Atmos. Chem. Phys. Discuss., 12, C3638–C3640, 2012
www.atmos-chem-phys-discuss.net/12/C3638/2012/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Spatial and temporal distributions of total and methyl mercury in precipitation in core urban areas, Chongqing, China" *by* Y. M. Wang et al.

Anonymous Referee #1

Received and published: 14 June 2012

The authors present one full year of continuous measurements of precipitation at three typical sites in the urban area of Chongqing city, Southwestern China. The sampling techniques and analytical approaches are good enough and I have no questions for the data sets presented in the manuscript. This manuscript presents comprehensive data sets with respect to atmospheric wet depositions of Hg in a large urban area in Southwestern China, and it is an important addition to the existing atmospheric Hg database in China. Although there are some grammar and words usage errors in the manuscript, I recommend that the manuscript to be published after revisions of the following issues.

1. Since they measured the precipitation Hg concentrations, I advice the authors to calculate the wet deposition fluxes of the three sampling sites, respectively. This is because this kind of data set is very important to evaluate the regional budget of Hg, and it is also important for the citation of this paper in some other publications.

2. In the presented manuscript, the authors just presented the means and ranges of THg and MeHg concentrations for all the three sampling sites in Figure 1. It is important to make a statistical summary of THg and MeHg at each of the sampling site. They may include the average, median, range, volume-weighted mean values, and precipitation depth.

3. Line 6 on page 10246, the citation of Fu et al., 2010a is not correct here. Fu et al. (2010a) does not show any information about the Chinese anthropogenic Hg emission inventory.

4. line 10 on page 10247, the sentence of "Three sampling sites……exurb." should be revised to "Three sampling sites were selected for monitoring precipitation in Chongqing city, which were located in the downtown, suburban and controlled sites in the city, respectively.

5. Sampling method: how many samples did you collected from each of the sampling site.

6. The second paragraph on page 10250, the authors presented that particulate Hg concentration is dominant in all the samples. I encourage the author to go further in the discussions of this part. Particulate bounded mercury (PBM) and gaseous oxidized mercury (GOM) are the predominant source of Hg in precipitation. The fractions of particulate mercury and dissolved mercury in the precipitation are useful to evaluate the distributions of PBM and GOM in ambient air, which in turn can help to explain the sources of your samples.

7. line 20 on page 10252, 'rain amount' should be "rain depth'.

ACPD

12, C3638–C3640, 2012

Interactive Comment

8. line 25 on page 10252, the authors declare that there is a significant negative correlation between THg and rain depth. But the relationship factor (r) of -0.176 indicates that this is just a weak relathionship.

9. line 3 on page 10253, I am not clear of the item of 'frequent plum rains'

10. line 18 on apge 10253. 'the difference was statistically insignificant' should be 'there is no significant difference observed'

11. line 5-7 on page 10254, it is better to draw figures showing the relationship between precipitation THg and SO4 and NO3. The relationship factors of r do not show there are significant correlations.

12. line 2 on page 10255, 'house heating using coal' should be 'coal burning in domestic activities'.

Interactive comment on Atmos. Chem. Phys. Discuss., 12, 10243, 2012.