Biogeosciences Discuss., 10, C693–C695, 2013
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Biogeosciences Discussions

Interactive comment on "Seasonal dynamics of methane emissions from a subarctic fen in the Hudson Bay Lowlands" *by* K. L. Hanis et al.

Anonymous Referee #1

Received and published: 2 April 2013

General

The paper "Seasonal dynamics of methane emissions from a subarctic fen in the Hudson Bay Lowlands" represents a valuable piece of research and I was pleasantly surprised reading the work done by Hanis et al. Overall the article is well written and very well referenced.

It is very important to be able to measure CH4 fluxes during long periods of time and look into seasonal/interannual variability and most important at environmental controls. Data availability of such time series of EC CH4 measurements is scarce and this is a valuable dataset. This research provides good results which can be further used for calculations of GHG balance at site/region or global level and can represent an answer to many questions regarding environmental controls on CH4. I enjoyed reading this

manuscript and I would like to congratulate the authors for delivering such a nice and useful piece of research. I recommend this article for publication in Biogeosciences.

Specific and technical comments:

Page 4541, line 2: insert “and” before 25

Page 4541, line 3: replace “in northern” with “from northern”

Page 4543, lines 15-25: I would suggest including these dates into Table 1; would be much easier to follow the trend of snow melt. You could also add there the length of growing season for each year.

Page 4546, line 23: merge the two sentences as following:”. . .growing season, the data. . .”

Page 4546, lines 24-26: perhaps added to table 1?

Page 4548: within section 3 (3.1, 3.2. . .) please define “normal” when you talk about precipitation, temperature. . .I guess you refer here to the 1971–2000 Climate Normals for Churchill, Manitoba but make sure it is clear within the text.

Page 4548, 3.2, line 23: will you be able to insert an explanation on why did you focus only on 2009, what happened with capturing the other years’ spring melt?

Page 4550, 3.3: please start with a paragraph in which you explain what happened with the other years’ coverage. . .why 2011 was mostly covered and other years not?

Page 4551, line 26: will you be able to show inter-growing seasonal variations in Fig 2?

Page 4552, 3.5: You reference very well your annual emissions how about looking into literature for interannual variability? Do you observe similar trends, is everywhere 2008 a high emitting year and 2010 a low one?

Page 4553, line 1: delete “also”

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Page 4553, line 2: delete ", and" and replace with "; in contrast"

Page 4555, lines 1-13: regarding winter fluxes, some say that it may contribute to up to 40% (Saarnio, 1999) and others to 10% of annual CH4 budget (Rinne 2007). . .probably truth is somewhere in the middle. Can you up-scale your emissions and present annual budgets for HBL and see if they fall within literature range (see Pickett-Heaps 2011. Worthy, 2000 and Roulet, 1990)?

Page 4556, line 5: ". . .Greenland where measurements. . ."

Interactive comment on Biogeosciences Discuss., 10, 4539, 2013.