

***Interactive comment on* “Measurement report: Exploring the NH₃ behaviours at urban and suburban Beijing: Comparison and implications” by Ziru Lan et al.**

Ziru Lan et al.

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—We thank both referees for their very constructive comments and suggestions. We revised our manuscript according to their comments and suggestions.

Response to comments by referee 2

Anonymous Referee #2

General comments: This manuscript reports a year long parallel measurements of NH₃ concentration at urban of suburban sites of Beijing. Statistical analysis, seasonal variation, diel profile and the relationship with temperature, RH, H₂O, wind speed and wind

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direct are present. This could be useful documentary for scientists who are interesting in aerosol chemistry, aerosol pH and pollutant management etc. I thus recommend publication of this manuscript on Atmospheric Chemistry and Physics. Specific comments: 1. The author might be able to take advantage of the parallel measurements and summarize the difference in pattern of NH₃ pollution and source. However, there seems to be a lack of effort on the in-depth analysis.

Response: Thanks for the suggestions. We present the differences in the seasonal and diurnal variability of NH₃ and H₂O at urban and suburban Beijing in this manuscript. The present spatial resolution of NH₃ emission inventory is not sufficient to support source difference analysis. Many other data should be used together to understand the NH₃ pollution and source, and this will be carried out in further studies.

2. The dew and NH₃ releasing point is interesting. I wonder if the dew point calculation could be useful to further explore and validate this point.

Response: Here, we reference some possible explanations to the diurnal changes. We calculate the dew points in summer for urban site (Fig. R1). There has some relationship but not all the truth.

Figure R1. The average diurnal change in NH₃, dew point, and H₂O in summer at the urban Beijing.

3. The author claimed a rain clearing effect for NH₃. But in Figure 8 suburban case, there was an increasing during the rain and after the rain. Therefore, there is a inconsistency between the data and the explanation.

Response: We notice the phenomenon that there was a little increasing during the rain, and on average it was lower than the mean NH₃ concentration in the same time in August. We pointed that the diurnal variation of NH₃ on the rain day did not differ considerably from the average diurnal variation in August. At the suburban site, the diurnal NH₃ mixing ratio increased in the daytime, so there was an increasing after the

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rain. We pointed that the rainfall MIGHT have a clearing effect on NH₃ but needed more cases to support.

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2020-1047>, 2020.

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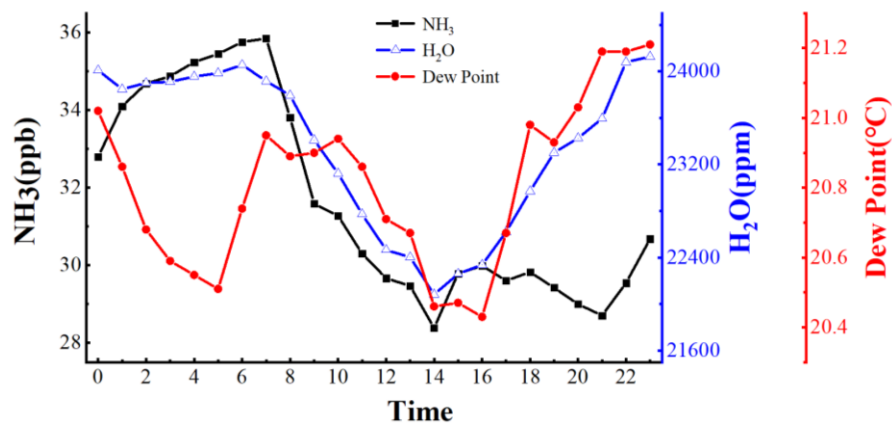


Figure R1. The average diurnal change in NH_3 , dew point, and H_2O in summer at the urban Beijing.

Fig. 1.

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