Marine A. Denolle

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1. EMPLOYMENT HISTORY

2024- **Associate Professor**, Earth and Space Sciences, University of Washington
2021-2024 **Assistant Professor**, Earth and Space Sciences, University of Washington
2016-2021 **Assistant Professor**, Earth and Planetary Sciences, Harvard University
2014-2016 **Green Postdoctoral Fellow**, Institute of Geophysics and Planetary Physics, SIO, UC-San Diego
Supervisor: Dr. Peter Shearer

2. EDUCATION HISTORY

2014-2016 **Green Postdoctoral Fellow**, Institute of Geophysics and Planetary Physics, SIO, UC-San Diego,
Supervisor: Dr. Peter Shearer
2008-2014 **PhD** in Geophysics, Stanford University, USA
Supervisor: Dr. Gregory Beroza
Co-supervisors: Dr. Eric Dunham
Seismic Hazard Analysis using the Ambient Seismic field
2007-2008 **Master** in Geophysics, Ecole Normale Supérieure - IPGP , France
Supervisors: Dr. Satish Singh (IPGP), Dr. David Bercovici (Yale)
2006 **Bachelor** in Earth Sciences, Ecole Normale Supérieure, France
2004-2005 **License** in Physics-Mathematics (Classe Préparatoire aux Grandes Ecoles), Lycée Chateaubriand, France

3. AWARDS and FELLOWSHIPS

(* bold represents a national and international-level recognition)
2023 Invited Professorship - 1 month visit to the Ecole Normale Supérieure rue d'Ulm-Paris
2023- Data Science Fellow, eScience Institute, University of Washington
2019 **Charles F. Richter** Early Career award (Seismological Society of America)
2019 **Kavli Frontiers of Science Fellow** (National Academic of Sciences)
2019 **Radcliffe Assistant Professorship** Institute for Advanced Study Fellow
2018 **CAREER** award - NSF
2017 **The David and Lucile Packard Foundation** Fellowship
2016 Outstanding Reviewer citation for Geophysical Research Letters
2015 Outstanding Reviewer citation for Geophysical Journal International
2012 **AGU** Outstanding Student Paper Award
2012 **SSA** Student Presentation Award
2010 **AGU** Outstanding Student Paper Award

4. TEACHING

Computational seismology (grad level) - UW ESS 590 - spring 2023
Introduction to seismology (undergrad/grad level) - UW ESS 412/512 - winter 2023
Geophysics (undergrad level) - UW ESS 314 - fall 2021, 2023
Machine learning in the geosciences (undergrad+grad level) - UW ESS 490/590 - spring 2021, fall 2022, 2023
Machine Learning in Earth and Planetary Sciences (graduate level seminar) - Harvard EPS268 - Fall 2019
Induced Seismicity (graduate level seminar) - Harvard EPS268 - Fall 2018
Earthquakes and Faulting (graduate level) - Harvard EPS203- Spring 2018, Spring 2020
Earthquakes and Tectonics (sophomore level) - Harvard EPS55- Fall 2017, Spring 2020
Earthquake Sources (graduate level) - Harvard EPS204- Fall 2016, Fall 2020
Intro to Seismology, substitute lecturer (senior undergraduate science major - beginning graduate level), - Stanford - Fall 2012-2013
Earthquakes and Volcanoes, Teaching Assistant (undergraduate level - non science major) - Stanford - Spring 2012
Inverse Theory, Teaching Assistant (graduate level) - Stanford - Fall 2010

