

Quantitative analysis of the ecological and economic balance and the structure of land use in the basin of the Tumannaya River

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Abstract. The article is devoted to the study of the structure of land use in the transboundary basin of the Tumannaya River. The map of land use within the Tumannaya River basin was compiled using remote sensing data. According to the basin approach, the territory was divided into the tributary basins of the first, second and third order using the ArcGIS software suite – a total of 21. The mapping results were analyzed by means of mathematical methods and quantitative techniques. The ecological and economic state of the transboundary basin has been found to have a low level of tension. The ecological and economic state of the floodplain is less balanced, for which low values of the natural protection coefficient have been identified. The minimum value of this coefficient is typical for the DPRK territory. The entropic measure of complexity and its derivatives as well as the Margalef index are more informative among the quantitative indicators. The floodplain parts of the basin within the PRC and the DPRK also have high values for most of the complexity indicators. Unlike the peripheral parts of the basin, they are more susceptible to anthropogenic effect. The Russian territory of the basin is the smallest in terms of the area, with less diversity in types of land use and greater fragmentation.

Keywords:

transboundary basin, land use, ecological and economic balance, quantitative methods of map analysis

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