

Interactive comment on “Mesoscale temperature fluctuations in the Southern Hemisphere stratosphere” by B. L. Gary

Anonymous Referee #1

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This manuscript uses data from the microwave temperature profiler (MTP) aircraft instrument to derive temperature fluctuations along adiabatic surfaces in the lower stratosphere. These are valuable data. They are not as well utilized as they could be for studies of gravity waves and small-scale atmospheric motions.

This manuscript does not introduce any new concepts compared to a 2006 paper by the same author. It extends the same analysis used then to flights in the Southern Hemisphere. The results for the Southern Hemisphere are consistent with those obtained earlier for the Northern Hemisphere, although the magnitude of the fluctuations is smaller. I doubt if this small extension is worth publication in a separate manuscript.

The data could be made much more valuable if, besides including Southern Hemi-

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sphere data, the analysis were extended to more topics. One possible extension would be to include temperature fluctuations in the upper troposphere, a topic of interest to cirrus cloud models. This would be especially interesting if an attempt were made to convert the temperature fluctuations to updraft velocities. Another possible extension would be to show how the derived temperature fluctuations depend on the length scale. In both the current manuscript and Gary (2006), the fluctuations are derived after applying a 400 km filter. What if the filter were 200 or 100 km? That information would help those attempting to parameterize sub-grid fluctuations for different resolution models.

There is one argument for publishing without an extended analysis: the author is retired and is trying to do a service by at least getting his existing data published.

Gary, B. L., Mesoscale temperature fluctuations in the stratosphere, *Atmos. Chem. Phys.*, 6, 4577-4589, 2006.

Interactive comment on *Atmos. Chem. Phys. Discuss.*, 8, 9167, 2008.

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