

Interactive comment on “Mutual promotion effect between aerosol particle liquid water and nitrate formation lead to severe nitrate-dominated particulate matter pollution and low visibility” by Yu Wang et al.

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The subject of the paper is the uptake of dinitrogen pentoxide onto PM including the hydrolytic uptake on aqueous aerosol. The process is very likely to occur in GAC instruments and the resulting nitrate measured by the IC will very likely contain a substantial contribution from the hydrolysis of nitrogen pentoxide within the GAC sampling system, where two nitrate ion result from the sampling of one dinitrogen pentoxide molecule. In situations where the chemistry of the N₂O₅/nitric acid/PM system is being studied, I would think that a consideration of this issue would be important at the very least in

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estimating the uncertainties of the experimental approach.

A description of the effect as observed in the Applikon MARGA was published in Phillips, G. J., Makkonen, U., Schuster, G., Sobanski, N., Hakola, H., and Crowley, J. N.: The detection of nocturnal N₂O₅ as HNO₃ by alkali- and aqueous-denuder techniques, *Atmos. Meas. Tech.*, 6, 231–237, <https://doi.org/10.5194/amt-6-231-2013>, 2013. All instruments using the same or similar means of determining nitric acid will very likely suffer form this effect.

Have the authors considered this effect? What uncertainty does it introduce into the data analysis?

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