Validation of a methane emission model using eddy covariance observations and footprint modeling.

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Several methane emission models were developed recently to quantify methane emissions. However, calibration of these models is currently performed using chamber flux methane measurements, which have a number of limitations, such as small footprint area and low temporal resolution. Furthermore, chamber measurements are unsuitable to register ebullition events, which can have a significant influence on observed fluxes. Eddy covariance measurements on the other hand provide high frequency (5 to 20 Hz) data and cover larger areas, while being a non-intrusive way to measure fluxes and account for ebullition.

In this study, we present a validation of methane emission model using eddy covariance data, collected in summer periods at the Indigirka lowland site in Eastern Siberia. A flux footprint model was used together with a high resolution vegetation map of the area to retrieve vegetation distribution inside the footprint. Subsequently, this data with eddy covariance data is used to calibrate a methane emission model.