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Diversity in the sedimentological and geochemical features of the late Cenomanian OAE2 in the different areas of the Crimea-Caucasus area

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Sediments accumulated during OAE2 occur in many localities of the Greater Caucasus and Crimea. We studied 10 sections through this interval, with the easternmost section at a distance of ca. 1000 km from the westernmost section. Accordingly, these sediments accumulated in different sedimentological environments, which caused the variations in their architecture (GAVRILOV et al., 2013). The distinct cyclicity in the black shales corresponding to OAE2 is displayed in Dagestan and Chechnya, eastern Caucasus. 10 to 12 bands are recognized; each band is built up of organic carbon-rich clayey sediments at the base gradually changing upward to light grey calcareous sediment with minor TOC content, but the contacts between bands are well-marked. In the flysch sequences of the western Caucasus, the black shale interval is disintegrated by intercalations of turbiditic sandstones. Thus, the concurrent supply of sedimentary material (background supply and turbiditic supply) makes the reconstruction of TOC-rich sediments difficult. The sediments accumulated during OAE2 in the central Crimea demonstrate weakly pronounced cyclicity, while in the western Crimea, where the sedimentation occurred in a basin-floor setting marked by rugged topography that caused variations in thickness and submarine slumping, the OAE2 black shales are rather homogenous. The positive C-isotope and negative O-isotope anomalies are found in most of the OAE2 records of Crimea-Caucasus. However, in the central Crimea, only the negative $\delta^{18}\text{O}$ excursion (ca. 2 ‰) is detected, while the positive $\delta^{13}\text{C}$ excursion is not present. Nannofossil assemblages of the OAE2 interval from eastern Caucasus and central Crimea are poor to absent compared to embedding sediments, but in the western Crimea they display a relatively diverse species composition, strongly dominated by opportunistic *Watznaueria* spp. In all areas studied, the increased relative abundance of cool-water species in the upper part of the black shales suggests short a cooling episode during the OAE2 terminal phase. The comparison of the structure of OAE2 and surrounding sediments from different parts of the Crimea-Caucasus area shows some common features: 1) the distinct boundary between OAE2 sediments and underlying Cenomanian limestones with erosion and hiatus marks; 2) the basal layer of a shallow clay-mudstone, which is 10–30 cm thick; 3) differently structured organic carbon-rich sediments, which are 20–60 cm thick; 4) in many sections, OAE2 sediments are overlapped by Turonian limestones, and a gradual Cenomanian–Turonian transition occurs rarely. The structure of the Cenomanian sequence evidences the regressive pulse prior to OAE2 following by accumulation of clayey sediments in a very shallow environment and, later, formation of organic carbon-rich sediments during rapid transgression.

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GAVRILOV, Y. et al., 2013. *Lithol. Mineral Res.*, **48/6**, 457–488.