

Interactive comment on “Methanotrophic activity and diversity in different *Sphagnum magellanicum* dominated habitats in the southernmost peat bogs of Patagonia” by N. Kip et al.

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h.opdencamp@science.ru.nl

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Rebuttal: Anonymous Referee #1 This is a nice paper that describes methanotroph diversity in *Sphagnum* dominated peatbogs in Patagonia. This has been achieved by studying 16S rRNA gene sequences and particulate methane monooxygenase sequences using a comprehensive *pmoA* microarray plus complementary *pmoA* clone library analysis. The work has been carefully done and the manuscript is clear and concise. The only problem I have with the work is that the authors perhaps play down the potential importance of facultative methanotrophs in this environment. There are

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now primer sets specific for the facultative methanotroph *Methylocella* and if these have not been used, the possibility of their use in the future could be mentioned. Also, the fact that *mmoX* was not detected is surprising (again there are other *mmoX* primer sets that could be tried, including for *Methylocella*) given the abundance of *Methylosinus* and *Methylocystis*, many of which have a soluble methane monooxygenase. So do some *Methylococcus* and *Methylomonas* species. This is at least worth a comment.

REPLY: Many thanks for the interest in our work. To detect *Methylocella* spp and other methanotrophs, containing the *mmoX* gene, we performed a PCR using five different *mmoX* primer combinations derived from the literature (Miguez et al., 1997; McDonald et al., 1995; Auman et al., 2000) with DNA from the different peat ecosystems and the reference strain *Methylocella palustris* as a template. No PCR product was obtained from the environmental samples. The new primers for real-time quantitative PCR developed by Rahman et al. 2011 were not used, because we preferred more general *mmoX* primers, instead of species specific ones. Indeed besides *Methylocella* we would maybe expect to find *mmoX* genes of *Methylosinus*, *Methylocystis* and *Methylomonas* spp. which were detected with the *pmoA* methods, but it is not sure whether these detected species possess a *mmoX* gene. We already suggest it might be due to the primers that detection failed, but we will include a paragraph dealing with the *mmoX* topic in the Discussion section of the manuscript. Suggested text is as follows:

“No *mmoX* possessing methanotrophs were detected despite using different *mmoX* primer combinations (Miguez et al., 1997; McDonald et al., 1995; Auman et al., 2000). This might indicate a low abundance of *Methylocella* species. However, several *Methylomonas* and *Methylocystis* spp. also possess the *mmoX* gene but remained undetected. This might be caused by a limited detection range for the primers or because the methanotrophs present indeed do not possess a *mmoX* gene. For future studies it could be worthwhile to test the recently described more specific *Methylocella* spp. real time quantitative *mmoX* PCR primers (Rahman et al., 2011).”

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References:

McDonald et al., 1995 and Rahman et al., 2011 references were added to the list of references.

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