

Dr. Bryant Chow

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current residence: Fairbanks, Alaska

RESEARCH

2023–Present	Assistant Professor of Seismology University of Alaska Fairbanks (UAF) Geophysical Institute & Department of Geosciences Fairbanks, AK, U.S.A
2021–2023	NSF Postdoctoral Fellow University of Alaska Fairbanks (UAF), Fairbanks, AK, U.S.A <i>“Active tectonics and crustal structure of Northern Alaska”</i> Scientific Mentor: Dr. Carl Tape
2021	Postdoctoral Researcher GNS Science, Lower Hutt, New Zealand

EDUCATION

2018–2021	Doctor of Philosophy in Geophysics Victoria University of Wellington (VUW), Wellington, New Zealand <i>“Adjoint tomography of the Hikurangi subduction zone and the North Island of New Zealand”</i> Advisors: Dr. Yoshihiro Kaneko, Dr. John Townend
2015–2017	Master of Science in Geophysics Ludwig-Maximilians-Universität München (LMU Munich) & Technische Universität München (TUM), Munich, Germany <i>“Analysis of rotational motion amplitudes on local and global scales”</i> <i>Part I:</i> “The development of a rotational magnitude scale” <i>Part II:</i> “Characterization of the Rot3D dataset” Advisors: Dr. Heiner Igel, Dr. Céline Hadziannou, Dr. Stefanie Donner, Dr. Joachim Wassermann
2011–2015	Bachelor of Science in Physics, minor in German Studies University of California Santa Barbara (UCSB), Santa Barbara, CA, U.S.A <i>“Determining Love wave phase velocity through analysis of rotational ground motion”</i> Advisor: Dr. Toshiro Tanimoto

MAJOR FUNDING

- NASA EPSCoR [24-2024EPSCoR-0025], 2024 (\$750k; *NASA*)
*“GRC: The Alaska–Venus analog: synthesizing seismic ground motion and
wind noise in extreme environments.”*
- SCEC Science Plan Award [22039], 2022 (\$35k; *Southern California Earthquake Center*)
“Adjoint Tomography Workflow Applied to California”
- NSF Postdoctoral Fellowship [2052839], 2021 (\$174k; *National Science Foundation*)
“Active Tectonics and Crustal Structure of Northern Alaska”

PUBLICATIONS

“Evidence for deeply-subducted lower-plate seamounts at the Hikurangi subduction margin: implications for seismic and aseismic behavior.”

Bryant Chow, Yoshihiro Kaneko, and John Townend.

Journal of Geophysical Research: Solid Earth (2022): e2021JB022866.
(*EOS Editors' Highlight: Adjoint Tomography Illuminates Hikurangi Margin Complexity*)

“Strong upper-plate heterogeneity at the Hikurangi subduction margin (North Island, New Zealand) imaged by adjoint tomography.”

Bryant Chow, Yoshihiro Kaneko, Carl Tape, Ryan Modrak, Nick Mortimer, Stephen Bannister, and John Townend.

Journal of Geophysical Research: Solid Earth (2022): e2021JB022865.

“An automated workflow for adjoint tomography — waveform misfits and synthetic inversions for the North Island, New Zealand.”

Bryant Chow, Yoshihiro Kaneko, Carl Tape, Ryan Modrak, and John Townend.

Geophysical Journal International 223.3 (2020): 1461-1480.

“Love wave amplitude decay from rotational ground motions.”

Bryant Chow, Joachim Wassermann, Bernhard S.A. Schuberth, Céline Hadziioannou, Stefanie Donner, and Heiner Igel.

Geophysical Journal International 218.2 (2019): 1336-1347.

“Ultra-long duration of seismic ground motion arising from a thick, low-velocity sedimentary wedge.”

Yoshihiro Kaneko, Yoshihiro Ito, **Bryant Chow**, Laura M. Wallace, Carl Tape, Ronni Grapenthin, Elisabetta D’Anastasio, Stuart Henrys, and Ryota Hino.

Journal of Geophysical Research: Solid Earth 124 (2019): 10347-10359

“An event database for rotational seismology.”

