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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Contributions of individual reactive biogenic volatile organic compounds to organic nitrates above a mixed forest" *by* K. A. Pratt et al.

Anonymous Referee #2

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Pratt et al. use a 1-D chemistry model to describe the atmospheric chemistry above a broadleaf forest, focusing on organic nitrate formation. Overall, the paper is clear and well-written. In addition to points raised by the first reviewer, I have three concerns that the authors should consider prior to publication in ACP.

Aside from the model description, the paper introduces little new science aside from the suggestion that as forest succession occurs, organic nitrates are derived from monoterpenes rather than isoprene. I think this does not provide adequate motivation for the paper, and suggest that the authors carefully frame their results in terms of the impact of their modeled organic nitrates on NOx reservoirs, ozone formation, or potential for

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SOA formation. This would greatly strengthen the Discussion section of the paper, and provide more context for the study.

My other concern regards the lack of measurement-model comparison of organic nitrates. The authors describe measurements of RONO2 in the Measurements section (p.17037, l.16), but do not compare the observations to the model. This would be a worthwhile and extremely useful figure that would provide insight into the ability of the model to replicate the data. Similarly, I am surprised that the authors don't compare observed and modeled NO and NO2 - this would be a good test of the model.

p.17046, l. 15-16. Please explain the discrepancy in Vdep between '1st-generation isoprene oxidation products'(0.5 cm/s) and 'secondary organic nitrates' (2.5 cm/s). Considering the uncertainty in these values, the authors should discuss/identify how sensitive the model is to making these both 0.5 or 2.5 cm/s.

Note that all of my technical corrections were identified by the first reviewer, so I will not replicate the list.

Interactive comment on Atmos. Chem. Phys. Discuss., 12, 17031, 2012.