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Comment

## ***Interactive comment on “The global 3-D distribution of tropospheric aerosols as characterized by CALIOP” by D. M. Winker et al.***

**Anonymous Referee #1**

Received and published: 7 November 2012

This is a very good paper which probably for the first time demonstrates the potential of the space borne lidar for global aerosol study. The main features of Sahara dust, African smoke, Asian dust and smoke transport are captured. Sure there are problems with aerosol classification, choosing the correct lidar ratio and detection of low density aerosol layers, still the contribution of presented results to our understanding of global aerosol loading is large. The paper is clearly and well written and can be published after minor revisions.

Specific comments: Fig.1 needs some explanations: what means best case, worst case, day-low (80 km) etc.

p.24852 ln.3. “Because the lidar ratio of smoke is much larger than that of marine aerosol, lower levels of aerosol extinction can be detected for marine aerosol” But from

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fig.1 we can conclude that the threshold for marine aerosol is higher. It should be explained.

Fig.8 The legends on the right and the left panels should be done in the same manner. The line colors corresponding cloud-free cases should be the same. The dashed lines representing the number of aerosol samples should be commented.

Fig.13. In the capture to the figure we see “61 N–82 N” while in the text - 60-82 N.

I am not sure that Appendix is needed. No information from Appendix is actually needed for understanding of the manuscript.

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Interactive comment on Atmos. Chem. Phys. Discuss., 12, 24847, 2012.

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