Author Comments: Response to reviewers' comments

Title: Evaluation on the effect of regional joint control measures in changing photochemical transformation: A comprehensive study of the optimization scenario analysis

Referees' comments:

Reviewer #1:

This manuscript investigated the effects of joint local and regional regulations on air pollution during the 2nd World Internet Conference held in Jiaxing, Zhejiang. Both modeling and measurements were used for the evaluation. The authors performed careful case studies by controlling the meteorological conditions, air mass back trajectory, etc. Different emission reduction plans were proposed based on different scenarios. In particular, it is recommended to implement regulation along the transport channel to the receptor-site. This is an important study to develop effective control strategies to mitigate air pollution in China. Overall, the manuscript is well-written and the analysis is solid. I recommend publication after minor revision.

Comments

1. Line 202. Please show the equations to calculate the metrics. Also, "Index of Agreement" should be as "IOA".

Revised. The equations have been added to the manuscript, as follows. The "I" has been revised to IOA.

The equations to calculate these statistical indexes are as follows:

$$NMB = \frac{\sum(P_j - O_j)}{\sum O_j} \times 100\% \quad (1)$$

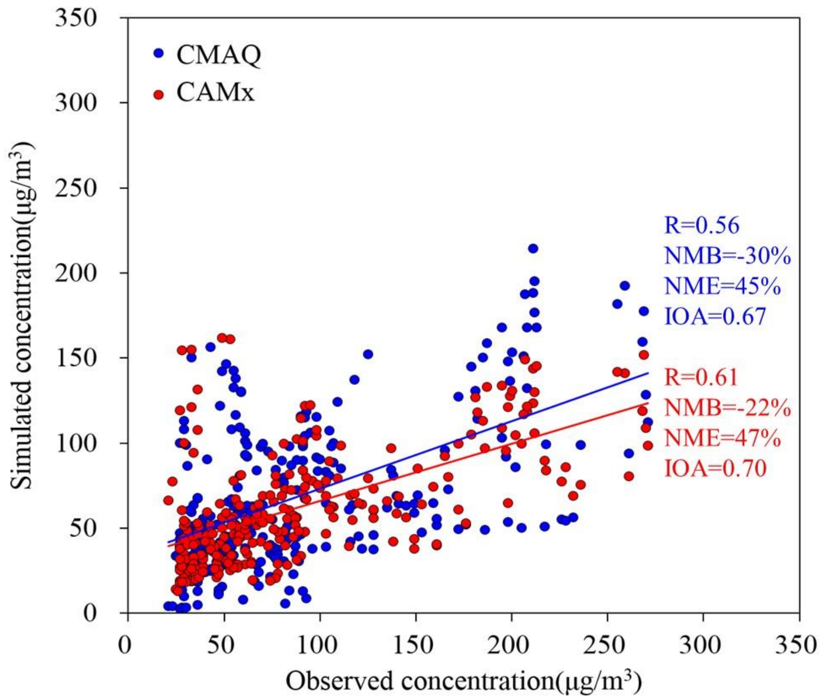
$$NME = \frac{\sum |P_j - O_j|}{\sum O_j} \times 100\% \quad (2)$$

$$IOA = 1 - \frac{\sum(P_j - O_j)^2}{\sum(|P_j - \bar{O}| + |O_j - \bar{O}|)^2} \quad (3)$$

where P_j and O_j are predicted and observed hourly concentrations, respectively. $\bar{O}$ is the average value of observations. IOA ranges from 0 to 1, with 1 indicating perfect agreement between model and observation.

2. Figure 2. Please include NMB, NME, and IOA (Table 2) in the figure.

Revised, as follows.



3. Line 241-244. This sentence has grammatical error.

Original sentence: For each of these processes, this study has comprehensively in the integrated emission-measurement-modeling method considered the backward air flow trajectory, potential contribution source areas, meteorological conditions and the variation of $PM_{2.5}$ concentration to analyse the evolution of the observed air quality."

Revised sentence: For each of these processes, this study utilized the integrated emission-measurement-modeling method to analyze the evolution of air quality from several aspects, including the backward air flow trajectory, potential source contribution areas, meteorological conditions and the variation of $PM_{2.5}$ concentration.

4. Figure 3-7. In panel (d), please specific if the PM2.5 time series is from modeling or measurement.

It is from measurement. The original sentences "(d) $PM_{2.5}$ time series for selected sites during … " have been revised to "(d) Observed $PM_{2.5}$ time series for selected sites during …" in Fig.3-7 (Fig.4-8 in the revised manuscript).

