

***Interactive comment on “Validation of water vapour profiles (version 13) retrieved by the IMK/IAA scientific retrieval processor based on full resolution spectra measured by MIPAS on board Envisat” by M. Milz et al.***

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We would like to thank reviewer # 2 for the helpful and constructive comments. Reviewer #2 pointed out several inconsistencies between plots and text which were introduced during the writing process. In this period various plots had to be redone a few times as the number of used measurements permanently increased during the reprocessing with the new retrieval setup (Version 13) and text and plots partly diverged.

Please find below our answers addressing the reviewer’s comments.

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*Reviewer Comments***Reviewer #2:****Reviewer comment:**

*This paper presents a thorough validation of the MIPAS version 13 H<sub>2</sub>O dataset produced by IMK/IAA for the period September 2002 to March 2004 while the MIPS instrument was operating with full spectral resolution. Satellite, aircraft, balloon and ground-based instruments are used in the intercomparisons. The conclusion is that there is no discernible sign to the bias in the MIPAS stratospheric H<sub>2</sub>O values. Other infrared instruments show closer agreement than in the microwave (which sense less H<sub>2</sub>O than MIPAS) or the visible and UV (which sense more H<sub>2</sub>O than MIPAS) indicating a possible inconsistency in the H<sub>2</sub>O spectroscopy. This latter point is an interesting note and one that probably should be stated in the abstract.*

**Answer:**

A sentence on this will be added to the abstract

*The paper is well presented and suitable for publication in AMT.*

*Questions, Minor corrections, Typos etc:*

**Reviewer comment:**

*Is the IMK/IAA data set available to general users? This is not indicated in the paper.*

**Answer:**

Yes, it is available to registered users on “<http://www-imk.fzk.de/asf/sat/envisat-data/>”. An according note will be added to the text

**Reviewer comment:**

*Did the authors consider comparing the MIPAS measurements of the overlapping parts*

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*of the ascending/descending orbit? This can provide a useful method to estimate precisions and reveal biases between ascending/descending retrievals.*

**Answer:**

A study on this issue (not restricted to H<sub>2</sub>O) is currently under way at IMK and will be published in a separate paper

**Reviewer comment:**

*A summary of the precision and resolutions of the data set must be given in the abstract. Although stated in the title the abstract should also indicate that the time period covers the full spectral resolution operation of MIPAS.*

**Answer:**

The Abstract will be modified to address these two suggestions

**Reviewer comment:**

*p492 line 18 Replace "It needs about ..." with "The orbital period is about 100 min"*

**Answer:**

This sentence will be reworded

**Reviewer comment:**

*p500 line 27-28 ... assumed error seem[s] to be realistic.*

**Answer:**

This sentence will be corrected

**Reviewer comment:**

*p503 lines 3-4, p504 line 28 [in] the ... Hemisphere*

**Answer:**

This sentence will be corrected

**Reviewer comment:**

*p513 line4 Due to small ... no [meaningful] statistical analysis ...*

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**Answer:**

This sentence will be corrected

**Reviewer comment:**

*p515 line 1 Comparison to ESA [MIPAS] water vapor ...*

**Answer:**

This sentence will be corrected

**Reviewer comment:**

*p552 Table 1 Does the - sign indicate displacement towards the satellite for optically thicker limb paths?*

**Answer:**

Yes. A note is added to the caption of Table 1

*Figures*

**Reviewer comment:**

*A number of the figures have plot lines which overlap the legend. These are unsuitable for publication and should be replotted.*

**Answer:**

As stated in the response to referee #1 most of the plots were redone for improvement

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Interactive comment on Atmos. Meas. Tech. Discuss., 2, 489, 2009.

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