

## Reply to 'Comment on gmd-2021-157'

December 3, 2021

Dear Editor, Thank you for your review and comments on our manuscript. We appreciate your insightful constructive suggestion and expand the discussion following your suggestion. The changes have been highlighted in blue and red fonts in the track-change file by using the L<sup>A</sup>T<sub>E</sub>Xdiff tool. We sincerely hope that the manuscript in its revised form will satisfy the queries of the referee and will be accepted for publication.

The comments from editor and referee are colored black.  
The authors' replies are colored blue.

### **Comments to the author & review by editor**

Dear Authors,

I apologize for the long delay in getting back to you. The second review from one of the reviewers never came back. One of the main comments from this reviewer was the lack of discussion in your manuscript. The reviewer requested an expanded discussion and conclusion, and I agree. I have reviewed the revised manuscript, and i do not think that your edits would have satisfied the reviewer. You have not really expanded much on the discussion and put your work in context of existing literature. Your edits are fairly small, i don't see much expansion at all.

Hence my request is to re-consider this properly. I think you can do a much better job at expanding the discussion and conclusion. It might be helpful to read the discussion sections of good papers in this field, to get a better idea of how to better craft your discussion and conclusion. It is currently rather short. Please give this due consideration in your re-submission.

Kind regards and apologies again for the long delay,  
Jatin

Dear Editor, Thank you for your review and comments on our manuscript. We appreciate your insightful constructive suggestion and expand the discussion following your suggestion. The changes have been highlighted in blue and red fonts in the track-change file by using the  $\LaTeX$ diff tool. We sincerely hope that the manuscript in its revised form will satisfy the queries of the referee and will be accepted for publication.

The main change of this revised manuscript is add a new section to discuss the current knowledge gap on the relationship of the in-canopy process and the dry deposition simulation. We summarized some point from the previous comments suggested by referee and the replies to referee. We also read further literature and re-consider about the importance of the in-canopy dry deposition process. We insist the consideration of biological physiological processes inside the vegetation canopy needs to be continuously refined while the understanding of the land-atmosphere exchange process in the ecosystem grows.

In addition, the comparison with other models and observations are discussed in the fourth paragraph of this section. It is found that the dry deposition velocities of  $\text{NO}_2$  range obtained by most of the model results is basically lower than the observed value obtained by the eddy correlation method, which is relatively consistent with the performance of most of the mechanism simulation results in this study. The limitations and the uncertainties issues of parameters are also discussed in the last paragraph of this section. We believe that it is necessary to further carry out the measurement and accurate characterization of model parameters.

**RC2: 'Comment on gmd-2021-157', Anonymous Referee #2**

Recommendation to the editor

1) Scientific significance

Does the manuscript represent a substantial contribution to modelling science within the scope of this journal (substantial new concepts, ideas, or methods)?

Good

2) Scientific quality

Are the scientific approach and applied methods valid? Are the results discussed in an appropriate and balanced way (consideration of related work, including appropriate references)? Do the models, technical advances and/or experiments described have the potential to perform calculations leading to significant scientific results?

Good

3) Scientific reproducibility

To what extent is the modelling science reproducible? Is the description sufficiently complete and precise to allow reproduction of the science by fellow scientists (traceability of results)?

Good

4) Presentation quality

Are the scientific results and conclusions presented in a clear, concise, and well structured way (number and quality of figures/tables, appropriate use of English language)?

Good

For final publication, the manuscript should be accepted as is

Were a revised manuscript to be sent for another round of reviews:

I would not be willing to review the revised manuscript.

The authors would like to thank anonymous referee RC2 for the previous valuable comments and the suggestions of our work's achievements and noteworthy findings. The authors are very supportive of the referee's opinion that the paper should be accepted as it is.