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Atmospheric Measurement Techniques Discussions

Interactive comment on "Technical note: A closed chamber method to measure greenhouse gas fluxes from dry sediments" *by* Lukas Lesmeister and Matthias Koschorreck

Anonymous Referee #1

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The technical note addresses the problem of sealing a chamber to a stony ground for performing flux measurements. Getting chambers gas-tight under such environmental conditions is indeed a problem. The note describes the testing of different sealing materials on the flux of CO2 and found that potting clay was a reliable sealing material. The study addressed inertness and tightness of the sealing materials in the lab and applied the sealing techniques under field conditions.

I found this paper a nice short story on a technical problem of wide interest to people working with chamber techniques to measure gas fluxes. The study is well done and well described. I assume it will be of interest to many readers.

General comments: 1.Chamber measurement on soil ground also have the problem of

tightness and gas diffusion through the soil between inside and outside the chamber. These general problems are only much stronger when the ground consists of gravel or stones instead of soil. The authors may wish referring to older literature on diffusion through soil below the chamber walls, e.g. G. P. Livingston and G. L. Hutchinson. Enclosure-based measurement of trace gas exchange: applications and sources of error. edited by P. A. Matson and R. C. Harriss, Oxford:Blackwell, 1995, p. 14-51; or, G. L. Hutchinson, G. P. Livingston, R. W. Healy, and R. G. Striegl. Chamber measurement of surface-atmosphere trace gas exchange: Numerical evaluation of dependence on soil, interfacial layer, and source/sink properties. J.Geophys.Res. 105:8865-8875, 2000.

2.The lab tests of the sealing material were all done with CO2. CO2 is a water soluble gas, which may behave differently than other atmospheric gases that are not well soluble, like H2, CH4, CO. Some gases may also undergo chemical reactions, e.g. CO, NO, sulfur compounds. The field test addressed CH4 and N2O in addition to CO2. However, the tests for inertness were not done with gases other than CO2. I think this problem should be addressed in the discussion.

3. The data shown in the bar graph (Fig.2) should be tested for statistically significant difference.

Technical correction: 4. L.7: the dynamic nature of the habitat is not subject of the study.

5. L.14: give the companies which supplied the materials.

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