Quantifying the impacts of the COVID-19 lockdown on urban emissions across the Salt Lake Valley
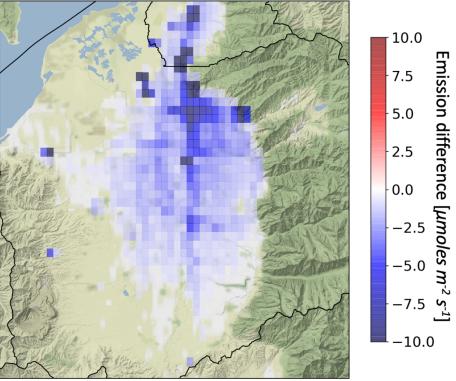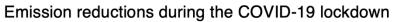
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The COVID-19 pandemic resulted in a widespread lockdown during the spring of 2020. The Salt Lake Valley observed a large decrease in anthropogenic emissions during the COVID-19 lockdown, which altered the urban atmospheric composition within the valley. Measurements on a light rail system in the Salt Lake Valley (TRAX), combined with observations from the Utah Urban Carbon Dioxide Network (UUCON) suggest that there was a notable decrease in urban greenhouses gases relative to prior years. These decreases were most pronounced in downtown Salt Lake City and areas adjacent to major roadways. During the lockdown, the average traffic volume across the Salt Lake Valley decreased by 35% according to the Utah Department of Transportation. CO_2 measurements across the Salt Lake Valley were used within a Bayesian inverse model to spatially allocate the reductions in anthropogenic emissions due to the COVID-19 lockdown. Preliminary results from our inverse analysis suggests that the Salt Lake Valley observed a 20% decrease in urban CO_2 from March-April 2020. The largest reductions in CO_2 emissions were confined to the northern part of the Salt Lake Valley and near major roadways and interstates. Changes in the spatiotemporal patterns of emissions could yield important insights into how anthropogenic emissions impact the atmospheric composition and air quality in and around urban centers.

Emission reductions during the COVID-19 lockdown

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