Paleocene sea-level and productivity changes at the southern Tethyan margin (El Kef, Tunisia)

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Abstract

Integrated analysis of quantitative distribution patterns of organic-walled dinoflagellate cysts (dinocysts) and benthic foraminifera from the Paleocene El Kef section (NW Tunisia) allows the reconstruction of sea-level and productivity fluctuations. Our records indicate that the environment evolved from an initially oligotrophic, open marine, outer neritic to upper bathyal setting towards a more eutrophic inner neritic setting, influenced by coastal upwelling by the end of the Paleocene. An overall second order change in paleodepth is reflected by both microfossil groups. From the base of planktic foraminifera Zone P4 onwards, the main phase of shallowing is evidenced by an increase of inner neritic dinocysts of the *Areoligera* group, disappearance of deeper-water benthic foraminifera and increasing dominance of shallow-marine taxa (several buliminids, *Haplophragmoides* spp., *Trochammina* spp.). The total magnitude of this shallowing is obscured by interaction with a signal of eutrophication, but estimated to be around 150 m (from ~200 to ~50 m). Superimposed on the overall trend, third order sea-level fluctuations have been identified and correlated to sequences in other regions. Paleoproductivity indicators (notably protoperidinioid dinocysts and buliminids) show a trend from an oligotrophic to a eutrophic setting.

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1. Introduction

The Paleogene has become appreciated as a climatically highly dynamic period, involving the transition from the near ice-free world of the Cretaceous to the glacially dominated world of the Neogene (Zachos et al., 2001). In this context,

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