

Measuring and Quantifying Toronto's Greenhouse Gas Emissions

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Description of Research

The climate change summit in Paris (COP21) resulted in an agreement to limit the rise in global temperatures by cutting greenhouse gas emissions. An important aspect of COP21 and subsequent international agreements is to encourage cities and local communities to cut their emissions. Toronto has joined the C40: a group of cities leading global emissions reduction efforts, and has ambitious goals of reducing its greenhouse gas emissions. My research group focuses on characterizing, monitoring, and quantifying Toronto's urban emissions to verify that the emissions are indeed reducing at the rate necessary to meet these goals. We use a variety of atmospheric measurement techniques, including remote sensing measurements both from the ground and from space, and local surface concentration measurements.

Summer Project Descriptions

Students involved in this project will have the opportunity to operate our mobile greenhouse gas observatory and our ground-based remote sensing observatories. The mobile observatory is contained in a bicycle cargo trailer, and our ground-based remote sensing observatories are located throughout the Greater Toronto Area (GTA). The students will participate in the design and implementation of a systematic scheme to measure greenhouse gases in Toronto's atmosphere. They will quantify emissions from the measurements and help to create a comprehensive map of Toronto's emissions. They will write code (e.g., time series analysis, machine learning, or geostatistical tools and techniques) to interpret the data from the observatories, and analyse satellite measurements of greenhouse gases over the city.

Applicant Requirements

This project would be suitable for any undergraduate with computing experience and enthusiasm! Familiarity with Python is preferred. Frequent travel throughout the GTA by bicycle to measure near potential emission sites may be required. Two summer intern positions are available on this project.

Contact Information

For more information, please feel free to contact me by email:
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