



## Anthropogenic Transformation of Hydrological Regime of The Dnieper River

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**Abstract.** Problems of rational water use and water quality assessment are the priorities of many states, especially in the basins of transboundary rivers. Creation and functioning of the cascade of Dnieper reservoirs led to a radical transformation of the hydrological regime of the Dnieper River. As a result, there occurred a significant deterioration of the physical, chemical and biological characteristics of surface water quality, increase of its trophic state, reduction of the efficiency and stability of the aquatic ecosystem of the Dnieper basin, which is largely determined by anthropogenic factors. As a result of interpretation the series of space images (August, 1986-2016) of the satellites Landsat- 5, Landsat- 7 and Landsat-8 with a spatial resolution of 30 meters, the spatio-temporal trend of changes in physical (water transparency), hydrochemical (general phosphorus concentration in water), biological (chlorophyll-a) properties of water areas of reservoirs was determined. In studies trophic state index developed by the Florida Department of Environmental Protection was used to classify all types of water surface, including rivers. It is established that the value of trophic state index in reservoirs is distributed unevenly from 26.5 to 56.5. Continuous water eutrophication processes are intensified by the deterioration of self-purification of the river, lack of effective anti-erosion organization of areas, and climate change. Long strengthening of the eutrophication of the reservoirs of the Dnieper cascade contributes to the increase of the concentration of nutrients, predominance of blue-green algae phytoplankton, reduced transparency, increased content of organic matter, significant deterioration of the aquatic ecosystem and reduced biological productivity of the Dnieper River. The studies of the trophic state of the cascade of the Dnieper reservoirs are of high scientific and practical value for the identification of the consequences of a powerful anthropogenic influence on the hydroelectric system and the identification of problem aspects of their water areas and the further priority development of substantiated spatially adaptive complex and systematic environmental protection measures, enhancement of ecological sustainability, and gradual improvement of ecosystem of the Dnieper River basin.

**Keywords:** Hydrological Regime, Trophic state, Dnieper River, Dnieper reservoirs, Spatio-temporal changes, Remote sensing

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