

Interactive comment on “Response of CH₄ emission to moss removal and N addition in boreal peatland of Northeast China” by H. N. Meng et al.

H. N. Meng et al.

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Responses to the reviewer's comments (bgd-11-3365-2014)

Dear editor,

We have received the comments on our manuscript entitled “Moss removal and N addition interact to affect CH₄ emission in boreal peatland of Northeast China” (bgd-11-3365-2014). We are very grateful to give us the opportunity to revise our paper. We thank the two referees for their thorough reading and their constructive comments and suggestions, which have helped us to improve the quality of our manuscript. According to the comments of the referees and the editor, we try our best to address the issues raised and to revise the manuscript. The detailed responses to the comments are

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attached. We hope you would be satisfied with the revised version.

If you have any questions about this paper, please contact us without hesitate.

Best wishes!

Sincerely,

Changchun Song

Responses to the comments from Reviewer

Detailed comment 1: In 2.1 study site, the amount of nitrogen deposition or nitrogen load (including urea fertilizer load) in the study area should be stated, and the height and coverage of the dominant species should be given.

Response: We thank the reviewer's comment. According to the suggestion, we have presented the rates of N deposition in the study site on the page 3-4, line 96-97 in the revised manuscript. Meanwhile, we have added the height and coverage of the dominant species on page 4, line 101-102 in the revised manuscript.

Detailed comment 2: P3372 L 12-13: the result and conclusion of “Across the three growing seasons, methane flux decreased linearly with increased soil temperatures ($p < 0.05$, Fig. 4a)” should be cautious, although the P value < 0.05 , the R₂ is very low.

Response: We thank the reviewer's comment. The R₂ is indeed very low, and we wanted to describe the linear relation between methane flux and soil temperatures. We have changed “Across the three growing seasons, methane flux decreased linearly with increased soil temperatures ($p < 0.05$, Fig. 4a)” to “Across the three growing seasons, methane flux exhibited a weak negative relationship with increased soil temperatures (R₂ = 0.02, $p < 0.05$, Fig. 4a)” on page 7, line 215-216 in the revised manuscript.

Detailed comment 3: Fig. 5. “Spatial dependence of seasonal mean CH₄ flux and soil temperature”, I don't know what is the meaning of “Spatial dependence”, it seem not correspond to the contents of Fig. 5.

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Response: We thank the reviewer's comment. We have changed the caption of the Fig. 5 to "The relationships between mean CH₄ flux and soil temperature at 5 cm depth (a,d, g), soil moisture at 5 cm depth (b, e, h) and soil moisture at 10cm depth (c, f, i), respectively".

Detailed comment 4: Whether can give some data of the water level above ground in the three years, especially in 2013? And discuss the effects of rainfall and water level above ground on methane emission.

Response: We thank the reviewer's comment. According to the comment, we have added the information on water table as supplement in the revised manuscript.

Detailed comment 5: Whether can give some data of the re-growth of the plants after cutting?

Response: We thank the reviewer's comment. We have added the data of the re-growth of the plant after cutting on page 7, line 189-195 in the revised manuscript.

Detailed comment 6: The author should have a more deeper discussion on the reasons of the effects of nitrogen addition on the methane flux, including compared with other reports on the effects of urea load on the methane in natural marshes in temperature zone, in different environmental condition, the mineralization rate of urea may be different, and finally affects the effects of urea load on methane production and oxidation, I think the author can give some more convincing explanations on their results.

Response: We thank the reviewer's comment. We have given more explanation on page 9-10, line 251-270 in the revised manuscript. And we have added references.

Please also note the supplement to this comment:

<http://www.biogeosciences-discuss.net/11/C3597/2014/bgd-11-C3597-2014-supplement.pdf>

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Interactive comment on Biogeosciences Discuss., 11, 3365, 2014.

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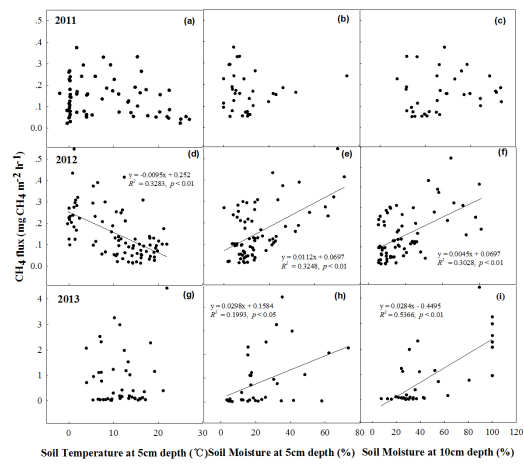


Fig. 1. The relationships between mean CH₄ flux and soil temperature at 5 cm depth (a,d, g), soil moisture at 5 cm depth (b, e, h) and soil moisture at 10cm depth (c, f, i), respectively.

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