

Interactive comment on “Spatial and temporal variation of methane emissions in drained eutrophicpeat agro-ecosystems: drainage ditches as emission hotspots” by A. P. Schrier-Uijl et al.

K. Küsel (Editor)

Kirsten.Kuesel@uni-jena.de

Received and published: 9 July 2008

Dear authors,

thank you for the submission of your manuscript, which has been reviewed in the Interactive Public Discussion by two experts. Measurements of methane (CH₄) emissions from degraded peatlands are important to estimate the contribution of the trace gas CH₄ as greenhouse gas to global warming. The authors aimed to (i) correlate CH₄ emissions with environmental parameters, (ii) determine the mean flux associated with certain landscape elements, and (iii) provide spatially integrated flux measurement.

Especially the first referee raised major concerns about the novelty of the results and
S1048

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



the poor degree of explanation of the CH₄ fluxes. Biological parameters like microbial and vegetation activity were not addressed which might be the main drivers of methane emission. The missing presentation and discussion of uncertainties and robustness of the results weakens further the credibility of this study. Although the second referee was more positive, he/she also recommended that the analysis of the data could be done deeper and the measuring period could be longer.

The authors responded to both referees and tried to highlight the novelty of their findings and addressed the issue of the uncertainty of balances. Both parts were only partially convincing to me. Thus, I contacted a third expert in the field.

He/she summarized "that the paper is scientifically weak, very short, and has major flaws in the presentation and interpretation of the data. The discussion is in great parts a repetition of the results chapter".

He/she further addressed in more detail the following points:

1) Section 2.3: INNOVA is normally not sensitive enough for field fluxes of methane on drier lands (less than 15 cm water table) - cross check with GC was not done! Five point measurements at one minute intervals with a total of 5 minutes enclosure time is much too short especially with INNOVA sensitivity! Good practise is at least 30 min (five points) and when samples are analyzed with GC. Soil temperature determined at 10 cm is normally too deep for good flux correlations. Water table was recorded automatically at one or two places in the field, but no further manual measurements were done to link to the plots and the plot fluxes.

2) Section 3.2: The correlations (r^2) between CH₄ emissions and temperature for ditches (0.216-0.295) and fields (0.212-0.371) are extremely low. Maybe this is a product of high errors in flux calculation because of INNOVA sensitivity. Since the water table levels was under 15 cm below surface, no CH₄ explanation is to be expected with water table fluctuations! This seems new to the authors.

[Full Screen / Esc](#)[Printer-friendly Version](#)[Interactive Discussion](#)[Discussion Paper](#)

3) Vegetation information is mostly lacking, but vegetation plays an important role for the CH₄ fluxes in wetlands.

4) Figure 4 is extremely scattered, I really wonder, if the p values are OK of the regressions. But I deeply doubt that these fits can be used to calculate reasonable annual balances.

5) Table 1 and Table 3: The results were given without any error estimate. This is not good practise, this is not scientific level.

Thus, the third referee also raised major concerns about the quality of the scientific data. Since your manuscript has failed to satisfy two referees, I had to decide that your publication does not reach the standard required for publication in BG. You will appreciate my need to be highly selective of the papers accepted, given the ever increasing rate of submission to this journal. I am very sorry to disappoint you but hope that this decision will not discourage you from submitting future manuscripts to Biogeosciences.

Best wishes

Kirsten Küsel

Interactive comment on Biogeosciences Discuss., 5, 1237, 2008.

BGD

5, S1048–S1050, 2008

Interactive
Comment

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

