Atmos. Chem. Phys. Discuss.,
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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Characterization of Organic Aerosol across the Global Remote Troposphere: A comparison of ATom measurements and global chemistry models" *by* Alma Hodzic et al.

Anonymous Referee #1

Received and published: 9 October 2019

This is a well-written paper. I recommend accepting it, but clarifying as noted below:

Line 46-47: highest levels measured at what altitudes?

Line 75: You might consider adding Zhu et al., 2019 to the list of references here or in line 79.

Zhu, J., Penner, J. E., Yu, F., Sillman, S., Andreae, M., and Coe, H., 2019: Organic aerosol nucleation, climate and land use change: Decrease in radiative forcing, Nature Communications, 10, Article No. 423, https://www.nature.com/articles/s41467-

019-08407-7

Fig 1b: lines 1402-1407: Is the distribution shown for the AEROCOM models at the ground or at altitudes sampled by aircraft? What is meant by "distribution of studies" when referring to the models? (explain in caption, please, not just text)

Line 136: Is there something that distinguishes "ATom models" from other models? Strange terminology

Line 178-179: what fraction of hydrophilic organic material is incorporated into precipitation in GOCART? i.e. what is the Kappa value used in this model?

Line 237: add reference for CMIP6 global inventory

Line 426-429: The averaging procedure you used is not clear. If the values are < 3 ïĄş detection limit, shouldn't you replace the value by zero (so as not to bias the average high)?

Line 550-551: Other than the reduction in spread of the AerocomII-sub models compared to full AeroCom II ensemble, this statement is not supported by comparing Fig S2 with Fig 3.

Line 558-559: you should plot these profiles on a linear scale. Its hard to judge how different the models are using a logarithmic scale.

Line 587-588: I would reference Fig S6 here, since it is on a linear scale. And you should change S7 to linear scale.

Line 766-769: what is meant by POA/OA being shifted rightward? Makes no sense to me.

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