

Dear editor,

Thanks for your comment and suggestion. We agree that the OH production rate of HONO should just contains the term of  $[HONO]J(HONO)$  from the point of view of chemical kinetics. When we consider a **net** OH production rate for the reversible reaction between HONO and OH radicals, the term of  $k_{HONO+OH}[HONO][OH]$  should not be taken into account by definition. And for the term of  $k_{NO+OH}[NO][OH]$ , since the ambient NO and OH are not all from the photolysis of HONO, so it's actually difficult to figure out the **net** OH production rate for the HONO-NO-OH reaction system in our study. We have corrected Equation 3 and related calculation results in the revised manuscript.

What we want to point out here is that, the  $P_{OH}(HONO)$  derived from the new Eq. (3) cannot stand for the contribution of HONO to OH. Assuming an extreme case that all of HONO come from the reaction of NO with OH. The photolysis of HONO in this case only regenerates OH radicals, cannot lead to a net increase to the concentrations of OH radicals.

*Line 281-286: As discussed in Su et al. (2008) and Li et al. (2014), HONO produced by the reaction of NO with OH (R3) is actually a temporary reservoir of OH radicals. The photolysis of HONO from this pathway only regenerates OH radicals, cannot contribute to the concentrations of OH radicals. So it is inappropriate to estimate the primary OH production from HONO based on  $P_{OH}(HONO)$  derived from Eq. (3).*

Sincerely,  
Wei Nie

## Reference

- Li, X., Rohrer, F., Hofzumahaus, A., Brauers, T., Haseler, R., Bohn, B., Broch, S., Fuchs, H., Gomm, S., Holland, F., Jager, J., Kaiser, J., Keutsch, F. N., Lohse, I., Lu, K. D., Tillmann, R., Wegener, R., Wolfe, G. M., Mentel, T. F., Kiendler-Scharr, A., and Wahner, A.: Missing Gas-Phase Source of HONO Inferred from Zeppelin Measurements in the Troposphere, *Science*, 344, 292-296, 10.1126/science.1248999, 2014.
- Su, H., Cheng, Y. F., Shao, M., Gao, D. F., Yu, Z. Y., Zeng, L. M., Slanina, J., Zhang, Y. H., and Wiedensohler, A.: Nitrous acid (HONO) and its daytime sources at a rural site during the 2004 PRIDE-PRD experiment in China, *Journal of Geophysical Research*, 113, 10.1029/2007jd009060, 2008.