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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Size-dependent aerosol deposition velocities during BEARPEX'07" *by* R. J. Vong et al.

Anonymous Referee #1

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Review of "Size-dependent aerosol deposition velocities during BEARPEX'07", submitted by Vong et al., for publication in Atmospheric Chemistry and Physics Discussions.

This article describes size dependent aerosol dry deposition velocities over a ponderosa pine forest located in the foothills of the Sierra Mountains of Northern California. Deposition velocities were determined using the eddy covariance flux method. The paper does a good job of discussing measurement details and the associated uncertainties related to counting errors, instrument response time, and hygroscopic aerosol growth. It would be nice to see the authors state why these measurements are important at this specific site and the Northern California region. I recommend publication of this manuscript with relatively minor revisions. Following are specific comments:

Section 1: The introduction simply states that the study has something to do with

aerosol dry deposition. The first sentence of the first paragraph should tell the reader that the study addresses key factors that contribute to uncertainties related to the measurement of aerosol fluxes using the eddy covariance technique, not uncertainties in the aerosol flux itself. Unless this paper describes a novel new method, which I don't believe it does, by the end of the introduction (not including the abstract), the reader should know specifically why these measurements are being made at the specific field site that was chosen. The third paragraph tells why aerosol deposition is important in general, but why is it important at the chosen site? How will this data be used specifically?

Section 2, first paragraph, line 6: "average canopy height was 7.9 m." Change 'was' to 'is', since all of the rest of the description of the field site at the time of the experiment is in the present tense.

Section 3.1: Has it been demonstrated that daytime air is never influenced by the diesel (?) generator that was located only 125m to the north? Were any other concurrent data available that would indicate contamination?

Section 4.6, second paragraph, line 1: It is confusing that the reported range of hygroscopic growth parameters reported in the text (0 – 0.12) does not match what is presented in Figure 3 (-0.20 – 0.05).

Section 4.6, third paragraph: The reference to Carrico et al (2005) is the only reference in the paper to previous work carried out in the Northern California region. Lunden et al (2006) presented a study on fine particle growth events for the Blodgett forest site. Can the data in this study be compared to any of those previous results?

Section 4.6, fifth paragraph, last line: The reference to figure 5 is in regard to differences between daytime and nighttime values, however, figure 5 itself makes no reference to day or night.

Section 5, second paragraph, line 1: Delete the first instance of the word 'during'.

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Conclusion: This should be section 6, not 5. Are there any additional measurements that could be made at this site that would make this data more useful?

Figure 1: Are the times listed standard local time or daylight savings time?

Figure 6: Delete the word 'to'.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 4649, 2010.