

# ***Interactive comment on “Evaluation on the effect of regional joint control measures in changing photochemical transformation: A comprehensive study of the optimization scenario analysis” by L. Li et al.***

## **Anonymous Referee #3**

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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

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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.

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.

#### 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.

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

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

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

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

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

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

9. P5, line 140, 1x1 degree is quite coarse. Why not just used WRF simulations?

10. P5, line 144, 'increase with the raise of distance' to 'increase with the distance'

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11. P5, line 147, 'the number of total' to 'the total number of'
12. P6, 154, does that mean only PM2.5 > 75 were used?
13. P6, WRF model setup, did you used FDDA? Why not?
14. P6, WRF model setup, what are the grid size for each domain?
15. P6, WRF model setup, you may name the 3 domain as D01/D02/D03. It's very confusing here.
16. P10, "4 processes" are very confusing too. 4 episodes seems to be more reasonable.
17. P10, line 240-241, "For each of these processes, . . .", confusing.
18. P10, line 255, 'ground humidity' to 'surface humidity'
19. P10, line 258, 'spread' to 'dispersion'
20. P11, Fig 3, add a few words for red line on (d)
21. P12, two "3.1.2" section
22. P13, line 295, 'slower' seems to mean 'reduced/lowered'
23. Fig3-7, color scale missing for (c)
24. P15, line 325, 'normal pollutants'?
25. P16, line 344, why not 'K' reduction? Which is a strong indicator of soil/mineral source
26. P17, Table3, Pressure is wrong
27. P18, line 378 and P19, line 388, the contributions from other PM2.5 components were 25% or 36% with transport and without transport impact. And the 'other components' should be EC and dust. EC is generally low, so the majority would be dust. If

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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?

28. P20, Line 393, One more evidence of other components is 33%

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.

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

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

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

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.

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