

## ***Interactive comment on* “Mid-winter lower stratosphere temperatures in the Antarctic vortex: comparison between observations and ECMWF operational model.” by M. C. Parrondo et al.**

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In the paper [[Höpfner et al.\(2006a\)](#)] (Appendix B, Fig. 15) we showed biases between ECMWF and ozone sonde temperature profiles above McMurdo ( $77.9^{\circ}$  S /  $166.7^{\circ}$  E) for each month from June 2003 until October 2003. Regarding altitude dependence and magnitude these are consistent with those reported in the current work for Belgrano ( $77.9^{\circ}$  S /  $34.5^{\circ}$  W). Also for McMurdo, the biases decrease in September and October 2003, correlated with the end of the polar stratospheric cloud (PSC) season. Since PSCs do not affect AMSU-A radiances, we speculate about the possible influence of PSCs on mid-IR sounders. The question is, whether ECMWF temperatures are

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biased due to assimilation of nadir IR sounding satellite instruments over Antarctica?

The effect of the ECMWF temperature bias on microphysical simulations of PSCs has been investigated in the companion paper [Höpfner et al.(2006b)] (Fig. 5) for June 2003. Here we showed that in the central part of the Antarctic polar vortex ice PSCs (Type II) appear in the simulation which is not consistent with MIPAS/Envisat observations. When the ECMWF temperatures were bias-corrected the calculations agree much better with the satellite observations. This supports the conclusion of the authors on the effect of wrong ECMWF temperatures on PSC simulations.

## References

[Höpfner et al.(2006a)] Höpfner, M., Luo, B. P., Massoli, P., Cairo, F., Spang, R., Snels, M., Donfrancesco, G. D., Stiller, G., von Clarmann, T., Fischer, H., and Biermann, U.: Spectroscopic evidence for NAT, STS, and ice in MIPAS infrared limb emission measurements of polar stratospheric clouds, *Atmos. Chem. Phys.*, 6, 1201-1219, 2006, <http://www.copernicus.org/EGU/acp/acp/6/1201/acp-6-1201.pdf>.

[Höpfner et al.(2006b)] Höpfner, M., N. Larsen, R. Spang, B. P. Luo, J. Ma, S. H. Svendsen, S. D. Eckermann, B. Knudsen, P. Massoli, F. Cairo, G. Stiller, T. v. Clarmann, H. Fischer: MIPAS detects Antarctic stratospheric belt of NAT PSCs caused by mountain waves, *Atmos. Chem. Phys.*, 6, 1221-1230, 2006, <http://www.copernicus.org/EGU/acp/acp/6/1221/acp-6-1221.pdf>.

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