

Elemental and isotopic signatures of soil organic carbon in a successional glacier foreland in Ny-Alesund, Svalbards

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High-latitude soil carbon stocks are of particular interest because recent warming thaws permafrost, raising questions about the fate of permafrost C. Previous study found a raised coastal marine deposit containing seashells under the terrestrial sediment in a glacier foreland in Ny-Alesund, Svalbards, Norway. Spitsbergen in Svalbards, has extensive areas of raised coastal marine deposits that accumulated during the late Pleistocene but have not been considered in most global carbon inventories. Our objects in this study are to obtain elemental and isotopic signatures of soil organic carbon in a successional glacier foreland sites in Ny-Alesund and examine its relation to vegetation. In this presentation, we will show results of soil organic carbon content, stable-carbon composition and radiocarbon age for soil profiles from study sites that were set up along a primary succession. The radiocarbon ages are used to establish the chronology of changes in past plant distribution over time and space, based on stable-carbon composition of SOC as indicator of successional change of vegetation associated with glacier retreat.