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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Observations and modeling of air quality trends over 1990–2010 across the Northern Hemisphere: China, the United States and Europe" *by* J. Xing et al.

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We would like to thank the referee for a very thoughtful and detailed review of our manuscript that helped to improve the paper. Below we provide a point-by-point response to the reviewer's comments and how we have addressed them in the revised manuscript.

[Comment]: The limitations of this paper, e.g., O3 chemistry over China is discussed without evaluation due to the unavailability of O3 data, should be discussed in the conclusion section.

[Response]: we agree with the reviewer and have provided additional description about this limitation in the revised manuscript (P26 L4-6), as below: "The lack of long-term observations in Asia, particularly over China and India limits a robust model performance evaluation as well as O3 and PM chemistry assessment in these polluted areas"

[Comment]: Seven cities are selected in CN-API network in model evaluation. It is better to add an explanation of the reasons to choose only those seven cities for China.

[Response]: we have added the reason for choosing only those seven cities in the revised manuscript (P8 L21-P9 L3) as below:

"CN-API is the average of observed air pollutant concentrations from urban monitoring sites in each city and represents records in 7 Chinese cities (i.e., Beijing, Shanghai, Guangzhou, Xi'an, Wuhan, Guiyang, Guilin which are located in north China plain, Yangtze-river delta, Pearl-river delta, northwest China, central China and south China respectively) where long-term observations are available starting from 2005."

[Comment]: The heading rows of Table 3 are confusing (%, emission, and concentration).Please revise it into a more readable format.

[Response]: we thank the reviewer for pointing this out; more detailed heading rows of Table 3 are provided in the revised manuscript.

Please also note the supplement to this comment:
http://www.atmos-chem-phys-discuss.net/14/C11210/2015/acpd-14-C11210-2015-supplement.pdf

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 25453, 2014.