

AN ATTEMPT TO COMMENSURATE THE LANDSCAPE MAPS AND SOIL MAPS USING THE CARTOGRAPHIC AND GIS METHODS (A SOIL MAP OF GEORGIA ON A LANDSCAPE BASIS)

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Abstract

As a result of arranging the Landscape and Soil maps, we have created the Soil Map of Georgia on the landscape basis, with the scale of 1:500 000. While working on the maps we have used landscape contours and have entered soil inside in it. By doing so, we have brought the soils presented on the landscape map into one system. The map represents the real precondition for creating the landscape-geochemical map of Georgia. While using this map, we can also easily determine which soil is found in which landscape, compare them with each other, define their area and so on. Thus, by using the map, during landscape and soil examination, with the use of GIS methods, we can obtain interesting results to solve lots of interesting issues.

Keywords: *Landscape and Soil maps, Cartographic and GIS methods, Geospatial analysis*

While working on the topic under research, which consists in studying the geochemical features of Georgian landscapes, one important issue has been highlighted. It refers to the idea of creating a soil map based on commensuration of the landscape maps and soil maps of Georgia. This is also closely related to the problem of studying soil as one of the components of landscape (1972, 1976, 1987, 1990, 2003, 2017).

The creation of soil maps and landscape maps has a long-standing tradition in Georgia. We will not delve into this issue, we will only say that the soil maps created about Georgia and its regions by S. Zakharov, D. Gedevanishvili, M. Sabashvili, G. Talakhadze, I. Anjaparidze, and other scientists had great recognition and public economic use. The same assessment can be given to the landscape maps of Georgia compiled by M. Saneblidze, Kr. Jakeli, D. Ukleba and the landscape map of the Caucasus compiled by N. Beruchashvili.

Some time ago, two important events took place in the geography of Georgia. A new landscape map and soil map of Georgia had been released, on a scale of 1:500,000. The landscape map of Georgia was compiled by Professor Nikoloz Beruchashvili (2000). The soil map of Georgia was compiled by Professor Tengiz Urushadze (1999).

The entire team of authors participated in compiling the soil map of Georgia under the leadership of Professor Tengiz Urushadze. So, the modern point of view of soil experts is shown thereof.

Along with many interesting points of the soil map of Georgia, it is important that the names of soils in the map legend are given in Georgian, Russian and English languages, and the terminology in these languages is adapted accordingly. This is the first attempt to solve the issue and allows the regional soil classification to match the international classification.

Although the landscape map of Georgia was compiled only by Professor Nikoloz Beruchashvili, it reflects the modern point of view of landscape experts.

It is known that landscape researches are full-scale studies, and soil is its most important constituent part. Therefore, soil research always plays a major role in landscape researches. The physiognomic descriptions of soil incisions conducted by landscape scientists are in no way inferior to the incisions described by soil scientists. However, chemical analysis is rarely used in landscape researches for some reasons. It is also important that landscape scientists always agreed their soil descriptions with the data obtained by soil scientists, in particular, with the researches of Professor Tengiz Urushadze, the flagship of Georgian soil scientists.

So, taking these two maps, landscape and soil ones, we compared them each other, on the one hand, in terms of content, i.e. according to identified soil units (soil type, subtype, etc.), on the other hand, according to contours, i.e. what is the spatial overlap or difference between the units identified on the landscape maps and soil ones. In many cases we obtained interesting data. However, when comparing the landscape maps and soil maps, it was often found that there was spacing between the contours of soils presented thereof. We carried out the above-mentioned, both by the common cartographic and GIS methods.

Based on the conducted studies, as a result of comparing these maps, we compiled a soil map of Georgia on a landscape basis on a scale of 1:500000 (Fig. 1). What does a soil map on a landscape basis mean? We used the landscape contours and loaded the soil contents into them, i.e. the contours of landscapes remained the same and the soil type was incorporated therein. At this time some landscape contours were sometimes merged; There was no split.

