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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Bias determination and precision validation of ozone profiles from MIPAS-Envisat retrieved with the IMK-IAA processor" *by* T. Steck et al.

Anonymous Referee #2

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This paper deals with an inter-comparison between MIPAS ozone retrievals with different ground-based and satellite-borne ozone measurements. A criterion of comparison is a sufficiently close spatio-temporal neighborhood of the compared observations. This procedure is a necessary task to ensure confidence in the retrieved data. The paper honestly describes the weaknesses of the MIPAS retrievals and sufficiently discusses differences to other observations. The relative and absolute deviations to the different comparative measurements are facts. The presentation of the results of this comparison comprises most of the information shared in the paper. These results are not intended as criticism assuming the correct statistical methods are used as is the case in this paper. The deviations between the different methods of measurements

range in the same order as what is also found for other species, such as water vapor (e.g. Nedoluha, G. E. and P. Hartogh; Upper stratosphere comparison (WVMS and WASPAM). In: Stratospheric processes and their role in Climate (A project of the WMO/ICSU/IOC World Climate Research Program) SPARC Assessment of Upper Tropospheric and Stratospheric Water Vapor, Eds. D. Kley, J. M. Russel III, and Phillips, WCRP-113, WMO/TD No. 1043, Sparc Report No. 2, pp 139-141, December 2000.). With exception of satellite measurements, most locations of comparison are made in northern (high and middle) latitudes. Certainly further possibilities for comparison are possible, for instance microwave ozone measurements in middle latitudes in Lindau, Germany (51.66^0 N, 10.13^0 E**)** (see also Hartogh, P., C. Jarchow, G. R. Sonnemann and M. Grygalashvyly, On the spatiotemporal behavior of ozone within the upper mesosphere/mesopause region under nearly polar night conditions, *J. Geophys. Res.*, **109**, D18303, doi:10.1029/2004JD004576, 2004.; observations in the upper stratosphere/lower mesosphere). It was mentioned repeatedly, that a wrong estimated water vapor concentration could influence the MIPAS retrievals. A discussion to explain how water vapor influences the retrievals would be helpful for the reader.

Some small formal notes:

In the abstract: It is correct to say “the precision increases” if it becomes poorer?

The top-lines of some figures are difficult to read.

An abbreviation should be introduced and defined at the first place of occurrence. (volume mixing ratio Fig.1. . .)

Parts per million by volume on page 4433 was already introduced on page 4432.

Maybe, for clarity, use S or N and E or W instead of the sign in order to characterize the latitude and longitude.

Fig. 5. The curves cross the marks of the curves.

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Interactive Comment