Atmospheric Chemistry and Physics Discussions

Atmos. Chem. Phys. Discuss., referee comment RC2
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Comment on acp-2021-189

Anonymous Referee #2

Referee comment on "Measurement report: Emissions of intermediate-volatility organic compounds from vehicles under real-world driving conditions in an urban tunnel" by Hua Fang et al., Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2021-189-RC2, 2021

General Comments:

In general the manuscript is well constructed and easy to follow. To my understanding, less previous studies were focus on investigation of real-world IVOC fleet emissions, this study showed that there are still some knowledge gaps between the real-world situation and laboratory-based results of vehicular IVOCs emissions. However, besides showing the measurement results and some relation analysis, there is a lack of in-depth data analysis and discussion, which could be attributed to less supporting data from other sources (only concurrent VOCs results were used, not even showed). Overall, the manuscript is recommended to be publicated in the form of "measurement report" after necessary revision.

Specific Comments:

- - *Line 196-197* : Here the Emission Factors (EF_{IVOCs}) for both GVs (13.29 ± 5.08 mg km^{-1} veh^{-1}) and DVs (21.40 ± 5.01 mg km^{-1} veh^{-1}) were determined from Equation (1). Similar parameters were estimated by Equation (2) with different outcomes showed in *Line 205-206* (13.95 ± 1.13 mg km^{-1} veh^{-1} for GVs and 62.79 ± 18.37 mg km^{-1} veh^{-1} for DVs). It is unclear that how to obtain these values directly from Equation (1). To my understanding, the only afftecting variable would be the vehicle count, but in this case it is difficult to tell how much of EF_{IVOCs} are attributed to GVs and DVs, respectively. Please explain.
- *Line 289-290* : It is mentioned that there is a difference between the SOA_{IVOCs}-to-SOA_{VOCs} ratio for DVs and GVs. Is it possible to differentiate this from your data set (say utilizing the principle of Equation (2))?