Reviewer 1

1. Does the introduction provide sufficient background and include all relevant references?

☐ Yes  ☐ Can be improved  ☑ Must be improved  ☐ Not applicable

1. Is the research design appropriate?

☐ Yes  ☐ Can be improved  ☑ Must be improved  ☐ Not applicable

1. Are the methods adequately described?

☑ Yes  ☐ Can be improved  ☐ Must be improved  ☐ Not applicable

1. Are the results clearly presented?

☐ Yes  ☐ Can be improved  ☑ Must be improved  ☐ Not applicable

1. Are the conclusions supported by the results?

☐ Yes  ☐ Can be improved  ☑ Must be improved  ☐ Not applicable

The manuscript titled “ensembleDownscaleR: R package for Bayesian ensemble averaging of PM2.5 geostatistical downscalers”, by Maden et al., describes an R package to estimate PM2.5 concentration based on chemical transport model and satellite-derived AOD. Despite a provided example of PM2.5 estimation at Los Angeles metropolitan area, the manuscript is mainly focused in describing the R package functions and no proper analysis of results are provided. It doesn’t seem suitable for “Remote Sensing” journal and my recommendation is reject it. More appropriate journals could be “R journal” or “Journal of statistical software”. Some recommendations to improve the manuscript are highlighted in the attached document

The remainder of Reviewer 1’s comments are contained in text boxes in the pdf “reviewer\_1\_comments.pdf”.

Reviewer 2

1. Does the introduction provide sufficient background and include all relevant references?

☐ Yes  ☑ Can be improved  ☐ Must be improved  ☐ Not applicable

1. Is the research design appropriate?

☐ Yes  ☐ Can be improved  ☐ Must be improved  ☑ Not applicable

1. Are the methods adequately described?

☑ Yes  ☐ Can be improved  ☐ Must be improved  ☐ Not applicable

1. Are the results clearly presented?

☑ Yes  ☐ Can be improved  ☐ Must be improved  ☐ Not applicable

1. Are the conclusions supported by the results?

☑ Yes  ☐ Can be improved  ☐ Must be improved  ☐ Not applicable

Authors present a statistical and modelling procedure using R package software  aimed to modelling and forecast PM2,5 concentrations.  .

The paper is a technical report so it describes the used procedure. The manuscript is clear and is presented in a well-structured manner.  Figures are relevant and clear

Cited references are relevant but not recent and they need to be updated.

Supplementary file is important to understand this technical report

Review 3

1. Does the introduction provide sufficient background and include all relevant references?

☐ Yes  ☐ Can be improved  ☑ Must be improved  ☐ Not applicable

1. Is the research design appropriate?

☐ Yes  ☑ Can be improved  ☐ Must be improved  ☐ Not applicable

1. Are the methods adequately described?

☐ Yes  ☑ Can be improved  ☐ Must be improved  ☐ Not applicable

1. Are the results clearly presented?

☐ Yes  ☑ Can be improved  ☐ Must be improved  ☐ Not applicable

1. Are the conclusions supported by the results?

☐ Yes  ☐ Can be improved  ☑ Must be improved  ☐ Not applicable

This study provides an R package for Bayesian ensemble averaging of PM2.5 geostatistical downscaling. As an article type of Technical Note, the paper is technically correct, but some key issues and shortcomings should be further detailed as follows.

1. Section 1: Introduction: It is important to incorporate an introduction that evaluates the strengths and weaknesses of the existing research to enhance the quality of your work.
2. It is suggested to add a flowchart to illustrate the specific steps and key processes of downscaling.
3. Lines 77-80: A brief description of data sources should be added.
4. How to obtain the optimal parameters of the grm model?
5. Section 3: Since the time and space effects are included in the program, it is recommended to add accuracy validation for PM2.5 downscaling under various scenarios.
6. Lines 108-112: Considering that the study area is not particularly large, the time of 11.29 hours seems a bit long, indicating that the program may not be applicable to relevant studies.
7. The conclusion section is missing. It might be helpful to combine the discussion and conclusion into one section.