



Atmospheric methane time series from Finland and Siberia: source areas and surface flux estimates

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We present atmospheric methane concentrations from a diverse set of Finnish stations and Tiksi, northeastern Siberia, and associate them with source areas and surface fluxes. In Finland, synoptic time scale concentrations are consistent with observations from the WMO/GAW site Pallas, with little difference in mean concentration in well-mixed cases. However, source areas determined with a backward dispersion model show that there is a gradient in sensitivity to both anthropogenic and wetland emissions among the stations. We estimate these flux components in the northern parts of Europe using the available observations. In Tiksi, the concentrations are consistent with nearby micrometeorological measurements and a remote-sensed wetness distribution in the region. Wintertime concentrations are usually close to background concentrations in a global transport model, and overall there are few events attributable to the ocean. In a Bayesian atmospheric inversion with weather-independent emissions, the oceanic source is about a third of wetland emissions in our study area that covers most of northern Yakutia and the East-Siberian Arctic Shelf.