Specific comments

1. Lines 34-36, the definition of “haze” is not accurate since dust represents part of haze.
2. Line 44-45, what is the difference between “haze” and “aerosols” ? Please delete the sentence of “The study … to a great extent”
3. Line 47, delete “agglomeration”.
4. Line 48, delete “Research on”
5. Line 55, delete “And”
6. Line 63, delete “as” and “also”.
7. Line 69, the critical value of 90% is too high for haze definition. Please double check this number.
8. Line 72, change “mainly” to “is”
9. Lines 72-77. Please split the long sentence into two or more short sentences.
10. Line 77, change “The study results were aimed to be references … the government” to “The study is aimed to providing scientific evidence for policy-makers to set up more effective emission control to mitigate the haze pollution”.
11. Line 80, Delete “Research”
12. Lines 82-85, please use short sentences to avoid unnecessary confusion. Please check and revise the same issues throughout the paper.
13. Line 86, delete “was”
14. Line 88, change “whereas” to “and”.
15. Lines 97-99, change past tense of all verbs to present tense. Please check the similar issue throughout the manuscript. Where are the “different parts of emission sources”?
16. Line 104, the full name of CMAQ should be given at the place when it appears at the first time.
17. Lines 104-106, please rewrite the sentence to include the main processes that are considered by CMAQ.
18. Line 115, please delete “,” between “important” and “integral”.
19. Lines 121, change “pollutant gases” to “gas pollutants”
20. Lines 127-128, change “set by referring to the study of Zheng [31]” to “described by Zheng [3]”.
21. Line 139, change “to” to “on”.
22. Lines 139-140, please rewrite the sentence.
23. Line 148, “Table 2(emissions” to “Table 2 (emission)”
24. Lines 160-162, please rewrite the sentence.
25. Line 180, change “find” to “found”.
26. Lines 224-225, the sentence “Besides …. Observation” is an incomplete sentence.
27. Lines 241-243, it is better to use present tense rather than past tense for general description in scientific paper unless there is a specific past time mentioned in the sentence. Please change “showed” to “shows”, and check the similar issue in other places.
28. Lines 244-246, the sentence is not complete.
29. Line 259 or Table 3, what are the units of MB, ME, and RSME?
30. Line 262, section 4.1, change “Analysis of contribution ratio” to “Contributions of different regional emission sources and weather conditions”.
31. Line 263, change “average monthly” to “monthly mean”.
32. Line 288, change “Space” to “Spatial”.
33. Line 293, change “every” to “each”.
34. Line 304, change “following” to “followed”.
35. Line 337, change “in a low level” to “slightly”
36. Line 355, change “transferred” to “transported” here and other places.
37. Lines 359-363, the sentence is very confused, please split it into two sentences.
38.

Specific comments

1. Please rewrite the whole abstract.
2. Haze definition is not accurate. It is not necessary to provide definition here since they can be found from text books. It is suggested to rewrite the first paragraph in section 1. It will be more meaningful to address the importance of haze study in this region in the first paragraph. Please use more professional terminology words. For example, some words like “powder” and “turbidity”, “adopt” read strange. Please check the similar problems in other places in the paper.
3. Please add a space before all reference citations throughout the manuscript.
4. Lines 64-65, criteria of humidity of 90% is not accurate for haze day identification. It is suggested to remove this sentence.
5. Line 76: change the subtitle to “Descriptions of models and simulation configurations”
6. Lines 77-78, please rewrite this sentence.
7. It should be CMAQ v.5.0.2 not CMAQ v5.0. Please provide reference citation for CMAQ and for WRF v3.3.
8. Lines 78-79, write this sentence. Please provide a little bit more details about NCEP reanalysis data which is used as the initial and boundary conditions for WRF simulations.
9. Lines 84-86, split into two sentences.
10. Line 88: Change to “Setting of the simulation domains”
11. Figure 1: add a) and b) in the left and right panels. (say put them at the left top inside the panels) .
12. Line 93, change “lines” to “boxes”, add “domains” after each “model”.
13. Add a space before all abbreviation word. Say, “Zhongshan(ZS)” 🡪 “Zhongshan (SZ)”. Please correct similar problems for all other places.
14. Lines 104-105. Please provide an appropriate reference rather than a website link here.
15. Figure 2, all the label numbers are too small, please replot this figure.
16. In Section 2.1, what gas-phase chemical mechanism and what aerosol module did you use in your simulations.
17. Line 127, change the subtitle to “Contributions of emissions from different regions” .
18. Line 145, add a space before “(see Figure 1)”.
19. Line 149: change “the variation of centration ” to “the difference of concentrations”. Please define Cctrl and Cx,0  first and then Cx and Px.
20. L155: Change to “ A summary of sensitivity studies”.
21. Figure 3: The numbers on X- and Y-axis labels are too small. Please replot Figure 3.
22. L160: change “Control test results” to “Evaluation of meteorological and air quality model simulations”
23. L161: change “simulation results” to “simulations”
24. L169” :24-hour pressure variation(c) -> “surface pressure (c)”
25. Lines 172-174. Please rewrite them. No need using “:” here.
26. L174, Add a space between “Zhongshan” and “(113.35)”. Delete a space after o. Please correct similar problems in other places too.
27. Figure 4: delete “concentration” from y-label of top panel.
28. Lines 244-245, change “From the table it can be found” to “It is found from Table 3”.
29. Figure 5: The numbers of all color-bars are too small.
30. Lines 254-256: The description of Figure 5 is very confused. Please rewrite it.
31. Line 283: Please add a space before “(see Figure 6). Again, please correct all the similar problems in other places throughout the paper.
32. Lines 306-308: Change to “Percentage contributions of the emission sources from different regions to the simulated PM2.5 in Zhongshan under different weather conditions (a …)”.
33. What is difference between Figure 6 and Table 4? If they show the same information for PM2.5, please delete them from Table 4.
34. Table 4, please reorganize the table structure in a better way
35. Line 320: change “As is” to “As”.
36. Lines 320-321, delete “of Zhongshan”.
37. Lines 333-335: change to “Evaluation of simulated PM2.5 (ug m-3) and 10-m wind fields (need scale of wind vectors in the plots) at a) 08:00 BJT (BeiJng Time), b) 17:00 BJT; c)23:00 BT on January 8, and d) 17:00 BJT on January 9, 2014 “.
38. Line 351, change to “Impact of emission controls in different regions”
39. Line 376: Change to “Percentage change of simulated PM2.5 concentration and visibility when local emissions are turned off in Zhongshan”
40. In Table 5, delete “decrement” and “increment”.
41. Please rewrite the conclusion part.