

## ***Interactive comment on “Global deposition of speciated atmospheric mercury to terrestrial surfaces: an overview” by Lei Zhang et al.***

**Anonymous Referee #1**

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This paper summarizes the important processes controlling atmospheric deposition of Hg. The topic is important, and new knowledge is available in the literature, so a review paper on this topic is a good and useful product to the broad scientific research community. However, there have been recent review papers that have largely covered the same topics and ideas, which leaves some doubt about this paper as one that makes a large contribution to the literature. For example, the abstract does not put forth many new ideas. There are a few missed opportunities such as when cloud/fog scavenging is mentioned the authors state: “the influence of cloud/fog scavenging is easy to neglect”. The authors should be more quantitative in their language so as to provide scientists with more concrete information on relationships and processes. Another example in the abstract that is a missed opportunity to provide some detailed information is the

C1

last line: “Future research needs have been proposed based on the current knowledge of global mercury deposition to terrestrial surfaces”. This statement is too vague and does not provide much substance. For example, in the conclusion, the 4th recommendation regarding fog, cloud, and dew is “The field ‘requires more standardized sampling methods’”. This is too vague and does not translate into a roadmap for improving the science. My suggestion is that the authors rethink their main focus of this paper – maybe all of deposition is too broad – and provide more insights and prescriptions for future research and/or data gaps. The authors have cited a large number of references and have done considerable research in the field. An improved focus would sharpen the discussion and make the paper more interesting to read.

One minor comment I have is that the following statement does not make sense to me: “The slope of the relationship implies the Hg concentration in precipitation. Europe has the flattest slope among all regions, indicating its lowest Hg pollution level around the world.” Europe has the lowest Hg pollution level around the world? That does not seem correct.

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C2