

Scenario of an Announced Death: The Extinction of Large Benthic Foraminifera during the Anoxic Episode OAE 2

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The Cenomanian / Turonian boundary is marked by one of the greatest extinction of the large benthic foraminifera. These organisms were usually living in shallow and transparent waters of the photic zone, devoid or poor of nutrients, and can live with symbiotic green algae that are capable of photosynthesis. A detailed biological analysis was made by BOMOU et al. (2016) on two sections of the Morelos carbonate platform in Mexico. Planktonic foraminifer assemblages from the English type locality of Eastbourne, studied by KELLER et al. (2001), were compared to the benthic foraminifer assemblages in the mexican sections. A significant correlation based on δC^{13} can be established between the mexican sections and the reference section of Eastbourne allowing to outline the extinction scenatio linked with the OAE 2.

The studied interval starts above the Sb Ce5 sequence boundary located near the *R. cushmani* / *W. archaeacretacea* boundary, above the δC^{13} positive excursion and ends close to the Cenomanian / Turonian boundary. Sb Ce5 begins with a fall of sea level of around forty meters. This explains why the sedimentary record on platforms is not complete. In the mexican platform, below the sequence boundary Sb Ce5, the microfauna is well diversified with large benthic foraminifera as *P. chapianensis* and *P. dubia*, *C. parva*, *Dicyclina* sp., *C. gradata* and large miliolids. Then, this faunal association becomes less diversified due to more restricted environment ending with a karstic surface indicative of emersion of platform (Sb Ce5). Above and up to a maximum of deepening (mfs?), some large foraminifera such as *Dicyclina* sp. and *P. dubia* are still present. Extinction is complete above the mfs?, excepted for some rare *C. parva*. Then, very restricted environments, very badly oxygenated (anoxic/disoxic), settled almost permanently. The depositional environment is then dominated by high stress condition organisms including, *Istriloculina* sp., *?Decastronema* sp., *Thaumatoporella* sp. etc. Later, at the beginning of the Turonian, the carbonate platform returned to a more open and oxygenated environment marked by the reappearance of the pre-OAE microfauna, but without the large benthic foraminifera with the exception of *Cuneolina* sp. and *Dicyclina* sp.

Our detailed analyses of the OAE 2 interval show that anoxic conditions were variable and synchronous in both basin and carbonate platform environments. Planktonic (Eastbourne Basin) and benthic foraminifera assemblages (Mexican platforms) reflect alternating depleted and normal oxygen conditions even in very shallow water conditions. Low oxygen conditions are marked by the multiplication of *Heterohelix* species in the basin and coeval blooms of *?Decastronema*, *Thaumatoporella* and *Istriloculina* on platforms.

KELLER, G. et al., 2001. Cret. Res., **22**, 391–422.

BOMOU, B., ARNAUD-VANNEAU, A., ADATTE, T., FÖLLMI, K.B., FLEITMANN, D., Paleoenviromental response to the Cenomanian-Turonian Oceanic Anoxic Event 2 in the Guerrero-Morelos carbonate platform, Mexico. (To be published)