

Dear Samuel,

Thank you very much for handling our paper. Jose Jimenez's group contacted with us for the introduction of ATom observations in our paper. After a detailed discussion with them, we would like to add some background information of ATom observations in the final paper:

1. the data cite these DOIs for ATom-1 and 2 AMS and for whole dataset:  
<https://doi.org/10.3334/ORNLDAAAC/1716>  
<https://doi.org/10.3334/ORNLDAAAC/1581>

2. Instruments for nitric acid and aerosols measurement during ATom:

Nitric acid was measured by Chemical Ionization Mass Spectrometer, while aerosols were measured by CU Aircraft High-Resolution Time-of-Flight Aerosol Mass Spectrometer (Hodzic et al., 2020). The work of Brock et al. (2019) indicated that there is very good quantitative agreement between AMS and volume data.

3. Explanation of OC comparison in this work:

For ATom data, OC is calculated by  $OA\_PM1\_AMS/OAtoOC\_PM1\_AMS$ . For model, we used 1.8 for SOAs.

4. the data source (<https://daac.ornl.gov/ATOM/campaign/>) was acknowledged in the paper.

These changes were added in the final paper. Let us know if you have any questions.

Best,

Gan