

Interactive comment on “NO_x emission trends over Chinese cities estimated from OMI observations during 2005 to 2015” by Fei Liu et al.

Anonymous Referee #2

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China is experiencing dramatic changes in economy and energy structure. Due to the poor air quality in developed regions, a series of emission control measures have been taken and changes in air pollutant emissions could be expected. Independent from the bottom-up emission inventory that might be limited by the accuracy and timeliness of data, this work applied OMI NO₂ data and estimated the trends of NO_x emissions for selected cities and power plants across the country, following previous studies from the same research group. In general the paper was well organized, clearly written, and easy to follow. I recommend its publication with some more discussions or corrections as suggested below:

1. Is there any big difference or correction in the method of "top-down" emission calculation between this work and the authors' previous studies (i.e., Liu et al., 2016a; b)? I understand the inter-annual trend is included in this work, but other improvement in

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method (if any) needs to be clarified so that the audience could easily compare different papers.

2. Pages 4-5, the authors said they presented cities/plants with satisfactory fitting results. Here needs some explanations: what's the criterion of examining the fitting results, and why were there any "unsatisfactory results"? Does that imply that there are some problems or limitations in the calculation method and it cannot be applied for all the selected cities/plants?

3. Although the emission trends between top-down and bottom-up methods were generally consistent with each other, it seems that larger emission growth was estimated based on the OMI data than MEIC for both cities and power plants before 2012 (e.g., Figure 3 and 7). Uncertainties in bottom-up emissions (i.e., MEIC) might be part of the reasons, and I suggest a paragraph of discussion including comparisons with other available bottom-up estimates.

4. Figure 4. Did that imply the poorer estimation in emissions from small industrial plants than those from power plants in MEIC? Needs clarification.

5. Small issues: Line 40, Page 4: "section 2.2" ? please check. Line 28, Page 5: "new dry-process" or "precalciner"?

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