Nathalie Redick

CURRICULUM VITAE

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Education

2024–2026 **MSc Geophysics** (3.91/4.00) University of California, Davis
Thesis: *Understanding Seismic Anisotropy Observations in the Context of 3D Slab-Induced Flow in the Cascadia Subduction Zone* (Advisor: Magali Billen)

2019–2023 **BA Computer Science** (3.75/4.00) McGill University
- Minor in **Earth & Planetary Sciences**, Supplementary Minor Conc. in Computer Science (Data Science, Machine Learning)
- Research: *Accessible Machine Learning For Geospatial Analysis; Using a U-Net to Identify Landslides* (Advisor: Jamie Kirkpatrick)

Work Experience

Sept 2025–present **Graduate Student Researcher** @ UC Davis Datalab *Davis, CA*
- Working on virtual & augmented reality development in C++ for scientific analysis & visualization.
- Rebuilding organization documentation to improve accessibility & reach.

Jul 2023–Aug 2024 **Technology Analyst** @ Morgan Stanley *Montreal, QC*
- Worked collaboratively to provide agile metrics analysis for internal dev. teams globally, user support, & documentation.
- Utilized DB2 SQL, MongoDB, & Python to process metrics & maintain project infrastructure.

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.
- Designed new input image layers & geomorphological indicators that improved the baseline model accuracy by ∼4%.

Papers & Talks[+]

1. [+] **Redick**, N. R. *Intro to Machine Learning Tools & Applications for Geoscience*. Friday Lunch Talk. *University of California, Davis*. https://github.com/nredick/intro-to-ml-GVP (2025).
2. [+] **Redick**, N. R. *Origin of Earth & Early Earth*. GEL 1. Guest Lecture, *University of California, Davis* (2025).
3. [+] **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).
4. **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).
5. [+] **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).

Skills

Programming Languages Python, Julia, C/C++, Java, DB2/SQL/MySQL, R, Bash, MATLAB, HTML/CSS, OCaml, (MIPS) Assembly

Software & Tools Git, Linux/Unix, LaTeX, Jupyter, HPC, Slurm, QGIS/ArcGIS, ASPECT, Paraview, RESTful APIs, MongoDB, Jira, Jenkins, Liquibase

Service & Leadership

Feb 2025 — **Field Trip Activity Leader** @ UC Davis
- Facilitated an interactive learning activity in the rock garden for visiting 6th-grade students.
- Engaged students in discussions & hands-on experiences about characteristics of the 3 major rock types.

Jan 2025–Jun 2025 — **Student Mentor** @ Association of Women Geoscientists at UC Davis
- Assist a student in learning new skills, building job applications & cvs; discussing the science field & graduate school.

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

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

Field Experience

Sept 2025 — *3 days*
Seismic Node Recovery/Redeploy — Mt. Rainier & Mt. St. Helens, WA
University of Oregon & USGS Cascade 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, and 87 seismic nodes during 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).
- PACSAFE OBS were recovered along the Explorer microplate off of Haida Gwaii & redeployed to the south of the 2024 field.
- EXTEND OBS were deployed along the Endeavour Ridge to complement existing cabled arrays.

Jul 2025 — *2 days*
Temporary Seismic Array Deployment — Mt. Rainier National Park, WA
University of Oregon & USGS Cascade 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, CA & Dublin Gulch, CA.
- Gained experience in structural field mapping, using a Brunton compass, & navigating with topographic maps.

Teaching Experience

Apr–Jun 2025 **GEL 1: The Earth (TA)** UC 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)** UC Davis
- Led 6 hours a week of lab on upper-division undergraduate structural geology concepts & field techniques/mapping.

December 2024 **Intro to Computational Pedagogy Workshop** UC Davis Datalab
- Two-day instructor training on evidence-based teaching, inclusive pedagogy, & instructional design for computational skills.

Sept–Dec 2024 **GEL 50L: Physical Geology Lab (TA)** UC Davis
- Led 6 hours a week of lab on intro geologic concepts & field techniques.

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

Scholarships & Awards

Bogo Hack, MAIS Hacks 2022 Oct 2022
Best Design & Most Fun; Most Creative Game Dev Hack, McHacks9 Jan 2022
Best AI Hack for Art, MAIS Hacks 2021 Oct 2021
Geotop 2021 Scholarship Competition, Geotop ($1500) Jun 2021
Best Overall Hack, MAIS Hacks 2020 Oct 2020
Alma Mater Scholarship, McGill University ($3000) Sept 2019