subsequent developments remain unknown and detailed morphological descriptions concerning shoreline properties and their relation to erosion are missing. Therefore, this master thesis combined field, GIS and statistical methods to study the morphology of thermokarst lakes which helped to explain long-term trends of lake dynamics. It was found that erosion along shorelines is dependent on the height and slopes of palsas facing lakes while the wind direction revealed no significant influence on erosion. The retreat of shorelines is limited due to terrestrialisation with eroded peat blocks and vegetation growth into the shallow lakes. Between 2003 and 2021 the thermokarst lake area decreased by 10 % and the number of lakes decreased by 48 %. The limnicity (proportion of lakes) in the study area decreased from 12.6 % in 2003 to 11.4 % in 2021, which is a continuation of the trend observed between 1963 and 2003. Permafrost degradation causing an enhanced hydrological connectivity is the driving factor for the limnicity trend, although evaporation effects likely play an important role as well. Due to the current warming trend of ca. 0.4 °C/decade in northern Sweden, the observed trends are likely to continue which has implications on the carbon balance.

10:10 – 10:30h
Large Herbivores and Their Interaction with Arctic Soil Carbon Storage

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Permafrost degradation and organic matter decomposition in the terrestrial Arctic are strongly depending on soil temperatures. A factor that affects these temperatures is grazing and snow trampling by large herbivorous animals, as well as animal-induced changes in vegetation cover. We analysed samples taken from adjacent areas with different grazing intensities, both in a permafrost environment (Siberia) and seasonally frozen ground (norther Finland) for TOC, C/N ratio, d13C, bulk density and radiocarbon age. While in permafrost there was a strong increase in soil carbon storage with high grazing intensity, this effect is not visible in seasonally frozen ground. However, in both areas we observed massive changes in vegetation composition and structure, following the grazing gradient. We conclude that seasonally frozen ground allows for more intensive carbon relocation and mixing, which outweighs the effects animals have in the permafrost region but state that on permafrost, animals might efficiently be utilized to stabilise permafrost temperatures and reduce organic material decomposition.

11:00 – 11:20h
Permafrost carbon on the Canadian Beaufort Shelf: Distribution and origin of organic matter in marine surface sediments

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The continental shelves of the Arctic Ocean are undergoing profound changes due to unprecedented warming of the Arctic. Large amounts of previously freeze-locked carbon and nutrients are released towards the shelves due to increasing river discharge, deeper permafrost thaw and accelerated coastal erosion. Still, their interactions and their effects on carbon turnover, ocean acidification, and greenhouse