



Emissions of nitrous oxide from an afforested peatland measured by enclosure and eddy covariance methods

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Agricultural peat soils generally are considered as large sources of nitrous oxide (N_2O) to the atmosphere, whereas northern forest soils generally show very small emissions. Limited amount of studies indicate that afforestation of agricultural peat land may not decrease N_2O emissions from the soil.

In this study N_2O emissions from an afforested peat field in the western Finland were measured with enclosure and eddy covariance techniques. The site was converted from a wetland to agricultural use in 1940s and afforested with Scots pine in 1970s. Currently, the site grows Scots pine and has a dense under storey vegetation.

The emissions of N_2O measured from the afforested site with agricultural history were comparable to those from agricultural peat soils, and one to two orders of magnitude higher than those measured from mineral forest soils. The emissions measured by the enclosure and eddy covariance techniques were similar in magnitude. The emission measured by the enclosure technique show a large spatial variability with certain areas having consistently lower emissions than others.