

Interactive comment on “Long-Range Transport Mechanisms in East and Southeast Asia and Impacts on Size-Resolved Aerosol Composition: Contrasting High and Low Aerosol Loading Events” by Rachel A. Braun et al.

Anonymous Referee #1

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Through ground-based observations, the authors studied physical and chemical properties of aerosol particles for 14 selected cases over Metro Manila, Philippines. This kind of ground-based data analysis is welcomed by both remote sensing folks as well as modelers for CTMs. The paper is well written. The data analysis part of the paper seems reasonable, as I am not a chemist. Thus, I rely on other reviewers who have a background in chemistry to fully evaluate the chemistry portion of the study. Still, I have a few concerns that I hope the authors can address.

First of all, for the methodology section, more details are needed. For example, the

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detection limits of ground-based observations are included in the supplement. Still, the authors need to mention uncertainties of other data and models used in the study. For example, precipitation amounts were obtained from PERSIANN-CCS data, but what is the uncertainty of the dataset? Also, details for some datasets such as CALIOP Level 2 VFM (version of the dataset, spatial resolution etc.) need to be provided for the benefit of the readers.

The temporal sampling window is different for different cases. While the temporal sampling window is approximately 2-day for most cases, the temporal sampling window is 5-day for MO4 and 1-day for MO1. Does the difference in temporal sampling window introduce a temporal-sampling related bias?

I understood that satellite aerosol retrievals have difficulties over the study region due to cloud coverage. But it is still useful to provide an aerosol optical depth (AOD) climatology for the study period (July-Oct. 2018) as well as the spatial distribution of AODs for the selected cases (e.g. MO7, 11, 12 and 14) using passive-based satellite data such as MODIS or MISR. Such an analysis will assist their modeling-based analysis (e.g. from NAAPS). This might also help the authors link their case studies with the aerosol climatology of the region.

Speaking of which, I think the linkage between data analysis presented in this study and broader scientific questions is still plausible. For example, how representative are those selected 12 events to different aerosol transport scenarios or to the general aerosol climatology of the region? What are the linkages between the data analysis presented in the study and some broader scientific questions? I hope the authors can add more related discussions.

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