

We are grateful to the referee for providing additional comments and suggestions, which have been addressed below.

1. (L137–138): *what is the source of these “representative modal splits”?*

The modal splits were derived from several literature sources for national and international transport volume reports, such as “Verkehr in Zahlen” (Traffic in Numbers, from the German Ministry of Transport) and OECD statistics. We have added these references to the text.

2. (L156): *if the data is for 2021, why is the reference dated 2018?*

This was indeed an error, thanks for spotting. An updated reference has been inserted.

3. (L198): *you had responded that Fruhwirt et al. (2023) was used as a reference for non-exhaust emissions for rail transport, so why not cite it in the text? I agree that a “full description of the literature used (...) is beyond the scope”. However, referencing the sources used for emission indices of the various vehicle categories is important for the openness and reproducibility of this work.*

We have added a short description and more references at line 203: *“For non-exhaust emissions of PM₁₀ and PM_{2.5} from tire wear and brake wear, the values are taken from Monks et al. (2019, including cars, 2-wheelers, buses, LCVs and HFTs differentiated by road type for the 6 European countries of HBEFA and uniformly across all other countries. Values of PN from brake wear stem from Perricone et al. (2020). For rail transport Fruhwirt et al. (2023) is used as a reference for non-exhaust emissions”.*

4. (L832–833): *it is unclear what “typical shares” are. Modal shares for other countries with data for both HFT and LCV? Which countries?*

The shares are based on data from the “Future of trucks” report by IEA (<https://www.iea.org/reports/the-future-of-trucks>). The reference has been added.

5. (L837–839): *which countries are estimated with each method?*

We have added the list of countries to the text: *“The transport performance via railway is known only for a small number of countries (EU countries, Australia, USA, China, Japan and Mexico).”*

6. (Figure 6): *you had responded that no emissions were estimated for Montenegro and Kosovo due to a lack of official statistics. But surely if you downgrade your standards for sources you could find a way to make an estimate, even if with larger uncertainty? After all, you still estimate emissions for other places with contested (or complicated) political status like Korea, Somaliland, Palestine, and Yemen. I think this lack of data should at least be mentioned in the text, as it impacts the usefulness of the inventory (out of the box), particularly for simulations of the European region or more specifically to the Balkans.*

We have added a statement at the end of Sect. 2.1.2 to highlight this gap: *“The final inventory contains a small number of data gaps, mainly resulting from the lack of input data for certain countries with contested political status (e.g., Kosovo). These gaps may be mitigated in future work by incorporating alternative data sources.”*

7. (Figure 14): you had responded that grouping emissions by local time would be relevant to atmospheric processes, but what is the relevancy or use case of the “global perspective” of grouping them by UTC? You do not necessarily have to do a more detailed breakdown per region and season; a simple correction based on longitude should reveal a daily pattern of more intense emissions (at least from shorter range subsectors) during the day than the night (I would guess). I think this would do a better job of highlighting the value in the hourly dataset provided in ELK.

Global atmospheric models, which are one of the main targets of this work, adopt a time coordinate in UTC units, therefore it is appropriate to format the emission in these units for global applications.

(L423, 1001): “Nil” instead of “Nile”.

(L1053): remove comma in “In cases, where”?

Both corrected, thank you.