

EGU2020-10253

<https://doi.org/10.5194/egusphere-egu2020-10253>

EGU General Assembly 2020

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Primary productivity dynamics in the northeastern Bay of Bengal over the last 26,000 years

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Paleo-records of primary productivity (PP) changes from the Arabian Sea (AS) have revealed the major influence of monsoon-wind intensity in controlling productivity variations at different timescales, through mixed-layer dynamics and upwelling activity. Much less is known, however, about past changes in paleo-PP in the Bay of Bengal (BoB).

In the present study, we have reconstructed PP over the last 26,000 years from a sediment core located on the northeastern (NE-) BoB. Paleo-PP was estimated by a PP empirical equation using the relative abundance of *Florisphaera profunda*, a deep dwelling coccolithophore that develops in the lower euphotic zone. Our record does not reveal any obvious difference of PP between the Last Glacial Maximum (LGM) and the late Holocene, but strong oscillations characterize the deglaciation. Our NE-BoB record is anti-phased to PP records in the AS, and positively correlated to surface seawater salinity (SSS) changes reconstructed from the same core since the LGM. We propose that the strong correlation to salinity variations reflects the role of salinity-stratification related to monsoon precipitation on PP at both orbital- and millennial-scales. Outputs of a climatic transient simulation (TraCE-21) and runs obtained with the Earth System Model IPSL-CM5 support the above interpretation of a strong control of past PP variations by local hydrological changes in the NE-BoB. Our data also highlight the potential teleconnection of the Atlantic Meridional Overturning Circulation strength and Indian Monsoon intensity during the deglaciation.