

Interactive comment on “Attribution of stratospheric ozone trends to chemistry and transport: a modelling study” by G. Kieseewetter et al.

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This manuscript presents the ozone time series calculated in 5 simulations of a simplified CTM and compares them with two observational time series in an attempt to estimate the influences of gas phase chemistry, polar chemistry and dynamics on ozone over the last 30 years. This is a tricky problem for a number of reasons and, while this manuscript is a good attempt, that does not make it publishable yet.

After reading the paper, I did not know how much to believe the results. I then read the other reviews and found my concerns already raised by referees 2 and 3. Trying not to re-state all their comments, the main points to me are:

1. there probably are good results in here, but from a single read I am not sure what they are; 2. more effort needs to be made to bring them out while some of the more mundane results are emphasised less; 3. the treatment of the high altitude ozone seems dismissive; 4. the statistical analysis should be improved – in particular the two time periods should be linked; 5. the implications of using the linearised ozone scheme are not well described – the reference to the earlier paper is insufficient – and the authors do not convince me that it is a good enough description of the chemistry for an attribution study of long-term trends, especially when the upper stratosphere is then dealt with somewhat arbitrarily and aerosols are ignored.

Three specific points I would like to raise: A. Polar ozone loss is close to linear with Cl_y . We showed this recently for the Arctic (Harris et al., ACP, 10, 8499, 2010) with a full chemistry trajectory model. Given this, the authors' assumption of linearity dependence ozone loss on Cl_y is reasonable and they should say more about the pre-1980 losses and their influence on trends, including whether they believe they were that large (p. 17504, l. 19 on). B. I find the use of acronyms excessive. GSG may become useful if the community start using it, but some of the others make it hard to follow what has been done. C. There are also a surprising number of typos given the prevalence of spell-checkers.

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Interactive comment on Atmos. Chem. Phys. Discuss., 10, 17491, 2010.

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