

***Interactive comment on “Aircraft based four-channel thermal dissociation laser induced fluorescence instrument for simultaneous measurements of NO<sub>2</sub>, total peroxy nitrate, total alkyl nitrate, and HNO<sub>3</sub>” by P. Di Carlo et al.***

**Anonymous Referee #1**

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This paper describes an instrument for detection of NO<sub>2</sub>, total peroxy nitrates, total alkyl nitrates and HNO<sub>3</sub>. Unfortunately there is nothing novel in the paper that would justify its publication. The methods used have been thoroughly described and evaluated previously and this paper reports no significant deviation or advance from prior implementation of the method.

Some further details:

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1) single frequency NO<sub>2</sub> detection by LIF is reported in previous work by this group and discussed in Fuchs et al. <http://www.atmos-meas-tech.net/3/21/2010/amt-3-21-2010.pdf> among other places

2) The introduction is not particularly up to date with current literature. I refer the authors to references on isoprene nitrates from Shepson's group, to calculations by Xie et al. <http://www.atmos-chem-phys-discuss.net/12/27173/2012/acpd-12-27173-2012.html> and many references therein, to their comparison between CIMS and TD-LIF measurements of nitrates in Beaver et al. <http://www.atmos-chem-phys.net/12/5773/2012/acp-12-5773-2012.pdf> to the discussion of inlets for thermal dissociation by Wooldridge et al. <http://www.atmos-meas-tech.net/3/593/2010/amt-3-593-2010.pdf> and to discussion of possible interferences to RONO<sub>2</sub> detection associated with ClNO<sub>2</sub> <http://pubs.acs.org/doi/abs/10.1021/ac200055z>.

3) The key issues for inlets articulated by others are sampling of sticky molecules. This paper doesn't really address that—e.g. isoprene hydroxynitrates.

4) The N<sub>2</sub>O<sub>5</sub> comparison by Fuch's et al. would seem relevant to the last section of the paper.

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