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A new method to continuously monitor trace gas flux

N. Nickerson, D. Risk, G. McArthur, and H. Beltrami
ESRC, St. Francis Xavier University, Nova Scotia, Canada (nnickers@stfx.ca)

Here we present a new method by which the flux of a gas or gases can be measured and monitored continuously. The method relies on a passive diffusion probe and a mathematical flux approximation originally developed for heat flow research. The probe is simple, rugged and has no moving parts making it ideal for winter use or for deployment at infrequently serviced field sites. The reliability of the method has been proven through model simulations, experimental and field trials and careful comparison with industry standard LiCOR chambers. In this poster we present data showing 1) probe benchmark tests in the lab, 2) continuous fluxes in simulated summer conditions, 3) overwinter fluxes at a frost-prone bare soil sites and 4) overwinter fluxes under a deep snowpack. Ideally, this measurement system will provide an inexpensive and reliable method by which soil fluxes can be continuously monitored, especially under harsh winter conditions that present significant challenges for current technologies.