

## ***Interactive comment on “The high Arctic in extreme winters: vortex, temperature, and MLS and ACE-FTS trace gas evolution” by G. L. Manney et al.***

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This paper gives a nice detailed comparison between Arctic stratospheric conditions in the winters of 2004, 2005, and 2006, using a combination of ACE-FTS, MLS, SABER and Eureka radiosonde and lidar measurements.

However, some prior analysis of the 2004 Arctic vortex using the ACE-FTS measurements is not cited. Nassar et al. [2005] estimated vortex descent rates using tracer profiles inside and outside the 2004 Arctic vortex and compared these to Arctic and Antarctic descent rates quoted in other publications. The comparisons indicated that upper stratospheric descent in 2004 was stronger and more persistent than usual dur-

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ing the late winter. I think it would be appropriate to cite this earlier paper, which used a different approach but agrees with one of the key findings of the present paper.

Nassar, R., P. F. Bernath, C. D. Boone, G. L. Manney, S. D. McLeod, C. P. Rinsland, R. Skelton, and K. A. Walker (2005), ACE-FTS measurements across the edge of the winter 2004 Arctic vortex, *Geophys. Res. Lett.*, 32, L15S05, doi:10.1029/2005GL022671.

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