

Greenhouse gas emissions during rewetting of formerly drained peat soil.

Drained peat soils contribute to significant emissions of the greenhouse gases CO<sub>2</sub> and N<sub>2</sub>O. A common proposed measure to reduce emissions is to rewet previously drained peatlands, but the risk is that CH<sub>4</sub> emissions will increase. Climate scenarios for the region show a higher frequency of rain storms and drier summers with an increased need for irrigation. This project aims to increase knowledge of how greenhouse gas emissions change during a rewetting project and in the case of large amounts of rainfall or irrigation.

We will describe the project setup and the first results from two drained peat sites in the central part of Sweden in the process of being rewetted. At these sites, which have pastures and forests, frames for measuring chambers and groundwater pipes were installed to monitor how greenhouse gas emissions are affected during the rewetting project. CO<sub>2</sub>, N<sub>2</sub>O and CH<sub>4</sub> measurements were made during the snow-free period in 2022 and spring 2023 with a GASMET GT5000 terra. The water content was measured with a WET sensor, and the position of the groundwater surface was measured in groundwater pipes.