



Comparative study of the hydrochemical regime in the Gelendzhik and Golubaya Bays, northeastern Black Sea

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The goal of this work was to study the hydrochemical regime in the coastal waters of the northeastern Black Sea. The observations were performed in influenced by significant anthropogenic stress Gelendzhik Bay and at the open coast region (Golubaya Bay). A sampling program has been initiated by the Southern Branch of Shirshov Institute of Oceanology, RAS, (SB SIO RAS) on a weekly basis at the shore line area of «Chernomorets» beach (Gelendzhik Bay) and from the head of pier in the Golubaya Bay. Studies were carried out during a period from January 2001 to December 2008. List of measured parameters includes following: temperature, salinity, dissolved oxygen, biological oxygen demand (BOD), pH, alkalinity, phosphate, organic phosphorus, silicates, nitrates, nitrites, ammonia, urea, organic nitrogen, oil products.

The Gelendzhik bay in its different parts is characterized with strong variability of concentrations of hydrochemical parameters. Above all, it relates to complex structure caused by wind impact. Parts of the bay filled with nearshore and sea waters are legibly differ from each other. The bay itself is rather isolated from the open sea, and its liability to man's impact leads to forming of next features of its seasonal variability of physical-chemical state:

- On the base of Si/P and Si/N ratios analysis it was shown that the Gelendzhik Bay waters are significantly enriched with nitrogen and phosphorus compounds.
- Unlike the Golubaya bay, phosphates are always present in the water of the Gelendzhik Bay and development of photosynthesis is not limited with nutrients. It may lead to processes of intensive eutrophication.
- The oxygen saturation in the Gelendzhik Bay periodically descend lower than 80% during the summer period. That means, that even the Bay's surface layer formally corresponds to the hypoxic conditions that testify to the degradation of the ecosystem there.

The conclusions obtained during our studies testify that the pollution from local spots of the coasts of the Black Sea, connected first of all with eutrophication, can play a large role in the nutrient balance of the Sea and affect its ecological state.