Anonymous Referee #2, 20 Apr 2024

We thank the reviewer for the positive and constructive evaluation of our manuscript. All comments are 1-by-1 addressed below and will help us greatly to further improve our study. Note that we found a slight inconsistency in the calculation of several of the NECBs and average groundwater tables. This means that a revised version of the manuscript will contain some updated values of NECBs and groundwater tables, and relationships with NECBs that have been adjusted accordingly. However, these changes do not affect the overall conclusions or the interpretation of our results.

The manuscript is based on an impressive dataset and is clearly written and good English language. This kind of information on the effectiveness of GHG mitigation measures on peat soils and methods to estimate the emissions based on environmental variable is urgently needed. Comparison of the WTD-NECB relationship in different datasets (Fig. 9) was especially interesting in this manuscript. I have only minor comments.

Thank you for the kind words and positive assessment of our work.

Title: I'm not sure if the title should start with "Using automated transparent chambers to quantify…" as this was not a methodology-oriented paper to my opinion. I would stress the large dataset by including the number of sites and probably "continuous measurements" in the title if needed. Could it be: CO_2 emission reduction potential of water infiltration systems at six drained coastal peatland sites in the Netherlands.

Thank you for the suggestion. We will remove the automated transparent chamber part of the title and revise it to: "CO_2 emissions of drained coastal peatlands in the Netherlands and potential emission reduction by water infiltration systems"

I think the infiltration system you used is also called submerged drainage. If this is true, please also include this term in the methods section to make it clearer for readers who are less familiar with (Dutch) drainage systems.

This is true. We will add this clarification in the revised manuscript.

In order to understand the functioning of the WIS, a figure on the WTD variation within a year would be useful.

We will add a Figure S2 that contains timeseries graphs showing hourly values of the average water table depth (WTD) for the control (CON) and water infiltration system (WIS) plot for each of the studied locations.

Table 1: should the title in the 6th column be "ditch WTD", not "aim".

We will revise this to "targeted ditch WT" to reflect that the values in this column are not measured values but ditch water tables targeted by the water authority.

Line 347: is-->was

We will correct this accordingly.

Line 370: add also the mean value (all sites) for NECB.

We will add the mean value of the NECB across all sites to the revised manuscript.

Line 412: This kind of observations on the proportion of C lost annually do not widely exist. You could add it to the abstract.

We will add this to the abstract.

Line 478: Paludiculture is not a water management system but a cultivation system. You could even use WIS to raise the WT for paludiculture (if possible to raise the WTD to 20 cm). I suggest revising this sentence e.g. to: Apart from WIS, typically leading to moderate WTD increase, more efficient WTD regulation could be implemented to allow paludiculture (Geurts et al., 2019; Martens et al., 2023) or restoration to a full peat growing ecosystem (Nugent et al., 2019).

Thank you for the suggestion. We propose the following revised text:

"Apart from WIS, which typically leads to a moderate WTD increase, more drastic WTD regulation could be implemented to allow paludiculture (Geurts et al., 2019; Martens et al., 2023) or restoration to a full peat growing ecosystem (Nugent et al., 2019) as more effective measures to limit (or even reverse) peat loss (Girkin et al., 2023)."