

Estimation of Methane Fluxes by the flux footprint technique

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This work will focus on the development of an indirect method for estimating methane fluxes and the contributing source areas from Paddy Fields and Wetlands. A micrometeorological model has been developed based on the estimation of footprints of scalar methane concentration measurements in the atmospheric surface layer. The model is based on an analytical solution of the Eulerian advection-diffusion equation for vertical diffusion; model parameters include the location of the methane analyser and standard surface layer scaling factors. Flux chambers, which are commonly used for measuring methane fluxes from agricultural sources, cannot replicate the real atmospheric conditions.

Common micrometeorological techniques for determining fluxes, such as vertical gradient measurements or eddy correlation methods, yield a flux magnitude but give practically no information about the source location. On the other hand the flux footprint describes the expansion and contraction of the required fetch under varying atmospheric stabilities. Preliminary results from the model are quite encouraging and agree well with those from flux chamber measurements.

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