

# ***Interactive comment on* “Emission inventory of air pollutants and chemical speciation for specific anthropogenic sources based on local measurements in the Yangtze River Delta region, China” by Jingyu An et al.**

## **Anonymous Referee #2**

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The authors updated a regional emission inventory in YRD China based on local measurement of emission factors and speciation profiles. They compared the newly developed emissions inventories with previous estimates from literature, assessed their uncertainties, and used a chemical transport model to evaluate the emissions data. Developing emission inventories lays the foundation for air quality modeling and the interpretation of atmospheric composition changes, which is quite important for the atmospheric sciences community and within the scope of ACP. However, I find few novel research findings after reading this paper. This paper developed regional/city emission

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inventories with local measurement data, which might be an innovative perspective, but it did not discuss details of the novel methods/data sources used here and lacked the implication for future studies of emission inventory development. My comments are as follows.

1. Method. Since this study updates an emission inventory developed by the same group before, the method section should put more focus on the new features of the updated emission inventory compared to the last version. Please summarize the new data development process and give a detailed table to show the new methods developed and the new data sources used in this paper. In my opinion, only an update of emission inventory for another year without any novel method or data source cannot be published as a research article in ACP. The method section lacks the descriptions of WRF-CMAQ model configurations and the estimation methods of OFP and SOAP.

2. Result. The manuscript in its current format just briefly describes the new inventory by source sector but does not provide any discussions on the improvement of the new emission inventory. Figure 8 only shows a map of modelled air pollutant concentrations with observation stations on it. It is difficult to say the simulated results are consistent with observed values. Table S7 provides statistical results of model performance in each city, which should be included in the main text using a few figures. And the evaluation part in the main text should be rewritten accordingly.

3. Data availability. Emission inventories are an important input to air quality models. Can a way for people to access the gridded emissions data by source sector that be included in the manuscript? This will allow other researchers to replicate and build on the modeling results if they wish. The authors now only provided gridded maps of total emissions, which are not enough to drive an air quality model. I suggest that the authors upload gridded emission maps by source sector at a regular spatial and temporal resolution, and also provide summary tables of emissions by city and source (i.e., emissions by source in each city).

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