Nathalie Redick

CURRICULUM VITAE

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Education

University of California, Davis | MSc Geophysics 2026
Davis, CA 3.929/4.00

- **Thesis**: *Understanding Seismic Anisotropy Observations in the Context of 3D Slab-Induced Flow in the Cascadia Subduction Zone* (Advisor: Magali Billen)
- **Relevant Coursework**: Methods of Teaching Geology, Regional Synthesis of Geophysical & Geological Data for Geodynamic Modelling, An Introduction to Subduction Geodynamics Modelling, Fracture & Flow of Rocks, Earthquake Geology, Seismology (Spring 2026).

McGill University | BA Computer Science, *Graduated with Distinction* 2023
Montréal, QC 3.75/4.00

- Minor in **Earth & Planetary Sciences**, Supplementary Minor Concentration in Computer Science
- **Research Projects**: *Accessible Machine Learning For Geospatial Analysis (Advisor: Matt Tarling, Jamie Kirkpatrick); Using a U-Net to Identify Landslides* (Advisor: Jamie Kirkpatrick)
- **Relevant Coursework**: Mineralogy, Petrology, Geology in the Field, Field School I, Earth Physics, Earth System Modelling, Structural Geology, Volcanology, Algorithms & Data Structures, Data Science, Linear Algebra I & II, Probability, Statistics, Applied Machine Learning, Probabilistic Programming, Machine Learning Applied to Climate Change.

Experience

Jul 2025–present **Graduate Student Researcher** @ UC Davis DataLab *Davis, CA*
- Working on extended reality development in C++ for scientific analysis & visualization.
- Rebuilding organization documentation to improve accessibility & reach.
- Supervising & mentoring an undergraduate student interning at the DataLab.

Sep 2024–Jun 2025 **Graduate Teaching Assistant** @ UC Davis *Davis, CA*
- Teaching assistant in the Dept. of Earth & Planetary Sciences.
- Taught lab courses, field excursions, & dicussion sections over three quarters.

Jul 2023–Aug 2024 **Technology Analyst** @ Morgan Stanley *Montréal, QC*
- Worked collaboratively to provide agile metrics analysis for internal development teams globally, user support, & documentation.

May–Aug 2022 **Data Science Intern** @ Esri Canada *Remote*
- Automated a workflow for updating national hydrography data using the Multi-Task Road Extractor deep learning model.

Publications & Talks

Papers

Redick, N. R. A Review of Pumice Raft Formation Environments, Saturation, and Dispersal Mechanisms. *McGill Science Undergraduate Research Journal* **18,** B19–B25. ISSN: 1718-0783. https://msurjonline.mcgill.ca/article/view/187 (2023).

Conference Abstracts

Redick, N. & Billen, M. I. *Understanding Seismic Anisotropy Observations in the Context of 3D Slab-Induced Flow in the Cascadia Subduction Zone*. AGU25. in *Proceedings of the 2025 Fall Meeting of the American Geophysical Union (AGU25)* AGU25 (New Orleans, Louisiana, USA, 2025). https://agu.confex.com/agu/agu25/meetingapp.cgi/Paper/1986081.

Talks

Redick, N. R. *Intro to Machine Learning Tools & Applications for Geoscience*. Friday Lunch Talk. *University of California, Davis* (2025).

Redick, N. R. *Open Source xR in Earth and Planetary Sciences*. Campus Alliance for Advanced Visualization Conference (CAAV). *University of Maryland, Baltimore County*. https://thecaav.org (2025).

Redick, N. R. *Science at Sea: Summary of the August 2025 PACSAFE & EXTEND Research Cruise*. Friday Lunch Talk. *University of California, Davis* (2025).

Redick, N. R., Tarling, M. S. & Kirkpatrick, J. D. *Code-Free Deep Learning for Geospatial Applications*. AGU23. https://agu.confex.com/agu/fm23/meetingapp.cgi/Paper/1366363 (2024).

Redick, N. R. *Building an Accessible Machine Learning Workflow for Geospatial Analysis*. Open Research Symposium. *McGill Library, Montreal QC*. https://escholarship.mcgill.ca/concern/presentations/2n49t738j (2023).

Blog Posts

Redick, N. R. *(Title TBD) Endeavour Ridge Awakens: Seismic Clues to an Imminent Diking Event* Temblor.

Redick, N. R. *Setting up VSCode and Python for MacOS* N. Redick. https://nredick.github.io/docs/setting-up-vsc-macos/.

Field Experience

Sep 2025 — *3 days*
Seismic Node Recovery/Redeploy — Mt. Rainier & Mt. St. Helens, WA
University of Oregon & USGS Cascades Volcano Observatory
- Assisted in the recovery of seismic nodes deployed in Aug 2025 along the Tahoma Creek drainage on Mt. Rainier.
- Assisted in the deployment of infrasound, field cameras, & 87 seismic nodes in a helicopter-enabled mission on Mt. St. Helens.

