Review comments on the revised manuscript 2021GH000506R submitted by Zhang et al.

The authors made great efforts to address my comments and concerns from the previous review. The manuscript has been improved to a large extent. However, I still have several concerns that require authors’ additional efforts before it is accepted for publication.

1. It is noticed that the ADMS-Urban model study region (i.e., Guangzhou) is too close to the northern boundary of the CMAQ D4. This may cause some uncertainty in terms of numerical calculations. Do the authors have comments on why they chose GZ instead of SZ as the ADMS model study region since the latter is closer to the center of CMAQ D4?

1. While the major cities of the Greater Bay Area (GBA) are labelled in Figure S2, I still strongly recommend to add those locations in Figs. 1-3. That will make it easier for readers to follow the discussion of those figures. A similar issue can be found in Figs. 4-5. For instance, I got lost when the authors mentioned “the inner ring road” and “Haiyin Bridge” for the discussion of Figure 4 (see Line 420). Please make sure all the geographic locations are labelled properly in the relevant figures or tables when they are discussed.
2. Figure 3: It seems that a big reduction (i.e., 50%) in traffic emission sources only causes a very small change in PM2.5 prediction (i.e., less than 2~3 µg/m³, Fig.3c). What is the percentage change of PM2.5 concentrations? Does this mean the traffic or mobile source is not important to PM2.5? Do the authors have any comments on this? In other words, what is (are) the most effective measure(s) to control PM2.5 levels in this region?
3. The authors have presented time series comparisons of simulated NO2, O3, and PM2.5 between CMAQ and ADMS-Urban models in Figures S13-S15. It will be very helpful to further demonstrate the advantage of the ADMS-Urban model on simulating air pollutant concentrations at a high resolution such as street level if the authors can include quantitative evaluation of the ADMS-Urban model performance on simulating O3 and PM2.5 in Table 2.
4. L87: I would suggest to use “Chinese government”.
5. L190: Please define “RML”. In addition, it was not included in Figure S1.
6. L199-L233: Are these only the chemical reactions that are included in the ADMS-Urban model? Please clarify.
7. L253: It seems redundant to keep both “determined” and “calculated” here.
8. L287: Please illustrate “the brute-force” a little bit in case readers are not familiar with it.
9. L381-382: It will be better to add a reference on this argument.
10. L401-402. As pointed out above (Comment 3), the change in PM2.5 is small due to 50% reduction in traffic emission. However, the authors still claimed “a considerable reduction in PM2.5 concentration is observed in urban Guangzhou and central Shengzhen”.
11. Table 2: All the abbreviations are not defined.
12. Overall the writing is improved, but several places require further refinement. For instance, the sentence on lines 455-456 has a grammatical problem. Perhaps get some helps from other native speaker coauthor(s).