



Thermohalinity Changes in the North-West Black Sea Shelf During the last 50 years

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The last decades have shown considerable climatic changes affecting the structure of the large-scale atmospheric circulation. It led to changes in regional water balances, in particular, in a precipitation regime. Finally, it results in changes of thermohaline characteristics in shallow parts of seas, such as the North-Western Black Sea (NWBS) shelf.

Time series of daily temperature and salinity observations along the NWBS coast as well as data collected on research cruises over 50 years are explored to assess statistics of water characteristics. Heterogeneous changes have been found in different parts of the NWBS area. In particular, predominant mechanisms in the western and eastern parts are different. The first are largely due to the Danube and other rivers' runoff, while the second are somewhat affected by a branch of the Main Black Sea Current.

Results have clearly shown the seasonal behaviour of trends for both parts of NWBS. The temperature and salinity changes are remarkable in the winter, while there are no significant variations in the summer season.

In the winter season, temperature in both parts of the NWBS has increased by about 2 degrees within the top 10-m layer and more than 3 degrees in the benthonic layer.

Long-term variability of upper layer salinity in the winter season has shown a clear negative trend in the entire NWBS. In contrast, within the benthonic layer the sign of salinity change in the eastern and southern parts of NWBS is opposite to that in the western part. In the former, salinity decreases (as in the upper layer), while in the latter it increases. As a result, the vertical density gradient in the western part of the NWBS is twice increased.