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SEDIMENTOLOGICAL FEATURES WITH RELATED GEOCHEMICAL AND BIOTICAL FLUCTUATIONS DURING MID CRETACEOUS OCEANIC ANOXIC EVENTS IN THE TETHYAN REALM

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Abstract Most of the Oceanic Anoxic Events (OAE) occurred during mid-Cretaceous times as a consequence of palaeoenvironmental and tectonic activities. The sedimentological feature of OAE2 is characterized by rich-organic black shales, which contain isotope $\delta^{13}C$ excursions. This study focuses on the upper Albian - lower Turonian interval of the Romanian Carpathian belt (eastern part). In this region, several black shales occurrences are known to crop out. Previous studies have linked these deposits to the palaeogeography and tectonics of this region, where a trough, i.e., the Moldavian Trough, existed during the Early Cretaceous, implying the setting of small marine basins with restricted circulation regime and anoxic deposition. Our findings pointed out several mid-Cretaceous OAEs in the area, proving that some of the rich-organic black shales occurrences are linked not only to regional settings, but also to global events. Based on sedimentological and geochemical changes we identified in the Eastern Carpathians, the Albian-Cenomanian Boundary Event (ACBE), the Middle Cenomanian Event (MCE), and the Cenomanian-Turonian Boundary Event (OAE2). According to the biostratigraphy based on calcareous nannofossils, the ACBE is placed in the UC0 nannofossil zone, while the MCE is situated in the UC3a nannofossil subzone. OAE2 is the most extended OAE of the studied section, encompassing the late Cenomanian-early Turonian interval. This oceanic event shows three successive peaks in the late Cenomanian, covering the UC3e-UC5c biozones, and the youngest early Turonian peak, in the UC6 biozone. The investigated successions are mainly composed of black and dark-grey shales, grey marls, and rare cm-thick radiolarites, which contain significant fluctuations of TOC (Total Organic Carbon) and OM (Organic Matter) values, with peaks corresponding to the associated OAEs. The characteristics of OAEs discovered in the Romanian Carpathians were also correlated with depositional intervals from Tethys, showing many similarities, and also a few differences, probably mirroring the regional setting.

Biography

Researcher at the National Institute for Research and Development on Marine Geology and Geo-ecology – GeoEcoMar. His field of activity includes projects related to multidisciplinary investigations of the Black Sea basin. He is currently enrolled at the Doctoral School of Geology of the University of Bucharest, studying the Cretaceous deposits in the Eastern Carpathians.

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