

Supplement

Land form and land cover description

This supplement provides a photographic description of the encountered land forms and surface presented in the main article.



Figure 1: Exposed cliff of the Kurungnakh-Sise Ice Complex. Height of the cliff is approximately 50m. Much of the cliff surface is almost pure ice (outlined in yellow for a small section). The plateau is a remnant of Pleistocene aged Yedoma deposits. These are characterized by large scale syngenetic ice-wedges that are around 3 to 5m wide along the shortest axes. A detailed sedimentological description of the locality has been published by Schirrmeister et al. (2003, 2011) and Morgenstern et al. 2011 (Photo: M.B. Siewert).

Morgenstern, A., Grosse, G., Guenther, F., Fedorova, I., Schirrmeister, L., 2011. Spatial analyses of thermokarst lakes and basins in Yedoma landscapes of the Lena Delta. *Cryosphere* 5, 849–867. doi:10.5194/tc-5-849-2011

Schirrmeister, L., Grosse, G., Schwamborn, G., Andreev, A.A., Meyer, H., Kunitsky, V.V., Kuznetsova, T.V., Dorozhkina, M.V., Pavlova, E.Y., Bobrov, A.A., 2003. Late Quaternary history of the accumulation plain north of the Chekanovsky Ridge (Lena Delta, Russia): a multidisciplinary approach. *Polar Geography* 27, 277–319.

Schirrmeister, L., Kunitsky, V., Grosse, G., Wetterich, S., Meyer, H., Schwamborn, G., Babiy, O.,

Derevyagin, A., Siegert, C., 2011. Sedimentary characteristics and origin of the Late Pleistocene Ice Complex on north-east Siberian Arctic coastal lowlands and islands – A review. *Quaternary International*, Timing and Vegetation History of Past Interglacials in Northern Eurasia 241, 3–25. doi:10.1016/j.quaint.2010.04.004



Figure 2: Surface of the Ice Complex. Front to right is the rim of a low-centered polygon covered by moss, graminoids, lichen and willow dwarf-shrubs. Upper left of the picture shows much wetter polygon center typically covered by sedges (Photo J. Petrone).



Figure 3: A thermokarst lake formed in the Ice Complex. The slopes show a thermal-erosion affected surface characterized by hummocky terrain associated with turbic soils. The vegetation is adapted to drier conditions with tussock forming graminoids over ground-covering mosses (Photo: M.B. Siewert).



Figure 4: View over the Holocene terrace dominated by low-centered polygons. Sedges and mosses are the dominating vegetation cover of the polygon centers. The polygon centers can be completely drained as seen here or have varying amounts of water up to be completely water-covered. Polygon rims often have a moss covered surface with graminoids and dwarf-shrubs (Photo: J. Petrone).



Figure 5: Holocene ice-wedge exposed due to cliff-erosion on Samoylov Island. The top of the ice-wedge is cut off by the active-layer. At the side the sedimentary origin of the soils and the deformation caused by the ice-wedge is apparent. Approximate width 1.5m. (Photo G. Hugelius)



Figure 6: Landscape of the recent floodplain with abundant driftwood. The vegetation is composed of sedges, moss and willow dwarf-shrubs, depending on local conditions. No ice-wedge polygons are established on these young surfaces (Photo: M.B. Siewert)



Figure 7: Sparsely vegetated sampling site of the alluvial sediment at the transition towards the recent floodplain (Photo: M.B. Siewert).