Atmospheric
Chemistry
and Physics
Discussions

Interactive comment on "**Disparities in particulate matter (PM$_{10}$) origins and oxidative potential at a city-scale (Grenoble, France) – Part I: Source apportionment at three neighbouring sites**" *by* **Lucille Joanna S. Borlaza et al.**

Anonymous Referee #1

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The manuscript presents one year datasets of PM10 at three city sites in France. This is the first part of their study: compositions and source apportionment. The authors analyzed four kinds of pollutants: carbonaceous aerosol, inorganic ions, trace metals and organic biomarkers to discuss their possible source categories and spatial-temporal variations. The authors used PMF to quantitatively apportion 11 distinct sources that were deeply described in the manuscript. The apportioned sources are mostly based on previous study results and therefore convincing. However, I don't think this is a high quality manuscript since there were too many long sentences and not easily to follow.

I suggest the authors add discussions on the seasonal variation of sources categories and make a careful revision of the sentence structure.

Specific comments: abstract: the authors should point out the contribution ratio of 11 factors to the total sources. (?%)

introduction: compared with the organic markers the authors analyzed, persistent organic pollutants, such as PAHs, n-alkanes have been widely used to trace specific sources in cities as they were potential mutagens.

2.1 PM10 sample collection: the reasons that choose these three sites are not substantial.

2.2 the QA/QC requirements for detecting carbonaceous pollutants and inorganic ions are not mentioned.

3 results and discussion: there could be pollution days during one year sampling. How about the variation of the source categories between normal and polluted days?