Atmos. Chem. Phys. Discuss.,
https://doi.org/10.5194/acp-2020-715-RC2, 2020

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Measurement Report: Determination of aerosol vertical features on different time-scales over East Asia based on CATS aerosol products" *by* Yueming Cheng et al.

Anonymous Referee #2

Received and published: 2 October 2020

The vertical profile of aerosol is important for aerosol forecast, assimilation and pollution control. But the measurement information of vertical structure is still poor, especially in the West China, since there are few ground-based lidars. In this manuscript, the authors use the CATS lidar to investigate the seasonal variations and diurnal cycles of the vertical aerosol extinction coefficients. The results are helpful for the understanding of the vertical structure of aerosol. I recommend this paper for publication after the following points are addressed. 1. In Line 49 and Line 96, the repeat cycle of the CATS measurements described is different, please check it carefully. 2. In Line 108, Please introduce the detail of the total depolarization ratios, for the readers to understand the related results. 3. In Line 127, Does CATS AOT contain aerosol information below the

Printer-friendly version

Discussion paper

cloud? If yes, it should be described in detail. 4. In Line 175, Does the CATS-derived aerosol subtypes product directly provided by CATS? Does it represent the total mass concentration of aerosol species in full particle size? 5. In Line 187, the pdf values are 19.18, 27.41%, 20.20%, but the maximum value of x coordinate in Fig. 3 are less than 8%. 6. In Fig. 3, the maximum proportion of some species is above the top of the PBLH. How the PBLH and mean PBLH is calculated? Please describe it in detail. And the PBLH should be compared with some literatures. 7. I think the dust storms are usually rare in summer for more precipitation. Please explain the continue influence of the dust storms in summer. 8. If the authors consider the difference of local time among different time zones even in a region, it's suggested that the authors introduce the method of data matching.

Interactive comment on Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2020-715, 2020.

Printer-friendly version

Discussion paper