



## **Stable carbon and nitrogen isotopes in vertical peat profiles of natural and drained boreal peatlands**

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Peatlands form a significant carbon pool in the global carbon cycle. Change in peat hydrology, due to global warming is projected to change microbiological processes and peat carbon pool.

We tested if bulk stable carbon and nitrogen isotopes serve as indicators of severe long term drying in peatlands drained for forestry. Depth profile analysis of peat, for their carbon and nitrogen content as well as their carbon and nitrogen stable isotopic signatures, were conducted for peatlands in southern and eastern Finland, having ombrotrophic and minerotrophic natural and corresponding drained pairs or separate drained sites. The selection of sites allowed us to compare changes due to different fertility and changes due to long term artificial drying.

Drainage lasting over 40 years has led to changes in hydrology, vegetation, nutrient mineralization and respiration. Furthermore, increased nutrient uptake and possible recycling of peat nitrogen and carbon through vegetation back to the peat surface, also possibly has an effect on the stable isotopic composition of peat carbon and nitrogen.

We think that drainage induced changes somehow correspond to those caused by changed hydrology due to climate change. We will present data from these measurements and discuss their implications for carbon and nitrogen flows in peatlands.