Atmos. Chem. Phys. Discuss., 7, S7641–S7642, 2007
www.atmos-chem-phys-discuss.net/7/S7641/2007/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Quantification of transport across the boundary of the lower stratospheric vortex during Arctic winter 2002/2003" *by* G. Günther et al.

Anonymous Referee #2

Received and published: 13 December 2007

In my earlier comment some tekst was omitted, so here is a second try.

'Quantification of transport...' by Gunther et al. is a generally clearly written paper that presents new results on transport from the polar vortex to midlatitude.

Major comments -I suggest to improve the presentation somewhat by mentioning more explicitly in the Introduction which questions are going to be answered in this paper. A general problem I have with the paper is that it contains rather long descriptive texts, without giving at the end of teh chapters some summary or conclusions that are be drawn from this. This is particularly a problem with the long chapter 5. I recommend to divide this chapter into different sub-chapters, each with a informative title, starting

the sub-chapter with the question that is going to be answered and ending with one or more conclusion.

-In its present form, the manuscripts suggest that there is one (main) conclusion, which is the one of the last sentence in the abstract (by the way, here '6%' is mentioned whereas in the text it is 7%). But a paper need not to be so extensive to come just to this (albeit important) conclusion. There is now much more info in the manuscript, but I feel this is not really used to draw conclusions. So I recommend either to omit material that is not necessary for the main conclusions, or to draw more explicit conclusions from all this material.

-6% vortex air loss is not much, but after the break up additional loss will occur. It would be nice if the authors could compare the loss before the break-up with the loss after it (or is the latter simply 94%?). In discussing the impact on midlatitudes of the vortex air before and after the break up, it might also be useful to mention the higher solar elevation after the break up, and hence the larger effect on UV at the surface of ozone decreases after the break up.

Minor comments p.17565, line 23: 'nert' must be 'inert' p.17567, line 24: Why 'Unfortunately'?. I assume because it would be nice if the second split would have been observed during the two campaigns. Perhaps it can be mentioned why this second split is so important. Fig. 11: I suggest to mention in the figure caps that the white lines are the flight track. It would be nice if the vortex boundary would be indicated in thie figure (although the authors might also refer for this (at p. 17571) to Fig. 4)

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 17559, 2007.

ACPD

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