28th Annual Environmental Engineering & Science Symposium

Keynote Speaker

Randall Martin

Raymond R. Tucker Distinguished Professor at Washington University in St. Louis

Leading expert on advancing the understanding of atmospheric composition

April 14, 2023
9:00 am, CEE Bldg.
(Hydro) 1017

Global Air Quality: Interpreting Satellite Observations with a Chemical Transport Model to Advance Understanding for Health Applications

Ambient air pollution is the leading global environmental determinant of longevity. However, ground-level monitoring remains sparse in many regions of the world. Satellite remote sensing of aerosols and nitrogen dioxide offers global data to address this issue. Global modeling plays a critical role in relating these observations to ground-level concentrations. The resultant satellite-based estimates indicate pronounced variation around the world, with implications for global public health and insight into the association with health outcomes. Sensitivity simulations with a chemical transport model (GEOS-Chem) provide information on the sources of ambient fine particulate matter contributions that affect human health. These capabilities offer information about the effects of COVID-19 lockdowns on air quality. The Surface Particulate Matter Network (SPARTAN) is designed to evaluate and improve satellite-based PM2.5 estimates. Advanced high-performance modeling offers capabilities to connect the local to the global scale. This talk will highlight recent advances in combining satellite remote sensing, global modeling, and ground-based measurements to improve understanding of air quality from global toward urban scales.

Civil and Environmental Engineering