



Timing of the late glacial retreat of the Antarctic Weddell Sea ice sheet

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Two recent ice cores from the Weddell Sea region span the period from the Last Glacial Maximum (LGM) to the present: Berkner Island to the south and James Ross Island to the north of the region. By comparing the ice core data to that from the continental East Antarctic deep ice cores, we estimate the height and extent of the ice sheet that is thought to have extended out to the continental shelf break in the Weddell Sea at the LGM. A combination of ice core and site physical data are used to define the rate of thinning and retreat of the ice sheet as the climate warmed into the Holocene. Thinning appears to commence at around 19 kyrs BP, and continue into the Holocene, well within the envelope of established sea level curves. We specifically examine whether the Weddell Sea ice sheet could have contributed to Melt Water Pulse 1a – while the timing of thinning is similar, the volume of ice available in the Weddell Sea is unlikely to have been sufficient to explain the observed sea level rise.