**Atmospheric
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Discussions**

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Comment

Interactive comment on "Geophysical validation of MIPAS-ENVISAT operational ozone data" by U. Cortesi et al.

Anonymous Referee #2

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GENERAL COMMENTS

This paper reports a huge and comprehensive work that definitely validates the MIPAS ozone level 2 products and provides to the users a measure of the confidence that should be attributed to the ozone profiles produced by ESA from the observations of MIPAS. As such the paper deserves publication in ACP.

I have only a major remark concerning the relation between this paper and the paper entitled: "Bias determination and precision validation of ozone profiles from MIPAS-Envisat retrieved with the IMK-IAA processor" also published in ACPD the 30/03/2007. Here a similar work has been done on MIPAS ozone products derived by a different level 2 processor; some common experiments are used for the comparisons in the

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two papers. This situation may confuse the MIPAS data users so that it would be desirable for the two studies to cross-compare their results and provide a synthesis of the outcomes. This task should not be tricky considering that four of the authors are common to the two papers.

SPECIFIC COMMENTS

Section 2: I understand that the authors have chosen to provide in this section a description of MIPAS limited to aspects that are functional to the understanding of their comparisons and of the paper text. If this is the case I feel the necessity to integrate this section by:

- shortly indicating the algorithm used for the data analysis (since the algorithm is often reported for the comparative measurements),

- defining the meaning of 'near real-time', 'off-line', v4.61, and v4.62,

- explaining the subdivision of MIPAS spectra in bands (A, AB, etc., that are reported in the text).

P. 5814, L. 1: 'the root-mean-square of the diagonal elements of the error variance-covariance matrix'. Do the authors mean 'the square root of the diagonal elements of the variance-covariance matrix of the profile'? If not they should better explain this sentence.

P. 5814, L. 3: 'climatological estimates'. A reference would be wise for these data.

P. 5815, L. 10: 'Profiles measured at much higher vertical resolution than that of MIPAS were convolved with the averaging kernels and a priori profiles associated with the MIPAS retrievals'. I agree with the convolution with the AK but the authors should clarify what they mean for 'convolution with the a priori profiles'.

P. 5823 L. 20: 'At Antarctic stations results can be separated between 'ozone hole' (21 August to 15 October) and 'normal ozone' periods (16 October to 20 August)'. It is

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known that the ozone hole phenomenon starts in coincidence with the spring equinox, the 21 September, and extends up to about mid November. Why do the authors anticipate by one month? Which dates have been actually considered for this comparison?

P. 5836, L. 6: Table 4 has no columns reporting the quantity SIGMAbj,tot.

P. 5853, L. 11: 'and to the climatological estimate of systematic errors'. There are systematic error sources that do not depend from climatology (e.g. calibrations, instrument functionĚ). Are they considered?

P. 5858, L. 16: 'The retrieval algorithm is based on the Optimal Estimation Method using statistical a priori knowledge of the retrieved parameters for regularisation'. Optimal estimation and regularization are two different exploitations of the a priori information. The authors should clarify what actually is the case.

P. 5858, L. 28: 'Only good quality ODIN-SMR profiles have been selected and a measurement response larger than 0.75 has been used'. The authors should better define the 'measurement response'; Is it a measure of the information content of the observations in the results provided by optimal estimation?

P. 5863, L. 3: 'convolution id'. The authors should specify what is this flag.

TECHNICAL CORRECTIONS

P. 5808, L.2 and throughout the text 'collocated measurements'. I suggest to use 'colocated measurements'.

P. 5810, L. 2: I suggest to move the reference 'Fischer and Oelhaf, 1996' on the previous line after MIPAS otherwise it seems to be referred to ENVISAT.

P. 5810, L. 4: 'Fischer et al., 1990' is not present in the references section.

P. 5810, L. 18: 'Upper Troposphere and Lower Stratosphere' should have capital initials in analogy with the acronyms expanded in other parts of the text.

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P. 5810, L. 26: 'Non Local Thermal Equilibrium' idem.

P. 5811, L. 17 and below: 'Commissioning Phase', 'Main Validation Phase', 'Long-term Validation Programme'; there is no reason for using capital initials.

P. 5812, L. 20: 'about 800 km' instead of '800 km'.

P. 5813, L. 11: 'Interferometric Drive Unit'; there is no reason for using capital initials.

P. 5816, L. 13: 'depends on' instead of 'depends of'.

P. 5817, L. 22: different fonts are used to represent matrices AK and W in this equation.

P. 5827, L. 12: a blanc should be inserted between 'guidelines.' and 'In'.

P. 5833, L. 4: delete '.' after '(2007)'.

P. 5849, L. 6: 'lower than MIPAS' instead of 'lower MIPAS'.

P. 5860, L. 26: I suggest to delete 'variability'.

P. 5861, L. 2: 'squares' instead of 'square'.

P. 5863, L. 27: 'Table 8' instead of 'Table 9'.

P. 5865, L. 15: 'Borchi (Borchi and Pommereau, 2006)' instead of 'Borchi Borchi and Pommereau (2006)'.

P. 5867, L. 10: delete '.' after 'profile'.

P. 5867, L. 25: 'Eq. (19)' instead of 'Eq. (12)'.

P. 5867, L. 27: 'SIGMAsys' should be 'Ssys'.

P. 5878. L. 18: 'with ground' instead of 'withground'.

P. 5924. Fig. 19 caption: 'mean relative' instead of 'meanrelative'.

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