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# Distribution, biomass and diversity of benthic foraminifera in relation to sediment geochemistry in the Arabian Sea

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| Résumé en anglais | The distribution, biomass, and diversity of living (Rose Bengal stained) deep-sea benthic foraminifera (>30 µm) were investigated with multicorer samples from seven stations in the Arabian Sea during the intermonsoonal periods in March and in September/October, 1995. Water depths of the stations ranged between 1916 and 4425 m. The distribution of benthic foraminifera was compared with dissolved oxygen, % organic carbon, % calcium carbonate, ammonium, % silica, chloroplastic pigment equivalents, sand content, pore water content of the sediment, and organic carbon flux to explain the foraminiferal patterns and depositional environments.A total of six species-communities comprising 178 living species were identified by principal component analysis. The seasonal comparison shows that at the western stations foraminiferal abundance and biomass were higher during the Spring Intermonsoon than during the Fall Intermonsoon. The regional comparison indicates a distinct gradient in abundance, biomass, and diversity from west to east, and for biomass from north to south. Highest values are recorded in the western part of the Arabian Sea, where the influence of coastal and offshore upwelling are responsible for high carbon fluxes. Estimated total biomass of living benthic foraminifera integrated for the upper 5 cm of the sediment ranged between 11 mg Corg m−2 at the southern station and 420 mg Corg m−2 at the western station. Foraminifera in the size range from 30 to 125 µm, the so-called microforaminifera, contributed between 20 and 65% to the abundance, but only 3% to the biomass of the fauna. Highest values were found in the central and southern Arabian Sea, indicating their importance in oligotrophic deep-sea areas. The overall abundance of benthic foraminifera is positively correlated with oxygen content and pore volume, and partly with carbon content and chloroplastic pigment equivalents of the sediment. The distributional patterns of the communities seem to be controlled by sand fraction, dissolved oxygen, calcium carbonate and organic carbon content of the sediment, but the critical variables are of different significance for each community. |
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