5. PROFESSIONAL SERVICE

Science community service

Year	Committee	Role
2024	NSF - Review Panel	reviewed 10 proposals, attended online panel review, and wrote summary reports.
2023-2025	Earthscope Consortium - (invited) Chair of the Integration and Innovation Advisory Committee	Lead a group of 9, write reports to Earthscope Board about the frontiers in geophysics and funding opportunities to the facility or extended community.
2021-2022	member of the IRIS Data Service Standing Committee	2 2days meetings/year
2022	Charles Richter Early career award committee	reviewed nominations, CVs, and met with committee
2021-	member of Southern California Earthquake Center HPC standing committee	attending multiple virtual meetings and submitted a proposal as PI on behalf of the committee
2020	NSF Geophysics Review Panel	reviewed 7-10 proposals, attended the online panel review, wrote summary reports, and made recommendations
2018	USGS - Review Panel	reviewed 3 proposals, attended online panel review, and wrote summary reports.
2016	USGS - Review Panel	reviewed 5-7 proposals, attended the in-person panel, and wrote summary reports.
2011-2012	Stanford Outdoors Education Program	led activities for the graduate ski club that took 100s of graduate students to ski lessons.

2011	Chair of the Graduate Student Council (Stanford University)	oversight of a $450k annual budget to distribute as student activities designed to improve student mental health and belonging, especially for international students, liaison between students and administration.
2009	Chair Graduate Student Advisory Council (School of Earth Sciences, Stanford University)	liaison between student and department administration, coordination of annual research symposium, ski trip, welcoming weekend, and regular activities.

Workshop and Summer School service:

Year	Workshop	Role
2024	SCOPED Workshop	Lead PI: organized (logistics and scientific planning) a workshop for 50 in-person participants and 50 remote participants as a spring school to learn about Cloud, HPC, wavefield simulations, and big-data processing in seismology, held at UW
2024	SSA: Cloud 101 & Data Mining	Lead organizer of a cloud workshop with 80 in person participants.
2023	CyberTraining workshop for HPC and Data Science in seismology	Lead PI, workshop coordinator, lead instructor
2018	Modeling earthquake source processes: from tectonics to dynamic rupture	Co-organizer of workshop and member of the scientific committee for the writing report.
2016	SCEC-ERI VISES Summer School, Lake Arrowhead, CA	member of the scientific committee and instructor.

National Conference Session Organizer and Chair:
2024 AGU, “Computational and Theoretical Seismology” annual fall meeting.
2019 SSA, “Environmental Seismology” and “Earthquake Ground Motions and Structural Response in Subduction Zones: A Focus on Cascadia ”
2018 AGU, Earthquake Source Physics Inferred from Macroscopic Source Parameters and Seismicity Parameters
2016 AGU, NH11A-NH14A Geophysical Methods in Urban Basins
2015 AGU, S24B Progress in Ambient Field Studies Driven by Complete Wavefields Initiatives
2014 AGU, S31F Physics of Subduction Earthquakes: From the Trench to the Transition Zone
2014 AGU, S11B Fault Mechanics at the Brittle-Ductile Transition of Subduction Zone

Referee activities:
2024- Editor for Geophysical Journal International
2017-2020 Associate Editor for Geophysical Research Letters, handling/reviewing about 2 papers per

month for 2 years.
2014-now Geophysical Journal International, Bulletin of the Seismological Society of America, Nature Communications, Geophysical Research Letters, NSF, NASA, Tectonophysics, Journal of Geophysical Research, Science, Earth-Planets and Space, Solid Earth, Swiss National Foundation, ≥ 150 reviews.

6. UNIVERSITY SERVICE

2024- (at **UW)** co-director of UW CS4Env (Computer Science 4 the Environment)
2023 (at **UW/ESS)** Reviewer - Royalty Research Fund
2022-2023 (at **UW/ESS)** Member Executive Committee
2022-2023 (at **UW/ESS)** Member Research Faculty Search Committee
2024- (at **UW/ESS)** Chair of the curriculum committee
2022- (at **UW/ESS)** Member of the Curriculum Committee and the Data Science Oversight Committee
2021- (at **UW/ESS)** Member of the search committee for the seismic Network Manager position, graduate preliminary exam committee
2016-2020 (at Harvard) Undergraduate Curriculum Committee, Graduate Student Council, IT Committee, Diversity Inclusion, and Belonging Committee, Department Colloquium Committee.

