

## ***Interactive comment on “Deciphering the Chemical Forms of Gaseous Oxidized Mercury in Florida, USA” by Jiaoyan Huang et al.***

**Jiaoyan Huang et al.**

mgustin@cabnr.unr.edu

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Please note the Gustin et al. 2016 and Lyman et al. 2016 papers have been accepted and references updated

The authors present their latest findings regarding identification of potential different chemical forms of gaseous oxidized mercury (GOM) at a site in Florida. The information presented should be useful to those working in this field. Following are specific comments on the manuscript: 1. Recommend revising the title of the manuscript to: "Deciphering some potential chemical forms of gaseous oxidized mercury in Florida, USA" Response: Good comment we have changed this to "Deciphering potential chemical compounds of gaseous oxidized mercury in Florida, USA"

2. For the unknown compound, recommend discussing in more detail potential candi-

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dates.

Response: We have suggested the higher temperature ones could be organic compounds based on the methyl mercury desorption profile. Otherwise, we do not want to speculate. Line 212.

3. The abstract does not align with the Conclusions section in discussing the five potential different GOM compounds. For instance, the abstract does not mention HgCl<sub>2</sub>, and the Conclusions section mentions 2 unknown compounds while the abstract mentions one unknown compound.

Response: This has been adjusted to fit with the text. Thank you for catching that. There are 7 potential compounds: 1) perhaps organic compounds when there is a high residual tail; 2) Hg-N and 3) Hg-S based compounds; 4) HgCl<sub>2</sub> and 5) HgBr<sub>2</sub>; 6) HgO; and 7) something released at the same temperature as GEM.

4. The Introduction, first paragraph, stated that deposition did not decrease with emission reductions as coal combustion facilities in the region (please clarify what region?) have implemented control technologies (Prestbo and Gay, 2009). The Prestbo and Gay is an older reference; would this still be the case in 2016?

Response: Good question. Based on data presented by the Mercury Deposition Network, concentrations have gone up at OLF 17.1 in 2012 and 21.0 in 2014 <http://nadp.sws.uiuc.edu/MDN/annualmdnmaps.aspx> Site updated 2104 visited 13 November 2016. This information has been added to the introduction

5. In Section 3.2 Potential GOM Compounds, the end of the third paragraph ("it is interesting to note that the 11/19 profile was similar to HgCl<sub>2</sub>") does not align with the end of the second paragraph which describes HgBr<sub>2</sub> instead of HgCl<sub>2</sub>. Response: This is now described as potentially being both.