

Spatial and temporal variations of the concentrations of PM<sub>10</sub>, PM<sub>2.5</sub> and PM<sub>1</sub> in China

by: Y. Q. Wang et al.

**General comments:**

Atmospheric particulates (aerosols) has significant influence on air quality, human health and regional climate changes. Large uncertainties in estimating the aerosol direct radiative forcing exist due to the uncertainties in the aerosol optical properties which were related to the aerosol emissions, profiles, compositions and mixing states. Thus, it's very important to figure out the temporal and spatial distributions of the aerosols in the regions with high aerosol loadings to better accessing their radiative forcing and regional/global climate effects. This study, which examines the spatial and temporal variations of the PM<sub>10</sub>, PM<sub>2.5</sub> and PM<sub>1</sub> over 24 sites in China by using a 9 years near continuous PM data measured by GRIMM180 instruments, is important to some extent and the paper has potential. I recommend the manuscript being published in the journal after the revision listed below being addressed.

**Major comments:**

- Re-typesetting the manuscript. Also, the manuscript still remains poorly written throughout the whole manuscript and requires many corrections.
- **Page 15320, line 9 and line 11:** It should be "the ratio of PM<sub>2.5</sub> to PM<sub>10</sub>" and "the ratio of PM<sub>1</sub> to PM<sub>2.5</sub>".
- **Page 15320, line 16-17:** The authors should show the readers what they found while just what they did.
- **Page 15320, line 9:** The authors indicate that the uncertainty of GRIMM in (Grimm and Eatough) was 9.9%, how about in China? Is it also 9.9%?
- **Page 15324, line 1:** The authors should present some emission results in China from publications (e. g.: Q. Zhang et al., 2009) when explaining the reasons.
- Again, it's obvious that the results being analyzed is too simple. The authors should provide evidences (from the similar studies in publications/references or from self-analysis) to make the readers more clearly.
- In addition to diurnal and seasonal cycles, did the PM have any periodic in China?