CLAIRE C. JENSEN

JENSENCC@UW.EDU | WWW.CLAIRECJENSEN.COM | +1 (612) 401-7981

RESEARCH STATEMENT

I am a PhD student in Earth and Space Sciences at the University of Washington, where I apply deep learning models to remotely sensed data to investigate the seasonal behavior of outlet glaciers in Greenland. I also use ice-penetrating radar to study crystal fabric and seasonal firn compaction in Antarctica. I am particularly interested in developing interpretable and open-source tools for the cryosphere community.

EDUCATION

University of Washington | Seattle, WA | *Doctor of Philosophy* Sep 2024 - Present

- Advised by Michalea King and Ian Joughin of the Polar Science Center
- Research Topic: *Investigating Seasonal Glacier Fluctuations in Northeast Greenland Using Deep Learning and Explainable Artificial Intelligence*
- Coursework: GIS, principles of glaciology, ice and climate, ice dynamics, continuum mechanics

Amherst College | Amherst, MA | *Bachelor of Arts, cum laude* 2020 - 2024

- Double major in Computer Science and Geology
- Research Topic: *Evaluating the persistence and spatial distribution of wind-induced scour zones at Dome A, East Antarctica*
- Coursework: artificial intelligence, geophysics, computer security, data structures & algorithms

University of Canterbury | Christchurch, NZ | *Study Abroad (No degree)* Jan - Jun 2023

- Frontiers Abroad Geology program
- Research Topic: *Spatial distribution and provenance of coastal sediments of Te Pātaka o Rākaihautū (Banks Peninsula)*
- Coursework: remote sensing, geology field camp, advanced topics in computer security

SKILLS

- **Primary Technical Skills:** Python, Java, Remote Sensing, Machine Learning, Git, GIS, LaTeX
- **Secondary Technical Skills:** C, HTML, CSS, JavaScript, Go, Penetration Testing, C++, SQL, ApRES

RESEARCH EXPERIENCE

Firn Compaction at Taylor Dome, Antarctica | University of Washington Nov 2025 - Present

- Collected a variety of ice-penetrating radar data at Taylor Dome, Antarctica
- Polarized ice-penetrating radar data processing, GNSS data processing

Glacier Seasonality in Northeast Greenland | University of Washington Sep 2023 - Present

- Building machine learning models to learn seasonal patterns in data from modeled and remotely sensed data
- Applying explainable artificial intelligence (XAI) techniques to geospatial machine learning data to understand seasonal fluctuations of glaciers that drain the Northeast Greenland Ice Stream

Predicting Seasonal Velocity at Zachariæ Isstrøm | University of Washington Sep 2023 - Apr 2024

- Examined **classic machine learning** and **deep learning** methods for predicting sub-annual ice velocity values in Northeast Greenland

- Created an **open-source GitHub repository** with detailed **Python Jupyter** notebooks for community use. [GitHub Repository]

Polar Science Center | Seattle, WA | *Data Analyst* Jul - Sep 2024

- Developed and improved workflows for **Python Jupyter Notebook** users of datasets from the Greenland Ice Sheet Mapping Project

Wind-Induced Scour Zones at Dome A, Antarctica | Amherst College Sep 2023 - Apr 2024

- Examined persistent wind-induced surface scour over **Dome A** in East Antarctica to inform paleo **ice flow** and **accumulation** rates
- Wrote a **scientific report** detailing the research process and results for the satisfaction of a **senior honors thesis** with cum laude honors. [Report]

Sediment Provenance of Te Pātaka o Rākaihautū | University of Canterbury (NZ) Feb - Jun 2023

- Analyzed the **sediment provenance** of Banks Peninsula and its effect on surrounding Māori communities and marine life using a novel method
- Prepared and analyzed marine surface sediment samples via **portable X-ray fluorescence (pXRF)** and **GIS mapping**. [Report] [Poster]

