Response to Interactive comments from Anonymous Referee #2

Referee comments are in black. Author responses are in blue. Revised sentences are in red.

This manuscript, Spatiotemporal and policy-related variations of PM_{2.5} compositions and sources during 2015-2019 at multisite of a Chinese megacity, has been studied the relationship among urbanization, policy and PM_{2.5} components variation in a fastdeveloping Chinese city. This manuscript investigated the spatiotemporal and policyrelated variations of PM_{2.5} components and sources via the methods of Hierarchical Cluster Analysis and PMF, etc. Meanwhile, source weighted PSCF was developed in this work. The results and method can be useful for further policy formulation in most developing and polluted countries as well as supply basic information for future epidemiological studies. I recommend the manuscript to be published after minor corrections.

Response: I am very grateful for your comments of the manuscript. According to your advice, we amended the relevant part in manuscript. Your questions were answered below.

Some minor corrections were as followed:

(1) Latitude and longitude should be added in Figure 1 and Figure 8.

Response: Thank you very much. Figures have been revised.





Figure 1: The locations of 19 sampling sites in Chengdu from 2015 to 2019.



(2) It is suggested that the coordinates of industrial factories could be added to Figure1.

Response: Thank you very much. We have presented the coordinates of factories in some key industrial sectors in Fig. S1.





Figure S1. The coordinates of iron and chemical industries, furniture and logistics industries, wood and glass factories, and petrochemical industries in Chengdu (<u>http://lbs.amap.com/api/webservice/guide/api/search/</u>, last access June 2th, 2021).

(3) Line 115: the start and end time of sampling day should be detailed.

Response: Thanks for your suggestion. The start and end time of sampling day is added at line 117: "Samples were collected daily for 22 h (from approximately 11:00 am to 09:00 am local time, GMT+8) at 19 sites."

(4) In section 2.2, 24 chemical species in PM_{2.5} were analyzed and why only 22 chemical compositions were introduced into PMF.

Response: Thanks for your comments. Cr and Co were not input for the apportionment because many concentrations of them were under the method detection limit (MDL). Corresponding explanation is added at lines 192-194: Because many concentrations of Cr and Co were under the MDL, they were not input for the apportionment and a total of 22 chemical species of 836 samples at 19 sites from 2015 to 2019 were simulated.

(5) Lines 173-174: why the time of "12 h" and "6 h" were chosen? Have you tried other time options? Such as the 24 h backward trajectories starting from the receptor site and 2h time intervals during all sampling periods will chose.

Response: Thank you very much. We added the explanation about the parameter selection at lines 203-209: "Using MeteoInfo modelling, 12 h backward trajectories starting from the receptor site at 500 m above ground level were generated with 6 h time intervals during all sampling periods. The 24 h and 72 h backward trajectories were also simulated in the process of parameter selection. The results suggested that regions passed over by 24 h and 72 h backward trajectories were far more widespread than those in our study area. The 12 h backward trajectories covered the most suitable range. In addition, it is possible to apply 24 h and 72 h trajectories when future studies refer to larger regions. In addition, the selection of the time interval showed little influence on the results."