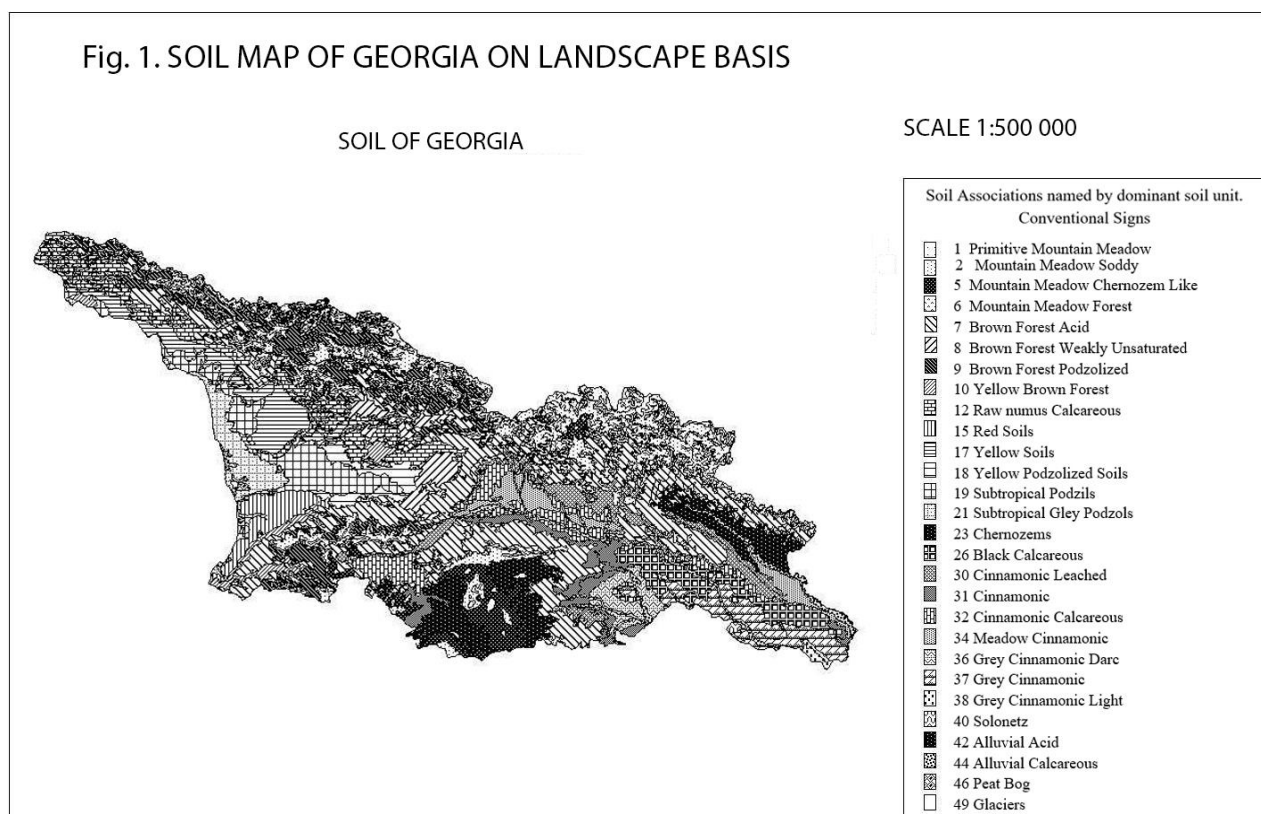


Figure 1. Soil map of Georgia on landscape basis

Our aim is not to criticize or analyze this soil map. This will be done by the user interested in this issue. The aim of the paper is only to bring soils presented in the landscape maps and soil maps into one system.

Here we would like to note as a conclusion that the soil map of Georgia, compiled on the basis of the commensuration of the landscape maps and soil ones, is very convenient for both landscape and soil studies.

Also, like landscape and landscape-geochemical studies, this is a full-scale research. Soil is the most important part of landscape-geochemical studies. Especially when identifying classes of geochemical landscape. Classes of geochemical landscapes - are identified by features of water migration in A horizon of soil. Therefore, the soil map of Georgia compiled by us is of fundamental importance in the classification of classes of geochemical landscape on a landscape basis. It is a true prerequisite for landscape-geochemical mapping of Georgia.

This soil map is in compliance with the international soil classification.

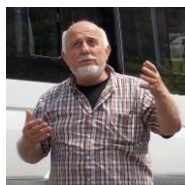
With this map, it is easy to determine in which landscape this or that soil is found.

With this map, it becomes possible to determine the area of this or that soil in individual landscapes, compare them, etc. We understand that these are only the first steps in the commensuration of these two scientific fields, soil science and landscape science, and it requires extensive consideration. However, in the presence of the mentioned map, we can obtain certain results based on the use of GIS methods to clarify many issues of interest for landscape or soil research.

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