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Atmospheric Chemistry and Physics Discussions

Interactive comment on "An annual cycle of long lived stratospheric gases from MIPAS" *by* M. N. Juckes

A. Dudhia

dudhia@atm.ox.ac.uk

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1) This really seems to be two papers: the first concerned with the comparison of MIPAS against other instruments, where the advantages of using a data assimilation approach are obvious; and the second concerned with the global annual cycle in H2O, CH4 and O3 as observed by MIPAS, for which it's not clear whether or not you have used data assimilation and, if so, whether it is necessary.

2) For the second part, it would have been nice to extend the analysis for the full MIPAS "high-resolution mission" (as it's now known) from July 2002 until March 2004 which would have allowed two northern hemisphere and (almost) two southern hemisphere winters to be compared.

3) Incidentally, the comment on p9391, line 4, that "MIPAS was operational" rather implies that it no longer is. In fact we now have a longer dataset in the "reduced resolution" mission (which started in January 2005) than the original - it's just that ESA haven't yet adapted their operational processing to handle it.

4) We were aware from the beginning that MIPAS upper stratosphere H2O values were a couple of ppmv higher than climatology (which is mostly derived from HALOE data) and higher than predicted by methane oxidation. Vivienne Payne, in her PhD thesis, made a fairly comprehensive analysis of possible causes (spectroscopic database errors, calibration of the C band, non-LTE effects, representation of the high altitude column, and more) but ended up discounting all these. On the other hand, some early measurements from the Aura MLS and SCISAT ACE-FTS seemed to support the high H2O values (at least "higher than CH4 oxidation") so we concluded that perhaps MIPAS values are correct.

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 9389, 2006.