

General comments

The paper presents another important test for application of a laser absorption based ground-based measurement system for monitoring methane emissions over complex areas (facilities or cities) as part of a series of recent publications on the subject. The paper is mostly well written and provides the most important references for understanding. Some figures and its captions have to be improved to be suitable for publication.

Specific comments

The paper contains too many abbreviations. If used only one or two times after its definition for the reader it would be better to spell it out every time.

Several abbreviations have been eliminated

Figure 4, 5: Please define symbols (filled circles) in captions. Do they represent a specific number of observations? Shouldn't their value be only 0 or 1? Please clarify.

Addressed with additional text in figure captions

Line 290: This remark should reference Fig.3 or occur earlier.

Addressed by referencing Figure 3

Table 2/line 320: A remark on the meaning of the negative 'CMP' value for 'Facility' would be useful.

The meaning of this comment was unclear, but our interpretation is that we should make it more clear why Localization Accuracy metrics improve when False Positive (FP) detections are omitted. We have attempted to clarify this by stating that FP detections are included in the denominator in the calculation of Localization Accuracy, thus, omitting them increases the calculated Localization Accuracy values. Our reasoning for doing so is already described in the text.

Figure 7: Are the individual points per box? For the green points there is almost no linear correlation. Please expand text.

No, the individual points are not "per box," as we do not have enough data points to separate them by release grid box. While you are correct that there is poor linear correlation between release rate and estimated emissions for point releases (green), the expected relationship is still linear. Our results indicate a poor estimation of release rates from point sources, and we touched on this in Section 4.2. We have added a sentence to the text following this figure to make this observation more clear.

Section 4: Is it possible to include a remark on the share of the puff model and the retrieval method in the uncertainties?

Added a sentence in the first paragraph of Section 4.1 to address this

Table C2: It might be useful to include a column with the average wind speed.

Addressed

Figure D1: What is the meaning of the shading?

Addressed with additional text in figure caption

Figure D2: For symbols refer to Fig. 1.

Addressed with additional text in figure caption

Technical corrections

Appendix D and section 2.7: Don't mess up concentration and volume mixing ratio or emission and elevated volume mixing ratio, at least not when the unit is 'ppm'.

This has been addressed by replacing "concentration" with "dry air volume mixing ratio" (and subsequently, "mixing ratio") and by changing the y-axis label of Figure D1 from "ppm" to "ppmv". All uses of "emissions" refer to the mass flow rate of gas in kg/h.