

Casey Engstrom, PhD

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Summary

Recent PhD graduate with passion for remote sensing, data science, and cross-disciplinary research. I am a motivated team-oriented scientist used to juggling multiple projects and demands simultaneously. Highly proficient in Google Earth Engine, machine learning, and conveying complex concepts through oral, visual, and written communication to both specialists and general audience.

Education

PhD, Simon Fraser University, Dept. of Molecular Biology and Biochemistry, Burnaby, BC, Canada (Fall 2023)

BA, Middlebury College, Biology major & physics minor, Middlebury, VT, USA (2013)

Relevant experience

Graduate Researcher, Quarmby Lab, Simon Fraser University, Burnaby, BC (2018–2023)

- Responsible for all stages of research including hypothesis formulation, fieldwork, benchwork, computational analysis, validation, and writing
- Designed and implemented global Random Forest in Google Earth Engine to map spatiotemporal distribution of snow algal blooms; synthesized multiple large remote sensing datasets
- Communicated scientific findings in 4 first-author manuscripts; 3 supporting-author manuscripts; a Google Earth Engine [web app](#); oral presentations at 6 local and 1 international conferences; routinely presented in weekly lab meetings and student statistics group
- Mentored 1-2 undergraduate students per semester; organized community-science field sampling campaign
- Consistently awarded competitive scholarships; won 10 individual scholarships over six years with a total value of \$65,000; nominated by advisor for best PhD thesis in department

Research Programming Peer, SFU Library Research Commons, Burnaby, BC (2020–2022)

- Developed two-day workshop in Google Earth Engine, delivered 3 times upon request
- Led graduate workshops in R
- Provided R and Google Earth Engine consultations to researchers across all departments

Bioinformatics Teaching Assistant, SFU Dept. Molecular Biology, Burnaby, BC (2022)

- Introductory course in bioinformatics using R, Python, and Bash
- Assisted with weekly lab section; held office hours; responded to questions on Slack; grading

Hackathon volunteer and participant, HackSeq, Vancouver, BC (2019)

- Assisted with fundraising; team member in 3-day bioinformatics-themed hackathon

Select publications

Engstrom, C.B., L.M. Quarmby, Satellite mapping of red snow on North American glaciers (In revision, *Science Advances*)

Engstrom, C.B., S.N. Williamson, J.A. Gamon, L.M. Quarmby (2022) Seasonal development and radiative forcing of red snow algal blooms on two glaciers in British Columbia, Canada, summer 2020. *Remote Sensing of Environment* 280, 113164. <https://doi.org/10.1016/j.rse.2022.113164>

Engstrom, C.B., K.M. Yakimovich, L.M. Quarmby (2020). Variation in Snow Algae Blooms in the Coast Range of British Columbia. *Frontiers in Microbiology* 11, 569. <https://doi.org/10.3389/fmicb.2020.00569>

[Link to Google Scholar](#)

Software

- Google Earth Engine (expert: workshop leader; JavaScript API; developed custom web apps;)
- R (expert: workshop leader; tidyverse; machine learning in tidymodels)
- Python (intermediate: rasterio; geopandas; TA'd introductory bioinformatics)
- Linux/Bash/HPC (intermediate)
- Git (basic familiarity collaborating with git, [github](#))
- QGIS/ArcGIS (used mainly for visualization)

Relevant graduate coursework

- Introduction to Machine Learning (SFU STAT 652)
- Biostatistics (SFU BISC 869)
- Introduction to Statistical Computing in R (SFU STAT 641)

Field research experience

- Snow algae sampling on snowfields and glaciers throughout British Columbia (2018–2022)
- Avian point-counts for Bird Conservancy of the Rockies (summer 2016)
- Sage grouse lek counts for Hayden-Wing LLC (spring 2016)
- Botanical surveys for Northern Arizona University (fall 2015)
- Sharp-tailed Grouse reintroduction for USGS Western Ecological Research Center (summer 2013)
- Seabird monitoring for Alaska Maritime National Wildlife Refuge (summers 2011 and 2012)