

Dear Editor,

Thank you and the reviewers for the additional feedback on our manuscript. The reviewer lists some good points for clarification, and we have tried to address them in our latest revision. Reviewer and community comments are presented in **blue font**; our labeled responses are in ordinary black font. Thank you again for your consideration.

Response to the Reviewer

Lines 21-24: This is a little unclear and I think the more interesting result to highlight here is that: Without P fertilisation, the model is insensitive to the parameterisation, whereas, with P fertilisation, the model is highly sensitive to the parameterisation.

We agree that this is a good point and have edited the text.

Line 33: See Evaluating nitrogen cycling in terrestrial biosphere models: a disconnect between the carbon and nitrogen cycles (Kou-Giesbrecht et al. 2023).

We agree that this reference is useful and have added it.

Line 70: See Terrestrial Phosphorus Cycling: Responses to Climate Change (Menge et al. 2023).

We agree that this reference is useful and have added it.

Figure 1: Add legend that shows blue/grey colours.

Done.

Figure 4: y-axis label is very hard to read.

We increased the font size.

Line 270-271: Please add this analysis to supplement.

We added the analysis as a supplement.

Lines 340-342: This sentence is very vague.

We added an example to make it more specific.

Line 367-369: Clarify and discuss that this acclimation would occur in the real world and not the model.

OK, we added a bit more detail to the text.

Line 372: This paragraph and the following paragraph would be more useful at the beginning of the discussion section.

We respectfully disagree. We think that the Discussion's first paragraph sets a more appropriate scope for the Discussion section. While this paragraph starting on 372 describes an important question, we thought it was a bit too narrow to lead the overall discussion.

Line 395: I think the more important argument here is that models rarely represent phosphatases or mycorrhizae. Also, Line 126 says that mycorrhizal fungi did not vary which contradicts this statement.

We added text reminding the reader that models rarely represent phosphatases or mycorrhizae. We also added some clarification. It is possible that carbon allocation to mycorrhizae changed without there being a change in the percentage of colonized root length.

Line 424-427: This hypothesis is unclear.

We added some clarification.