

# SEMINAR

## **Air Quality over Korea: Ozone Pollution from a Megacity over Forests**

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High ozone concentrations and other air pollution hazards threaten human and ecosystem health, yet current predictions of air quality are often lacking, particularly in regions of the world undergoing rapid change, such as East Asia. In Korea, ozone levels continue to rise although some emissions controls have been implemented. The atmospheric composition over Korea is complex due to the distribution of emissions within the country as well as its position along the Asian Pacific Rim. Korea's urban and rural sectors are distinct, providing an attractive setting for understanding the relative importance of human and natural emissions. Roughly half of Korea's population is located in the Seoul Metropolitan Area, which comprises only 12% of the country's area, while the rest of the peninsula is primarily forested. From an air quality perspective, these zones each have unique emissions and considerations regarding exposure impacts for humans, agriculture, and ecosystems. A joint Korea and US field campaign in May-June 2016, with 3 aircraft and numerous ground sites, provided the opportunity to quantify these disparate sources and their influence on air quality over Korea. This talk will outline the scientific and logistical design of this experiment, and present early results. Chemical transport model results indicate there was little influence from outside Korea on surface measurements during the campaign, allowing for numerous opportunities to evaluate Korean emissions. To determine the optimal controls for improving ozone pollution in Korea, the relative importance of NO<sub>x</sub> (primarily anthropogenic) and volatile organic compounds (VOCs, a mixture of anthropogenic and natural) must be determined through the combination of measurements and models. Model simulations at various scales (box, regional, global) are used in conjunction with the campaign observations to assess the role of various sources in ozone production. Results from the analysis of this experiment will provide insights for improving air quality in other megacities around the world, as well as understanding atmospheric chemistry at the intersections of urban and rural environments.

**Thursday, March 9, 2017, 10:30 a.m.**

Refreshments 10:15 a.m.

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