

*We are grateful for the detailed revision of our manuscript and appreciate the valuable comments and suggestions that greatly helped us improve our work. We will address all the issues point by point.*

Answers to Referee #2's comments and suggestions:

***1) The operational observation standards for foggy and hazy day by China Meteorological administration have changed during the passing decades. As for trends analysis, are there any considerations/treatments to avoid the difference caused by the different standards?***

We understand the concern of the reviewer and are grateful that this was pointed out. We confirmed that the operational standard was changed in 2014 for the stations in our study, thus not influencing the time range of 1981-2010. The same standard is applied throughout the entire analysis for determining fog and haze days.

***2) Figure 8 does not appear in the main text and the color scale ruler is not consistent with RH Unit. The units of vertical and horizontal axis is also missing in Figure 8, as well as that in figure 5 and figure 6.***

Thank you for pointing out our negligence. The units of the figures have been corrected/added and discussions on Figure 8 were added to Sect. 3.4 of the revised manuscript as is given below:

“The distribution of the count of days with 14h (LT)  $RH > 70\%$  and the count of haze days with 14h (LT)  $RH > 70\%$  are depicted in Figure 8. High RH days most frequently occur in the southeast, where there is a water vapour transport passageway, and along the orographic wind convergence line, which was observed to be favourable for the formation of fog events in Sect. 3.3.2. The distribution of the count of haze days with 14h (LT)  $RH > 70\%$  (Figure 8b) is similar to that of the count of all days with 14h (LT)  $RH > 70\%$  (Figure 8a), only with significantly less counts to the east of Shijiazhuang, because haze is not as severe in that region. Compared with the distribution of the total counts of low visibility and haze days (Figure 2b-c), it can be noted that the frequent low visibility events along the southern edge of the Taihang mountain were caused primarily by the heavy aerosol pollution and not by haze events associated with high RH. The low visibility events in the vicinity of Shijiazhuang, however, was not only caused by severe pollution but were also associated with high RH events, indicating that the hygroscopic growth of aerosols plays an important role in the visibility impairment in this region. Although aerosol pollution is not as severe in the south-eastern part of our area of study, a large fraction

of haze days are associated with high RH events, suggesting that the high RH in this region is able to impair visibility even if the aerosol concentration is not very high. The hygroscopic growth induced light scattering of aerosols plays a dominant role in the degradation of visibility in this region.”