

Project *brief*

Thünen Institute of Climate-Smart Agriculture

2022/38a

Establishment of a German peatland monitoring programme for climate protection (MoMoK) – Part 1: Open Land

Bärbel Tiemeyer¹, Ullrich Dettmann¹, Arndt Piayda¹, Stefan Frank¹

- Peat and further organic soils store large amounts of soil organic carbon and, due to drainage, cause around 6.7% of the German greenhouse gas emissions.
- For the first time, a monitoring network specifically designed for peat and further organic soils is currently established, comprising around 200 sites on open land.
- Parallel to the establishment of the monitoring network, the map of organic soils and regionalisation methods for greenhouse gasses and their drivers are improved.
- In future, the peatland monitoring programme will serve as one long-term basis for the evaluation of the conditions and the climatic effects of peat and further organic soils.

Background and aims

Peat and further organic soils store large amounts of soil organic carbon, which is released as carbon dioxide upon drainage. In Germany, most of these soils are drained and thus contribute with 53 Mio. t CO₂-equivalents per year 6.7% to Germany's total greenhouse gas emissions. Increasing efforts in implementing mitigation measures call for both adequate methods in emission reporting and consistent monitoring. Thus, the German Federal Ministry for Food and Agriculture has mandated the Thünen Institute of Climate-Smart Agriculture with the project "Establishment of a German peatland monitoring programme for climate protection (MoMoK) – Part 1: Open land".

Monitoring network

The monitoring network will comprise around 200 sites. It encompasses i) all types of peat and organic soils and ii) drained grassland and cropland, paludiculture as well as unutilized semi-natural and rewetted peatlands. Sites of other monitoring programmes (long-term greenhouse gas flux sites such as ICOS Germany, soil monitoring) are integrated into the network wherever possible. Monitoring sites are distributed in "clusters". Each combination of land-use and peat type will be represented by at least three sites in three different clusters.

As long-term monitoring of greenhouse gas exchange will only be feasible at a few sites and is not done within the MoMoK project itself, the peatland monitoring programme focusses on the measurement of soil surface motion, which may be used as proxy for changes in the stocks of soil organic carbon. Beside soil surface motion, total stocks of soil organic carbon are determined at all sites as a baseline for possible future inventories. The monitoring programme thus collects data on surface heights (annual survey of the monitoring sites, continuous point measurements of surface motion), total soil organic carbon and nitrogen stocks, soil chemical and physical properties of the individual soil horizons, peat and surface water levels as well as on vegetation and management.

Regionalisation approaches

Parallel to the establishment of the monitoring network, the regionalisation methods for greenhouse gases and their drivers as currently used in emission reporting are improved. This comprises an update of the map of organic soils as well as the improvement of the regionalisation methods for water table depths in organic soils and for the greenhouse gas emissions themselves.

Further Information

Contact

¹Thünen Institute of Climate-Smart Agriculture
stefan.frank@thuenen.de

www.moorbodenmonitoring.de

www.thuenen.de/en/ak

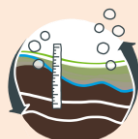
DOI: 10.3220/PB1667294659000

Duration

9.2020-05.2025

Project-ID

2143



Publications

Frank et al. (2022)

Methodenhandbuch zu den Gelände- und Laborarbeiten für den Aufbau eines deutschlandweiten Moorbodenmonitorings für den Klimaschutz – Teil 1: Offenland, Version 1.0. Thünen Working Paper 199, DOI:10.3220/WP1661764883000

Publications

Dettmann et al. (2022)

Geoderma 427, Article 116132, DOI:10.1016/j.geoderma.2022.116132

Support

German Federal Ministry for Food and Agriculture