Cretaceous black shales (Oceanic Anoxic Events) in Turkey: collaboration of tectonics, sea level and oceanographic changes

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Cretaceous oceanic anoxic events are recorded as black shale deposits in Mid-Barremian, Aptian, Cenomanian/Turonian stages in different basins in Turkey. The Mid-Barremian black shales (MBE) have been recorded within a turbidite succession in a deep marine setting in central Sakarya zone of Pontides (YILMAZ et al., 2012). 2 ‰ shifts in the carbon isotope curve are recorded in parallel with European basins, but with low TOC values. The Aptian black shales (OAE1a) are recorded in pelagic carbonate slope environments in central Sakarya zone of Pontides and represented by a negative carbon isotope shift with 2 ‰, and TOC around 2 % (YILMAZ et al., 2004; HU et al., 2012). The C isotope curve is well correlated to those of European basins and this indicates common paleoceanographic conditions. In the Sakarya zone of Pontides, OAE2 is recorded in pelagic carbonate slopes (YILMAZ et al., 2010) with a carbon isotope curve characterized by a > 1 ‰ positive shift and > 2 % TOC. A further section through the OAE2 was recorded in Antalya Nappes of Taurides with TOC > 20 % (YURTSEVER et al., 2003; BOZCU et al., 2011).

The OAE1a and OAE2 levels recorded in Turkey can easily be correlated with European examples and were mainly controlled by sea level and tectonics during large-scale and climate and oceanographic changes on a small scale. However, MBE was recorded on the drowned carbonate platform in Pontides and interpreted as mainly controlled by tectonics. The most extensive distribution of the OAE records in Turkey belongs to OAE1a and OAE2, and display potential for the presence of source rocks for hydrocarbon exploration.

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