NCAR | ATMOSPHERIC CHEMISTRY OBSERVATIONS & MODELING

Virtual ACOM Seminar

Rain or shine – examining the competition between deposition and oxidation in the fate of atmospheric organics.

Gabriel Isaacman-VanWertz
Virginia Tech, Department of Civil and Environmental Engineering

Date: Monday, February 28th, 2022, 3:30pm – 4:30pm

Links: https://operations.ucar.edu/live-acom

ABSTRACT

Reactive organic carbon is emitted to the atmosphere as a relatively small number of molecules and compound classes, which undergo sunlight-drive oxidation processes to form a dynamic and complex mixture of thousands of compounds. The physical and chemical transformations of each organic compound is dictated by physicochemical properties that depend critically on the molecular structure of the molecule. Small changes in molecular structure change not only individual properties, but also the balance between possible atmospheric processes. This presentation will examine how molecular structure influences the sources, transformations, and fates of organic compounds in the atmosphere. Data presented here will combine novel instrumentation, years-long observations of biogenic organic carbon in central Virginia, global precipitation data, and chemical modeling to examine the competition between the oxidation of a compound and its removal to the Earth's surface. A framework for understanding this competition will be presented alongside constraints on the fates of molecules as a function of their structure. Together these approaches will provide insight into the role of structure in the competition between different atmospheric processes, and the consequent fate of a molecule.

For more information please contact Mary Anne Cervantes, mcervant@ucar.edu, phone 303-497-1484.