



FORAMS 2006

Living benthic foraminifera in methane- and sulfide-enriched sediments at cold seeps and hydrothermal vents

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Methane- and sulfide-enriched sediments at cold seeps and hydrothermal vents show a high variability of environmental conditions in a very narrow area. This leads to the formation of ecological niches and a biological zoning of the fauna. While the distribution of seep communities like chemoautotrophic bacteria or macrofaunal groups is well investigated, little information is available concerning the biology and population of benthic foraminifera in these habitats. Living (Rose Bengal stained) benthic foraminifera in different methane- and sulfide-enriched sediments were investigated in this study. Foraminiferal assemblages, densities, species composition, diversity, and distributional patterns of several vent sites in the Northeast and Northwest Pacific (Hydrate Ridge off Oregon; cold seeps off Hatsushima, Sagami Bay and off Kuroshima Knoll; hydrothermal vent at Hatoma Knoll) were compared to search for possible characteristic foraminiferal zones, endemic species, or other common community structures. Living foraminifera, dominated by species which can tolerate or prefer low oxygen conditions, were found at all sites, but they showed high variable densities and taxa composition, indicating strong local geochemical, environmental and faunal influence on each sampling site, despite of similar methane- and sulfide-enriched concentrations in the sediments.