

***Interactive comment on “How much does traffic contribute to benzene and PAH air pollution? Results from a high-resolution North American air quality model centered on Toronto, Canada” by Cynthia H. Whaley et al.***

**Anonymous Referee #2**

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The introduction needs to be much clearer on why this reserach was undertaken. Additionally, the assertions need to be backed up with appropriate citations. In particular, Lines 33-35 do not seem true, so need citations to support them.

I cannot comment on how this model performs relative to its peers. However, I don't see the utility in turning various block-level emission estimates and county level emissions estimates into a geographical model. There does not appear to be any need of a 2.5km resolution for the type of analyses presented here.

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Discussion paper



In examining the referenced article Whaley et al 2018b, it is not clear that the GEM-MACH-PAH model has the accuracy and precision to really describe the difference the authors say it is between the two scenarios. The variability across sites and seasons seems that it is larger than the observed difference. For example, the % reduction of the PF of FLRT in winter looks to be 20% in Figure 6f. In Whaley et al 2018b, the model to measurement ratio for FLRT varies across sites from -10 to 10. It seems that this degree of uncertainty makes it hard to believe the model is able to tell the difference between a change of 20% and a change of 200%.

I'm also not completely clear on what the difference is between the Whaley 2018 model and the model used in this paper.

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Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2019-871>, 2019.

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