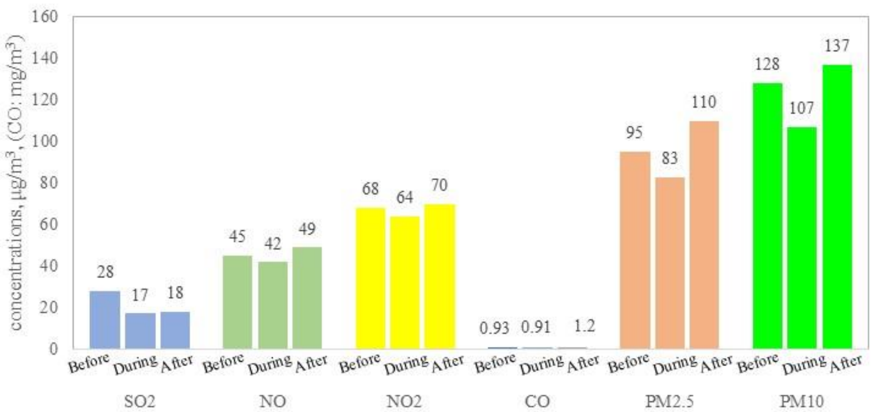
5. Figure 8 and Figure 9. These two figures are really intriguing. Why is "[SO2] after control" is similar to "[SO2 during control]", but "[SO4] after control" is much higher than "[SO4 during control]"? The opposite trend is observed for [NO2] and [NO3]. Please make similar figure for the [SO2]+[SO4] and [NO2]+[NO3], which should better represent the effect of regulation. Another potential plot is the partitioning of SOx and NOx (e.g., SO2/(SO2+SO4)). Interesting chemistry may be inferred from these analyses. Also, can the model reproduce these observations? Last comment, please consider to change the x-axis label from dates to "before/during/after

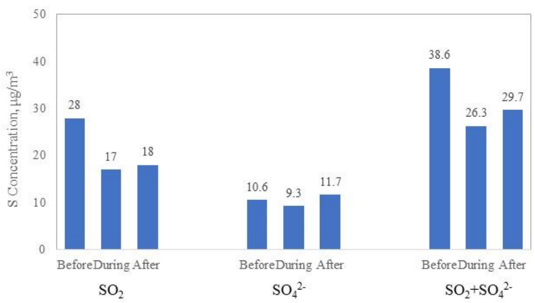
regulation”.

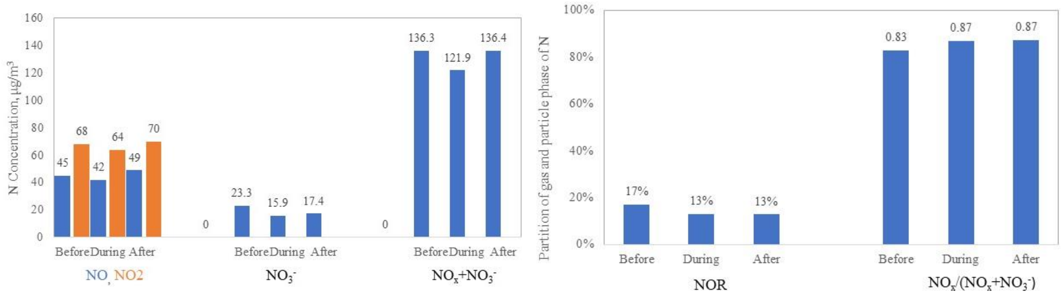
It is a very good question and suggestion!

As is shown from the figure, the SO_2 concentrations after control is a little bit higher than during control (+5.9%). However, the SO_4^{2-} after control is much higher than during control (25.8%). This is probably due to two reasons: firstly, SO_2 emissions and primary sulfate emissions increased after the control measures were stopped; secondly, increased NO_2 emissions could accelerate the formation of secondary sulfate (Cheng et al., 2016), which can be clearly shown from the SOR and NOR. Different trend is observed for NO_2 and NO_3^-, with the NO_2 concentrations after control much higher than during control (+9.4%), while the increase ratio of NO_3^- (+9.45%) is the same. Sulfate originates from both primary emissions and secondary formation, but nitrate is mostly secondary formed. The NOR during and after regulation is the same and most of the N is in the gas phase ($NOx/(NOx+NO_3^-)$ is 0.87). Therefore, the increase of NO_3^- is lower than SO_4^{2-}. The $PM_{2.5}$ concentration after control sharply rebounded 31.8%, indicating that both the emissions increased, and the secondary pollution formation is improved.

