



The MOMENT Project - Permafrost Research Towards Integrated Observation and Modelling of the Methane Budget of Ecosystems

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Estimates of the future methane (CH₄) budget of northern permafrost landscapes remain highly uncertain with projections ranging from negligible to major CH₄ releases to the atmosphere.

The German collaborative MOMENT project aims to address important gaps in process understanding of the high-latitude methane cycle using multi-scale methane flux observations in western Greenland linked to microbiological and biogeochemical laboratory studies. Through an innovative model-data integration framework, these novel datasets will be used to develop and evaluate land surface schemes of German Earth System Models (ESM) across terrestrial systems and multiple scales with the overarching goal to reduce uncertainties in future greenhouse gas projections.

We will introduce the overall project along with the innovations in experimental and observational techniques that facilitate observations at remote Arctic locations as well as in the lab. New remote sensing products allow for wall-to-wall mapping of structures on the finest scale across the Arctic, while novel computational infrastructure and modelling frameworks help with integration of all this information into next generation ESMs.

Selected preliminary results of the first field season and lab experiments will be highlighted.

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