

# Seminar Series 2016 - 2017

Southern Ontario Centre for Atmospheric Aerosol Research  
University of Toronto

## Sources of Fossil Fuel and Biomass Burning Black Carbon in Ontario

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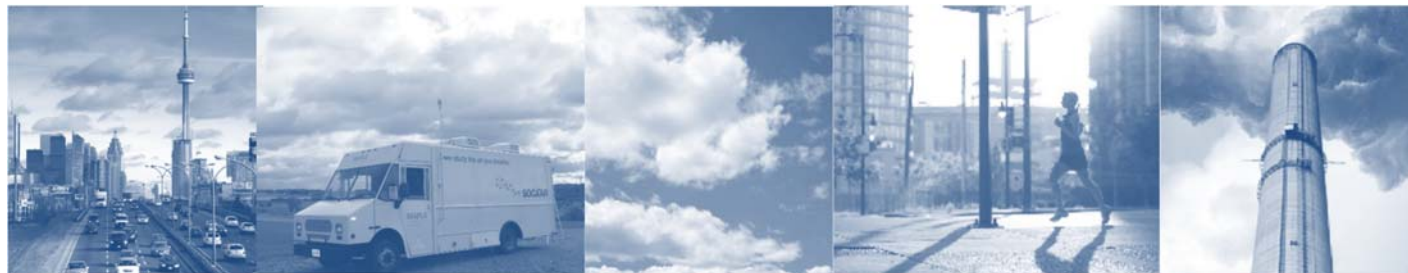
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Ontario Ministry of the Environment and Climate Change*



The Ontario Ministry of the Environment and Climate Change and the Southern Ontario Centre for Atmospheric Aerosol Research operate several air quality stations across the province. Sources of black carbon (BC) aerosol influencing air quality in Ontario were investigated using nine concurrent aethalometer datasets collected between June 2015 and May 2016. The stations are located in Toronto, Hamilton, and Windsor and represent a mix of background and near-road locations. An optical model, based on assumed absorption properties for fossil fuel combustion and biomass burning aerosol, was used to estimate the relative contributions of these two sources to ambient concentrations of BC at every site. The highest annual mean BC concentration ( $1.7 \mu\text{g m}^{-3}$ ) was observed at a near-road site adjacent to Toronto's Highway 401. Fossil fuel combustion was the dominant contributor to ambient BC at all sites in every season, while the highest seasonal biomass burning relative mass contribution (33%) was observed in winter at a background site on the Toronto Islands. A strong seasonal dependence was observed for fossil fuel BC concentrations at every Ontario site, with mean summer concentrations higher than their respective mean winter concentrations by up to a factor of two. Quantitative transport bias analysis was used to investigate this seasonal effect, and the influence of transboundary fossil fuel emissions will be discussed.

**Wednesday, November 30, 2016, 2:30 – 3:30 PM**

**Wallberg Building, 200 College Street, Room 407**



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