To better illustrate emissions and chemistry before, during and after control measures, we revised the previous figures and added another two indicators for partitioning of SOx /NOx, and SOR/NOR.







6. Line 511. "reduction in PM2.5 concentrations" is not accurate. It should be "PM2.5 decline ratio".

Revised.

7. Figure 14. It is surprising to see that the decline ratio is typically ~10% after such strict regulation policies. What are the sources of the residual PM? From transport?

The decline ratio changes with meteorological conditions even under the same emissions reduction situation, because meteorological conditions influence dispersion from primary emissions, regional transport and secondary formation. If we look at the decline ration of hourly concentrations, we can find that the decline ratio was the most significant on December 8-9 with a maximum reduction of 56%. The percentage reduction in hourly PM2.5 during the conference (December 16-18) ranged between 2%-24%. If we look at the PM2.5 decline ratio in daily average, we can see the improvement in PM2.5 before the conference (December 8 and 9) was relatively significant, with a daily average decline of roughly 31% and 35%, respectively, which corresponds to a decrease of around 17 μg/m^3. The reduction in PM2.5 on December 14-15, two of the days with some of the highest observed PM2.5, was relatively low at around 6%, while daily average PM2.5 concentrations on those days decreased by around 10.0 μg/m^3. The magnitude of emission reductions during those two time periods was basically the same, so it's likely that the observed difference in $PM_{2.5}$ levels was the result of meteorological differences. Overall, the residual PM may come from two reasons: (1) although stringent control measures have been implemented, there are still precursor emissions in this city, which accumulate and form secondary particles under specific meteorological conditions; (2) enhanced transport under different meteorological conditions, especially upwind emissions.

8. Effect of local emission reductions in Jiaxing and Figure 18. Regional control only has slight extra benefit over local control. Does it suggest that less strict regulation should be implemented in nearby cities?

Figure 18 shows the decline ratio of daily average PM2.5 concentrations under the regional emission reduction scenario, the Jiaxing local emission reduction scenario and the transport channel emission reduction scenario (24 hrs in advance and 48 hrs in advance). Air quality improvement due to regional emission reductions was slightly larger than that of local emission reductions in Jiaxing, and smaller than that of channel emission reductions. This suggests that emissions reduction in downwind cities does not have much effect on Jiaxing's air quality. In contrast, emissions reduction based on predicted transport pathway in advance are more effective than local emissions reduction.

Reviewer #2:

Review for “Evaluation on the effect of regional joint control measures in changing photochemical transformation: A comprehensive study of the optimization scenario analysis”
This paper investigates the effect of regional control during the 2nd World Internet Conference from December 16 to December 18, 2015. They analyzed the meteorology condition, observed air pollutant concentration, and quantified the effect of air pollution control using numerical models. They found the local emission reduction plays an important role in air quality improvement and suggest that a 48-hr advance pollution channel control before the event. Overall, this paper is well-organized and fits into the scope of Atmospheric Chemistry and Physics on the advance understanding of atmospheric chemistry process. I suggest this paper gets accepted with the following minor revisions.

Minor comments:
1. In the model performance section, the author mentioned about the underestimation of the simulated $PM_{2.5}$ concentration compared to the observation. Where are the uncertainties possibly coming from? Knowing this uncertainty in the model, how do we interpret the results (possible uncertainty and limitation in the result)?

Although simulated $PM_{2.5}$ can well capture the air pollution situation, with IOA of 0.67 and 0.70, the predicted $PM_{2.5}$ is relatively lower than the observed data (NMB values are all negative). These underestimations may be due to three reasons. Firstly, winter underestimation of $PM_{2.5}$ (especially SOA) is a common issue with CMAQ or CAMx simulations over China (Hu et al., 2017; Li et al., 2016), which can be explained by a lack of model calculated oxidants or missing reactions (Kasibhatla et al., 1997) and the state-of-science of SOA formation pathways (Appel et al., 2008; Foley et al., 2010; Chen et al., 2017). Secondly, uncertainty still exists in the regional emissions inventory, including the basic emissions inventory and the control scenarios. Thirdly, the wind speed is slightly overestimated over the region, with NMB and NME of 28% and 33%, causing fast dispersion of air pollutants.
In view of these uncertainties, we mainly use observational data to interpret the photochemical change, while in Section 3.4, we should keep in mind that the secondary formation may probably be underestimated, causing the decline ratio lower than reactivity.
Text has been added to interpret the model performance and the predicted results in the model performance section 2.3.2 and section 3.4.1.

