

***Interactive comment on* “Spatiotemporal variations of NO_y species in the northern latitudes stratosphere measured with the balloon-borne MIPAS instrument” by A. Wiegele et al.**

A. Wiegele et al.

Received and published: 30 September 2008

We would like to thank the referee for the valuable comments which we answer in the following (referee comments are inserted *in italics*).

Specific comments

Issue 1: In the abstract and the conclusion only a qualitative statement is made about the difference between the modelled and measured NO₂ and N₂O₅ concentrations. Statements like (page 4694, line 12) ‘the photochemistry in the model is slightly too slow’ should be quantified.

Ok, we have replaced “too slow” by “about three times slower” in the conclusion and reworded the sentence in the abstract.

Furthermore, the box model could be used to perform sensitivity studies on the various parameters that influence NO_2 and N_2O_5 concentrations.

In order to better quantify the differences between measurements and box model results, the paper has been expanded by a chapter dealing with NO_2 J values deduced from the MIPAS-B measurements around sunrise, and those used in the box model runs. For the latter, the impact of ozone and the albedo has been studied. However, a thorough sensitivity study on the various parameters that influence NO_2 and N_2O_5 concentrations goes, in our opinion, beyond the scope of this paper.

Issue 2: Page 4704, line 22: 'Time steps are 10 min and the output is obtained every hour' - does that mean that the values shown in figure 11 and 12 are interpolated between every one-hour time step? The values (circles) plotted in the figures seem to have time-steps somewhere between 5 and 10min.

During the three days of modelling prior to the measurement along the calculated backward trajectories the model uses time steps of ten minutes for calculation and an output interval of one hour. During the period of measurements each time step and output of the model is similar to the temporal resolution of the corresponding measurements (i.e. about five minutes). This has been made clear in the text.

Technical comments

1. Page 4695, line 28: Hyphenate balloon-borne.
2. Page 4696, line 8: In the abstract 14 to 31km are stated , here 14 to 32km.
3. Page 4697, line 11: As 'a' measure of...
4. Page 4705, line 18: Originating form the ...
OK, these changes have been done.
5. Page 4715 and 4716: For clarity you could combine figure 2 and 3, e.g., by using a grey-scale for the tangent heights. At least it would be helpful to indicate the tangent points in Figure 3, i.e., it would probably be sufficient to show the tangent point at 14km. We have modified Figure 3 such that the tangent points of 19.5 km and 22.5 km are

[Full Screen / Esc](#)[Printer-friendly Version](#)[Interactive Discussion](#)[Discussion Paper](#)

shown in the respective plots.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 4693, 2008.

ACPD

8, S7678–S7680, 2008

Interactive
Comment

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

S7680

