



Glacial ocean and continental climate variability off southernmost Chile during the past 60 kyr

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We present paleoceanographic and continental paleoclimate data from sediment core MD07-3128 recovered during IMAGES XV-MD159-PACHIDERME cruise off southernmost Chile. The coring site is located at $\tilde{53}^{\circ}\text{S}$ at the continental slope ($\tilde{1000}$ m water depth) off the Pacific entrance of the Strait of Magellan. Based on the preliminary stratigraphy (14C and paleomagnetic evidence), the Holocene sequence is very condensed and largely consists of foraminifera sand, whereas enhanced terrestrial sediment input provides high time-resolution during the last glacial back to ca. 65 kyr BP.

The alkenone SST record reveals a very strong warming of ca. 8°C over the last termination and millennial-scale variability in the order of $2\text{-}4^{\circ}\text{C}$ in the glacial (MIS 2-4). The timing and structure of the termination and some of the millennial-scale fluctuations in the glacial are very similar to those observed in the well-dated SST record from the Chilean margin ODP Site 1233 (41°S) and in the temperature reconstructions from Antarctic ice-cores. There are however important differences in the new southernmost Chilean margin record, e.g. regarding a long-term warming trend over the MIS 3 followed by a cooling towards the LGM. Opal/CaCO₃ ratios are generally higher and alkenone concentrations lower during millennial-scale cold intervals suggesting SST-related shifts in the calcareous and siliceous plankton communities.

The cold period between $\tilde{25}$ to $\tilde{19}$ kyr BP is accompanied by a significant increase in ice rafted debris and alkenone C37:4 content in particular at $\tilde{21}$, $\tilde{20}$ and $\tilde{18}$ kyr BP that correlate with reduced iron contents (most likely due to Quarz-rich IRD). These changes may be related with glacier advances documented in the Strait of Magellan region or wind-driven changes in the advection of ice-bergs to the site.