



High-diversity foraminiferal assemblages from coastal mangrove habitats in northern Brazil: Adaptive capacities and resilience under conditions of environmental stress

Nisan Sariaslan and Martin Langer

Steinmann Institute of Geology, Mineralogy and Paleontology, University of Bonn, Bonn, Germany
(nisan.sariaslan@uni-bonn.de)

Mangrove forests are extremely productive ecosystems, sources and sinks of organic carbon and deliver essential ecosystem services both to the marine environment and people. We have studied the composition of modern benthic foraminiferal assemblages from mangrove swamps and mud flats along the Mamanguape River in Paraíba/Northern Brazil. Brazil is home to approximately 15% of the world's total mangal forest areas but the release of effluents and untreated wastewater is threatening these important ecosystems along the coastline. Sampling points for foraminifera were selected to acquire information on the foraminiferal assemblages associated with different environmental conditions, on the mud banks and in the estuary.

A total of ~100 species of benthic foraminifera were identified within the shallow mangrove habitats. The large number of identified mangrove taxa is the highest recorded so far for Brazilian mangrove habitats and rivals shallow-water assemblages recorded from nearby offshore and reef environments. Mangrove foraminifera require a number of physiological adaptations to overcome the problems of anoxia, high salinity and frequent tidal inundation. The high diversity recorded indicates that a particularly large number of species is capable to grow and flourish under conditions of multiple stressors. Numerical analysis of the faunal assemblages shows that specific taxa are abundant and indicative for specific habitats (inner mangroves-, channel-, brackish water environments). Tidal elevation is interpreted as an important factor in regulating species richness with a strong trend of decreasing diversity moving up the shore. Distribution, diversity and species-specific analysis will provide guidance on the use of Brazilian mangrove foraminifera as indicators for sea-level reconstructions.