Atmos. Chem. Phys. Discuss., 6, S718–S720, 2006
www.atmos-chem-phys.org/acpd/6/S718/
European Geosciences Union

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Imaging gravity waves in lower stratospheric AMSU-A radiances, Part 2: validation case study" *by* S. D. Eckermann et al.

S. D. Eckermann et al.

Received and published: 2 May 2006

We thank anonymous reviewer #1 for his/her generous and helpful comments on the manuscript.

To the specific points raised:

Page 2018 L20: Good point. We will correct this in revision.
Page 2022 L9: The radiosonde data were downloaded from the University of Wyoming radiosonde archive site. These archival data do not retain any raw position data, as may be acquired during radar range tracking of the balloon. The same holds for the radiosonde data stored at the newer Integrated Global Radiosonde Archive (IGRA) (Durre et al., 2006).

Lacking such data, positions can be easily estimated using our trajectory algorithm based on the actual radiosonde winds.

Page 2025 L25: After considering the reviewer's suggestion, we'd prefer to keep them. If additional reviewer comments suggest their removal, we will revisit the issue. Currently, we feel the lidar temperatures provide a particularly valuable cross-validation of the cold stratospheric temperatures at ∼25 km that can only come from adiabatic cooling due to the presence of the mountain wave. They also further validate the NWP fields at these critical altitudes.

Page 2028 L1: We will reword this sentence along the lines suggested.

Page 2029 L4: The PSC encountered here is an ice cloud. Radiative transfer and retrieval modeling at microwave frequencies typical of these AMSU-A channels indicates that water in the vapor and liquid phases has an order of magnitude or greater impact on microwave brightness temperatures than ice. Any liquid clouds would present a potential problem if they were present at these altitudes. Recall Channel 9 peaks at 60-90 hPa, whereas the tropopause at this high-latitude location is located at ∼200-300 hPa, so the liquid clouds would need to be thick high cirrus near the tropopause and could only contaminate Channel 9 near the low altitude tail of the weighting functions in Figure 1b. While satellite imagery does reveal some high cirrus at this time and location, we see no evidence of it producing significant contamination of either the mean or perturbation Channel 9 brightness temperatures.

Page 2034 L18: We will cite this interesting paper in revision.
Page 2007 L11: Good suggested change.
Page 2009 L20: Agreed.

Page 2016 L1: We will reword here along the lines suggested by the reviewer.
Page 2018 L7: We will reword here to avoid repetition.

ACPD

6, S718–S720, 2006

References

[1] Durre, I., Vose, R. S., and Wuertz, D. B.: Overview of the Integrated Global Radiosonde Archive, J. Clim., 19, 53–68, 2006.

ACPD

6, S718–S720, 2006