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Ecological aspects of pedogenesis and evaluation of ecosystems in Georgia on the basis of edaphic factors

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Among the main Geo-spheres of the Earth (Atmosphere, Hydrosphere, Lithosphere, and Biosphere), the rightful place is occupied by the Pedosphere. All natural and anthropogenic processes, taking place within each ecosystem, are reflected in soils. One of the most important tasks of geographical studies is evaluation of ecosystems' sensitivity. It allows: To identify the potential and current trends of landscapes; to determine the level of their sustainability to the various natural and anthropogenic impacts; to establish the level of endurance of anthropogenic pressure. Such kind of studies provides an opportunity to create a scientific basis for sustainable environmental management and spatial planning. On the bases of the edaphic factor analysis, the assessment of ecosystem sensitivity was carried out. In addition, some methodological aspects of the evaluation were developed. Along with the geographical factors (surface slope, migration regime, the level of relief dissection), the main edaphic parameters having a huge impact on the sensitivity of the ecosystems are: Density of the parent rocks, structure and texture of soils. Each of these parameters was estimated to sensitivity individually and comprehensively based on GIS and using the method of mathematical statistics, in particular, a way of balancing data. Analysis of Geo-edaphic factors showed that Georgia's ecosystems differ in sensitivity. Sometimes, one of the indicators has a main role, but in some cases - several indicators together at the same time. The next levels of sensitivity were installed in Georgia's territory: Highly sensitive, sensitive, medium-sensitive, low-sensitive, and very low-sensitive; as well as the features of territorial distribution of ecosystems' sensitivity were identified.

Biography

Lia Matchavariani is a Professor of Tbilisi State University (TSU), Faculty of Exact & Natural Sciences, Soil Geography Dep., Head of Chair; Director of the Institute "Applied Ecology" at TSU; Chief of Doctoral Program "Applied Ecology", Bachelor Program "Geography" and co-chief of Master Program "Physical Geography & Environment Sustainable Development" at TSU. She is a Doctor of Science in Geography (Geo-ecology) from TSU (2006); PhD in Agrarian Sciences (Soil Science) from GSAU (1989). She has over 150 publications (Sci. papers, textbooks, monographs, etc.).

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