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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Chemical characteristics of inorganic ammonium salts in $PM_{2.5}$ in the atmosphere of Beijing (China)" *by* A. Ianniello et al.

Anonymous Referee #1

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This manuscript addresses the sources and cycles of the major PM2.5 contributors to urban pollution in Bejing, China, particularly SO42-, NH4+, NO3-, and Cl-. A collection method, using annular denuders and filter pack techniques, reduces the loss of semi-volatile inorganic salts, which provides more reliable estimates of these particulate species. These species were analyzed and discussed in terms of temporal and diurnal variations, which provides insight into the contributions of local and regional sources to observed concentrations in Bejing. Meteorological effects were also discussed and used in the thermodynamic interpretation of the data. I find it suitable for publication in ACP with minor, mostly technical, revisions.

Comments:

The Introduction section contains a lot of information on chemical species, their sources, and chemical reactions in the atmosphere. I would find a Table to be helpful in presenting this information.

There are several instances of the word "Indeed" that begin sentences used to support a claim made in the prior sentence (i.e., page 17152, lines 17&21). In this, and other cases, the word "Indeed" is being used incorrectly. Also, the word "Besides" (page 17151, line 5) is being used incorrectly in this case.

Use caution in claiming any relationship with an R2 value < 0.5 as "good", perhaps consider changing to "significant" (i.e., page 17147, line 25).

The phrasing "probably coal combustion" (page 17131, line 5) implies the authors aren't sure of the major source of HCl. Does the the scientific community, in general, have a fundamental lack of knowledge in these regards? A reference and flux estimate would be appropriate here.

Technical corrections:

P17129, line 16 - add an "s" on the end of "source".

P17129, line 18 – missing a word after "gas"?

P17129, line 23 – misspelling of the word "tipically", replace with "typically".

P17130, line 6 – missing a word after "gases"?

P17130, line 23 – do the authors mean "OH radical"?

P17130, line 24 – delete "s" on the end of the word "combines"

P17131, line 2 – is "attach" supposed to be "attached" or "attack"?

P17131, line 8 – misspelling of the word "volcanoes".

P17131, lines 27-29 – consider omitting the phrase “take about one third of the total coal consumptions” and change “emitting” to “emit”.

P17131, line 28 – end sentence after He et al., 2003 reference, as the next part of the sentence has already been mentioned.

P17132, line 16 – the word “simultaneous” is unnecessary.

P17132, line 28 – should the word “of” be “from”?

P17135, line 8&18 – not sure what the authors mean with the phrase “ indicated with term of”. Needs to be re-phrased.

P17139, line 25: change “to point” to “pointing”.

P17139, line 25-26 – for the phrase “in same time scale above that of”, do the authors mean “on the same times scale, higher than than that of. . .”? If so, a comma should appear after the word “always”.

P17146, line 3 – “An other” can be changed to one word “Another”.

P17146, line 4 – omit the word “solid”

P17146, line 12: subscript the “4” in “NH4Cl”.

P17148, line 17: omit the word “Besides”.

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 17127, 2011.