



Continuous cover forestry as a measure to mitigate environmental impacts of peatland forestry – a case study in Southern Finland

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Country-wise, greenhouse gas emissions from drained and managed peatlands may overrule a large part of the carbon (C) sink term reported for the upland forests. For example in Finland, about 1/5 of the forestry takes place on drained peatlands, of which particularly the nutrient-rich ones have been reported to show a substantial carbon dioxide (CO₂) and nitrous oxide (N₂O) loss into the atmosphere, not to forget the nutrient losses to surface waters. Besides peatland restoration, forest management methods which differ from the traditional rotation forestry, including thinnings and finally a clear clearcutting, could be a solution to mitigate the adverse environmental impacts of forestry on drained peatlands. In this presentation, we will show results from a case study comparing the impacts of harvest done either according to rotation forestry practices with a clear cut (CC) or to continuous cover forestry with selective harvest (CCF). We have measured the CO₂ exchange using the eddy covariance method before the harvest for six years, and after the harvest (taking place in March 2016) at both the CC and CCF plots. In addition, we have measured the N₂O and methane exchange with manual and automatic chambers at the forest floor and quantified the leaching losses of C, nitrogen and phosphorus from all three experimental plot treatments at a study site located in Southern Finland. We will discuss the results from the first three years after the harvest and compare the short-term impacts of these two different management types.