Japan Geoscience Union Meeting 2011
(May 22-27 2011 at Makuhari, Chiba, Japan)

BPT024-07 Room:201B Time:May 22 15:45-16:00

Short-term euxinia coinciding with rotaliporid extinctions during the Cenomanian-Turonian transition

Masahiro Oba[1*], Kunio Kaiho[1], Takashi Okabe[1], Marcos A. Lamolda[2], James D. Wright[3]

[1]Tohoku University, [2]Universidad de Granada, [3]Rutgers University

Oceanic anoxic event 2 (OAE2), which occurred during the Cenomanian-Turonian (C-T) transition and lasted 10^6 years, is characterized by a positive global carbon isotopic excursion and stepwise extinctions in marine biota. To examine temporal variations in the dissolved oxygen content of the water column, shallow-marine C-T sediments from northern Spain were analyzed for concentrations of dibenzothiophenes, which are indicators of euxinic depositional environments, and 2,3,6-trimethylarylisoprenoids, which probably indicate photic-zone euxinia. The positive excursion in $d^{13}C$ values of carbonates is accompanied by short- (10^3 to 10^4 years) and long-term (10^5 years) increases in dibenzothiophene and 2,3,6-trimethylarylisoprenoid concentrations, suggesting that the bottom water and photic zone of the eastern marginal sea of the North Atlantic Ocean were euxinic. Two of the short-term increases in organic compound concentrations took place just after the last occurrence of the planktonic foraminifers Rotalipora greenhornensis and R. cushmani. These transient maxima indicate that the extinction of both planktonic foraminifers was due to short-term OAEs lasting 10^3 to 10^4 years.

Keywords: Cenomanian-Turonian, oceanic anoxic event, foraminiferal extinction, dibenzothiophenes, 2,3,6-trimethylarylisoprenoids, brachiopods