

Jul, 2024

General comments:

I support the manuscript for publication after several technical and grammar corrections are applied following GMD guidelines: <https://www.geoscientific-model-development.net/submission.html>

We greatly appreciate the invaluable feedback and help provided by topic editor. We have acted upon all points raised and check the grammar, units, citations and figures throughout the manuscript. We have also corrected two unclear sentences (lines 291 and 308). We believe the current manuscript is improved through addressing the review comments.

Detail comments:

- Spaces must be included between number and unit (e.g. 1 %). Please consider this at multiple instances within the text (Lines 34, 85, 89, 227, 253, 356, 370, 384, 385, 393, 394, 395, 405, 406, 407, 413, 448, 449, 452, 454, 456).

Thank you for your comment! We have corrected the format of the unit and ensured that spaces are included between the number and unit throughout the text.

- Units must be written exponentially (e.g. $g\ m^{-3}$). Please consider this at multiple instances within the text (e.g., Lines 147, 180, ...) as well as on Figures and in Figure captions.

Thanks for the important comment. We have modified the units to exponentially throughout the manuscript.

- The abbreviation "Fig." should be used when it appears in running text and should be followed by a number unless it comes at the beginning of a sentence, e.g.: "The results are depicted in Fig. 5. Figure 9 reveals that...". Please consider this at multiple instances within the text (e.g., Lines 365, 376, 378, 382, ...)

Thanks for your comment and explanation. We have modified the abbreviation of figures in the running text accordingly.

- Line 134: "equation (2)" should be "Eq. (2)".

Thank you for the comment. We have modified the abbreviation of equation in line 134.

- Please make multiple changes regarding abbreviations:

a) I would advise you to omit definitions of several abbreviations in the Abstract (SDM, LES, NC), since you don't use them later in the Abstract. The abbreviations have to be newly defined in the Main text anyway.

Thanks for the comment. We have removed the redundant abbreviations in the Abstract.

b) The abbreviation "SDM" is defined twice within the Main text (Line 95, Line 104).

Thanks for the comment. We have removed the redundant definition of "SDM" in line

104.

c) The abbreviation "CS" is defined twice within the Main text (Line 76, Line 95).
Thanks for the comment. We removed the redundant definition of CS in l. 95.

d) The abbreviation "NC" is defined in Line 393; but it should be instead defined earlier (at the first instance in the Main text).
Thanks for the comment. We have defined the abbreviation "NC" in line 347 and removed the redundant definition in line 393.

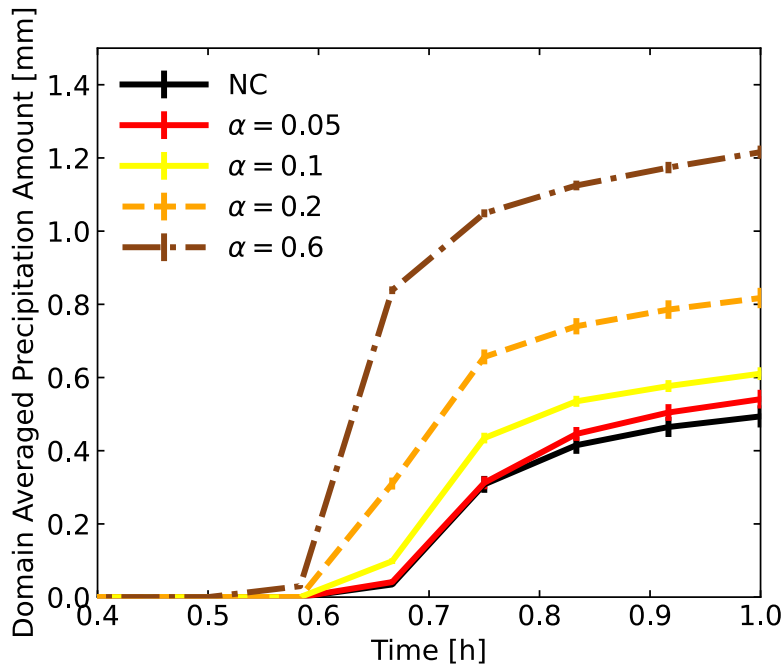
e) The abbreviation "CB" is defined in Line 90; but it should be instead defined earlier (at the first instance in the Main text).
Thanks for the comment. We have defined the abbreviation "CB" in line 63 and removed the redundant definition in line 90.

- I can notice both "Greenfield Gap" and "Greenfield gap" appearing at multiple places within the manuscript. Please use consistent terminology.
Thanks for the comment. We have made the terminology consistent as "Greenfield gap" in lines 77 and 263.

- Please correct reference citations at multiple places within the text, for example:
a) Lines 98 and 484: "(Tinsley and Zhou 2015)" should be "(Tinsley and Zhou, 2015)";
b) Line 487: "(Zelinka et al. 2017)" should be "(Zelinka et al., 2017)";
...
Thanks for the comment. We have double-checked the citations in the text and corrected them accordingly (lines 47, 98, 129, 138, 151, 238, 484, 487).

- A few additional comments regarding optimization of the Figures:

a) As already previously pointed out by the reviewer: the choice of axis ranges in Figs. 3a, 6, 7, 8 is not optimal, since the vast majority of plot area is left blank.
Thanks for your comment. We have adjusted the axis ranges in Figs. 3a, 6, 7, and 8 to utilize the plot area more effectively like:



b) Figure 3: "IM setting" should also be mentioned in figure caption. I would further advise you to employ different colors for displaying results of various settings (NC, CB, CS, IM) in order to improve the readability of the figure (while you can retain different line types).

Thank you for the comment. We have added the "IM setting" information in the Figure 3 caption and changed the colors of different settings in Figures 3-8 to improve readability.

c) Figures 4, 5, 6, 7, 8: Similarly as in Fig. 3 I would advise you to use different (and contrasting !) colors for various results displayed on plot. For example, you often use grey and black lines on the same plot, which might be difficult to distinguish. Choosing bright yellow color as you do in Fig. 8 is also not optimal. Thus please improve the quality of figures.

Thanks for your suggestion. Ditto, we have modified the colors and axis ranges in the revised manuscript to improve the quality of the figures.