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Foraminifera assemblages of western Crete coastal areas from beach samples and drill cores

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At the western coast of Crete in the Aegean Sea samples were collected in order to analyse and elucidate the distribution and composition as well as the recent and paleoenviromental characterization of foraminifera assemblages.The foraminifera assemblages were investigated through studying of 36 samples that were taken from PHA3, KIS4 core samples and 10 beach sand samples which are Falasarna, Kissamos, Balos, Napalia and Frangkastello areas. Multivariable techniques of cluster analysis, principal component analysis (PCA) and ordination analysis were used to analyse biological data and abiotic factors. Investigation data were obtained from different species in each sample. A total of 66 species was identified. The order Rotaliida and species Peneroplis pertusus were dominant in the whole of the samples. According to the result of cluster analysis indicated four groups of sample (Q-mode) corresponding to three foraminifera assemblages (R-mode). Five measures of species diversity were calculated: (1) species richness, (2) the alpha-index of Fisher; (3) Simpson's index, (4) the Shannon-Wiener index [H(s)] and the percentage dominance (the highest percentage abundance of Foraminifera species in a sample). The Principal component analysis (PCA) also showed approximately the same three groups obtained from the cluster analysis. The cluster are: (Ia) Peneroplis pertusus (includes five stations); (Ib) Cibicides pseudolobatulus (comprises 18 stations of Falarsarna core samples and Falarsarna beach samples); (II) Ammonia beccarii (contents two stations); (III) Globigerina bulloides-Globigerinoides rubra (Kissamos core samples and eastern Kissamos beach samples). Each cluster has a peculiar faunal assemblage that expresses particular environmental conditions. The quantitative assessment of paleobathymetry based on P/B ratio suggests an origin from the inner shelf to bathyal water depths.