# Dissecting the Multiple Scales of Urban Air Pollutant Variability using a Mobile Lab

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Air pollutants at any given location in an urban area represent a combination of regional, urban, and local -scale contributions. Urban air quality monitoring sites are typically placed to avoid the impacts of local sources generally providing insight on urban background conditions for a portion of the city. Mobile measurement platforms capture data across all scales helping to better characterize urban air quality and population exposures. CRUISER mobile lab measurements, which started for the PanAm Games and continued with campaigns in Sept. 2015 and January 2016, were obtained through systematic driving across a large portion of Toronto and surrounding region. CRUISER was able to resolve local source impacts related to a variety of activities such as traffic and industry, to urban and regional patterns related to the urban footprint and lake breezes. Ultimately, these data are being used to evaluate high resolution chemical transport models (GEM-MACH2.5) and to develop empirical models for exposure assessment resolved to the postal code level or better. In this presentation, analyses of CRUISER data will be presented showing the patterns observed within and between neighbourhoods, and across the city, to evaluate spatial and temporal changes in the regional and urban background as well as sub-grid scale variation.