



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

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The late Eocene - Early Oligocene transition is characterized by transient changes in environmental conditions from greenhouse to icehouse controlled by the onset of the major Antarctic glaciation phase (~34 Ma). The effects of this major climatic transition in Earth history have not been studied so far in the southern Tethys. Here, we present new data from the Ain Rahma section (Northeastern Tunisia, Cap Bon peninsula) across the late Eocene – early Oligocene. High-resolution magnetic susceptibility allows for an astronomical calibration of the section. Calcareous nannofossil biostratigraphy and carbon and oxygen-isotope stratigraphy permit an excellent tie to the global standard benthic oxygen and carbon isotope curves. Hand-held X-ray Fluorescence (HH-XRF) analysis is used to show changes in detrital elements (Fe, Si, Al, Zr,...). Two major changes are recorded in Tunisia corresponding to the Eocene/Oligocene transition 1 event (EOT1) and to the Oi-1 glaciation event and depicted by important shifts in detrital elements and calcareous nannofossil assemblages. The cyclostratigraphic analysis of the section demonstrates the major role of obliquity dominance and 1.2 Myr amplitude modulation of the obliquity over sedimentation in these southern Tethys deposits.