

Creation of the National GIS system «The geography and geo-ecology of rivers and river basins of European Part of Russia: Spatial Analysis, Assessment and Modeling»

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Problem-oriented geographic information system and geoportal «The geography and geo-ecology of rivers and river basins of European Part of Russia» is proposed to form the base for investigations concerned to assessment and prognosis of geo-ecological state of river basins belonging to the European Russia (approx. 4 million of sq. km. in total). This large part of Russia concentrates the predominant part of country's population, industrial and agricultural potential. Actuality of assessment and prognosis of the environmental state for the chosen territory is caused by the increasing anthropogenic influence onto the basin geosystems of Russia and triggering negative riverbed-erosion processes, shifts of river runoff regimes, and lack of drinking water resources. These problems are demanding for examination of the response of the basin geosystems from various landscape zones to the anthropogenic impact, and the climate change, for understanding, predicting and managing streamflow. Assessment of river basins and changes occurring in them is based on a complex spatial-temporal analysis of long-term monitoring data, the use of remote sensing and maps of state surveys. All available geo-information will be integrated into the multi-function, problem-oriented GIS. Proposed approaches of investigation: cartographic and geoinformational methods, automated procedures of territory zoning, automated procedures of interpretation of remote sensing images, modern statistical methods of analysis (geostatistics, statistical and mathematical models).

Study area: the European Part of Russia (except for mountainous areas). Scale studies (level of spatial detail): Regional (corresponding to a scale 1: 1 000 000). The object of study: Geosystems river basins.

Subject of study:

- The development of GIS;
- Analysis of the spatial and temporal relationships of river runoff;
- Quantitative assessment of the current geo-ecological state of European Russia river basins.

Scientific novelty of research: the first time will be implemented a geographical characteristic of tens of thousands of river basins (more 60 000), will be set the landscape and geographical laws of development, will be carried out an integrated quantitative evaluation and mapping of geo-ecological state of river basins for the largest and most densely populated territory of Russia using modern information technologies and methods of spatial analysis. Specialized GIS and geoportal public use on European Russia river basins with a high degree of detail of geo-information is first created. This free available GIS will attract a large amount geo-information for a wide range of scientific and applied problems for the territory of European Russia.

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