

Interactive comment on “Sources of uncertainty in eddy covariance ozone flux measurements made by dry chemiluminescence fast response analysers” by J. B. A. Muller et al.

Anonymous Referee #2

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General Comments I found this paper to be well written, clear, and thorough. However, it is a bit on the long and dense side. I have only minor comments discussed below. I think the biggest area of improvement would be to make some of the figures clearer. For example, it is difficult to discern the different traces and error bars in figure 3.

Comments on Abstract The Abstract is too long. The first few sentences are more introductory material and do not belong in the abstract. The abstract should start with the sentence ‘We present ...’

Comments on Introduction The Introduction is well written and comprehensive. It does a nice job of explaining the subject matter, i.e. ozone flux measurements, the princi-

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ples and problems of the instrumentation used, and the motivation behind the analysis performed in the paper. It may be a bit long for those familiar with the material but it is very informative for those with a less comprehensive background in ozone flux measurements and issues.

Comments on Experimental The Experimental section does a nice job of describing the measurement set-up, data processing, and analysis techniques used in the paper. In particular I found section 2.3 data quality control very clear and worthwhile. In section 2.2.1, what is meant by de-spiked and how is a spike determined? In my experience some data is disregarded because it does not ‘look right’ when there is no objective reason to throw it out. I caution the authors to be very careful to not arbitrarily disregarding data. Also, how is the ‘best plane of correction’ determined? These concepts could be better explained or defined briefly in the text. In section 2.2.2, I am confused by the term raw flux covariance. Is it measured or calculated? What is the difference between $\overline{w'X'}$ with the bar on top versus the w' and X' described in 2.2.1. In section 2.2.3 line 11, remove word bars. I am a little uncomfortable in applying an offset determined from 15 minute averaged data to 30 minute averaged data. If the fit with the 30 minute data is uncorrelated then doesn’t that imply some other processes going suggesting all the analysis be done with 15 minute averages? I think could be better explained and defended in the text.

Comments on Results The Results of this study have been thoroughly analyzed and well-explained in the text. However, the sub-sections in the Results consist of very dense text and are a bit difficult to read. Section 3.4 seems out of place in this paper in that it discusses application and interpretation of ozone fluxes and not sources of the uncertainty. I realize it is giving a context using the uncertainty analysis. However, it may be better expanded and in its own paper.

Comments on Conclusions The Conclusion section is long. The discussion of the three main sources of uncertainty can be moved to the results and discussion section since this is really discussing the results. The paragraph spanning 2264 and 2265

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seems to be a conclusion with a few sentences of recommendation at the end. The recommendations should be separated out in a paragraph of their own.

Comments on Tables and Figures Table 1, the dash line in the 2 sigma mean error column is confusing and should be replaced with n/a to be consistent with Table 2. The figures could use work making them clearer. The error bars in Figs. 3, 4, and 5 are barely legible. The longer figure captions unnecessarily repeat what is shown in the legend.

Interactive comment on Atmos. Meas. Tech. Discuss., 2, 2241, 2009.