

We appreciate these practical suggestions from the reviewer. These technical corrections are essentials to improve the quality of our manuscript. Please find included a point-by-point response to all the comments.

Answers to Referee

Section 3.2, last paragraph – The authors state that there is good correlation between the HGF vs Inorg/(Org + BC) ($r^2 = 0.38 - 0.47$), but not good correlation between HGF and O:C ($r^2 = 0.23$). These r^2 values do not seem so different to me as to state that one shows good correlation and the other bad. The authors should change the phrasing there to simply say that one has better correlation than the other. Unless, of course, there is some other justification for this ranking that I'm not aware of. In that case, state the justification.

Reply: The sentence was rephrased as 'In Fig. 4, the HGFs of accumulation mode particles correlate with the mass fraction ratio between inorganics and organics + BC ($R^2 = 0.38 - 0.47$) better than the oxidation level of the organic fraction with R^2 values of around 0.23.'

Section 3.4.2 – Switch this section with section 3.4.3 for a more natural flow.

Reply: We switched these two section with each other.

Section 3.5 – Why is this called “Synthetic Comparisons”. I would call it something like “Comparison to other ambient measurements”, because only one of the studies you compare it to is a lab-based study.

Reply: We changed it to ‘Comparison to other ambient measurements’.

Figure 1 – Put a marker on the x-axis that indicates which time periods are considered polluted vs. clean. This will make it visually more clear.

Reply: We indicated these two periods in Fig. 1 in the revised manuscript.

Figure 5 – Y-axis labels need units, and the 4 plots are too close together.

Reply: Yes, we modified this figure as suggested.

Figure 6 – Clearly label the three plots as polluted, clear, etc. Also, it would be helpful if all three were on the same latitude and longitude scale.

Reply: We added these labels in Fig.6 in the revised manuscript. However, the resolution of the figure will be reduced a lot if we put these subplots on the same latitude and longitude scale. Hence, we kept the previous version.

Figure 12 – Mei et al is misspelled as “Mie” in the plot legend.

Reply: We corrected it.

All figures – standardize the formatting for all figures

Reply: We replot all of the figures to have similar formats.