

## Organic geochemical investigations on sediments deposited under low oxygen conditions of the Northeastern Arabian Sea and Chile margin: a comparison

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Recent sediments accumulating on the continental slopes of the northern Arabian Sea are characteristically enriched in organic carbon in a depth zone roughly coincident with the depth of the oxygen minimum. This distribution has been ascribed to the preferential preservation of deposited organic matter under the very low dissolved oxygen conditions of the bottom waters, the differential supply of sediment components and textural controls. In this investigation we focus on the record of organic matter burial in a long kastenlot core from within the oxygen minimum zone on the continental slope off Pakistan.

In a core from the lower part of the oxygen minimum (111KL), we observe a complex sequence of alternating organic-rich laminated and organic-poor bioturbated/homogeneous intervals (0.4 to 4.9% TOC). The isotopic composition of organic carbon throughout the core ( $\delta^{13}\text{C}$  range from  $-19.6$  to  $-21.5\text{‰}$ ) indicates a predominantly marine source. Rock-Eval hydrogen indices are higher in the laminated compared with the homogeneous intervals (300–400 mg vs 100–200 mg hydrocarbons/g organic C), probably reflecting higher organic matter reworking when the sediment surface was more oxygenated. The pattern of high and low values

in laminated and homogenous layers, respectively, is also reflected in both marine and terrestrial organic matter indicators; thus, the chlorin contents vary from 1379 to 28174 ng/g and are higher in the laminated sections compared with the homogeneous intervals. Long chain *n*-alkane ( $\text{C}_{29}$ ) concentrations, which range from 26 to 355 ng/g and the lignin concentrations, which range from 0.08 to 0.33 mg/10g are also higher in the laminated intervals compared with the homogeneous sections of the core (carbon-normalized lignin concentrations are slightly higher in the homogeneous intervals). However, both terrestrial markers do have low concentrations and indicate low terrestrial organic matter input. TOC normalized dinosterol and brassicasterol concentrations of core 111KL show, with few exceptions, an enrichment of the biomarkers relative to TOC in the laminated layers. Organic carbon concentrations and biomarker distribution in core 111KL, therefore, suggest higher preservation during times where an OMZ was present.

The sediments from the northeastern Arabian Sea are compared to sediments from the Chilean margin where also a pronounced oxygen minimum is present.