

## ***Interactive comment on “Speciated atmospheric mercury and sea–air exchange of gaseous mercury in the South China Sea” by Chunjie Wang et al.***

### **Anonymous Referee #1**

Received and published: 4 May 2019

The authors presented a set of valuable data and conducted a meaningful analysis of the data. I have a few comments, which may help improve clarity in some places. I don't view that it is reviewers' responsibility to copy-edit and hence I did not point out all grammatical errors, but the manuscript needs careful editing.

Some of the results need to be quantitative. For instance, in the abstract, how much higher were GEM and RGM concentrations in the northern SCS, Hg<sub>p2.5</sub> and Hg<sub>p10</sub> in PRE than other areas (lines 48 – 50)? How much higher were RGM concentrations during the day than at night (lines 54 – 56)? How much higher were their GEM concentrations than “those background sites in the southern hemisphere” (lines 232-233)

C1

and “remote oceans” (lines 234-235)? How much higher were the GEM concentrations over the northern SCS from a previous studies (lines 238-240)? They need to be quantitative about such comparisons.

Lines 81 – 88: Ye et al. (2016, acp) would be a good reference to cite, because their box model included the most up-to-date gas-phase reactions of Hg and Br and simulated contributions from variation oxidation reactions to GEM oxidation.

Line 97 – 102: Grammatical errors. They might want to break this rambling passage to three sentences.

Lines 103 – 108: Too many excess articles. In fact, this was fairly commonly throughout the text. They might want to give it a good editing to get rid of those excess articles.

Line 115: Mao et al. (2016, acp) provided a fairly complete review of the literature, up to early 2016, on spatiotemporal distributions of GEM, GOM, and PBM in different environments worldwide, including coastal areas. Not just these four studies for reference.

Lines 258-259: The larger variabilities in RGM and Hg<sub>p</sub> were due not only to scavenging but also likely due to their sensitivity to meteorological conditions and chemical environments.

Figure 3a: I suggest that the lines be thickened to make it clearer.

Please indicate where PRE is on the map. Every reader does not necessarily know where PRE is.

Lines 276, 278, 281, 282: I suspect the supplemental figure numbers were wrong. Shouldn't they be Figures S1 and S2?

Lines 330: I don't see bi-modal here. There was a third peak below 0.4  $\mu\text{m}$ .

Lines 367-368: This statement needs support of evidence. I don't see where this came from.

C2

Line 429: The GEM-Hgp correlation may also indicate the two had oceanic sources in addition to anthropogenic sources.

---

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2019-186>, 2019.