

Interactive comment on “Enhancement of aerosols in UTLS over the Tibetan Plateau induced by deep convection during the Asian summer monsoon” by Q. S. He et al.

Anonymous Referee #1

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This paper presents some continuous lidar measurements of aerosol profiles at a meteorological station over the Tibetan Plateau during August 2011. It is found that a maximum aerosol layer persistent above the tropopause and is anti-correlated with the tropopause temperature and satellite-derived OLR values. By this, the authors concluded that the aerosol layer is resulted from deep convection over the Tibetan Plateau during the Asian summer monsoon. This is a very interesting work and should be publishable in ACP if the following issues are addressed in the revised version.

1. The paper (Figure 2) shows that the day-to-day variations of the maximum aerosol extinction coefficient in 12 days are anti-correlated with the tropopause temperature,

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how are about the data between 12 Aug. and 22 Aug.?

2. The authors indicate that OLR values less than 200 Wm⁻² are indicative of deep convection, but only OLR values larger than 200 Wm⁻² are shown in Figure 4. How can we know that deep convection actually occurred in those days? Please also provide more evidence to show such an aerosol layer is absent if no deep convection occurred.
3. The aerosol data are obtained in cloud-free days, but OLR data reflect cloud top heights, how these two datasets are correlated?
4. The manuscript is generally well rewritten, but there are many wording or typo errors. The authors should check the whole text carefully.

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