



FORAMS 2006

Influence of hydrodynamic patterns on foraminifera in reef sediment at the Praia do Forte beach and Itacimirim, Bahia, Brazil

Simone Souza de Moraes & Altair de Jesus Machado

*Laboratório de Estudos Costeiros, Centro de Pesquisa em Geofísica e Geologia, Instituto de Geociências, Universidade Federal da Bahia/UFBA.
Rua Caetano Moura, 123, Federação, 40201-340, Salvador, BA, Brazil
moraess@hotmail.com*

The present work analyses the influence of hydrodynamic conditions on the proportion of foraminifera in the sediment of two coastal reefs from the northern Bahia State, northeastern Brazil. The Itacimirim reef is 1,114 m long and 471 m wide, while the Praia do Forte beach reef is 686 m long and 128m wide. Both of them occur in the fore reef zone in waters less than 10 m deep, while the back reef zone is inclined towards the siliciclastic sand beach, so it is surrounded by sand. The reef tops stay exposed during the low tide, which reveals great colonies of coral truncated by erosion, and between them, little pools and a channel inhabited by living corals and algae. The collecting was carried out in the winter (May and July) and summer (November and December) periods of 1999. Fourteen samples were collected along a delimited transect across the length of the reefs. The surficial sediment samples were taken from the top and the bottom of the reefal pools. At the laboratory, the samples were washed under a stream of water, dried, weighed and submitted to the pattern technique of grain size analysis. The first 300 grains of the fraction over 0.062mm in size were identified as one of the following groups: *Halimeda*, red algae, bryozoans, corals, crustaceans, echinoderms, sponges, foraminifera, molluscs, polychaetes and quartz. The quartz grains were predominant, varying in the winter vs. summer period, with 58.23% and 70.36%, respectively, from the Praia do Forte beach, and 44.90% to 45.39% in Itacimirim. Concerning carbonate grains, only red algae and molluscs in the winter and red algae in the summer had average percentages over 5% on the Praia do Forte beach. In Itacimirim, of the red algae, molluscs, and *Halimeda* in the winter, only the two first groups in the summer had percentages over this value. The foraminifera showed average percentages of 2.56% and 1.88% on the Praia do Forte beach and 2.48% and 3.31% in Itacimirim; the lowest percentages (Praia do Forte beach) and highest percentages (Itacimirim) of these organisms were both obtained in the summer period. Considering grain size, the percentages of carbonate grains decrease

when the grain size of the sediment decreases, so carbonate grains predominate in the gravel and coarse sand fractions on the Praia do Forte beach reef, and the gravel and coarse to medium sand fractions in Itacimirim. The foraminifera are the most abundant of all groups, in the gravel fraction (4.5% in the winter and 3.0% in the summer) on the Praia do Forte beach and the medium sand fraction (3.8% and 4.9%) in Itacimirim. The analysis of the foraminiferal fauna established that specimens develop preferentially around 30 m water depth and are transported with the sediment. In the studied reefs, sediment grain size has a great influence on the coastal drifts from waves of the southeast in the winter and of the east in the summer, but the coastal drift has a northeast-southeast direction. Therefore, the action of seaside drift is responsible for the seasonal variation of the foraminifera in the sediments, but they are the most abundant organism in the coarser fraction due to the low incidence of siliciclastic grains in this fraction.