Johannes Salvermoser, Céline Hadziioannou, Sarah Hable, Lion Krischer, **Bryant Chow**, Catalina Ramos, Joachim Wassermann, Ulrich Schreiber, André Gebauer, and Heiner Igel.

Seismological Research Letters 88.3 (2017): 935-941

“Seasonal variations in the Rayleigh-to-Love wave ratio in the secondary microseism from colocated ring laser and seismograph.”

Toshiro Tanimoto, Céline Hadziioannou, Heiner Igel, Joachim Wassermann, Ulrich Schreiber, André Gebauer, and **Bryant Chow**.

Journal of Geophysical Research: Solid Earth 121.4 (2016): 2447-2459

TEACHING & ADVISING

◦ Thesis Committee Member:

- Amanda McPherson (UAF PhD; primary Carl Tape)
- Aakash Gupta (UAF PhD; primary Carl Tape)
- Logan Scamfer (UAF MSc; primary David Fee)

◦ Teaching Assistant: UAF GEOS 692 (*Reading Seminar*), VUW ESCI 451 (*Active Earth*)

SERVICE

◦ Peer Reviewer: *Nature Geosciences*, *National Science Foundation*, *Journal of Geophysical Research*, *Geophysical Research Letters*, *New Zealand Journal of Geology and Geophysics*

◦ Committees:

- 2024 – Present: UAF GI DEI Committee
- 2024: CIG Community Meeting Steering Committee

◦ Workshops:

- 2024 SCOPED Workshop: CyberTraining for Seismology (*Co-host*)
- 2024 SPECFEM Developers Workshop (*Organizer, Chair*)
- 2023 High Performance Seismology (*Co-host*)
- 2022 SPECFEM Users Workshop (*Lead host and workshop designer*)

- 2022 Moment Tensor Uncertainty Quantification (MTUQ) Virtual Workshop (*Co-host*)
- **Convener/Chair:**
 - SSA2024: *3D wavefield simulations: from ground motion modeling to seismic imaging*
 - AGU2023: *Online Poster Session for Seismology VI*

AWARDS & HONORS

- Arctic Fellow Award, 2024–2025 (\$9.7k; *UAF Faculty Accelerator*)
“*Advancing Field-Based Cryoseismology in Arctic and Subarctic Alaska.*”
- Innovative Technology and Education (ITE) Award, 2024 (\$5k; *UAF URSA*)
“*Upgrading a high-precision gravimeter for improved hands-on lab experience in an undergraduate geophysics course.*”
- EOS Editors’ Highlight, 2022 (*American Geophysical Union*)
Chow et al. (2022b): “Evidence for deeply-subducted lower-plate seamounts at the Hikurangi subduction margin: implications for seismic and aseismic behavior.”
- Faculty of Graduate Research Dean’s List PhD Recipient, 2021 (*VUW*)
- SSA Annual Meeting Travel Grant, 2021 (*Seismological Society of America*)
- Jim Ansell Geophysics Scholarship, 2020 (*Geoscience Society of New Zealand*)
- Best Oral Presentation, GSNZ Annual Conference 2020 (*Geoscience Society of New Zealand*)
- Beanland-Thornley Student Talks Prize Winner, 2019 (*Geoscience Society of New Zealand*)
- Young Researcher Travel Grant, 2019 (*Geoscience Society of New Zealand*)
- Faculty Strategic Research Grant, 2019 Round 1 (*VUW*)
- 2nd Place Poster, Undergraduate Research Colloquium, 2015 (*UCSB*)

OPEN SOURCE SOFTWARE

- Pyatoa: Misfit quantification and inversion assessment (*Creator & Lead Developer*)
- SeisFlows: Automated inversion workflows on HPCs (*Lead Developer*)
- PySEP: Seismic data extraction and processing (*Lead Developer*)
- Pyflex: Waveform windowing algorithm (*Lead Developer*)
- Pyadjoint: Waveform misfit functions (*Lead Developer*)
- SPECFEM: Spectral element simulation software (*Maintainer*)

