Atmos. Chem. Phys. Discuss., 6, S4194–S4195, 2006
www.atmos-chem-phys-discuss.net/6/S4194/2006/

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.

H. Roscoe (Referee)

hkro@bas.ac.uk

Received and published: 30 October 2006

This careful and detailed work should definitely be published after minor revision. The authors are to be congratulated on their innovative use of the formality of retrieval theory to derive a better comparison between values retrieved from remote-sensing data and in situ values, on p9734. As stated there, it is not enough to smooth the in-situ data by the weighting functions of the remote sensor, the same dependence on the remote sensor's a priori data must also be ensured. To the best of my knowledge, this is the first time this has been pointed out and derived - if so, it is a very important first and the authors should say so, vigorously.

Most of the comparisons show that the new MIPAS HNO3 product is in great shape, better than the previous MIPAS HNO3 product described by Mencaraglia et al (2006). Furthermore, because most of the comparisons show good agreement, with small standard deviations, the fact of poor agreement with the ODIN HNO3 values, with large standard deviations, reflects badly on the ODIN product but the authors do not say so. Obviously it is bad practice to make derogatory comments about the ODIN product, but the authors should find a form of words to say what is obvious to the reader, for example that the ODIN product needs more work and should meanwhile be treated with caution.

Some editorial comments are:

1. Many of the figures are rather small. They should be stretched to the full margins allowed by ACPD.

2. The last sentences on p9729 should be clarified, it was confusing to find the end result.

3. On p9734, x_mipas is used for what was earlier x_retrieved without explanation. Either use only one symbol, or explain the substitution.

4. Reference Mencaglia et al., with some comment about the improvement of your result.

References:

Mencaglia, F., G. Bianchini, A. Boscaleri, B. Carli, S. Ceccherini, P. Raspollini, A. Perrin, J-M. Flaud, “Validation of MIPAS satellite measurements of HNO3 using comparison of rotational and vibrational spectroscopy”, J. Geophys. Res. 111, D19305 (2006).

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