

Interactive comment on “Retrievals of heavy ozone with MIPAS” by Bastiaan Jonkheid et al.

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P2, L24: ‘per mill’ is changed to ‘parts per thousand’ in the revised manuscript.

P2, L27: The referee is correct that the retrieval processor uses the HITRAN standard. This is discussed in Section 2.2 of the revised manuscript.

P4: In the revised manuscript, it is stated in the first line of Section 2.2 which isotopomers are retrieved.

P4, L27: We changed the ‘seven’ to ‘six’. The error occurred because the microwindow set of Piccolo et al (2009) has seven microwindows in the AB band. However, one is discarded by the retrieval processor because it is too close to the band edge.

P4, L27: Besides information on lower altitudes, the A band also contains some strong $s -^{50} O_3$ lines. This is stated explicitly in the revised manuscript.

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P6, Eq (7): The derivatives are evaluated in the revised manuscript.

P6, L13: The definition of the cross-terms is corrected, as well as the spelling of 'matrices'.

P6, L18: It is now emphasized throughout the manuscript that the errors reported here are absolute ones in terms of the enrichment, and therefore expressed in

P6, L23: The error caused by uncertainties in the CFC-113 profiled is likely overestimated. As the referee points out, the spectral features of CFC-113 are very broad and almost constant in each microwindow. It is therefore likely that any uncertainty will be filtered out by continuum fitting. However, due to the overlap with O₃ spectral features, the uncertainty given here is formally correct. This is discussed in the revised manuscript.

P6, L23: Due to changes in the discussion of the uncertainties, the error in gain calibration is no longer focused on in the manuscript. It should be noted that the correlations should be accounted for by the treatment of errors in the enrichment adopted here (cf. Equations 7 and 8).

P6, L27: In the revised manuscript only uncertainties in spectroscopic data and instrumental line shape contribute to the systematic error. All other error sources are considered random in nature.

P7, L1: Corrected.

P7, L15: The misleading term 'global mean' is changed to the more descriptive 'mean over all retrievals'. While latitudinal variation is present, it should be noted that at least part of this may also be part of a seasonal cycle, so that certain features would change hemisphere if one focuses on retrievals for the first of January rather than the first of July. Since the other datasets all span different time periods, there would be very little to compare against if all these variations were taken into account.

P9, L19: In the original manuscript, the 2% figure referred to the accuracy of the

averaged product. Because of the unknown magnitude of the systematic uncertainty, the accuracy is removed from this section.

Please also note the supplement to this comment:

<http://www.atmos-meas-tech-discuss.net/amt-2016-144/amt-2016-144-AC2-supplement.pdf>

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2016-144, 2016.

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