Added references:
Appel, K.W., Bhave, P.V., Gilliland, A.B., Sarwar, G., Roselle, S.J., 2008. Evaluation of the community multiscale air quality (CMAQ) model version 4.5: sensitivities impacting model performance; part II particulate matter. Atmos. Environ. 42, 6057e6066. http://dx.doi.org/10.1016/j.atmosenv.2008.03.036.
Chen, Q., Fu, T. M., Hu, J., Ying, Q., & Zhang, L. (2017). Modelling secondary organic aerosols in China. National Science Review, 4(6), 806-809.

Foley, K.M., Roselle, S.J., Appel, K.W., Bhave, P.V., Pleim, J.E., Otte, T.L., Mathur, R., Sarwar, G., Young, J.O., Gilliam, R.C., Nolte, C.G., Kelly, J.T., Gilliland, A.B., Bash, J.O., 2010. Incremental testing of the community multiscale air quality (CMAQ) modeling system version, 4.7. Geosci. Model Dev. 3, 205e226.
Kasibhatla, P., Chameides, W.L., Jonn, J.S., 1997. A three dimensional global model investigation of seasonal variations in the atmospheric burden of anthropogenic sulphate aerosols. J. Geophys. Res. 102, 3737e3759.
Li, J. L., ZHANG, M. G., GAO, Y., & CHEN, L. (2016). Model analysis of secondary organic aerosol over China with a regional air quality modeling system (RAMS-CMAQ). Atmospheric and Oceanic Science Letters, 9(6), 443-450.
Hu, J., Wang, P., Ying, Q., Zhang, H., Chen, J., Ge, X., ... & Zhao, Y. (2017). Modeling biogenic and anthropogenic secondary organic aerosol in China. Atmospheric Chemistry and Physics, 17(1), 77-92.

2. Some of the figure (Figure 3-7) contents are hard to read, for example, the values on the color bar on the panel (b) and contours on the synoptic maps (a). Moreover, the graph resolution is not consistent in these Figures, especially figure (c). What is the color scale in (c)?
We updated the precision and enlarged these figures, so that they are more clearly to read. We also added the color scale to figures (c). See revision in the revised manuscript.

3. Line 153: "GDAS" needs to be defined at its first appearance.
"GDAS" has been revised to "Global Data Assimilation System (GDAS)".

4. Line 201: : : : Index of Agreement (IOA). Same apply to Line 209:and the IOA value of 0.67 to 0.70.
Revised.

5. Line 340: " under static weather condition"
Revised.

6. Figure 9: what is the unit of the measurement (%)?
The unit is "$\mu g/m^3$", revised.

7. Figure 11: WS/WD panel has similar information as the PM2.5 (top panel) regarding the wind direction. I suggest change the WS/WD panel to wind speed only and use contour lines to represent that.
The top panel with different colors mainly indicates the trajectories at the 500m height, which can show the transport; while WS/WD means the surface wind, which can give us information regarding pollution dispersion or accumulation. Therefore, we suppose it is better to keep both.

8. Line 649-652: Please be consistent on the notification, such as SO2 PM2.5. This occurs in other sections of the manuscript, e.g. line 669-672. 2019.

We have gone through the manuscript and made edits accordingly.

Reviewer #3:

The emission reduction during the Second World Internet Conference provided a unique scenario to evaluate the chemical/physical processes affecting the air quality in Yangtze River Delta region. This paper estimated the emission reduction and simulated this scenario in a reasonable way. It provides some useful insights in the air quality management in this region. One thing is missing is this paper did not show how the chemistry works during the emission reduction period. Since sulfate and nitrate are both secondary, how they were formed and how they were affected? How did nitrate become more significant than sulfate with and without the control measures? The role of dust emission was not paid enough attention in the discussion. There is also a big room for improvement of overall writing. This paper is not presented consistently. It gives me a feeling that this paper is written by two different people. Later part was better presented than the first half.

