

The manuscript by Sun et al. had a detailed characterization of composition, sources and processes of submicron aerosols during wintertime in Beijing with an aerosol chemical speciation monitor and various collocated instruments. Positive matrix factorization was performed to investigate the sources and composition of organic aerosol. In addition, the effects of meteorology on PM pollution were also explored. Some results in this study are interesting and important to improve our understanding the air pollution in summer and winter in Beijing. For example, the authors found that coal combustion organic aerosol plays a major role in leading to PM pollution during wintertime. Sulfate however is more important during high relative humidity periods because of aqueous-phase processing. This manuscript is well written and the topic itself is appropriate for ACP. Thus, I recommend publication of the manuscript after some minor revisions.

Comments:

1. P 2079, line 24: spell "OA" out when it shows up for the first time
2. P2080, line 25: add related references on receptor models
3. P2089, line 15: remove "a.m." and "p.m."
4. P2090, line 8: the authors concluded that the larger evening peak of COA during wintertime is due to enhanced cooking activities, which might not be the fact. The cooking activities at night between summer and winter should not be quite different. Instead, the enhanced COA emissions because of low temperatures might be the major reason.
5. P2095, line 16: "increasing mass" to "mass increase"