

## ***Interactive comment on “Isotopic constraints on heterogeneous sulphate production in Beijing haze” by Pengzhen He et al.***

### **Anonymous Referee #1**

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In the manuscript, the study reported the first observations of  $\text{PM}_{2.5} \Delta^{17}\text{O}(\text{SO}_4^{2-})$  during haze events from October 2014 to January 2015 in Beijing, and use them to quantify the relative importance of different sulfate formation pathways, which is quite interesting and significant. But there are some mistakes and problem:

1. There are some typesetting in the manuscript: such as: (1) line 1: should be sulfate production; (2) line 25: formationwith should be formation with;(3) line 30: should be  $\text{NO}_2$  in; (4) line 84: should be round 20m; (5) line 84:should be round 60m; line 243: should be Figure 1a shows 2. Sampling site locate at a country-site (is not downtown), round 60 km northeast of downtown, and so that it is not perfect to know isotopic constraints on heterogeneous sulfate production in Beijing haze, the reason is that downtown has more information about the automobile exhaust emission, enter-

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prise emission, and resident emission and so on. Furthermore, the sampling site is close to Yanxi lake, so that it has been probably affected by cloud liquid water content; 3. Method: As we know, these data are likely contaminated to various degrees by occluded nitrate isotope signal in the samples, so that we had better remove nitrate during the preparing the  $\text{Ag}_2\text{SO}_4$ , but the manuscript has not removed the nitrate, which will effect on the sulfur isotope composition results; 4. The manuscript should introduce name of laboratory, precision of the machine.

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