



Geophysical Investigations at Bosphorus Outlet in Black Sea

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The evolution models of Bosphorus are still controversial. Recent studies assume that a rapid flooding event could have occurred in the Black Sea during the Holocene. In the westernmost part of the Black Sea Basin, Srednogorie zone with U. Cretaceous volcanics, volcanoclastics, and granite intrusions, Balkanide thrust belt, and West Pontides are important local features.

The Bosphorus outlet has been mapped by using a EM 300 multibeam echosounder and a Sonar. Acoustic imaging of the sea floor allowed to identify continental shelf incision and continuation of the Bosphorus strait to the Black Sea. This survey has revealed a canyon system which is generally composed of many feeder canyons merging with one or two main canyons to form “tributive canyon” systems. These channels may have formed by the erosive actions of the density currents such as debris flows and turbidity currents. Eastern slopes are more steeper than western. Slumping is evident on canyon walls. A prominent retrogressive submarine canyon dissects the continental slope together with numerous smaller canyons and gullies, giving the impression that it was once linked to the Bosphorus. Two or more recent canyon heads can be traced landward on the shelf. Erosional surfaces at the upper parts of the canyon walls indicate recent activity. The canyon heads are directed west-east and the paths of canyons are probably guided by local tectonic structures.

Erosional truncation surfaces are evident which indicate sea level fall. Old shoreline can be traced at the shelf edge. Coastal onlaps are observed that indicate sea-level rise.

Chirp sonar profiles demonstrate paleo channels which indicate that the canyon heads

was located in an area of high sediment supply during the last low stand level of Black Sea. In the northwestern part of the study area profiles show some interesting features which have been interpreted before as mud volcanoes (Aksu et al., 2002a). They exist only on the western shelf at 100 m water depths.. Gas related features observed on the shelf.. A multibeam and deep tow side scan sonar and chirp subbottom profiler survey is planned in April 2007 at the survey area to investigate if the features are really mud volcanoes and if there was a connection between this canyon system and Bosphorus.