Geophysical Research Abstracts
Vol. 13, EGU2011-4667, 2011
EGU General Assembly 2011

Recent benthic foraminifera in the oxygen minimum zone at the Western Indian margin, Arabian Sea

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Live benthic foraminiferal communities from the western Indian margin oxygen minimum zone (OMZ) incubated for four days with labeled algae material in a spreader experiment have been studied. The OMZ in this area extends between 180-1200 m water depth with oxygen values <0.5 ml/l. In order to determine the density and the faunal composition, surface sediments from two different water depths, one in the center of the OMZ (813 m: 17˚32.0´N, 71˚10.5´E) and one at the lower margin (1155 m: 17˚32.0´N, 71˚05.9´E) were analyzed (> 125 μm) and compared. In the center of the OMZ 475 living individuals/10 cm^3 were found, but only 44 living individuals/10 cm^3 at the lower part of the OMZ. Samples were taken during the intermonsoon of 2008 (October-November). The faunas show a clear difference between the two sampled depths. In 813 m water depth, *Epistominella rugosa*, *Bolivina dilatata* and *Trifarina occidentalis* dominate the assemblages. These taxa thus appear to be adapted to the very low bottom-water oxygen values (0.027-0.049 ml/l in the OMZ core) and the extremely high input of organic carbon due to phytoplankton blooms during monsoon season in the upwelling area. High surface abundances, especially of calcareous species (>95 %), the appearance of some calcareous infaunal taxa (e.g. *Praeglobobulimina*, *Chilostomella*, *Fursenkoina*, *Globobulimina*) and a lower diversity are recognized in the sample from the central part of the OMZ. This may result from specific physiological adaptations of the fauna to persistent almost anoxic conditions and the nearly absence of predators and competition. The lower part of the OMZ (1155 m) with oxygen values between 0.46–0.53 ml/l is dominated by *Bolivina dilatata*, *Epistominella exigua* and *Bolivina pacifica*. This depth shows higher diversities and low abundances with an increased agglutinated fraction (>40 %). There is an obvious relationship between species distribution and the strength of the OMZ. This relationship most likely results from differences in the persistence of suboxic to anoxic conditions as well as the preferences of individual species for amount and/or type of organic flux. This first comparison of recent benthic foraminiferal faunas in the OMZ at the Western Indian margin extend our knowledge about ecological demands of foraminiferal communities in oxygen poor sediments and may help to reconstruct oxygen depleted conditions in the past.