

BENTHIC FORAMINIFERAL BIOFACIES ASSOCIATED WITH MIDDLE TO EARLY LATE MIOCENE OXYGEN DEFICIENT CONDITIONS IN THE EASTERN MEDITERRANEAN

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EXTENDED ABSTRACT

The Potamos Section from the Upper Serravallian of Gavdos Island, Greece, has been investigated with respect to foraminiferal assemblages. The main objective was to analyze qualitatively and quantitatively and to interpret paleoecologically the benthic foraminiferal fauna of the Potamos Section. The concept, which has been adopted, is that species fitness is primarily affected by changes in nutrient abundance. The occupation of different microhabitats is governed by a more local interplay of nutrient availability, oxygen supply and seasonality. Benthic foraminifera represent one of the most sensitive indicators of dissolved oxygen levels and can therefore be used to interpret ancient sediments. Criteria to estimate oxygenation are based on foraminiferal morphology, test size, wall thickness or indicative taxa. Therefore, according to these criteria the determined benthic foraminifera have been grouped into three categories: oxic indicators, suboxic indicators and dysoxic indicators. The Benthic Foraminiferal Oxygen Index (BFOI) based on foraminiferal characteristics reflects aspects of these processes.

The analysis showed that oxygenation was the most important factor for the distribution of the faunas in the investigated area.

The entire section is characterized by high percentage values of the representatives of the Dysoxic and Suboxic group. Oxic indicators are of minor importance. Microfaunas adapted to these low-oxygen conditions indicate temporal sluggish bottom-water circulation, which can be associated with high fresh water fluxes. The lower part of the section (Interval I) is characterized by a decline in the abundance of the oxic indicators and an increase of the suboxic morphogroup related to intermediate oxygenated conditions. Interval II is characterized by the presence of potentially infaunal taxa, representing the establishment of a restricted environment with abundant nutrients. In this dysoxic part, foraminifera were more abundant and assemblages exhibited higher dominance, lower species richness and lower diversity. Finally, the upper part of the section (Interval III) is dominated by the "oxic" morphogroup.

Our data indicate that biologically important factors such as oxygen and nutrient content of the waters played a great role in the palaeoecosystem evolution.

Key words: Benthic Foraminifera, Late Serravallian, oxygenation, BFOI.