



Micropaleontological assemblages and palaeoenvironmental interpretation of Paleocene deposits from Tarcău Nappe (Eastern Carpathians, Romania)

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The calcareous nannofossils and foraminifera have been used to establish the paleoenvironments and the age for a representative section located on the Moldova Valley Basin (Izvor Stream - N 47°31'52.1"; E 25°55'34.4"). The studied deposits belong to Tarcău Nappe (Eastern Carpathians, Romania) and are represented by a mid - fan turbiditic succession (complete Bouma sequences were identified on the field).

Biostratigraphically, the sedimentary succession is Paleocene in age. A precise age and the attribution of the specific biozones are difficult to be done due to the lack of the marker species. Thus, the presence of *Prinsius dimorphosus* and the absence of *Ellipsolithus macellus* and *Neochiastozygus saepes* could indicate the upper part of Zone NP3 (middle Danian). The calcareous nannofossils assemblage is dominated by the *Prinsius* spp. (*P. dimorphosus*, *P. bisulcus* and *P. martinii*). The next dominant species are *Coccolithus pelagicus*, *Ericsonia subperitusa* and *Cruciplacolithus* spp. (*C. primus* and *C. tenuis*). Other calcareous nannofossils species (*Neochiastozygus concinus*, *Neocrepidolithus cruciatus*, *N. dirimosus*, *N. fossus*, *Fasciculithus involutus*), present in low number, are completing the assemblage. In the upper part of the section an input of some new species was observed but their presence is linked by the contamination processes. The presence of *Rzehakina fissistomata* taxa in the foraminiferal assemblages allow the assignment of the deposits to the Paleocene *Rzehakina fissistomata* Zone of the Eastern Carpathians.

The palaeoenvironment of the section have been reconstructed based on the micropaleontological analyses. Multivariate statistics was applied and the obtained clusters were used to assess the calcareous nannofossils palaeoecological preferences. Two main clusters and 3 sub-clusters were differentiated and described. Into the Cluster I (a, b and c) the predominance of *Prinsius* spp. has been observed with some minor variations: Cluster Ia – the abundance of *C. pelagicus* is increasing but not exceeding the number of *Prinsius* spp. and the the *Markalius* spp. are present into assemblage; Cluster Ib – the abundance of *Prinsius* spp. is highest and the number of *C. pelagicus* is lowest; Cluster Ic – include also the high number of *Prinsius* spp. and *C. pelagicus* but the number of reworked species exceed 100 specimens/sample; Cluster II – is characterized but the lowest abundance of calcareous nannofossils.

The paleoecological conditions of the studied deposits are considered as being related with a cold-water environment, based on the high abundance of *Prinsius* spp. These species are described from eutrophic conditions or are considered as mesotrophic R-mode specialists.

Foraminiferal assemblages are dominated by agglutinated taxa and display variations throughout the section (high abundances alternating with quasi sterile intervals). These oscillations could had been caused by the palaeoenvironmental instability in the turbiditic systems. The distribution of the agglutinated foraminifera morphogroups and the diversity analyses (Fisher α and Shannon Wiener indices) reveals periods with low organic matter flux (suggested by the dominance of M1 morphogroup) alternating with intervals with high organic matter flux (dominance of M4b morphogroup).