Time series of radiocarbon in Southern Ocean intermediate water for the past 30,000 years

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Movement of intermediate waters play an important role in global heat and carbon transport in the ocean and changes in their distribution are closely tied to glacial-interglacial climate change. Coupled radiocarbon and U-Th measurements on deep-sea *Desmophyllum dianthus* corals allow for the reconstruction of past intermediate water circulation rates. We present a time series of Antarctic Intermediate Water radiocarbon from over 30 corals spanning 30 ka through the Holocene, encompassing the transition into the Last Glacial Maximum and the last deglaciation. Corals were collected south of Tasmania from water depths between 1450 and 1700 m. Uranium series calendar ages were measured by MC-ICP-MS on the Neptune. Radiocarbon was measured by AMS at the Keck Carbon Cycle Accelerator Mass Spectrometry Laboratory at UC Irvine.

Preliminary data from the Antarctic Cold Reversal and Heinrich Stadial 1 show abrupt transients where intermediate waters appear to age around 190 radiocarbon years in a timespan of roughly 40 calendar years, as shown by top-bottom age differences in single corals. Changes of this magnitude are likely due to the rapid movement of a water mass front during times of abrupt climate change. An extended record back through the LGM will not only help put these abrupt changes in context and add to existing deglacial Southern Ocean and North Atlantic records, but will also provide a view into how the ocean operated during a quasi steady-state other than the modern circulation.