



Estimation of atmospheric input role for the Black Sea waters from Nitrogen balance perspective.

Medinets S., Medinets V., Kovalova N., Kotogura S., Gruzova I., Mileva A., Soltys I. (ONU)
s.medinets@gmail.com

Abstract

Three main nutrient pollution sources, such as coastal, riverine and atmospheric, are known for the Black Sea ecosystem. Nitrogen (N) contamination plays most important role for ecosystem, since N is crucial element for any organism metabolism. It is known N excess could effect on water quality, ecosystem and biodiversity, leading to acidification, eutrophication and even hypoxia. It was shown that coastal zones of the Black Sea consider as a sink of N for open sea waters, where growth of phytoplankton is limited by N availability. Periodically eutrophication events occur on huge area of Black Sea, which associated with N load, but source and detailed scheme has not identified yet. The aim of this work is to develop balance scheme of N in the Black Sea ecosystem, determine and quantitatively assess the role of main N pollution sources with the description of contributor chemical forms, estimate main threats, propose the mitigation procedures.

The peculiarities of Black Sea ecosystem has been considered to find special aspects of nutrients distribution and consumption. Assessments of atmospheric, riverine and coastal inputs have been performed. A dominant contribution of atmospheric input for open sea areas has been challenged and the main constituents have been characterized. Aerosol removing by dry deposition from atmosphere has been shown as a prevailing way for the Black sea open waters. Significant meaning of atmospheric organic pollutants, which are usually neglected, has been demonstrated and discussed. Relationships of eutrophication associated events with excessive atmospheric N loads episodes have been considered. Basic directions for mitigation of N harmful effect on the Black Sea ecosystem have been proposed.