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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Persistent growth of anthropogenic NMVOC emissions in China during 1990–2017: dynamics, speciation, and ozone formation potentials" *by* Meng Li et al.

Anonymous Referee #1

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This manuscript presents a comprehensive bottom-up inventory of China's NMVOC compounds between 1990 and 2017, including detailed information on sectors and speciation. The causes of trends in total NMVOC emissions and in specific sectors, including economic factors and pollution control strategies, are discussed. The impacts of NMVOC emissions changes on ozone formation potentials in China are quantified. The policy implications of China's NMVOC emissions changes are highlighted.

The manuscript is well presented and informative. The datasets presented here will be very useful to the atmospheric research and environmental policymaking communities. The manuscript is a valuable contribution to the literature. I recommend publication

after some issues are addressed.

Detailed Comments:

Title: - Suggest changing "dynamics" to "trends". "Dynamics" has a specific meaning in atmospheric science that is unrelated to emissions. I think the authors simply mean the trends in emissions.

Methods: - Emissions from open biomass burning were excluded from the inventory. Does this sector include crop burning? How big of a potential source is open biomass burning across China? What are the implications of excluding it from the inventory - Are NMVOC emissions from shipping in ports and near coastal areas included in the inventory?

Results: - Solvent use (including both industrial and residential sources) is now the largest NMVOC sector in China. How certain are the estimated emissions in this sector? McDonald et al. [Science, 2018] recently showed that, for cities in the United States, there are large differences between currently bottom-up approaches for estimating NMVOC emissions from paints, adhesives, and other sources lumped in the "solvent use" category of this manuscript. Should we expect similar uncertainties in Chinese solvent use emissions? If so, what are the implications for uncertainties in Chinese NMVOC speciation from solvent use, and for the resulting ozone formation potentials?

Discussion: - P 11, L 24-25: The differences between inventories in the most recent years appearsto be greater than 13% (for example comparing the 2014 values from MEIC and Wei inventories). Please change this sentence to more accurately reflect the data presented in Figure 8. - P 12, L 24: There are also large uncertainties for emissions of many compounds emitted from the Waste Treatment sector. Please note this fact.

References: - Liu et al., 2015, is missing from the list of references. Please include it.

Data accessibility: - For this paper to be useful to the community, the detailed inventory datasets reported here must be publicly available. A clear statement is needed in the manuscript about how the community can obtain the annual national and gridded emissions datasets and the sectoral and speciated detailed data presented here.

Technical Comments:

The figures and tables are clear and easy to follow. I have no changes to suggest for these.

The manuscript is also generally well written. However, there are numerous small mistakes in English grammar and usage throughout. For example, on the first page alone, I found the following errors: - P 1, L 20: omit "," after "that" - P 1, L 20: omit "been" - P 1, L 22: omit "," after "that" - P 1, L 24: change "offset" to "offsetting" - P 1, L 27: change "form" to "from" - P 1, L 28: change "were" to "was" - P 1, L 31: change "increase" to "increasing" There are similar small errors throughout the manuscript. Please correct them before resubmitting the revised manuscript.

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