

## **Eocene–Oligocene calcareous nannofossils from the Transylvanian Basin (Romania): Biostratigraphy, sedimentology and palaeoecology**

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Eocene–Oligocene calcareous nannofossils were examined from three sections in NW Transylvania (Brebi, Mera, Baciu) and one section in southern Transylvania (Turnu Rosu). At Brebi, the exposure consists predominantly of marls, including several carbonate levels. The calcareous nannoplankton assemblage contains *Ericsonia subdisticha*, which places it in Zone NP21. In the upper part of the exposure, the Middle Eocene to Late Oligocene bivalve *Gigantostrea gigantea* was found. The basal outcrop at Mera has clays that are rich in calcareous nannoplankton, indicating a transgressive phase and a reversal in depositional environments. One level also contains *Gigantostrea gigantea*. The entire succession confirms an overall transgressive trend. The calcareous nannoplankton assemblage identified the Zone NP21/NP22 boundary. The exposure from Baciu is predominantly terrigenous, with clays and sands rich in tempestite intercalations, and *Gigantostrea gigantea* occurs in the upper part. The calcareous nannoplankton assemblage is the same age as at Brebi (Zones NP21/NP22) and contains frequent ascidian spicules.

These successions show differences in sedimentary facies, indicating different depositional environments with significant variations in energy. The facies from Mera and Baciu have similar depositional environments and environmental energy, and probably indicate an open area of the basin. The facies at Brebi indicate a more terrigenous environment, with lower energy typical of a gulf isolated from the main currents. The calcareous nannoplankton assemblage with the presence of *Ericsonia subdisticha* indicates Zone NP21.

In the southern part of the Transylvanian Basin, the outcrop at Turnu Rosu contains conglomerates at its base, followed by structureless massive sandstones, very rich in calcareous nannofossils from Zones NP17–NP18 (Middle to Late Eocene/Bartonian–Priabonian). The sandstones are overlain by clays belonging to Zone NP19 (Late Eocene/Priabonian). Overlying the clays, the top of the section contains limestones that are extremely rich in various mollusc species and very rare small reticulofenestrids and *Coccolithus pelagicus*. For this study, diversity indices and non-hierarchical and hierarchical clustering were conducted.