

# Multispecies Foraminifera Reconstruction of the Eastern Equatorial Pacific Thermocline During the Holocene and Last Glacial Interval

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In the present, the mean state of the Eastern Equatorial Pacific (EEP) is modulated by the position of the thermocline. Fluctuation from the mean state is influenced by the El Niño Southern Oscillation (ENSO), an interannual mode of climate variability, with atmospheric teleconnections impacting extreme weather events on a global scale. The variations of the EEP thermocline's depth throughout the Holocene and last glacial interval are not well established. Reconstruction of the temperature structure of the water column can provide insight to the dominant driver of the mean state of the thermocline and the extent to which changes in global climate or solar radiation at the equator, due to a shift in orbital precession, affect the thermocline's position. This will also provide invaluable input for climate models and future assessments of the region. To reconstruct the position of the EEP thermocline in the past, we will sample the marine sediment core at Ocean Drilling Program Leg 202 Site 1240 (2921 m; 0.02°N, 86.46°W) located in the Pacific cold tongue. We will then create a high-resolution  $\delta^{18}\text{O}$  record of multiple species of planktic foraminifera; *Globorotalia tumida*, *Pulleniatina obliquiloculata*, *Globorotalia hexagonous*, *Trilobatus sacculifer* (née *Globigerinoides*), and *Globorotalia menardii*, which live at different depths throughout the water column, and will produce data spanning the past +20,000 years including both the Holocene and Last Glacial Maximum (LGM). In combination with previous proxy records from this site, we will explore implications of these results for understanding past ENSO variability. We anticipate our results will indicate a decreased temperature gradient or deeper thermocline during the LGM, consistent with an El Niño-like mean state. An El Niño like mean state could have brought warmer sea surface temperatures to the EEP.