



Modeling of nutrient concentrations in the river Loktinka, Western Siberia

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Nutrient pollution is the process where too many nutrients, mainly nitrogen and phosphorus, are added to bodies of water and act as fertilizer, causing excessive growth of algae and threatening the natural species assemblages. The investigated catchment area is the river Loktinka which is located in the southern part of the West Siberian Plain, in the forest-steppe vegetation region. One of the most serious contaminant of the surface waters in the region are nutrients. The main input of nutrients comes from untreated runoff from agricultural fields and pastures.

To mitigate agricultural non-point source pollution, simulation tools can aid in the development of temporal and spatial management plans. This study presents a software application of a Geohydrological Analysis Model, developed by Prof. Kalinin, Tyumen State University, Russian Federation (1998) for the region. The model is based on "Runoff Forming Surfaces", which are a distinguished part of the catchment characterized by a set of natural components such as land use, soil and elevation. These areas are relatively homogeneous and lead to the same parameters for representing the hydrological cycle.

The model is used to simulate the water quality situation which was sampled during spring runoff in 2013. Results of the Siberian Geohydrological Analysis Model are compared to simulations carried out with the Soil and Water Assessment Tool (SWAT).