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Atmospheric Chemistry and Physics Discussions

Interactive comment on "NO_x emissions in China: historical trends and future perspectives" *by* B. Zhao et al.

Anonymous Referee #1

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General Comments:

NOx emissions in China not only affect the local and regional air quality of China, but also pose multiple adverse impacts on the human health, ecosystem and climate forcing in the East Asia and the hemisphere via large-scale tropospheric ozone and PM pollution, which have aroused great concerns throughout the whole world. Thus, it is of great significance to know well about the historical trends, present status and future changes of NOx emissions in China. Particularly, it is very important to demonstrate the future scenario for NOx reduction based on the scientific knowledge about emission structure and various emission control measures. The study conducted by Zhao and coauthors provides a historical emission inventory for NOx during 1995-2010 using a consistent model structure and detailed Chinese data sources for activity data and

emission parameters; and also the future trends up to 2030 are forecasted by applying scenarios analysis. In particular, within the reviewer's knowledge this article is the first study in which the NOx emissions in China are estimated during 1995-2030 using a consistent methodology and are predicted based on the various emission scenarios on accounting of end-of-pipe control measures as well as energy-saving measures. The author's efforts have made new NOx emission inventory study more reliable and complete compared to others previously reported, which will be a good reference for poly making of NOx reduction in China. Consequently, this reviewer believes that the paper is of the interest of Atmospheric Chemistry and Physics and recommends publishing this paper with minor revisions in response to the following questions, comments, and suggestions.

Specific questions and comments:

1. Page 16052, Line 10: The "specific control technology" is "specific air pollutants control technology"?

2. Page 16053, Lines 22-30: The soil NOx is an important emission source in China. Why the authors don't include the soil NOx?

3. Page 16061, Lines 21-22: The authors should cite the relevant references for this assumption.

4. Page 16073, Lines 9-11: The reason why the CV varies with emission sector should be discussed. Especially, why is the CV of emissions from transportation higher?

5. Page 16076, Line 25: What is the "standard" scenario?

6. Section 3.4: The spatial distribution of large point sources and spatial proxies will vary during 2010-2030 depending on the scenario. The spatial distribution within a specific province is fixed? It is suggested that the authors explain the temporal changes of spatial proxies.

7. Section 3.5: For verification of the historical trend of NOx emissions, the satellite

NO2 vertical column density (VCD) is very useful. I suggest that the authors compare with recent trends by satellite NO2 VCD and make some discussion about it.

8. Table 6: The removal rate of a specific air pollutants control technology (parameter "d" in Eq. (3)) used in this study should be shown in Table 6 or other.

9. Fig.10: The legend is invisible and should be improved.

Interactive comment on Atmos. Chem. Phys. Discuss., 13, 16047, 2013.