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Interactive comment on "Investigating the regional contributions to air pollution in Beijing: A dispersion modelling study using CO as a tracer" *by* Marios Panagi et al.

Anonymous Referee #2

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This study investigates the regional and local contribution of air pollution in Beijing through a modeling approach. I am generally positive to the topic, presentation, and result. However some issues need to be clarified and justified before potential acceptance.

1. When I read the paper for the first time, I was wondering that is the result of this study a generalized work or a case study? From the conclusions I found the statement being very confirmative and generalizable in Beijing region. If the authors like to make a stronger statement, they should provide a more consolidate proof; otherwise the author should give potential limitation or factors that could be missed in the study, so a

generalization could be difficult to achieve, e.g. the emission inventory is only available at a single year of 2013.

2. The clean air policy in China has been executed starting around 2013, the pm2.5 pollution is seen peaked at 2011-2012 and is largely reduced since. Is this the reason the authors choose 2013-2016 as study period? If not, how much contribution and correlation between the study result and reduction of local emission due to the new policy? If so, 2013 represents a special year, does it mean that we should not over-interpret the result?

3. Does the result from figures 2 and 3 result in the change of area of interest in figure 4? Why the figure 4 is not centered at Beijing? How do the authors define the boundary of regional contribution? (it is difficult to see the "black box" in figure 4). On page 6 the authors discuss the result by quadrants, that is inconsistent with figure 4.

4. When the author uses regression analysis to demonstrate the "account-ability" (P8, l6) of model to the measurement, they should use the "coefficient of determination", instead of the correlation coefficient. The former is the right statistical measure to indicate the proportion of the variance in the measurements that is predictable from the model.

Minors and typos::

P2, l18. Missing parentheses.

P2, l27. Missing parentheses.

P3, l6. Extra comma in citation.

P3, l17 why the resolution is different from l9?

Interactive comment on Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2019-759, 2019.