



Modelling of seafloor relief and coastline position of north-western Black Sea (Ukraine) for the past 25 ky.

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Recent relief and coastline of NW Black Sea shelf have been formed due to interaction of various processes: eustatic sea-level change, sedimentation, and the subsequent vertical movements. Several levels of coastline stabilisation during sea-level rise from -87- -85 m (25 ky BP) until present have been established. In general, the shelf seafloor is a gently tilted surface, but according to statistical analysis there are several depth intervals where the surface is flat or relatively steep. The surfaces correspond to transgression phases reflecting the non-uniformity of the process.

This work is based on GIS modeling aimed at reconstructing the seafloor relief and the locations of past shorelines along the NW Black Sea in a regime of transgression which began 25 ky BP.

The sea floor relief and actual position of the NW Black Sea coastline was analysed and modelled using GIS and various statistical methods. Paleorelief and ancient coastlines corresponding to sea level position of -87 m (Neoeuxene), -37 m (early Holocene) and -12 m (Vitjazevsky time) have been analyzed and modeled.

The following results have been obtained:

1. The actual relief of the northwestern shelf of the Black Sea has positive and negative deviations from the modeled relief.
2. The spatial distribution of grain-size fractions demonstrates that studied area does not have circum-continental zonality. There is a swash of coarse sediments in front of the Dniester liman that is located perpendicular to modern shoreline. On both sides of the swash the mean grain-size of bottom sediment decreases. The fine (pelitic) sediments cover sea floor near Odessa and along Danube River

delta (Ukrainian part).

3. A comparative analysis of thickness and texture of recent sediments with the map of deviations of recent relief from the modeled one enables us to conclude that the paleo-valley of the Dniester River is uplifting while the Danube delta and Odessa Bay are subsiding.

Comparison of relief paleotrends with contemporaneous paleorelief and recent seafloor relief has shown that there are wide areas where the paleorelief was higher than a contemporaneous trend surface. This could be the result of tectonic uplift, and some of the areas could have been isolated islands or archipelagos. Most of the areas existed at their locations during the past 10-12 ky; however, their dimensions were reduced during the Holocene.