Thank you for your careful assessment of our revised manuscript and for pointing out the remaining issues. We have addressed all comments in the revised manuscript and provide a point-by-point response below.

The sections "Author contributions" and "Competing interests" must be included in the PDF manuscript in the next revision. Please see more information below: https://www.atmospheric-measurement-techniques.net/submission.html#manuscriptcomposition

Thank you for this comment. We added the required "Author contributions" and "Competing interests" sections to the manuscript in L466–474:

Author contributions

EE: *denuder design and preparation, laboratory and field deployment, measurements, chemical analysis, data processing and interpretation, and writing (original draft, review, and editing)*

AM, DB*: DMS500 measurements, data analysis*

NG*: Filter collection and writing (review and editing)*

MS, RZ, ACN*: funding acquisition, conceptualization, supervision, and writing (review and editing)*

Competing interests

The authors declare that they have no conflict of interest

Please ensure that the colour schemes used in your maps and charts allow readers with colour vision deficiencies to correctly interpret your findings. Please check your figures using the Coblis – Color Blindness Simulator (https://www.color-blindness.com/coblis-color-blindness-simulator/) and revise the colour schemes accordingly with the next file upload request. -> Fig. 3

Thank you for pointing this out. We changed the colours of Fig. 3 to a colour-vision-deficiency-friendly colour scheme and additionally adjusted the line styles to improve the distinction between measurements with and without TSOD. The figure caption was amended accordingly.

Figure 1 Particle size distributions recorded downstream of the TSOD and for reference without a TSOD at three different flow rates (4, 11, and 30 L min^{-1}). Purple tones refer to 4 L min^{-1} (light purple: wTSOD, dark purple: woTSOD), green tones to 11 L min^{-1} (medium green: wTSOD, dark green: woTSOD), and orange tones to 30 L min^{-1} (orange: wTSOD, dark orange: woTSOD). Shaded areas represent ±10% uncertainty.

Reviewer #1, question 6 and reviewer #2 (line 458):

Please follow the journal's data policy located https://www.atmospheric-measurement-techniques.net/policies/data_policy.html and place the data in a public repository - thank you.

Thank you for this comment. We published the underlying data in Zenodo and added a Data availability statement to the manuscript in L464.

Data Availability

The data presented here are available at https://doi.org/10.5281/zenodo.20325619

Reviewer #2, question regarding near-unity O3 transmission: Even though your response to the reviewer's question will be published, it still makes sense to add relevant statements to the manuscript.

Thank you for this comment. We agree that this clarification should also be included in the manuscript. We added the corresponding statement in L340–343:

A linear regression yielded a slope of 1.04 and a coefficient of determination (R^2) of 0.90, confirming the comparability of both datasets within the uncertainty of the measurement. The near-unity slope indicates that the inlet, impactor, hose system, and uncoated denuder did not cause substantial systematic O_3 losses under the field conditions. Therefore, no correction was applied to either dataset before subsequent analysis.

Reviewer #2 (line 21, 22): A zero offset (4.6 ppbv) and its standard deviation (+/-0.5 ppbv) does does not equal the instrumental limit of detection (see https://goldbook.iupac.org/terms/view/L03540). Please define and calculate LOD properly and state what level of confidence (e.g., k) is assumed.

Thank you for clarifying this point. We revised the statement in the abstract in L20–21:

In laboratory tests under controlled relative humidity and inlet O_3 levels up to 200 ppbV, the outlet mixing ratio remained consistently below the limit of detection, demonstrating the O_3 removal efficiency of the TSOD.

In addition, we added the calculation of the LOD to the Methods section in L156–159:

We tested the TSOD over an O_3 mixing ratio range of 5 to 200 ppbV. To assess the zero-level response of the instrument, separate zero-air measurements were performed, yielding an analyzer signal of 4.6 ± 0.5 ppbV under O_3-free conditions. The variability of this baseline signal resulted in a limit of detection (LOD) of 1.5 ppb, calculated as three times the standard deviation of the zero-air measurements (k=3).

Reviewer #2 (line 28): Please be consistent with significant figures (e.g., 15+/-2.9 should be 15+/-3 etc.)

Thank you for pointing this out. We revised the numbers accordingly in L28–31:

Without upstream O_3 removal, the individual concentrations of the PAHs were 15±3 – 46±6 % lower. (2) Secondly, for the tire and road wear marker, the antioxidant N-(1,3-dimethylbutyl)-N'-phenyl-p-phenylenediamine (6PPD) and its oxidation product 6PPD-quinone (6PPDq), we observed in-situ ozonation of 6PPD to 6PPDq with transformation yields of about 13±4 to 20±8 %.

Reviewer #2 (Figure 4 caption; concentrations vs. mixing ratio): There are a few more instances, e.g., in the caption of Figure 1, in section 2.4 "Ambient O3 concentrations" and in section 3.2 "available data on O3 concentrations".

Thank you for drawing our attention to this. We revised the terminology and now consistently refer to gas-phase O_3 data as mixing ratios rather than concentrations in L21, L196, L338, and in the caption of Fig. 1.