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Interactive comment on "Kinetics of the reactions of isoprene-derived hydroxynitrates: gas phase epoxide formation and solution phase hydrolysis" *by* M. I. Jacobs et al.

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The identification of a "high NO" pathway that produces IEPOX in the oxidative chemistry of isoprene is very interesting. This channel will be important for atmospheric chemistry primarily due to the associated NOx release during the oxidation of isoprene nitrates.

Consistent with Jacobs et al., we have detected IEPOX produced in the OH-initiated oxidation of 4,3-HNI during previous chamber studies performed at ~300K, 745 Torr, and high NO oxidation conditions (e.g. Experiment 4 & 8, see Lee et al., 2014). The

molar yield is 12±2%, consistent with the pressure-dependent yield determined by Jacobs et al. Cis- and trans-beta-IEPOX are produced in approximately the same ratio as during low NO isoprene oxidation [Bates et al., 2014] (see Fig.1).

Additionally, from OH oxidation of isoprene under high NO conditions, we observe IEPOX production consistent with formation from both 1,2-HNI and 4,3-HNI. This will be described in more detail in a forthcoming manuscript.

Finally, uncertainties in the Caltech-CIMS hydroxyacetone sensitivity may account for some or all of the difference in the hydroxyacetone yields reported by Jacobs et al. and Lee et al., 2014. We are working to improve the calibration method for this compound. Previous calibrations span (max/min) a factor of ~1.6, and the hydroxyacetone sensitivity used in Lee et al., 2014 was at the upper end of this range (lower limit for hydroxyacetone concentration).

Reference

Bates, K. H., Crounse, J. D., St Clair, J. M., Bennett, N. B., Nguyen, T. B., Seinfeld, J. H., Stoltz, B. M., and Wennberg, P. O.: Gas Phase Production and Loss of Isoprene Epoxydiols, J. Phys. Chem. A, 118, 1237-1246, 10.1021/jp4107958, 2014.

Lee, L., Teng, A. P., Wennberg, P. O., Crounse, J. D., and Cohen, R. C.: On Rates and Mechanisms of OH and O3 Reactions with Isoprene-Derived Hydroxy Nitrates, J. Phys. Chem. A, 118, 1622-1637, 10.1021/jp4107603, 2014.

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 12121, 2014.

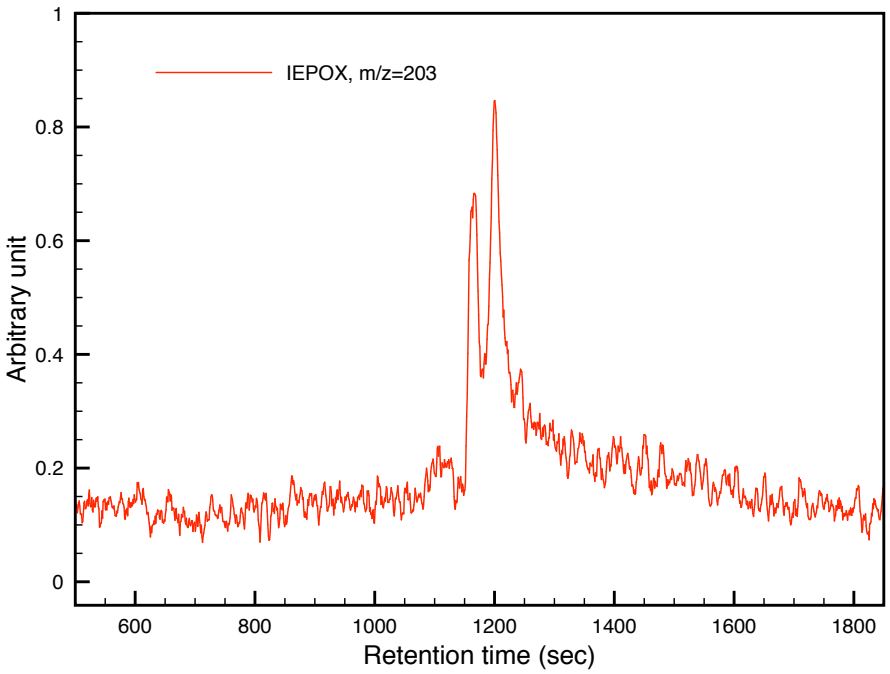

Fig. 1. GC chromatogram of m/z=203, after oxidation of 4,3-HNI.