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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Validation of nitric acid retrieved by the IMK-IAA processor from MIPAS/ENVISAT measurements" *by* D. Y. Wang et al.

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This paper presents intercomparisons between MIPAS measurements of HNO3 and measurements from a variety of other instruments, having as much temporal and geographical overlap as possible. In general, the comparisons show very good agreement, and the criteria for "coincidence" are clearly described. There is one exception noted below which I fell should be clarified if the comparison is to have any utility in this paper. Overall, this is a well-written paper and should be published after minor revisions. I have read and agree with the comments made by Dr. Roscoe, and so will avoid repeating most of them, other than to emphasize again that the figures are rather small,

and some necessary information is sometimes missing from the captions or given in obscurely small type in the body of the figure. Details will be found below.

Recommendations:

In the specific case of comparison with Odin data, I believe the authors need to clarify several things: In Section 5.3, the statement is made that Odin data are "zonally averaged for 6 latitude bands... during a period of 6 days in September 2002 and February 2003." In the caption for Fig.8, it is stated that Odin data were taken "during 19 September 2002 to 6 February 2003." These statements are not at all equivalent. Finally, in Table I, 618 MIPAS measurements and 1033 Odin measurements are listed as involved in this intercomparison. Were the MIPAS data zonally averaged to give a more meaningful comparison to Odin data, if the later were indeed zonally averaged? Figure 8's caption says Odin data lay within a 30° latitude band, but does not mention averaging of either Odin or MIPAS, and the main text is at best ambiguous. The overall agreement between Odin and MIPAS is poor, so that these issues of exactly what is being compared with what are in need clarification. Aside from this, there is an evident altitude mismatch which the authors do comment on and treat reasonably.

Detailed commentary on Figures and figure captions:

1. Figures 2-7 generally show data tracks along which numbers are shown. No explanation seems to be given for the significance of these numbers, but should be.

2. Useful PV overlays are given on Fig's 3 and 5, but not on other similar figures. On e has to guess that nothing meteorologically interesting or relevant was occurring in the field of view in these cases, but the authors might reassure readers of this in the text.

3. It is frequently difficult (partly a type size issue) to read the latitude and longitudes given in the various data track graphs. This should be remedied by either larger numbers, or perhaps by moving them to the periphery of the graph. (Fig's 3 and 5, with their PV overlays, are particularly obscure.)

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4. Starting in Fig. 2 and proceeding through similar graphs, lower panels are labeled "VMR" whether the abscissa shows "VMR" or "δVMR" . Those showing the VMR differences should be re-labeled as δVMR.

Specific grammatical corrections:

1. Pg 9727, line 25: change "...allowed to relax the regularization..." to read "allowed relaxation of the..." A similar change to read "...allowed the retrieval of information..." is needed on Line 26.

2. Pg 9731, line 21: should read "...three other balloon campaigns" instead of "other three balloon campaigns".

3. Pg. 9732, Line 4: change to read "...while the April one extends over a wide longitude range...". Line 6: change to read "at a mid-latitude of 35 N..."

4. Pg. 9738, The sentence on lines 9-11 makes no sense as written. I believe the authors mean something like "The two MIPAS measurements centered near 65 N, more closely matching the latitude of the MkIV measurement, exhibit better agreement than the profile which is completely within the vortex."

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 9723, 2006.