
Ecological monitoring of soil-vegetation cover of minor river basins landscape

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Abstract

Catchment area is one of the fundamental geomorphological elements and it indicates landscape regularity expressed as systematic and repetitive dependence of slopes, soils, location and activity intensiveness of both fluvial and lithogenic flows. The research objective is to assess the dynamics of soil-vegetation condition of river basins. Research object. The Klyazma river basin area located in European Russia on the East European plain, refers to the Volga basin which belongs to the close Caspian basin. Research methods. Basin approach has been used for the research. The research has been carried out applying geoinformation systems and remote data. For the integrated characteristic of soil and vegetation cover of minor river basins ecosystems soil productive potential (SPP) index, suggested by the authors, has been applied. It characterises the ability of natural or anthropogenic-natural ecosystem under certain soil-climatic conditions to produce phytomass and averages phytomass reserve, produce, crop, humus content, soil-ecological index. NDVI (Normalised Difference Vegetation Index) is suggested to be applied as a generalised, efficient and monitoring index of soil-productive potential determined by remote method. Results. Minor river basins creating the Klyazma catchment area differ in their peculiarities of soil-vegetation cover.

The highest SPP in the Klyazma basin refers to the Nerl river, the largest and the most diverse in landscape. Agricultural land here adhere basically to grey forest soil, possess high SEI and crop, whereas natural ecosystems productivity is low and it is compensated with the considerable phytomass reserve of forest massifs, located on turfy-podzol soil.

A group of minor river basins (the Sudogda, the Kirzhach, the Peksha river basins) can be distinguished which are characterized by maximal and stable values of soil-productive potential (according to NDVI).

The intensity of the Sudogda basin ecosystems transformation is traced through the indices of forest vegetation assessment (area and wood reserve) their dynamics.

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