

## **Tethyan anoxic events. Carpathian-Black Sea segment**

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Carpathian and Black Sea-Caspian sedimentary basins during Phanerozoic represented a segment of the northern continental margin of Tethys. Sedimentary record of this margin allows tracing in space and time the anoxic events, which caused the deposition of thick sections of organic-rich rocks. They played an important role in petroleum systems formation.

The first (Aptian-Albian) oceanic anoxic event (OAE-1) had its clear reflection within the Carpathian-Black Sea continental margin of Tethys. In the Carpathian flysch sequence the deposits of this age are represented by the thick black shale section of Spas and Shypot formations. These rocks contain up to 8% of TOC, type II and III kerogen with medium to good petroleum potential. Aptian-Albian black shale sections of the Black Sea-Crimean segment of the continental margin are represented by terrigenous-clayey deposits with TOC reaching 2.5%. Organic matter is of mixed marine and terrestrial origin. These deposits are considered to be the potential oil and gas source rocks.

The large-scale development of anoxic facies in the Carpathian-Black Sea-Caspian segment of the northern continental margin of Tethys occurred in Oligocene-Early Miocene (suggested index OAE-4). In Carpathians the Menilite formation is represented by a thick black shale section with TOC content reaching over 20%. The rocks contain type II kerogen with good and very good petroleum potential. Within the Black Sea-Caspian part the development of anoxic events in Oligocene resulted in a discrete distribution of TOC in sediments. Maximum TOC concentrations are observed in the eastern part of the segment, while in the Black Sea region TOC content in rocks reached 1.7-2%.

Within the Volyno-Podolian margin of the East-European Platform (mid-Dnister area and Volyn) the Vendian black shale section of the Kalus formation (Minkovets beds) occur. TOC content in them usually reaches about 1%, but sporadically up to 20% have been observed. This black shale section is the evidence of the most ancient anoxic event in the region (suggested index OAE-Vd). Identification of anoxic events in the sedimentary record of the basins, analysis of their causes and consequences, which have a decisive influence on biogeochemical processes during sedimentation, diagenesis and lithogenesis, allow not just to understand the distribution in time and space of potential petroleum source rocks, but also to study the development of petroleum systems and to assess the prospects of oil and gas bearing in the region.