

A portable automatic chamber system for measurement of CO₂ and CH₄ fluxes in wetland vegetation

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Chamber flux measurements of CO₂ and CH₄ fluxes from soft wetland source are subject to errors due to induced ebullition during measurements. Even when appropriate boardwalks are constructed at such sites, ebullition may be induced during the measurements, causing overestimation of CO₂ and CH₄ fluxes.

We constructed an automatic chamber system for near-continuous automatic measurements. The system consists of round, transparent chambers, with a lid operated by airpressure. The system is constructed in such a way that shocks and vibrations of the chamber due to movement of the lid are minimized. The system is easy to transport and install. The system connects to a Los Gatos portable greenhouse gas analyzer for CO₂, CH₄ and H₂O. Data processing is done using easy to operate Matlab scripts.

The system has been tested in the summer of 2015 at two sites in the Netherlands, Horstermeer and Ilperveld. Preliminary data show that previous CO₂ and CH₄ fluxes may have been influenced by induced ebullition. This influence may last for several hours after installation of a chamber system.