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Atmospheric Chemistry and Physics Discussions

Interactive comment on "A synthesis of research needs for improving the understanding of atmospheric mercury cycling" *by* Leiming Zhang et al.

Anonymous Referee #1

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This manuscript provides a complete overview of the state of the art in mercury observation. It reports the issues that affect current instruments used to measure mercury speciation and provides recommendations for future research to cope with lack of measures at global level. Advice on passive filtering can be considered as a way to cover missing measures and define a method for designing and developing next observation networks. About observation networks, the document highlights the importance of harmonized observations at global level: information should be comparable between data sources within the same network and between different networks.

Even though the needed for Quality Assurance (QA) is cited in the manuscript, the authors should improve the discussion about data validation process. QA and QC are

often presented together even if they are two quite different concepts: QA is related to the process regarding data collection, while QC is applied to the final product of monitoring. As data are often collected in near-real time, the importance for QA/QC system can be crucial in order to improve data quality throughput. In the manuscript only QA is cited.

Another important aspect is the storage of data collected by the observation network. The authors cite shared databases, freely released. This is very important to improve knowledge of phenomena and to allow policy makers to make better decisions, but there is a difficulty in sharing data openly and freely to the public. In the manuscript the authors cite SOP to collect the data, but the Data Policy within the observation network should also be treated.

Finally, many services related to the observation network and data sharing are included in IT infrastructures that pay attention to all data management issues, such as the implementation of data policy, data catalog and interoperability among networks using metadata. See, for example, GEOSS as a system designed to collect data from different observation networks. In session 2.6 may be that a small discussion on these IT systems and data sharing using metadata could be useful.

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