



Planktic and benthic foraminiferal event-stratigraphy and paleoecology across the Cretaceous/Paleogene boundary at El Melah section (North-Eastern Tunisia)

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A detailed biostratigraphical and micropaleontological study of the El Melah section from the Tethyan area characterized by low latitude, found several zones and subzones for the Cretaceous-Paleogene transition. The expanded zones and sub-zones allow us to define three Acme-stages at the lower Danian interval. The planktic foraminiferal Acme-stages can be correlated with significant turnovers in the benthic foraminiferal assemblages, suggesting an environmental control in the evolution and diversification of the early Danian planktic foraminifers. We identified the later Maastrichtian *Abathomphalus mayaroensis* biozone, and mainly studied the *Plummerita hantkeninoides* Subzones. This subzone is defined by the total range of the nominate species. In the lower Danian, we identified the *Guembelitria cretacea* biozone, subdivided into the *Hedbergella holmdelensis* and *Parvularugoglobigerina longiapertura* Subzones; the *Parvularugoglobigerina eugubina* biozone, subdivided into *Parvularugoglobigerina sabina* and *Eoglobigerina simplicissima* Subzones and the *Parasubbotina pseudobulloides* biozone subdivided into *Eoglobigerina trivalis* and *Subbotina triloculinoides* Subzones. For the definition of the Danian biozones and subzones, we used the lowest stratigraphic occurrence of the *Pv. longiapertura*, *Pv. eugubina*, *E. simplicissima*, *Ps. pseudobulloides*, *S. triloculinoides*. The earliest stratigraphic occurrence of *Pv. longiapertura* correspond to the earliest record of the Paleogene species. The estimated age for the first occurrence (FO) of the *Pv. longiapertura* Danian index taxa occurred between 5.7 and 6.7 ky after the K/Pg boundary. At El Melah section, we identified three Acme stages in the evolution of the post K/Pg boundary planktic foraminifera, which were easily recognized at the El Kef GSSP and Ellès sections (Tunisia); Agost and Caravaca sections (Spain) and Bidart section (SW France).

Until the uppermost Maastrichtian, the benthic foraminiferal assemblages are highly diversified. They are dominated by endobenthic morphotypes (72 %). At the K/Pg boundary, although 34% of them seem to disappear, but only few species have really extinct. The lower Danian associated epifauna are belonging to oligotrophic species or minimum oxygen tolerant. The sudden reorganisation of Benthic Foraminifera assemblages at the K/Pg boundary reflects important environmental changes. These changes are compatible with the catastrophic scenario induced by the large asteroid impact. These benthic foraminifera indicate upper bathyal environment.