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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Toward a real-time measurement of atmospheric mercury concentrations using cavity ring-down spectroscopy" *by* X. Faïn et al.

Anonymous Referee #2

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The paper describes a revised version of CRDS method with improved mirrors so that the detection limit is better. Now it can be used to measure ambient levels of Hg(0) air. The paper gives a description of the principle in CRDS and on the new setup. The method is tested under laboratory conditions towards a TEKRAN 2537B mercury analyser.

The paper is straightforward and I have only 1 serious comment. A comparison between results based on equation 4 and values from the Tekran show that the Tekran measures 21% higher than CRDS. This point needs more explanation. The Tekran instrument has been demonstrated to be a very reliable instrument but the calibration of

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the instrument is based on the vapour pressure of Hg and thus the calibration might be wrong and CRDS should be an absolute method? Therefore this point needs further discussion. Furthermore it would be interesting to see a comparison between CPDS and the Lumex the only alternative method which measures high time resolution Hg(0).

Below I have some more specific comments and questions

P 22144 line 26. The range of Hg(0) lifetime is due to lack of knowledge of the removal reactions and not due to difference in lifetime in e.g. Northern and Southern Hemisphere. This has to be specified.

P 22145 line 2. an average conc. of 1.7 ng m-3 is valid for the Northern Hemisphere but not the Southern Hemisphere so add "in the Northern Hemisphere" after ∼1.7 ng m-3.

P 22160 Line 19-22. It would improve the paper significantly if measurements in ambient air were presented and at the same time give a direct indication of the reliability and robustness of the CRD instrument.

P 22161 Line 2. replace "that" with "than"

P 22164 Line 6. After analyzers write: "Tekran 2537B and Lumex RA-915+.

Fig. 1 and 5. The figure texts are too small make them larger

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