Manual processing and visual interpretation were implied to very high resolution data (Quickbird, Geoeye satellites). Various types of anthropogenic landscapes are easily identifiable, such as cryo-geomorphological relief forms within Vaskiny Dachi research station.

After this, density growth rate was estimated. Spatial correlation was applied to changing objects of the study area. Correlation type weak positive and equals 0.15. Area of thermocirques increased by 49 550 sq. km, out of which vehicle tracks increased by 10.6 sq. km, and quarries and embankments by 2.7 sq. km.

GIS-techniques enable us to relate any other type of hazardous natural phenomenon, which may have a significant influence on the infrastructure in the Arctic as well as on indigenous communities. Therefore, prediction of such processes in permafrost environment is highly important. Within this research, we tried to create a prediction map based on several potential controls of GEC formation included in our current hypothesis.

Second main control was a concentration of dissolved methane in lake water. We used relation between CDOM and dissolved methane concentration based on field and laboratory measurements, to map methane-rich lakes using lake CDOM map obtained through analysis of remote-sensing data.

Gas-emission craters (GEC) are relatively a new type of hazardous natural phenomenon, which may have a significant influence on the infrastructure in the Arctic as well as on indigenous communities.

First control was TGI table depth. According to our current hypothesis, we consider TGI table bodies close to ground surface more favorable for GEC formation.

Estimation of gas-emission crater formation hazard showed that in the image area of 8441 sq. km most hazardous are 2004 sq. km (24% of the territory), non-hazardous can be considered 1877 sq. km (22% of the territory).

Thermocirque № 2 monitoring with UAV survey technology

Gas-Sale peatland degradation monitoring with UAV survey technology