

Mid-Holocene South China Sea Paleoceanographic reconstruction using records of corals from the Philippines coast

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Although recent advancements of climate models using powerful computer resources, capability of future prediction of climate still need to be improved. One of the areas of research in which model predictions of climate have not been reached to consensus is low latitude hydrological cycles. Corals provide an archive of temporal high resolution (weekly ~ monthly) of past climate in the low to mid latitude of surface oceans. Measurements of coupled d18O and strontium contents can give us the information of sea surface temperature (SST) and local water isotopes that latter strongly controlled by hydrological cycles. At the low latitudes ocean, seawater oxygen isotopes are often provides the measure of past sea-surface salinity (SSS). South China Sea (SCS) is a pivotal area to understand the past variability of the East Asian Monsoon system and El Nino Southern Oscillation (ENSO) where climate predictions required to be refined. In this study, we reconstructed paleoceanography using the calcium carbonate skeleton of corals. There are only two studies to date to reconstruct mid-Holocene South China Sea paleoceanography and limited along the west coast of SCS. More than 6 Porites corals from Luzon and Palawan islands are obtained and ages are ranged from the present day to 6.6 ka. Coral based SST and SSS indicated that East Asian Summer Monsoon during the mid-Holocene was stronger than the one in the present. Our reconstructed SST and SSS for 5.3 ka were broadly consistent with the result obtained from an AOGCM simulation for 6 ka (Abe and Ohgaito, per. com), as is SCS climate changes were mainly derived from the insolation differences in the Northern Hemisphere between the present and the Middle Holocene.