

Interactive comment on “Measurements of ambient HONO concentrations and vertical HONO flux above a northern Michigan forest canopy” by N. Zhang et al.

Anonymous Referee #2

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This paper reports concentration and flux measurements of HONO in a forest site in North Michigan, using a custom instrument and the relaxed eddy covariance technique.

I recommend publication after the authors have addressed the comments below:

1) The main concern I have about this paper regard the analysis done to exclude the role of NO_x in the HONO production. The Authors report only the correlation between HONO flux and NO_x and they conclude that NO_x is not an important precursor of HONO, because it is very low. There are other papers (i.e. Ren et al., 2011) where it is showed that even if the correlation between HONO flux and NO₂ or between HONO flux and solar radiation are low, the correlation between HONO flux and

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NO₂*Solar_Radiation is high. How about in this study? Why it was studied only the correlation between HONO and NO_x and not with NO₂ and NO₂* Solar_radiation? Are there other proofs to exclude the role of NO₂ in the HONO formation during daytime?

2) In this paper there are no evidence that the HNO₃ deposited in the forest canopy is the major daytime source of HONO: this conclusion is based on the analysis reported in another paper (Zhou et al., 2011). Probably it would be worth to report some evidence also here, otherwise would be better to modify the abstract and the conclusion reporting clearly that these evidences are not shown here, but only in another paper.

Minor comment: Page 7275 line 5: in the phrase “HONO is in an intermediate” probably “in” is a typo.

Reference

X. Ren, J. E. Sanders, A. Rajendran, R. J. Weber, A. H. Goldstein, S. E. Pusede, E. C. Browne, K.-E. Min, and R. C. Cohen, A relaxed eddy accumulation system for measuring vertical fluxes of nitrous acid, *Atmos. Meas. Tech.*, 4, 2093–2103, 2011.
Zhou, X., Zhang, N., Michaela, T., Tang, D., Hou, J., Bertman, S. B., Alaghmand, M., Shepson, P. B., Carroll, M. A., Griffith, S., Dusanter, S., and Stevens, P. S.: Nitric acid photolysis on forest canopy surface as a tropospheric nitrous acid source, *Nature Geosci.*, 4, 440–443, doi:10.1038/NGEO1164, 2011

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