(1) Chemistry

We have replotted figures 9-10 and inserted more discussions regarding the chemistry changes before, during and after the regulations. See Section 3.2.1 in the revised manuscript. See follows:

Figure 9 shows the concentration levels of normal pollutants including SO_2, NO, CO, NO_2 and $PM_{2.5}$ in Jiaxing City before (December 1-7), during (December 8-19) and after the regulation (December 19-31) under stagnant weather conditions. It can be seen that pollutant concentrations during the campaign were less than those before the campaign, in which SO_2 had the most significant decline of 40.1%, NOx, CO, $PM_{2.5}$ and PM_{10} declined 8.0%, 2.6%, 12.5% and 16.3%, respectively, indicating that control measures have significantly improved the air quality in Jiaxing City, especially with respect to SO_2 and PM_{10}.

After the campaign, all the pollutant concentrations rebounded sharply. SO_2, NO, NO_2, CO, $PM_{2.5}$, PM_{10} increased 8.3%, 15.4%, 10.3%, 31.8%, 32.2% and 28.6%, respectively. Concentrations of some pollutants were even higher than those before the campaign, which suggests that the emission intensity of the sources had significantly increased after the campaign.

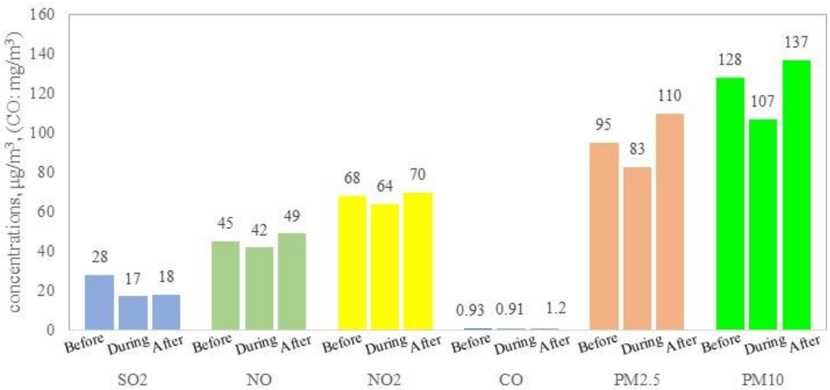
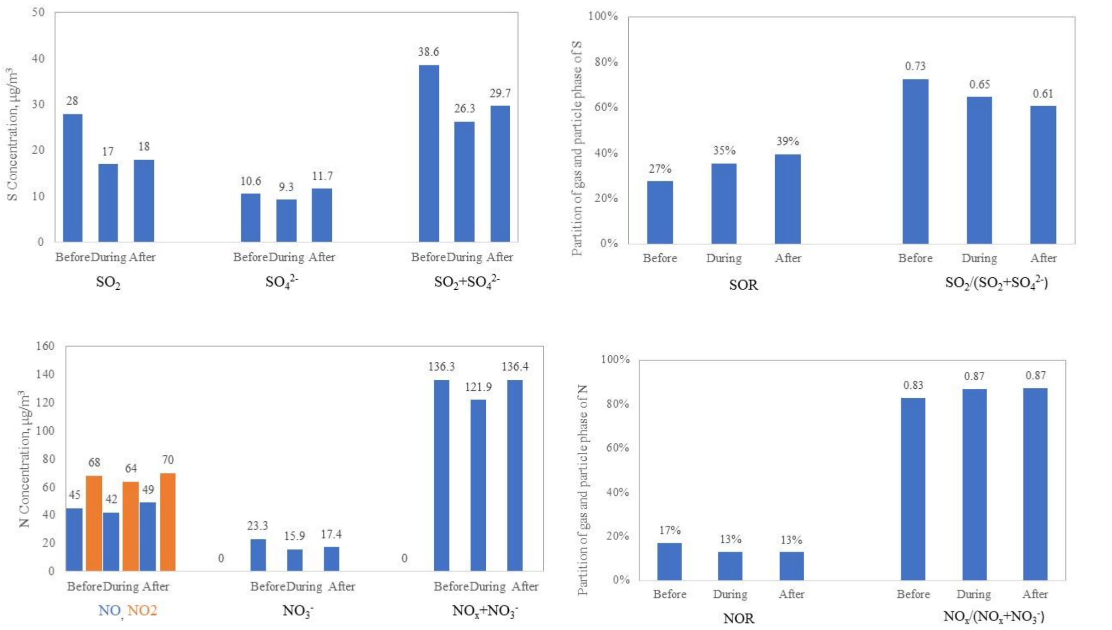


