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Biogeosciences Discussions

Interactive comment on "Laboratory measurements of nitric oxide release from forest soil with a thick organic layer under different understory types" *by* A. Bargsten et al.

Anonymous Referee #2

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General comments:

The contribution reports on potential NO release determined under laboratory conditions from organic topsoils. As there is little information on NO release from these ecosystem types, and the measurements were conducted very carefully in a well equipped laboratory, the data is of great value and should be published. However, there is a strong emphasis on safeguarding a high analytical standard, and the data is not consistently adequately presented and discussed. I suggest a more critical contemplation considering sample treatment and the Q10 calculation. This should result in an expanded discussion (chapter 4.3) and a more specific interpretation of the data,

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leading to a coherent message beyond the general importance of the quantification of potential NO fluxes.

Specific comments:

p 204, l 20-25: The two last sentences of the abstract should be improved: It is insufficient to state that effects of. . .”are discussed”, instead the most important effects should be highlighted. The circular reasoning in last sentence should be replaced by tighter message.

p 205, l 12-14: “Although. . .” Split this awkward sentence into several shorter ones.

p 205, l 19-20: “Nitrification. . .” Delete this unnecessary sentence.

P 206, l 19: Deschampsia caespitosa is the correct spelling.

p 206, l 21-24: “”Other. . .” Delete this unnecessary sentence.

p 207, l 25 to p 208, l 1: I have qualms about naming soil samples according to ground vegetation following removal of biomass, sieving, and long time storage. Looking at Tab. 3, I get the impression that soil parameters within “vegetation types” differ more strongly than between them. You need to show that this variability is due to the (removed) ground vegetation rather than other factors. This will be difficult with two replicates.

p 208, l 11: “>3” The way soil moisture is presented in this contribution is uncommon outside the soil hydrology community. As you aim for an audience outside this community, you might consider employing another way of presenting soil moisture data.

p 209, l 20: “chemiluminescence” Shouldn’t it be “chemoluminesence?”

p 210, l 15-17; “This procedure. . .” The presented procedure only gives data for a drying cycle, not wetting one. For CH4 release, there are reports of hysteresis. Can this be expected for NO as well?

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p 212, l 1: obtain instead of “obtail”

p 212, l 16-21: Constructing a Q10 based on just two data points is bold, if not impossible.

p 217, l 18-20: “Net NO release. . .” You did not examine a soil under blueberry cover. Please find a more suitable expression.

p 221, l 8-9: “,not to mention. . .” Again, I doubt that you really examined the influence of the understory type. In your setup, there were no live roots and the importance of live roots for gaseous N species is well known.

p 223, l 16: “WFPS” Here, you switch to WFPS. Why don’t you stick to WFPS throughout the manuscript?

p 224, l 10: vary instead of “are varying”

p 224, l 18: Therefore instead of “Therfor”

p 225, l 26-27: “We obtained. . .” I am not surprised about your wide range of Q10 values: Two replicates per “plot” and two data points on the Q10 curve are not sufficient for drawing well founded conclusions.

p 226, 1st paragraph: Please condense the number of citations to 3 per sentence. p 226, l 8-11: “no very significant. . .” Statistical significance is well defined. So the word “very” is not needed here. Are you sure that a probability level of 0.1 is defined as “significant”?

p 227, l 11: “small relationship” This sounds strange. Please rephrase.

p 28, l 6: delete “biologically”

p 28, l 20: “those species, which can exhibit. . .” Please rephrase.

Entire subchapter 4.3: The importance of understory vegetation on NO fluxes is very nicely described. Now you need to point out what this means to the fluxes you de-

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termined in the laboratory (presence of roots vs. no roots and other issues). Please extend this chapter. In the present state, you are not doing your data justice.

p 229, 1st paragraph: It should say: “In this study, we investigated the net potential NO fluxes from the organic layers of soils. . .”

p 229, l 13: “of this study. . .” Delete “is” following “study”. Please write “vegetation” instead of “types”.

p 229. L 16: the comma following “indicated” in not needed.

Tab. 4, caption: Please give an explanation of the abbreviation PD.

Fig. 8, caption: Sorry, but the caption suggests that the measurements were done on patches covered by different kinds of vegetation. Instead, they were done on sieved organic topsoil.

Interactive comment on Biogeosciences Discuss., 7, 203, 2010.