

## ***Interactive comment on “The variation characteristics and possible sources of atmospheric water-soluble ions in Beijing” by P. F. Liu et al.***

### **Anonymous Referee #1**

Received and published: 24 March 2016

In this study, over two hundred PM<sub>2.5</sub> samples were collected in four seasons, and only the water-soluble ions were analysed. So many studies have already been carried out for the chemical compositions from PM<sub>2.5</sub> in Beijing. Because of the lack of other related aerosol measurements, this paper basically focuses on the simple display of the ion concentrations. Most of the discussion are based on speculation, and no new ideas and no interesting points are found in this paper. On the whole, this paper is not suitable for publication in the ACP. In addition, there are also some problems and mistakes in this paper. After major revision, this paper might be suitable for publication in some local journals. 1. It is strongly recommended that this paper be send to a language editing service. There are too many Chinese English in this paper. For example,

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the use of the word “farmer” is inaccurate, even ridiculous, just as “with high density of famers”, “farmers’ activities”, “heating by farmers”. At present, most of the people living in the rural area are not engaged in agricultural activities. And farmers have also not engaged in agricultural activities in most of the time. You should use the “rural area” and “agricultural activities” to describe the exact meaning. 2. Line 70, “Because crop leaves absorbed large quantities of atmospheric particles during crop growing season, the abrupt release of the particles by smashing crop straw for returning in the vast area of the NCP must also make striking contribution to atmospheric particles in the region during the seasonal harvest seasons.” This statement is basically impossible to be true. There is no evidence that the crop could absorb PM<sub>2.5</sub>. And the smashing process of crop straw could not be an important source of PM<sub>2.5</sub>. Just a small amount coarse PM might be emitted. 3. Line 74, what’s the meaning of “pollutant emissions from the chimney of the farmers’ coal stoves”? There is not a thing called “farmers’ coal stoves” in this world. I think “pollutants from coal combustion for heating” is more accurate. The author is not familiar with the countryside. 4. Line 94, “dedicated filter storage containers”? I think it should be a desiccator. 5. As mentioned in this paper, the TEOM 1405 is not suitable for accurate PM<sub>2.5</sub> mass concentration measurement owing to the volatilization of unstable components. Why didn’t the authors weigh the PTFE filters before and after the sampling for mass concentration analysis? This is the biggest problem in this paper. The proportions of different ions in PM<sub>2.5</sub> could not be obtained.

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Interactive comment on Atmos. Chem. Phys. Discuss., doi:10.5194/acp-2016-82, 2016.

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