Editor review of "Summertime fine particulate nitrate pollution in the North China Plain: Increasing trends, formation mechanisms, and implications for control policy" by Liang Wen et al.

MS Number: acp-2018-89

Summary:

As discussed by the two referees, this paper presents a useful analysis of particulate nitrate pollution in the North China Plain. I concur in their judgment. In addition to the comments of those referees, I suggest that two additional points be discussed:

1) In the Abstract the authors note: "The nitrate/$PM_{2.5}$ and nitrate/sulfate ratios have significantly increased in Ji'nan (2005-2015) and at Mt. Tai (from 2007 to 2014), indicating the worsening situation of regional nitrate pollution." And likewise "This study provides observational evidence of rising trend of nitrate aerosol …" These statements are necessarily correct only if the absolute concentrations of $PM_{2.5}$ and sulfate have remained constant (or increased). If these two species in the denominator of the two ratios have decreased more rapidly than the ratios themselves, then the regional nitrate pollution may be improving in an absolute (but not relative) sense. A short discussion and clarification of this issue should be included.

2) In the Conclusions the authors "recommend that further reduction of anthropogenic emissions of NO_X should be the most efficient pathway for the current control of nitrate aerosol ..." The data discussed in the paper were collected in 2014 and earlier years. Satellite data (e.g., Liu et al., 2017) suggest that NOx over the North China Plain was increasing during the period covered by these data, but has been decreasing rapidly since 2014. The authors should briefly discuss the likely impact of this NOx reduction.

Reference:

Liu, F., Beirle, S., Zhang, Q., van der A, R. J., Zheng, B., Tong, D., & He, K. (2017). NOx emission trends over Chinese cities estimated from OMI observations during 2005 to 2015. Atmospheric Chemistry and Physics, 17, 9261–9275.