

Interactive comment on “Atmospheric mercury observations from Antarctica: seasonal variation and source and sink region calculations” by K. Aspmo Pfaffhuber et al.

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We thank Steven Brooks for a careful examination of our manuscript and for thoughtful suggestions to improve its quality.

Reviewer comment (RC): The paper could really benefit from a couple of GEM Vs. Ozone plots. Perhaps a 14 day period in Summer and a 14 day period in Winter.

Author comment (AC): We have chosen to add a figure showing GEM and O3 time series from typical winter, spring and summer periods.

RC: There is a critical discrepancy between the GEM value of 0.02 to 6.04 in the text,

and the values shown in Figure 2. which appear to be truncated at 3.0

AC: The authors apologize for the inconvenience of a typographical error; the highly variable GEM concentrations range from 0.02 to 3.04 (not 6.04 as stated in the text). This typo is corrected in the text.

RC: Figure 2. appears to indicate diurnal variation or at least periodic GEM enhancements. A plot of the average diurnal GEM in the summer would be a nice addition. Alternatively, the author could add a few 10 day GEM only plots for selected time periods.

AC: As also stated in the text (section 3.2 paragraph 3) “Diurnal variation in the GEM concentration was not observed at any time of the year at TRS”, and consequently we have not added any figure showing this. We have, however, added 14-day GEM and O₃ time series showing GEM and O₃ concentrations for different seasons, to visualize the small concentration variation in winter, the strong correlation between GEM and O₃ in spring and the anti-correlation in summer.

RC: Also in figure 2, the Zeppelin data is offset a half year, but the caption does not state if the offset is forward or background. While it can be deduced from the date of paper submission that the data is shifted forward. For completion, it should be stated in the caption.

AC: We agree, the figure caption should indicate whether the date offset is forward or backward. The caption now reads: “The time series from Zeppelin is shifted 182 days forward as compared to the TRS time series such that the seasons coincide.”

RC: The paper contains excessive misspellings (the worse is “Atmoephric” in the Xia reference). There are also many grammar errors. The paper requires a spell check and a good proofreading.

AC: The manuscript has been proofread for misspellings and grammatical errors.

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