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Interactive comment on "Trends in China's anthropogenic emissions since 2010 as the consequence of clean air actions" *by* Bo Zheng et al.

Anonymous Referee #2

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The authors investigated the key trends and drivers of China's anthropogenic emissions for the period of 2010–2017 for the first time. They used a bottom-up emission inventory to quantify emissions for each source sector in each Chinese province, and then combined the estimated emissions data with the Index Decomposition Analysis approach to analyze the drivers of emission trends. The results suggest that China reduced its anthropogenic emissions by a large extent between 2010 and 2017, and emission control measures are the main drivers of this reduction, especially since 2013 when China's Clean Air Action was successfully implemented. The trends in China's emissions are evaluated with both satellite- and ground-based measurement of SO_2 and NO_2 concentrations, which confirm the certainty of the estimated emis-

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Discussion paper

sions trends. This work is absolutely within the scope of the ACP journal. Overall, I think the paper reads well, provides valuable results, and could be published after the following issues are addressed. 1. The article makes heavy use of data sets that appear to be confidential or have restricted access, such as the technology penetration data achieved from China's Ministry of Environmental Protection (line 13, page 5). It would be helpful to other researchers if the authors describe these data a bit more clearly, such as which data are used, how these data sources are compiled, and the role these data play in the calculation of emissions in this paper. 2. The emissions trends estimated in this paper are built upon a variety of input data, including official statistics, government reports (not peer reviewed if I understand it correctly), and peer reviewed literatures. I understand the effort made by the authors that update emission inventories to the latest year using a mix of data sources. However, the audience may want to know the certainty of these data and how they affect the certainty of the estimated emissions trends, even if in qualitative terms would be very helpful. For example, care must be taken to confirm that targeted goals/progress from government reports may not be taken as actual emission reductions, although I believe China's emissions are decreasing fast in the last several years after reading this paper. 3. According to the emissions results, China's emissions decreased fast since 2013 mainly due to China's Clean Air Action. I suggest the authors add a bit more description of China's Clean Air Action in the introduction part. Besides, since reducing ambient PM2.5 pollution is the primary objective that stimulate emission control actions, the discussions on PM2.5 concentration trends and the possible linkage to the estimated emission trends may be added in the Sect. 4.3. 4. The authors should be more specific to what they refer in the main text. For example, in line 13 page 3, "to fulfill the air quality target", not clear what the air quality target is. In line 2 page 4, what do the "emission-intensive industries" include? In line 24 page 10, what's the definition of "Eastern China"?