Geophysical Research Abstracts, Vol. 9, 09757, 2007
SRef-ID:

Thanetian Coral-Microbialites from the Norhtern Tethys (SW Slowenia): Palaeoenvironmental Interpretation

S. Moellerhenn (1), **J.Zamagni** (1), A. Kosir (2) and M. Mutti (1)

(1) Department of Geosciences, University of Potsdam, Germany, (2) Ivan Rakovec Institute of Palaeontology, ZRC SAZU, Ljubljana, Slovenia (zamagni@geo.uni-potsdam.de / Fax: +49-331-977-5700 / Phone: +49-331-977-5853)

Microbial precipitation of calcium carbonate has played a vital role in the development of carbonate platforms since the Proterozoic, especially during periods of important changes in sea level, nutrient supply and biotic assemblages. Therefore, microbial carbonates are important environmental and ecological indicators.

We studied the role microbial carbonates had in the Latest Palaeocene. Ramp carbonates along the NW margin of the Adriatic Carbonate Platform (SW Slovenia) have been investigated. We recognise microbial carbonates as important contributors within this carbonate system through a detailed facies and palaeoecological study of coral-microbialite reef mounds. These buildups mainly consist of encrusting, small coral colonies associated with ample amounts of microbial micrite and other encrusting organisms.

A semi-quantitative facies analysis of thin sections integrated with field data and paleoecological data has been performed to describe the evolution of coral-microbialite and associated encrusting fauna.

The reef mounds crop out as bioconstructions of metric extension and may have domal morphology. Carbonate mud shows mainly leiolitic and thrombolitic meso-fabric forming the primary framework, with dense and clotted to peloidal microstructures. Stromatolitic (laminated) fabrics are only observed in thin sections. Microbialites may exhibit vertical successions of alternating microbial micrite and encrusting fauna. Within these structures the microbial micrite has a reversed grading. Dense micrite is

succeeded by dense-peloidal micrite followed by peloidal micrite, which is encrusted by coral colonies and /or other encrusting biota (encrusting forams and/or red algae). The microbial micrite may also exhibit dome-shaped structures with thin, regular to irregular lamination (stromatolitic microfabric). Different facies can be distinguished within the buildups following the composition of microbial micrite, the associated coral fauna and other biota. We are currently working on a detailed facies description. Buildups are separated by foralgal packstones with abundant *Assilina*, *Discocyclina* and red calcareous algae. These bioclastic limestones are characterised by fining upward structures with basal lags composed by *Assilina* accumulations.

The composition and sedimentary features of these microbial reef mounds point to the conclusion that their deposition took place in the photic zone with low-energy and low-light conditions, likely below the FWWB. Moreover, the dominance of microbialite compared to corals indicates mesotrophic conditions, possibly induced by intensified weathering in the humid, tropical climate of the Latest Paleocene. High energy events, responsible for bioclastic limestone accumulations, could have caused varying nutrient distribution with microbialite growing in nutrient-enriched settings.