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Foraminifera and Nannofossils

From life strategies to the geological record

Meeting Handbook & Abstracts

SEM picture of Karreriella sp. - Courtesy of E. Thomsen

Recent and Fossil Bio-Indicators

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FRANCE

Benthic foraminifera on the Guadiana inner shelf as indicators of rainfall variability and human impacts on the river basin

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Prodeltaic depositional systems can be used as high-resolution archives, since they sensitively record environmental changes occurred during their formation. On the inner shelf off the Guadiana River, northern Gulf of Cádiz, the recent deposition is mainly driven by river discharge, which reflects both climate variability and human-induced processes in the river basin.

The purpose of this study is to unravel rainfall variability and human impacts on the river basin, recorded on the Guadiana prodeltaic wedge, over the past decades.

A multiproxy study including the analyses of benthic foraminiferal assemblages, grain size and geochemical element distribution (X-ray fluorescence core scanning), constrained in a chronological framework (based on radiocarbon dating and Pb-210), was performed on core GeoB19522. This core was collected in March 2015, during the RV Poseidon cruise POS482 CADISED, on the Guadiana prodeltaic wedge at 13.5 m water depth, which is an area with high sedimentation accumulation rates and consequent detailed temporal resolution.

The upper part of the sediment core (from 1.6 m depth to the top) is dominated by the silt-clay fraction (77-99%), occasionally with higher percentages of sand (0.2-23 %). The element ratios and the benthic foraminiferal fauna show significant temporal variations. Some of the identified species can be regarded as successful colonizers (*Textularia earlandi*, *Reophax arctica*) and others as opportunistic species linked with river discharges and the limits of productivity (*Bolivina ordinaria*, *Hopkinsina atlantica*). These variations point to changes in the environment, promoted by periods of increase or decrease sediment supply to the shelf.