

Improving the representation of major Indian crops in the Community Land Model version 5.0 (CLM5) using site-scale crop data

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We thank the referees for their suggestion to further improve the quality of the manuscript and the editor for allowing us to respond to the referees' comments.

Below, we provide a point-by-point response to the referees' comments. The comments provided by the referee are in red color, our responses are in black color, and the proposed changes to the text are in green color.

Referee I:

- 1) By way of final recommendations or suggestions to further improve the manuscript, in the methods section, a visual representation of the workflow would be helpful to readers - authors should include a flowchart summarizing methodological steps, from data collection to model evaluation, to improve accessibility. Finally in the discussion section, explicitly state the limitations, such as assumptions about single-season rice crops, and discuss how they might affect the findings. Other than that, the manuscript is primed for publication.
 - a) A visual representation of the methodology is added to the supplementary material in the last revision. An extra text is added to the manuscript to direct the readers to this flowchart in the line 102 of the revised manuscript: "The overall methodology and steps followed in this study are depicted as a flowchart (Figure S1) and explained in detail in the following sections."
 - b) To highlight the major drawbacks of the study and its consequences, the following text is added to the revised manuscript at the line 638: "Although the harvested area of rice grown in rabi and summer seasons is very low (Biemans et al., 2016), it is important to include the rice growth in these seasons in LSMs. This will significantly impact the terrestrial fluxes at the local scale (Oo et al., 2023). The lower LH simulated by the CLM5 models during the rabi and summer season (November to June) compared to FLUXCOM data (Figure S12(a)) might be due to growing rice in kharif season only. However, because of the small areal coverage of rabi and summer rice, their impact on large scale fluxes and weather/climate is likely to be small. This study did not consider other major crops, such as maize, soybean, and pulses, which cover substantial harvesting areas. Future studies should focus on improving the representation of these crops in CLM5 for a comprehensive study of climate impacts on Indian agroecosystems."

In addition to the above mentioned changes, the manuscript is thoroughly checked for typos, grammatical errors and a few sentence corrections (highlighted in tracked changes file). For example, usage of "spring wheat" and "wheat" interchangeably in the manuscript might confuse the reader and therefore, we consistently used "wheat" in the manuscript.