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Analysis of aerosol properties at recent (2015-2018) high PM concentration events in two super-mega cities, Seoul and Beijing

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To meet public concerns of health caused by the high concentration of PM highly raised, this research has been done to find out unique physical, chemical, and optical characteristics of aerosols in the case of recent four years high PM concentration events over the East Asian region, especially in Korea and China. Severe air pollution over the East Asian region has occurred by the rapid development of urban areas and industrialization. Also, the meteorological conditions in East Asia are strongly correlated with a high concentration of air pollution and seasonal variation of aerosols. There are three types of aerosol properties (physical, chemical, and optical property), and each property is essential to understand the characteristics of regional and seasonal high PM concentrations. This research has been done to find out unique physical, chemical, and optical characteristics of aerosols in the case of high PM concentration events, especially in two super-mega cities (Seoul and Beijing) of Korea and China, by using various observations measured during recent four years. To analyze those characteristics of aerosols at high concentration events occur, various measurement data are used, like ambient surface air monitoring data (for physical properties) from national network in both Korea and China, Intensive Monitoring Data (for chemical properties), AERONET, GOCI satellite (for optical properties), and meteorological data during recent years (2015 – 2018). This study can provide observational evidence to confirm that each different region has different physical, chemical and optical characteristics of aerosol with the different time periods. The comprehensive results analyzed from this study and integrated methodologies suggested in this study might be useful to make a better in-depth understanding of the relations between various aerosol properties in certain regions and periods.

Key words : Aerosol, High concentration events, Physical/Chemical/Optical Properties of aerosols