Development of ice-wedge polygons: examples from Lena River Delta (N Russia)

Mariusz Galka¹, Pim de Klerk²,³, Merten Minke¹,⁴, Hans Joosten¹

¹Department of Biogeography and Palaeoecology, Faculty of Geographical and Geological Sciences, Adam Mickiewicz University, Poznań, Poland; galka@amu.edu.pl
²State Museum of Natural History Karlsruhe, Karlsruhe, Germany
³Institute of Botany and Landscape Ecology, Ernst Moritz Arndt University, Greifswald, Germany
⁴Mire Centre, Greifswald, Germany

AIMS
We carried out high-resolution (0.5 cm) palaeoecological analysis on three peat profiles from Lena River Delta in order to:
1. Reconstruct local and regional vegetation changes during the late Holocene;
2. Evaluate the influence of changes in climate and autogenic succession in the development of arctic plant communities in polygon mires;
3. Explore fire activity and vegetation feedback on fire activity.

MATERIALS AND METHODS
1. Core collection: peat monoliths were sampled from ice-wedge polygons.
2. Chronology: radiocarbon dating (AMS), dates will be carried out on terrestrial plant macrofossils and bulk samples.
3. Vegetation changes: plant macrofossils and pollen analysis.

PRELIMINARY RESULTS

CONCLUSIONS
1. In the three monoliths we documented rather stable local plant succession over analyzed periods. Monoliths 87.1 and 83.5 are dominated by indicators of dry hydrological conditions e.g. Tomentypnum nitens and Aulacomnium turgidum. In monolith 78.1 indicators of wet conditions e.g. Scrophularia revolvens and Warnstorfia sarmentosa dominated.
2. The constant presence of macro-charcoal may indicate high fire activity in the surroundings of the sampling sites. However, only one macro-charcoal piece was found in monolith 83.5, which may suggest very rare local fire events in our study sites.

References: