Geophysical Research Abstracts,
Vol. 11, EGU2009-2288, 2009
EGU General Assembly 2009

Atypical tropical sedimentation on a carbonate ramp off Mauritania

J. Michel (1), H. Westphal (1), G. Mateu-Vicens (2), and K. Gürs† (3)

(1) MARUM, Center for Marine Environmental Sciences, University of Bremen, Germany (julien.michel@uni-bremen.de), (2) Departament de Ciències de la Terra, Universitat de les Illes Balears, Spain, (3) Landesamt für Natur und Umwelt, Schleswig-Holstein, Germany

Tropical shallow water carbonates are well known as coral reef systems. Here we present a modern example of tropical ramp where typical tropical carbonate elements are missing.
The shelf off northern Mauritania is influenced by oceanic upwelling. The upwelling, nutrient-enriched waters warm up on the broad shelf to temperatures typical for many tropical environments. Another peculiarity of this shelf area is that Trade Winds introduce high amounts of eolian dust from the Sahara, further fertilizing the environment. The carbonate grain associations of this depositional setting reflect these conditions. The sediments collected in water depths between 10 and 150 m water depth are characterized by heterozoan carbonate grain associations. They vary from clean coarse-grained, almost pure carbonate sediments to fine-grained sediments with siliciclastic (dust) contents of about 50%. Carbonate components include abundant molluscs, worm tubes and bryozoans, as well as foraminifers, elements that are also abundant in extratropical sediments. While planktonic foraminifers represent the upwelling element, other components (e.g. molluscs) demonstrate the tropical origin of the sediment. The high-nutrient (and thus also low light-penetration) conditions are reflected in the fact that hermatypic shallow-water corals are absent as are calcareous green algae. The Mauritanian sediments represent an environment that is rare in the modern world but might have been more common in the geologic past when global temperatures were higher. On the basis of facies analyses, analogous sediments from the rock record could be misinterpreted as extratropical carbonates when using a high taxonomic level. Closer study allows to distinguish high-nutrient carbonate sediments from extra-tropical sediments, thus improving paleoclimatic reconstruction.