

## ***Interactive comment on “Observation of nitrate dominant PM<sub>2.5</sub> and particle pH elevation in urban Beijing during the winter of 2017” by Yuning Xie et al.***

**Anonymous Referee #1**

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General this paper investigates the pH of nitrate-dominated PM<sub>2.5</sub>. in Beijing in the winter of 2017. The acidity of particles is important in the discussion whether or not a S(IV) might be oxidized through NO<sub>2</sub>.

The English language of all the manuscript must be thoroughly checked and revised where needed. As the language correction alone is massive, I think the revision of the manuscript corresponds to 'major revision'.

Other than this, the manuscript is a solid work with interesting and valuable information and good analysis which should not be missed when Beijing wintertime sulphate formation is discussed.

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### Details

Title: Maybe better 'nitrate-dominated' instead of 'nitrate dominant' ?

Abstract, line 18: Better use 'Compared to historical records...' - see above comment, the English language of all of the manuscript has to be thoroughly checked, preferable by a professional editor or a native speaker.

Introduction: Needs to be fully language-edited. I cannot do this in my review. Note especially singular/plural use is wrong very often

line 55ff: Maybe the role of non-classical H<sub>2</sub>O<sub>2</sub> formation possibly contributing to S(VI) formation should be mentioned here.

line 183ff: How much of the observed pattern is due to weather conditions ? Is there a possibility to 'de-weather' these observations ?

Figures 5 & 6: Altogether, this is the most interesting finding of the MS. As the nitrate/sulphate ratio increases, pH is expected to increase

line 242: Give the correlation coefficient of the straight line plotted in Figure 6

line 308: Please do not start a paragraph like this.

Figure 2: Maybe use identical y-axis scaling for (a), (b) and (c) ?

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Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2019-541>, 2019.

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