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## *Interactive comment on* "Satellite Data Reveals a Common Combustion Emission Pathway for Major Cities in China" *by* Wenfu Tang et al.

**Anonymous Referee #2**

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A very interesting approach is shown to analyse the ratio of CO/NOx and SO2/NOx spatially over megacities and its development over time. The manuscript is basically well-written but it contains some carelessness, which I will mention below.

Page 1, Line 15-19 [Our results ....relative to 2005]: This sentence is very confusing and ambiguously written. A range of ratios is given, but 4 cities are mentioned, it is relative to 2005 and the sentence is ending with an dependent clause. I suggest to split-up this sentence and give a some more explanation.

Page 1, Line 20 [...sectors in Shanghai and Shenzen...]: Only Shanghai and Shenzen are mentioned. What about Shenyang and Beijing?

Page 4, line 21, Page 5, line 14: If you are looking at a 2 x 2 degree area around cities

in China, does this not lead to overlap, for instance, in the case of Guangzhou and Shenzhen.

Page 7, line 18: The results start with Figure 3, while Figure 2 is mentioned later. This is unusual, but moreover I think the storyline of your paper becomes clearer if you start with explaining Figure 2 first.

Page 7, line 24-28: When I compare the numbers of the given ratios with Figure 3, the unit reads %/year instead of %. The rate is in fact an annual rate.

Page 7, line 31 (also on Page 10, line 7): Which four levels of development do you mean ? These development within cities is a very important aspect of the paper, nevertheless the four levels are not discussed nor defined.

Page 8, line 14: Here a reference to Figure 3a is made. However, Figure 3a is not defined while the first subfigure is about Shenyang.

Page 11, line 17: The reference has been forgotten here.

Appendix A, page 15, line 17: "..the fractional contribution of x emission sector f." Change to "..the fractional contribution of emission sector f for species x."

Appendix B: The estimation of H depends on a-prior information because it is an under-determined problem. Can you also give an indication how much information is coming from the measurements and how much of the a-priori ?

Figure 3: - The grey area is very hard to see in this Figure. - It would also be helpful if the underlying data points of the fit are plotted in the Figure as has been done in Figure 2. - The error bars mentioned in the caption are missing.