



## **Permafrost sequences on Kurungnakh Island, Lena Delta (NE Siberia, Russia) as key site of the late Quaternary environmental history of West Beringia**

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Late Quaternary permafrost sequences are widely distributed in the arctic lowlands of Siberia. Because the existence of permafrost has been sensitive to climate changes during the Quaternary past, such frozen deposits are regarded as an archive of palaeoenvironmental dynamics. Late Quaternary palaeoenvironments of the Siberian Arctic were reconstructed by combining data from several fossil bioindicators (pollen, plant macro-fossils, ostracods, insects, and mammal bones) with sedimentological and cryolithological data from permafrost deposits. The late Pleistocene to Holocene sequence on Kurungnakh Island (Lena Delta, NE Siberia) reflects the environmental history of West Beringia and covers glacial/interglacial and stadial/interstadial climate variations with a focus on the Middle Weichselian interstadial (50–32 kyr BP). The record mirrors the development of periglacial landscapes under changing sedimentation regimes which were meandering fluvial during the Early Weichselian, colluvial or proluvial on gently inclined plains during the Middle and Late Weichselian, and thermokarst-affected during the Holocene. Palaeoecological records indicate the existence of tundra–steppe vegetation under cold continental climate conditions during the Middle Weichselian interstadial. Due to sedimentation gaps in the sequence between 32 and 17 kyr BP and 17 and 8 kyr BP, the Late Weichselian stadial is incompletely represented in the studied outcrops. Nevertheless, by several palaeoecological indications arctic tundra–steppe vegetation under extremely cold-arid conditions prevailed during the late Pleistocene. The tundra–steppe disappeared completely due to lasting paludification during the Holocene. Initially subarctic shrub tundra formed, which later retreated in course of the late Holocene cooling.