

Interactive comment on “Graphics Algorithm for Deriving Atmospheric Boundary Layer Heights from CALIPSO Data” by Boming Liu et al.

Anonymous Referee #2

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Comments:

The atmospheric boundary layer height is of great importance because it not only affects the diffusion of air pollutions but also determines the formation of different kinds of weather. Previous studies have focused on the determination of BLH based on measurements of remote sensing, especially laser remote sensing. This study proposed an interesting method, which can obtain reliable BLH from CALIPSO data. I have given a review report before, and authors made some revision of the manuscript. Now it looks much better. But I still have some major concerns.

Major comments:

1. In the noise removal phase, how much points were removed in the end? If it is 100

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data points, 60 are removed at once and only 40 valid points remain. Can the results be trusted? The authors should add some quality control, such as removing 10 or less, the best quality, 30 are not credible, etc. I did not see the description in the paper.

2. Figure 9, this study shows the comparison between the BLHs from CALIPSO at 0210LT and RS at 2000LT. But the BLH has strong diurnal variances, this comparison is unreasonable. I suggest that the author change to RS data at night, or delete this comparison.

3. The author claimed that they use nighttime data of CALIPSO and Lidar (0210LT), but the nighttime BLHs at 0210LT from CALIPSO and Lidar looks a little high. It may be due to the that the Lidar system regarded the top of residual layer as the BLH at night. So, the authors should explain it clearly.

4. About data collection time, the authors claimed that the number of residual CALIPSO data over Wuhan area was 49 after removing the cases with cloud and dust. The author should describe the continuous observation period for Lidar and RS, and indicate that how many cases have collected.

5. The principle that satellite data matches the ground station did not appear in the paper. The authors should clarify the match distance range and time range between the CALIPSO and the ground lidar (RS). Because the returns trajectory of CALIPSO is not completely coincident. It is necessary to point out the match distance range and time range.

Technical comments:

1. P2, Line 2: RS is the abbreviation., It should give the full name when it first appears
2. The English of the paper should be improved.

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