

Interactive comment on “Evaluating simulated primary anthropogenic and biomass burning organic aerosols during MILAGRO: implications for assessing treatments of secondary organic aerosols” by J. D. Fast et al.

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Aromatic compounds, in particular toluene, typically serve as major SOA surrogate precursors in lumped chemistry schemes. Modeling correct concentrations of these compounds is therefore important when discussing OA. It is concluded (summary statement) that 'only predictions of aromatics were consistent with the measurements at T1'. We have observed that WRF-Chem significantly underestimates toluene mixing ratios over the city using the CAM01 and CAM04 emission inventories without adjusting these to match the more recent SMA-GDF inventory. If the modeled CO is 'well simu-

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lated on most days and over the city' (as mentioned in the abstract), then there seems to be a significant (e.g. a factor of ~ 2) overestimation of aromatics by the model during the day as presented in figure 18 (see average concentrations normalized by CO). It seems that conclusions drawn for VOCs would need to be discussed for a larger set of observations (maybe the comparison would look much different if data sets at T0, the G1 and the C-130 were also considered). Given these uncertainties I am not sure about the usefulness of defining TOOC in this context. It seems like comparing apples and oranges. Adding up all organic species in a lumped chemistry scheme is not the same as adding up all VOC + OA from measurements. For example there are no observational data for many intermediates produced during photo oxidation (qualitative GCxGC chromatograms have shown >500 peaks in polluted urban environments - for example Lewis et al., Nature 405, 778-781, 2000). On the other hand lumped chemistry schemes typically aim at carbon closure. So even if 'TOOC' between the lumped chemistry mechanism and observations agreed in the present case, they would most likely agree for the wrong reasons.

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