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Atmospheric Chemistry and Physics Discussions

Interactive comment on "The effects of energy paths and emission controls and standards on future trends in China's emissions of primary air pollutants" *by* Y. Zhao et al.

Anonymous Referee #1

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This paper discussed how the growth of energy consumption and the implementation of emission controls would affect China's emissions of primary air pollutants through 2030. These emission scenarios will contribute to the policy making for air pollution control in China. The paper also presents some interesting findings, one of which is that faster reduction of PM emissions and alkaline substances contained in ashes compared with the reductions of acidifying substances (SO2 and NOx) may cause increased acidification of ecosystems. The technical part is clearly described and of good quality and the manuscript is well organized. Therefore, I believe that the paper is of the interest of ACP and recommends publishing this paper with minor revisions

in response to the following comments. In addition, the reviewer suggests a thorough grammar-checking by a native English speaker before the paper is published by ACP.

Specific comments: 1. The paper predicted annual emissions of SO2, NOx, and PM for 2015, 2020, and 2030 based on different scenarios. Is it possible to also include emissions for 2025? 2. Total PM shall be TSP. In addition, the energy related activities also emit VOCs. Is it possible for the authors to give the results of VOCs emissions? 3. Page 7923 Line 24-27: although the authors give a reference here, it is better that they give a brief description on how they consider the slower increases in electricity demand and more penetration of renewable power. 4. MMT used in the manuscript: is it for physical coal amount or standard coal coal equivalent? In fig. 1, the MMT is also used for oil consumption, is it MMT oil? Please clarify. 5. Table 1: the authors assume that the recently issued emission standards will be fully implemented under the STD scenario, which means that the emission standards would not be fully implemented under the other two scenarios. At what levels the standards will be implemented under BAS and REF scenarios? What are the rationale of this assumption? This point shall be clarified. 6. Section 3: There have been quite a few new studies on the emission factors of Chinese sources. This reviewer suggests the authors to include the most recent studies in this paper. 7. Fig. 2: This figure is hard to read. To make it clearer, I suggest the authors to separate this figure into two. One figure shows the projected trends in penetrations of technologies for typical sources in China from 2010 to 2030. The other one gives the changes of emission factors, which shall be exact values and not the percentage relative to 2010 levels. 8. In current manuscript, only the trends of technologies penetrations and emission factors for NPS are given. I think it is also important to give such information for CPS and 450S. 9. Fig. 3: results for PM10 shall be given. 10. Section 4.2: Except for the emission control levels, the activity levels have significant impacts on future emission trends. The reviewer is wondering whether it is possible to add more discussions on the uncertainties of future energy consumptions used in this study. 11. Section 4.3: Please include the following study in the comparison: S. X. Wang, B. Zhao, S. Y. Cai, Z. Klimont, C. Nielsen, M. B. McElroy,

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T. Morikawa, J. H. Woo, Y. Kim, X. Fu, J. Y. Xu, J. M. Hao, and K. B. He. Emission trends and mitigation options for air pollutants in East Asia. ACP, 2014, acp-2013-1012

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 7917, 2014.