

Interactive comment on “Eddy covariance fluxes of acyl peroxy nitrates (PAN, PPN, and MPAN) above a Ponderosa pine forest” by G. M. Wolfe et al.

Anonymous Referee #3

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This extremely well written paper represents yet another leading contribution by these researchers. The comprehensive treatment of the measurements appears to include all important considerations and comparisons (with theory and prior results) and to include cautions regarding interpretation and conclusions that can be drawn without further probing in-canopy processes.

I only have a few questions and suggestions as I find the paper nearly publishable “as is”. I am assuming that someone with greater expertise in micrometeorology / boundary layer processes and turbulence as it applies to flux measurements has also served as a referee for this paper.

The authors state that the summer of 2007 was unusual for this site. Does the statement in the abstract (expounded upon in last section) “PAN deposition is approximately 4 – 19% of that due to dry deposition of nitric acid at this site” stand as a general conclusion or might the fraction vary under more typical photochemical conditions?

Might the authors share the details of their estimate for APN losses due to thermal decomposition in the inlet lines? Did they ever conduct calibrations by placing the calibration gas at the air inlet?

Are there references that should accompany the text at the start of section 2.5 or does it refer to this work only?

Page 17507 lines 5 – 11. I would be more comfortable with the actual correction being applied to the data (according to actual turbulence values). Without knowing what the uncertainty in tW is, it's difficult to know if it would be appropriate to apply the daytime average correction to the daytime data and the nighttime average correction to the nighttime data. In either case, it seems “cleaner” to correct the data rather than adding to the total uncertainty. I am aware that this is how isoprene flux data are treated – if this is not the case for APN fluxes, then it may make comparisons with other results more difficult. Perhaps the authors might comment on the consequences of this choice as regards data comparisons and data interpretation.

Page 17521 lines 20-23: how great of an underestimation might this cause?

The word “outward” is used in 4 times in this paper. An explanation of the authors thinking here would be useful. (both upward and horizontal flux out ? only horizontal flux out?)

Page 17575 line 25: is this assumption reasonable? Add support?

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 17495, 2008.

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