

Interactive comment on “A study of polar ozone depletion based on sequential assimilation of satellite data from the ENVISAT/MIPAS and Odin/SMR instruments” by J. D. Rösevall et al.

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More precise quantitative estimates of the observed ozone depletion will be presented in the revised manuscript.

Changes of words and expressions suggested in the specific comments will be made.

Specific comments:

P. 9969 Lines 9-11: Yes, chemistry is excluded. Will be more clear about it.

Line 26: By assimilating a large set of satellite data the random noise in the individual ozone profiles is averaged out in the model.

P. 9970: OK

P. 9975 Line 26: The number of MIPAS data is roughly twice that of Odin/SMR data. Since the MIPAS data is less noisy most datapoints end up in the centre of the histogram making it necessary to use a 0-4000 range on the y-axis. Using the same range on the y-axis for the Odin/SMR data would however make it difficult to see the shape of that histogram.

End of section 4: Will refer to Raspollini et al.

P. 9979 lines 1-3: Will be more clear in the revised manuscript. The $\sim 10\text{K}$ decrease of potential temperatures means that air masses sink $\sim 1/5$ of the vertical distance between model layers. Furthermore, in the arctic polar vortex of 2003, the ozone concentrations generally increased with less than 20% when going from one model layer to the layer above. Therefore we estimate that vertical transport in the lower polar vortex lead to $\sim 4\%$ increase of the ozone concentrations.

P. 9988 Fig. 6: The percentage formula is: $100 * [(active\ field) - (passive\ field)] / (passive\ field)$

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