Deep Learning for Radioglaciology | Amherst College Jan 2022 - Dec 2023

- Reviewed automated and semi-automated **algorithmic** and **machine learning** solutions for interpretation of englacial radar imagery, tested models using **Python** and **Jupyter Notebooks**
- Presented a **quantitative evaluation framework** for judging traced englacial layers from automated layer tracing methods, presented at AGU 2023 Fall Meeting [Video]

INDUSTRY EXPERIENCE

Google | Mountain View, CA | *SWE+ Intern* Jun - Sep 2023

- Designed and implemented a fullstack mapping system in **TypeScript** and **JavaScript** for backend errors occurring in **Google Earth Engine** to improve user debuggability
- Wrote design document with multiple mapping schemes, presented project to engineers, and implemented **unit tests**

American Geophysical Union | Washington, D.C. | *Facilitator* Aug 2022

- Prepared conference session leaders and attendees for daily reading sessions at the **Second National Conference: Justice in Geoscience**
- Presented conference outcomes and future **DEI** work for polar science at the AGU 2023 Fall Meeting [Video]

Google | Seattle, WA | *STEP Intern* May - Aug 2022

- Designed and implemented systematic monitoring for logging **Google Kubernetes Engine**'s node bootstrap process using **C++** and **Golang**, improving on-call workflow and bug routing
- Wrote in-depth design documents of project architecture and collaborated with engineers to improve designs, discuss security concerns, and give project presentations and demos

InspiritAI | Remote | *Instructor* Dec 2021

- Taught a 10-lesson course to middle school students about **artificial intelligence** including NLP, deep learning, computer vision, and basic **Python** skills

Google | Remote | *STEP Intern* May - Aug 2021

- Created a JSON-formatted output for the **Linux kernel**'s performance counting command using **C**, added testing using **Bash** and **Python** for JSON and CSV outputs

- Implemented testing using **Go** to generate and test perf commands for correct output from a **Protobuf** of command-line arguments based on the test machine type

PUBLICATIONS

Jabeli, A., Tama, B. A., Janeja, V. P., Holschuh, N., **Jensen, C.**, Morlighem, M., MacGregor, J. A., & Fahnestock, M. A. TSSA: Two-Step Semi-Supervised Annotation for Englacial Radargrams on the Greenland Ice Sheet. doi: 10.13140/RG.2.2.23219.20007

CONFERENCE PROCEEDINGS

AMERICAN GEOPHYSICAL UNION (AGU), GEOLOGICAL SOCIETY OF AMERICA (GSA), UNIVERSITY OF WASHINGTON EARTH AND SPACE SCIENCES (UW ESS) | * INVITED

Jensen, C., King, M., Joughin, I. *Glacier Seasonality in Northeast Greenland*. UW ESS Research Gala. Seattle, WA (Apr 2026).

King, M., Joughin, I., **Jensen, C.** *Decadal trends in Greenland-wide proglacial mélange and calving behavior from integrated altimetry and SAR.* AGU Fall Meeting. New Orleans, LA (Dec 2025).

Jensen, C., King, M., Joughin, I. *Investigating Glacier Seasonality Using Machine Learning*. UW ESS Research Gala. Seattle, WA (Apr 2025).

Jensen, C., Bourgeois, J. *Geologic History of Black Graduate Students at UW*. UW ESS Research Gala. Seattle, WA (Apr 2025).

