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Verification of temperature and humidity conditions of mineral soils in the active layer model

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Detailed monitoring of the temperature of the soil layer provides a unique experimental material for studying the complex processes of heat transfer from the surface layer of the atmosphere to soils. According to the data of autonomous devices of air temperature, it was found that within each key area there are no significant differences between the observation sits. According to the annual (2011-2018) observations of the temperature regime of the soil and ground, it has been found that the microclimatic specificity of bog ecosystems is clearly manifested in the characteristics of the daily and annual variations in soil temperature. A regression model describing the change in the maximum freezing depth during the winter has been proposed, using air temperature, snow depth and bog water level as predictors. The effects of BWL and snow cover have similar values, which indicates an approximately equal contribution of BWL variations and snow depth to changes in freezing. The thickness of the seasonally frozen layer at all sites is 20-60 cm and the maximum freezing of the peat layer is reached in February-March. Degradation of the seasonally frozen layer occurs both from above and below.

It was found that similar bog ecosystems in different bog massifs have significantly different temperature regimes. The peat stratum of northern bogs can be both warmer (in winter) and colder (in summer) in comparison with bogs, located 520 km to the south and 860 km to the west.