

Spatial and Temporal Observation of Urban Trace Gases and Pollutants from a Light Rail Vehicle Platform

L. Mitchell, E. Crosman, B. Fasoli, L. Leclair-Marzolf, A. Jacques, J. Horel, J.C. Lin, D. Bowling and J. Ehleringer

University of Utah, Salt Lake City, UT 84112; 541-207-7204, E-mail: logan.mitchell@utah.edu

Urban environments are characterized by both spatial complexity and temporal variability, each of which present challenges for measurement strategies aimed at constraining estimates of greenhouse gas emissions and air quality. To address these challenges we have recently initiated a project to measure trace species carbon dioxide (CO_2), methane, ozone, and particulate matter by way of a Utah Transit Authority (UTA) light rail vehicle whose route traverses the Salt Lake Valley in Utah on an hourly basis, retracing the same route through commercial, residential, suburban, and rural typologies. Light rail vehicles present advantages as a measurement platform, including the absence of *in situ* fossil fuel emissions, repeated transects across a urban region that provides both spatial and temporal information, and relatively low operating costs. We present initial results from a pilot study in the summer of 2014 as well as current measurements from the winter of 2014/2015 and will discuss future directions of this measurement platform.

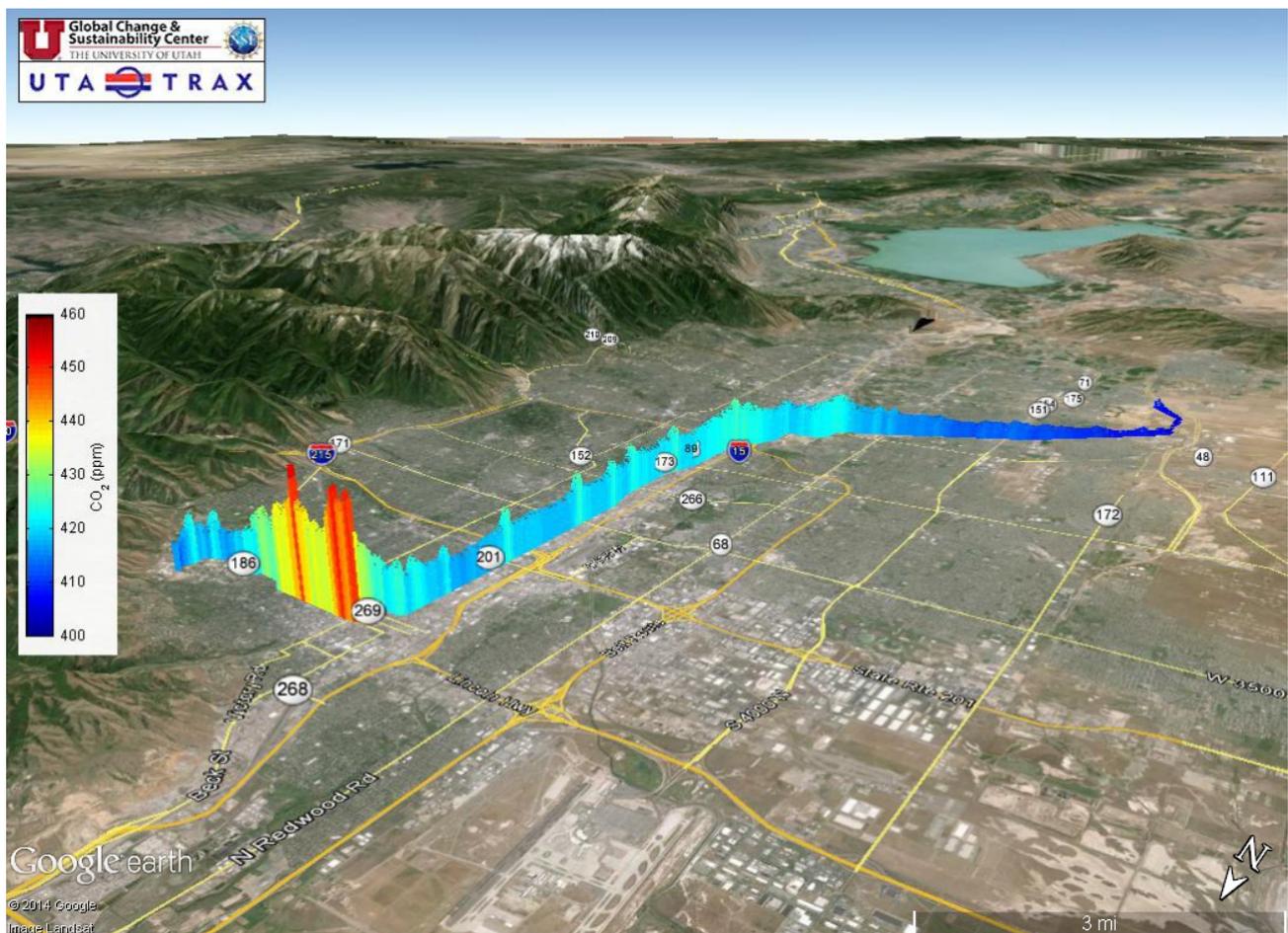


Figure 1. Average CO_2 concentrations along the Red UTA TRAX light rail route during the month-long pilot project in the summer of 2014.