Fig. 9 Comparison between air pollutant concentrations at Shanxi station before, during, and after the campaign under stagnant meteorological conditions

There are also some differences in concentrations of major chemical components of $PM_{2.5}$ in Jiaxing City before (December 1-7), during (December 8-19) and after the campaign (December 19-31) under static weather conditions, as shown in Figure 9. The concentrations of major chemical components of $PM_{2.5}$ during the campaign were less than those before the campaign, which is consistent with the conclusion about changes in normal pollutant concentrations. On average, SO_4^{2-}, NH_4^+, NO_3^-, OC mineral soluble irons (Ca^{2+} and Mg^{2+}) and K^+ declined 11.8%, 5.1%, 32.1%, 9.8%, 56.8% and 5.1%, respectively. Comparisons between the distribution of $PM_{2.5}$ chemical components before and during the campaign suggest that Ca^{2+} and Mg^{2+} decreased most significantly during the control period, which indicates that the suspension of construction operations which result in dust emissions and the rising frequency of rinsing and cleaning paved roads, significantly reduced dust emissions. During the campaign, NO_3^- significantly decreased, indicating that vehicle control measures successfully reduced NO_x emissions and subsequently the formation of inorganic aerosols. The significant decrease in SO_4^{2-} also shows that restricting and/or suspending the operation of coal-burning power plants and industries in local and neighbouring cities played a very positive role.

The chemistry also changes if we compare during and after the regulation. As is shown from figure 10, the SO_2 concentrations after control is a little bit higher than during control (+5.9%). However, the SO_4^{2-} after control is much higher than during control (25.8%). This is probably due to two reasons: first, SO_2 emissions and primary sulfate emissions increased after the control measures were stopped; second, increased NO_2 emissions could accelerate the formation of secondary sulfate (Cheng et al., 2016), which can be clearly shown from the sulfate oxidizing rate (SOR) and nitrate oxidizing rate (NOR). Different trend is observed for NO_2 and NO_3^-, with the NO_2 concentrations after control much higher than during control (+9.4%), while the increase ratio of NO_3^- (+9.45%) is the same. Sulfate originates from both primary emissions and secondary formation, but nitrate is mostly secondary formed. The NOR during and after regulation is the same. However, if we look at the partition between NO_x and particle nitrate, we can see most of the N is in the gas phase, with $NO_x/(NO_x+NO_3^-)$ reaching 0.87. Therefore, the increase of NO_3^- is lower than SO_4^{2-}. The $PM_{2.5}$ concentration after control sharply rebounded 31.8%, indicating that both the emissions increased and the secondary pollution formation is improved.



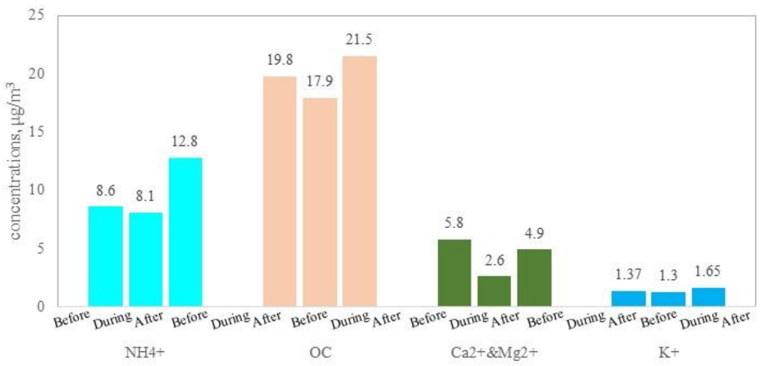


Fig. 10 Comparison between $PM_{2.5}$ chemical components at Shanxi station before and after the campaign under static meteorological conditions

(2) Dust

We do agree that dust control should be paid enough attention in this study. The dust control is also one of the major control measures during this campaign. Most construction sites were shut down, and the paved roads were added cleaning frequencies every day during the campaign. We added more discussion to the revised manuscript, as follows:

Page 3, Line 81-81: Specifically, the impact of measures such as management and control of coal-burning power plants, production restriction and suspension of industrial enterprises, motor vehicle limitation and work site suspension, dust control were investigated.

