

Cover letter

To

Dr. Sylwester Arabas
Topic Editor,
Geoscientific Model Development (GMD)

02 July 2024

Subject: Author reply to the Editor's comments

Manuscript Title: AeroMix v1.0.1: a Python package for modeling aerosol optical properties and mixing states.
Manuscript ID: EGUSPHERE-2024-62

Dear Dr. Sylwester Arabas,

Along with this letter, we submit the revised version of our manuscript titled "AeroMix v1.0.1: A Python package for modeling aerosol optical properties and mixing states" to the Journal of Geoscientific Model Development (GMD). We are very glad to note that all three referees have recommended our manuscript for acceptance.

The co-authors and I appreciate your comments on ensuring the proper formatting of the manuscript according to GMD policies and enhancing the reproducibility of the results. We have carefully considered your feedback and made the necessary revisions to the manuscript file and the scripts. Our responses to your comments are attached, with line numbers referenced as they appear in the tracked changed version.

All the authors agreed with the revision of this manuscript. I request you to kindly take the necessary steps for the manuscript's earliest decision.

Thank you.

Sincerely yours,

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Response notes

1. Note that GMD reserves supplement for items that cannot reasonably be included in the main text or as appendices (<https://www.geoscientific-model-development.net/submission.html#assets>). Supplements are also not subject to language editing, reference checks and typesetting in the publication process. Please replace the supplementary material pdf with appendices to the paper - to comply with the policy and to ensure it is consistently typeset and edited with the main body of the paper (currently, the title does not match the paper with lack of version information and "state" vs. "states" mismatch)

Reply: In accordance with GMD policy, the supplementary material has been merged into the manuscript as Appendices A, B, and C. We request the removal of the previously submitted supplementary material.

2. The reference "Ram et al. (2010)" on page 3 in the supplement is ambiguous - please clarify which paper is cited - 2010a or 2010b?

Reply: Corrected as suggested in Appendix B.1 (line #465).

“A detailed description of the analytical procedures and the data can be found in Ram et al. (2010a).”

3. There are hardcoded absolute paths ("/home/sam/CommonFiles/PhD") in the Python script provided - please ensure that all scripts can be run by the readers without errors, in other environments than author's machine - use relative paths

Reply: Absolute paths are now replaced with relative paths in the script, and the updated scripts have been uploaded to Zenodo (<https://doi.org/10.5281/zenodo.12625421>). The code availability section has been updated to reflect this change (line #533).

“The model outputs and codes used to generate the results presented are available in a separate Zenodo repository: <https://doi.org/10.5281/zenodo.12625421> (P Raj and Sinha, 2024b).”

4. The Zenodo link leads to an archive consisting of numerous .ods, .xlsx, .inp, .out and .png files + three Python scripts, but without any explanation on the contents or usage of these files. The Python scripts do not refer to any of the .ods files. Please include an explanation on the contents of these files. How a reader should proceed with using these files and with what kind of software? The dependency on scikit-learn and openpyxl should also be explained - either in the text, a README file or a requirements.txt list of dependencies. I highly recommend to check if the complete set of figures can be recreated by someone else on a different machine before resubmission to Zenodo. Same applies to regenerating the output data from OPAC and AeroMix.

The updated archive, which includes the scripts and spreadsheets (.ods, .xlsx) used for data analysis and visualization of each figure, has been uploaded to Zenodo. The manuscript provides the link to this archive. Each folder now contains a README file explaining the script requirements and the contents of each file. Due to the large volume of source data, only the processed data necessary for producing the figures are included. Source datasets can be accessed from the respective sources listed in the data availability section.

5. Only one of the supplied Python scripts uses AeroMix package. Scripts for Fig 3 and Fig 4 have all the AeroMix output data manually entered into the code. Please include scripts used to setup and run AeroMix to achieve these output data.

Reply: We have included the scripts used to set up and run AeroMix, along with the visualization scripts.