

## Reviewer #2

Overall, I think the authors did a very good job revising the manuscript in response to the reviewers' comments. As Reviewer 2, I appreciate the authors' effort in moving much of the key model description from the Supplementary Information into the main Methods section. I also appreciate that the authors addressed my previous requests for clarification on the model calibration setup and several model assumptions. These points are now much clearer in the revised Methods and Discussion sections. The revised manuscript is much easier to follow. It now provides a clearer explanation of how ELM-MYCI modifies nutrient acquisition processes, how the model is evaluated against the SPRUCE experimental data, and what limitations remain for future model development. I also had the opportunity to look over Reviewer 1's comments and the authors' responses, and I think the authors have responded carefully to those concerns as well.

I only have one remaining minor comment. Related to Reviewer 1's earlier concern that "the analysis is sometimes overly complicated" and that "the focus on sensitivity leads to a lot of relative figures where internal variables are compared to each other," I wonder whether Figure 7(c-i) could be made more directly interpretable by showing absolute AR, HR, and AR+HR values, especially because GPP and NEE are already shown in absolute units. I understand that AR/GPP, HR/GPP, and (AR+HR)/GPP are useful for interpreting fractional C losses, but the current presentation makes it difficult to assess how much the absolute respiration fluxes change without multiplying the ratios by GPP.

Once this minor point is addressed, I think the revised manuscript is ready for publication.

Thank you for the positive assessment. We updated Fig. 7 to show absolute AR, HR, and AR+HR values, in addition to the ratios. The plot is simplified so that the AR and HR bars are stacked to show the AR+HR values and ratios. The text description of Fig. 7 is revised accordingly (lines 586-589 of the revised manuscript).