



Weekly Cycle of PM10 in Eastern China: the seasonal patterns and possible effect on radiation

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The dominating species of aerosol are different from area to area and the effects on climate will not be the same correspondingly. In the present study, the weekly cycle of PM10 and visibility in different seasons were analyzed and checked by parametric and non-parametric tests. The results are in complete agreement that the weekly cycle of average PM10 over the cities in Eastern China is significant, which reaches its maximum during weekdays and the minimum during weekends. Stations were further categorized into 6 groups with respect to the Weekend Index, which was defined as the average PM10 for Saturday through Monday minus the average PM10 for Wednesday through Friday. The stations with positive Weekend Index (i.e. larger PM10 in weekends compared to weekdays) are located around the south coastal region mostly and the positive results could be caused by the significant larger precipitation frequency than most of the other groups. And the group with the smallest negative Weekend Index suffers the lowest quantities of passenger vehicles and trucks and the lowest value of product in construction compared to the other 4 groups. These results suggest that the weekly cycle of PM10 results from the weekly emission of the vehicles and the construction probably. And the comparison among the weekly cycle of total radiation, PM10 and cloud cover indicates that the weekly change of radiation is affected mostly by the cloud cover and the semi-direct effect of aerosols may take a leading role over Eastern China.