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Two positive δ^{18}O shifts in the Middle-Late Cenomanian of the Crimea

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Results of the δ^{13}C (PDB) and δ^{18}O (SMOW) isotope studies of the rocks in the Middle-Upper Cenomanian (without uppermost "Black Shale") of the Selbukhra section, Crimea are presented. Sampling interval was 0.5-1 m. The beds studied belong to the zones *Rotalipora reicheli* (upper Lower Cenomanian - lower Middle Cenomanian) and Rotalipora cushmani (Middle-Upper Cenomanian). The *Rotalipora reicheli* Zone embraces the upper part of the glauconite-bearing sandy marls and overlying fine- and medium-bedded light and dark gray clay marls with interbeds of silty marls enclosing glauconite grains and numerous pyrite crystals (thickness 7-8 m). The deposits contain planktonic foraminifers: abundant *Rotalipora reicheli*, *Hedbergella delrioensis*, single *Asterohedbergella sp.* and *Rotalipora cushmani*, *Hedbergella vesata* (in the upper part). Benthic foraminifers *Gavelinella cenomanica*, *Ammodiscus cretaceous*, *Gyroidinoides nitidus*, and *Dentalina* sp. are common. The *Rotalipora cushmani* Zone is composed of dark gray and gray marls with light gray limestone interbeds bearing scarce glauconite grains (lower part) and with dark gray limestone interbeds containing grains of quartz, feldspar, and glauconite and pyritized tests of planktonic foraminifers (upper part, without uppermost "Black Shale"). Abundant *Rotalipora cushmani*, *Rotalipora deckei*, *Rotalipora greenhornensis*, *Praeglobotruncana stephani*, *Globigerinelloides bentonensis*, *Brittonella brittonensis*, *Hedbergella incauta* and benthic *Dentalina* sp., *Lenticulina* sp., *Lingulogavelinella baltica*, *Valvulineria lenticula*, *Oolina* sp., *Arenobulimina preslii*, *Praebulimina* sp., *Gavelinella cenomanica*, *Gyroidinoides nitidus*, *Astacolus* sp., also calcisferulids are.

Results. (1) The middle part of the *Rotalipora reicheli* Zone demonstrates a distinct positive δ^{18}O shift with value change of 1.5 $^{o}/_{oo}$. No changes of the δ^{13}C value have been recorded at this level. **(2)** The middle part of the *Rotalipora cushmani* Zone which contains abundant planktonic foraminifers *Rotalipora deckei*, *Rotalipora greenhornensis*, *Praeglobotruncana stephani*, *Globigerinelloides bentonensis*, *Brittonella brittonensis* and benthic *Dentalina* sp., *Lenticulina* sp., *Lingulogavelinella baltica*, *Valvulineria lenticula* is characterized by weak but distinct positive δ^{18}O excursion with value change of 0.8-1$^{o}/_{oo}$, which is accompanied by well pronounced positive δ^{13}C shift (change of 1-1,2 $^{o}/_{oo}$). **(3)** The positive δ^{18}O shifts pronounced in the *Rotalipora reicheli* Zone and in the middle part of the *Rotalipora cushmani* Zone may evidence of relative cooling episodes. This work was supported by RFBR n. 05-05-64949.