

**Environmental Engineering**

**and Earth Sciences**

**EEES Department Seminar**

**Tracking the New Factors that Shape Urban Air Quality**

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**Abstract**

In the US, 4 in 10 people live in counties with unhealthy levels of ozone or fine particulate matter. These pollutants are not directly emitted, but rather formed in the atmosphere by reactions of NOX (NO + NO2) and volatile organic compounds (VOCs). VOC and NOX emissions are constantly changing, leading to difficulty in constructing accurate and predictive models of air quality. As on-road emissions have declined, modern air pollution is increasingly shaped by sectors that are difficult to represent in air quality models.

In this presentation, we will focus on two sectors with growing influence on modern urban air quality. The first is “non-traditional” VOC emissions from the use of volatile consumer products (VCPs). VCPs have been shown to modulate ozone and PM chemistry in population-dense cities like LA and NYC. Here, we explore the prevalence and impact of VCPs in Atlanta, and discuss the ubiquity of VCP emissions and their impacts. The second sector is aviation. Increases in air traffic impact are a growing concern for both near-airport and regional air quality. Focusing on ATL (the world’s busiest airport), we will examine the 3D distribution of near-airport NOX as seen from the ground, by satellites, and as represented in air quality models. For both sectors, we highlight recent advances in atmospheric observation approaches that allow for “top-down” constraints on urban emissions and their trends.

**Brief Bio**



Dr. Jennifer Kaiser is an assistant professor in the School of Civil and Environmental Engineering and School of Earth and Atmospheric Sciences at the Georgia Institute of Technology. She received a Ph.D. in Chemistry from the University of Wisconsin-Madison, and completed postdoctoral training at Harvard University. She is currently a Brooks Bryers Institute for Sustainable Systems Fellow. By integrating field work, satellite observations, and air quality modeling, Dr. Kaiser’s research works towards two goals: (1) develop and implement a more accurate representation of VOC emissions and oxidation in air quality models (2) advance the use of new satellite-based observations in air quality studies. Her work is supported by the EPA, NASA (including the New Investigator Award), NOAA, and the NSF.

**3:30 PM**

**Thursday, April 4, 2024**

**Rich Lab Auditorium**

***Attendance is mandatory for graduate students enrolled in***

 ***EES 8610, EES 9610, and GEOL 8610.***

***Refreshments following seminar.***