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Biogeosciences Discussions

Interactive comment on "Seasonal methane emission from a boreal peatland in continuous permafrost zone of Northeast China: effects of active layer depth and vegetation" *by* Y. Miao et al.

Anonymous Referee #1

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This study reports the seasonality of methane emission from two boreal peatlands with different vegetation, and concludes that the methane flux vary across vegetation type in boreal peatlands. This finding partially supports authors' previous study on natural wetland in another site in northeast China (Song et al., 2009, GCB), while for different wetland types; this study focuses on a boreal peatland in northern permafrost region. To this point, this study is critically important to fill the research gap in China on the current international hot-topic of carbon-rich permafrost in releasing carbon. Meanwhile, the reported methane flux would serve as data basis for methane emission from wetlands in permafrost region. Basically, the experimental design and data analysis are sound; the manuscript is well-written except some writing errors.

Study site and setup

This should be revised to “Study site” or “study site and experiment installation” In this section, the authors describe the two sites with different vegetation types; some information is missing. How far of two sites? How measurements were taken for two sites.

Results and discussion

The author reported that “The active layer depth continuously increased with air and soil temperatures at initial stage. In the late sampling period, the active layer depth still increased with decreasing air and 10 soil temperatures.” While the discussion of effects of active layer on methane fluxes is not quite rich, little inconsistent with the title in which the active layer is emphasized. The authors might want to include more information on potential control of active layer on observed methane fluxes. Meanwhile, the current efforts focus on methane emission in growing season; while the seasonality usually includes winter season as well. So the authors should have some words on this aspect, at least should point out the potential uncertainties derived from this issue.

Specific comments

I saw several occurrences of “both in shrub-sphagnumand- and sedge-dominated plant communities” throughout the ms. It should be “in both shrub-sphagnumand- and sedge-dominated plant communities”

At the end of abstract, I would like to see one sentence to summarize the implication of the findings of this study.

Some words are not accurate and need to be corrected. “Distinct” in line 24 on page 6753; “about” in line 18 on page 6754.

Line 2-4 on page 6754. Confusing. Did you mean “transition from anaerobic to aerobic condition”?

BGD

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Line 4 on page 6756, “by using the static chamber method”. Check the previous publication (such as Song et al., 2009 or Wang and Wang, 2003) for professional description of the method.

Page 6758, 2.5 Data analysis. “Statistic analysis”; the description in this section needs to be re-casted.

Interactive comment on Biogeosciences Discuss., 9, 6751, 2012.