

## Vertical temperature structure change in the tropical Pacific over the last 2.2 Myr

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The zonal gradient of sea surface temperature (SST) in the tropical Pacific is associated with the atmospheric Walker Circulation, and the changes are known as the El Niño–Southern Oscillation (ENSO), which contributes to global climate change. Past long-term tropical temperature changes have also been interpreted in analogy to the ENSO, mostly based on temperature records at two edge regions, the western equatorial Pacific (WEP) and eastern equatorial Pacific (EEP). Temperature record in the central tropical Pacific (CTP) is required for a better understanding of zonal temperature structure change. There are few temperature records in the central tropical Pacific (CTP) because the water depth of most of this area exceeds lysocline, which makes both oxygen isotope stratigraphy and temperature reconstructions difficult. The Manihiki Plateau, located in the central tropical Pacific, has a water depth above the lysocline, and the sediments consist of carbonate ooze with well-preserved calcareous microfossils. In this study, orbital-scale oxygen isotope stratigraphy was constructed on two sediment cores, Site U1488 in WEP and KR99-12 PC5 in the Manihiki Plateau in CTP, and SST and thermocline temperature (TT) were reconstructed for the last 2.2 Myr using Mg/Ca thermometry. The SSTs in two sites show similar variability, indicating that both sites have been located within the warm pool for most of the studied period. On the other hand, the TT in CTP rapidly increased at ~1.7 Ma. The reconstruction of vertical temperature structures in CTP in addition to EEP and WEP reveals the behavior of the tropical Pacific over the past 2.2 Myr.

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