

Atmos. Chem. Phys. Discuss., referee comment RC4  
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## Comment on acp-2021-730

Anonymous Referee #4

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Referee comment on "The formation and mitigation of nitrate pollution: comparison between urban and suburban environments" by Suxia Yang et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2021-730-RC4>, 2021

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This is a nice study to quantify the contributions of different formation mechanisms on nitrate at urban and suburban sites by using an observation-constrained box model. The authors found the important source of nitrate from the downwards transport of residual layer at the urban site, and a VOCs-limited chemical regime for nitrate formation, the nitrate formation was different at the suburban site. The results have important implications for future mitigation of nitrate in this region. The manuscript is overall well written, and I only have several small comments.

1. The measurements at the urban and suburban sites were conducted in different years? Did the author compare the meteorological differences between 2018 and 2019? Are there any influences on your conclusions?
2. The urban site is approximately 80 km from the suburban site. Could the authors provide the wind rose plots during the two years to see if there is transport between the two sites. Or the authors can compare the total PM concentrations in the same year to see if the episodes occurred during the same period. This will also affect the conclusion in this study.
3. "ammonia" in Figure 2 should be "ammonium", same in Figure 3.