Evidence of sea level changes during Neogene and Quaternary

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The Black Sea Basin was formed by back-arc extension when oceanic crust of the Tethys Ocean was subducted along its northern margin during Triassic to Miocene. It is structurally separated in two sub-basins with different timing and orientation of extension. The western part has an oceanic basement and a thick sedimentary cover up to 19 km being separated from the eastern part by a strike-slip system along the Mid Black Sea ridge and Andrusov Ridge.

The Black Sea covers an area of more than 400.000 Km^2 and is connected to the global oceans only through a chain of narrow and shallow sea strains via the Bosporus, the Sea of Marmara, the Dardanelles and the Mediterranean. During glacial times, it was from time to time isolated and formed a brackish lake, in which the water level could develop independently of global sea level stands.

The northwestern Black Sea is characterized by a particularly wide shelf of 100–150 km in the Romanian and Ukranian sectors with the shelf edge at approximately 130 m water depth, and a reduce slope. For this reason sea level variations have increased intensity.

Due to shallow water depths (0-130m) the self-areas are the most sensible to sea level drop, during lowstand periods. During this time much part of the self is exposed and eroded. The resulted material is transported basinwards to a network of incised valleys, connected to deep sea fans.

New data-shallow seismic acquired during the scientific campaign BLAZON offer a high resolution image of Neogene deposits. For this reason sequences of higher order can be separated in to the Neogene sediments.

On this shelf have been identified six sequences in Neogene - Quaternary deposits separated by sequence boundaries with a obvious erosional character. Numerous channels are associated with these boundaries . These channels are erosive structures completely filled up with sediments.

There have been also identified progradations that indicate a sea level rise at different timing. During the Quaternary, the seismic stratigraphic model proposed is controlled by the most distinct climatic events of this period, namely the four major glaciations Günz, Mindel, Riss, and Würm. They led to sea-level lowstands and in turn to the formation of erosional unconformities as well as the subsequent transitions from one seismic stratigraphic unit to the one overlying it.