



The Eocene – Oligocene transition in the southern Tethys: astronomical calibration of calcareous nannofossil bioevents and geochemical changes in northeastern Tunisia

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A detailed study based on calcareous nannofossils was carried out in the El Rahma section covering the Eocene-Oligocene Transition (EOT) event in the southwestern margins of the Neo-Tethys ocean (northeastern Tunisia, Cap Bon peninsula). The goals of this study were to construct a detailed biostratigraphic and chronostratigraphic record to report the signature of the EOT in the study area.

The EL Rahma section is continuous and consists of marls and limestones extending from the Late Eocene to the Early Oligocene (Upper NP 21 to lower NP23 calcareous nannofossil zones). Calcareous nannofossils of the studied section are characterized by well-preserved assemblages consisting largely of middle latitude species. Three calcareous nannofossil zones were recognized (Agnini et al., 2014); Upper *Helicosphaera compacta* Partial Range Zone (Zone CNE21), the *Ericsonia formosa*/*Clausicoccus subdistichus* concurrent range (Zone CNO1) and *Reticulofenestra umbilicus* top zone (CNO₂).

The FO of *C. subdistichus* coincide with the extinctions of hantkeninids and is used here to define the E/O boundary. The Early Oligocene shows two major bioevents : the extinction of *Ericsonia formosa* and *Reticulofenestra umbilicus*.

The semi-quantitative analysis reveals a decrease in total abundance and species diversity close to the EOB. Near the CNE21/CNO1 boundary, a shallowing trend is testified in the assemblage by an increase in near-shore species (*L. minutus*, *Z. bijugatus*, *I. recurves* and *B. bigelowii*).

Our paleoecological results based on statistical techniques (PCA and nMDS) show that the EOT interval coincides with a significant turnover from an oligotrophic/warm water assemblage during the upper Eocene to an Early Oligocene assemblage exhibiting a eutrophic preference. These lines of evidence are consistent with geochemical results suggesting an increase in terrigenous input in the Early Oligocene that enhanced nutrient availability.