

Biogeosciences Discuss., author comment AC1
<https://doi.org/10.5194/bg-2022-156-AC1>, 2022
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Reply on RC1

Laura Clark et al.

Author comment on "Duration of extraction determines CO₂ and CH₄ emissions from an actively extracted peatland in eastern Quebec, Canada" by Laura Clark et al.,
Biogeosciences Discuss., <https://doi.org/10.5194/bg-2022-156-AC1>, 2022

We thank the Reviewer for the detailed comments on our manuscript.

Introduction

-lines 47-50 please give an explanation what do you mean under the peat quality? Some economic value or quality for microorganisms or something else?

RESPONSE: we have reworded as "Carbon dioxide production rates indicate the biogeochemical quality (e.g. nutrients, humification etc.) because..."

Section 1.2- for giving the audience the hunch of the significance of the topic, please also bring out the area of peat production sites (e.g. globally) or percent of peat production sites from global peatland area.

RESPONSE: we will add global numbers for greater context.

-lines 81-83- GHGs on active milled peatlands was also measured by Salm et al. (2012) (some of the sites in his study), please also consider his work in the introduction and also in the discussion.

RESPONSE: added as per reviewer

Methods

Section 2.1: I would prefer to have more background data about the sectors of the site, like peat layer thickness, and some general parameters such as pH, peat decomposition

Section 2.1: Also I would like to have the information if the similar peat production works were done on all sectors in similar amount. Also, if similar amount of peat per hectare (or production field) was removed in all sections. In peat production, they tend to remove different amounts depending on the peat decomposition (e.g. white, brown or black peat)

RESPONSE: we have the above information from student theses, we will add the information as per above.

Section 2.2: how often the chamber measurements were made? Maybe you could also give the number of measurements per sector.

RESPONSE: could be added in summary table

Line 150-151: was peat temperature profile measured during each flux measurement campaign?

RESPONSE: yes it was. Line in text modified "For each measurement, peat temperature was taken..."

Results

I would like to have the short analysis of all measured variables (peat temperatures at different depth, peat volumetric water content), e.g. average values with standard deviations or some table, per sections. The the rest of the results sectors can be easier to discuss; In different parts 3.1.2, 3.2.2, 3.4.1 sentences with long lists of numerical results are given (marked in yellow in uploaded pdf), although the results are also presented in easier to understand figure. I would prefer the numerical results as a table (maybe in annexes), to make understanding these values easier.

RESPONSE: agree that the text can get a bit cumbersome. We will condense these into summary tables and reword to highlight main findings. Editor, please advise if these are best in the text or in supplementary information.

Discussion

Lines 360-364: discuss also the results of Salm et al. 2012

RESPONSE: added sentence to discussion reporting the mined results in Estonia.

Lines 378-379: it is said that there is almost no influence of surface temperatures on measured CO₂ flux, but you also measured temperatures in deeper peat layers, what about those?

RESPONSE: there was no correlation with deeper soil temps but no attempt at correlating with time-lag temperature was made

REVIEWER 1 COMMENTS IN THE M/S (supplement)

GENERAL RESPONSE: All issues related to citations (missing or not in reference section) have been addressed. All minor editorial suggestions and changes have been accepted.

2.1 The site coordinates were indeed incorrect and these have been corrected.

Around Line 380, the citation to be added is a Pers. Comm. with an industry scientist.