

Microphysical aerosol properties over South Korea during the Airborne and Satellite Investigation of Asian Air Quality (ASIA-AQ) field campaign

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Abstract

The recent Airborne and Satellite Investigation of Air Quality (ASIA-AQ) flight campaign combined multiple –observing platforms (aircraft, satellite, and surface) to study the atmospheric composition of four metropolitan areas across Southeast Asia. Researchers from the Philippines, South Korea, Taiwan, Thailand, and the United States worked together to deploy the NASA DC-8 flying laboratory to each country. The two-month effort spanned February-March, 2024, and targeted wintertime peaks in pollution levels to advance the understanding of air quality over Asia and inform satellite observations and model predictions. During the campaign, multiple science flights were conducted using the NASA DC-8 to provide comprehensive in situ data of atmospheric chemical constituents, aerosol properties, and meteorological parameters. In this study, we focus on in situ observations of microphysical aerosol properties collected from 5 science flights in the vicinity of Seoul, South Korea. Particle concentration and size distribution data allow us to examine the relationships between these aerosol properties and diverse emission sources, formation mechanisms, and boundary layer processes. Summary statistics of the prevalence of new particle formation and the competing influences of long-range transport versus local aerosols over three different regions (Yellow Sea, downtown Seoul, and downwind of Seoul) will be discussed.

Early Career Scientist

NO, I am not an early career scientist.