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Interactive comment on "Rapid meridional transport of tropical airmasses to the Arctic during the major stratospheric warming in January 2003" *by* A. Kleinböhl et al.

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Figure 4 shows that the idealized isentropic transport calculations using linearized ozone photochemistry produce ozone values above 850 K at 20°N that are too low after 3 days. This may be due in part to the details of the linearized photochemistry parameterization used in the transport calculations.

A recent modeling study of polar stratospheric ozone during the SOLVE2 campaign (McCormack et al., Atmos. Chem. Phys., 4, 2401-2423, 2004) performed an inter-comparison of three different linearized ozone photochemistry parameterizations. This

study showed that the LINOZ scheme (McLinden et al., 2000) produces unrealistically large ozone loss at altitudes above 10 hPa. Specifically, the residual ozone tendency term (P-L) in the LINOZ scheme is very large and negative above 10 hPa, in disagreement with other linearized photochemistry schemes (e.g., Cariolle and Déqué, JGR, 2000; McCormack et al., ACP, 2004). Model prognostic ozone calculations during January and February 2003 using the LINOZ scheme significantly underestimated the ozone mixing ratios above 10 hPa after only 2-3 days.

The use of the LINOZ ozone photochemistry scheme in the present study may explain the low ozone values produced by the isentropic transport calculations in Figure 4 above 850 K after only 3 days. Perhaps the authors could try different ozone photochemistry parameterizations to investigate the sensitivity of their transport calculations to the parameterized photochemistry?

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