

Interactive comment on “Relationship between low-cloud presence and the amount of overlying aerosols” by C. E. Chung et al.

Anonymous Referee #1

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This paper study the difference between AOD_{ct} in clear sky and above low clouds, presents some new and interesting results. In general, I find this manuscript to be of sufficient interest for publication and appropriate for ACP audience. I recommend accepted this paper for publication to do minor revisions that specified below:

1. The author should highlights why CALIPSO data are used in this study? Since there are some studies indicate that the CALIPSO derived above-cloud AOD are lower than other satellites sensors in the A-Train. 2. Do you consider the multilayer cloud with the existence of aerosols in this study? For example, aerosols above lower layer clouds but below the upper layer clouds? 3. When you calculate the \hat{AOD}_{ct} , how do you define the nearby clear sky? As we know that for some grid cell, there may be three or two nearby clear sky grid cells. 4. Some discussions or conclusions should be given about the relationship between low-cloud presence and the amount

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of overlying aerosols. 5. There are several related references advise you to cite in you study, for example: (1. Wang, W., J. Huang, P. Minnis, Y. Hu, J. Li, Z. Huang, J. Ayers, and T. Wang, Dusty cloud properties and radiative forcing over dust source and downwind regions derived from A-Train data during the Pacific Dust Experiment, *Journal of Geophysical Research*, 115 (2010), D00H35, doi:10.1029/2010JD014109. 2. Huang, J., P. Minnis, B. Lin, Y. Yi, S. Sun-Mack, T. Fan, and J. Ayers, 2006: Determination of ice water path in ice-over-water cloud systems using combined MODIS and AMSR-E measurements, *Geophysical Research Letters*, 33 (21)L21801, doi:10.1029/2006GL027038. 3. Huang, J., P. Minnis, B. Lin, Y. Yi, M. Khaiyer, R. Arduini, A. Fan, and G. Mace, 2005: Advanced retrievals of multilayered cloud properties using multispectral measurements, *Journal of Geophysical Research*, 110 (D15) (2005), D15S18, doi:10.1029/2004JD005101.) 6. In references, there are some unusual expressions. For example, some reference use “Atmos. Chem. Phys.”, but some reference use “Atmospheric Chemistry and Physics”.

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