Jensen, C., Holschuh, N. *Evaluating the persistence and spatial distribution of wind-induced scour zones at Dome A, East Antarctica*. Northwest Glaciologists Annual Meeting. Fairbanks, AK. (Oct 2024)

***Jensen, C.**, Bernard, R., Keisling, B. *Reflections on The Second National Conference: Justice in Geoscience and the Urgent Need for Diversity Initiatives in Polar Science*. AGU Fall Meeting. San Francisco, CA. (Dec 2023) [Abstract] [Video]

Jensen, C., Holschuh, N. *A Quantitative Evaluation Framework for Automated Englacial Layer Tracing Initiatives*. AGU Fall Meeting. San Francisco, CA. (Dec 2023) [Abstract] [Video]

Bengston, E., **Jensen, C.**, Nolon, I., Randall, L., Gravely, D., Hampton, S. *Preparation of marine surface sediments around Te Pātaka o Rākaihautū (Banks Peninsula) for provenance analysis using pXRF.* GSA Fall Meeting. Pittsburgh, PA. (Oct 2023)

FIELD EXPERIENCE

Taylor Dome Season 1 | Taylor Dome, Antarctica Nov 2025-Feb 2026

- Deployed ApRES at four overwinter firn monitoring stations, conducted polarimetric ice-penetrating radar surveys, and collected local ice velocity data to understand firn compaction in Antarctica

Frontiers Abroad Geology Program Field Camp | New Zealand Jan 2023

- Completed field modules across locations on New Zealand's North and South Islands, focusing on mapping, geomorphology, and structure, and volcanic hazards

SCHOLARSHIPS, FELLOWSHIPS & AWARDS

Earth and Space Sciences Research Award | *University of Washington* 2026
Best Diversity, Equity, and Inclusion Talk | *UW Earth and Space Sciences Research Gala* 2025
Sigma Xi Qualification 2024
Program on Climate Change Fellowship | *Program on Climate Change* 2024
David F. Quinn Memorial Prize | *Amherst College* 2024
John Mason Clarke 1877 Fellowship | *Amherst College* 2024
Oliveira R&D Scholarship | *Oliveira Scholarship Foundation* 2020 - 2024
William C. and Corinne J. Dietrich Scholarship | *Scholarship America* 2020 - 2024
Minnesota Masonic Charities Scholarship | *Minnesota Masonic Charities* 2020 - 2024
D.E. Shaw Momentum Fellow 2022
Women in Cybersecurity (WiCyS) Scholarship Recipient 2021
Girls Inc. National Scholarship | *Girls Inc.* 2020
NCWIT Aspirations in Computing National Honorable Mention 2020
NCWIT Aspirations in Computing State Winner 2020
Ron Brown Guided Pathway Support (GPS) Program Captain 2020

MENTORSHIP, LEADERSHIP, & SERVICE

Sofia Suhinin (UW) | Co-advised with Taryn Black Summer 2025
- *Estimating Antarctic Surface Mass Balance Using ICESat-2 and Modeled Surface Height Change*

Sofia Suhinin (UW) Spring 2025
- *Terminus and Velocity Change at Zachariæ Isstrøm, Greenland*

UW Earth and Space Sciences Open House Volunteer 2025
UW Earth and Space Sciences DEI Committee Member 2024 - 2025
Rockin' Out Earth Science Outreach Volunteer 2024
Amherst Computer Science DEI Intern 2023 - 2024
Amherst Black Student Union First-Year Liaison 2020 - 2022
Captain of Amherst Women's Soccer Club 2020 - 2022
Captain of Amherst Women's Ultimate Frisbee Club 2020 - 2022
Events Manager and Alumni Outreach Team Member for Amherst Women in CS Club 2020 - 2022

MEDIA COVERAGE

- Program on Climate Change | Connecting two Ice Sheets: Glacier and Snow Seasonality in Greenland and Antarctica 2026
- The Daily | From the Magic School Bus to Cyberchase: How 2000s PBS science shows inspired current STEM students, 2025
- The Amherst Student | Geologists Build Community, Empowerment in GUAC, 2022
- YWCA | *Graduating From Eureka!: An Experience Like Nothing Else*, 2020
- Minnesota State IT Center of Excellence | Announcing the 2020 Minnesota Aspirations in Computing Award Winners, 2020
- Minnesota State IT Center of Excellence | These 6 Young Women of Color are Making Local History and Impact, as Shining Tech Stars, 2020