

- I. 31: 'carboxylic acid with fragmentation' is not clear. Do you mean 'carboxylic acid formation due to fragmentation of larger precursors' or 'fragmentation of carboxylic acids'? Please clarify.
- I. 32: 'was likely transferring the OA evolution close to the processes of addition of alcohol or peroxide groups' is not clear. Do you mean 'likely reflect OA evolution due to the addition of alcohol or peroxide groups'? Please clarify.
- I. 53: replace 'cognition' by 'knowledge'
- I. 60: add 'is' (which is defined as...)
- I. 79: either remove 'are' or replace 'lack' by 'lacking'.
- I. 83: replace 'absorption' by 'absorbing'
- I. 89/90: replace 'much consistent with' by 'very similar to'
- I. 117: replace 'gases species' by 'gas species', or remove 'species'
- I. 125: Please add reference for the SQUIRREL and PIKA software. To find appropriate citations, please look at [https://cires1.colorado.edu/jimenez-group/wiki/index.php/ToF-AMS\\_Analysis\\_Software](https://cires1.colorado.edu/jimenez-group/wiki/index.php/ToF-AMS_Analysis_Software)
- I. 1321: Strictly OM/OC is not an elemental ratio. Better write 'The elemental ratios including oxygen-to-carbon (O/C), and hydrogen-to-carbon (H/C), as well as the organic mass-to-organic carbon (OM/OC) ratio were also analyzed...'
- I. 150: replace 'increase of' by 'higher'
- I. 163: replace 'transformation of nitrate from gas-phase to particle-phase' by 'partitioning of nitrate to the particle phase'
- I. 201: replace 'much' by 'very'
- I. 217: 'the increase ratio of sulfate or nitrate contribution from reference days to SIA periods' is not fully clear. It might be better to write 'the increased contribution of sulfate or nitrate during SIA periods as compared to reference days ('increase ratio', IR)'
- I. 239: add 'more' before 'favorable'
- I. 243: replace 'meteorology' by 'meteorological'
- I. 244: remove 'species'
- I. 303: It is not clear what you mean by 'group papers'. Certainly, f44 and f60 were measured by other groups before – perhaps not at the same location. What do you mean here? Would it be sufficient to shorten the text to '(see Fig. 3b, additional data from our previous studies are also shown)'?

I. 317: 'positively' seems redundant here and could be removed

I. 317, 320: 'Meanwhile' is redundant in both sentences

I. 323: 'Plots of' is redundant in a figure caption

I. 354: remove 'The plots of'

Figure 4: The numbers next to the pie charts are very small. I suggest moving them to a separate panel (4c) and adding the values of the mass concentrations there. It is sufficient in panel a) to write 'SIA\_P2', 'SIA\_P1' and 'Reference' when the additional information is then included in a new, clearer panel c.

I. 393: replace 'weak' by 'weaker'

I. 403: specify 'much more important' than what? Than during summer? Or than the increase in RH?

I. 422: clarify 'carboxylic acid with fragmentation (slope=-0.5) dominated OA aging in reference days, and the variation of slope might suggest the transformation of OA from reference days to SIA-enhanced periods, which is likely transferring much close to the processes of addition of alcohol or peroxide groups' (see my comments to your abstract)

I. 452: Data availability statement: Would it be possible for you to extract the data that were used for your paper (and only those) from the large data base, and provided them in a separate repository? If not, it would be at least helpful if you could give a bit more information in the data availability statement how and where to find the data in the large data base.