

Research Project

Combining biogeochemical and modelling approach to assess peatland restoration

Third-party funded project

Project title Combining biogeochemical and modelling approach to assess peatland restoration

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Department

Project Website <http://p3.snf.ch/Project-169556>

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Status Completed

Large percentages of peatlands in Europe have been degraded during the last centuries due to intensive agricultural or forestry usage resulting in a major loss of related ecosystems functions such as biodiversity, natural habitat, water cycle regulation, recreational values and last but not least carbon storage. While landscape managers seek to restore peatlands in the recent years they lack feasible monitoring tools to prove successful restoration. Here we propose to develop a set of biogeochemical and modelling tools to assess peatland restoration including a verification of net carbon storage. A combination of bulk isotope depth profiles, biomarker concentrations, soil chemical characteristics (molecular compound information, ash content, bulk density, C/N ratio, von Post humification degree, ¹³C NMR and IR spectroscopy) and radiocarbon data will be used to assess transformation degree and net carbon gain or loss of selected peat lands. Biogeochemical information will be used to develop a peatland model to test assumptions on isotope, molecular compound and biomarker dynamics. As such our overall aim is to develop work, cost and staff effective monitoring tools (bulk isotope data, soil chemical parameters) which will be verified in the proposed study as suitable indicators by sophisticated state-of-knowledge biogeochemical information (biomarker concentrations, molecular compounds, radiocarbon data, peat model development). Selected study sites will be in Finland, Southern Germany and Switzerland, where we already gathered experience and data from the antecedent project "Stable Carbon indicators of soil degeneration" (SNF project no. 200021-137569) and will profit from established collaborations on the long-term monitoring sites.

Financed by

Swiss National Science Foundation (SNSF)

Add publication

Published results

4607218, Gross-Schmolders, Miriam; von Sengbusch, Pascal; Krueger, Jan Paul; Klein, Kristy; Birkholz, Axel; Leifeld, Jens; Alewell, Christine, Switch of fungal to bacterial degradation in natura drained and

rewetted oligotrophic peatlands reflected in delta N-15 and fatty acid composition, 2199-3971, SOIL, Publication: JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

4612324, Gross-Schmolders, Miriam; von Sengbusch, Pascal; Krüger, Jan Paul; Klein, Kristy; Birkholz, Axel; Leifeld, Jens; Alewell, Christine, Switch of fungal to bacterial degradation in natura drained and rewetted oligotrophic peatlands reflected in delta N-15 and fatty acid composition, 2199-3971 ; 2199-398X, SOIL, Publication: JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

4612331, Klein, Kristy; Gross-Schmolders, Miriam; De la Rosa, José María; Alewell, Christine; Leifeld, Jens, Investigating the influence of instrumental parameters and chemical composition on pyrolysis efficiency of peat, 0010-3624 ; 1532-2416, Communications in Soil Science and Plant Analysis, Publication: JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

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