

Review on the revised version of ACP-2019058_R1 submission by Yu et al.

Most of the comments and suggestions have been addressed in the revised version. For instance, the manuscript structure was re-organized as suggested. However, several major concerns need to be addressed before it is accepted for publication.

Major comments.

1. Issue 1 related to manuscript-structure organization: P147-165, Section 2.2.2, the model simulation validation should be not presented here.
2. Issue 2 related to manuscript-structure organization: the three sections, i.e., Sections 3.2, 3.3, and 3.3 are presented in the current version to illustrate the impact of meteorological conditions such as winds and stabilities of the atmospheric boundary layer on surface $PM_{2.5}$ concentrations and pollution events. I am not sure that the authors need three sub-sections to discuss them separately. To me, the observed evidence is pretty clear and straightforward that heavy $PM_{2.5}$ pollution events (daily mean concentrations higher than $150.0 \mu g \cdot m^{-3}$) were caused by strong northerly winds and light pollution was associated with local sources. I would suggest combining them or re-organizing them further in a better way.
3. To better characterize the unique features of the ABL for the heavy pollution events in this region, the authors are suggested to shed more light on the characteristics of the ABL for different pollution events. Fig.6 is a good one but it isn't enough. For instance, which cases do the profiles presented in Fig.6 represent? What time and which day? If these profiles represented the conventional sounding data like twice a day (07am and 07 pm Beijing Time), that would be not sufficient. It will be very helpful if the authors can present any more observed profiles like LiDAR measurements, Wind Profilers data, etc. to compare the differences between the three heavy pollution events and a case with low $PM_{2.5}$ as well as their evolution. Any effort like that will be a strong support to the conclusions that the authors want to draw through this study.
4. English writing is another major concern that the authors really need more efforts. There are many writing issues related to grammar, typo, sentence structures, inappropriate words, etc. I am not going to list them here. My suggestion is to find a professional language edit service.