

The authors have addressed all the comments and the manuscripts has been improved after the revision. The reviewer recommends acceptance after minor revision.

General comment:

A new emission tool has been developed in this work, which generates emissions over Mainland China at a monthly basis and at provincial level. Is it possible to increase the temporal and spatial resolution in this emission tool? In other words, is it possible to apply your emission estimates to study urban scale air quality or air pollution events? In that sense, we may need separate estimates for weekdays/weekends and urban/rural areas. As for the covid-19 impacts, it would also be interesting to see how different the impacts are over urban and rural areas. Also, if we want to use those emissions to drive the chemical transport model, how do you deal with the spatial resolution issue?

Specific comments:

Section 2.3, what meteorological input is used for the model? I assume they are different for 2019 and 2020, is that correct?

Figure 6, there is an overall agreement on the relative changes of air pollutants between model estimates and surface observations. One thing we need pay attention is that the differences in meteorology between 2019 and 2020 could also play a role here. Also, it looks like the correlation is poorer over Yangtze River Delta than North China Plain. Is that something related to much larger uncertainties in the emissions over Yangtze River Delta than North China Plain or more likely due to inherent model uncertainties?

Page 9, line 255-261, any explanations on such a large difference in NO<sub>x</sub> emission reductions between your estimates and Zhang et al. (2021)?