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Discussions

# Interactive comment on "CALIPSO Lidar Calibration at 532 nm: Version 4 Daytime Algorithm" *by* Brian J. Getzewich et al.

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The paper details the CALIPSO V4 daytime 532 nm calibration approach, which is critical for using CALIOP data. The paper is well organized, and the general approach is sound. But some details could be better presented. I suggest it for publication after the following comments are properly addressed.

1. Even the paper presented detail error estimations. But not all potential sources are included. Based on Figures 1,2, and 4, there are large calibration variations with time or locution. Although the potential mechanisms to day and night time calibration differences were discussed, what control these spatial variations during daytime were not touched. These daytime in-granule variations could indicate that there is a possibility

for large between granule variations, which could be a large random error source. Is there any way to quantify this?

2. Section 4.2 and Fig. 6: There are few major questions related to the discussion here. First, I don't think that the comparison gives you a real independent evaluation of daytime calibrations because your approach assumes that the day and night are same. The results only indicate that the approach is properly implemented. It is not clear which zonal clear air data are used here, all clear air or only in the calibration transferring zone? If the results are for the calibration transferring zone, the attenuated scattering ratio given in the figure is too high for me because the upper troposphere and low stratosphere have very low scattering ratio, especially under background conditions.

3. Page 4, line 9: should Eq. 2 be Eq. 3?

4. Page 5, Eq. (5): Is Cnight a constant here?

5. Figure1: use large font sizes for labels and legends.

6. Page 6, section 3.1: the baseline slope correction is hard to follow. Can you provide equations to support the discussion?

7. Page 8, lines 30-33: Why not using the new data to re-calculate altitude?

8. Page 10, line 24: Is 15 m here right?

9. Figure 3: Using a nighttime case to illustrate the approach is fine, but it will be good to see a daytime case because it is the focus of the paper. Due to the lower SNR, daytime data are challenging to handle.