

# The role of continental runoff versus upwelling in triggering the Weissert Oceanic Anoxic Event (mid-Valanginian): Micropalaeontological and isotopic data

## Majd Homaidan Shmeit

Lebanese University, Doctoral School of Science and Technology, Beirut, Lebanon; mshmeit@outlook.com; majd.homaidan-shmeit@univ-grenoble-alpes.fr

## Fabienne Giraud, Etienne Jaillard

University of Grenoble-Alpes, ISTerre, UMR 5275, IRD, BP 53, 38041 Grenoble, France; Fabienne.Giraud-Guillot@univ-grenoble-alpes.fr, etienne.jaillard@univ-grenoble-alpes.fr

## Stephane Reboulet

University of Lyon, UCBL, ENSL, CNRS, LGL-TPE, F-69622 Villeurbanne, France; stephane.reboulet@univ-lyon1.fr

## Jorge Spangenberg

University of Lausanne, Institute of Earth Surface Dynamics (IDYST), CH-1015 Lausanne, Switzerland; jorge.spangenberg@unil.ch

## Jean-Francois Deconinck

University of Bourgogne, UMR CNRS 6282 Biogeosciences, 21000 Dijon, France; Jean-Francois.Deconinck@u-bourgogne.fr

## Moussa Masrou

Ibn Zohr University, Department of Geology, Laboratory of Applied Geology and Geo-environment (LAGAGE), Agadir 80000, Morocco; moussamasrou5@gmail.com

## Catherine Chauvel

Paris Institute of Earth Physics, CNRS, 75005 Paris, France; ISTerre Grenoble, Grenoble, France; chauvel@ipgp.fr

## Antoine El-Samrani

Lebanese University, as above; antoineelsamrani@ul.edu.lb

The Weissert Oceanic Anoxic Event corresponds to the first significant carbon-isotope excursion of the Cretaceous, and has been associated with a global increase in marine surface-water productivity and a biocalcification crisis (Erba et al., 2004). This study aimed to examine the fertility increase and trace the source of nutrients during this event into the Essaouira-Agadir Basin (EAB, Morocco). During the Valanginian, the EAB was a temperate platform, with mixed carbonate/siliciclastic deposits on a topographic ramp. Calcareous nannofossil abundances and assemblages, along with brachiopod-derived  $\delta^{18}\text{O}$  data, were used to examine changes in marine primary productivity and temperature. Neodymium and lead isotope analyses, which can be used to trace the source of nutrients, are still in progress. We used ammonite data to obtain a high-resolution biostratigraphic framework. We present here the results obtained from the Zalidou distal section. The Weissert Event has now been identified for the first time in southern Tethyan margin carbonate deposits. It is characterised by three phases (rising, plateau and smooth decrease) in the  $\delta^{13}\text{C}_{\text{carb}}$  record, as described by Martinez et al. (2015). Prior to the Weissert Event, there was a decline in nannoconid abundance. The increasing  $\delta^{13}\text{C}_{\text{carb}}$  values are associated with a decrease in both carbonate production and nannofossil total absolute abundance (NTAA). The latter, excluding poor preservation or dilution by terrigenous influx, suggests unfavourable conditions for nannofossils. Simultaneously, the relative abundance of the high-fertility taxon *Diazomatolithus lehmanii* increases. This phase is concomitant with both a transgression and cooler marine temperatures. As the  $\delta^{13}\text{C}_{\text{carb}}$  further increased, nannofossil primary productivity increased, as attested to by both rising NTAA and the relative abundance of high-fertility, small *Zeugrhabdotus* spp. This is also concomitant with higher terrigenous input, as recorded by the presence of sandstone deposits. During the  $\delta^{13}\text{C}_{\text{carb}}$  plateau and decrease, favourable conditions for the nannofossil community were established, as attested to by the recovery of large calcifiers, such as nannoconids.

## References

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