

Thanks for pointing at this minor changes that will help us improve the manuscript. Here below, we provide answer and changes in the document.

Minor Comments:

- Line 43-47: Divergence-integral method is an alternative to the IME method for quantification. Do you mean some other retrieval method?

Thanks for pointing at this. We have pointed specifically at the IME method.

- Line 64: replace DoP with PoD

Thanks, it has been changed.

- Line 79-80: “The methane absorption spectrum is convolved with the instrument spectral line shape and then multiplied with reference spectrum, providing the target signature.” is a more correct description of matched-filter method.

Thanks, it has been changed.

- Figure 1: I suggest using solid line and dashed line along with the different colors for easier separation of downwelling and upwelling path that is described in Line 105.

We have changed the figure and line 105.

- Line 139: I believe k is derived assuming standard temperature and pressure. Please provide the details.

k is explicitly described in the code as:

```
ime=(8000* np.sum(xch4[plume] / 1000)* ueff_config.pix_res[0]* ueff_config.pix_res[1]*  
1000* 0.01604/ (1e6 * 22.4))
```

we have been more explicit in the text rewriting as:

“k is a scaling factor that converts the total of the pixel-wise methane concentration values in ppb to kg by assuming Avogadro’s law, the molar mass of methane (0.01604 kg/mol), an atmospheric column height of 8000 m and taking into account the pixel size (e.g. k = $5.155 \cdot 10^{-3}$ kg/ppb for 30 m pixel).”

The assumption of a standard temperature and pressure is taken into account when converting the 3D VMR into a 2D concentrations described in Equation 6. In this same conversion, the term 8000 is also introduced and, therefore, is cancelled when converted into flux rates in equation 5.

We preferred not to expand the discussion to other areas in this manuscript but rather distribute the code and simulations to the community.

- Line 152: I would suggest describing L as defined during emission quantification instead

of retrieval.

L is part of the process between retrieval and quantification. We have rewritten as: “However, its impact is based on the definition of both L in equation 4 and Lref during Ueff calibration.” to keep it neutral.

- Line 204: Do you mean Equation 10?

Thanks. It has been changed.

- Use “Ueff calibration” instead of “calibration” throughout the manuscript.

Thanks, we have identified two instances that required specify the type of calibration.