
Response to Referee #1

RE: Comprehensive evaluation of typical planetary boundary layer (PBL) parameterization schemes in China. Part II: Influence of uncertainty factors

Author(s): Wenxing Jia et al.

By using 12 sensitive experiments, this manuscript analyzes comprehensively and quantitatively the influence of six uncertainties (including horizontal resolution, vertical resolution, initial and boundary conditions, underlying surface update, near-surface scheme, and update of the model version) on the model simulated meteorological fields. Overall, the manuscript is informative and is a good reference for model users. A few suggestions are as follows.

Thank you for your positive comments and valuable suggestions to improve the quality of our manuscript. Based on these comments and suggestions, we have made careful modifications to our pervious draft, and the detailed point-by-point responses are listed below.

Specific comments:

(1) Abstract: The Abstract may give more detailed information about uncertainties, such as different products of initial and boundary conditions, horizontal and vertical resolution, etc.

Re1: Revised as suggested. We have modified the abstract.

(2) Introduction: The logical flow of the introduction can be improved to provide a clearer view of the model uncertainties research progresses.

Re2: Revised as suggested. We have revised the introduction.

(3) Data and Methodology: The model settings need to be introduced in more detail. Are they the same as the settings in Part I?

Re3: Revised as suggested. As per your comments, we have refined this section and it is indeed the same as Part I's settings.

(4) A figure summing the influence of different factors may be added to the conclusion section, and it will allow the readers to better understand the major findings of this study.

Re4: Based on your suggestion, we have simply added a graph to indicate the degree of influence of different factors.

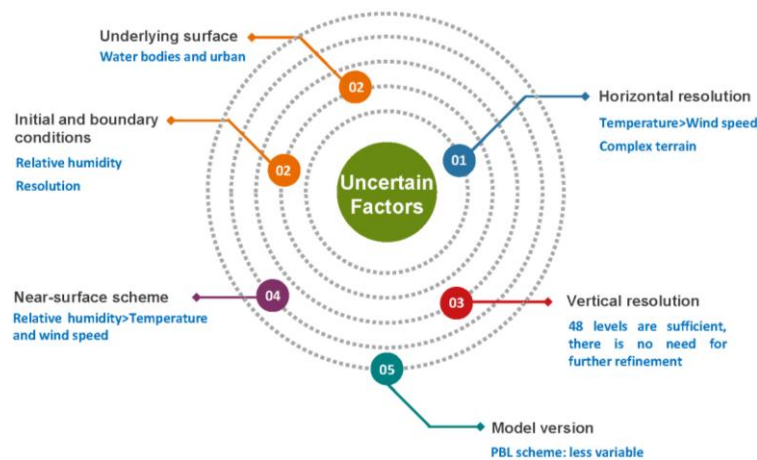


Figure R1. An overview figure of the prioritization of uncertainties, where the uncertainties are in black font and the elements focused on in that factor are in blue font.

Technical Corrections

1. Abstract, L41, the full name of the “EC” in “EC data” should be given.

Re1: Revised as suggested.

2. L48, it may be more appropriate to change “elements” to “parameters”, which are used more often.

Re2: Revised as suggested.

3. L49, “structure” should be changed to “structures”.

Re3: Revised as suggested.

4. L50, “scheme” should be changed to “schemes”.

Re4: Revised as suggested.

5. L51, what are the “different parameters, regions and seasons” included, please indicate.

Re5: Revised as suggested.

6. L76, “higher” should be changed to “finer”.

Re6: Revised as suggested.

7. L80, lack of reference support.

Re7: Revised as suggested, References have been added.

8. L94-96, further clarification on other initial and boundary condition data.

Re8: Revised as suggested.

9. L100-101, lack of reference support.

Re9: Revised as suggested.

10. L115, “(FNL)” should be deleted.

Re10: Revised as suggested.

11. L126-127, “ECMWF” should be changed to “EC”.

Re11: Revised as suggested,

12. L131, “DATA” should be lowercase.

Re12: Revised as suggested.

13. L142, the acronym “IGBP” should be placed in parentheses.

Re13: Revised as suggested.

14. L186, “and” should be changed to “but”.

Re14: Revised as suggested.

15. L191-192, the full name of the “N” and “RB” should be given.

Re15: Revised as suggested.

16. L220, “although” should be deleted.

Re16: Revised as suggested.

17. L221-222, this sentence needs to be reconsidered.

Re17: Revised as suggested.

18. L248, the four stations in each region should be represented again.

Re18: Revised as suggested.

19. L381, “Tianjin” should be changed to “Tianjin Shi”, and three regions are best marked in the Figure 15.

Re19: Revised as suggested.

20. L388, “Chengdu” should be changed to “Chengdu Shi”.

Re20: Revised as suggested.

21. L426-441, “WRFv3.6.1+” should be changed to “WRFv3.6.1+”.

Re21: Revised as suggested.

22. L437-439, this sentence needs to be reconsidered.

Re22: Revised as suggested.

23. Plots in Figures 17a-b are not temperatures but temperature differences.

Re23: Figures 17a-b show the diurnal temperature range (DTR). Revised as suggested.

24. The quality of the images may be improved.

Re24: Revised as suggested, and we checked all the figures.

25. The citation format of the references needs to be corrected according to the journal's requirements.

Re25: Revised as suggested, and we checked all references.