

Thank you for taking the time to provide a response and clarifications to the reviewer's comments. However, despite having provided a lot of information and figures, the authors failed to integrate these changes into the manuscript. The last version of the supplementary material dates to November 11, 2020, therefore unless it has been explicitly stated in the response to reviewer's questions it is unclear if more changes have been included.

My suggestions and comments of how this manuscript can be improved are detailed below.

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General introduction to the sampling period: It would be useful to provide an overview section of the measurements into the results section, prior to introducing the case study measurements. The authors can then provide information on why the chosen period is a representative case study. In this section, the long term temporal trend of the ACSM measurements, the OC from Sunset and the HOMS measurements, as well as the size distributions from both measurements (DMPS +PSM), could be included.

Comparison with collocated measurements: The authors provided details of the comparison between the NRPM25 ACSM and the PM25 from the TEOM. This comparison should at least be included in the supplementary section on the manuscript and this agreement should be referred to in the main text.

From the figure provided in R1, it appears that there are a small number of points (above the fit line) where the agreement between the ACSM and the TEOM are better. Do these data points correspond to any period in particular (Haze events/nonevent days)? Is this level of agreement TEOM (or other external measurements) considered good for the PM25 inlet of the ACSM, please provide references? Can the authors show this fit as a function of time.

In general recommendations, it is better to place a PM10 inlet upwind of a PM25 inlet rather than applying twice a PM25 size cut. This can result in an unnecessary loss of particulate mass.

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Regarding the CO2 artefact. Thank you for the response to the reviewers queries, however it would be expected to include these details into the main part (or at least the supplementary part) of the manuscript, and to include information as to how this artefact varied throughout the sampling period.

The correction described by the authors is a modification of that described in Pieber et al., so it is necessary to provide a reference for this modification or at least a more detailed description of this method as well as a justification of its use compared to the previous published correction.

The authors should show the impact of this correction on the total mass concentrations (as well as the F44 vs F43 plots) etc. What are the differences in the fit between the ACSM and TEOM with and without the mz44 artefact correction?

Reword «In addition to the RIE correction, a correction for the mz44 artefact (Pieber et al., 2016) and a collection efficiency correction were applied".

Comparison of ACSM Org and Sunset OC: In the response to the reviewers, the authors provided a comparison between Org measured by the ACSM and that from the Sunset, these comparisons could be included in an overview section or at least in the supplementary. Can the authors state if a denuder was used upstream of the sunset instrument and include a reference to what analysis protocol was used for the Sunset OC/EC measurements.

Figure R3/Table in supp: It appears that the OC from Sunset values are consistently lower than Org ACSM values? Please provide some explanation for this? What was the OM to OC ratio applied to the Sunset measurements?

Significance of increases in concentrations during haze events: Thank you for providing the information on the significance of the aerosol mass concentration increases during the haze events. However, these additions do not appear to be included in the manuscript. A short sentence in the main part of the manuscript and some information in the supplementary would be informative for the reader.

Measurements from PSM and LTOFCIMS: Regarding the PSM measurements, they are only mentioned in the methods section and do not appear to be included anywhere else in the manuscript, (neither in the figures or supplementary figures), or used in the discussion. I would suggest either including more discussion of these measurements, or removing the instrument description.

Similarly, the majority of the discussion and the main conclusion of this manuscript is focused on ACSM (and DMPS) measurements, with little focus on the LTOFCIMS measurements (except in relation to Fig. 5), making their added value to this manuscript unclear. In the response to the reviewers comments the authors provided some interesting comments and figures comparing the temporal evolution of the OC (Sunset), Org(ACSM) and HOMS (LTOFCIMS), but did not include this discussion in the manuscript. These plots together with some discussion could also be included in the overview section of the manuscript

****Minor remarks****

Line 317 75 $\mu\text{g}/\text{m}$ correct to m^3

Figure S1: Please provide a legend in the figure or in the figure caption for the gray shaded area.

Figure S2: It is still not clear what each of these groups of four figures refers to. Please provide the dates (and times) on the figures to distinguish them from each other; also a label on the color scale is needed. Also check the caption, there are only figures labeled (a) through (d).

Figure S3: The axis labels could be improved here, they are very small.

Figure S4: Neither a or b is included.