

Comments on “Emission inventory of semi-volatile and intermediate volatility organic compounds and their effects on SOA over the Pearl River Delta region”

General comments:

The manuscript by Wu et al. gave an overview of *S/IVOCs* and their contributions to SOA formation based on the model simulation. The authors improved the model setup parameters and reduced the uncertainty of simulation. The improved model simulation was used to evaluate the effect of *S/IVOCs* and key anthropogenic *S/IVOCs* to SOA formation. And the results also showed the potential area of *S/IVOCs* and sources.

Overall, the manuscript is well organized and within the scope of Atmospheric Chemistry and Physics. I have some minor comments about the manuscript. After addressing the concerns, I would recommend this manuscript for publication.

Specific comments:

1. Page 5 line 19. What are the POA factors and OM/OC ratios of different sources? Could you please provide the detailed information about them?
2. Page 8 line 15. Please clarify the definition of SI-SOA.
3. Page 9 line 6. I wonder where the OH rate constants come from. Please explain it.
4. Page 12 line 4. From Fig. 2, I find that the dust and industry contributions to Zhaoqing and Shenzhen are similar. Do you consider the uncertainty when estimate the emission inventories?
5. Page 15 line 9. “The simulation results of SOA formation” will be better.
6. Have you tried to screen out the dominant species among *S/IVOCs* which contribute mostly to SOA formation in PRD region?

Technical corrections:

1. Page 1 line 15. “emissions” may be “emission”.
2. Page 2 line 12. “secondary organic aerosols” should be “secondary organic aerosol”.
3. Page 2 line 13. Please add some refs. About the SOA contribution to PM_{2.5}.
4. Page 2 line 22. The ref. “Guo et al. et al.,” should be “Guo et al.,”. Please revise it.
5. Page 12 line 7. I think you have miswritten the figure number. Fig. 4 may be Fig. 3? Please check it.
6. Page 12 line 14. The discussion order is weird. Fig.3a is after Fig. 3c. And Fig.3b is after Fig. 3d. Please reorganize the discussion about spatial distribution of *S/IVOCs*.
7. Page 14. In my opinion, I think the whole paragraph on this page is discussing the *S/IVOCs* emission inventory and comparisons with another study. So maybe an addition of a section title (3.3 ...) here will be better.