

VERÓNICA GAETE ELGUETA

Ph.D. Candidate in Geophysics | University of Washington
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RESEARCH PROFILE

Ph.D. candidate in geophysics specializing in earthquake source processes, volcano seismology, and Distributed Acoustic Sensing (DAS). Experienced in seismic data analysis, earthquake detection, source-parameter estimation, field deployments, and scientific programming.

EDUCATION

University of Washington, Seattle, Washington, USA 2022–Present
Ph.D. Candidate in Geophysics; expected May 2027

Universidad de Chile, Santiago, Chile 2021
Master of Science in Physics

Pontificia Universidad Católica de Valparaíso, Valparaíso, Chile 2015
Bachelor of Science in Physics

RESEARCH EXPERIENCE

Graduate Researcher, University of Washington 2022–Present
UW Fiber Lab / Department of Earth and Space Sciences

- Investigate earthquake source processes, rupture directivity, volcano seismicity, and shallow subsurface structure using DAS and conventional seismic observations.
- Develop Python workflows for waveform processing, cross-correlation, earthquake detection, spectral analysis, source-time-function estimation, and seismic imaging.
- Analyze large, spatially dense seismic datasets from Alaska, Mount Rainier, and Cordón Caulle volcano.

USGS Cooperative Researcher, University of Washington Summers 2023–2026
U.S. Geological Survey Cooperative Agreements

- Developed a local earthquake catalog for the Puget Sound region using DAS observations (2023).
- Developed and evaluated earthquake-detection algorithms using dense fiber-optic seismic data (2024).
- Investigated earthquake source parameters and rupture directivity in Cook Inlet, Alaska, using DAS (2025–2026).

SZ4D U.S.–Chile Exchange Program Researcher 2026
Universidad de Chile, Host: Dr. Sergio Ruiz

- Completed fieldwork in northern Chile near Iquique, installing DAS and two temporary seismic stations to support high-resolution observations of shallow seismicity in a subduction-zone setting.
- Collaborate with researchers at the Universidad de Chile to build earthquake catalogs, map active faults, and study tectonic earthquake processes using distributed fiber-optic sensing.

Graduate Researcher, Universidad de Chile 2017–2021
Laboratorio de Materia Fuera del Equilibrio, Department of Physics

- Conducted an in situ experimental study of acoustic attenuation in polycrystalline materials for master's thesis research.

PUBLICATIONS AND MANUSCRIPTS

1. **Gaete-Elgueta, V.**, Köpfl, M., Gräff, D., Denolle, M. A., Thelen, W. A., Pratt, B., Kenyon, T. R., and Lipovsky, B. P. “Distributed Acoustic Sensing on Telecommunication Fiber for Complementary, High-Resolution Seismic Monitoring at Mount Rainier.” Submitted to *Seismica*. Preprint available at ESS Open Archive, doi:10.22541/essoar.15005272/v1.
2. **Gaete-Elgueta, V. A.**, Prieto, G., Rose, A., and Lipovsky, B. P. “Submarine Fiber Optic Cables Resolve Earthquake Source Directivity in Cook Inlet, AK.” Manuscript in preparation.
3. **Gaete-Elgueta, V.**, Ruprecht, P., and Lipovsky, B. P. “Seismic Imaging of a Shallow Intrusion with High Spatial Resolution at Cordón Caulle, Chile.” Manuscript in preparation.

FIELDWORK EXPERIENCE

Mount Rainier, Washington 2022
Seismic and geophysical fieldwork

- Supported field operations and data collection using an existing telecommunications fiber at Mount Rainier.

Cook Inlet, Alaska 2023
Seismic and geophysical fieldwork

- Participated in deployment and field operations for fiber-optic seismic monitoring across Cook Inlet.

Mount Rainier, Washington 2025
Nodal seismometer deployment

- Deployed and recovered temporary nodal seismometers for high-resolution volcano and earthquake monitoring.

Cordón Caulle Volcano, Chile 2026
Distributed Acoustic Sensing deployment

- Installed and operated a 1.5-km fiber-optic array across the 2011–2012 laccolith to study shallow volcanic structure, seismicity, and hydrothermal processes.

Yellowstone, Wyoming 2026
Seismic and geophysical fieldwork

- Participated in data-collection activities using an existing roadside telecommunications fiber for volcano monitoring and subsurface imaging.

Northern Chile near Iquique 2026
DAS and seismic station deployment

- Conducted September 2026 fieldwork near Iquique, installing a DAS array in Puerto Patache and deploying two temporary seismic stations for dense seismic monitoring.
- Supported field logistics, instrumentation setup, and site preparation for building earthquake catalogs, mapping active faults, and studying tectonic seismicity with distributed acoustic sensing.

TEACHING EXPERIENCE

Part-Time Instructor, Universidad de Santiago de Chile 2020–Present
Department of Physics

- Taught theory and laboratory courses in electricity and magnetism, waves, mechanics, and thermodynamics.

Part-Time Instructor, Universidad de Chile

2020–Present

Faculty of Medicine

- Taught mathematics and applied mathematics courses for undergraduate students.

Teaching Assistant, Universidad de Chile

2016–2018

Department of Physics, FCFM

- Supported courses in mechanics, thermodynamics, experimental methods, and experimental physics.

Grading and Teaching Assistant, Universidad de O'Higgins

2018–2019

School of Engineering

- Supported introductory Physics I and Physics II courses.

Teaching Assistant, Pontificia Universidad Católica de Valparaíso

2012–2015

Institutes of Physics and Mathematics

- Supported courses in Newtonian mechanics, fluids, electromagnetism, mathematical methods, linear algebra, and calculus.

OUTREACH AND SERVICE

Organizer, AGU Fall Meeting Mini-Workshop

2025

Open DAS Data for Subduction Zone Environments

- Co-organize an SZ4D mini-workshop focused on open DAS datasets, community access, and applications of fiber-optic sensing in subduction-zone environments.

Alternative Spring Break Volunteer, University of Washington

2023 and 2024

Riverways Education Partnerships, Olympic Peninsula, Washington

- Developed and taught lessons for students in Tribal communities on the Olympic Peninsula on rocks, seismology, tsunamis, and earthquake hazards.

GeoGirls Science Volunteer, Mount St. Helens Institute

2024

Mount St. Helens, Washington

- Volunteered with the Mount St. Helens Institute GeoGirls program, teaching girls about volcanic seismology, volcano monitoring, and volcanic hazards through hands-on Earth science outreach.

SELECTED PRESENTATIONS

American Geophysical Union Fall Meeting, Oral Presentation

2025

University of Washington Earth and Space Sciences Gala, Oral Presentation

2023–2025

Seismological Society of America Annual Meeting, Poster Presentation

2024

Chilean Geological Congress, Poster Presentation

2023

AWARDS AND SCHOLARSHIPS

SZ4D U.S.–Chile Exchange Program

2026

Selected participant; host institution: Universidad de Chile (Dr. Sergio Ruiz).

Fulbright–ANID Ph.D. grant

2019–Present

DFI Scholarship, Department of Physics, Universidad de Chile

2016–2018

Bicentenario Scholarship, Chilean Ministry of Education

2013–2015

University Credit Solidarity Fund, Government of Chile

2012–2015

TECHNICAL SKILLS

Programming and Data Analysis: Python, MATLAB, LabVIEW, Mathematica

Seismological Methods: waveform processing, cross-correlation, spectral analysis, earthquake detection, ambient-noise interferometry

Instrumentation: Distributed Acoustic Sensing systems, nodal seismometers, conventional seismic instrumentation

LANGUAGES

Spanish Native

English Professional working proficiency