

Referee #1

This manuscript investigates the effect of atmospheric transport and trade on air pollution mortality in China. The topic is interesting and important. The approach is new and robust. The paper presents a good interdisciplinary study and is written. A few minor correction may need to be made.

Response: We thank Referee #1 for the encouragement and for the valuable comments to improve our manuscript. Responses to each point are addressed as below.

1. Abstract: “33% of China’s air pollution deaths...”, it is suggested to provide the number of premature deaths besides the percentage.

Response: Thanks for the suggestion. We have add the number there and some other regions.

2. C_0 is the counterfactual concentration in equation (1). The authors should declare the value of C_0 adopted in this study.

Response: Thanks for the suggestion. We have added the data for counterfactual concentration (C_0) and death incidence (B) in the appendix of the revised manuscript.

3. China also imports intermediate and finished goods from other regions. The authors should describe the calculation of international imports in methods.

Response: Thanks for the comments. Yes, as the most populous country, China plays an important role in international import as well as export. These would have substantial health impacts to other countries. In another recent paper published in Nature (Zhang et al., 2017), we estimated the cross-regional health impacts among 13 world regions (including China) from international trade and atmospheric transport perspectives, including health impact of China’s import on other regions. In this work, we didn’t repeat the analysis but added a citation to the study mentioned above.

4. Recent progress in transboundary air pollutants and its associated health effect should be mentioned in this study, some are listed below: Zhang Q, Jiang X, Tong D, et al. Transboundary health impacts of transported global air pollution and international trade[J]. Nature, 2017, 543(7647): 705-709. Li Y, Meng J, Liu J, et al. Interprovincial reliance for improving air quality in China: a case study on black carbon aerosol[J].Environmental science & technology, 2016, 50(7): 4118-4126.

Response: Thanks for the suggestion. The two papers and other related papers were cited in the revised manuscript.

5. The authors should thoroughly check the manuscripts to avoid grammar mistakes. For example, Page 6 Line 25, “which account for about 35%...” should be “which accounted for about 35%...”, all “PM2.5” should be changed to “PM_{2.5}”.

Response: Thanks for the comments. We have checked through the manuscript and corrected the grammar mistakes.

6. Fig.2, white color means no data, why lots of grids in northwest and northeast are white?

Response: Thanks for the comments. In Fig. 2, the grids where no death occurred were also labeled in white color. We have revised the Fig. 2 to distinguish the cases of “no data” and “no death”.

Reference:

Zhang, Q., Jiang, X., Tong, D., Davis, S. J., Zhao, H., Geng, G., Feng, T., Zheng, B., Lu, Z., Streets, D. G., Ni, R., Brauer, M., van Donkelaar, A., Martin, R. V., Huo, H., Liu, Z., Pan, D., Kan, H., Yan, Y., Lin, J., He, K., and Guan, D.: Transboundary health impacts of transported global air pollution and international trade, *Nature*, 543, 705-709, 10.1038/nature21712, 2017.