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Influencing of covers (peat, snow mosses) on the frost heave by the example of Yamburg (the North of West Siberia)

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The frost heave is the one of the widespread and intensively influencing on the objects process. It's also one of the reasons of forming the cryogenic relief. Analytics methods and frost heave map composition, which connected with landscape, cryolithology and geology conditions – the most effective decision of this problem. Now a lot of considerable trends were found out in The Bolshezemelskaya tundra, Yamal and Tazovskiy peninsulas, and they have shown the increase of temperature on 0.02 – 0.06 °C per one year and about 0,7°C per one year in East Siberia. We have studied frost heave in different areas, and calculation of the general frost heave deformation has shown that in West Siberia it's about 40 cm, in East Siberia up to 2m. The Yamburg gas field characterized as the syngenetic type of continuous permafrost area with the sincryogenetic sandshale deposits which are found almost on the all geomorphological levels. This factors are determinates the widespread occurrence of cryolithology factors, especially frost heaving. The frost heave on the Yamburg in the singenetic permafrost happens because of deep seasonal thawing to 1,5m. We have had a set of experiments to determine influencing of peat cover on frost heave. In the laboratory we were modeling conditions of "closed system" with fragmentary freezing. The results have shown that the most influencing cover – peat, while the moss has no affects on the frost heave. The results could be comparing with calculating data which were received for this region, for example in the cold years the peat cover influencing will be lower than in warmer and in the future we could expected the enormous increasing of deformation. Sand deposits which are presents here in itself are not apply to heaving soils, but in case of widespread development of peat and with high dispersion of deposits they are also heaving every season. The maximum ice content was registered in peat or on the contact mineral ground – peat. For the appraisal of experimental data also were done calculations of seasonal frozen layer thickness, in the system sandy clay-clay 2,1m, on the boggy area with peat - 0, 95 m, and with the high thickness of peat on the sandy clay-sand 1m, corresponding to it the frost heaving value will be change, which is confirmed by experiment.
These experiments have shown that peat is the most affecting cover on the frost heave and also peat is the most widespread cover in this region.
In transition of landscapes including the human intervention most of the natural territorial complexes in tundra interchange to the peats with various thicknesses, therefore it's necessary to pay special attention for interaction peat cover and soils systems and to peat cover influencing for development of cryogenic process.