Project acronym: PeatTrait

Project title: Plant Traits of Northern Peatlands as impacted by global change

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Discipline: Earth Sciences & Environment: Ecosystems & Biodiversity

Station(s): Mukhrino Field Station - Nymto Park (Russia), Abisko Scientific Research Station (Sweden)

Northern peatlands are characterized by wet conditions, to which their unique, specialized species and biogeochemical processes have adapted. Peatland biota and functioning are highly sensitive to changes in precipitation, evapotranspiration and water table depth, because wet conditions are prerequisite for their existence. In here we propose a study to assess the sensitivity of key peatland plant species and ecosystem functions to environmental change based on functional plant traits.

We will study plant traits in fertile and nutrient poor pristine and drained peatlands near Mukhrino and Abisko Field Stations and combine this new data with already existing data from peatland sites in Finland and Canada. We will measure traits that directly affect the species' ability to cope with moisture and the consequent availability of oxygen. For vascular plants we will measure traits such as existence of aerenchyma, rooting depth, leaf N content, SLA, plant height, presence of wax layer and hairs in leaves and the amount of irradiation (PAR) below plant canopy. For Sphagnum mosses we will measure traits such as the density of moss stand and density of branches, capitulum size and weight, capitulum N content, moss colour and the size of water storing hyaline cells. To quantify trait distribution in the study sites, species level trait data will be combined with data on plant community composition and carbon gas exchange data already existing at most of the sites. The resulting dataset will be an unique combination of plant trait and gas exchange data and allow us to quantitatively link ecosystem functions to plant traits