

## ***Interactive comment on “Impacts of emission reduction and meteorological conditions on air quality improvement during the 2014 Youth Olympic Games in Nanjing, China” by Qian Huang et al.***

### **Anonymous Referee #1**

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This manuscript described a study for the emission control scenario during the 2nd Youth Olympic Games in Nanjing using surface measurements and WRF/CMAQ model. This manuscript's English need improvement. It listed both model and measurement results, but it is not easy to track which is about observation and which is about the model. I suggest add something to make it clear. For instance, the title of section 3.1 can be “Observed air quality during YOG”, and the section 3.2 changes to be “simulated impact of meteorological conditions”. Another issue is that the discussions for the measurements and model are totally separated, and the modeled impact of NO<sub>x</sub> emission reduction on O<sub>3</sub> et al is not supported by the observation. Obviously

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the model or emission inventory has some biases, which should be addressed. Another issue is that this study did not discuss anything about emission and pollutant concentrations in surrounding areas, which sometimes can affect your results. Page 1, line 27, “However, simulation” better to be “However, the model simulation” Page 1, line 28, “and raised SO<sub>2</sub>” better to be “and could increase” Page 2, line 48-49, “Preparatory work were carried out since 1 July, 2014” better to be “The preparation started from July 1, 2014” Page 2, line 54-59. Please consider to split that long sentence to several sentences as it has grammar errors. Page 4, line 137. “Exp.3 had the same inventory as Exp.2 but the weather” better to be “Exp.3 had the same inventory as Exp.2 but used the weather” Page 4, line 141. “meteorology on contaminants” better to be “ meteorology on air quality” Page 6, line 132-141. This manuscript should show a map of the emission reduction for Exp1 –Exp2, instead of just modeled concentration changes. Page 8, line 184, “most species had a good reflection”, What does it mean? Page 8, line 186-194. Please re-write to make it easy to understand. Figure 6, 7 and the corresponding discussion in section 3.2. Are those comparisons for monthly averaged value, such as 10m wind, PBL heights? If so, please state it. Page 13, line 257-259. The O<sub>3</sub> increase should be due to the NO<sub>x</sub> emission reduction -> less titration. Page 14, table 6. Why the modeled impact of the emission reduction on NO<sub>2</sub>, O<sub>3</sub>, PM<sub>10</sub>, PM<sub>2.5</sub> diff significantly from the observations? You may discuss it.

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