



Sources of PM_{2.5} during Haze Episodes in Winter in Beijing

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Beijing, the capital of China, has experienced several severe haze episodes (HEps) during November and December of 2016, with hourly average PM_{2.5} mass concentrations up to 400 $\mu\text{g}/\text{m}^3$, which has attracted a great deal of attention for its formation mechanism and its effects on public health. In this study, a comprehensive field campaign, with several online instruments (e.g., TEOM, Xact, semi-continuous OC/EC analyzer, in-situ Gas and Aerosol Compositions Monitor (IGAC), and Aethalometer (AE-33)) for simultaneous high time resolution measurement of PM_{2.5} chemical compositions (e.g., PM_{2.5}, metals, organic carbon, elemental carbon, water-soluble ions and gases, and black carbon), has been conducted during 7th November to 25rd December, 2016. The primary goal of this study is to investigate the sources of PM_{2.5} and the formation mechanism of different HEps. Our preliminary results indicated that chemical compositions and sources of PM_{2.5} differently varied during the HEps. Coal combustion and vehicle emission were two major sources of PM_{2.5} during this period. Two typical HEps, with hourly PM_{2.5} concentrations up to 200 $\mu\text{g}/\text{m}^3$ and 400 $\mu\text{g}/\text{m}^3$, respectively, were chosen for further studies. Correlations among different chemical species were analyzed, and positive matrix factorization (PMF) were performed for high time resolved PM_{2.5} source apportionment. Potential source regions of PM_{2.5} sources, as well as formation mechanism of HEps will be further discussed.