

Performance of Heterogeneous Sulfate Aerosol Formation Mechanisms Against Aircraft and Ground-based Observations in Seoul, South Korea

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Abstract

Haze events are a common occurrence in East Asia, where local meteorology combines with anthropogenic emissions under certain conditions to create rapid increases in secondary aerosol. Often these events are driven by rapid production of secondary sulfate-nitrate-ammonium (SIA) aerosol. Models have typically included simple parameterizations of the production of sulfate during these events which vary widely in their magnitude. There are a range of different mechanistic descriptions of the chemical processes occurring during these events in large part due to poor constraints on aerosol pH and transition metal content, both of which are important to determining the key pathway(s) driving aerosol production. Here, we use the GEOS-Chem chemical transport model to interpret detailed ground and aircraft observations from May and June 2016 during the Korea-United States Air Quality (KORUS-AQ) field study to evaluate the mechanistic pathways governing sulfate production during a haze event. We apply our model of sulfate production mechanisms to ground-based speciated aerosol measurements in winter, summer, and fall in Seoul.

Early Career Scientist

NO, I am not an early career scientist.

IGAC Activities

MAP-AQ: Monitoring, Analysis and Prediction of Air Quality, ACAM: Atmospheric Chemistry and the Asian Monsoon

IGAC Regional Working Groups

MANGO: Monsoon Asia and Oceania Networking Group