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Comment on amt-2022-44 "Impact of instrumental line shape characterisation on ozone monitoring by FTIR spectrometry" by Omaira E. García et al.

Anonymous Referee #1

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General comments

The IRWG of NDACC is an international network bringing together more than 20 observational FTIR sites over the world since the 1990s. In comparison to other observational methods used for the investigation of gaseous composition of the atmosphere, FTIR spectrometry provides a unique advantage of simultaneous measurements of the total columns (or even profiles) of a number of climatically active gases. The significant efforts are being made by the IRWG community to develop the unified retrieval strategies for deriving total columns/profiles of atmospheric species including O3. The main target of these efforts is verifying and harmonizing the results obtained by different groups operating FTIR sites. To get reliable information on O3 trends in the stratosphere which are currently nearly zero, it is necessary to provide the FTIR products of high accuracy and precision. Achieving this goal requires knowledge of the parameters characterizing the alignment of FTIR spectrometer (instrumental line shape function, ILS) and correct accounting of ILS in the retrieval procedure. Paper by García et al. is devoted to the detailed study of the influence of several ILS approaches (used in the procedure of inverse problem solving) on the O3 retrieval results (focusing the stratosphere). FTIR instruments having different alignment status are considered.

The manuscript corresponds to the AMT main subject areas and can be recommended for publication (minor revision is required) after a few points are addressed (please, see specific comments section).

Specific comments

Results presented in Appendix B deserve to be moved to the main text of the paper as a separate section. But the final decision is up to the authors.

Authors tested several approaches of ILS for the getting best retrieval results on O3. Is there a "universal" recipe for the processing FTIR observations (for example, archive spectra) in the absence of information on instrument alignment (ILS function)? Is it correct that in the case of the ideal ILS function should be used for overall spectra processing? Is it possible to create a homogeneous O3 row by stitching separate O3 time series obtained as a result of processing FTIR spectra using different ILS approaches? Analysing such a complex time series can be an additional challenge to reveal long-term O3 trends close to zero.

It is not quite clear whether the AVKs (averaging kernels) were taken into account when comparing the O3 results obtained by the FTIR and Brewer techniques?