Page 15, Line 324-328: On average, mineral soluble irons (Ca^{2+} and Mg^{2+}) declined 56.8% before and during the campaign under static conditions, this suggests that the suspension of construction operations which result in dust emissions and the rising frequency of rinsing and cleaning paved roads, significantly reduced dust emissions.

Page 20, Line 398: Emission reduction of $PM_{2.5}$ caused by dust control was estimated as 266.0 tons. Dust control contributed 10% to emission reductions of $PM_{2.5}$.

In conclusion part, (3) The effect of dust control measures is remarkable. During the conference, most of the construction sites in Jiaxing were suspended from operation. Measures of increasing frequency for road cleaning activities greatly lowered the dust emissions. Speciation of the measured $PM_{2.5}$ suggest that the mass concentration of crust material, which is greatly affected by dust, decreased by 14% compared to measurements after the conference. Specially, under static conditions, mineral soluble irons (Ca^{2+} and Mg^{2+}) declined 56.8% before and during the campaign. This suggests that the suspension of construction operations which result in dust emissions and the rising frequency of rinsing and cleaning paved roads, significantly reduced dust emissions.

Some detail suggestions:

1. Transport vs transportation

Better not to use ‘transportation of air mass’. Transportation is for traffic related business. It’s used for mobile emission. A better way is to say ‘the transport of air mass’ for the movement of air mass/pollutants/plumes.

We have read through the manuscript and revised improper use of "transportation" to "transport" after careful check.

2. Pollution vs pollutant

The used of a lot of 'pollution' in this paper is quite confusing. I think you refer it as either 'plumes' or 'polluted air masses'. Pollution is a status, it does not mean any subject and cannot be moved around. While the plumes or pollutants can be moved or transported. I'd strongly suggest the author to check all the wordings in this paper.

We have read through the manuscript and revised improper usage of "pollution" to "plumes", "polluted air masses" or "emissions".

3. P3, line 69-70, 'Many studies: : :', 'Some have reported : : :'. Any references?

We have inserted the references, see follows:

Many studies have provided descriptive analysis of changing concentrations of air pollutants during mega events; some have reported the emission reductions and related air quality changes (Wang, et al., 2009; Wang, et al., 2010; Liu, et al., 2013; Tang, et al., 2015; Li, et al., 2016; Wang, et al.,2016; Sun, et al., 2016; Wang, et al., 2015; Chen, et al., 2017; Han, et al., 2016; Qi, et al., 2016).

4. P3, Figure 12 may be better shown here in the introduction.

We agree that putting figure 12 into the introduction part is more suitable, so we moved it forward, and revised the numbers of the figure captions accordingly.

5. P4, line 101-102, 'online' and 'On-line'?

Revised.

6. P4, line 108, 'consisting of' to 'such as/including'?

Revised.

7. P4, line 110, 'data conform' to 'data quality conform'?

Revised.

8. P5, line 137, 'with observation data and meteorological data included'. Did you used met observations for TrajStat? How?

Yes. We applied TrajStat to analyze potential source contribution areas of $PM_{2.5}$ in Jiaxing during different pollution episodes. We included observation data and meteorological data as well. For the meteorological data, we combined Global Data Assimilation System (GDAS) meteorological data provided by the NCEP (National Center for Environmental Prediction). For observation data, we included the observed hourly $PM_{2.5}$ concentrations. The long-term measurement data could be assigned to their corresponding trajectories. The model can be used to identify the trajectories to which a user can distinguish the polluted trajectories with high measurement concentration from a large number of trajectories and then the pollutant pathway could be roughly estimated. The mean pollutant concentration for each cluster can be computed using the cluster statistics function. Pollutant pathways could then be associated with the high concentration clusters. After calculating the PSCF and CWT value, an arbitrary weight function (Polissar et al., 1999) is applied to reduce the uncertainty of cells with few endpoints. Then the potential source regions with high PSCF or CWT value could be identified. (Wang et al., 2009.) We also added color scale to PM2.5 concentrations in figures 4-8 (c).

Ref.
Polissar A V, Hopke P K, Paatero P, et al. The aerosol at Barrow, Alaska: long-term trends and source locations. Atmospheric Environment, 1999, 33(16): 2441-2458.
Wang Y Q, Zhang X Y, Draxler R R. TrajStat: GIS-based software that uses various trajectory statistical analysis methods to identify potential sources from long-term air pollution measurement data. Environmental Modelling and Software, 2009, 24(8): 938-939.

