

Interactive comment on “The Role of Meteorological Conditions and Pollution Control Strategies in Reducing Air Pollution in Beijing during APEC 2014 and Parade 2015” by Pengfei Liang et al.

Anonymous Referee #2

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Distinguishing the influence of the meteorological conditions and pollution control strategies on the pollutants concentrations is important for evaluations of the air pollution policies. The authors used the stable meteorological condition identification method and the GLM method to address this issue. Two cases, i.e. APEC 2014 and Parade 2015 were selected for study. Overall, the manuscript is well-written. The manuscript would be acceptable for publication in ACP if the following comments can be satisfactorily addressed.

Major Comments

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1 Why the authors chose the stable meteorological condition identification method to give the evaluation first? It seems GLM method is more effective for the meteorological influence separation. Which method is focused on? If the stable meteorological condition identification method has limitations in quantifying the meteorological influences, why the authors give so many discussions on the quantifying results in this part, i.e. Line 393-436? Compared to the stable meteorological condition identification method, the GLM method mainly focused on the evaluation of the model performance and lack in-depth discussions. Furthermore, the validations of the GLM method is still weak in the manuscript, the authors just compared the model results of PM_{2.5} in literatures, line 551-552. Please give more in-depth analysis for the results of GLM method 2The authors are recommended to adjust the structure of the manuscript to give more clear and concise abstract and introduction. Some part of the “introduction” and “Results and discussions” can be moved to the method section. The “Results and discussions” should give more in-depth analysis without just give statement of the tables and Figures. See the following comments in detail. 3 Some annotations of the Figures and Tables should be more precise and accurate.

Detailed comments

1 Line 47-48, this sentence is confusion and misunderstanding. If “meteorological conditions and pollution control strategies contributed 30% and 28% to the reduction of the PM_{2.5} concentrations”, is there any other reason to cause the reduction? Please rewrite sentences like this in the manuscript. 2 Line 62-63, what does you mean here? 3 Line 64-80, the authors list the special events for air pollution control, are there related studies on these events? Please add some scientific references here. 4Line 90-91, the statement here is quite obscure. Please give a clear and accurate summary of the previous studies. 5Line 95, add more references here to back your statement. 6line 130-134, the authors give the advantages of the GLM methods. “(3) in addition to predicting PM_{2.5} mass concentrations, our model could also predict concentrations of gaseous pollutants and individual PM_{2.5} components.” Other methods can not predict

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concentrations of gaseous pollutants and individual PM_{2.5} components? However, I think for most reader, they more concern about the correctness and effectiveness of the method. 7Line 162-168 Why the authors used the data from BCIA? Did the meteorological data can match with the observation data of the pollutants? 8line 183 "OCEC" to "OC/EC" 9Line201-205 Why the authors define "variable WD" and separate to (1) and (2) 10 What the physical meaning of β_0 i.e. the intercept? 11 Line233, what is the study period? 2014.10.01-2014.12.31 and 2015.08.01-2015.12.31 not match with the data shown in Figure1 12Line 255-268 what does the results imply? 13Line276-278, "indicating that OC and EC were mainly derived from the same sources during both pollution control periods, and were from different sources during the non-control periods." Why and how the sources changes? 14line280-281, why the secondary OC (SOC) formation contribution from residential solid fuel (coal and biomass) are higher in the control period? 15 Line 341-353 what is the basis for this method 16 Line 568-597 Please give in-depth discussion of the results. Why the authors use positive value to represent decrease? Why the sulfate increase during APEC?

Other Comments 1 Give the full name of abbreviations only for the first time they appear. 2 "during the APEC/Parade" can be labeled as "DAPEC/DParade" to avoid confusion of the study periods 3Table 1 give the air pollution control measures for APEC and Parade. Are the pollution control strategies different? If there is different, can use this to validate the GLM method?

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