

Re-review of Schlag et al. (Referee 1)

Overall, the authors have adequately addressed my comments and I recommend the manuscript be published in ACP. However, there are a few minor points that should be addressed before final publication.

Organic Nitrates: What is the cause of the negative data points in Figure S11? This should be explained, perhaps briefly in the figure caption. In addition, the diurnal average in Figure S12 should be a box and whiskers plot rather than a simple average, which does not show the variability in the data.

PMF: The fact that the correlations between the tracers and OA components are generally low has not been really addressed in the revisions, other than for the case of eBC. A sentence or two should be added to the manuscript stating that the low correlations indicate that the identities of the PMF components are uncertain.

CE Algorithm: I disagree with the statement that the Middlebrook et al. algorithm is not “suitable” for this study, which implies the algorithm is flawed. Aerosol thermodynamics dictates that if the ammonium nitrate fraction is high, then the charge of NH_4^+ is fully balanced by SO_4^{2-} , NO_3^- , and Cl^- . In other words, the particulate sulfuric acid must be fully neutralized before the incorporation of ammonium nitrate. In this study, the problem is rather that the ACSM doesn't distinguish inorganic and organic nitrate, which is biasing the calculation of predicted ammonium. I don't think the current CE calculation used in the manuscript needs to be changed, but it should be acknowledged that the calculation is very similar to the Middlebrook approach. However, the influence of particle acidity has been ignored here, which is reasonable given the high ammonium nitrate fraction. One could have used the MARGA NO_3^- rather than the ACSM NO_3^- for the CE calculation, and then I would expect the Middlebrook et al. algorithm to work very well.

SMPS Correction: Another explanation for the discrepancy in the SMPS measurements is that the instruments sampling from 60 m height are not sampling the same air mass as the MARGA and ACSM, which sampled at a lower height. This possibility should be mentioned in the text. It is not necessarily always the case that both measurements are sampling within a well-mixed boundary layer.