

Comment on amt-2021-292

Anonymous Referee #1

Referee comment on "Comparison of planetary boundary layer height from ceilometer with ARM radiosonde data" by Damao Zhang et al., Atmos. Meas. Tech. Discuss.,
<https://doi.org/10.5194/amt-2021-292-RC1>, 2021

- The author aimed to compare the ceilometer- and radiosonde-estimated PBLHTs under stale, unstable and RL, cloudy and cloud-free conditions. But what is the stability parameter used and how is the RL defined in this study? How the cloudy and cloud-free condition is defined? It should be explained.
- The observation data used in this paper include both over land and ocean. However, what is the difference between the accuracy of PBLH estimation over land and ocean? It is suggested to be explained in the manuscript.
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In Figure 2, what is the reason for the great difference in PBLH retrieved by different methods at 18:00 LT? According to the attenuated backscatter coefficient, it is well mixed within the PBL, generally, the uncertainty of PBLH retrieving should be relatively small under this condition?

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In Figure 3, The profiles of backscatter and Richardson number is incomplete, which will lead us to doubt the rationality of the data. In addition, what are the reasons for the difference of PBLH retrieved by different methods? Because the defect of the method or the structures of the PBL? should be explained.