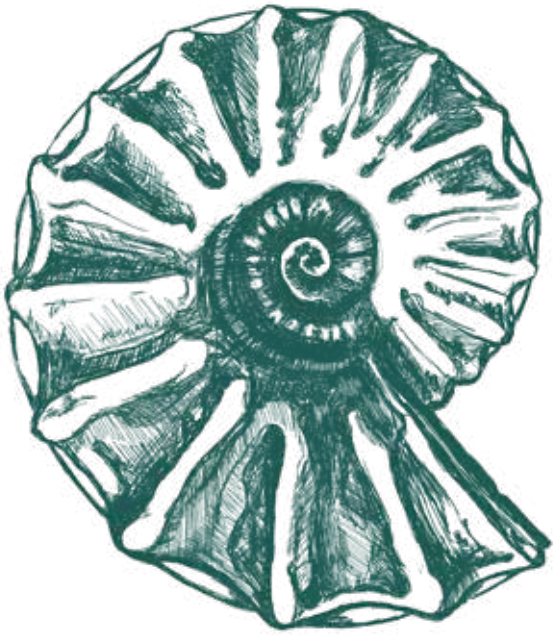

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GEOCHEMICAL AND CALCAREOUS NANNOFOSSIL EVIDENCE OF TWO LATE BARREMIAN EPISODES OF ENVIRONMENTAL CHANGE IN SOUTH-EAST SPAIN

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Several episodes of environmental change (EECs), corresponding to reinforced greenhouse conditions and characterized by shifts in the C-isotope record and occasional deposition of organic mud, occurred during the Early Cretaceous (Föllmi 2012). Here we present geochemical and biotic evidence for two Late Barremian EECs recorded from pelagic successions of argillaceous limestones and marlstones of the Subbetic Domain (Betic Cordillera). New C – and O-isotope data are provided for the Barranco de Cavila, Río Argos, Cortijodel Hielo and La Frontera sections. These data cover the interval comprised between the *Gerhardtia sartousiana* and *Deshayesites forbesi* ammonite zones (Upper Barremian–Lower Aptian). C – and O-isotope data record pronounced negative excursions within the *Hemihoplites feraudianus* ammonite subzone (intra-Feraudianus negative excursion, IFeNE) and *Martelites sarasini* ammonite zone (intra-Sarasini negative excursion, ISNE). The IFeNE would represent a new EEC to be recorded in the pelagic basin of the Southern Iberian Palaeomargin (Western Tethys). Whether this EEC had only regional or more widespread effects remains unclear. High-resolution quantitative studies of calcareous nannofossil assemblages have allowed the application of a refined biostratigraphy and identification of the nannoconid decline (ND) and the wide canal>narrow canal (wc>nc) Event (Aguado et al. 2022). Both bioevents are directly correlated to the standard Mediterranean ammonite zonation for the first time, and to the geochronological time scale by using astrochronologically tuned cyclostratigraphic data (Martinez et al. 2020). The ND

(122.4 Ma) is located within the *H. feraudianus* ammonite subzone and the wc>nc Event (122.0 Ma) within the lower part of the *M. sarasini* ammonite zone. A quantitative analysis of calcareous nannofossil assemblages has revealed significant variations in environmental conditions during deposition of the interval studied. The recorded increases in absolute and relative abundances of *Rhagodiscus asper*, concomitant with inceptions of the ND and the wc>nc Event and with the two observed negative C-isotope excursions, point to oceanic surface-waters warmings. These episodes of rising abundances of *R. asper* coincide with increases in *Biscutum* spp., *Discorhabdus ignotus* and *Zeugrhabdotus noeliae*, suggesting surface-water eutrophication. Elemental and organic geochemistry evidence suggests coeval environmental, sedimentary and biotic changes.

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