



Depositional age and palaeoclimatic signal, Upper Cretaceous continental deposits, Hațeg basin, South Carpathians: isotopic and lithostratigraphic evidences

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In the Hațeg basin, South Carpathians, two different continental Formations of Maastrichtian age occur: the Densuș-Ciula and the Sânpetru Formations. The Maastrichtian age of the middle Densuș-Ciula member and the Sânpetru Formation is constrained by freshwater gastropod assemblages and palinology (Antonescu et al., 1983; Grigorescu, 2010). Additionally, the age base on calcareous nannofossils, of the youngest Cretaceous marine deposits that are overlaid by the Densuș-Ciula and, respectively Sânpetru Formations, is Late-Campanian-Early Maastrichtian (Grigorescu and Melinte, 2001; Melinte-Dobrinescu, 2010). Palaeomagnetic studies were carried out for the Sibișel Formation. For the Densuș-Ciula Formation, the palaeomagnetic signal displays no consistent results (Panaiotu and Panaiotu, 2010). Bojar et al. (2010a) found high amounts of magnetic titanohematite (up to 40%) with tabular crystallographic forms in the heavy mineral fraction of the Densuș-Ciula Formation, which disturbed the primary magnetic signal. The preservation of this mineral, which is most probably of volcanic origin, was favored by the general dry and oxic conditions at the time of deposition. For the Hațeg basin, the seasonally dry to sub-humid conditions prevailed during the sedimentation of Densuș-Ciula Formation and the lower part of the deposits occurring on Sibișel Valley. These conditions were put in evidence by mineralogical and isotopic investigations of palaeosol and fossil remains (Bojar et al., 2005; Bojar et al., 2009; Bojar et al., 2010 b). Recent palinological investigations (Lindfors et al., 2010) from a site situated near Valioara, in the Densuș-Ciula Formation, also support seasonally dry conditions during the formation of the deposits.

In order to constrain the age of the Densuș-Ciula Formation and correlate it with the Sânpetru Formation, we separated and dated by K-Ar method biotites and amphibols from the volcanoclastic deposits. The mineralogy and lithology of the samples were done using X-ray diffraction and semi-quantitative determinations. Further correlations and interpretations are based on the new data presented in this study and previously published palaeomagnetic and biostratigraphy.

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