

SUSTAINABILITY SCHOLARS PROGRAM

Summer 2020

The UBC Sustainability Initiative (USI) is pleased to offer current UBC graduate students the opportunity to work on funded sustainability internship projects. Successful candidates work under the mentorship of a partner organization, and are immersed in real world learning where they can apply their research skills and contribute to advancing sustainability across the region.

- Visit the [Sustainability Scholars Program website](#) to learn [how the program works](#) and to [apply](#).
- Be sure to review the [application guide](#) to confirm your eligibility before applying.
- **Applications close at midnight on Sunday February 2, 2020.**

Research project title: Trend analysis on background levels of ground-level ozone for renewal of Regional Ground-Level Ozone Strategy

How will this project make a contribution to regional sustainability?

Metro Vancouver's *2019-2022 Board Strategic Plan* provides direction to "continue to identify air contaminants in the region, identify priorities and pursue effective actions to reduce pollutants". In addition, Strategy 1.2.3 of the *Integrated Air Quality and Greenhouse Gas Management Plan* gives direction to "Investigate and implement additional targeted measures to address emissions of contaminants (e.g., volatile organic compounds, ammonia, nitrogen oxides and sulphur oxides) that contribute to ground-level ozone and secondary fine particulate matter concentrations, in partnership with other governments, industry, academia and other interested parties".

To meet Strategy 1.2.3, Metro Vancouver and partner agencies adopted a Regional Ground-Level Ozone Strategy (RGLOS) in 2014, which provides strategic directions for reducing ozone precursor emissions and exposure impacts in the region. Ozone is formed through atmospheric chemical reactions between volatile organic compounds (VOC) and nitrogen oxides (NOx) in the presence of sunlight.

The science and understanding on ozone formation has continued to evolve since the adoption of RGLOS. Additional research is needed to understand the contribution of background ozone levels (i.e., ozone or ozone precursors transported into the region from elsewhere) to measured ozone levels in the Lower Fraser Valley (LFV) airshed, which would inform a renewal of RGLOS planned for 2020 or 2021.

Project description

The purpose of this project is to prepare a report on trend analysis of background levels of ground-level ozone to support the planned renewal of the [Regional Ground-Level Ozone Strategy](#).

Outline the scope of project, including how Metro Vancouver will use the Scholar's work:

The Scholar would identify and summarize recent trends on background ground-level ozone based on the analysis of:

- data on background levels of ground-level ozone at the former Marine Boundary Layer Station (MBLS) in Ucluelet (data collected by the Environment and Climate Change Canada in 2011-2017), including seasonal and intra-annual variations;

- comparison of MBL data with historical ground-level ozone data, within the LFV airshed and globally; and
- comparison of MBL data with current global trends in background ozone levels.

If possible, the Scholar will also explore the following:

- potential impact of contributing factors, including meteorological parameters, localized emission influences, precursor dynamics, and transboundary transport on ground-level ozone data at the MBL and in the LFV airshed; and
- discussion of potential impact of background ozone levels on ambient ground-level ozone concentrations and air quality standards for ozone expected in the future.

The results of this study would be shared with and considered by the RGLOS Steering Committee, whose membership includes Metro Vancouver, Fraser Valley Regional District, BC Ministry of Environment and Climate Change Strategy, Environment and Climate Change Canada, and Vancouver Fraser Port Authority.

The report would support potential changes to RGLOS and inform the expected renewal of RGLOS in 2020 or 2021. It could also support new ozone-related actions in the development of Metro Vancouver's refreshed Air Quality and Greenhouse Gas Management Plan, the *Clean Air Plan*.

Project Deliverables:

- The main project deliverable is a report on trend analysis of background ground-level ozone levels, with emphasis on quantitative data analysis. The report should be:
 - based on existing available data;
 - a synthesis of the statistical analysis conducted on the above data; and
 - written using a report framework approved by Metro Vancouver.
 - The report should include a list of the references used to produce the report. Metro Vancouver will provide the scholar with the relevant data from the Lower Fraser Valley Air Quality Monitoring Network and the MBL.
- It is expected that a draft report will be provided for review by Metro Vancouver before the end of the project and prior to completion of the final report.
- A webinar or in-person presentation of the report to RGLOS Steering Committee representatives may also be requested, depending on the availability of all parties.
- A final report [or Executive Summary] for the UBC Sustainability Scholars online project library.

Time Commitment

- This project will take **250** hours to complete.
- This project must be completed between May 4 and August 14, 2020.
- The scholar is to complete approximately 17 hours per week.
- Research and report writing can be completed by the scholar at their convenience.
- The scholar must be available to meet over the phone or in person with the project team on a weekly basis for the first few weeks of the project, and then on a bi-weekly basis for the remainder of the project.



Required/preferred Skills and Background

- Strong data analysis skills, including statistical analysis
 - Experience with computer programming or statistical analysis tools (e.g., R, Python)
 - Some understanding of air quality, ozone formation and air quality issues in the Lower Fraser Valley
 - Excellent English writing skills
 - Ability to work independently
 - Demonstrated time management skills
 - Deadline oriented
 - Excellent presentation skills
 - Preference for students with strong data analysis and statistical analysis skills.
 - Experience with air quality issues in the Lower Fraser Valley would also be valuable.
- The Scholar will need to have access to own computer and software capable of producing documents in Microsoft Word format.
 - Ideally, the successful candidate will have access to computer programming or statistical tools (e.g., R, Python).

Applications close **midnight Sunday February 2, 2020.**

Apply here: <http://sustain.ubc.ca/scholarsapply>

Contact Karen Taylor at sustainability.scholars@ubc.ca if you have questions

Useful Resources

Below are some links to useful resources to help you with your resume and cover letter (there are many more online). Some of these resources also provide information on preparing for your interview.

<https://students.ubc.ca/career/career-resources/resumes-cover-letters-curricula-vitae>

<https://www.grad.ubc.ca/current-students/graduate-pathways-success>

<https://www.grad.ubc.ca/cover-letter-cv-resume-templates-ubc-career-services>

The Centre for Student Involvement & Careers will host a resume & cover letter webinar tailored for graduate students on Tuesday, January 21, 2020 from 12:00-1:30. Registration will open approximately two weeks before the webinar, and can be accessed at Careers Online.

