

# ***Interactive comment on “Passive air sampling of gaseous elemental mercury: a critical review” by D. S. McLagan et al.***

**D. S. McLagan et al.**

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Received and published: 17 February 2016

We appreciate the generally positive sentiments about our manuscript. Below we give a detailed response to each of the points raised by the reviewer.

REVIEWER: Summarize and simplify the contents. Introduction There are a lot of references cited in the first three paragraphs.

AUTHORS' RESPONSE: We believe that our review requires a brief, yet comprehensive introduction of the mercury cycle in the environment, especially in the atmosphere, and as such, see little opportunity to shorten and simplify the introductory section. In a revised version, we will reduce the number of references used per point.

REVIEWER: “Do existing gaseous elemental mercury...” The last two paragraphs

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(Line 27 of page 34625 to line 3 of page 34627) mention the memory effects on sampler accuracy. All of them derive from the same reference, Brown et al. (2011). Also, the whole paragraph in 7.2, “Lessons from active monitoring”.

**AUTHORS’ RESPONSE:** It is true that the majority of references in the last two paragraphs refer to Brown et al. (2011). While we do cite several other references including Luo et al. (2010), Skov et al. (2007), Morris et al. (2002), etc., it is simply that Brown et al. (2011) have completed the most extensive testing of this concept to date. To our knowledge this is the only study that specifically addresses the topics of memory effects, and physical degradation of noble metal sorbents directly. Other studies that discuss these phenomena simply suggest that they may be the cause of problems that have arisen using these sorbents. Thus the Brown et al. reference dominates these sections. To quote the paper by Brown et al. (2011): “A couple of studies have identified the presence of a possible memory effect and proposed that short and long-term effects exist; there has been no work to quantify this effect, its dependence on input variables, or its potential to bias measurement results. This paper now addresses that deficiency.”

**REVIEWER:** The same capitalization applies to table titles. For example, “Diffusive barrier” should replace with “Diffusive Barrier”.

**AUTHORS’ RESPONSE:** This will be updated in a revised manuscript.

**REVIEWER:** This paper was well organized, but I still find many confusing or complex sentences. In Figure 1, headings titles of page 34641, “Initially the SR is constant and analyte uptake will be linear (or near linear) and the sampler can be described as being in the effective deployment period.”

**AUTHORS’ RESPONSE:** This sentence will be changed to the following: “Initially the SR is constant and the amount of sorbed analyte will increase linearly with time. During this phase the sampler can be described as being in the effective deployment period.” We have also identified a number of additional sentences that could be perceived as

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being complex and will simplify them in a revised version.

REVIEWER: Error bars should be added in Figure 3.

AUTHORS' RESPONSE: Errors bars will be added to Figure 3 in a revised manuscript.

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Interactive comment on Atmos. Chem. Phys. Discuss., 15, 34605, 2015.

ACPD

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2016

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