CALCAREOUS PLANKTON BIOSTRATIGRAPHY OF THE MIDDLE MIOCENE DEPOSITS OF LEVKAS ISLAND, IONIAN SEA, GREECE.

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In the Ionian Sea, the Middle Miocene deposits are of particular interest due to their biostratigraphic and lithologic features. The study area extends from Asprogerakata and Roupakias, two of the five most external units of the E-W to ESE-WNW striking, north dipping nappe stack, each unit with its own distinct lithostratigraphy and separated by thrusts (Fig. 1).

The Ionian unit contains (Permo)-Triassic gypsum, Triassic to Jurassic platform carbonates and deep-marine well-bedded limestones that overthrust the (pre)-Apulian unit. The (pre)-Apulian unit exposes continuous Oligocene deep-marine flysch that overthrust the Ionian unit, along a major N-S thrust fault. Many neotectonic active faults, striking to the NNE-SSW or E-W direction, cross-cut the island (Lekkas et al., 2001).

The sections presented on this poster are a first attempt to provide an overview of the biostratigraphic markers and the lithology of the Middle Miocene deposits in Levkas Island. The Asprogerakata section (52 m thick) in the northeast belongs to the Ionian unit (Bornovas, 1964) whereas the Roupakias section (10 m thick) in the southwest may belong to the (pre)-Apulian unit.

The biostratigraphic analysis on planktonic foraminifera revealed that the Asprogerakata section (62 m thick) in the northeast belongs to the Ionian unit (Bornovas, 1964) whereas the Roupakias section (10 m thick) in the southwest may belong to the (pre)-Apulian unit.

The biostratigraphic analysis on planktonic foraminifera revealed that the Asprogerakata section spans from the Acme End of Paragloborotalia asiakensis random coiled, up to the FO of Praeorbulina circularis. The occurrence of Orbitolina sulcata and of P. circularis sinistral coiled, from the base of Roupakias section indicates that this section is within the O. suturalis subzone.

The Asprogerakata section is composed of fine-grained, predominantly clayey and marly deposits with some fine-grained sandstone interbeds (Fig. 2).

The Roupakias section is composed of well-bedded, grey-brown, medium to fine-grained, ill-sorted, bioturbated calcareous sandstones and silty to sandy, burrowed marls with some intercalations of thin, calcareous sandstone beds (Fig. 3).

The preliminary biostratigraphic results based on qualitative analysis revealed that the planktonic foraminifera are abundant but poorly to moderate preserved and diversified. For the biostratigraphic analysis we only consider the appearance/disappearance of marker species and acme interval of selected taxa which are used as biohorizons according to the integrated biostratigraphic scheme of Iaccarino et al. (2005).

Methods

- 55 samples (sampling resolution about 0.50-0.60 meters) from Asprogerakata and 16 (sampling-resolution/0.50 meters) from Roupakias have been collected for preliminary planktonic foraminiferal biostratigraphic analysis.

Biostratigraphic results

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Conclusion

According to de Mulder (1975), Roupakias and Asprogerakata sections belong to two different palaeogeographic domains (pre-Apulian unit and Ionian unit, respectively). However, the only stratigraphic data known as from these two successions, were proposed by de Mulder (1975) who dated the turbiditic deposits of Asprogerakata section to the Lower Miocene (Burdigalan) on the basis of the presence of G. triabas, G. altaicus, G. subapertura, G. praescitula and the absence of Orbitolina, and he attributed a Middle Miocene age to the Roupakias sediments.

Following these two criteria, we attribute the Asprogerakata section to the lowermost part of Langhian, from the Acme End of Praeorbulina circularia. The occurrence of Orbitolina sulcata and of P. circularis sinistral coiled, from the base of Roupakias section indicates that this section is within the O. suturalis subzone.

As far as the Roupakias section is concerned, this is attributed to the middle-upper part of Langhian, based on the occurrence of O. suturalis. Our biostratigraphic results contradict those of de Mulder (1975).

References


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