Relative Humidity Effects on the Oxidative Aging of Isoprene Epoxydiol-Derived Secondary Organic Aerosol

ALISON FANKHAUSER, Madeline Cooke, Jin Yan, Cara Waters, Rebecca Parham, N. Cazimir Armstrong, Yao Xiao, Katherine Kolozsvari, Zhenfa Zhang, Avram Gold, Jason Surratt, Andrew Ault, *University of Michigan*

Abstract Number: 369
Working Group: Aerosol Chemistry

Abstract
Organosulfates (OSs) formed from heterogeneous reactions of organic-derived oxidation products with sulfate ions are an important component of secondary organic aerosol (SOA) mass, primarily in submicron particles with long atmospheric lifetimes. Fundamental understanding of OS evolution in particles, including the formation of new compounds via oxidation, is limited, particularly across relative humidities above and below the deliquescence of typical sulfate aerosol particles. By generating aqueous particulate OSs and other SOA products from the acid-driven reactive uptake of isoprene epoxydiols (IEPOX) onto inorganic sulfate aerosols in a 2-m^3 indoor chamber at various relative humidities (30 – 80%) and injecting them into an oxidation flow reactor under the presence of hydroxyl radicals (·OH), we investigate the modification of particle size distributions, extent of inorganic sulfate conversion to organosulfates, and single-particle physicochemical properties. Chemical composition of particle-phase species, as well as aerosol morphological changes, are analyzed as a function of relative humidity and oxidant exposure times to better understand OS formation and destruction mechanisms in the ambient atmosphere.

AAAR 2022