

SOUTHERN OCEAN AND ANTARCTIC NEARSHORE RECORD OF AN EARLY PLEISTOCENE WARM INTERGLACIAL, MIS-31

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Marine Isotope Stage 31 (MIS-31) is a strong early Pleistocene interglacial that came at a critical time with respect to Pleistocene climatic development. This interval is characterized by strong precessional signal in the lead-up to the Mid-Pleistocene Transition from 41 ka to 100 ka climate cycle dominance. MIS-31 can be precisely dated, and globally correlated, by the coincidence of interglacial warmth with the base of the Jaramillo paleomagnetic subchron (C1r.1n_{base}) at 1.072 Ma.

We present multiproxy data for MIS-31 from the Southern Ocean ODP Site 177-1094, at 53°S, south of the modern polar front. Data include quantitative diatom and calcareous nanofossil assemblage data, and $\delta^{18}\text{O}$ and $\delta^{13}\text{C}$ on planktonic foraminifer *N. pachyderma* (sin.). These data are interpreted with respect to surface water conditions associated with southward migration of the polar front.

The Site 1094 record is correlated with geologic evidence from stratigraphic drilling in the Antarctic nearshore zone (Cape Roberts Project Site 1, Unit 3.2) at 77°S, which indicates an extended period of minimal coastal sea ice, and possible retreat of the Ross Ice Shelf during MIS-31. We then compare the Southern Ocean record with that of the high latitude North Atlantic record of ODP Site 983, which shows peak warmth in phase with the northern hemisphere insolation maximum at 1.072 Ma.

Warm conditions of MIS-31 in high southern latitudes initiated subsequent to the southern hemisphere insolation maximum at 1.083 Ma and persisted in the nearshore zone well into the time of northern hemisphere insolation maximum.