



Cretaceous/Tertiary boundary in the Eastern Carpathians: evidence from stable isotopes, mineralogy and calcareous nannoplancton

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This study presents the first integrated analyses of stable isotopes, mineralogical, and calcareous nannofossil data from a continuous Upper Campanian to Maastrichtian red bed sequence, including the K/T boundary interval, situated in the bend area of the Romanian Carpathians. The semi-quantitative calcareous nannofossil investigations have focused on six taxonomic groups, such as *Watznaueria barnesae*, *Micula* spp., Boreal nannofossils, Tethyan nannofossils, *Braarudosphaera bigelowii*, and the calcareous dinoflagellate genus *Thoracosphaera*. The nannofossil investigations show that the sequence spans the Upper Campanian and the whole Maastrichtian stage, including the K/T boundary. Calcite is present in all samples and varies from values up to 70 % down to 2 %. Its concentration varies in opposite direction with the concentration of layer silicates (smectite, chlorite, illite). Quartz and feldspars are plotted together and their content varies between 20 and 40 % and show no systematic fluctuations or long term trends. The $\delta^{13}\text{C}$ and $\delta^{18}\text{O}$ values are constant in the Upper Campanian and lower Maastrichtian red marls of the Gura Beliei Formation. In the upper Maastrichtian, lithological, mineralogical and nannofossil changes, together with several negative $\delta^{13}\text{C}$ and $\delta^{18}\text{O}$ excursions suggest instability of the ecosystems related to climatic changes and/or late Cretaceous tectonic phase. At the Cretaceous/Tertiary boundary, both $\delta^{13}\text{C}$ and $\delta^{18}\text{O}$ values show a negative excursion. Above the Cretaceous nannofossil mass extinction, successive blooms of the dinoflagellate genus *Thoracosphaera* and of the nannofossil species *Braarudosphaera bigelowii* were identified. Each of these blooms is marked by successive increases in productivity and positive $\delta^{13}\text{C}$ excursions.