Atmos. Chem. Phys. Discuss.,
https://doi.org/10.5194/acp-2018-1293-RC3, 2019

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Contributions of different anthropogenic volatile organic compound sources to ozone formation at a receptor site in the Pearl River Delta region and its policy implications" *by* Z. He et al.

Anonymous Referee #2

Received and published: 11 March 2019

This manuscript presents an analysis of hourly VOC data from the Pearl River Delta region including PMF and VOC sources important for ozone formation. There is also an analysis of VOC and NOx limitation and what effect controlling each of these may have on ozone. In general the manuscript is well written with only a few sections needing clarification.

Specific Comments: P8 Line 62-63: Is this a result from this study or from elsewhere? It is confusing to have these papers cited without more explanation.

Table 1: Add a line dividing the individual species from the categories. This will make the table easier to read.

P9 Line 73-78: The use of these correlations seems to be overstated both in terms of widespread use (1 paper cited) and what these correlations mean for photochemistry impacts. Weak correlations may exist due to strength of impact from different sources in addition to changing photochemistry. Adding some statements about the degree of correlation or lack of correlation between other species would strengthen this section. A more convincing argument would be to look at photochemically formed species from these precursor compounds – I'm not sure if these compounds are available.

This simple analysis and the extended analysis using the parameterization suggests little photochemistry is taking place. Is this due to the time available for photochemistry to take place or atmospheric conditions. What is the estimated air mass age? (using chemical tracers, proximity to sources and average wind speed, or from the parameterization).

Figure 2: Consider showing as the difference between the measured and estimated initial concentration instead. It will be easier to see the delta for all species than infer it from the difference between bars.

Figure 5: Why are both diesel and gasoline vehicles together if they were different factors?

Sect 3.3 How does this compare for the different classes of VOCs? This would be good to include to inform which measurements would be most important to make long-term or in the future. Or if new industry moved into the area and the mix of VOCs was different.

Sect 3.4.2 – something about the tenses used (past and present) is confusing or not consistent. I suggest going through the section and checking verb use for consistency and clarity.

Line 19 Line 40: Which of your reduction scenarios reflect these changes? I ask that for the majority of this section. The listing of all these policies without more direct connection to your findings is superfluous. Only the last paragraph in the section touches on this but still doesn't connect how much these policies are expected to change VOC and NOx levels. The importance and relevance of this section needs to be considered. If it is important figure out a way to make it easier to follow and more connected to the rest of the paper.

P9 Line 77: little instead of insignificant. Insignificant implies statistics were used.

P11 Line 11: adjusted instead of compensated

P12 Line 26: C6-C7 alkanes?

P13 Line 39: why "again"? I don't think you've presented PBM-MCM data yet.

P19: Line 32-33: This suggests. . .in the region.

P19 Line 42: closely instead of strictly

P19Line 42: What are new energy automobiles?

Interactive comment on Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2018-1293, 2019.