

Interactive comment on “Validation of MIPAS HNO₃ operational data” by D. Y. Wang et al.

D. Y. Wang et al.

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Many thanks for your comments and suggestions. Our responses are detailed below.

The reviewer found that the main difference between our paper and Vigouroux et al. (2007) is “the use of the HITRAN2004 database by all groups”, and claimed that both papers have “a lot of similar text”.

It is clear for us that Vigouroux et al. (2007) and the present paper are showing different works. The Vigouroux et al. (2007) paper was dedicated in a large part to the use of a data assimilation system (BASCOE) for validation purposes. In that previous paper, only ground-based FTIR observations were used. The aim of the present paper, and of the MIPAS Special Issue in general, is to assess the quality of MIPAS data by using several independent experimental techniques, and without including model calculations. If we delete the 4 pages of our Section 4 concerning the FTIR comparisons and even all comparisons with balloon and aircraft observations, only our comparisons with

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three satellite observations can still provide an independent paper. Thus, we guess the referee is not questioning the relevance of the present paper in addition to Vigouroux et al. (2007), but the presence of the Section 4 which seems redundant to the referee with Vigouroux et al. (2007). This section is included in our paper because the FTIR retrievals have been reprocessed using a different spectroscopy (HITRAN 2004 instead of HITRAN 2000). This is a major change in the FTIR products since it removes the high bias of about 14% that was present in the HNO₃ MIPAS and FTIR comparisons of Vigouroux et al. (2007). We believe that it is relevant to include that new work in the MIPAS Special Issue.

We have tried to validate the MIPAS HNO₃ dataset with all available measurements, especially with vertically highly resolved global satellite observations. Like in the other papers of the ACP(D) special issue on MIPAS validation, there is no intent to provide much more detailed scientific interpretation of the comparison results in this paper, as expected by the reviewer, but to focus on the assessment of the quality of the data. Of course, we have tried to assess the reason for any significant difference between instruments. In some cases a possible candidate was identified and is described in the manuscript. For other cases the differences are stated, but a definite explanation remains open.

We have revised the manuscript according to your comments as follows.

The reviewer is correct to demand a short and concise conclusion part. We re-wrote the section. In the revised version the common results of the different comparisons are summarized, instead of discussing all cases individually as it was done previously. The problems and the possible reasons for deviations between the different instruments are listed now. See the revised manuscript for details.

Concerning the "Odin" discussion, the information we provided in the previous manuscript regarding spectroscopy indeed remains incomplete. We have modified the manuscript by removing the poorly-phrased or inaccurate statements according to your

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comments.

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