

Mid Holocene Western Pacific Palaeoclimatology Reconstructed from fossil coral and Atmosphere-Ocean GCM model.

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High-resolution records of Sea Surface Temperature (SST) from South China Sea (SCS) could provide important archives to better understanding the paleoceanography in the Western Pacific. Mid Holocene and modern corals were obtained from SCS and was radiocarbon dated as ca. 7000 years ago. Oxygen isotope measurements of modern coral marked average value of ca. -6 permil, whereas fossil coral showed ca. -5.5 permil. If we attribute this $\delta^{18}\text{O}$ difference to SST changes between the present to the mid Holocene, approximately 3 degreeC of cooling had been occurred at 7000 years ago. However, Alkenone SST thermometry and foraminiferal SST reconstruction in the previous studies did not indicate cooling as this extent. The oxygen isotopic difference recorded in corals between present and mid Holocene therefore cannot solely attributed by SST changes, we have to consider the possibility of changes in $\delta^{18}\text{O}$ in water, namely local salinity of sea water. Coral data were then compared with the coupled Ocean-Atmosphere GCM (MIROC3.2) which was also used for IPCC-AR4 experiment. The GCM experiments were conducted under the protocol of PMIP2 and the resolution of the atmosphere is 2.8 degree whereas oceanic grid was 1 degree except for equatorial region where resolution increased as high as 0.5 degree (Ohgaito and Abe-Ouchi, in press). We will discuss the possible mechanism inferred from GCM experiments to explain $\delta^{18}\text{O}$ records.