

Interactive comment on “Development and testing of an online method to measure ambient fine particulate Reactive Oxygen Species (ROS) based on the 2',7'-dichlorofluorescin (DCFH) assay” by L. E. King and R. J. Weber

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We thank the reviewer for the comments and address each below.

1. Section 4.4 Collection efficiency of the system: the authors measured relative particle collection efficiency (compared to PILS efficiency) and not absolute. How efficient is the PILS in total particle collection? Have you ever performed experiments with your system and checked what is collection efficiency of the mist chamber in terms of total particle number entering and exiting the chamber, or even step more to see size

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distribution of particles entering the system and trapped by the mist chamber?

The PILS particle collection efficiency as described in Orsini et al. [2003] is greater than 97% for the applicable size range. The instrument's collection efficiency has been analyzed in a number of studies [Moya et al., 2011; Sorooshian et al., 2006; Weber et al., 2003] and so we feel that using the PILS as a standard for comparison is well justified. We have not evaluated the collection efficiency of the mist chamber in this study by measuring particles exiting the top of the chamber, but more extensive evaluations were done with an identical mist chamber in an early study involving test with nitric acid, which showed collection efficiencies greater than $95 \pm 2\%$ [Hennigan et al., 2008].

2. Page 3294, Line 14: LOD for ROSp is 0.15 nmol H₂O₂ equivalents m⁻³. However, in the text below Figure 9 LOD for ROSp is 0.5. It should be corrected.

We apologize for this confusion. The caption for Figure 9 is explaining that values of ROSp that were found to be below the limit of detection were represented in this figure as concentrations that were $0.5 \times \text{LOD}$. The Figure caption has been changed.

3. Table 2, last column with values for standard deviation: it is not clear if that is the STD of mean values (although those values seem to be in the first column) or what? Please make it clearer.

The rightmost column represents the standard deviation across all measurements for each sampling location/period shown in the first column, i.e., for the total number of samples given (N).

4. Table 4: For the results from the present study (Atlanta, GA), does the value 0.25 \pm 0.01 represent average from all 3 sampling locations? If yes, then you cannot call it only Atlanta, GA. If that is only Atlanta, GA sampling site then you did not sample in June, but only May and July. Please check that.

This value represents the urban average, i.e., from Jefferson St (JST) and Georgia

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Tech (GT), both urban Atlanta locations. We have revised the table to more correctly reflect the sampling periods for those locations, which occurred in May and July 2012, and not throughout May and July 2012 (originally noted in Table 4 as May-Jul 2012).

References Cited:

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