TECHNICAL SKILLS

- **Programming Languages:** Python, Bash, MATLAB, FORTRAN, JavaScript, HTML, L^AT_EX
- **High Performance Computing:** SLURM, MPI, Singularity, ParaView
- **Software Development:** Git, GitHub, Sphinx, Conda, Jupyter, Docker
- **Field Skills:**
 - Seismic instrument deployment (Germany, Italy, Switzerland, New Zealand, Alaska)
 - Offroad 4WD and Utility Task Vehicle driver training (CarNZ; 2018)
 - Wilderness First Aid (SOLO; 2023)
 - Avalanche Safety Level 1 (Alaska Avalanche School; 2023)
 - Firearms Safety (2023)
 - Bear Awareness (UAF; 2024)
 - Snowmachine Basics (UAF; 2024)
 - Glacier Travel and Crevasse Rescue (UAF; 2024)

PRESENTATIONS

‘*’ = student presentation

“Seismic Structure of Northern Alaska From Ambient Noise Adjoint Tomography.”

Bryant Chow, Carl Tape

Oral presentation at SSA Annual Meeting 2024

“SCOPED Update: A Cloud and HPC Software Platform for Computational Seismology.”

Marine Denolle, Carl Tape, Yinzhi Wang, Ebru Bozdogan, Felix Waldhauser, Eric Beaucé, **Bryant Chow**, et al.,

Poster presentation at SSA Annual Meeting 2024

“Synthetic Inversions for Anisotropic Structures using Wavefield Simulations and Adjoint Methods.”

*Aakash Gupta, **Bryant Chow**, Carl Tape

Poster presentation at SSA Annual Meeting 2024

“Validating Tomographic Models of Alaska Using 3D Wavefield Simulations.”

*Amanda McPherson, Carl Tape, Evans Onyango, **Bryant Chow**, Daniel Peter

Poster presentation at SSA Annual Meeting 2024

“Estimating Crustal Velocity Structure in Alaska From Acoustic-to-Seismic Coupling From the 2022 Hunga Eruption, Tonga.”

Kenneth A. Macpherson, David Fee, Juliann Coffey, Stefan Awender, **Bryant Chow**, Sam Delamere, Matthew Haney

Oral presentation at SSA Annual Meeting 2024

“Ambient Noise Adjoint Tomography of Northern Alaska.

Bryant Chow, Carl Tape

Oral presentation at AGU Annual Meeting 2023

“adjTomo: An Open-source, Python Toolkit for Adjoint Tomography and Full Waveform Inversion.”

Bryant Chow, Ryan Modrak, and Carl Tape.

Online Poster presentation at AGU Annual Meeting 2023

“Estimating Crustal Velocity Structure in Alaska from Acoustic-to-Seismic Coupling of Infrasonic from the 2022 Hunga Eruption, Tonga.”

Kenneth A. Macpherson, David Fee, Juliann Coffey, Stefan Awender, **Bryant Chow**, Sam Delamere

Poster presentation at AGU Annual Meeting 2023

“Towards Adjoint Tomography of the Nankai and Kyushu Subduction Zones.”

*Samridhi Prakash Mishra, Yoshihiro Kaneko, **Bryant Chow**, Shun Adachi, Yusuke Yamashita, and Masanao Shinohara.

Poster presentation at AGU Annual Meeting 2023

“Towards adjoint tomography of northern Alaska.”

Bryant Chow, Carl Tape

Oral presentation at SSA Annual Meeting 2023

“adjTomo: an open-Source, Python toolkit for adjoint tomography and full waveform inversion.”

Bryant Chow, Ryan Modrak, and Carl Tape.

Poster presentation at SSA Annual Meeting 2023

“adjTomo: an open-source Python toolkit for automating seismic waveform inversion.”

Bryant Chow, Ryan Modrak, and Carl Tape.

