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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Spatial and seasonal variability of PM_{2.5} acidity at two Chinese megacities: insights into the formation of secondary inorganic aerosols" *by* K. He et al.

Anonymous Referee #1

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The manuscript rationalized seasonal and inter-annual variations of acidity estimated from the measured chemical composition of PM2.5 collected in two megacities of China. The results are interesting, but more clarifications are needed.

General comments 1. The authors attempted to explain the enhancement of aerosol acidity during Asian dust in Beijing because of possible heterogeneous reactions. The enhancement of aerosol acidity during Asian dust is definitely a new result to research community and is contradictory to the common knowledge. However, it is well known that the response of ionic species in high concentration could be non-linear when IC is used to detect these ions. The non-linear response could be even stronger for NH4+

than other ions. This reviewer suggested that the authors should detail how to solve the non-linear response in chemical analysis. 2. In Discussion Section, this reviewer has problem to follow the logic and strongly encourages the authors rearranging most of discussion.

Specific comments 25563-Line 13, References are needed here. 25571-Line 2, the sentence does not sound scientific. Rewrite by including the average or the mean value. 25571-Line 11, the sentence is problematic, correct it. . 25572-Line 5, it will be easy for the reader to follow the discussion if the authors can summarize all factors before detailed discussion. 25579-Line 4, why was Rc/a at 0.9 used a threshold to judge the extent of neutralization? Conclusions and atmospheric implications 25582-Line 1-3 The contribution from coal combustion in southwestern China is not a new finding here, so it is better for the author to give a value here to describe how significant it contributed. 25582-Line 22,why "Chongqing's lower levers of NO3- suggest that vehicle sources play a more important role in Beijing."? Table.2 What does "0.95/0.80" mean? The uncertainties are missing and should be included. Figure.3b & 3c are not readable, and Chongqing and Beijing should be labeled out.

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 25557, 2011.

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Interactive Comment