

# Geochemistry and stratigraphy of an expanded section recording the early aptian Oceanic anoxic event (Carbonero section, Subbetic Basin, southern Spain)

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The Early Aptian Oceanic Anoxic Event (OAE 1a) represent a major perturbation in the global carbon cycle and is linked to environmental, biotic and sedimentary changes. The signature of this event is a global positive  $\delta^{13}\text{C}$  excursion, associated with widespread deposition of organic rich marine sediments [1].

This study present the stratigraphic and geochemical characterization of an expanded pelagic marine section from the western Tethys. A multiproxy approach, including C-isotope stratigraphy, biomarkers and elemental geochemistry has been carried out. Our results reveals that the previously defined C-isotope segments 2-7 [2] are clearly recorded in an expanded section, which has lead to a further subdivision of the C-isotope profile.

The biomarker study has revealed that OM is thermally mature, mainly composed of marine organic matter. Pr/Ph ratios and Pr/C<sub>17</sub> vs. Ph/C<sub>18</sub> distributions, along with the absence of significant biomarkers suggest that sedimentation took place under generally well oxygenated waters only punctuated by short episodes of anoxia/dysoxia. On the other hand, a marked increase in the sterane content during OAE 1a is interpreted as related to an increase in primary marine productivity. The RSTE elements also indicate generally well oxygenated conditions, with high frequency oscillations suggesting short episodes of anoxia/ disoxia.

Our results suggest that a high primary productivity was the main control on the deposition of organic-rich sediments during OEA 1a in the studied section.

[1] Jenkyns (2010) *Geochem. Geophys. Geosyst.* **11**, Q03004.

[2] Menegatti *et al.* (1998) *Paleoceanography* **13**, 530–545.