Atmos. Chem. Phys. Discuss., 4, S1192–S1193, 2004
www.atmos-chem-phys.org/acpd/4/S1192/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Extrapolating future Arctic ozone losses" *by* B. M. Knudsen et al.

B. Knudsen

bk@dmi.dk

Received and published: 13 July 2004

John Austin has questioned the use of his own data in Figure 6. Although we do not fully agree with this we might omit the Figure in the revised version.

The trend calculations stop in 2001 because FU-Berlin data stop there. Including the last years would decrease the PSC trends. However, such a decrease would probably not be significant since it would likely be due to random fluctuations of Arctic temperatures. The NCEP trends have not been used in the paper because NCEP PSC areas do not agree with ERA-40 and FU-Berlin areas, which agree with each other, and ERA-40 agrees with radiosonde temperatures (in the winter 1995/96 and 1996/97). The NCEP PSC areas are 21-25% lower than the FU-Berlin areas in those two winters.

John Austin questions the relevance of showing Figure 1. However, compared to the figure shown in Rex et al. (2004) the time period has been extended backwards from 1966 to 1958 and the PSC areas for the ERA-40 reanalysis are shown for validation

purposes.

John Austin suggests we show the case for zero temperature change. But since the level of uncertainty for such a prediction is quite high and since we do not want to redo the CCM predictions, we have chosen not to show this. Anyway it would just be a matter of scaling the current ozone depletion with the EESC.

It is true that transport might also change the Arctic column ozone. Andersen and Knudsen (2002) found the total column ozone depletion to be 1.7ś0.2 times the chemical ozone loss for 1992-2000. We will add a comment about this in the revised paper. However, transport affects also the present ozone, so this could not explain why many models show substantial recovery by 2030 contrary to our results.

Reference:

Andersen, S.B., and B.M. Knudsen, The influence of polar vortex ozone depletion on Arctic ozone trends, Geophys. Res. Lett., 29, (21), 2013, 10.1029/2001GL014595, 2002.

Interactive comment on Atmos. Chem. Phys. Discuss., 4, 3227, 2004.