

Interactive comment on “Wintertime organic and inorganic aerosols in Lanzhou, China: Sources, processes and comparison with the results during summer” by J. Xu et al.

Anonymous Referee #1

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The manuscript by Xu et al. has a comprehensive characterization of wintertime sub-micron aerosols in Lanzhou, a highly polluted city in western China. The sources of organic aerosols were investigated using positive matrix factorization and radiocarbon analysis. The results were also compared with those measured in summer. This is an important study by providing scientific data and improving our knowledge on aerosol chemistry in western China. This manuscript fits within the scope of ACP, and I recommend it for publication after addressing the following minor comments.

Comments: 1. Please consider the usage of SV-OOA and LV-OOA since this study did not measure the OA volatilities. 2. As shown in Figure 2, POA showed an elevated contribution to PM at high mass loadings. Is this due to cooking OA, HOA or BBOA?

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3. Line 41-43: please show the range for the changes in fractions of OA, nitrate and sulfate. 4. Line 46-47: frequently calm and stagnant air conditions during wintertime in Lanzhou. 5. Line 51: present the O/C value during summer 2012. 6. Line 60: haze to air pollution events. 7. Line 61-62: remove "The primary OA sources were more complex during winter than during summer". 8. Line 84-86: please add one or more citation. 9. Line 90-93: remove this sentence because of the duplication information with line 85. 10. Line 99: insert "recent" before "investigated..." 11. Line 119: add receptor model after (CMB) 12. Line 122-125: add the citation. 13. Line 142-146: combine these two sentences into one sentence. 14. Line 155: remove the comma after HR-ToF-AMS and add "of" after characteristics 15. Line 160: change basin to valley 16. Line 161-164: rephrase these two sentences. Two "thus" have been used which is a little bit confused. 17. Line 180: add "on average" before 0.82 18. Line 190: RH appears at the above content. 19. Line 200: instruments. 20. Line 246: consisted to consisting. 21. Line 270-271: where is this number (2.14) from, please add the citation. 22. Line 275: add the dry the aerosol in the sentence. 23. Line 310: show the reason to remove the period of Jan.22-23. 24. Line 315-317: how about seven solution results, could BBOA be separated? 25. Line 373-374: there is no wind data in Figure 1, please add them. 26. Line 412: please show the wind data. 27. Line 422: primary OA to POA. 28. Line 443-445: please add the citation. 29. Line 459: change suggest to could result from 30. Line 485-488: add "from the diurnal variation". 31. Line 498: is to was. 32. Line 502-504: Please add the diurnal variation of O/C in summer 2012. 33. Line 543: add "for all the PMF factor". 34. Line 544: change "in the past" to "in the recent". 35. Line 645: add "a little" before "more". 36. Line 653: change "have been" to "suggest".

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