Project acronym: HOLARCLIM

Project title: The Late Holocene climate change inferred from the wetland ecosystems in the lower Indigirka River basin

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Discipline: Earth Sciences & Environment: Global change & Climate observation

Station(s): Chokurdakh Scientific Tundra Station (Russia)

In recent time, rapid global climate fluctuations have led to the development and improvement in the variety of methods that allow for climate reconstructions and future predictions. For that purpose, the use of deep-sea sediments and ice core records is the most popular as a natural source of climatic proxies. In order to examine climatic changes that have taken place over the continents, the most reliable palaeorachives are biogenic lacustrine and peatland sequences. As the low Arctic is a key region for climate evolution research, the North-Eastern Siberia past temperature variation and the corresponding biotic response are still insufficiently recognized. For that purpose, we plan to reconstruct the summer air temperature, peat surface wetness, palaeofire episodes, and plant communities during the Pleistocene and Holocene in the lower Indigirka River Basin. This will shed a light on the Arctic wetland ecosystems transformation in the context of global and regional environmental history of the last several thousand years. The palaeotemperature estimations will be inferred mainly from Chironomide and/or diatom subfossil assemblages. Peat surface wetness from the testate amoeba. Local plant communities and paleofire from plant macrofossils. Parallel environment reconstructions will provide Cladocera and geochemistry analysis. In order to obtain biogenic material for multi-proxy analysis, we recovered by excavations lacustrine sediment cores from palaeo-lakes near the Chokurdakh Scientific Tundra Station. Additionally, we excavated a short peat core sequences below the permafrost layer. The obtained biogenic sequences will be delivered to the University of Lodz (Poland) for the above-mentioned analysis.