



Soils of natural and anthropogenically disturbed landscapes adjacent to megalopolis

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During the analysis of a digital medium-scale soil map, created in the V.V. Dokuchaev Central Soil Museum we identified some changes in the soil cover of the territories adjacent to Saint Petersburg (the Leningrad region (LR)). The human impact on the soil cover is manifested within the range that varies from insignificant changes in soil parameters to radical transformations of soil profile, complete destruction of soil and “creation” of new soil forms and soil cover organization forms.

Depending on the type of human activities on the territory of the LR are identified: forestry, land reclamation, long-distance, residential, industrial, agrogenic, postagrogenic and other landscapes.

Virtually in all the landscapes, we found a large number of soil cover structures, components of which are natural soils, anthropogenically disturbed soils, anthropogenic soils and non-soil formations.

Natural soils. All soils whose profile has not been affected by human impact.

The most typical soils for the LR are: Albic Podzols, Entic Podzols, Umbric Albic Luvisols, Fibric Histosol, Sapric Histosol, Folic Gleysol, Histic Gleysol, Fluvisols, Regosols, Leptosol, Rendzic Leptosols, Cambisols, Arenosols.

Anthropogenically disturbed soils. The upper horizons of such soils have been altered by people. They contain: signs of urbopedogenesis (artifacts), plowing, drainage reclamation, mechanical disturbance of natural occurrence of strata, input of artificial material. The lower formations a natural sequence of genetic strata.

They include: soils with turbic and novic materials, Anthrosols, postagrogenic Anthrosols, Drainic Histosols.

The areas of Anthrosols confined to the borders of agricultural lands. In the center of the contours, there are often human settlements with various combinations of soils with non-soil formations.

Soils of fallow lands (postagrogenic Anthrosols) are distributed in the territories of former agricultural lands. To date, they are under forests, but preserving the traces of former development (territory with ameliorative ditches, old wood-felling).

Drainic Histosols haven been identified in areas of peat extraction sites; soils with turbic and novic materials, in the territories of wood-felling areas, military training grounds.

Anthropogenic soils. These are soils, the profile of which has been designed by people. The upper stratum of these soils consists of the material of the humus horizon of natural soils, whose properties were partially preserved, and partly transformed under the influence of the city.

They include: Umbrisol (Novic) with a thickness of fill-up mass of over 40 cm; Technosols, having in their structure an introduced humus horizon.

Non-soil formations are found in the area of rock exposure due to technogenic impact. Combinations of non-soil formations and Technosols have been identified in the territories with buildings (soils of lawns in residential, main zones); Umbrisol (Novic) - in recreational areas.

We identified a significant prevalence of anthropogenically disturbed soils over natural ones. The share of anthropogenic soils is >50 % surface soils; > 30% of natural soils in the LR has been anthropogenically disturbed. Among anthropogenic soils, soils and soil combinations of agricultural land prevail (80%). A significant share is a combination of natural and anthropogenic soils with non-soil formations (50% of the total number of soil combinations).