

Late Quaternary palaeoenvironmental evolution of the southern Evoikos Basin, Aegean Sea as deduced from palaeontological and sedimentological data

Hara Drinia¹, George Anastasakis², Assimina Antonarakou¹, Konstantinos Konstantopoulos¹

¹University of Athens, Greece, cntrinia@geol.uoa.gr

²University of Athens, Greece

A (micro)-palaeontological and sedimentological investigation was undertaken on several cores recovered by Athens University in the South Evoikos Basin, a down to 145 m deep marginal basin in the Central Aegean Sea, which receives little terrigenous supply and its sedimentation is dominated by hemipelagic processes, elucidated the palaeoenvironmental evolution of the area during the last 90 kyr.

Lithofacies associations display the same cyclic development as recorded along the entire East Mediterranean Sea, centered on organic rich sapropelic sediments. Although lithofacies chromatic variations are not as striking if compared to deeper basins, nevertheless consistently score increased OC contents and securely correlate to the S1-S3 stratigraphic levels. This is further documented by C14 dating. Grain size plots display well established trends of fining silts during MIS 1, MIS 3 and MIS 5 high sea level stages and coarsening median diameters to sands during low sea level MIS 2 and MIS 4 times. Carbonate contents and mineralogy also display comparable cyclic variations with enhanced carbonate contents and minerals during low sea levels and reduced carbonates and enhanced siliclastic silts and clays during high sea levels. Sedimentological and micropaleontological data, especially benthic foraminifera suggest a number of substantial changes in sedimentation and also food/oxygen availability to the benthic ecosystem during the last ~90 ka BP. Cluster analysis (Q-mode) based on the most abundant taxa was used to recognize similarities within the data set. Four main clusters were established by Q-mode cluster analysis. The *Elphidium* spp. – *Haynesina* spp. Assemblage corresponds to a marginal marine environment of low productivity, well oxygenated estuarine waters inflow and vibrant currents referable to transition from MIS 5 to MIS 4. The *Cassidulina carinata* Assemblage corresponds to a transgressive trend from MIS 4 to MIS 3, from a foreshore environment into a marine circalittoral domain with paleontological evidences of water stratification events and sustained eutrophication. The *Bulimina gibba* Assemblage signifies a shallow to very shallow sedimentary basin, possibly part of a coastal lagoon as those developed on the shelf, indicative of the extensive regression that took place in the second half of MIS 3 and during the course of MIS 2.

Finally, the *Bulimina marginata* Assemblage supports open marine sedimentation with high organic productivity and low oxygen concentration. This assemblage prevailed during the transgression of MIS 1 and especially within the time interval of the deposition of the well-established uppermost East Mediterranean Sapropel S1, which is also identified in the South Evoikos Basin.

This research has been co-financed by the European Union (European Social Fund e ESF) and Greek national funds through the Operational Program “Education and Lifelong Learning” of the National Strategic Reference Framework (NSRF) - Research Funding Program: THALIS - UOA-70/3/11669-MIS: 375910).

ABSTRACTS

31st IAS Meeting of Sedimentology held in Kraków on 22nd–25th of June 2015



31st IAS
Meeting of Sedimentology
Kraków, Poland • June 2015

