

Abstract

The Toarcian Ocean Anoxic Event (T-OAE) took place in the early Jurassic (~181 My) and is characterised by the widespread deposition of organic matter-rich black shales in deep basins and by a negative carbon isotope excursion reflecting profound environmental changes. This event is well documented in the sedimentary record of deeper marine settings, in which the T-OAE is marked by the presence of organic-rich shales. However the recording of the T-OAE in shallower environments is less common, due to incomplete sediment records, to sea-level fluctuations and the lack of good biostratigraphy markers.

Here we present data gathered from a new extremely shallow section in Morocco (Dadès Gorges, Central Atlas), which was located along the northern Gondwana margin during early Jurassic. This section consists of alternating dolomitic limestones and paleosoils, associated with the presence of several dinosaur footprints and other sedimentary features such as stromatolites, ripple marks, mud cracks and fossil roots.

This section shows an significant increase in mercury (Hg) located just below a negative excursion in $\delta^{13}\text{C}_{\text{carbonate}}$ isotopes (-3 ‰) that we attributed to the T-OAE, which coincides with several cyclical emersion episodes.

These results confirm the presence of the negative carbon T-OAE excursion even in the most shallow environments of the Tethys. The observed Hg anomalies have been globally recorded and are probably linked to the volcanic activity of the Karoo Ferrar province. This marker combined with stable isotopes study is therefore a very promising correlative tool.