

Atmos. Meas. Tech. Discuss., referee comment RC2
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Comment on amt-2022-260

Anonymous Referee #1

Referee comment on "Michelson Interferometer for Passive Atmospheric Sounding
Institute of Meteorology and Climate Research/Instituto de Astrofísica de Andalucía
version 8 retrieval of nitric oxide and lower-thermospheric temperature" by Bernd Funke
et al., Atmos. Meas. Tech. Discuss., <https://doi.org/10.5194/amt-2022-260-RC2>, 2022

This is a very well written and comprehensive paper that is of relevance to AMT. I suggest
it be published after a few minor issues are addressed:

Lines 18-21: If you're going for completeness, I'd recommend adding the OSIRIS NO
measurements ([doi:10.1029/2009JD013205](https://doi.org/10.1029/2009JD013205), [doi:10.1029/2011GL048054](https://doi.org/10.1029/2011GL048054)). Or, if you're
just giving examples, please put "e.g." at the beginning of the list.

Line 78: I think "constraints" should be "constrains"

Line 334: In what sense are you using the word significant? According to Table 3, the
improvement to the convergence rate is ~0.4-0.7%. Are you saying that the improvement
significantly affects mean NO results or simply that the increase of converged retrievals is
non-trivial?

Section 3: Is there a reason why you use just the diagonal elements for data filtering
instead of the retrieval response (i.e., sum of A_k) as is more typical with other
instruments? It could be interesting to have the retrieval response plotted in Fig 1 as well.

Line 363: I'm not sure I understand where the statistical biases come from. Wouldn't
leaving those retrievals data points with $A_{kd} < 0.03$ in the averaging lead to a bias
towards the a priori?

Figure 2: What is the reason for the worsening vertical resolution in the Northern mid latitudes (MA and UA, especially)?

Figure 6: plot titles all have the term "esd," which I don't believe has been defined.

Line 575: I found this sentence a bit confusing. Are you saying that differences between v_8 and v_5 for MA are consistent with those for UA? Please consider rephrasing.

Figure 15: please add a legend.

Line 634: "allow to assess" doesn't sound right. I'd suggest something like "allows for an assessment of"

Lines 634-642: The description of the migrating diurnal tide could use a reference. Perhaps Brasseur and Solomon (and refs therein)?