

Dear Editor and Reviewers,

"I appreciate the authors' effort in revising the manuscript. My comments have been satisfactorily addressed. The following are only suggestions for minor edits. I would be happy to suggest the acceptance of the manuscript for publication. 1. L24-25. "One of the reasons for this overestimation could be related to the strong nitrogen fertilization effect observed in MATCRO-Maize." Please consider rephrasing this sentence to avoid the confusion that this states about the CO₂ fertilization effect. One suggested adjustment is "One of the reasons for this overestimation could be related to the strong model response to nitrogen fertilizer observed in MATCRO-Maize." 2. L251. "the calculation of evaporation" This would be evapotranspiration rather than evaporation. 3. L336. Typo. "290year period"."

Reply: We are pleased to hear the news. Thank you very much for the thoughtful efforts that reviewers and editors have taken in this manuscript. Hereby, we have revised as follows:

- 1. Thank you for your comment. We have replaced the related sentence with your recommended wording in **L23**: "One of the reasons for this overestimation could be related to the strong model response to nitrogen fertilizer observed in MATCRO-Maize".*
- 2. We have replaced "evaporation" with evapotranspiration in **L252**, which the related process also includes the transpiration.*
- 3. Thank you for pointing it out. We have revised the typographical error in **L342**: "[...], 29-year period [...]"*

We have also revised our short summary to exclude abbreviations (See Note below) and rotated Table 4 to portrait orientation, as requested by the editorial team in the system notification.

Additionally, we revised certain sentences in the manuscript to enhance clarity and readability in the PDF file with the track changes.

Sincerely,

Astrid Yusara

On behalf of all authors

Note: Short Summary (<500 characters)

We developed a maize version of a process-based crop model coupled to a land-surface model by incorporating photosynthesis for C4 plants and maize-specific parameters. The model was calibrated with field data and literature, and it was extensively validated with global reference yields. The model effectively captured interannual yield variability in global and county-level yield data, demonstrating its potential for assessing the climate impacts on maize production.
