



Pedogenetic processes in the young soils of Caspian Lowland

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The concept of pedogenetic processes (PP) considers the movement and transformation of matter in soil profile as a complex of specific phenomena occurring simultaneously or sequentially. Though PP cannot be observed directly, they can be reconstructed on the basis of available morphological properties or hypothesis based on current and past soil-forming factors. The pedogenetic processes develop at different rates and have diverse characteristic times, i.e. a different time scales.

We studied the soils of young coastal region of the Caspian Lowland. The study sites are located in the plain part of Northern Dagestan, and are flooded periodically by tidal water. The age of exposition of the surface is about 150-300 years. The climate is cold arid with mean annual temperature +11.6°C, mean July temperature +25.9°C and mean January temperature -3,3°C. The soils are Solonchaks formed in saline marine deposits under halophytic vegetation.

The young soils are weakly developed and soil profile is primitive. The PP are indicated by the presence of some morphological features without forming evident genetic horizons. The horizontation of the profiles is formed by the layers of parent material and bedding rock.

The main processes that develop shortly after the emergence of soil from the sea water are related to humus formation and accumulation and to redistribution of salts in the soil profile. Soil organic carbon (SOC) content as indicator of the process of humus accumulation decreases abruptly down the profile. The highest concentrations were observed in the surficial humus and the buried humus horizons. In mineral horizons carbon is presented in inorganic form (as carbonates).

On the primary stages of soil formation humus accumulation is registered by SOC concentration and its morphological indicators.

The research was supported by the Federal Task Program ""Research and development in priority areas of development of Russia's scientific and technological complex for 2014-2020", research grant "Management of atmospheric carbon sequestration in arable soils of Russia", unique project identifier RFMEFI61618X0105.