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Biogeosciences Discussions

Interactive comment on "Improved quantification of microbial CH_4 oxidation efficiency in Arctic wetland soils using carbon isotope fractionation" *by* I. Preuss et al.

Anonymous Referee #1

Received and published: 22 January 2013

This study deals with an important issue for Northern permafrost affected wetland soils, the mechanisms involved in the methane cycle. This manuscript fits perfectly to Biogeosciences as the studied fundamentals of the oxidation and diffusion of methane in water saturaded soils are also of great interest for methane dynamics at larger scales. Furthermore, the manuscript represents a well planned and scientifically sound study. There are only minor flaws which should be considered by the authors. The tense should be checked and kept consistent throughout the manuscript. There are also some sentences which are a bit complicated to read, in this respect it would be nice if a native speaker would look over the manuscript.

One major concern is the representativeness of the sampled spots, was there any pre-assessment before the samples were taken? It would be nice if the authors could back up the choice of the sampled soils/spots, e.g. by C and N contents or distribution of the distinct land forms and/or soil types on the studied Island (just a sentence would do it), just to give the reader an idea of the representativeness. The authors state in line 25 (page 17004) "most active" in concert with representativeness for modern delta landscapes. What is meant by that - active in case of sedimentation and erosion or what? And is the aim really to be representative for delta landscapes or could it be more general polygonal Tundra ecosystems?

Line 15 (17005): So just the active layer was sampled? Please add this information. Please also add that you sampled per horizon, one could think you sampled depth layers.

Line 6 (17006): Where did you take the samples, in the soil pits? Please state this in more detail.

Line 4 (17008): At what exact hPa (pF 1.8 or 2.5)?

Line 8 (17012): Here and also in the tables you give everything in wt %, please use SI like e.g. as mg*g-1.

Line 12 (17012): Please write out the word WRB.

Line 8 (17019): Please write "microbial degradation".

Line 18-19 (17020): This sentence sounds a bit awkward, please re-phrase.

Line 13 (17022): Please write " at temperatures occuring in-situ".

Table 1: Please also give the depth ranges and not just the mean depths of the horizons. And as mentioned before, please give the Corg in mg*g-1 (SI unit).

Interactive comment on Biogeosciences Discuss., 9, 16999, 2012.