



Types of river valleys as a criterion for estimation of the territory geodiversity

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The Oka plateau occupies an intermediate position between large morphostructures of Southern Siberia. It is a unique object, where the features of relief development of the contiguous areas were reflected. The structure of the plateau also includes the Ilchir-Kitoy depression, located in the southeast, and the Oka depression, which lies in the north-west. The river network is characterized by deeply incised valleys, the relief of which bears traces of glacial activity, manifestations of Cenozoic volcanism, and active neotectonic movements. These factors also determine a wide variability in distribution of the types of river valleys: from the valleys with the hilly-moraine topography to the broad-floodplain sections of valleys with an insubstrat floodplain-terrace complex and incised type of channel when the river crosses basalt fields.

Thus, the antecedent Oka river valley of ancient formation was actively affected by volcanism and glaciation in Late Cenozoic. Lava flows enabled the formation of the incised and adapted types of channels within the south-western part of the Oka depression. Large areas of distribution of basalts on the left-bank part of the Oka river basin, occupying mainly the watershed positions, contributed to the formation of a certain type of longitudinal profiles of channels, characterized by a shallow form in the upper reaches (in the field of basalts development) and by a steep form in the middle and lower sections of the valleys. The distribution of fluvio-glacial landforms and moraine ridges descending into the Oka valley along the tributaries (Sentsa, Gargan and others), and the presence of facies transitions from fluvio-glacial and glacial to alluvial deposits determine the specific type of river valleys, developed under the conditions of the glacial relief formation. Due to the uplift of the Kropotkin range, the river erosion within the plateau is relatively slowed down in comparison with the surrounding mountains, which is reflected in the extensive development of accumulative terraces here.

River valleys as the most flexible systems providing a rapid response to geological and geomorphological events of various origin and scale of manifestation, are the most informative sites for the further study of this territory. The more diverse are the factors and wider is the range of processes involved in the formation of the river valley, the richer and more varied are responses to them, reflected in the morphology and structural features of alluvium and associated sediments. Consequently, such river valleys and (or) their types have the greatest potential for change, and can be used as a criterion for estimation of the territory geodiversity. Thus, the types of river valleys with the greatest number of factors affecting their formation and therefore with the largest number of specific characteristics that are reflected in their morphology and lithology can serve as one of the estimates of geodiversity of a territory in general.

The reported study was partially supported by the RFBR and Government of Irkutsk oblast, project No. 14-45-04002 r_siberia_a.