

## ***Interactive comment on “Integrated impacts of synoptic forcing and aerosol radiative effect on boundary layer and pollution in the Beijing-Tianjin-Hebei region, China” by Yucong Miao et al.***

**Anonymous Referee #1**

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The authors aim to investigate the complicated impacts of synoptic forcing and aerosol radiative effect on boundary layer and pollution in the Beijing-Tianjin-Hebei region of China. The manuscript has well-presented some findings. However, there are still some minor concerns that need to be addressed.

1. Most of all, more deeper analyses are needed for all of the figures. In the current version, the analysis is too simple and rough for the figures. Besides, a mechanism analysis should be performed according to the phenomena. 2. In the Abstract section, Line 10-15, the meaning of “To unravel the complicated impacts of large-scale atmo-

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spheric forcing and the local-scale planetary boundary layer (PBL) characteristics on the pollution there” is unclear. Moreover, the title illustrated that the focus of this study is the “impacts of synoptic forcing and aerosol radiative effect on boundary layer and pollution”. The Abstract needs more improvements. 3. What is the standard to identify the heavy pollution episodes in Figure 2? 4. The abbreviation should be used in the following illustration after definition. 5. Section 2 should be separated the two parts including “Data” and “model description”. 6. In Figure 6, the legend should be given in (a). 7. Figure 7-9, are these results the model simulation or reanalysis results? It should be present clearly in figure title. 8. The black line in Figure 7 is not clear. 9. In Figure 8-9, what is the meaning of gray color shading? In Figure 10a and 10b, what does the white color denote? 10. Page 5, Line 151, the sentence “As the estimated BLH shown in Fig. 5” need to be rephrased. 11. What is the meaning of “region of interest”? Some abbreviation is not needed. For example, ROI,

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