MG14

Centennial- to millennial-scale variability of surface ocean temperature and salinity in the Northern Gulf of Mexico during the late Holocene

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We investigated centennial- to millennial- scale variability of sea-surface temperature (SST) and sea-surface salinity (SSS) in the northern Gulf of Mexico (GOM) during the Late Holocene using foraminiferal geochemical records developed from a suite of multi-cores collected in the Garrison Basin (26°43'N, 93°55'W) in the summer of 2010. A radiocarbon-derived chronology from these cores spanning ~4500 years revealed a sediment accumulation rate of 15 to 17 cm per kyr. We generated time series $\delta^{18}O$ (SST and SSS proxy) variations in the white variety of the planktic foraminifer *Globigerinoides ruber*. Recent sediment trap studies indicate that *G. ruber* (w) is generally present throughout the year in the northern GOM. The geochemical records were replicated in three multi-cores to assess heterogeneity of the environmental signal. Initial stable isotopic results indicate that multi-cores from the Garrison Basin contain well-replicated, coherent, centennial- to millennial variability in $\delta^{18}O$. Our initial results compare well with published results from the Pigmy Basin, GOM. In addition, paired Mg/Ca and $\delta^{18}O$ analyses of *G. Ruber* (w), collected from a sediment trap located ~350 km from the multi-core site lend confidence that down-core variations are robustly correlated with surface ocean temperature and salinity variability.

Keywords: paleoceanography, replication, foraminifera, late Holocene