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Cluster analysis of benthic foraminiferal morpho-groups from the western margin of India reflects its depth preference

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Abstract

Q-mode and R-mode cluster analyses have been carried out on the census counts data of 68 genera and one 'other genera' of benthic foraminifera from 32 stations off Mangalore-Cochin sector, west coast of India, to study the ecological preferences, especially the effect of depth on external test morphology of benthic foraminifera. It is noticed that cluster B is dominated by rounded-symmetrical forms, cluster C includes both rounded-symmetrical and angular-asymmetrical forms, whereas cluster A, is predominantly represented by angular-asymmetrical forms. From the spatial distribution of cluster A-C-B, we report that with decreasing depth, there is a gradual tendency among benthic foraminifera to become more symmetrical from angular-asymmetrical. The observed morphological changes in benthic foraminifera are attributed to the sediment turbulence. The angular-asymmetrical morpho-group could be considered as an indicator of relatively deeper water while rounded-symmetrical forms suggest shallow environment. Therefore, the temporal variation in the relative abundance of these morpho-groups, can be used for paleo-depth reconstruction.

Key words: Benthic foraminifera; Q-mode Cluster analysis; Morpho-groups; Bathymetry; West coast of India; Arabian Sea

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