

Permafrost peatland dynamics during the last millennia in NE European Russia and Finnish Lapland

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Permafrost peatlands cover vast areas in circum-Arctic regions. Since the 1980s, annual temperatures in these areas have risen by ca. 2 °C and warming is projected to continue. Accordingly, the large carbon store in these peatlands may therefore be threatened. Alternatively, warming may increase productivity more than decomposition and peat accumulation rates may increase. To better understand how high latitude permafrost peatlands have responded to recent warming and what might be their future fate, we carried out detailed studies on two permafrost peatlands in NE Russia and two in Finnish Lapland. Our study methods included high resolution testate amoeba, plant macrofossil, C/N analyses, together with ²¹⁰Pb and radiocarbon dating. We reconstructed changes in hydrological conditions, plant composition, and peat and carbon accumulation rates. Our preliminary results showed large variations in peat accumulation rates even within a very small area. Furthermore, testate amoeba and plant macrofossil data suggest variations in hydrological conditions during the last millennia. In the future, we will compare our regional data derived from different peatlands to each other, to climate reconstructions and to measured meteorological data.