

## **Responds to Referee #1:**

### **Major comments**

*Based on ground measurement of aerosol, visibility and meteorological conditions in north china plain, the paper proposed a parameterization scheme for low visibility conditions on hazy days. The analysis is well-grounded; the result is reliable with innovative ideas. The reviewer thinks this paper can be published on ACP.*

**Response:** Thanks for the comments.

### **Minor comments**

*In the introduction part, the author mentioned “Mass concentrations of  $PM_{2.5}$  in Beijing and Chongqing both exceeded the national air quality standard of particulate matter within  $10\ \mu m$  ( $PM_{10}$ ) for residential areas ( $100\ \mu g\ m^{-3}$ ) and were at least 10 times those ( $5\text{--}10\ \mu g\ m^{-3}$ ) measured in US continental east (Hidy et al., 2009).” The term “air quality standard for residential area” is not clear and improper. It is suggested to revise the sentence to “Mass concentrations of  $PM_{2.5}$  in Beijing and Chongqing both exceeded the ambient air quality standard of China (GB3095-1996) for  $PM_{10}$  ( $100\ \mu g\ m^{-3}$ , grade 2) and were at least 10 times those ( $5\text{--}10\ \mu g\ m^{-3}$ ) measured in US continental east (Hidy et al., 2009).”*

*Another suggestion is that besides GB3095-1996, the author may consider referring following  $PM_{2.5}$  standards in China for comparison in the sentence mentioned above:*

*$75\ \mu g\ m^{-3}$  (QX/T 113-2010, Observation and forecast levels of haze)*

*$35\ \mu g\ m^{-3}$  (grade 2, annual average limit, ambient air quality standard of China, GB3095-20XX(draft), <http://www.zhb.gov.cn/gkml/hbb/bgth/201111/W020111121388004546031.pdf>)*

*These may help the readers (especially for those non-Chinese readers) to know updated progress of ambient air quality standard revision in China.*

**Response:** We appreciate the valuable comments and suggestions of the referee.

According to the referee's suggestion, we have added the recently revised ambient air quality standard of China (GB3095-2012) in the reference list. Considering the old ambient air quality standard of GB3095-1996 will be replaced with the new one, we have not referenced it in the manuscript.