**Title:** Distribution of 67 organic compounds throughout the Uintah Basin, Utah

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**Abstract:**

The Uintah Basin is a rural area in Northeast Utah where the oil and gas industry is prominent. During multi-day temperature inversions that occur during some winters, locally-emitted air pollutants, particularly from the oil and gas industry, react in the atmosphere to produce ozone. While it is well known that oxides of nitrogen and organic compounds are the main precursors to ozone formation, significant gaps exist in understanding of the sources and composition of organics emitted from various oil and gas-related sources. Better understanding of organic compound emissions will allow regulators and industry to make better decisions to reduce ozone-forming pollution to protect the health of residents and workers in the Uintah Basin.

During the winter of 2018-2019, we are deploying 14 remote measurement stations that collect air samples in silonite-coated canisters (for non-methane hydrocarbons and light alcohols) and on 2,4-dinitrophenylhydrazine-coated sorbent cartridges (for carbonyls). We are analyzing the canister and cartridge samples in our laboratory via gas and liquid chromatography, respectively, to determine concentrations of a suite of 67 organic compounds, all of which are known to be involved in the formation of wintertime ozone in the Uintah Basin. We position these stations in different configurations around the Basin to characterize certain facility types and to characterize organic compound concentrations across the entire Basin. For this presentation, we will use meteorological data and trajectory modeling to determine how facilities in the vicinity of our measurement stations impacted ambient organic compound concentrations and speciation. Later in 2019, we will use the 2014 Utah Air Agencies Oil and Gas Emissions Inventory with a three-dimensional photochemical model (WRF-CMAQ) to simulate air concentrations of the measured compounds. We will compare modeled and measured results to determine how well the inventory and model simulate actual ozone precursor concentrations.