9. P5, line 140, 1x1 degree is quite coarse. Why not just used WRF simulations?
We used GDAS as the meteorological data input, these data are global assimilation data, which can well reflect the meteorological conditions and trajectories. Since we focus on the potential source regions instead of specific sources or each city, we believe 1x1 degree data should suffice for this analysis.

10. P5, line 144, 'increase with the raise of distance' to 'increase with the distance' that's true, dust PM2.5 would be the most important equal to or after sulfate. If the dust can be controlled, it's more than what has been achieved due to the control measures.
Any idea what can be done to reduce the dust emissions?
We agree that the dust control is of great importance to improve the air quality. We have highlighted the importance of dust controls, as answered in the following question 33.
The control of dust pollution includes: Construction work sites were suspended in key areas and control areas. Dust materials were forbidden to be transported within key neighbourhoods. Dust control measures were implemented on renovation operations at ports, docks, railway stations and commercial concrete mixing stations and on materials storage yards. These measures have resulted in the decrease of particle emissions and decrease of mineral ions. Speciation of the measured $PM_{2.5}$ suggest that the mass concentration of crust material, which is greatly affected by dust, decreased by 14% compared to measurements after the conference. Specially, under static conditions, mineral soluble irons (Ca^{2+} and Mg^{2+}) declined 56.8% before and during the campaign.

28. P20, Line 393, One more evidence of other components is 33%
The original sentence "The major chemical components during this cleaner period were organic carbon (26%), nitrate (16%), ammonium (12%) and sulphate (9%)…" has been revised to "The major chemical components during this cleaner period were organic carbon (26%), nitrate (16%), ammonium (12%), sulphate (9%) and other components (37%)…".

29. P20, section 3.3.1. This section can be more concise. If needed, Details can be moved into supplement materials. The focus here is the Table3.

We agree that the section 3.3.2 and Table 4 is the major focus, so we deleted section 3.3.1, and just add a short description at the beginning of 3.3.2, which has currently been revised to 3.3.

3.3 Emissions reduction estimation during the campaign

The air quality assurance campaign for the 2nd World Internet Conference was from December 8 to December 18. In order to ensure the air quality during the conference, three provinces and Shanghai municipality in the YRD region carried out joint control measures. Based on the implementation of control measures in all areas during the conference and whether each area had effectively implemented control measures on December 8-18, regional emission reductions have been assessed…….

30. P20, line 394, 'obvious regional pollution characteristics', what is it?

It means regional transport, to avoid misunderstanding, we revised this sentence to:

The major chemical components during this cleaner period were organic carbon (26%), nitrate (16%), ammonium (12%), sulphate (9%) and other components (37%), with some newly formed particles and no obvious regional transport, suggesting that air pollutants were mainly derived from local emissions.

31. P28, line 589, 'percent reduction' to 'percentage reduction', 'conducted' to 'considered/investigated/discussed/etc'

Revised accordingly.

32. P30, section 3.6 seems to be not that relevant here. It may be moved into the introduction or the supplement.

We removed section 3.6, and revised to short descriptions in the introduction part.

Many studies have provided descriptive analysis of the changing concentrations of air pollutants during mega events, some have reported the emission reductions and related air quality changes (Wang, et al., 2009; Wang, et al., 2010; Liu, et al., 2013; Tang, et al., 2015; Li, et al., 2016; Wang, et al.,2016; Sun, et al., 2016; Wang, et al., 2015; Chen, et al., 2017; Han, et al., 2016; Qi, et al., 2016). However, different air pollution control targets, different control measures, and different locations, may cause big different effects among those strategies….

33. P32, line 682.'The effect of dust control measures is remarkable'. This conclusion comes from nowhere. It has not been discussed or showed in this paper. Better to prove it or remove it.

We revised the conclusion by adding more proves, as follows:

The effect of dust control measures is remarkable. During the conference, most of the construction sites in Jiaxing were suspended from operation. Measures of increasing frequency for road cleaning activities greatly lowered the dust emissions. Speciation of the measured $PM_{2.5}$ suggest that the mass concentration of crust material, which is greatly affected by dust, decreased by 14% compared to measurements after the conference. Specially, under static conditions, mineral soluble irons (Ca^{2+} and Mg^{2+}) declined 56.8% before and during the campaign. This suggests that the suspension of construction operations which result in dust emissions and the rising frequency of rinsing and cleaning paved roads, significantly reduced dust emissions.