Geophysical Research Abstracts
Vol. 14, EGU2012-8521, 2012
EGU General Assembly 2012

Benthic foraminiferal trace metal uptake: a field calibration from the Arabia Sea Oxygen Minimum Zone

K.A Koho and G-J Reichart
University of Utrecht, Earth sciences, Utrecht, Netherlands (K.A.Koho@uu.nl)

The Arabian Sea Oxygen Minimum Zone (OMZ) is sustained by high surface water productivity and relatively weak mid-depth water column ventilation. High primary productivity drives high respiration rates in the water column, causing severe oxygen depletion between $\pm$150-1400 m water depths, with the oxygen concentrations falling below 2 μM in the core of the OMZ. Living (rose Bengal stained) benthic foraminifera were collected at 10-stations, covering a large bottom water oxygen concentration gradient from the Murray Ridge. This sub-marine ridge is located in the open marine environment of the Arabian Sea and thus not affected by large gradients in surface water productivity such as encountered at the continental margins. Since these sites thus receive similar organic fluxes, but are bathed in bottom waters with contrasting oxygen concentrations, pore water profiles mainly reflect bottom water oxygenation. The study sites represent a natural laboratory to investigate the impact of bottom water chemistry on trace metal incorporation in benthic foraminifera. Trace metal analyses by laser ablation ICP-MS allows detailed single chamber measurements of trace metal content, which can be related to in situ pore water geochemistry. Focus of this study is on redox sensitive trace metal (e.g. Mn, U) incorporation into foraminiferal test calcite in relation to pore water oxygen and carbonate chemistry.