

## Response to referee comments

### Referee #1

In this manuscript, the impacts of features such as the machine learning algorithm, the temporal scales of the observed flux data, and the PFT of the flux sites on the accuracy of the model were evaluated by the authors. The results of this study can provide some general guidance for the selection of feature factors during future NEE simulations. This manuscript logic is clear and well arranged, in terms of criteria for article selection, the choice of analysis methods, and the uncertainties in this analysis of the article. While, there are some problems need to be revised before this manuscript can be published, following is the detailed advices.

Response: We would like to thank the reviewer for the positive comments and the time invested to review our manuscript. The revised manuscript will follow the reviewer's recommendations.

L34, the 2 of CO<sub>2</sub> should be subscripted;

We will correct it.

L63, "soil temperature(Ta)" in parentheses should be "Ts";

We will correct it.

L68, It can be expressed as "in models that include multiple PFTs" without writing the full name of the PFT;

We will correct it.

L189-191, please rewrite the sentences. I guess the author wants to express that MLR is weaker than ANN, SVM, and RF because MLR did not divide the training and validations sets. The logic of this sentence is confusing because of the inappropriate use of the words "Unexpectedly" and "not worse than";

Response: Thank you for the insightful comments. We will modify the expression of this sentence more logically.

L230, please add references to support "the lag of precipitation and NDVI/EVI in effect on NEE";

Response: Thank you for the insightful comments. References (Hao et al., 2010; Cranko Page et al., 2022) will be added to support this description.

L431-434, the reference title formatting is inconsistent with others;

We will check and correct it.

Figure 3, there is no scale bar and north arrow;

We will add a scale bar and north arrow to the map.

The 2 in  $R^2$  needs to be superscripted in all figures throughout the manuscript, e.g. Figure 5, Figure 6, Figure 7, Figure 8, etc.

We will check and correct them which should be superscripted.

### **References**

Cranko Page, J., De Kauwe, M. G., Abramowitz, G., Cleverly, J., Hinko-Najera, N., Hovenden, M. J., Liu, Y., Pitman, A. J., and Ogle, K.: Examining the role of environmental memory in the predictability of carbon and water fluxes across Australian ecosystems, 19, 1913–1932, <https://doi.org/10.5194/bg-19-1913-2022>, 2022.

Hao, Y., Wang, Y., Mei, X., and Cui, X.: The response of ecosystem CO<sub>2</sub> exchange to small precipitation pulses over a temperate steppe, *Plant Ecol*, 209, 335–347, <https://doi.org/10.1007/s11258-010-9766-1>, 2010.