

***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.***

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This MS contains some important valuable information for in site measurements that deserves to be published as it will provide new idea of the influence of natural boreal peatland with different community on CH<sub>4</sub> biogeochemistry process. As noted by the authors, relatively little data is available from choose ecosystems. This study therefore makes a valuable contribution to our understanding of natural boreal peatland CH<sub>4</sub> emission and carbon sequestration variations at a regional scale. But to my knowledge, some more background information, such as what is the climate situation during the study period comparing with long-term patterns, soil nutrient (particularly available

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nutrient), et al., are not clean explained in the text. These should be making more attentions for the revision.

However, the value of the data, in the regard, the MS will be much enhanced if there is some modification in the presentation.

I would suggest demonstrating and discussing in materials and methods section what are the mean ecological different on two measured site, such as biomass weight, plant height, leaf area, root/shoot ratio, et al. This information will strongly support some differences of ecosystem CH<sub>4</sub> effluxes.

It is should be much better if MS can statistic and calculate the exact differences of climate factors between measurement period and long-term annual mean data, particularly, precipitation and temperature. It is also so important to compare the plant growth data different during the measurement period with long-term mean value if the date is available. Most of time, the plant growth situation is more correlation with CH<sub>4</sub> productions and emissions.

It is necessary to show and discussion the variations of soil nutrient data (DOC, Nitric-N, Ammonia-N) of CH<sub>4</sub> active layer, maybe with the microbes and relative soil characteristics. This is basically proving the results of CH<sub>4</sub> emissions from two measured ecosystems.

Lastly, I suggest to make some comparing of CH<sub>4</sub> emissions with others ecosystems in the measured area.

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