Reconstruction oxygen conditions of the Peruvian OMZ for the last 22 thousand years using benthic foraminifera

Project B7 (SFB754, Phase II and III)
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SFB 754

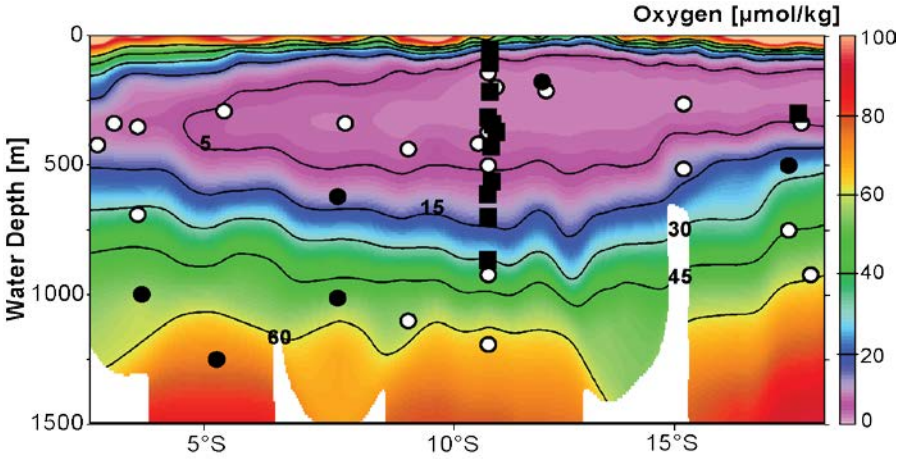

Fig.1: Latitude vs depth section of dissolved oxygen conditions along the Peruvian shelf and slope. Squares: surface samples for living benthic foraminiferal faunas, black dots: sediment cores designated for foraminiferal studies, white dots: other SFB754 sediment cores used for sedimentological studies.

- The Peruvian Oxygen Minimum Zone is one of the most pronounced OMZs in today's oceans and thus a key area to understand changing oxygen conditions in relation with climate change.
- The aim of this project is to reconstruct the changing bottom-water oxygen conditions in the Peruvian OMZ since the Last Glacial Maximum by using benthic foraminiferal assemblages.

- Living benthic foraminiferal assemblages are structured with the prevailing bottom-water oxygen concentrations (Mallon et al., 2012).
- Downcore distribution of benthic foraminiferal assemblages showed gradual abundance cahnges of indicator species for certain oxygen conditions (Erdem & Schönfeld, 2017).
- The faunal changes indicate a decrease of oxygenation by 30 µmol kg^{-1} during the last Termination (Erdem et al., 2020).

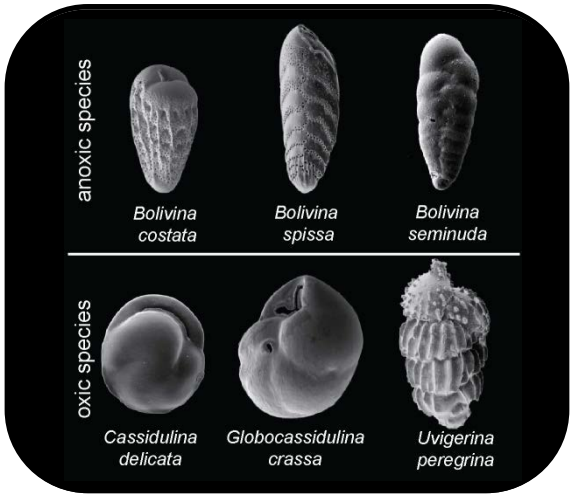

Fig. 2: Frequent indicator species observed in the sediment cores studied.

Mallon et al., 2012: The response of benthic foraminifera to low-oxygen conditions of the Peruvian oxygen minimum zone, in ANOXIA, pp. 305-322.

Erdem & Schönfeld, 2017: Palaeontologia Electronica, 20.2.35A, pp. 1-32.
Erdem et al., 2020: Biogeosciences, 17, pp. 3165–3182.