Cryolithology and palaeoecology of NE Siberian Ice Complex (Bol’shoy Lyakhovsky Island, New Siberian Archipelago)

I. BACKGROUND

Cryolithological and paleontological proxy data from East Siberian Arctic permafrost preserve records of late Quaternary climate and environmental conditions in West Beringia and their variability which results from interglacial-glacial and interstadial-stadial dynamics.

A key site for late Pleistocene Ice Complex is situated at the southern coast of Bol’shoy Lyakhovsky Island (Figure 1a) where coastal outcrops expose frozen sediments, ground ice, and fossil remains dating from the mid-Pleistocene (Andreev et al., 2004).

II. ICE COMPLEX of MIS3 and MIS2 AGE

According to the Quaternary stratigraphy scheme of the Dmitry Laptev Strait coasts presented by Tumskoy (2012), the Sartan Ice Complex (MIS2) belongs to the Yanskaya Suite and fills erosional structures such as valleys within the underlying older Ice Complex deposits of the Oyogoskaya Suite (MIS4 and MIS3) that formed during the Zyryan stadial and Molotkov interstadial periods.

A 15 m long sequence of Molotkov Ice Complex accumulated between >49 and 29 ka BP (Figure 1b, L7-18, Wetterich et al., 2014), and a 4.5 m long sequence (Figure 1c, L7-07; Wetterich et al., 2011) reflects Ice Complex formation between 26 and 22 ka BP during the Sartan Stadial.

III. RESULTS

Sediment data

Pollen data of tundra-steppe vegetation

Ice wedge stable water isotope data

IV. CONCLUSIONS

Continuous Ice Complex formation during MIS3 - changing deposition regime during MIS2

Interstadial-stadial climate variability reflected by pollen data of tundra-steppe vegetation

Coldest winter temperatures during MIS2 are revealed by stable water isotopes of ice wedge ice

References

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