

Interactive comment on “Peroxyacetyl nitrate (PAN) and peroxyacetic acid (PAA) measurements by iodide chemical ionisation mass spectrometry: first analysis of results in the boreal forest and implications for the measurement of PAN fluxes” by G. J. Phillips et al.

Anonymous Referee #3

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This is an interesting paper, but more provocative than careful. The other two referees have covered the instrumental issues in this paper quite thoroughly, instead I will focus on the analysis and the presentation. The only thing I will add to the instrument part of the discussion is to note that the paper reports that Wolfe et al didn't publish some parameters of their instrument operation (pg 20195). An e-mail to ask them would have been a good way to address that.

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Analysis: The analysis would benefit from a more thorough reading of the series of Roberts papers on the ratios of MPAN/PAN and the more recent papers from the Cohen group papers on APNs. Those papers come to the conclusion that the concentration of APNs depends on the chemistry over a much longer timescale than the thermal time scale for PAN decomposition. It is possible that the equations presented in those papers reduce to the one presented in this paper, but it is not obvious. Either way, the paper should explain its analysis in the context of those other equations which build on different assumptions.

The paper should address the potential for interferences in measurements of other APN molecules more explicitly. I am unclear on whether it is suggesting that an analog peracid will be detected at the same mass as every APN. This is important because one of the puzzles raised in Turnipseed et al, and Wolfe et al is that the fluxes of different APNs are different from each other.

Presentation: Given the complete absence of work on fluxes in this paper, the prominence given to unsubstantiated claims about other flux measurements is inappropriate. The flux comments do not belong in the abstract or the conclusions. The authors should focus on what they have accomplished.

Interactive comment on Atmos. Chem. Phys. Discuss., 12, 20181, 2012.

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