



Productivity variations in the Northeast Indian Ocean during middle Miocene in connection with initiation and intensification of SW Monsoons.

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The Miocene epoch marks the most salient interval in the Cenozoic era, characterized by several major climatic events. An important aspect of Miocene epoch is related to a better understanding of the initiation and intensification of Indian summer monsoon (ISM), which is believed to have occurred during Miocene epoch. The productivity which varies through time, is directly correlated to monsoonal strength. The monsoon is intern dependent on atmospheric heating and SST. We have used three productivity proxies Porg flux, Babio flux and $\Delta\delta^{13}\text{CP-B}$ in Miocene sediments of ODP 758. The productivity proxies have been compared to stable oxygen isotope record of planktonic foraminifera to check glacial-interglacial variability in productivity. The Porg, Babio and their fluxes exhibit high values during relatively warm period as compared to colder period. At ~ 12 Ma, initiation of ISM, enhanced upwelling and nutrient supply via fresh water runoff from rivers Excess nutrient supply inturn triggered photosynthesis in phytoplanktons and thus generating excess organic matter. High rate of photosynthesis amplified removal of ^{12}C from sea surface water, resulting in increased $\delta^{13}\text{C}$ of dissolved inorganic carbon. Sinking organic matter and biogenic silica enhanced Babio and Porg fluxes. Intensification of ISM at ~ 10 Ma escalated the reaction chains occurring in the ocean and atmosphere, i.e organic carbon burial and silicate weathering causing intense CO_2 drawdown that could have possibly contributed to late Miocene cooling (reverse greenhouse effect) (Herbert et al., 2016). As there is a direct relationship between SST and modern summer monsoon, a decrease in SST must have resulted in weakening in ISM intensity at ~ 8 Ma.