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Aerosol vertical distribution and optical properties of different pollution events in Beijing in autumn 2017

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Abstract: As one of the largest metropolitan areas in the world, Beijing has a high aerosol loading. Although the government has taken various measures to reduce emissions, the large-scale and intermittent occurrence of pollution is still a major issue. To understand the mechanisms and characteristics of pollution, Raman-Mie lidar and CE-318 sun photometer were used to study the aerosol vertical distribution and optical properties during dust, haze and clean periods in Beijing that occurred in September to October 2017. Combined with meteorological data, the sources and transmission paths of the pollution events were analyzed. The results are as follows. For the dust event, irregular particles with a large linear particle depolarization ratio played a leading role. The aerosol boundary layer height reached 3.5 km. The volume concentration of coarse particles was obviously larger in the volume size distribution. This event was due to typical long-distance transmission of pollutants at high altitude. Strong northwest winds at

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