

The Eocene-Oligocene Transition in Eastern Carpathians: global versus regional changes in the Paratethys Realm

Teodora Babos^{1,2} and Mihaela-Carmen Melinte-Dobrinescu¹

1 National Institute of Marine Geology and Geo-ecology (GeoEcoMar), 23-25 Dimitrie Onciul St., 024053 Bucharest, Romania. teodora.babos@geoecomar.ro

2 University of Bucharest, Doctoral School of Geology, 1 Nicolae Bălcescu Blvd., Bucharest, Romania

Abstract: *The Eocene-Oligocene Transition (EOT), which took place approximately 34.5 Ma, marks a significant climate change from a Greenhouse to an Icehouse climate mode, determining a significant turnover of faunas and floras. According to many authors, the occurrence of an Icehouse world was possibly driven by a decline in atmospheric CO₂ levels and the global tectonics, impacting sedimentation patterns, ocean circulation and ecosystems. During the EOT, the palaeogeography of the European Tethys Realm significantly changed, due to the isolation of the Paratethys Realm (in the Central and Eastern European regions) from the Mediterranean Realm (in the Western and Southern European regions). The palaeosetting shifted in the whole Carpathian bend, from an Upper Eocene oxic sedimentation to a Lower Oligocene anoxic one. These sedimentological features could be well recognized in the Eastern Carpathians (Romania), which display several continuous successions covering the Eocene-Oligocene boundary interval. In this region, the uppermost Eocene is characterized by the deposition of shaly turbidites (mainly variegated shales rhythmically alternating with cm-up to dm-thick sandstones), which are replaced in the lowermost Oligocene by hemipelagic deposits in an anoxic facies, such as bituminous marls, shales, and cherts. This change is accompanied by a fluctuation in total organic carbon and CaCO₃ and a shift in $\delta^{13}\text{C}$ and $\delta^{18}\text{O}$ isotopes. The fluctuation of stable isotopes shows a similar trend with the global one but recorded regional differences. Isolation of the Paratethys and the influence of the Alpine orogeny overprinted the global signals.*

Key words: *turbidites, oxic to anoxic changes, Eocene-Oligocene Transition, Carpathian bend.*