REPLY TO J-.U. Grooss for comments on: acp-2010-343

We thak Dr. Gross for the time and effort that he invested to review the paper.

This is a nice study that shows high resolution simulations for ozone loss for the Arctic winter 2005 to 2010. I appreciate this work, however there are two points in my opinion that need to be improved. There are a number of publications on ozone loss in the winter 2004/05 with differing results.

 # Thank you for appreciating our work.

1. The comparison of ozone loss with other existing studies is important to evaluate these model results. For a correct comparison of the calculated ozone loss it is extremely important to compare numbers that have (a) the same vortex edge definition (b) the same vertical range over which the column is evaluated and (c) the same time interval. Otherwise, the given numbers are not comparable. Therefore it would be essential to get a comparable Mimosa-Chim number to the individual published results

 # Yes. We have also stated these points clearly in the paper in Sec 6.3.1. Obviously, the comparison of partial ozone column loss in 2005 is just a small part of the paper. Therefore, a detailed discussion on each result with additional calculations is beyond the scope of our study. As suggested by Referee 2, we would like to make such an extensive comparison in a forth-coming paper.

However, in order to compare with Grooss et al. (2007) we have calculated the loss at 375-550 K (as we do not have 380 and 580 K levels) using their vortex criterion. Further, a few additional estimations are also presented in a comparison point of view. Please find the new results in Sec. 6.3.1 and Table 3.

2. The results of derived ozone loss are based on the passive ozone tracer, a quantity that cannot be measured. A validation/comparison between model ozone loss and e.g. MLS-derived ozone loss may be incorrect, if the passive tracer would be simulated incorrectly. Therefore it is desirable to show a direct comparison of modeled ozone with observations as it was done in fig. 4; However, as the color scale is rather difficult to read, I would propose to show the difference model ozone - MLS ozone with the range (color bar) of figure 3. With this one could possible see offsets or trends of the simulation better.

 # Done. A very good suggestion. Please find the new Figure 2.