

***Interactive comment on “Dicarboxylic acids, metals and isotopic compositions of C and N in atmospheric aerosols from inland China: implications for dust and coal burning emission and secondary aerosol formation” by G. Wang et al.***

**Anonymous Referee #1**

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General comments: Many papers have characterized atmospheric aerosol chemical compositions, however, very few of them have used multiple techniques like authors did in the current work. In this paper, authors have determined diacids, metals, EC, OC, and isotopic compositions of TN and TC in the PM<sub>10</sub> samples from inland China, and further calculated the concentrations of POC, SOC, ON, and IN, etc. Based on the compositions of those secondary aerosols (i.e., diacids, nitrate, sulfate), primary aerosols (i.e., metal elements and EC) and isotopic compositions, authors further dis-

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cussed the relations of those primary and secondary species, and have showed some insights into the source and secondary aerosol formation process. The paper is organized well, and the results and conclusions are of novelty. The data and related discussions are very helpful for readers to improve the understanding of the characteristics of Asian aerosols including compositions, sources, and formation processes. Therefore, I recommend an acceptance of this paper for publication in ACP. I found some mistakes in the current format, which should be corrected before publication.

Detailed comments 1. Page 6900, line 10–20, the discussions on pH are good. It is very useful for comparison of relative acidities samples and identification of the aerosol sources, although the pH values do not reflect the real acidity of the particles. The results presented here strongly demonstrated the importance of dust emissions in inland China. But I think it would be better for understanding the aerosol properties if authors measure the real acidity using some method like titration. 2. Page 6902, line 5, I would like to add one more sentence, i.e., inorganic nitrogen compounds (i.e., nitrate and ammonium) are the major nitrogen-containing matters in inland China, whereas organic nitrogen species are relatively minor. 3. Page 6909, Table 1, the title, composition should be compositions. Through Table 1 to Table 4, the letter “n” denoting the sample numbers should be in regular format not the italic. 4. Page, Table 2, glyoxylix is wrong, should be glyoxylic. The concentration numbers for Al, Ca and Fe in the 4th column should be presented with no space. 5. Page 6917, Fig. 4, the caption should be changed as Concentration ratios of C3 and C4 to C2. 6. Page 6918, the figure caption, reference should also be Wang 2010, same thing for Fig. 7 caption in page 6920.

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