



First inventory of optical lake types in the permafrost landscapes of the central Lena River Delta and central Yamal - case studies of Coloured Dissolved Organic Matter (cDOM) and turbidity regimes

Birgit Heim (1), Annett Bartsch (2,3), Yuri Dvornikov (4,1), Marina Leibman (4), Antje Eulenburg (1), Anne Morgenstern (1), Julia Boike (1), Barbara Widhalm (3), Irina Fedorova (5,6), Antonina Chetverova (5,6)

(1) Alfred Wegener Institute for Polar and Marine Research, Periglacial Research, Potsdam, Germany (birgit.heim@awi.de), (2) Zentralanstalt für Meteorologie und Geodynamik (ZAMG), Vienna, Austria, (3) Vienna University of Technology, Vienna, Austria, (4) Earth Cryosphere Institute (ECI) SB RAS, Tyumen, Russia, (5) Arctic and Antarctic Research Institute (AARI), St. Petersburg, Russia, (6) St. Petersburg State University, St. Petersburg, Russia

We provide a first satellite-based inventory of optical lake types in the permafrost landscapes of the central Lena River Delta and central Yamal using multi-sensor satellite data. Within our thematic network between our groups we seek to investigate how we may link:

- multi-sensor remote sensing analysis (optical and radar)
- tachymetrical and satellite-based stereographical analysis
- geochemical and hydrodynamical ground investigations

in the thermokarst- and thermoerosional-influenced landscape types in the central Lena Delta and the Yamal region in Siberia.

We are investigating the turbidity regimes of the lakes and the catchment characteristics (vegetation, geomorphology, topography) using satellite-derived information from optical and radar sensors. For some of the lakes in Yamal and the central Lena River Delta we were able to sample for Dissolved Organic Carbon, DOC, and coloured dissolved organic matter, cDOM (the absorbing fraction of the DOC pool). The sediment sources for turbidity spatial patterns are provided by the large subaquatic sedimentary banks and lake cliffs. The cDOM regimes influence the transparency of the different lake types. However, turbidity seems to play the dominant role in providing the water colour of thermokarst lake types.