



Geochronology of Holocene Soil Forming Processes in the Baikal Region

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The chronology of soil formation in the Baikal Region is worked out poorly, and the issues concerning the soil cover development during the Holocene, still remain not fully understood. In this connection, the study of paleosols sequences which located on western Lake Baikal coast is interesting in all aspects. Features of pedogenic allow us to trace soil evolution in response to climatic and landscape changes, using morphological (color, texture, etc.) and analytical data (total organic carbon and nitrogen, humus content and composition, carbonate content, particle-size distribution, major and minor elemental compositions). Paleosols features suggest that the soils which were spread on the Primorsky Range piedmont about 7200 ± 140 year BP coincide to Luvisols (WRB). The paleosols which were spread along the coast of the Lake Baikal between 7000-3200 calendar years ago are comparable to Chernozems (WRB). The principal attributes of the buried soil horizons with the age 4120 ± 95 BP show maximum humus accumulation. This soil is distinguished by darker (black) color and high (up to 6%) humus content, and by the predominance of humic acids in humus composition. The Subatlantic pedogenesis is shown in the buried soil horizon with age of 2400, 1900 and 400 years. These soils are similar to the typical contemporaneous soils of this territory – Leptosols (WRB), except lower content of humus and exchange calcium for the Subatlantic soils.

On the whole, the soils evolution of the studied area consists of three stages. First and foremost, it is the stage of Early Holocene shaping of the soil cover with pedogenic intermittence and weakness as a result of erosion and permafrost influence, with formation of skeletal soils of the organic-accumulation type. The next soil formation stage (Middle Holocene) characterized by a more stable state of soil cover, and by shaping of the Luvisols and Chernozems. Humus accumulation, carbonization and lessivage process dominated during this stage. Throughout the Late Holocene the soils were evolving that could be related to changing paleoenvironment. Strong erosion took place before 6200 BP, between 4900 BP and 4200 BP, from 3300 BP to 2200 BP, about 1300 and 1000 BP, and 400 years ago. Transform of the soil formation type, decrease rate of the humus formation and humus accumulation processes, and intensification of erosion and cryogenic processes were appeared as result of paleoenvironmental changes in the Baikal Region.