

Some Issues of Mapping Landscape-Geophysical Space-Temporal Characteristics (Geomasses) and Map Analysis

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Abstract:

In recent years, increasing interest has been observed in landscape sciences in terms of landscape mapping and the spatio-temporal analysis of landscape-geophysical parameters. Geomasses, which are elementary structural-functional components of landscapes, are characterized by a certain mass, a specific functional role, as well as a rate of variability over time and/or displacement in space. So, they are capable of spatial movement and of increasing or decreasing in quantity; that is, they may be active, stable, or inert. Geomasses are one of the best landscape-geophysical indicators, through which it is possible to assess various characteristics of landscapes and the processes occurring within them.

The aim of the study is to present the patterns of spatial distribution of Geomasses in the Ialno Range, and their relationship with physical-geographical factors, general features of productivity and their trends of change. The study is based on long-term expeditionary, stationary, and semi-stationary field investigations conducted by the LAB of Tbilisi State University.

Observations were conducted on 5 field plots: on the northern slope, covered with beech forests, at an altitude of 1,750 m, in the vicinity of Mount Nakokhari; On the ridge, with subalpine meadows, at an altitude of 1770 m, in the vicinity of Mt. Nakokhari; on the southern slope, with subalpine meadows, at an altitude of 1,700 m, in the vicinity of the Tsivtskaro Gorge; on the southern slope, covered with beech forests, at an altitude of 1,640 m, within the Tsivtskaro basin, and finally, in an erosion-denudation cirque at Tetri-Klde, at an altitude of 1,500 m.

These field plots represent all the main types of landscapes characteristic of the study area, which are widely distributed in the Ialno Ridge.

The report presents certain methodological features of compiling maps of landscape-geophysical characteristics (geomasses) and their analysis. The spatial distribution patterns of geomasses in the landscapes of Ialno Range were analyzed from different aspects: 1) by identifying the relationships between geomasses and physical-geographical/anthropogenic factors; 2) by determining the physical-geographical factors that control the maximum or minimum accumulation of geomasses. As a result of the study, relationships between landscape-geophysical parameters, the average quantities of Geomasses, and their ranges of variation in different physical-geographical environments were identified.