

## ***Interactive comment on “Statistical analysis of the precision of the Match method” by R. Lehmann et al.***

**R. Lehmann et al.**

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We thank Referee #1 for his/her comments, which arrived as a complete surprise three weeks after we had been officially informed about the closure of the discussion in ACPD and 5 days after the submission of the Final Author Comments and the revised version of the manuscript.

Reply to the comments of Referee #1:

- 1) -
- 2) The potential systematic impact of intrusions of mid-latitude air into the polar vortex on the Match results was investigated in the following publications:

Rex et al. (e.g., 1998, 2003) performed a bi-variate regression (ozone mixing-ratio dif-

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ferences versus time of sunlight and time of darkness along the Match trajectories). They found that no significant ozone loss was seen during darkness. As the above-mentioned intrusions of mid-latitude air would operate both during sunlit and dark periods, they can be ruled out as a significant contributor to "artificial" ozone loss in the Match method.

Groß and Müller (2003) simulated a Match campaign with the help of ozone mixing ratios generated by a Chemical Transport Model. They found that intrusions of mid-latitude air into the polar vortex do not cause a significant bias of the Match method.

The reference to Groß and Müller (2003) will be added to the revised version of the manuscript.

3) The multi-sensor Match technique, which exploits different types of sensors (ozonesonde, satellite instruments) at the same time, is still under development. It will be discussed in a separate publication in the future. The derivation of the corresponding precision estimates is more complicated than the equations in the present manuscript, which would be "overloaded" by the treatment of the more general case.

#### References:

Groß, J.-U., R. Müller: The impact of mid-latitude intrusions into the polar vortex on ozone loss estimates, *Atmos. Chem. Phys.* 3, 395-402, 2003.

Rex, M., P. von der Gathen, N.R.P. Harris, et al.: In situ measurements of stratospheric ozone depletion rates in the Arctic winter 1991/1992: A Lagrangian approach, *J. Geophys. Res.* 103, 5843-5853, 1998.

Rex, M., R.J. Salawitch, M.L. Santee, J.W. Waters, K. Hoppel, R. Bevilacqua: On the unexplained stratospheric ozone losses during cold Arctic Januaries, *Geophys. Res. Lett.* 30, 1008, doi:10.1029/2002GL016008, 2003.

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Interactive comment on *Atmos. Chem. Phys. Discuss.*, 5, 3225, 2005.