



## **Regional and global signals in seawater $\delta^{18}\text{O}$ records across the Mid-Pleistocene Transition**

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An increase in ice volume is often assumed to have accompanied the shift in glacial-interglacial periodicity observed in benthic carbonate  $\delta^{18}\text{O}$  across the Mid-Pleistocene Transition (MPT). In the global benthic oxygen isotope stack (Lisiecki and Raymo, 2005), Marine Isotope Stage (MIS) 22 and MIS 16 show step-wise increases in  $\delta^{18}\text{O}$  related to temperature and/or ice volume. High-resolution seawater  $\delta^{18}\text{O}$  records, derived from coupled Mg/Ca and benthic  $\delta^{18}\text{O}$  analyses, can be used to evaluate how global ice volume changed during the MPT. However, seawater  $\delta^{18}\text{O}$  records at a single location are also influenced by regional hydrographic signals (i.e. salinity) and changes in deep ocean circulation across the MPT transition. To explore regional and global patterns in seawater  $\delta^{18}\text{O}$  records, we reconstruct seawater  $\delta^{18}\text{O}$  from coupled Mg/Ca and  $\delta^{18}\text{O}$  analyses of *Uvigerina* spp. at North Pacific Integrated Ocean Drilling Program Site 1208 and compare it to existing records. Our Mg/Ca-derived bottom water temperature record shows warm temperature excursions during glacial MIS 22 and MIS 16. These Mg/Ca values are unrelated to preservation or carbon chemistry. Comparison of the N. Pacific and S. Pacific seawater  $\delta^{18}\text{O}$  records suggests either different water masses became more prominent in the Pacific and/or the formation properties (i.e. salinity) of the water masses occupying the Pacific changed. In addition to a modest increase in ice volume over MIS 22, we suggest salinity stratification had a growing role in determining the deep ocean's glacial density structure and carbon storage over the MPT.