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## Holocene vegetation and climate changes inferred from pollen record of Nordenskiöld Land (West Spitsbergen Island)

**Diana Soloveva**<sup>1,2</sup>, Larisa Savelieva<sup>2</sup>, and Sergei Verkulich<sup>1</sup>

<sup>1</sup>Department of Geography of Polar Countries, Arctic and Antarctic Research Institute, St.Petersburg, Russia.(ultimuscaurus@gmail.com, verkulich@mail.ru)

<sup>2</sup>Saint Petersburg University, Institute of Earth sciences, Geomorphology, St.Petersburg, Russian Federation (ultimuscaurus@gmail.com, savelieval@mail.ru)

Pollen analysis is one of the methods that allow revealing ecological and climatic changes in the past based on vegetation reconstruction. Spitsbergen (Svalbard) archipelago, as well as other regions of the Arctic, is difficult for creation of regional models of vegetation and climate development during the Holocene. This is primarily due to the limited distribution, low thickness and relative young ages (usually this is the late Holocene) of organogenic deposits, which are most suitable for palynological studies.

Nordenskiöld Land is located in the central part of the West Spitsbergen Island and different the most favorable climatic conditions. The largest number of sites suitable for paleobotanical researches is located here. The Coles valley has length about 12 km, well-developed profile and situated on the north shore of Nordenskiöld Land. The field campaign with studying of floodplain peat sediments from Coles River valley was carried out in August 2018. Two sites (K18-15, K18-16) were studied on the remains of first terrace. Excavated deposits are represented by leafy peat of varying degrees of decomposition with silt lenses. The laboratory studies of sediments included radiocarbon dating, pollen and non-pollen palynomorph analyses. They were carried out in Laboratory of St-Petersburg State University and Russian chemical-analytical Lab on the Spitsbergen archipelago.

The pollen analysis of two sections from Coles River valley allowed us to reconstruct paleovegetation changes. Samples from K18-15 site contain more mineral components and more pollen and spores than samples from K18-16 site. This is probably due to the inflow of pollen with water. The main components of spore-pollen spectra are Poaceae, Cyperaceae, Salix and Betula sect. Nanae. The relationship between these taxa shows a different degree of moisture of the study area under the dominance of the grass - sedge tundra. Thus, a significant influence on the formation of spores and pollen spectra in the studied deposits is played by the dynamics of the sedimentation.

Results of radiocarbon dating showed that studied deposits formed during mid and late Holocene.

A generalization of all available palynological data on the Nordenskiöld land made it possible to construct a scheme of dwarf birch (Betula sect. Nanae) distribution during the Middle and Late Holocene. A comparison of received data with our previous data and published data from

Nordenskiöld Land shows the asynchronous of appear and distribution of shrubs on these area from ~5000 to ~2500 yrs ago.