Atmos. Chem. Phys. Discuss.,
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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Investigation of CATS aerosol products and application toward global diurnal variation of aerosols" *by* Logan Lee et al.

Anonymous Referee #2

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The authors use more than two years of CATS data to examine the diurnal cycles of the aerosol loading on global scale. Their results show that a strong peak at 6 am local time in aerosol extinction profile over North Africa during the June-November season. This finding is exciting and brand new. I would recommend this manuscript be published in ACP after a few minor changes.

(1) In Figure 5, there are some spikes above 2 km in the aerosol extinction vertical profiles seen in the CATS data, but not present in the CALOP data. Are they due to the cloud screening differences between CATS and CALIOP? (2) Line# 353-354, unlike CALIOP, MODIS Aqua aerosol products are only available in the early afternoon, but not in the early morning, since the algorithm only performs retrieval over daytime. (3) Line# 355-356, please add a sentence or two to briefly elaborate what aerosol above

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cloud issues are as reported by Rajapashe et al., (2017). (4) Line# 358, please spell out “AGL”. (5) The aerosol extinction at 1064 nm may not be as sensitive to the fine mode aerosols (such as smoke and urban pollutant aerosols) compared to the coarse mode aerosols (such as dust). The authors probably should add a few sentences to address this.

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