

PM2.5 and Ozone Transport Through a Salt Lake Valley Tributary Canyon

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The populated basins of northern Utah are prone to particulate pollution episodes during the wintertime and periodically suffer from high summertime ozone concentrations. A better understanding of the role of meteorological processes in modulating the mass budget of pollutants are necessary to evaluate pollution forecasts and control strategies.

In a Utah DAQ-funded study, a Doppler Wind LiDAR was deployed at the mouth of Red Butte Canyon, a tributary canyon opening into the Salt Lake Valley basin, for two winter seasons (2019-2020, 2020-2021) and two summer seasons (2020, 2021) to monitor diurnal thermally-driven as well as synoptically-forced up- and down-canyon flows. Co-located surface-based observations of PM2.5 and ozone were combined with the LiDAR-based volume flux retrievals to evaluate mass transport of PM2.5 during wintertime particulate pollution as well as summertime ozone pollution episodes through this representative tributary canyon.

This presentations will (1) illustrate the technique developed to allow PM2.5 and ozone mass flux estimates, and (2) present cases studies for both a wintertime (PM2.5) and summertime (ozone) pollution event.