

***Interactive comment on “Technical note:
Boundary layer height determination from Lidar
for improving air pollution episode modelling:
development of new algorithm and evaluation” by
Ting Yang et al.***

Anonymous Referee #3

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General comment:

This manuscript presents “Boundary layer height determination from Lidar for improving air pollution episode modelling: development of new algorithm and evaluation”. The authors discuss the boundary layer height under different pollution situations by using a new algorithm. As we know it is not easy to define the boundary height particularly, the data from radio sounding is usually too rough to define it. This paper provides a new thinking by using high resolution of lidar monitoring data to estimate boundary layer height. However, here still have some concerns in the following as list in specific

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comments.

Specific comments:

1. Since the existing of gravity wave is an important factor for the method, should you declare the application limitation of the method you developed?
2. In general, the data from radio sounding is usually too rough to define boundary height. You might also need to declare what kind of the method you define from radiosondes (same as Stull (1988) ?), and in case have multi-levels, how do you define boundary layer height ?
3. Page 8, line 33 and Table 2, there are 298 radiosondes in total for the comparison of RMSE and Lidar retrieval method, how many cases in each pollution types? I suggest you need to show in the table.
4. Figure 6, from the case under clean atmosphere (9 Aug.), they are with good performance for all the method of retrieval algorithms, even in the vertical distribution. However, in Figure 7, at low concentration level (green dots, less than 35 $\mu\text{g}/\text{m}^3$), the scatter distribution of some cases are diverse (i.e. far away 1:1 line) in different method. Why?

Interactive comment on Atmos. Chem. Phys. Discuss., doi:10.5194/acp-2016-1010, 2017.

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