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Interactive comment on "Fast photolysis of carbonyl nitrates from isoprene" by J.-F. Müller et al.

Anonymous Referee #1

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The authors develop a method, using previously published data, to derive estimates for the photolysis rates of carbonyl nitrates, including aldehydic species. Logical suppositions are made to show that cross sections are enhanced due to the multi-functionality of these species and that quantum yields are near-unity for all of these species, and thus their photolysis rates are considerably enhanced above what is often used in models. They then conduct a re-analysis of the Paulot et al. (2009) isoprene oxidation experiment (using the new data) to draw conclusions regarding the chemistry of these nitrates and related compounds.

I found this to be a useful paper, and a very interesting read. The paper is clearly organized and presented, and appropriate literature is cited throughout. Where uncertainties or discrepancies appear in the literature, appropriate sensitivity studies are

conducted. The conclusions made (or suppositions drawn) are well-supported and clearly discussed. It is my opinion that the paper is suitable for publication in ACP in essentially its current form. A few trivial suggestions are made below.

Pg. 31129, line 25 and 31134, line 24 - MACR is an enal not an enone. Maybe the wording could be changed to 'enals and enones' in both cases?

Pg. 31133, and Figure 2. It might be worth showing the calculated spectra for the additional species considered here, perhaps in the supplement?

Pg. 31135, end of Section 3. It would be helpful to refer to Table 3 here, to present the photolysis rates implied by the cross section and quantum yield estimates provided in Sections 2 and 3.

Interactive comment on Atmos. Chem. Phys. Discuss., 13, 31127, 2013.