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Employing $\delta^{44/40}$Ca ratios in foraminifera to simultaneously track sea surface regional temperatures (SST) and salinities (SSS) variations across Termination I

Christian Horn, Anton Eisenhauer, and Dirk Nürnberg
IFM-GEOMAR, KIEL, GERMANY

Previous studies of coupled Mg/Ca and δ^{18}O time series measured at planktic foraminifera across Termination I have shown that the planktonic Mg/Ca$_{foram}$ signal leads the δ^{18}O$_{foram}$ in tropical settings by several thousand years [1,2,3]. This implies that the tropical ocean must have warmed before the melting of Northern Hemisphere. Latter observation challenges the role of the North Atlantic as the driving force of glacial/interglacial transitions emphasising the tropical ocean as an important area triggering global climate changes.

In order to test this hypothesis a multi-proxy approach of coupled $\delta^{44/40}$Ca, Mg/Ca and δ^{18}O measurements on *G.sacculifer* was applied. The goal is to decouple global and regional influences of SST, SSS and ice volume on the three proxie records. In order to extract regional signals the study was performed on sediments along a south-north transect from the Central Caribbean Sea (SO 164-03-4) via the Blake Outer Ridge (ODP 1058c) to high northern latitudes.

Our findings indicate the presence of a phase shift in the timing of the glacial/interglacial temperature transition in the Caribbean between the Mg/Ca and δ^{18}O signals in the order of $\sim$3500 years in accordance with previous observations [2,3]. However, our interpretation of the origin of the phase shift is different to earlier understandings since it´s occurrence coincides with salinity variations reflecting a climatic driven change of the evaporation/precipitation ratio at the site of the sediment core SO164-03-4. Latter variations are most likely driven by a northward movement of the Inner Tropical Convergence Zone (ITCZ). In contrast to the observations from the Caribbean no salinity driven phase shifts between proxies exist in the sediments from North Atlantic. We interprete these observation that all sediments located within the influence of the ITCZ show salinity driven phase shifts across Termination I between δ^{18}O and other temperature proxie records.

[1] Lea et al.(2000) *Science* **289**, 1719-1724

[2] Nürnberg et al. (2000) *Paleoceanography* **15** (1), 124-134

[3] Visser et al. (2003) *Nature* **421**, 152-155