This paper presents a new method that uses the gas enhancement ratios of CH4 to CO for apportionment of different airmass sources during the CAMP2Ex campaign. The developed method is very useful and the results presented are also very interesting. Below are a few minor comments/suggestions.

We thank the reviewer for their time and attention reviewing the manuscript!

Is "Technical note:" necessary in the title?

Our understanding is that this is a requirement for the publication type, as was submitted as a technical note. We defer to the editor and editorial staff's judgement.

The abstract is somewhat difficult to follow, as it takes several sentences before clearly stating the main objective of the study—using CH_4-to-CO enhancement ratios to separate airmass influences. The initial portion of the abstract, while informative, may distract from the core contribution and could be shortened or moved to the introduction. I suggest streamlining the abstract to more quickly convey what was done and what was found in this study.

We have reorganized and edited the abstract, removing some of the earlier information about the field campaign, some of which has been moved to Section 2.1.

Can you provide a figure showing the flight tracks of CAMP2Ex?

A map has been added as Fig. S1 with flight tracks colored by altitude AGL.

I suggest providing more details and explanations in section 3.1 and 3.2, as the methods described are not very straightforward to follow.

We have added more explanation to especially the beginning of Sect. 3.1, which we believe makes the overall description more clear.

Figure 3, what is "BT"?

BT stands for back trajectory, and the figure has been altered to state this fully.

Line 231: "the high and low ΔCH4/ΔCO urban regimes exhibited distinctive ΔNOy/ΔCO slopes". This is a particularly interesting result. I encourage the authors to elaborate further on the potential reasons behind these differences and their implications for understanding urban emission sources or atmospheric processing.

We have added the following text toward the end of that paragraph: "In general, higher NO_y/CO emission factors are indicative of higher efficiency combustion, as high temperatures lead to more complete conversion of carbon to CO_2 and greater NO_x production. This would

infer that urban combustion sources sampled in the high $\Delta CH_4/\Delta CO$ regime were on average more efficient that those sampled in the low $\Delta CH_4/\Delta CO$ regime."

Line 249: "The high ΔCH4/ΔCO urban regime exhibited less aerosol on average (8.8 µg/m3) than the low ΔCH4/ΔCO urban regime and had very similar composition with also ~40% each organic and sulfate aerosol mass" This is interesting. Just out of curiosity, any possible explanations?

Unfortunately, the project dataset does not include any further composition measurements that would allow for us to discern more subtle differences (differing organic compound compositions, for example), making speculation difficult. It could indicate a similar level of sulfur impurities in the respective fossil fuel sources, which could lead to the similarity in ratios. Without some other method of substantiation, we felt that this level of speculation seemed outside of the scope of the manuscript.