

## How is the opening of the Black Sea reflected in the Cretaceous sequence of the Bulgarian Moesian Platform?

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The age of rifting in the Western Black Sea (WBS) basin remains an unresolved issue. Various models have been suggested for the timing of the basin opening spanning a long period from the Barremian to the Santonian. The main reason for the different rifting models is the asymmetry of the Cretaceous stratigraphic record on the conjugate margins of the WBS basin. In the Pontides of Turkey, a significant part of the Cretaceous syn-rift strata is missing either by erosion or by non-deposition. On the conjugate Bulgarian, Romanian and Ukrainian margin, the stratigraphic record of the Black Sea rifting is much more complete, indicating separate extensional periods for the Aptian-Albian, Cenomanian-Coniacian and the Santonian-Campanian.

The Eastern Moesian Platform in Bulgaria has a fairly complete Upper Cretaceous strata composed of well-studied shallow-marine successions. There is a major unconformity between the Lower and Upper Cretaceous with a hiatus of variable time span. The basal Upper Cretaceous (Cenomanian-Turonian) with mixed siliclastic/carbo-nate units deposited in foreshore-shoreface environment (Madara Formation) tends to infill the existing paleorelief. Typically, these sediments are composed of siliclastic framework grains with abundant bioclasts and minor authigenic components (glauconite pellets and phosphatic concretions). Upward in the section chalky limestones dominate (Cherencha Member) reflecting lower sedimentary input to the basin and relative sea-level rise. Above a regional unconformity, the Upper Turonian has thin glauconitic mixed rocks (Dobrindol Formation). This unit transitions upwards into chalks with cherty nodules, interpreted to be deposited in open-marine shelfal environments (Venchan Formation). The Senonian chalks are overlain by sandstones (mainly feldsarenites of the Shumen Formation) and bioclastic limestones deposited in shallow-water environments (foreshore-shoreface) of Novachene and Nikopol Formations.

Regionally, the entire Upper Cretaceous succession records deposition on a south-facing passive margin with migrating depocenters (nearshore-shelfal environments) partly influenced by eustatic control on sedimentation. The Upper Cretaceous "platform" type basin of the Moesian Platform, is subdivided on its Bulgarian segment into a western and eastern sub-basin. The western one is related with the expansion of the Jurassic-Lower Cretaceous remnant basin eastward. The eastern subbasin is interpreted as the western continuation of the WBS and its real expansion occurred in Late Turonian. During Campanian the two subbasins were merged together and expanded southward, covering the Forebalkan area.

The opening of the WBS Basin can be explained by asymmetric rifting at the southern margin of the European plate in a wide-rift style during the Aptian-Albian. The fine stratigraphic subdivision in the Bulgarian Moesian Platform allows the interpretation of two other rift-related sequences within the Cenomanian-Lower Turonian and Upper Turonian-Coniacian corresponding to narrow-rift style rifting of the WBS basin may have been driven by subduction roll-back associated with the Pontides. The subsequent prolonged Senonian post-rift subsidence is responsible for the coalescence of the earlier syn-rift subbasins in the Bulgarian Moesian Platform.