

# **Supplementary material for the source apportionment of primary PM<sub>2.5</sub> in an aerosol pollution event over Beijing-Tianjin-Hebei region using WRF-Chem, China**

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In order to better prove the effect of simulation, we provide more comparison between simulated PM<sub>0.625</sub> and observed PM<sub>1</sub> composition data (including SO<sub>4</sub>, NO<sub>3</sub>, NH<sub>4</sub>, OC) in Beijing. The observed PM<sub>1</sub> data was measured by using a high-resolution time-of-flight aerosol mass spectrometer (HR-ToF-AMS; Aerodyne Research Inc., Billerica, MA, USA; DeCarlo et al., 2006). The details of HR-ToF-AMS operation and data analysis have been reported elsewhere (Zhang et al., 2014) and it has been widely used (Zhang et al., 2015). The observed site is located in Beijing (39°58'28"N, 116°22'16"E). The source-apportionment method is based on MOSAIC 4bins(0.039—0.156μm, 0.156—0.625μm, 0.625—2.5μm, 2.5—10μm). So we compared simulated PM<sub>0.625</sub> and observed PM<sub>1</sub> in Beijing. Fig.1(a-c) shows that the concentration of SO<sub>4</sub>, NO<sub>3</sub> and NH<sub>4</sub> in PM<sub>0.625</sub> is near in PM<sub>1</sub>. But Fig. 1(d) presents that the concentration of OC in PM<sub>1</sub> is much higher than PM<sub>0.625</sub>, the possible reason is that the relevant calculations on secondary organic aerosols being not included in MOSAIC. Therefore, the simulated OC in PM<sub>0.625</sub> is only primary organic aerosols. And the OC in observed PM<sub>1</sub> is total (primary organic aerosols and secondary generated organic aerosols). Furthermore, in Fig.1d, the tendencies between the observed OC in PM<sub>1</sub> and simulated OC in PM<sub>0.625</sub> are similar, In general, the result of comparison is realistic.

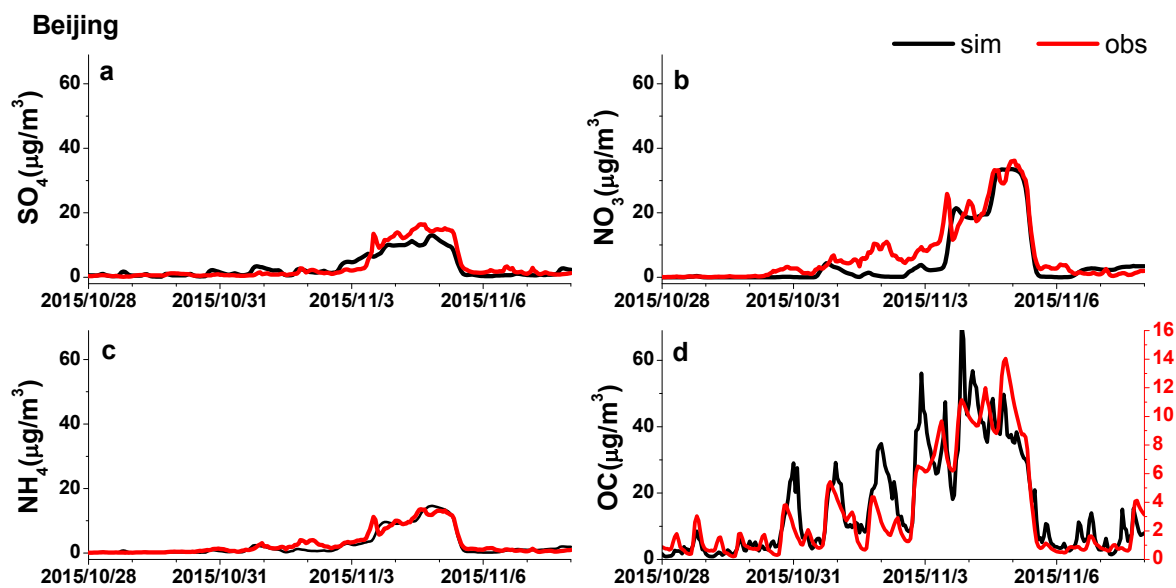


Fig. 1. a-c) Time series comparisons between the observed PM<sub>1</sub> and simulated PM<sub>0.625</sub> composition (SO<sub>4</sub>, NO<sub>3</sub>, NH<sub>4</sub>), d) Time series comparisons of the tendency between the observed OC in PM<sub>1</sub> and simulated OC in PM<sub>0.625</sub>

## Reference

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