VERTICAL ELECTRICAL RESISTIVITY SOUNDING OF SOILS AND PERMAFROST OF THE EASTERN MACROSLOPE OF THE POLAR URALS AND SURROUNDINGS OF RIVER ERKUTA

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The vertical electrical resistivity sounding (VERS) of soil-permafrost strata was studied during the field work within the eastern macroslope of the Polar Urals, foothills of the Polar Urals, surroundings of river Erkuta at several key plots (Yamal peninsula). A portable device LandMapper was used for the measurements. Apparent electrical resistivity values on the soil-permafrost strata usually change rapidly. Histic Gleysols, Gleysols, Stratozems, Spodosols have been investigated within the key plots. Several trends were distinguished in the profile distribution of the electrical resistivity values. The main trend is monotonous increasing of Ra value with depth. It is necessary to underline that values of apparent electrical resistivity increase rapidly on the border of active layer with permafrost layer (from hundreds to thousands Ohm*m). It was shown that permafrost layer (in comparison with soil strata) is characterized by higher values of apparent electrical resistivity (Ra). Vertical electrical resistivity sounding method helps to perform measurements of electrophysical properties of soil-permafrost strata without any mechanical disturbances of soil cover. The results have been also compared with the data obtained in the field using the steel bar. The results obtained by the two methods on the active layer thickness and permafrost layer depth were clearly corresponding.

Key words: vertical electrical resistivity sounding, active layer, permafrost, soils, tundra.