Atmospheric
Chemistry
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Discussions

Interactive comment on "Aerosols from anthropogenic and biogenic sources and their interactions: modeling aerosol formation, optical properties and impacts over the central Amazon Basin" *by* Janaína P. Nascimento et al.

Anonymous Referee #1

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Title

Aerosols from anthropogenic and biogenic sources and their interactions: modeling aerosol formation, optical properties and impacts over the central Amazon Basin

C1

Authors

Janaína P. Nascimento, Megan M. Bela, Bruno Meller, Alessandro L. Banducci, Luciana V. Rizzo, Angel Liduvino Vara-Vela, Henrique M. J. Barbosa, Helber Gomes, Sameh A. A. Rafee, Marco A. Franco, Samara Carbone, Glauber G. Cirino, Rodrigo A. F. Souza, Stuart A. McKeen, and Paulo Artaxo

Summary

This study analyses how biogenic and anthropogenic air pollution impact aerosol formation and optical properties over the Amazon. The paper uses campaign measurements from the Green Ocean Amazon experiment (GoAmazon2014/5) and high-resolution chemical transport model simulations with and without anthropogenic emissions from Manaus. The paper is well written. The paper is suitable to the scope of Atmospheric Chemistry and Physics. My main criticism is that it would be useful to add a more detailed discussion of the implications of these findings.
Overall, this paper is a high quality and detailed investigation of aerosols over the Amazon with interesting findings. The reach of the paper would be improved from further contextualising the results.

Comments

1. Lines 14, 138, and Table 2: Define acronym at first use.

2. Figure 1 is high quality.

3. Line 140: The lowest volatility bin has a saturation concentration of 1 μg m^{-3}. Does this not exclude lower volatility compounds (e.g. 0.1 μg m^{-3}), which could be potentially important e.g. Shilling et al., (2008)?

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4. Lines 191-193: Supplementary Figure 2 shows that the model underestimates precipitation. The implications of this is not discussed in the meteorlogical analyses.

5. The small font size within some plots is difficult to read e.g. Supplementary Figure 4, Figure 10.

6. Line 311: Typo: Additional bracket.

7. Supplementary Figure 9 is not referenced in the main text.

8. The ordering of some Supplementary Figures (e.g. 10, 11, 12, 14, 15) does not match how they are referenced in the main text.

9. Figure 8: The rainbow colour bar may be difficult to distinguish for some readers, and I suggest using an alternative e.g. ColorBrewer 2.0.

10. Figure 8: Typo: subplot (c) named subplot (b).

11. Line 502: Observations evaluate models, not validate.

12. If the Figure captions are to be read or searched independently of the main paper, then define the acronyms they contain.

References

Shilling, J. E., Chen, Q., King, S. M., Rosenoern, T., Kroll, J. H., Worsnop, D. R., McKinney, K. A. and Martin, S. T.: Particle mass yield in secondary organic aerosol formed by the dark ozonolysis of α-pinene, Atmos. Chem. Phys., 8(7), 2073–2088, doi:10.5194/acp-8-2073-2008, 2008.