Online Poster presentation at AGU Annual Meeting 2022

“Adjoint tomography of an accretionary wedge and shallow slow-slip regions in the North Island of New Zealand”

*Shun Adachi, **Bryant Chow**, Yoshihiro Kaneko

Online Poster presentation at AGU Annual Meeting 2022

“Investigation of complex seismic wave propagation in sedimentary basins via 3-D waveform modeling.”

Yuan Tian, Carl Tape, **Bryant Chow**
Oral presentation at AGU Annual Meeting 2022

“adjTomo — automated, open-source workflow tools for adjoint tomography and FWI.”
Bryant Chow, Ryan Modrak, and Carl Tape.
Poster presentation at SSA Seismic Tomography 2022

“Adjoint tomography of the Hikurangi subduction zone and the North Island of New Zealand.” **Bryant Chow**, Yoshihiro Kaneko, Carl Tape, Ryan Modrak, Nick Mortimer, Stephen Bannister, and John Townend.
Oral presentation at SSA Annual Meeting 2022

“Adjoint tomography of the Hikurangi subduction zone and the North Island of New Zealand.”
Invited seminar at Lawrence Livermore National Lab, Jan. 20, 2022.

“Strong upper-plate heterogeneity and deeply-subducted seamounts at the Hikurangi subduction zone (North Island, New Zealand) imaged by adjoint tomography.”
Bryant Chow, Yoshihiro Kaneko, Carl Tape, Ryan Modrak, Nick Mortimer, Stephen Bannister, and John Townend.
eLightning presentation at American Geophysical Union Fall Meeting 2021

“Adjoint tomography of New Zealand’s North Island using an automated, open-source workflow.”
Bryant Chow, Yoshihiro Kaneko, Carl Tape, Ryan Modrak, and John Townend.
Invited Oral presentation at SSA Tomography 2020

“Adjoint tomography of the North Island, New Zealand using an automated workflow.”
Bryant Chow, Yoshihiro Kaneko, Carl Tape, Ryan Modrak, and John Townend.
Poster presentation at American Geophysical Union Fall Meeting 2020

“An automated workflow for adjoint tomography applied to the North Island, New Zealand.”
Bryant Chow, Yoshihiro Kaneko, Carl Tape, Ryan Modrak, and John Townend.
Poster presentation at Southern California Earthquake Center Annual Meeting 2020

“An automated workflow for adjoint tomography applied to New Zealand’s North Island.”
Bryant Chow, Yoshihiro Kaneko, Carl Tape, Ryan Modrak, and John Townend.
Invited Oral presentation at SCEC CVM Workshop 2020

“Adjoint tomography of the Hikurangi subduction zone and New Zealand’s North Island using an automated workflow.”
Bryant Chow, Yoshihiro Kaneko, Carl Tape, Ryan Modrak, and John Townend.
Oral presentation at Geoscience Society of New Zealand Annual Conference 2020

“A semi-automated adjoint tomography workflow applied to New Zealand’s North Island.”
Bryant Chow, Yoshihiro Kaneko, Carl Tape, Ryan Modrak, and John Townend.
Oral presentation at American Geophysical Union Fall Meeting 2019

“A semi-automated adjoint tomography workflow applied to New Zealand’s North Island.”
Bryant Chow, Yoshihiro Kaneko, Carl Tape, Ryan Modrak, and John Townend.
Oral presentation at Geoscience Society of New Zealand Annual Conference 2019

“Adjoint Tomography of the Hikurangi Subduction Zone and New Zealand’s North Island.”
Bryant Chow, Yoshihiro Kaneko, Carl Tape, Vipul Silwal, and John Townend.
Poster presentation at American Geophysical Union Fall Meeting 2018

“Towards detection of triggered tremor and associated slow slip in New Zealand from transient teleseismic surface waves,”
Bryant Chow, Yoshihiro Kaneko, Satoshi Katakami, Laura Wallace and John Townend.
Poster presentation at Geoscience Society of New Zealand Annual Conference 2018

“The development of a rotational magnitude scale.”
Bryant Chow, Andrea Simonelli, Céline Hadziannou, Stefanie Donner, and Heiner Igel.
Oral presentation at European Geosciences Union General Assembly 2017