

Point-by-point response to comments by Reviewer#4

We thank the reviewer for the detailed and constructive review comments. Below is our point-by-point response to each comment, marked in blue. Changes made to the main text are also marked in blue in the revised manuscript file.

General comments:

1. The authors would need to explain why the data from the two sites can be combined and how this might lead to uncertainties in the results.

Response: This comment has been addressed in the point-by-point response to comments by reviewer#1, in "**Response to General comments**". The reviewer can refer to the corresponding response there.

2. It is not clear to me how PM_{2.5} concentrations for the four clusters of air mass were calculated. Please elaborate.

Response: 36-h duration backward trajectories arriving at an altitude of 100 m above ground level over the sampling site were calculated for each hourly sample, deploying the 0.5 Global Data Assimilation System meteorological data. Thus, for 289 samples, there are 289 trajectories. The trajectories were then classified into four clusters according to the geographical origins and movement process of the trajectories using the TrajStat model. Each sample was then attributed to its corresponding cluster from the model. The average PM_{2.5} concentrations for each cluster are calculated by averaging all the PM_{2.5} concentrations from the samples belong to that cluster.

3. Misuses of words and sentence structures sometimes can make it hard for readers to understand. I just listed below some as examples, but there are more mistakes that need to be fixed.”

Response: we sincerely thank the reviewer to give us a chance to revise our manuscript. We have carefully revised the whole manuscript with substantial efforts. Please see the detailed changes made in the updated version of the manuscript.

Minor comments:

“While” and “however” are misused many times: For example, in Line 241

Response: revised accordingly. We have carefully examined the whole manuscript and improved the language.

28-29: This sentence is grammatically incorrect.

Response: The sentence has been rewritten.

Lines 25-26: “Cooking emission was a minor contributor (2.8%) to PM_{2.5} mass while a significant contributor (11.4%) to the OC mass.”

77: What does “change of sources” mean? Change relative to what?

Response: it was a typo mistake and caused ambiguity. This sentence has been rewritten in the main text.

Lines 76-77: “The results from this work can provide support for the development of air pollution prevention and control strategies.”

159: Please split this sentence into two sentences.

Response: revised as suggested.

Lines 181-182: “The preferential input species for PMF analysis are those with high abundance and known to be specific to certain sources. Generally, organic markers with lower volatility and lower reactivity were selected as input species for MM-PMF.”

195: “accounting for 16.2% to OC” -> “and accounts for 16.2% of OC”

Response: revised as suggested. These sentences have been rewritten in the main text and updated with the data of the model results.

Line 227: “F3 contributed to 12.6% of the total PM_{2.5} mass and 19.4% of OC on average.”

199: 67->0.67, 58->0.58

Response: revised as suggested. This sentence has been rewritten and updated with the data of the model results.

Lines 226-227: “In addition, F3 has high correlations with NO_x (R=0.68) and CO (R=0.48), further supporting the association of this factor with vehicle exhaust.”

211: 49->0.49

Response: revised as suggested.

Lines 232-233: “F4 shows a high correlation with NO_x (R=0.49), and NO_x in the Yangtze River Delta mainly originates from industrial and vehicular pollution sources (Fu et al.,2013).”

229: There is a grammar mistake. Please split this sentence into two sentences.

Response: revised as suggested.

Line 257: “F8 contains a high abundance of As and Pb, which identifies this factor to be associated with coal combustion (Chen et al., 2013).”

Line 261: “F8 contributes to 5.3% of total PM_{2.5} and 5.6% of OC, respectively.”

284: I’m not sure how the authors concluded that dust are local emissions, since the dust contribution in Cluster 2 is actually lower than the contribution to Cluster 1. Also the sentence is redundant, and could be revised to “Dust is also an important local emission source of PM_{2.5}.”

Response: this weak statement has been removed from the main text.

401 - 402: Please revise the sentence to something like “Air quality in Shanghai area is greatly affected by the air pollution transport from the northern regions.”

Response: the whole conclusion section has been revised to make it more concise.

Lines 415-417: “The results indicated that PM pollution in winter in Shanghai area is greatly affected by both local pollutant emissions and the regional transport from the northeastern continental regions.”

Figure 8: The upper panel needs y axis label

Response: suggestion taken. Original Figure 8 was combined with Figure 2, as suggested by one reviewer. See the revised version in [Figure 2](#).