Atmos. Chem. Phys. Discuss., 8, S6127–S6129, 2008
www.atmos-chem-phys-discuss.net/8/S6127/2008/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Mesospheric N_2O enhancements as observed by MIPAS on Envisat during the polar winters in 2002–2004" *by* B. Funke et al.

B. Funke et al.

Received and published: 19 August 2008

We would like to thank L. Millan-Valle for the helpful comments. Below, they are noted first and then we give our "Reply". We are submitting a revised manuscript that includes all the actions noted below.

In p.10564 l.23 says that Mipas passes the equator at 10:00am, the local time at the tangent height is around 10:30am.

Reply: It is right that MIPAS tangent point passes the equator around 10:30 local time. However, we refer to the equator overpass of the satellite's footprint which is around 10 am local time (e.g., 10.10 am for MIPAS orbit 9574). To clarify that we state now: "ENVISAT passes the equator in southerly direction at 10.00 am local time 14.3 times

a day."

In p.10566 l.11 ECMWF is not defined (i.e. European Center for Medium ...) Reply: In the revised manuscript, ECMWF is now spelled out.

In p.10570 l.9 says 58km why 58km if the actual tangent height is 60km.

Reply: We interpolated the ESA N2O data (given on the variable tangent altitude grid) to a fixed altitude grid in order to avoid any altitude-related features in the representation of the temporal evolution of N2O. Since the highest tangent altitude where N2O is available (nominally 60 km) is sometimes located 1-2 km below its nominal value, we chose 58 km as the highest altitude where ESA N2O was available during the whole period of interest. This has now been clarified by stating on page 10569, l11: "Retrieved N2O abundances on the highest tangent height level are discarded by the operational algorithm, such that highest available N2O observations are taken around 60˜km with variations of ś 2 km related to the orbital characteristics. ESA 4.61/4.62 data include all MIPAS observations taken with full spectral resolution between June 2002 and March 2004, representing thus a quasi-continuous dataset. Here, we analyze operational N2O data interpolated to an altitude of 58 km, which turned out to be the highest altitude covered by this data set during the whole period."

In the same page L.21 what is a curved relationship?

Reply: A "non-linear relationship" is probably a clearer description of the N2O-CH4 correlation. We have changed l.21 on page 10570 in this sense.

Are MEPED p.10572 l.11, WACCM p.10576 l.14, MSIS and SABER l.21 defined?

Reply: In the revised manuscript, these acronyms are now spelled out.

Figures 1, 2, 3, 4, 6 will be easier to read if they have the dates in the X axis formatted as in figure 5.

Reply: We have changed the x-axis labels of Figures 2, 3, 4, and 6 accordingly. Figure

ACPD

8, S6127–S6129, 2008

Interactive Comment

1, however, does not show a temporal evolution, such that a similar x axis format as in Figure 5 cannot be applied.

In Figure 5 p.10591, is the single measurement noise error useful here? We do not know how many measurements have been averaged so cannot know what reduction (˜sqrt(n)) is to be expected in these plots.

Reply: In Figure 5, we provide the single measurement noise error in order to illustrate the dependence of the magnitude of the statistical correction on this quantity, rather than giving an estimate of the precision of the averaged N2O abundances (see also the discussion of this Figure in the text at page 10570, l11).

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 10561, 2008.

ACPD

8, S6127–S6129, 2008

Interactive Comment