

# PLANKTONIC COMMUNITY RESPONSES TO OXYGEN MINIMUM ZONE (OMZ) VARIABILITY IN THE ARABIAN SEA.

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The NE Arabian Sea harbours the most extensive OMZ where monsoon influences surface-water productivity. Alternating organic matter-rich vs. bioturbated sediments collected for this study record fluctuations in OMZ intensity that match with North Atlantic climate oscillations over the last glacial-interglacial cycle [1]. Information on how marine planktonic communities respond to long-term exposure to OMZ-conditions is restricted to a few fossilising species [2]. Using a 13 m-long and 52 kyr-old sediment record from a classical OMZ coring location off the Indus Canyon, we applied palaeontological-independent approaches (i.e., lipid biomarkers and ancient DNA stratigraphy) [3] to provide a holistic overview of long-term plankton-OMZ interactions at centennial to millennial scale resolution. Overall plankton communities were significantly different (ANOSIM < 0.001) before and after last glacial maximum (LGM). This is in agreement with a shift towards increased sterol (e.g. dinosterol) and decreased long-chain alkenone concentrations after the LGM. Notably, overall eukaryotic communities were also significantly different periods of stronger vs. weaker OMZ conditions. Dinoflagellates, prasinophytes, jellyfish, indicative of eutrophic conditions, were among the significant indicator taxa for periods of stronger OMZ while the chlorophyte *Chlorella*, centroheliozoans were relevant significant indicator taxa for periods of weaker OMZ conditions. The planktonic ecosystem is likely resilient since the same taxa reappeared during these contrasting climate conditions despite being thousands of years apart.

[1]Schulz *et al.* (1998) *Nature* **393**, 54-57 [2] Ganssen *et al.* (2011) *Clim. Past*, 7, 1337-1349. [3]Coolen *et al.* (2013) *Proc Natl Acad Sci* 110, 8609–8614.