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Comment

Interactive comment on “Development and testing of an online method to measure ambient fine particulate Reactive Oxygen Species (ROS) based on the 2',7'-dichlorofluorescein (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. Suggest changing the word “particle” in the title to “particulate”.

We have revised the title accordingly.

2. Page 4, line 89-90 “Weak correlations between ROS and ozone have been reported (Venkatachari et al., 2005).” This statement is not accurate. The correlation between

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ROS and O₃ is actually pretty strong during early afternoon (12pm – 3pm).

We have revised this statement to take into account the afternoon correlation between ROSp and ozone found in the referenced study.

3. Page 20, line 451-453 “During May (JST) and June (YRK), the ROS instrument was operated using a 5-minute sampling period, but increased to 30 minutes for later portions of the GIT July study.” Why did you change the sampling period from 30-min to 5-min?

We apologize for any confusion this statement may have created. The original sampling period was 5 minutes, and was used for the majority of the study. At the end of the summer measurement period, we hoped to improve the measurements of ROSp by increasing the total amount of ROS collected per sampling period, allowing the difference between ROS_t and ROS_g values to be more consistently greater than the limit of detection. We have revised this statement to add clarity.

4. As the authors mentioned, the ROSp reported in this study is significantly below what has been reported by other investigators, with ranges between 0.54 to 15.1 nmol H₂O₂ equivalents/m³. This could be due to different emission characteristics, linked to different measurement methods, or due to some of the substantial challenges associated with using this chemical probe. I would suggest measuring ROSp concentrations at the Rochester site (during summertime) using the same automated flow system and online instrument to see if the result is persistent.

We would like to make measurements in the same location as the previous online monitoring study (Wang et al, 2011) but unfortunately it is not practical to do so terms of this publication.

5. Table 4 shows exactly the same information as Table 4 published by Wang et al., 2011.

We appreciate this comment. We have revised Table 4 to include results also shown

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in Table 3 from our online measurements as well as our filter-based results to provide a better comparison between our work and previous results.

6. It would be useful to add one plot showing the diurnal variations of the ROSp concentrations at all sites.

Diurnal plots of ROSp at different sites are strongly controlled by the values below the limit of detection and so we feel do not present useful new information.

Interactive comment on Atmos. Meas. Tech. Discuss., 6, 3279, 2013.

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