**Monitoring Air Quality Variations in Complex Terrain using a Multi-Platform Approach**

Alexander A. Jacques, Erik T. Crosman, and John D. Horel

*Department of Atmospheric Sciences, University of Utah*

Concentrations of criteria pollutants can vary greatly within urbanized regions of complex terrain. These pollutants are typically monitored with hourly observations at a small number of surface sites within each urban area. Further, vertical profiles and mobile transects of pollution are often only available during research field campaigns. We illustrate that the inclusion of routine mobile observations (installed on news helicopter and light-rail train platforms), with additional research-grade fixed site sensors, has provided unprecedented spatial information on pollutant concentrations over the last 3 years in the Salt Lake Valley.

These real-time air quality observations, collected at intervals of 5 minutes and greater, are archived and made accessible to the public via a variety of web-based visualization tools (e.g. <http://utahaq.chpc.utah.edu/>) for research, forecasting, and public awareness. Large spatial and temporal gradients in criteria pollutants were observed across the Salt Lake Valley during the 2015-2017 summer and winter seasons. These gradients were often associated with a range of meteorological factors including: wintertime cold-air pool stagnation events, summertime heat waves and high pressure systems, local thermal and terrain-forced circulations, lake breezes, wildfires, and dust episodes.