



HOW MICROBIAL COMMUNITY COMPOSITION DETERMINES THE FUTURE OF CARBON PUMPING AND GREENHOUSE GAS PRODUCTION IN THE TWO NORTHERN INDIAN OCEAN BASINS

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Ocean primary production is the basis of the marine food web, sustaining life in the ocean via photosynthesis, and removing carbon dioxide from the atmosphere. The availability of organic matter largely determines oxygen consumption in waters below the euphotic zone. By generating low oxygen conditions, the production of greenhouse gases including nitrous oxide can be facilitated. The Arabian Sea and the Bay of Bengal are strongly antagonistic regarding their primary production, not necessarily regarding the total rates, but regarding the community composition of photosynthetic organisms. Further, carbon export efficiencies differ impacting the intensity of the two oxygen minimum zones, their biogeochemistry and greenhouse gas production. Recently, a decrease of global marine primary production has been reported based on ocean color data, which was mostly ascribed to decreases in primary production in the Bay of Bengal but not in the Arabian Sea. In this presentation, I will discuss, based on available rates and community compositions, what this change in primary production means for the future of the carbon pump, the oxygen minimum zones, and the nitrous oxide production in the Arabian Sea and the Bay of Bengal, respectively.