OA2) Observation and Simulation of Inorganic Spring-time Aerosol Compositions Over the Yellow Sea Area

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Northeast Asia has experienced substantial air pollutant emissions reduction in the recent years. In this study, inorganic species including sulfate and nitrate were measured at supersites of both Baengnyeong (background site) and Seoul (typical urban site), and the annual trends and characteristics including the aerosol acidity of the sulfate-nitrate-ammonium system of two sites were assessed for the higher $PM_{2.5}$ events occurred in springtime of 2014 ~ 2016. We classified two types of high $PM_{2.5}$ events: Long-Range Transport (LRT) case and Local case, depending trajectories of particulate matters influenced by airflow. WRF-Chem modeling results applied different emission input data for each year were analyzed for both LRT and local cases and showed good performance. The results exhibited that, during the spring 2014 ~ 2016, sulfate and nitrate in Seoul and sulfate in Banegnyeong were on the decline but nitrate concentration in Baengnyeong was only on the rise. In Baengnyeong, an increase in sulfate during the LRT cases in 2014 was clear, representing that sulfate played a role as indicator of LRT. However, the nitrate concentration increased significantly during the LRT cases in 2015 ~ 2016, denoting that the dominance of sulfate has dwindled. In Seoul, nitrate concentration was higher than sulfate concentration regardless of high PM event type. The aerosol acidity was varied depending on the cases, especially in Baengnyeong. The ratio of ionic species to $PM_{2.5}$ in Baengnyeong of LRT cases showed the clear changes in trends of aerosol chemical compositions, which were decrease in sulfate and increase in nitrate in 2015 ~ 2016. This implying that high nitrate concentration is a key characteristic in high PM events in both Seoul and Baengnyeong.