Dear reviewer, dear editor,

We kindly thank you for your critical and productive comments on the revised version of the manuscript. Based on these, we have restructured the manuscript and reformulated specific sections. Specifically, we have made the subsequent changes to the manuscript:

- We have formulated the objective more clearly in the introduction, which we then feature more prominently in the conclusions chapter as well as in the abstract. This way, the overall aim of the paper is clearer and less intertwined with other findings and aspects of the manuscript.
- As suggested, we have created a new chapter 4 which discusses the following three major points: model parameterization, scale commensurability, and computer requirements. This chapter has been complemented with content from the results chapter and the conclusions chapter. In this step, some less relevant or repetitive content was removed. Subsequently, the discussion was extended with new material focusing on the three covered topics.
- As a consequence of the previous two changes, the conclusions and recommendations chapter is now less lengthy and fuzzy but focusses on the main take-away messages.
- In the discussions and conclusions chapters, the topic of scale (in)commensurability of model and observational data has been addressed in more detail, and how it affects the ability to (in)validate the results and modelling approach. As this topic deserves a study itself, we tried to strike a balance between providing sufficient space and depth for this topic without overly extending the manuscript.
- Furthermore, we formulated conclusions in a more balanced way, that is by avoiding general formulations but stressing dependencies with the modelling approach as well as input and observational data we opted for in this study.
- Some very minor cosmetic changes have been made to the manuscript to improve readability and flow across chapters, especially with the newly created discussion chapter.

After having implemented your feedback and suggestions, we feel that the manuscript has improved further and now captures the opportunities and challenges alongside their associated uncertainties better and more concisely.