

## ***Interactive comment on “The Lifetime of Nitrogen Oxides in an Isoprene Dominated Forest” by Paul S. Romer et al.***

### **Anonymous Referee #2**

Received and published: 14 March 2016

This is a very well written paper that is worthy of publication in ACP due to its timeliness and high quality. With regard to timeliness, there is a lot of interest in organic-nitrogen in PM and its fate. While I personally believe that calculations such as these are better suited to a 3D model so that many of the assumptions made can be avoided, I doubt that the findings are compromised, and it is likely that results would be within the uncertainty of those presented here. As such, I recommend publication. Only very minor comments follow. In fact, this is likely the fewest number of comments I have ever had to provide on a review!

#### Minor comments

Chemical formulas (HNO<sub>3</sub>, RONO<sub>2</sub>, etc.) are used before they are defined but then defined upon a second use. Either don't define them (assume everyone reading the

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paper already knows) or define them upon first use.

Should reaction R3 be shown as reversible as the decomposition can be described using a thermal equilibrium.

Page 4, line 17. Perhaps it would be better to not use primary (as it can connote direct emission), maybe use predominant?

Figure 1 – Please distinguish more strongly between NO<sub>3</sub><sup>-</sup> (nitrate ion) and NO<sub>3</sub>dot (nitrate radical) as the dash looks like a dot.

Equation 2 – Is the fraction flipped? Should it not be deposition velocity\*concentration/BLH?

Page 8, first paragraph... are there any other potential ignored or unidentified HNO<sub>3</sub> sources that should at least be mentioned?

Figure 7 – Is photolysis not included because it is assumed to occur so rapidly that it is “included” in the OH reaction (as described in the t

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