

## ***Interactive comment on “Acyl peroxy nitrate measurements during the photochemical smog season in Beijing, China” by Z. Xu et al.***

**Anonymous Referee #1**

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This paper describes observations and analysis of peroxy nitrates in Beijing. The paper adds little to our understanding of these chemicals and I recommend rejection.

1) The measurements in Beijing are indeed new. However measurements in a new location alone do not justify publication in ACP. 2) Several recent papers have taken a more comprehensive look at sources of PNs and at the conditions where assumptions that underlie some of the analysis in this paper—for example, B.W. LaFranchi, et al., Closing the Peroxy Acetyl nitrate Budget: Observations of Acyl Peroxy Nitrates (PAN, PPN, and MPAN) During BEARPEX 2007, Atmos. Chem. Phys. 9, 7623-7641 2009.. One point of these papers is to separate the idea represented by a model of production followed by dilution that are the core of some previous analyses and which are correct within certain limits from the idea that PAN and its relatives are in

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a photostationary-state with local sources and sinks. At high temperatures that latter situation is in my opinion more relevant—but either way, the authors should do their own analyses that address these two competing ideas. 3) The section on surface chemistry is pure speculation without any justification based on the measurements. 4) The correlation of PAN with PPN has an R-squared of 0.95. The increase in correlation of a model that includes PPN and MPAN is only to 0.96. It is highly unlikely that this increase meets any tests for statistical significance. This makes the bulk of the analysis in this paper irrelevant.

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