University of Central Florida
Department of Chemistry Seminar Series – Fall Semester 2023
Friday, September 1st, 9:00 AM, Location CB2 105

Bloodhounds of the Sky: Tracking Biomass Burning by "Smell"

Dr. Alex Jarnot

University of Central Florida

Host: Dr. Cherie Yestrebsky

Abstract: Wildfires have been increasing in frequency and severity over the decades. Wildfires, agricultural fires, land use burns, and other forms of biomass burning are sources of particulate matter and trace gases. These are detrimental to air quality and climate, and can react to form tropospheric ozone, which is harmful to us. Also, many of these trace gases produced by combustion are toxic or otherwise directly hazardous to human health. Several large-scale field campaigns have been mounted to study the emissions of fires. These campaigns are usually focused on collecting data from very fresh and aged fire smoke with little influence from background emissions. Therefore, the interaction between fire smoke and urban air has not been well studied. Using high-precision gas chromatography, research aircraft, and large-scale data analysis, the emissions from biomass burning in the United States are examined, and the effects on human health, air quality, and climate are reported.

Bio: Alex is currently a postdoctoral researcher through the University of Central Florida working on the Mass Spectrometer observing lunar operations (MSolo) instrument at NASA Kennedy Space Center. He received his PhD in analytical chemistry from the Rowland-Blake lab at the University of California - Irvine, where he studied the effects of biomass burning emissions on urban air quality. He was deployed on several large-scale airborne campaigns to study wildfires in the northwestern US, and crop fires in the southeastern US, where he used whole air sampling coupled with high-precision gas chromatography to collect smoke samples and analyze them. He was also a graduate mentor for the NASA Student Airborne Research Program (SARP) for two years, where he oversaw groups of undergraduate students as they flew aboard the NASA DC-8 aircraft and collected samples on the whole air sampling system. Alex received his B.A. in chemistry from Hood College in Frederick, MD. During the summer prior to his senior year he was a student intern in the NASA SARP program, which is how he first was introduced to atmospheric chemistry.