Aug 2025 — *20 days*
PACSAFE 2025 & EXTEND 2025 — Offshore, BC
NRCAN, University of British Columbia, University of Victoria, NFSI
- Partcipated as an Apply-to-Sail student aboard the CCGS John P. Tully to recover & deploy ocean bottom seismometers (OBS) along the Explorer microplate off of Haida Gwaii and at the Endeavour ridge.

Jul 2025 — *2 days*
Temporary Seismic Array Deployment — Mt. Rainier National Park, WA
University of Oregon & USGS Cascades Volcano Observatory
- Assisted a deployment of 53 seismic nodes in temporary arrays along the Tahoma Creek drainage to support studies of debris flows.

May 2025 — *1 day*
Field Assistant — Jot Dean Cave & Pluto Cave, CA
UC Davis
- Assisted in the collection of biofilm samples from lava tubes.

Oct 2022 — *7 days*
Graduate Volcanology Seminar — Long Valley Caldera, CA
McGill University
- Participated in a field seminar to study the volcanological features & geologic history of the caldera & associated features.

May 2021 — *16 days*
Field School I — Death Valley, CA
McGill University
- Produced maps of geologic units & structures in both Rainbow Basin & Dublin Gulch, CA.
- Gained experience in structural field mapping, using a Brunton compass, & navigating with topographic maps.

Service & Leadership

Oct 2024–present
DataLab Affiliate @ UC Davis DataLab
- Participate & assist in data science & computational pedagogy workshops.

Jan 2025–present
Student Mentor @ Association of Women Geoscientists (AWG) at UC Davis
- Assist a student in learning new skills, building job applications & CVs; discussing the science field & graduate school.

Mar 2025, Nov 2025 **Pathways to Graduate School** @ AWG at UC Davis
- Presenting member at panel discussions designed to provide undergraduates with valuable insights into the graduate school application process & life as a graduate student.

Feb 2025 **Field Trip Activity Leader** @ UC Davis
- Engaged 6th graders in discussions & hands-on experiences about characteristics of the 3 major rock types in the UC Davis rock garden.

Sept 2020–Apr 2023 **Vice President of Communications** @ Monteregian Society
- Managed communications for the undergraduate student council of Earth & Planetary Sciences at McGill University.

Teaching Experience

Apr–Jun 2025 **GEL 1: The Earth (TA)** University of California, Davis
- Guest lectured on the formation of the Earth & space.
- Led 1 hr/week of discussion on introductory earth science concepts.

Jan–Mar 2025 **GEL 101L: Structural Geology Lab (TA)** University of California, Davis
- Led 6 hours a week of lab on upper-division undergraduate structural geology concepts & assisted in field techniques/mapping excursions.

Dec 2024 **Introduction to Computational Pedagogy** University of California, Davis
- Two-day instructor training on evidence-based teaching, inclusive pedagogy, & instructional design for computational skills.

Sept–Dec 2024 **GEL 50L: Physical Geology Lab (TA)** University of California, Davis
- Led 6 hours a week of lab on introductory geologic concepts & field techniques; developed course material & updated lab lecture slides.
- Sample topics include mineral/rock identification, stratigraphy, & glacial processes.

Skills

Programming Languages	Python, Julia, C/C++, shell scripting, R, Java, MATLAB, DB2/SQL/MySQL, HTML/CSS, OCaml, (MIPS) Assembly
Field Techniques	Structural mapping, Brunton compass, field navigation & safety
Instrumentation	Temporary seismic nodes, broadband ocean bottom seismometers, field cameras, infrasound, rock saw
Software & Tools	Git, Linux/Unix, LaTeX, Jupyter, HPC, Slurm, QGIS/ArcGIS, ASPECT, Paraview, RESTful APIs, MongoDB, Jira, Jenkins, Liquibase
Languages	*French*: writing (intermediate), reading (intermediate), speaking (beginner)

Scholarships & Awards

Geoscience Professional Development Fellowship, CRESCENT ($800) Feb 2026
Early Career Program, UNOLS MSROC ($500) Dec 2025
Graduate Research Fellowship, UC Davis, Dept. of Earth and Planetary Sciences ($10,000) Mar 2025
Geotop 2021 Scholarship Competition, Geotop ($1,500) Jun 2021
Best Overall Hack, MAIS Hacks 2020 ($200) Oct 2020
Alma Mater Scholarship, McGill University ($3,000) Sep 2019

Certifications

A-200 Mishap Review, Interagency Aviation Training (USGS) Aug 2025
A-110 Aviation Transportation of HazMat, Interagency Aviation Training (USGS) Aug 2025
A-100 Basic Aviation Safety, Interagency Aviation Training (USGS) Aug 2025
Workplace Hazardous Materials Information System (WHMIS), Aix Safety (Canada) Jun 2025
Wilderness First Aid, Sierra Rescue (Expires Nov 2027) Nov 2024
Epinephrine Auto-Injector Administration, Sierra Rescue (Expires Nov 2026) Nov 2024

Adult Child Infant CPR/AED & First Aid, Sierra Rescue (Expires Nov 2026) Nov 2024