
Investigations of nutrients level influence to the costal marine waters phytoplankton in the Black Sea North-Western part (Zmiinyi Island area)

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Abstract

North-western part of the Black Sea (NWBS) is one of the areas where eutrophication not only brings down the quality of marine environment causing blooms of phytoplankton, but also causes hypoxia and mass mortalities of marine organisms. As it has been shown in our previous studies the quality of the NWBS marine waters is closely connected with nutrients levels. The aim of this work has been to estimate the changes, trends and influence of the main physical and chemical characteristics, especially the nutrients levels, to the phytoplankton biomass and number in the Zmiinyi Island area of the Black Sea in 2004-2012. Material for analysis comprised results of observations carried out during 2004-2012 in the Zmiinyi Island coastal waters by the staff of Marine Research Station "Zmiinyi Island" of Odessa National I.I. Mechnikov University. Results of determination of physical (salinity), chemical (oxygen, nitrites, nitrates, ammonium, total nitrogen, phosphates, total phosphorus) and biological (chlorophyll, phytoplankton) characteristics of surface waters in 2004-2012 are presented. Changes and trends of these parameters in the Zmiinyi Island area have been analyzed. Correlation analyses of their interrelations have been presented. Cases of high chlorophyll and nutrients concentration levels in the coastal waters have been described and their reasons analyzed. The conclusion has been made that the main reason of Nutrients and Phytoplankton changes is the origin of marine water in the Zmiinyi Island area. At the same time maximal levels of Nutrients and Phytoplankton Biomass and Number have been registered during advection of the Danube waters to the Zmiinyi Island area.