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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Mercury fluxes, budgets and pools in forest ecosystems of China: A critical review" *by* Jun Zhou et al.

Anonymous Referee #1

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The manuscript by Zhou et al. attempts to "provide a better understanding of current knowledge with respect to forest Hg in China and quantify the forest act as net sinks or sources of GEM" and discuss the ecological risk of Hg accumulation in forest ecosystems. Although the authors provide a reasonable summary regarding Hg concentrations in streams with associated "export" fluxes (this is perhaps an ill-defined term by the authors since there is no sufficient evidence that the Hg measured in streams represent "removal" or "export" of Hg from the environmental systems under discussion) and present simplified graphic illustrations for Hg mass balance in various type of forest ecosystems, the manuscript has major deficiencies that do not meet the publication standards of Atmospheric Chemistry and Physics.

1. First of all, I am not sure if the review paper is needed given the information already

available in the literature. Even somewhat disturbing, after carefully reviewing the data presented in Table 1, Table 3, Figures 1-3 and part of Figures 4&5, a majority of the data appears to be repeating what has been presented in the text and SI Fu et al. (2015, ACP) and Wang et al. (2016, ES&T). The discussion provided for these tables and figures are also similar to the arguments provided by the two references. There is little new insight in the discussion of the manuscript.

2. The claim of "serious ecological risks" is an overstatement without clear evidence. The analysis is purely based on potential occurrence of forest fire events and the quantity of Hg storage. In fact, there are few documented cases of Hg pollution of ecological significance caused by forest fires. Should there be fire events, Hg pollution is not likely to be the primary factor leading to negative impacts to the ecosystem. There is no formal risk assessment component in the entire section 5.3 and the discussion in most based on what has been provided in the cited literature.

3. There is little synthesis in the manuscript except Figure 6. Most of the text in the manuscript only re-states the information presented in the figures and tables, rather than providing new insights or specific views of the authors. What is the novelty and what are the new findings in this review?

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