平成２０年度　環境科学院　修士論文内容の要旨

# Reconstruction of Sea Surface Temperature in the Southwest Pacific for the Past 340,000 years
# (南西太平洋における過去３４万年間の表層水温変動の復元)

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Sea surface temperature (SST) is a direct expression of the energy balance of the Earth. Coupled with other oceanographic parameters, it could be very useful in revealing the mechanism and dynamics of the evolution of the climate. Hence, SST records of long time-span in the relatively less-explored southern Pacific are still very much sought after. In this study, we present SST records in the southwest Pacific for the past 340,000 years, reconstructed using 2 organic proxies, namely $TEX_{86}$ and $U^{K'}_{37}$ paleothermometries. Although the variations in both records were in phase, the pattern of $TEX_{86}$-derived SSTs resembled the benthic $\delta^{18}O$ record and Antarctic temperature, while that of the $U^{K'}_{37}$ -inferred SSTs is more similar to planktonic $\delta^{18}O$ record. We found that the global core tops $TEX_{86}$ calibrations [Schouten et al., 2002 and Kim et al., 2008] resulted in SST records with anomalously large amplitude, indicating a possible lack of geographical coverage of these state of the art $TEX_{86}$ calibrations in the southern Pacific and plausibly a substantial contribution of deepwater temperature signal. Meanwhile, fluctuations in $\delta^{18}O$ records lagged SSTs by several thousand years during glacial terminations, suggesting that Antarctic forcing was not as predominant as previously thought at the core site during deglaciation. Furthermore, early stages of terminations II and III were marked by increased sea surface salinity and decreased marine productivity, which could be attributed to more vigorous Subtropical inflow, as a consequence of a strengthened East Australian Current and the southward migration of the Tasman Front. Dissimilarly, sea surface salinity and marine productivity decoupled during termination I, possibly due to a less developed deglaciation compared to the previous two. These findings highlight the dominance of tropical forcing in the mid-latitudes of the Pacific during deglaciations.