

**100<sup>th</sup> Anniversary of the Carpathian-Balkan Geological Association**

**XXII International Congress of the  
Carpathian-Balkan Geological Association  
(CBGA)**

**ABSTRACTS**

# **Geologica Balcanica**

**Irena Peytcheva, Anna Lazarova, Georgi Granchovski,  
Rositsa Ivanova, Iskra Lakova, Lubomir Metodiev  
(Editors)**

**7–11 September 2022  
Plovdiv, Bulgaria**

**Bulgarian Academy of Sciences**

**ISBN 978-619-91305-4-4  
e-ISBN 978-619-91305-5-1**



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## Integrated biostratigraphy, organic geochemistry and thermal maturity assessment of Upper Cretaceous deposits in the northern part of the Romanian Eastern Carpathians

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Eight geological sections, discussed in the current research, are located in the Pluton–Pipirig area (Neamț County, Romania). All studied outcrops consist of Upper Cretaceous sediments of the Hangu Formation (Outer Moldavides of the Eastern Carpathians). Most of the analyzed samples contain palynological, foraminiferal and nannoplankton assemblages. The palynological assemblages are moderately rich in dinoflagellate cysts, spores and pollen grains. The dinoflagellate cyst bioevents allowed determination of upper Campanian deposits based on the first occurrences (FOs) of *Alterbidinium montanaense* and *Diconodinium wilsonii* and the last occurrence (LO) of *Odontochitina operculata*, characterizing the uppermost Campanian *Hystrichokolpoma gamospina*–*Samlandia mayi* zones in the Boreal Realm. Many of the studied outcrops contain lower Maastrichtian deposits indicated by the FOs of *Alterbidinium varium*, *Palaeocystodinium golzowense*, and the LO of *Alterbidinium acutululum*. The youngest deposits in the studied area are assigned to the lower part of the upper Maastrichtian, based on the FO of *Deflandrea galeata* and the LO of *Isabelidinium cooksoniae*.

The calcareous nannoplankton assemblage is dominated by *Micula staurophora* (up to 87%), accompanied by *Watznaueria barnesiae*, *Arkhangelskiella cymbiformis* and *Lucianorhabdus maleformis*. The constant occurrences of taxa whose LOs mark the uppermost Campanian (i.e., *Eiffelithus eximius* in Zone UC15e and *Broinsonia parca constricta* in Zone UC16) suggest a late Campanian age for the studied deposits. However, the Maastrichtian age, revealed by dinoflagellate cysts, is not confirmed by calcareous nannoplankton marker taxa. The presence of upper Campanian marker taxa within the Maastrichtian deposits can be attributed to the reworking processes, recognized previously in some other sites.

The identified foraminiferal assemblages include both agglutinated forms (*Bathysiphon*, *Nothia*, *Saccammina*, *Reophax*) and calcareous benthic and planktonic forms (extremely poorly preserved). The occurrence of tubular, coiled or flattened-streptospiral forms, together with coarsely agglutinated taxa, suggest that the identified assemblages are typical for the “flysch-type” agglutinated foraminiferal biofacies.

Microfossil assemblages and palynofacies constituents, combined with organic geochemical data (gas chromatography–mass spectrometry, total organic carbon and total sulfur contents) were used to reconstruct the depositional environments during the Late Cretaceous. According to these data, during the late Campanian–early Maastrichtian, the deposition took place in outer neritic–open marine settings with contribution of redeposition from inner neritic zone. During the late Maastrichtian, the sedimentation gained deep-sea character shown by the upper part of the Hangu Formation.

The thermal maturity assessment of organic matter was obtained based on vitrinite reflectance measurements. These results show that the Upper Cretaceous succession in the studied area lies within the oil window (VR values ranges from 0.54% to 0.89% R<sub>v</sub>).

**Acknowledgements.** This study was supported by a grant of the Ministry of Research, Innovation and Digitization, CNCS/CCCDI – UEFISCDI, project number PN-III-P4-ID-PCE-2020-2570, within PNCDI III. The authors are also grateful to Romanian Ministry of Research, Innovation and Digitization, within Program 1 – Development of the national RD system, Subprogram 1.2 – Institutional Performance – RDI excellence funding projects, Contract no.11PFE/30.12.2021, for financial support.