

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

Anonymous Referee #1

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In this study, an automated flow system and online instrument was developed for analysis of ROS using a mist chamber collection system coupled to an analytical system employing DCFH as a fluorescent probe. The paper is of high quality and moderate novelty. I strongly suggest publication after addressing the comments listed below.

1. Suggest changing the word “particle” in the title to “particulate”. 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 ROS and O₃

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is actually pretty strong during early afternoon (12pm – 3pm). 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 change to the 30-min sampling period from the 5-min period? 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. 5. Table 4 shows exactly the same information as Table 4 published by Wang et al., 2011 (this reference is originally included in the paper). 6. It would be useful to add one plot showing the diurnal variations of the ROSp concentrations at all sites.

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