



The Cenomanian-Turonian boundary event in the Tethys realm: insights from geochemical and calcareous nannofossil evidences

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A significant biotic turnover accompanied the deposition of the Oceanic Anoxic Event 2 (OAE2), within the Cenomanian-Turonian boundary interval, mirrored in the diversity and composition of the marine planktonic faunas and floras, especially of foraminifers and calcareous nannofossils (Lamolda et al., 1994; Premoli-Silva et al., 1999; Erba, 2004; Hardas and Mutterlose, 2007). Our investigations focussed on sections from N Spain, a region where the OAE2 is very well expressed (Paul et al., 1994; Lamolda et al., 1997), aiming to extend the knowledge on the geochemical and biotic records of OAE2. The gathered data indicate that blooms of the nannofossil fertility indexes, such as *Biscutum constans* and *Zeugrhabdotus erectus*, took place well below the increasing in $[U+FO64]^{13}C$ values that marks the onset of OAE2. The blooms of the above-mentioned nannofossils reflect change in primary productivity of the surface waters, from a mesotrophic setting (prior OAE2) towards an eutrophic setting (at the debut of OAE2), preceding the instauration of an anoxic regime. The blooms of the calcareous dinoflagellate genus *Thoracosphaera*, observed in the study shallow marine sediments of N Spain, mirrored the establishment of stressful marine conditions (including probably changes in salinity, pH and surface water temperatures) together with high nutrient supply towards the debut of the OAE2.

The marine productivity collapses shortly after the OAE2 instauration (i.e. in the latest Cenomanian), event that is coeval with high values of $[U+FO64]^{13}C$, and possibly an increasing of sea-surface temperatures. During the OAE2 (lithological expressed in the study area by black shale deposition), the nannofossil preservation is very poor, feature that is probably associated with a developing of oxygen minimum zone during the Cenomanian-Turonian boundary transgression. The nannofossil *Epolithus floralis* shows peaks towards the end of OAE2, nannofloral event that could be linked to surface-water temperature decrease in the late phase of OAE2.

References

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