

Response Letter

Public justification (visible to the public if the article is accepted and published):

Thank you for your comprehensive and thorough revision of your manuscript. The main concerns of the reviewers have been addressed. Additional partitioning methods based on machine learning and quantitative comparison of methods have been added.

In my opinion, the following points have to be improved first (minor revisions) before this manuscript will be acceptable for publication.

Response: Thank you very much for recognizing that we have addressed the major concerns raised by the reviewers. We also sincerely appreciate your additional suggestions for further improving the readability and presentation of the manuscript.

Following your comments, we have carefully revised the manuscript throughout to improve its clarity, readability, and overall presentation. Below, we provide a detailed, point-by-point response to each of your comments and describe the corresponding revisions made in the manuscript.

We hope that these changes have further improved the quality and readability of the manuscript, and we sincerely thank you for your time and constructive feedback.

- Please double check for the entire manuscript, where you can use defined abbreviations, such as ET, T and E, and where you should write out the words (e.g., in lines 73-78 you use ‘transpiration’ and ‘evaporation’, where you could also just use ‘T’ and ‘E’). For instance, use no abbreviations in titles or at the beginning of sentences. Check if you have defined all abbreviations in the text, when you use them the first time.

Response: Thank you for your helpful suggestion. We have carefully reviewed the use of abbreviations throughout the entire manuscript and Supplementary Material, including the abstract, main text, section headings, figures, tables, and their titles and captions. We have revised the manuscript throughout to ensure that all abbreviations are defined at their first use and used appropriately thereafter. We have also ensured that abbreviations are not used in titles or at the beginning of sentences.

- line 68: please rephrase, maybe as follows: “In fact, it cannot be guaranteed that these methods are suitable for wetlands, ...”

Response: Revised as suggested. (Line 71 in the tracked-changes version).

- line 85: It should say “...relationships between carbon uptake and water...”

Response: revised as suggested. (Line 90 in the tracked-changes version).

- lines 95-96: It should say: "...reported moss contributions to cumulative community-level photosynthesis of about 1.5%, 35.2% and 41.2% in ..."

Response: Revised as suggested. (Line 100 in the tracked-changes version).

- Table 1: The definition of 'Ph' is missing (used in the description of PP method). Please add in Notes under table or don't use it.

Response: Thank you for pointing this out. Based on the PP method (Pérez-Priego et al. (2018)), the "Ph" is the EC-inferred photosynthesis rate expressed as the molar flux density ($\mu\text{mol CO}_2 \text{ m}^{-2} \text{ s}^{-1}$). We revised it to "EC-inferred photosynthesis rate" for better clarity. (Table 1 in the tracked-changes version).

- line 200: 'Poplar' with capital 'P'. Please check entire manuscript for correct study site names.

Response: Thank you for your suggestion. We have revised this as suggested and carefully checked the entire manuscript and supplementary material to ensure that all study site names are used consistently and correctly throughout.

- Table 2: Please change the description of 'vascular vegetation' from complete sentences to bullet points. Maybe, change the format of the table to improve readability. Use one column for each sites and all the characteristics as rows (thus, transpose the table).

Response: Thank you for your suggestion. We have reformatted the description of vascular vegetation using bullet points and transposed Table 2 so that the study sites are presented as columns and the site characteristics as rows.

- line 251: Check the usage of dashes and hyphens in entire manuscript (e.g. for 'S-W model')

Response: Thank you for your suggestion. We have carefully reviewed the use of dashes and hyphens throughout the manuscript and supplementary material and revised them to ensure consistency with the journal's style. For example, "S-W model" has been corrected to "S–W model", and "Priestley-Taylor equation" has been corrected to "Priestley–Taylor equation."

- lines 261-268: Can you add for this paragraph a reference or a figure to the Supplementary material? Or just state "(not shown)" somewhere.

Response: Thank you for your helpful suggestion. We have added the comparison and fitted linear regression as Fig. S6 in the Supplementary Material and referred to this figure in the revised manuscript. (Line 490 in the tracked-changes version).

- lines 326-332: Could you please add your used notations for the different ensemble means in this paragraph: all-method ensemble, HF ensemble, CW ensemble, and ML ensemble?

Response: Thank you for your helpful suggestion. We have added the notations for the different ensemble means in the revised manuscript as follows: “For each day, the overall ensemble mean was calculated as the average of all available model predictions of T:ET and is hereafter referred to as the all-method ensemble. In addition, ensemble means were calculated separately for each method group, referred to as the HF ensemble (Group 1 ensemble), CW ensemble (Group 2 ensemble), and ML ensemble (Group 3 ensemble). These three group-specific ensembles were evaluated against both the measurement-based T:ET time series and the all-method ensemble to assess whether any group of ET partitioning approaches consistently outperformed the others.” (Lines 383 to 388 in the tracked-changed version).

- Fig. 1, 2, and 4: May it be possible to add some kind of mark (e.g., a horizontal bar) in the panels to indicate flooded periods at Poplar and Burstall?

Response: Thank you for your helpful suggestion. We have added cyan bars at the bottom of the Burstall and Poplar panels in Figs. 1, 2, and 4 to indicate the flooded periods. The corresponding figure captions have also been revised to describe these additions.

- line 380: It should say: “Note: R² values ...”. Adjust for all related tables.

Response: Thank you for your suggestion. To improve clarity, we have revised the note in all related tables from "Values greater than 0.5 are shown in bold" to "Any R² or NSE value greater than 0.5 is shown in bold."

- line 386: I guess it should say “Klosterhalfen et al. (2019b)...”

Response: Thank you for pointing this out. The citation has been corrected to "Klosterhalfen et al. (2019b)". (Line 458 in the tracked-changed version).

- Could you please improve the resolution of all figures in the supplementary material.

Response: Thank you for your helpful suggestion. We have improved the resolution of all figures in the Supplementary Material to 600 dpi. We also increased the font sizes of the axis titles, tick labels, panel titles, and legends to improve readability. The only exception is Fig. S3 (site photographs), which was already prepared using the highest-resolution images available, so no changes were made to that figure.

- Table S4: The given RMSE is calculated between what (e.g., measurements vs model)? Could you add a brief info in the table caption?

Response: Thank you for pointing this out. The RMSE reported in Table S4 is the mean test-set root mean squared error of the selected best model across the cross-validation folds. Specifically, using 10-fold cross-validation, the nighttime data were randomly divided into 10 subsets. In each iteration, the model was trained on 9 folds and evaluated on the remaining held-out fold. The root mean squared error was calculated for each held-out fold, and the reported RMSE is the mean across all 10 folds. Following Stapleton et al. (2022), RMSE was used for feature selection, but not for selecting the best model. The best model was selected based on the highest adjusted R^2 , as formulated in Stapleton et al. (2022). We have added this information to the Table S4 caption for clarification.