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Discussions

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Interactive comment

Interactive comment on "Chemical characteristics and causes of airborne particulate pollution in warm seasons in Wuhan, central China" *by* X. P. Lyu et al.

Anonymous Referee #3

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The manuscript by Lyu et al. offers interesting results on the chemical compositions of PM and precursors in Wuhan China, in specific campaigns in 2014. In my opinion, results are noteworth but several revisions are necessary before pubblication in ACP :
- Abstract needs signicant improvement. It should be self-explanatory. For examples cases explanation is missing. K is 47% of what? etc. - Introduction. The first sense is not needed. - English should be significantly improved. Some sentences are too simple for a scientific journal. Some terms eed corrections (ammonia in page 2; the use of past tense should be avoided for general sentences like EC was the typical tracer of uncomplete combustion; aromatically instead of automatically etc....). Syntaxis also needs improvement. - I advice the use of SIA instead of SIOA - do authors mean

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wildfires with the term "fire spot"? - Information on traffic volume next to the monitoring site is lacking - The TEOM model doe snot include FDMS. Authors should discuss what uncertainty does this add to the conclusions. -rephrase sentence in rows 199-200 and 223-224. Wht do you mean with "completely" in row 225? - Row 233: not fully true, also primary OC and EC are fine particles. - I would rather use the temr episode instead of case - Row 240: the contribution of fugitive dust is estimated in 5 ug/m3, well beofre the Source aportionment section. Please reorder. - Realting sulfate to point source and nitrate to mobile ones, is too simplistic. Traffi also emit primary particles, and no3 can also come form industries. - How OCnon-comb was estimated?? the reference Cabada et al., 2004 is missing in the Bivliography. More clarification is needed here. Do they mean that biogenic OC is all primary?? - Row 295: p avlue missing. - Row 280: provide rreferences for value of 2. - Figure 6: how authors interpret daily variation of HO2 - Section 3.2.2. there is a constrast between the conslusion that all PM componnets increase during episodes (rwo 234) and theta the OC decreases (row 329) - If cases 1 and 3 are attributed to Biomasss burning, why OC decreases? BB is the largest source sof OC as, shown in Figures 10 and 11. - Ca and Fe also come from traffic and construction/demolition works. And K in case 2 can also be emitted by mineral sources. - The source apportionment section lacks of many details which are needed to ensure that the solution is the omore realistic one. Why authors decide to perform separate PMFs for different cases? They at least present aldso the total (asembled) PMF, which will certainly imporve statistically siginifance and redice random and rotational errors of the solution. - The lack of SIA in summer is a critical issue. They are a major contributor to the mass, so the PM source apportiomnet has certanly larger errors thatn in autumn. THis needs to be discussed, showing residuals of PM and perofrmeing error estimate tools, such as BS, DISP and BS-DISp which are implemented in EPA PMFv5. By the way which software have ben used? What uncertainty of the data have been used as input? Was the Q -values the only criterion used for number of factor selection? What about distribution of residuals, G space plot, factor profiles in g/g (which are missing and need to be shown)....? -

Traffic is missing among the sources. This is hard to believe for a mega city. There must be a mix of sources, so that solutions with 5, 6...factors should be explored. Residuals of OC EC, Cu should be provided. - Backtrajectories are presented, but please specify wchih day did you select for each case? cases span overs several days... and the selection should be supported by some discussion. -Row 546 "between" should be replaced by "with" - The conlusion in row 608, should be revisited. The lack of SIA data in summer does not allow to draw comprehensive knowledge of PM2.5.

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