, i.e., at the onset of MWP-1b. These results provide conclusive evidence that the WAIS retreated during two distinct intervals of rapid sea-level rise.

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