

We thank referee #1 (RC1) for the thoughtful review of our manuscript and the constructive comments on how it could be improved. Our responses to the comments and the resulting revisions to the manuscript are listed below.

General Comment 1: We agree with the referee that additional model performance evaluation (MPE) at city level and summer and winter seasons would support the analysis of SA results. For this project, observed data collected for MPE included only daily mean concentrations, therefore the additional analysis was limited to this metric, although SA results for ozone refer to the H8MDA. However, we believe such analysis can provide enough information about CAMx model performance at the selected cities and for the two seasons.

In response to the referee request, we have added a new section (Sect. 2.2.2) where MPE at city level is presented, along with new tables and figures. The previous performance evaluation for annual values is now in Sect. 2.2.1. The new MPE is conducted for both ozone and PM_{2.5}. Two different seasons (January-March and July-September) are considered.

General Comment 2: As requested by the referee, we have conducted additional analyses of the source attribution results to consider a wider range of conditions. Specifically, we have looked at source contributions for the 16 cities for the 25th, 50th, 75th and 90th percentiles of daily MDA8 summertime ozone as well as daily mean summer and winter PM_{2.5}, to supplement the previous analyses that only considered H1MDA8 ozone and monthly PM_{2.5}. Sects. 3.1, 3.2, and 3.3 have been revised accordingly, along with new figures.

General Comment 3: We have updated Sect. 4 (Discussion) to discuss in more detail the relationship between model performance and source attribution results. Additional sensitivity studies and uncertainty analysis would need to be performed to provide more quantitative relationships, and such an uncertainty analysis was not part of the current study.

Specific Comments:

All comments have been addressed in the revised manuscript:

- 1) Instead of removing the “comma” after (Byun and Schere, 2006) as suggested by the referee, we have added another “comma” after (PGMs) at the beginning of the sentence.
- 2) The requested reference to TF-HTAP has been added in the Introduction section.
- 3) Nudging on wind speed, temperature and water vapor mixing ratio has been performed above and within the Boundary Layer, with the same nudging coefficient of 0.0003 sec⁻¹. The text in Sect. 2.1 was modified accordingly to the Reviewer request.
- 4) The initial conditions were included as part of the boundary conditions. The abstract and text have been modified accordingly and the contribution of the initial conditions at the end of the one week spin-up is discussed in the source attribution results in Sect. 3.
- 5) The source apportionment results were conducted using horizontal bilinear interpolation over 8 grid cells around each city location. This information is now included in the manuscript in the introduction to Sect. 3.

- 6) The requested correction has been made.
- 7) Sect. 3.3 has been revised in response to the referee's request seeking more information on the pathways for wintertime SOA contributions to $PM_{2.5}$ in London. Two new references have also been added as part of this revision.