

## Technical review comments

**Dear technical team and Reviewers, thank you very much for the comments and reference for color conformity as well as the correct reference document. Please have my responses on the comments provided.**

### Notification to the authors:

1. Please note, if you used scientific abbreviations without giving the written-out explanation, these must be written out with the next file upload request.

- All the scientific notations used were explained in the text, either in the abstract or in the main text.

However, do not forget that there is a limit to characters (not words!) for “Short summary”: it must be < 500 characters.

This was checked and the short summary is now 418 characters.

- 2. Regarding figure S1: for the next revision please include the copyright icon in description as following: © Airbus, CNES

Thank you very much for highlighting this, it is super important and with this version the copyright is on the bottom right conner of the map.

3. For the next revision, please add full affiliations of authors. The department should be followed by the University/Institute, the city, and the country in English.

- Thank you very much for the comment the affiliation was updated to add the department and city and country where applicable.

4. 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. Please avoid crossing red and green colours.

- This adjusted and all the crossing red and green colors were updated in the map.

5. Please make sure that all the figures are numbered consequently.

Thank you for the reminder this is checked and ensured.

## **Reviewer's comments.**

We thank the reviewer for his/her time and thorough assessment of our manuscript, as well as for their valuable insights and suggested resources.

We greatly appreciate their observations, and below are our responses to the comments and requested revisions. We also thank them for their willingness to review this revised version.

Suggestions for revision or reasons for rejection

(visible to the public if the article is accepted and published)

Second review of "Chemical characterization and source apportionment of fine particulate matter in Kigali, Rwanda, using aerosol mass spectrometry" by Habineza et al., doi:10.5194/egusphere-2025-1700.

The authors have significantly enhanced the content and presentation of this manuscript. Adding the analyses of the car-free and Umuganda periods compared to the "regular" days was an excellent use of this dataset and a strong addition to the scientific quality of the paper.

I erroneously attributed some of the inconsistencies and errors to using AI for preparing the manuscript, but the authors state that it was not. The authors have responded adequately to nearly all of my comments and suggestions.

While not a crucial part of the manuscript, the discussion concerning the calculation of particulate organic nitrate from the ACSM data should be corrected prior to publication.

The initial paragraph in the main manuscript describing it is generally correct. However, the papers cited for Equation 1 (Lanz et al., 2007; Ng et al., 2011; Budisulistiorini et al., 2013) are incorrect and should be replaced by Farmer et al. (2010), who originally developed this method.

Thank you very much for catching this, we updated the references in the main manuscript

Furthermore, the proper citation for  $\text{ROrgNO}_3 = 0.1$  should be Fry et al. (2009) and not Brito et al. (2018).

There is only one method for doing this calculation, which is using Equation 1. Algebra and renaming variables show both Equations 1 and 2 in the SI are derived from this equation.

The only difference is in the value used for  $\text{ROrgNO}_3$ :

1) the value of 0.1 originally used in Farmer et al. (2010) based on the Fry et al. (2009) chamber work (also used in Brito et al., 2018 and Werden et al., 2023)

and 2) the value from the ratio-of-ratios method developed by Day et al., 2022, where  $\text{RNH}_4\text{NO}_3/\text{ROrgNO}_3=2.75$ . The initial paragraph conveys this in a general way, but incorrectly attributes Werden et al. 2023 to a third method.

Thank you for clarifying, this was adjusted L304 -L307.

Calculations with this third “approach” should be equal to those using  $\text{ROrgNO}_3=0.1$  (but they are not), and the value of  $\text{ROrgNO}_3$  reported in the second paragraph must be equal to  $\text{RNH}_4\text{NO}_3$  divided by 2.75 (but it is not).

Thank you for pointing this out. You are correct that the third approach should yield  $\text{ROrgNO}_3 = 0.1$ , which is consistent with our case ( $\text{ROrgNO}_3 = 0.12 \pm 0.06$ , rounded to 0.1). This confirms that there were no mistakes in the calculations.

Similarly, we believe there is no inconsistency in the values listed. All the reported values were obtained directly from this study’s dataset ( $\text{RoR} = 2.47$ , not the standard  $\text{RoR} = 2.57$ ). However, we have added a clarifying note in the main text (Line 313).

These inconsistencies indicate that there are errors somewhere. Although correcting these errors will not change the main message about the particulate nitrate (it is mostly organic with some ammonium nitrate), the calculations should be re-evaluated. Nevertheless, the discussion in the second paragraph of the main manuscript and the section in the SI needs

to be changed to clearly reflect that there is only one approach (Equation 1), with two different values for R<sub>Org</sub>NO<sub>3</sub>.

[Addressed.](#)

Thank you for sharing the reference as well.

Fry et al., 2009, doi: 10.5194/acp-9-1431-2009

Farmer et al., 2010, doi: 10.1073/pnas.0912340107