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Distribution patterns of foraminifera in Late Miocene eastern mediterranean sediments in relation to Environmental gradients: first results

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In this work, the succession of paleoenvironments and foraminifera assemblages are analyzed from two sections (Ah Giannis, Bo) from the Lower Tortonian in Gavdos Island, which forms the southernmost extension of the South Aegean Island Arc. The main objective of the present study is to gain a better understanding of the environmental factors controlling the distribution of faunal parameters. The paleoecological approach uses the available data on recent foraminiferal assemblages from the Mediterranean (see review in Murray, 1991). These ecological characteristics of foraminifera can provide assessments, at varying levels of accuracy of water depth, bottom water oxygenation, salinity.

To reach our goal, quantitative and statistical analysis on benthic foraminiferal assemblages were carried out. Foraminiferal data are compared to others micropaleontological data. A data set, constituted by counted samples of benthic foraminifera, has been subjected to cluster and principal component analyses, in order to demonstrate the linkage between taxa distribution and paleoenvironmental gradients.

The most important benthic constituents are biconvex *Cibicides, Uvigerina,* elongate *Bolivina, Bulimina, Globobulimina (Praeglobobulimina), V. complanata* and *O. umbonatus* and represent a typical deep-sea mud dwelling assemblage. Associations largely made up of these groups are found today in normal marine environments with a muddy substrate, at depths below 100 m and with bottom temperatures lower than 10°. White marls are characterized by well distributed high diversity of benthic species indicating stable environmental conditions. On the other hand, *Ammonia beccarii* is a very common foraminiferal species, which grows in almost every brackish or shallow marine environment, form the tropic to temperate regions.

Our results suggest that oxygenation and trophic conditions of the near-surface sediments are the most important factors that control the community structure of the benthic foraminiferal fauna. In addition, upwelling phenomena evidenced by signals from the benthic foraminifera may have played a role in the study area.

References:

Murray, J.W. (1991)- *Ecology and Paleoecology of Benthic Foraminifera.* pp. 397, Wiley, New York, NY.