

Interactive comment on “Contributions of local and regional sources to fine PM in the megacity of Paris” by K. Skylakou et al.

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1. *The authors used a new implementation of a Particulate Matter (PM) source apportionment algorithm in PMCAMx-2008 with a treatment of organic aerosol with a volatility basis set framework. They applied the model to Paris for a summer and a winter month. They used the model to quantify the contributions from local, mid-range and long-range emission sources to aerosol concentrations in Paris. This paper is an excellent demonstration of the power of this technique.*

They found that local sources were most important for elemental carbon (EC) while long-range sources were most important for sulfate aerosol. The sources of secondary organic aerosol (SOA) were particularly interesting. Mid and long-range transport are

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very significant during the summer and winter months and together they are much more important than local sources. This seems to be surprising because so many biogenically emitted compounds that produce aerosol precursors are very reactive and it might be expected these produce SOA on very local scales. This result should encourage further laboratory, field and modeling research.

We appreciate the positive assessment of our work. The significance of long range transport (including that of biogenic SOA) as a source of PM even for a Megacity is indeed the most important finding of our work. Biogenic SOA is formed rapidly in general over large areas, but also has rather long timescales allowing its transport over long distances. These results (as discussed in the paper) are consistent with the observation-based estimates for OA. Additional work on biogenic SOA would indeed be useful to confirm the corresponding estimates of the contributions of local sources and long range transport.

2. *One purely technical correction: Figure 7 is difficult to read and it could be improved by readjusting its color scale.*

We have followed the reviewer's suggestion and have redrawn the figures using a better color scale.

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