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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

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The study of Lesmeister and Koschorreck addresses the important issue of an airtight, non-influencing sealing strategy of chambers when measuring GHG emissions from dried aquatic sediments with coarse particles. Therefore different materials are tested within an approach, which combines a laboratory experimental setup with a short field study to find the most appropriate sealing material. In general the study is well designed and written, and thus suitable for publication in AMT. However, I have some major concerns: - within the abstract/ introduction especially the problem of coarse (rocky) material is mentioned (L7), however, the field study seems to only test the different sealing materials on sand and mud but not on coarse material (e.g. gravel). –

did you tested whether only slightly inserting the chamber into the sand or mud would have yield in similar results during the field study (important for generalization of made statements!)? - testing silicone for sealing is mentioned in section 1.1 (L14), but not tested during the field study (or mentioned) - was the wetted clay tested during the laboratory test as well (L14: "a little water was added to the clay")? - I am curious about the drastic differences between on-site material and clay used for sealing at the river sand site and at the reservoir site during the field study. From where was the on-site material taken to seal the chamber? Might it be that the measurements were generally disturbed cause the material was taken from around the chamber? - is it right, that the field study only consisted of three to four repetitious measurements per sealing material and site? - might the time needed for sealing (1-2 min) yield in an already increased chamber starting concentration which biases lateron flux calculation? Depite of this, there are also some minor concerns: - Did you test for saturation effects (due to small chamber size and rather high CO2-emissions)? - what kind of statistic test was performed (P4, L24) and was the test performed for the n of only 3-4 - in general more details about used statistics are needed! Statistical tests comparing the fluxes should be added to this figure. The low n should be mentioned here. - P1 L4 erases "probably" - P7 Tab. 2 caption: capitalize "number" - Fig. 1: check the y-axis? Why was the incubation time different for the different materials? Could you add a error band around the line displaying the deviation during the three repetitive measurements (same for Fig. 3)? - Fig. 3: how was the leakage measurement performed during the field study? - please add "aquatic" to the titel ("dry aquatic sediments") - How does Lorke et al. fit as a reference to the MS, if measurements were not performed on dried sediments but water (floating chamber)? - Numbering is wrong (1.3 comes before 1.2) - please add a space between 28 and °C at P2 L26 - please directly address that the laboratory test is only able to detect the combined effect of leakage and CO2 production (which is still suitable for the purpose of the study)!

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