

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

**G. Pitari**

gianni.pitari@aquila.infn.it

Received and published: 15 July 2004

The paper by Knudsen et al. (Extrapolating future Arctic ozone losses) describes a method for extrapolating future ozone losses using observation of PSC and total vortex ozone depletion correlations. The analysis of PSC-polar ozone loss correlation in the past decades is well done and deserves publication, but it should not be linked to the attempt of deducing future trends.

The reason is that distribution and trends of lower stratospheric ozone are the result of several complex non-linear mechanisms interacting each other. A CCM is the only numerical tool that tries to incorporate all of these, i.e. chemistry, radiation, dynamics, climate, strat/trop exchanges. An extrapolation based on present data would probably fail, because the evolution of present climate conditions will change in the next decades (global ozone trends are most probably going to be different from what they were in the past decades, and the same is probably true for stratospheric water vapor, as well

Full Screen / Esc

Print Version

Interactive Discussion

Discussion Paper

as for many GHG, as CFCs, HCFCs, HFCs, PFCs and methane). Changing climate conditions strongly interact with the lower stratosphere via planetary wave propagation, and the interaction is particularly strong with the polar stratosphere (perturbation of sudden warming events, etc.). The rate and geographical distribution of future climate changes will most probably be different from what they have been so far, making an extrapolation based on past data of PSC-polar O<sub>3</sub> loss correlation probably more inaccurate of what we can do with biased CCMs.

---

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

Full Screen / Esc

Print Version

Interactive Discussion

Discussion Paper