

Interactive comment on “Annual emissions of CH₄ and N₂O, and ecosystem respiration, from eight organic soils in Western Denmark managed by agriculture” by S. O. Petersen et al.

Anonymous Referee #2

Received and published: 2 November 2011

The manuscript gives a welcome and much needed comprehensive compilation on CH₄ and N₂O release as well as ecosystem respiration from several sites in Denmark. The manuscript is well structured and well written and Tables and Figures are of high quality. There are, however, some issues that call for clarification. I recommend acceptance of the Discussion Paper following adequate consideration of these issues.

10020, 11-12: I suggest refraining from quoting too many references. Two recent ones should be enough.

10022, 1-2: I hardly can imagine that it was impossible to find that kind of land use on peat in such a large region. Of course, it is sometimes hard to get access to all sites

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one would like to measure on. What means "could be found"?

10022, 15: The absence of fertilization during the measurement period is a problem to the validity of your dataset. Please devote a paragraph or two in the discussions chapter on why you are sure that the absence of fertilization does not cause biased flux data. Please also give the amount of atmospheric N deposition.

10023, 3-4: Where did you install the tube? At every pair of sampling points?

10023, 17-20: When did this happen? How did the data from the climate station fit to data from your monitoring site?

10024, 17: Did you use transparent or dark chambers?

Chapter 2.4: Please create a subchapter on temporal upscaling procedures and statistics. How did you calculate the annual estimates? How were error margins calculated?

10030, 1st paragraph: Does this not belong to the Materials & Methods section?

10032, 10-11: "...which is like...": This is part of the discussion.

10034, 5: Early spring, not spring

10035, 8-13: How did you calculate the Q₁₀? Why didn't you calculate it for CH₄? Q₁₀ is critical for the calculation of annual ecosystem respiration and it changes over time. Please give more information and discuss.

10040, 25: Check spelling of the authors name.

10041, 1: Preferential gas exchange via aerenchyma is also an issue when peat structure is intact.

References: Lloyd & Taylor is missing, Maljanen et al is given before Madsen ==> Check References section again

Table 1: Give geographical coordinates of the sites and a map of Denmark showing the sites and the three regions.

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