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Drinking Water Engineering and Science Discussions

Interactive comment on "Confirming anthropogenic influences on the major organic and inorganic constituents of rainwater in an urban area" *by* K. Chon et al.

K. Chon et al.

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Response to the Reviewer Comments

Comment #1: This study assesses the impact of natural and anthropocentric sources on rainwater quality. The study presents data which in the future could be used for various studies related to environmental issues such as aerosols build-up, climate variability and extreme rainfall events etc. This paper can be accepted for publication but with minor revisions.

Response: We appreciate your comments and thank you for your positive recommendation

Comment #2: To increase the readability of study I would suggest the author to add a section on “framework and research design”. The section should clearly lay down the need and steps followed to study a) seasonal variation in chemical composition of rainwater b) variation in chemical composition of initial and subsequent rain events and c) enrichment factor to assess contribution of natural and anthropocentric sources.

Response: We thank the reviewer for this comment. According to your comment, we have added a section “framework and research design” in the Introduction as follows:

Our framework and research design are as follows: a) Seasonal variation in chemical composition (ions and trace metals) of rainwater b) Enrichment factor analysis to evaluate the contribution of non-crustal sources c) Variation in chemical composition of initial and subsequent rainfall d) Factor analysis to investigate the influence of natural and anthropogenic sources e) Analysis of organic compounds in rainwater

Comment #3: In Section 2.2-kindly add mathematical equation(s) to the methodology section indicating how VWMC was arrived at.

Response: We thank the reviewer for this comment. According to your comment, we have added an equation in Section 3.2 as follows:

VWMC was calculated by following equation:

VWMC=$(\sum\_(i=1)^{n} XiPi)/(\sum\_(i=1)^{n} Pi) Where Xi is the measured ion concentration, Pi is the precipitation amount, nist$

Comment #4: Section 2.2 line-16 - “Samples from initial precipitation events were collected with care not to be mixed with later precipitation samples” – this sentence is somewhat confusing. It’s not clear whether author is referring to a single rain event or multiple rain events in single day. Kindly elaborate the sample collection procedure in the methodologysection to make it understandable.

Response: We thank the reviewer for this insightful comment. We have added the description of sample collection procedure in the Materials and Methods section as follows:

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Rainwater samples were collected per event using a Teflon-coated funnel shaped collector designed to manually take samples with time. Initial rainwater sample was collected in a 2L glass jar connected to the collector at the beginning of rain event in a single day. Subsequent rainwater samples were collected after initial rainwater sampling. Samples from initial precipitation events were collected with care not to be mixed with later precipitation samples.Several subsequent samples could be collected depending on the amount of rainfall in a single day.

Comment #5: Fig 11-The Trace metal variation in initial rain event samples was higher as compared to the subsequent samples. Following information would be needed to understand the trace metal variation in initial and?? incomplete I have few doubts related to this figure 1. Why numbers of initial rain event samples were different from the subsequent rain event samples?

Response: We thank the reviewer for this comment. The number of subsequent rainwater samples was higher than initial rainwater samples since we usually have higher amount of rainfall in a day during summer in Korea.

2. As mentioned in section 2.7 -rain event samples were collected manually with time. What was the time between the two samples collected for analysis?

Response: We thank the reviewer for this comment. We did not divide initial and subsequent samples based on the time. Initial rain water samples were collected until 2L glass jar was filled up. We could collect an initial rainwater sample and several subsequent samples in a single day during summer. However, we could collect only initial rainwater sample when we did not have enough amount of rain in a single day.

3. How was the sample collection period to formulate initial and subsequent samples for a rain event decided?

Response: We thank the reviewer for this comment. Initial sample was collected in a 2L glass jar when it began raining in a single day. Subsequent samples were collected

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until the rain stopped.

Please also note the supplement to this comment:
http://www.drink-water-eng-sci-discuss.net/8/C62/2015/dwesd-8-C62-2015-supplement.zip

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