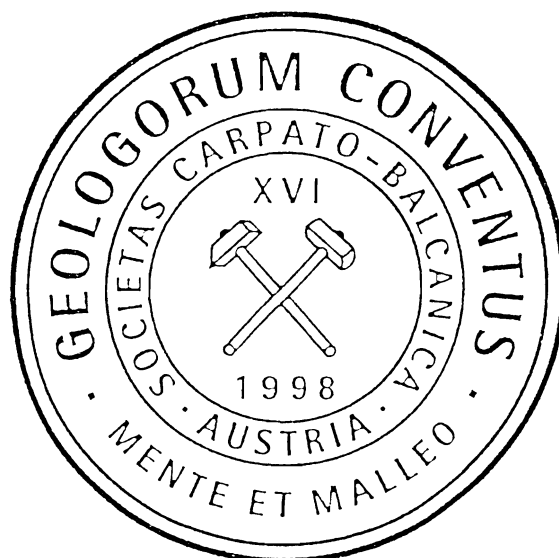


CARPATHIAN-BALKAN GEOLOGICAL ASSOCIATION
XVI CONGRESS

95

ABSTRACTS



AUGUST 30th to SEPTEMBER 2nd, 1998
Geocenter, University of Vienna,
Althanstraße 14,
1090 Vienna, AUSTRIA

Geological Survey of Austria
Austrian National Committee of Geology
Geological Society of Austria Austrian Academy of Sciences

ENVIRONMENTAL AND CLIMATOLOGICAL SIGNIFICANCE OF THE MIOCENE CORALLINE ALGAL-BRYOZOAN FACIES (APOSTOLI BASIN, EASTERN CRETE, GREECE).

Drinia, H., Pomoni-Papaioannou, F., Triantaphyllou, M.V., Dermitzakis, M.D.

National University of Athens, Dept. of Geology, Section of Hist. Geology-Paleontology, Panepistimiopolis, 157 04, Athens, Greece. E-mail: cntrinica@atlas.uoa.gr

The Apostoli Basin, in the central-west part of Crete, was formed as a fore-arc type basin related to the convergent plate boundary between the African and the Eurasian plates. Most of the Neogene sediments filling the basin were deposited in a terrestrial to shallow marine environment. Marine facies become more abundant upward in the succession and culminate with the overlying bioclastic limestones.

The studied bioclastic limestones are characterized by a Coralline Algal-Bryozoan facies, analogous to the "maerl" facies described for fossil and recent carbonate sediments. Coralline algae prevail towards bryozoan and occur mostly in fragments (poorly sorted biomicrudites). In places branching or encrusting coralline algae also occur (biolithites). Fauna includes also abundant echinoderms and in lesser amount benthonic and planktonic foraminifera.

The above facies consists principally of high and low Mg calcite shells, typical for a temperate sedimentation. Typical tropical carbonate elements generally lack (e.g. corals, calcareous green algae, ooids, grapestones).

Textural characteristics reflect deposition under low energy of sedimentation, in a protected marine environment. Such conditions are favoured in a very shallow shelf, "bay-like", environment, where scattered patch-reefs consisted of coralline algae and bryozoans develop. These build-ups suffer strong bioerosion providing abundant skeletal elements (bioclastic limestones).

The absence of reef-building corals (chlorozoan association) and the appearance of a highly calcareous facies, representing by the coralline algal-bryozoan facies (foramol/bryomol), association suggest the prevalence of cooler conditions. These conditions are developed due to the progressive closure and drainage of the marine connection between the western Tethys and the Indo-Pacific ocean, as Africa and Eurasia collided, ultimately leading to the Messinian salinity crisis (Drooger, 1979).

Calcareous nannofossil biostratigraphy has been carried out in the marly intervals of the bioclastic limestones. The calcareous nannoplankton assemblages are characterized by the presence of *Helicosphaera stalis* and *Discoaster pentaradiatus*. The combination of these species along with the absence of *Amaurolithus* spp. allows the assignment of the studied sediments to CN8b/CN9a biozones (Okada & Bukry, 1980), suggesting a Middle-Upper Tortonian age.

References

- Drooger, 1979. Marine connections of the Neogene Mediterranean, deduced from the evolution and distribution of larger foraminifera. *Ann. Geol. Pays Hell.*, Tome hors serie, 361-369.
- Okada, H. & Bukry, 1980. Supplementary modification and introduction of code numbers to the low latitude coccolith biostratigraphic zonation. *Marine Micropal.*, 5:321-325.