

Relationship between the Cretaceous? “black shales” and Cretaceous oceanic red beds of the Grajcarek Succession-a geochemical approach (Pieniny Klippen Belt, west Carpathians, Poland)

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In the Polish Outer Carpathians, the contact zone of the Magura Nappe and the Pieniny Klippen Belt is known as the Grajcarek Succession (Unit). This succession contains the “black flysch” deposits, with controversial age, overlain by the Cenomanian radiolarian shales (CRS), followed by the Turonian through Campanian variegated shales (CORB). All these deposits have been sampled. The major and trace elements were analyzed, as well as relation of trace metals with organic matter content (TOC) was recognized. The studies performed by authors reveal that deposition of the CRS took place under oxygen deficiency condition. The trace-element distribution characterizes the hemipelagic regime of sedimentation of both the upper portion of the “black flysch” (spotty shales) as well as the CRS, which were deposited during increasing sea-level. Enrichment in redox-sensitive elements match was probably due to scavenging by H₂S-rich pore fluids. It suggests that spotty shales and the CRS were deposited under very similar sedimentary conditions. During the Late Cretaceous, crucial change in oceanic sedimentation occurred in the Tethys. The Mid-Cretaceous “black shale” facies were passed into Upper Cretaceous oceanic red beds (CORBs).

Bolkardağı bauxite deposits at Ayrancı, Karaman, Central Turkey. Part I. Geological setting

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The region investigated is located 15 km southeast of the Ayrancı district (Central Turkey), covering an area of about 300 km². The aim of this study is to investigate the stratigraphical setting and erosional surface of bauxite deposits and examine their age in relation to host rocks. Thus, the geological evolution of the area and formation of bauxite deposits are discussed on the basis of geologic, tectonic and stratigraphic data. Permian–Cretaceous rocks of the Bolkardağı unit, which is one of the main tectonic associations comprising the Central Taurides, are found at the basement, and overlain by Miocene units. Sequence starts with the Upper Permian Dedeköy formation, which is composed of dolostone at the bottom and limestone to the top. It is conformably overlain by schist, phyllite, metasandstone and marble of the Lower Triassic Saraycık formation. Middle Triassic vein rocks of diabase composition (Kasır diabase), with a maximum diameter of 100 m, divide the Saraycık formation units. The Saraycık formation and all other old units are unconformably overlain by the Jurassic–Cretaceous Berendi formation. Karamanoğlu Ophiolite is pushed over the Berendi formation, seen as a thick carbonate sequence. This ophiolite was probably emplaced during the Late Cretaceous period. Karamanoğlu Ophiolite is unconformably overlain by Miocene Mazı and Divlek formations, which are represented by conglomerate-sandstone and clayey limestones, respectively. The bauxite deposits are found within the Upper Permian Dedeköy formation, and between the Gerdekesyayla Dolostone and Bulgardede Limestone member, and also in the limestone. Geological setting and degree of metamorphism of these bauxites indicate that they were formed during the Late Triassic–Early Jurassic (?) period on Upper Permian carbonate rocks and Lower Triassic shale–sandstone–limestone units and before being transported into the dolines and caves of carbonate rocks. The fact that bauxites are formed on top of dolostone and on the top, base and within limestone may indicate that these two carbonate units response differently to karstification.