

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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General comments:

1) We have read the article by Konopka et al. and we will refer to it in our article. We will however refrain from estimating ozone losses above ~25 km since in its current form the DIAMOND model does not include vertical transport which is a more rapid process at higher altitudes.

2) In this article the comparison of assimilated Odin/SMR and MIPAS data to balloon sondes is mainly intended to explain the differences found when using the two datasets to quantify polar ozone depletion. A separate article describing how the atmospheric transport model can be used for validating satellite data is currently being prepared. A

detailed comparison of assimilated MIPAS ozone to balloon sonde measurements will be presented in it.

Specific comments:

Sec. 2: The role of NO_x will be mentioned and reference will be given to Konopka et al.

Sec. 2: This manuscript is the first description of DIAMOND. More information about the model will be added to the revised manuscript.

P.9971, lines 15-16: To avoid confusion we will omit "over the pole" from the manuscript. When projected on the earth surface the sides of the model grid-boxes are however not constant as the distance from the pole increases.

P.9976, lines 10-14: The manuscript will be changed according to your comment.

P.9988, We apologise for the error.

Sec. 6. The Odin/SMR N₂O data product is described in Urban et al. (2005). The reference will be entered into the manuscript.

Sec 7. Since the article by Konopka et al. is not yet in press we refrain from making quantitative comparisons to the results in it.

P.9979, lines 19-20: We would like to present the loss ranges found using both MIPAS and Odin/SMR to point out that we found differences in the two sets of data. In the revised manuscript we will however point out more clearly that the Odin/SMR dataset is more uncertain.

References:

Urban, J., Lautie, N., Le Flochmoen, E., Jimenez, C., Eriksson, P., De La Noe, J., Dupuy, E., Ekström, M., El Amraoui, L., Frisk, U., Murtagh, D., Olberg, M., and Ricaud, P.: Odin/SMR limb observations of stratospheric trace gases: Level

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2 processing of ClO, N₂O, HNO₃, and O₃, J. Geophys. Res., 110, D14307, doi:10.1029/2004JD005741, 2005.

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 9967, 2006.

ACPD

6, S5185–S5187, 2006

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