We also thank reviewer #2 for having carefully read our manuscript and for making very valuable comments and suggestions. Here is how these were addressed:

The EFs are reported as X ± Y g·kg^{-1}. It is unclear what the plus/minus value refers to. Is this 1σ or some other value? Does this reflect the variability across multiple transects alone, the uncertainties in variables and assumed values in the EF calculation, or both? This needs to be clearly described in the Methods. [Also, Reviewer #1's comment on propagated uncertainties.]

This is already mentioned in the original version of the manuscript: "We thus included all plume transects in our analysis, up to where $\Delta NH_3/\Delta CO$ reached its maximum and derived an average EF_{NH_3} and EF_{NH_x} ($\pm$ standard deviation, SD)." We have added one sentence for further clarification: "All SDs reported herein only include the measured variability and do not consider measurement uncertainties in the underlying variables (NH_3, NH_4^+, CO_2, CO, CH_4)."

An assumed carbon fraction of 0.5 for biomass may be conservatively off by ±10% (please also cite literature justifying this assumption). [Also noted by Reviewer #1]

We have added a brief explanation on the carbon fraction:

"F_c is the fraction of carbon in the fuel, which is typically in the 0.45-to-0.55 range (Akagi e al., 2011 and references therein). We assumed F_c to be 0.50 and note here that the resulting 10% uncertainty in EF_{NH_3} is small compared to the natural variability of EF_{NH_3}."

How was the background mixing ratio estimated? What about during agricultural fires, where there may have been numerous such occurring around the same time and around the same place contributing to NH_3/NH_4^+ in the sampled air; can elevated VMRs specific to the plume under consideration be reliably obtained?

The NH_3 values measured immediately before the plume encounter were used as background mixing ratio. The modified text reads as follows:

"For calculating Δ, we thus applied the method described in the Supplement of Müller et al. (2016) and calculated cumulative volume mixing ratios including the immediate period (10 s) before the plume was encountered (background) and the period after the plume encounter (seconds to minutes) when the NH_3 signal tailed off."

In 2019, the fire activity was actually very low. We thus almost exclusively sampled isolated fires. In other words, the background was negligible.

Which plume transect segments were used in the analyses? Ideally, also plot the selected transects on the map showing location of fires (at least for the wildfires).

This is already explained in the manuscript: "We thus included all plume transects in our analysis, up to where $\Delta NH_3/\Delta CO$ reached its maximum and derived an average EF_{NH_3} and EF_{NH_x} ($\pm$ standard deviation, SD)." Fig. 3 (formerly Fig. S3) now includes a map, as suggested by the reviewer.

How were the classifications by fuel types obtained?

This was described in section 2.2 of the original manuscript: "Information about fuel types was obtained from the 30 m Fuel Characteristic Classification System (FCCS; Ottmar et al., 2007), the 30 m Cropland Data Layer classification 2019 dataset, and ground intelligence." This was obviously misplaced and we have moved it to section 2.1.

Lines 212-217: Since Gkatzelis et al. (2022) cited here is unpublished, unavailable as a preprint, and not made available at the time of the review, these lines cannot be reviewed. Suggest deleting or making Gkatzelis et al. (2022) available during the next round of revisions.

The Gkatzelis et al. manuscript is still in preparation. We have deleted this reference.

Suggest avoiding speculative statements such as: (Conclusions) "NH3 emissions were highest from fires of corn and rice residues, which may be caused by fertilization of these fields." There was no analysis presented to make this claim (even if softened by "may").

We have removed this subsentence.

The primary finding is that EF_{NH3} may be underestimated in laboratory studies. More details are required to develop confidence in the reader that this is the case. It may be that in the "real world conditions" there is burning/heating of duff and/or of the soil itself (NH_4^+ and $NH_4^+ \rightarrow NH_3$) that is not considered in the lab among other possible factors. That these are insignificant aspects and that lab- and aircraft-derived EFs are equivalent but not equal needs to be demonstrated before the finding is presented as strongly as it is in the manuscript.

In the revised manuscript, we just describe the findings and do not draw any strong conclusions:

Abstract: "NH_3 emissions in ambient sampling were significantly higher than observed in previous laboratory experiments in the FIREX FireLab 2016 study."

Conclusions: "EF_{NH_3}values measured in plumes of large wildfires were similar to those observed during the 2018 WE-CAN field campaign, but significantly higher than observed in the FIREX FireLab 2016 laboratory study."

Technical corrections

Throughout the manuscript: ppb or ppbV and ppm or ppmV?

We think that "ppb" is good for NH_3. The distinction between ppbV and ppbC is important for organic compounds.

The supplementary figures and tables are important for the narrative. Suggest moving these to the main manuscript and not relegating to the supplement.

We have moved the figures to the main manuscript, but not the table. The detailed fuel type description is not important for the narrative.

Figure 1: The error shading seems to consider only the average values (circles) and not their error ranges as well. Why? Please also describe what exactly the shading represents in the figure caption.

We have updated the figure caption.

Suggestion: Due to wide range of values in Figs. 1 and 2b, suggestion to use log-log scale

The small values on the y-axis of Fig. 1 are actually not relevant for the calculation of the cumulative Δ. We think a linear scale more clearly visualizes the dimension of the tailing problem.

Fig. 2b: Again, we think that is more important to show the full range of EF_{NH_3} and EF_{NH_x} on a linear scale, rather than emphasizing differences at low values on a logarithmic scale.