

Interactive comment on “Mercury dynamics and mass balance in a subtropical forest, southwestern China” by M. Ma et al.

Anonymous Referee #1

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It is of great interest and importance to study on Hg mass balance in subtropical forests, which have high Hg deposition, and been seldom studied. The manuscript shows very good data of throughfall, litterfall, and soil emission.

However, it is weak in discussion. Not always compare with other studies, but should focus on the relation between the sources/sinks.

Seasonal variation of the sources/sinks should be shown. It is very strange that annual precipitation is slightly lower than the annual discharge. Therefore, there was overestimation of stream leaching! Is there geological Hg region? High Hg emission caused by high deposition or high soil Hg content?

Specific comments:

C11435

P35858, L11: Too many significance digits (25 341).

P30860, L12: Why is most preventive?

P30860, L21: Delete 'self-made'.

P30860, L23: Precipitation collector should be set up on open land?

P30861, L6: Since the catchment is so big, measure stream Hg in some sub-catchment may be better. As mentioned later, the runoff is even higher than the precipitation got in the site!

P30861, L11: The bottle should be washed by acid.

P30861, L13: Not good for Hg balance! Better choosing smaller catchment or using soil water Hg leaching instead?

P30861, L19: How to define robustness and how to obtain the values?

P30861, L19: Diameter?

P30862, L7-9: Reference?

P30862, L25: (Cout - Cin)!

P30863, L12: Was the bank too high to the detection limit? Need the results be adjusted?

P30863, L18: The detection limits of Tekran 2537X is 0.1 ng/L for GEM.

P30865, L9: 'at home' changed to 'in China'.

P30866, L5: Seasonal variation need to be introduced.

P30867, L18: Du et al. (2014) in Tieshanping, Chongqing showed different seasonal variation of soil Hg emission and indicated the importance of atmospheric Hg concentration. Some discussion added?

C11436

P30868, L21: Why the MeHg not so high?

P30868, L24: When you concluded that the elevated Hg fluxes in stream water were probably attributed to the great atmospheric Hg depositions, you need explain there is not a geological Hg hotspot.

P30869, L5: How deep the soil layer considered?

P30869, L20: The stream flux of Hg was overestimated!

P30870, L20: Very high Hg pool in soil here (equal to many years' Hg deposition), mainly from other source than atmospheric deposition! It might not be concluded that high emission relates to high deposition. Better to show the Hg content in mineral soil and bed rock.

Figure 2: I suggest to add Hg concentration in the atmosphere.

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 35857, 2015.