

Planktonic foraminiferal biostratigraphy and palaeoenvironmental implications of a Middle Miocene transgressive sequence in the Ionian zone of Levkas Island, Ionian Sea, Greece

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Asprogerakata section, located in the northeast part of Levkas Island, Ionian Sea, consists of well-bedded grey-brown calcareous sandstones and silty to sandy marls and represents part of the Miocene transgressive cover of the Ionian zone. Biostratigraphic data and palaeoenvironmental conditions are inferred based upon the planktonic foraminifera. A rich, highly to moderately diverse and well preserved planktonic foraminiferal association enabled biostratigraphic zonation of the Lower-Middle Miocene deposits. On the basis of the composition of the foraminiferal assemblages, palaeoecological and palaeoclimatic interpretations have been made. Quantitative and qualitative analyses provide a detailed distribution of the identified taxa and defined a number of bioevents for the Middle Miocene. The recognition of the first Acme End (AaE) of *Paragloborotalia siakensis* proved that the Neogene deposits in Levkas Island have an age of 15.435 Ma and belong to the MMi4 planktonic foraminiferal zone. The MMi4c-MMi4d boundary has been defined by the presence of *Praeorbulina glomerata circularis* dated at 14.89 Ma. Planktonic foraminiferal assemblages identify a significant change in variability of climate system at around 15.2 Ma, probably corresponding to the global cooling events superimposed to the Middle Miocene Climatic Optimum. In particular, faunal composition suggests a warm phase in the lower part of the section followed by a cooling phase.

Structure of the Eastern Hellenides and emplacement of ophiolites. Field evidences

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Our recent research in most areas of Eastern Hellenides has given following results:

In Vourinos and Vermion, the ophiolites are in normal, not tectonic contact with their supporting layers (marbles of mostly upper Triassic age). This contact shows a typical thermal transformation with layers of hornstein, amphibolites and granatites. The directly underlying series shows progressive and clear evolution from a carbonate platform into a submarine environment with increasing volcanic influences, including pillow lava flows.

In northern Pindos, at the ophiolitic overthrust masses, outcrops of limestones are observed. Detailed analysis of these limestones showed that they are remainings of transgressions, their age determined by the microfauna as upper Campanian – early Maastrichtian. The limestone series ends upwards in a karstic surface supporting doleritic lava flows with essential thickness. In the locations of Tragopetra and Tzina we can observe that these lavas clearly intrude in the caves of the paleokarst. At the same section, over this lava formation can be found the basic conglomerate (Auversian) of the "mesohellenic trench" sediments. An important outcome of this is that there is no ocean floor before the overthrust but that land, with karstification of the limestones, was already emerged instead.

In central Pindos, near Artotina, we observe ophiolite outcrops in the Pindos flysch, with a transgression enclosing microfauna of the same age.

In Euboea, a "subpelagonian" ophiolitic unit, with his underlying limestones, is overthrust over a paleozoic and mesozoic continuous sedimentary succession (Eretria unit), but the contact is violently folded and characterized by a thick mylonite. This Eretria unit is