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Atmospheric Chemistry and Physics Discussions

Interactive comment on "High-resolution inventory of technologies, activities, and emissions of coal-fired power plants in China from 1990 to 2010" *by* F. Liu et al.

Anonymous Referee #3

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General Comments: This paper estimated emissions from China's coal-ïňĄred power plants at unit level for a 20 year period. Compared to previous emission inventories, CPED signiïňĄcantly improved the spatial resolution and temporal proïňĄle of power plant emission inventory in China. The new inventory developed in this study will enable a close examination for temporal and spatial variations of power plant emissions in China and will help to improve the performances of chemical transport models by providing more accurate emission data. The paper is well structured and written. I would recommend publishing this paper after addressing some general comments and minor revisions. Before publication, making the emission inventory open to public is

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highly encouraged (or required?).

Some general comments:

(1) Besides SO2, NOx, CO2, PM2.5, did the authors also estimate CO, VOC, PM-coarse, BC, OC from coal-ïňĄred power plants? Do the authors plan other papers to report other compounds? Why did the authors select the four compounds as in the paper? Please say more.

(2) What is difference/relationship between this study and the MEIC 1.2, 1.0 or MIX inventories? Does this paper advance those inventories? Is this paper one part of those inventories (which one?)? Please specify in the paper.

(3) Please make this inventory data set open to public, so that the scientific community is able to utilize.

(4) Emissions were estimated at unit level for 2005-2010, however, priori to 2005, many parameters were extrapolated and assumed. So I suggest the authors make statements in the paper more clear about this difference.

Specific comments:

P18789, 1-3: what is the meaning of “because of a lack of detailed underlying data”?

P18789, 11-12: what is the citation of “32% of CO2, 33% of SO2, 33% of NOx, and 6% of PM2.5 in 2010”?

P18791, 22: how much totally is the number of coal-ïňĄred electric generating units in mainland China?

P18793, 11-14: Actually, the operation hour for each unit was not got from database but from disaggregation.

P18792-18792, Section 2.1: many data were extrapolated from years after 2000 to years 1990-2000. First, how robustness are these extrapolations? Second, the authors

ACPD

15, C7927–C7929, 2015

should emphasize emission estimates before 2000 are based on extrapolation rather than real data.

P18794, 20-23: “Surveys and satellite observations conïňĄrmed that some of the early installed FGD facilities were not actually in operation prior to 2008”. Does this influence the final estimates much?

P18797, 13-16: Do these values of “25.8 and 26.7 kg-CGJ -1” differ from the values recently published by Liu et al., Nature, 20151? If yes, country-specific data are more appropriate.

P18802, section 3.2.3: why did not the authors estimate PM10? How about the changes in PM10 during 190-2010?

P18807, section 4.2: what is the difference between this study and MEIC 1.0, MEIC1.2, MIX invenotries? Please specify.

P18832, Figure 9, Figure 10, Figure 13: did you estimate emissions in Taiwan? Right now, the figures look like there are no emissions of these four compounds in Taiwan. If not, please specify and change the color.

1. Liu, Z., et al. Reduced carbon emission estimates from fossil fuel combustion and cement production in China. Nature 524, 335-338 (2015).

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 18787, 2015.