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Atmospheric Chemistry and Physics Discussions



# *Interactive comment on* "Exploring the inconsistent variations in atmospheric primary and secondary pollutants during the G20 2016 Summit in Hangzhou, China: implications from observation and model" *by* Gen Zhang et al.

**Anonymous Referee #1**

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The manuscript describes a comprehensive observational dataset including atmospheric O3, PAN, particulate matter, VOCs, NOx, and other trace gases to evaluate the effectiveness of emission control measures on reducing pollutant concentrations before, during, and after G20. It's very reasonable to demonstrate the effect of meteorological conditions by using WRF-Chem model. Further, an explicit OBM model was used to identify the predominant VOCs precursors and key chemical processes in PAN and O3 formation and to further appoint the corresponding VOCs sources before, during, and after G20 by using PMF model. The manuscript is clearly written and for-



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Discussion paper

matted very well. Thus, after considering several comments below as minor revisions, I recommend the publication of this manuscript in ACP. 1. The authors mentioned emission control measures contributed 63.5%, 44.1% and 31.2% to the reductions of PM2.5, SO2 and NO2 in DG20 II relative to BG 20. And meteorological conditions made negative contributions. What are the other factors contributing to the reduction of the observed pollutants. 2. What are the contribution of emission control measurement and meteorological conditions to O3 concentration? 3. I don't understand the variation of CO concentration during different stages. The authors mentioned fuel combustions should be the reason. Is there any evidence? Why did fuel combustion increase during G20? 4. Other minor errors: Line 61-62: no need to mention "which are dominant compounds of fine particulate matter". Delete it Line 69-70 the complexity of mitigating secondary photochemical pollution is also highly related with intricately photochemical reactions. Thus add the phase "in addition to intricate photochemical reactions" Line 207-210: This section belongs to the description of emission control measures. Thus suggest moving it in Introduction. Line 429-459 The Conclusion is a bit long. The authors are encouraged to shorten this section.

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