

Paleoceanographic changes inferred from organic matter sedimentary record in the northeastern Arabian Sea over the past 110,000 years

M. MURAYAMA^{1*}, K. YAMASHITA², N. HARADA³

¹ Center for Advanced Marine Core Research, Kochi University, 200 Monobe, Nankoku 783-8502, Japan (*correspondence: murayama@kochi-u.ac.jp)

² Graduate School of Integrated Arts and Sciences, Kochi University, 2-5-1akebono-cho, kochi-shi, Kochi 780-8520 Japan (slime_pig_dambo@yahoo.co.jp)

³ Research and Development Center for Global Change, JAMSTEC, 2-15 Natsushima cho, Yokosuka 237-0061 Japan (haradan@jamstec.go.jp)

The northeastern Arabian Sea is characterized by a widespread midwater oxygen minimum zone (OMZ), between 80 to 1300 m, with oxygen concentrations reaching values of <0.05 mL/L⁻¹ at present [e.g. 1, 2, 3]. In particular, biogenic particle fluxes in this region have experienced large seasonal changes due to strong Indian monsoonal winds in summer and winter. Here we report carbon and nitrogen isotope data for a sediment core (ER-4; W.D. 3,550 m) collected from topographic high in this region. Synchronous downcore variations in the $\delta^{15}\text{N}_{\text{org}}$ record, which are explained by regional changes in the isotopic composition of subsurface nitrate, and hence denitrification were found. Moreover, these variations are synchronous with Indian monsoon changes during the glacial-interglacial cycles, thereby establishing a link with global climate. We discuss that these climate linked variations in this region that are likely to have experienced marine biogeochemical cycles during the Late Quaternary.

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[2] Govil and Naidu (2010) *Paleoceanography*, **25**, PA1210

[3] Kao *et al.*, (2015) *Biogeosciences*, **12**, 1–14.