Geophysical Research Abstracts
Vol. 14, EGU2012-11602-2, 2012
EGU General Assembly 2012

Cretaceous biotic changes and isotope events in the Southern and Eastern Carpathians (Romania)

M.C. Melinte-Dobrinescu (1) and A.-V. Bojar (2,3)

(1) National Institute of Marine Geology and Geo-ecology, No. 23-25, Dimitrie Onciul Street, RO-024053 Bucharest, Romania; e-mail: melinte@geoecomar.ro, (2) Dept. of Geology, Salzburg University, Hellbrunnerstrasse 34, A-5020, Salzburg, Austria; e-mail: ana-voica.bojar@sbg.ac.at, (3) Dept. of Mineralogy, Studienzentrum Naturkunde, Universalmuseum Joanneum, Weinzöttlstrasse 16, A-8045, Graz, Austria

An important feature of the Cretaceous time is related to the occurrence of global Oceanic Anoxic Events (OAEs), which represent one of the most intriguing geological aspect of the Cretaceous period. The overprints of these events are black shale deposition, as well as significant shifts of δ^{13}C values, accompanied by considerable biotical turnover. In the romanian Carpathians, thick Cretaceous sedimentary successions are present in various facies, i.e., pelagic, hemipelagic and turbiditic, in which several OAEs have been identified.

The oldest Cretaceous OAE is the Weissert Event, placed within the Valanginian-Hauterivian boundary interval, globally characterised by a positive excursion of the δ^{13}C values and by drastic Tethyan nannofloral shift. In Romania, this event was pointed out based only on palaeobiological evidences of the Eastern Carpathian deposits, being described as 'the Valanginian Nutrification Event', which most probably corresponds to the Weissert OAE. Besides this Early Cretaceous anoxic event, in the bend area of the Romanian Carpathians, OAE1a of the Early Aptian, as well as OAE1b, OAE1c and OAE1d, produced during the Albian stage, were identified in turbidite deposits of the Moldavide tectonic units.

The OAE2 (i.e., the Cenomanian/Turonian boundary event) have been put in evidence in the Southern Carpathians (SE Hateg region), where a positive shift of the δ^{13}C values was observed, accompanied by significant turnover in calcareous nannoplankton taxa. Nannofossils which are indicative for surface water fertility, such as *Biscutum constans* and *Zeugrhabdotus erectus*, show high fluctuations including specific blooms below and coincident with OAE2. These modifications are linked to the shift in the primary productivity that significantly increased during initial stages of OAE2, but almost collapsed at the end of this anoxic event.

The Middle Santonian Event is placed towards the top of *Micraster coranguinum* echinoid zone, being characterised in general by increasing δ^{13}C values up to 2.7‰İn the SW Southern Carpathians, Santonian red marine marlstones and claystones show an increasing of the δ^{13}C values from 2.2 ‰ up to 2.4 ‰ the values decreasing afterwards to 2.2‰Ṫhis δ^{13}C positive excursion is placed between the successive last occurrences of the nannofossils *Lithastrinus septenarius* and *Eprolithus floralis*.

The Santonian/Campanian Boundary Event is globally distinguished based on the positive excursion of the δ^{13}C values up to 2.9 ‰Ṫhe positive isotope excursion is placed within the *Marsupites testudinarius* crinoid zone. In the Southern Carpathians, an increasing of the δ^{13}C values (from 2.4‰ up to 2.6‰) coincident with the first occurrence of the nannofossil *Arkhangelskiella cymbiformis* was put in evidence. Afterwards, the δ^{13}C values decrease, but at the level coincident with the first occurrence of the crinoid *Marsupites testudinarius* it show a new shift to 2.6‰Ṫhe level where *Marsupites testudinarius* became extinct is coeval with the maximum δ^{13}C values, up to 2.6‰Ṫhis geochemical event is situated between the successive first occurrences of the nannofossils *Arkhangelskiella cymbiformis* and *Broinsonia parca parca*

This work was supported by CNCS –UEFISCDI, number PN-II-ID-PCE-2011-3-0162 and a MOEL project.