

Co-editor:

Please consider the suggestion from the referee carefully and make necessary revisions and/or specific response. Alternatively, you may also consider using satellite data, e.g., OMI NO₂, OMI SO₂ and nighttime lights, to show the regional distributions of pollution in the investigated city and its surrounding areas.

REPLY:

Please see the reply to the referee. We have used the map of nightlights.

Referee#2

The revised manuscript does improve to some degree with ambiguous expressions corrected. While the main purpose of this study is to distinguish the sources of urban pollution between the local emissions and regional transport, measurements were made only at an urban site. Therefore, I think the geographical distributions of emissions can be shown as compensation. There are some global and regional emission inventories with high resolution (0.5 degree by 0.5 degree) available, for example, the GEIA-ACCENT emission data (<http://accent.aero.jussieu.fr/index.php>), the Regional Emission inventory in ASia (REAS) Data (<https://www.nies.go.jp/REAS/>), and the MEIC dataset from the Chinese research group. It might be true that none of these emission inventories provide information on the emission reduction during the festival. But a seasonal or annual average distribution of “normal” emissions will also be helpful for understanding the observational results.

REPLY:

We have created a new Figure S1 to clearly indicate the regional pollution distribution of PRD and the location of the sampling site, as below. In Line 79, we have also added this sentence “Figure S1 shows that the sampling area had a middle-level aerosol pollution during the winter in comparison with other areas in PRD and further areas.”

Figure S1 The locations of Shenzhen and its sampling site. The upper map is part of the global maps of Earth at night from NASA (<https://www.nasa.gov/feature/goddard/2017/new-night-lights-maps-open-up-possible-real-time-applications>), which indicates that PRD is one of the most developed regions in China. The lower map is the surface extinction coefficient (SEC) of dry aerosol in southern China in winter (using the monthly average in February, 2015 as the example) from the Institute for the Environment, the Hong Kong University of Science and Technology (<http://envf.ust.hk/itf-si/index.py?where=Home/SAMap&id=premap>), which presents the general spatial distribution of aerosol pollution, as well as the locations of Shenzhen and its sampling site.

