Comment on amt-2021-363

Anonymous Referee #2

Referee comment on "Evaluating daytime planetary boundary-layer height estimations resolved by both active and passive remote sensing instruments during the CHEESEHEAD19 field campaign" by James B. Duncan Jr. et al., Atmos. Meas. Tech. Discuss., https://doi.org/10.5194/amt-2021-363-RC3, 2022

The manuscript "Evaluating daytime planetary boundary-layer height estimations resolved by both active and passive remote sensing instruments during the CHEESEHEAD19 field campaign" by James B. Duncan Jr. et al. efficiently analyzes the daytime evolution of the planetary boundary-layer, by using multiple active and passive remote sensing instruments, as well as radiosonde observations. It is well organized, meets scientific quality and provides valuable information within the scope of the Atmospheric Measurement Techniques community. Moreover, the figures gather important information that is featured clearly.

We thank the Referee for the positive and constructive comments. We hope we have addressed all of the Referee's concerns and we think that our manuscript did benefit from the constructive comments made by all Referees.

Specific comments:

Since parcel method is better suited in convective boundary layer conditions, please comment the fact that it is employed to derive PBLH at 6 local time, when convection is not accomplished.

According to all Referees' comments, we removed the radiosondes at 06:00 LT from the analysis. At the beginning of Section 2.1 we included the text *"Since sunrise for 19-24 August and 23-28 September is approximately at 05:20 and 06:00 LT, respectively, the 06:00 LT sounding was not included in the analysis as a convective PBL would not yet have been present in the remote sensing observations. Sunset for the 19-24 August and 23-28 September is at around 19:00 and 18:00 LT, respectively."* As a consequence of this change, all figures have been reproduced and all statistical results have been updated in the revised version of the manuscript.

Figure 4: Please add a label for "Prentice" and "28 September 2019", like in figures 3,5,7,8. It is really helpful to see this information pointed out, considering the amount of data and case-studies.

As suggested, the site and date labels have been added to Fig. 4.

Figure 2: A more detailed caption, including the error bar and outlier information would be supportive for the reader.

Description of the error bars used in the figure has been added to the caption of Fig. 2: *"The boxes show the interquartile range with the median indicated by the horizontal line and the*

whiskers extend to points that lie within 1.5 times the interquartile range of the lower and upper quartiles."