

## MID-CRETACEOUS DEPOSITS OF EASTERN CAUCASUS: A CASE OF OCEANIC ANOXIC EVENTS

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In the mid-Cretaceous, the Great Caucasian underwent subsidence and became the deepest part of a wide relatively shallow epicontinental basin of northeastern Peri-Tethys, where the most complete sedimentary sequences accumulated. They were composed of calcareous deposits with intervals of sediments rich in organic matter. The most interesting and representative mid-Cretaceous section is exposed in the bank of Khalagork R. (Dagestan) where several intervals correlated to Oceanic Anoxic Events (OAEs) are found. The sequence demonstrates clearly visible three-folded composition: dark marls (upper Aptian-lower upper Albian, nannofossil Zones CC7-CC8), light marls and limestones (upper upper Albian-lower lower Turonian, Zones CC9-CC11), and red limestones (upper lower-middle Turonian, Zone CC12).

The lowermost part of section is made up of dark gray to black thinly laminated marls (18 m of exposed thickness) with discrete intercalations of hard yellowish limestones and contains abundant macrofossil remains (belemnites, inoceramids, ammonites) which shows small and thin shells indicating unfavorable (possibly disoxic) environment. Several intervals with sediments rich in organic matter (up to 2.5%) are found in this sequence: the upper part of nannofossil Zone CC7 (OAE1b, Jacob Level?), lower part of Zone CC8 (OAE1b, Paquier Level?), upper part of Zone CC8 (OAE1c?).

The sharp sedimentological change occurs at the CC8/CC9 boundary (late Albian) when the sediments rich in organic matter give the way to alternation of light marls and limestones (~30 m). Nevertheless, there are isolated intercalations of dark organic carbon- and clay-rich sediment at the lowermost Zone CC9 (OAE1d, Breistroffer Level?) and in the Zone CC10 (OAE2, Bonarelli Level).

The thin (1 cm) bentonite layer separates the uppermost sequence composed of hard pink to dark red limestones (~7 m) of CC12 Zone (Turonian) which form a distinct bench in relief.

Nannofossils of this section are not very various and shows rather poor preservation. *Watznaueria* spp. (with high predominance of *W. barnesiae*), which is believed to be low fertility taxa, consists more than 40% of nannofossil assemblage reaching maximal contents (up to 90%) in the light and red limestones underwent hard diagenetic alternation, where only this diagenetically resistant taxon could be preserved. The increase in content of "high fertility group" (*Biscutum*, *Zeugrhabdotus*, *Eprolithus*, and *Parhabdolithus* with high predominance of the latter), is marked toward the top of dark-colored sequence with maxima (up to 50%) within organic carbon-rich intervals, but they progressively decline within light-colored sequence coincidentally with increasing of nannofossil variety. This proves the eutrophic conditions of the basin in course of OAE1, but it is not the case of OAE2, when nannofossil total abundance and the content of "high fertility group" decrease. The peak of *Parhabdolithus* spp. in the top of dark sequence evidently attests the temperature optimum in the basin in the early late Albian.

As a whole, the mid-Cretaceous sediments of Eastern Caucasus are characterized by clear rhythmicity caused by both Milankovich and eustatic cycles. In addition, uneven tectonic subsidence controlled the formation of long-term sedimentary cycles.

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