Reply on RC4
Gerald Wetzel et al.


Response to Referee 4:

First of all we thank the referee for the effort to carefully reading the manuscript and for all comments.

Detailed comments:

Please try to improve the quality of Figures 2-22 by increasing figure resolution, using distinct colors, optimizing line widths, or using shading. For example, blue dashed and dash-dotted lines overlap in many cases. It might look more clear if total error intervals will by indicated by shading.

In the run-up to the paper, the authors already had some discussions about what the best representation of these figures could be. The current result can be understood as a kind of compromise between different views. However, we emphasize that in the final version the dpi resolution of the images will be clearly improved, so that the images will have more depth of sharpness. Nevertheless, it will not always be avoidable to zoom in on the images to see small details better. Anyhow, since the vast majority of papers are read electronically today, this shouldn't be a big problem. In this respect we have not changed the layout of Figures 2-22.

Line 181: "The primary vertical coordinate of MIPAS-E is pressure whereas for MIPAS-B it is altitude." Please specify which temperature/pressure profiles are used for pressure-altitude conversion.

MIPAS-E pressure altitudes were logarithmically interpolated to the MIPAS-B hydrostatic pressure levels. Hence, vertical profiles refer to the MIPAS-B pressure-altitude grid. This has now been formulated more clearly in the text.

Lines 182-183: "vertical profiles refer to the MIPAS-B pressure-altitude grid". It is not clear what is used as the vertical coordinate. For "pressure-altitude", please give a formula or a reference.

This should be clear now from the explanation above. The MIPAS-B altitudes are connected with hydrostatic pressure levels (calculated using the basic hydrostatic equation).
Lines 200-201: "A bias between both instruments is considered significant if the SEM is smaller than the bias itself. “The significance is meaningful only at a specified significance level, which should be specified. Please justify also why you selected a low confidence level (for example, 95% confidence level corresponds to 2-sigma interval).

All error estimations performed in previous MIPAS validation papers (which were cited in the text) refer to the 1-sigma confidence limit. That’s why we decided to do the same here (also for reasons of consistency). We added a corresponding sentence to the text here to clarify that all errors refer to the 1-sigma criterion.

Line 224: Please define the used threshold for the maximum error.

This is not one number for all atmospheric parameters. The used thresholds are given in the MIPAS output NetCDF files. We included the reference Raspollini et al. (2022) in the manuscript text, where the quality filtering is described in detail.

Line 273: reference to WMO ozone assessments would be also appropriate here.

We added this reference to the text.

Table 1 is informative and good. An analogous table for MIPAS/Envisat would be useful.

We prepared a corresponding table and attached it to the text.