

Atmos. Meas. Tech. Discuss., referee comment RC1
<https://doi.org/10.5194/amt-2022-44-RC1>, 2022
© Author(s) 2022. This work is distributed under
the Creative Commons Attribution 4.0 License.

Comment on amt-2022-44

Anonymous Referee #2

Referee comment on "Impact of instrumental line shape characterization on ozone monitoring by FTIR spectrometry" by Omaira E. García et al., Atmos. Meas. Tech. Discuss., <https://doi.org/10.5194/amt-2022-44-RC1>, 2022

The work by Garcia et al. focus on the impact of the instrumenta line shape of the high resolution FTIR spectrometer on the retrieval of vertical ozone profiles. The authors evaluate ver systematically more than 8 retrieval steregies to use y estimate the instrumental lineshape and evaluate these strategies using the long term measurements of FTIR spectra together with measurements from Brewer and the frequent ozone soundings. These collocated measurements at the Izaña observatorio are an unique possibility to evaluate the different retrieval strategies with respect to the instrumenta line shape and to study the sensitivity of the ozone profile retrieval on the estimation of the ILS.

The optimization of retrieval strategies for vertical gas profiles and especially of ozone by a very focused study is going to improve this remote sensing method towards a more exact measuremet method which is an important step for measurements in the NDACC network. The work fits perfectly in the scope of AMT, the manuscript is well written and clear presented.

In my opinion the manuscript is ready and paper should be published as is.

Just some few specific comments:

I would recomend to include a headline like "relative difference" in table 1,3,4 andit would be helpfull to see in addition to the infromation with respect to the brewer column measurements, a relative diference between the retrieval sterategies, maybe with respect to the favourite retrieval sterategies of the authors. This would ilustrate clear how sensible the ozone profile depend on the retrieval sterategy with respect to the ILS.

I would recommend to include a little more basic information about the modulation efficiency and the phase error in the beginning of the section 3.1, so that the reader get the important information which and how the ILS depends on both parameters without consulting the cited papers.

It is very interesting that the authors recommend to fit the phase error at ZPD, but use the modulation efficiency from the cell measurements. It would be very nice if the authors might try to give a possible physical explanation, why a fit of the "phase error" at ZPD from an individual spectrum improves the retrieval? Does it depend on alignment the temperature of the beamsplitter the phase correction during the calculation of the spectrum?