Poster Session Abstract Book

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The impact of environmental changes on internal and external nutrient loads in the Mozhaysk Reservoir

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The main driver of eutrophication around the globe remains the input of nutrients with anthropogenic sources. However, in Russia over the past 30 years, the intensity of agriculture has significantly decreased, which in turn has led to a decrease in the external nutrient load and lakes. The catchment area of the Mozhaysk reservoir, located in the central European part of Russia, was actively used mainly for agricultural purposes until the late 1980s. Our study shows, that over the past 30 years, the supply of nutrients to the reservoir has reduced significantly. Along with a decrease in human input of nutrients, the decrease in external nutrient load has been affected by changes in spring weather. In spring, 50-60% of the total annual amount of external nutrients enter the reservoir, and as a result, depending on the form of the flood, differences in the amount of incoming phosphorus can reach several tons.

Under these conditions, a significant source of nutrients in the reservoir comes from the internal load. As a result of climate change in the reservoir, there has been an increase in the duration of the period of stratification and the anoxic conditions. Consequently, the concentrations of nutrients, especially phosphorus, in hypolimnion has doubled over the past 30 years. Furthermore, in the last 10 years the frequency of extreme weather events has increased, resulting in nutrients being released from sediments and consumed by phytoplankton. Such extreme weather events followed by periods of warm weather cause the bloom outbreaks. in the reservoir.