

## **Response to Reviewer Comments for**

# **“Ethylene Oxide Monitor with Part-per-Trillion Precision for In-Situ Measurements”**

**by Yacovitch et al.**

Reviewer comments are shown in [blue](#), and responses are shown in black.

### ***Reviewer comments “RC2”***

<https://doi.org/10.5194/amt-2022-294-RC2>

[Review of Yakovitch et al., AMTD](#)

[This is a nice concise paper that describes the TILDAS-FD-EtO analyzer for ethylene oxide.](#)

[This is a really difficult measurement \(due to low conc and potential interferences\) and the authors give a good description here.](#)

[The large enhancements from two Facilities observed at the lab are very interesting and chasing down those sources with the mobile lab is particularly impressive.](#)

[I only have a couple of minor comments below.](#)

We thank the reviewer for their in-depth read and useful comments. We address them all below:

[Line 7. I don't think the cell is 413m long. I think you mean a cell with a 413 m path length. Indeed. We have reworded the sentence.](#)

[Line 55. Whats the cell pressure? Add it here.](#)

We added the sentence: The sample pressure was maintained between 20 Torr (26 mbar) and 30 Torr (40 mbar) throughout the experiments described in this paper.

[line 103. "averages down well" is something I would say but it is a bit informal. Maybe reword. Agreed. We have reworded the sentence.](#)

[Line 129. Hysplit is a model not an engine.](#)

We have reworded to model.

Line 152. I'm not sure this the best way to represent these statistics. Is the 18 ppt a general background for the hourly average in Fig 3?

Is the 22 ppt sd real signal or noise? Maybe include the averaging time? Maybe clarify what you explicitly mean here.

Yes, the 18 ppt is the average of the hourly data over the entire period. This was explained near original line 115 where these values are first mentioned. The instrument noise as a function of averaging time was explained in section Instrument Performance.

We have clarified further by adding the following sentence in Section Ambient Measurements: The standard deviations given reflect the combination of instrument noise as described above and the variability of EtO in ambient air.

We have also modified Figure 3 and added a box plot to it. This box plot shows the monthly median and percentiles. Furthermore, Figure S3 was added to show histograms of winter/spring and summer hourly average EtO values.

I think Fig S1 is especially helpful to the discussion. Would you consider moving it (or something similar) to the main text?

We have decided to leave this figure in the supplemental information.