

## Eastern Arabian Sea Climate Change during Mid-Pleistocene Transition

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Most of the studies from the eastern Arabian Sea spanning the Mid-Pleistocene Transition (MPT) are qualitative. Here, we present the high-resolution record of productivity, denitrification, provenance, oceanic temperature and salinity variability from MIS 18 to MIS 28 spanning a major part of MPT. The productivity and denitrification was higher during the warmer periods of the MPT accompanied by weaker ventilation. We also compared our record to the productivity and denitrification variability from the Western Arabian Sea. We found a synchronous variability between the two regions during MPT. We carried out the paired measurement of Mg/Ca and  $\delta^{18}\text{O}$  of *G. sacculifer*. Our record shows that the MLT varied from 28 °C to as low as ~19 °C with a mean value of ~23 °C. The  $\text{d}^{18}\text{O}_{\text{sw}}$  and salinity range from ~39 to ~32 units with a mean value of ~36 units. At the study site, low MLT and high salinity occur during the monsoon as shown by the present day climatology. We find high salinity during the warmer periods (MIS 27, 25, 21 and 19) implying intense monsoon. The salinity and temperature record generated shows that the monsoon intensified during the warmer periods of MPT. We also examined our data and looked for the possible linkage of SAsM to the forcing factors like solar insolation at 15°S (I15°S) and precession during MPT. We visibly examine the relationship between the I15°S and the  $\delta^{18}\text{O}_{\text{sac}}$  variability. We saw a good match of I15°S with  $\text{d}^{18}\text{O}_{\text{sac}}$ , which corroborates earlier study of upper-ocean stratification from the Southern Indian Ocean. It supports a robust sensitivity to warming in the Southern Hemisphere. The continuous wavelet transform reveals that the ~24 kyr periodicity dominates from 0.97 Ma to 0.85 Ma. The same periodicity is observed during ~0.79 Ma to ~0.77 Ma. The significance of internal forcing might get reflected by small scale periodicities of ~ 7 kyr and ~15 kyr.