7. STUDENT ADVISEES

Ph.D. Primary advisor
(* 3 at UW)

Year	Name	Level	Institution	Topics
2025-	Michael Hemmett	PhD pre-candidate	Earth and Space Sciences, University of Washington	offshore geophysics
2022-	Manuela Kopefli	PhD candidate	Earth and Space Sciences, University of Washington	geohazard. 1 publication.
2022-	Akash Kharita	PhD pre-candidate,	Earth and Space Sciences, University of Washington	geohazard. 1 publication, 1 in prep.
2021-	Yiyu Ni	PhD candidate	Earth and Space Sciences, University of Washington	machine learning - big data seismology. 8 publications.
2019-2024	Congcong Yuan	PhD (Postdoc at Cornell)	Earth and Planetary Sciences, Harvard University	time-dependent seismology, solid-fluid interaction. 4 publications.

2018-2023 (June)	Stephanie Olinger	PhD (recipient of the **Stanford Thompson Postdoctoral Fellowship**, now CEO of Applied Environmental Intelligence	Earth and Planetary Sciences, Harvard University	cryo-seismology (* 50% co-advised with Brad Lipovsky). 4 publications.
2016-2021 (Sept)	Tim Clements	Ph.D. (receipient of **Mendenhall Postdoc**, now USGS geophysicist)	Earth and Planetary Sciences, Harvard University	hydro-seismology, big-data seismology. 4 publications.
2016-2022 (Jan)	Jiuxun Yin	Ph.D. (received **Caltech SCSN Postdoc**, now at Schlumberger)	Earth and Planetary Sciences, Harvard University	earthquake seismology. 6 publications.

Graduate Student Supervision

(*) at UW, roles are secondary advisor, primary advisor on one manuscript)

(**) advising resulted in a publication.

My total time commitment to these grad students is 1-2 hours per week.

2018-2025	Natasha Toghramadjian, Earth and Planetary Sciences, Harvard University.
2021-	Maleen Kidiwela, **University of Washington** (co-advised with William Wilcock). (**)
2021-2024	Zoe Krauss, **University of Washington** (co-advised with William Wilcock). (**)
2021-	Parker Sprinkle, **University of Washington** (co-advised)
2018-2021	Zhuo Yang, Harvard University. (**)
2017-2019	Manuel Florez, MIT, member of the dissertation committee
2019	Congcong Yuan, USTC China, master student visiting researcher (**)
2019	William Flanagan, Harvard University
2018	Philippe Danré, Master student, Ecole Normale Supérieure, Paris. (**)
2017	Thibault Pérol, Harvard University.(**)

UW PhD student dissertation Committee Service.

Student Name	Department	Role	Dates
Chien, Mu-Ting	Atmospheric Sciences	GSR	2023 – 2024
DeGrande, Jensen	Earth and Space Sciences	Member	2023 –
Jones, Randall	Atmospheric Sciences	GSR	2025 –
Kharita, Akash	Earth and Space Sciences	Advisor	2023 –
Kidiwela, Maleen	School of Oceanography	Member	2024 –
Koepfli, Manuela	Earth and Space Sciences	Chair	2024 –
Krauss, Zoe	School of Oceanography	GSR	2022 – 2024
Ni, Yiyu	Earth and Space Sciences	Chair	2024 –
Pearson, Anna Elaine Rogers	Earth and Space Sciences	Member	2024 –

Ragland, John	Electrical and Computer Engineering	GSR	2023 – 2024
Rasanen, Ryan	Civil And Environmental Engineering	GSR	2022 – 2023
Sangmin, Song	School of Oceanography	GSR	2024 –
Sprinkle, Parker	Earth and Space Sciences	Member	2022 –
Sweeney, Aodhan	Atmospheric Sciences	GSR	2024 –
Velappan, Hemalatha	School of Env. Forest Sciences	GSR	2023 –
Velegar, Meghana S	Applied Mathematics	GSR	2023 – 2023
Zahn, Olivia	Physics	GSR	2022 – 2024
Zhang, Maochuan	School of Oceanography	GSR	2023 –

Undergraduate Advising: My advising consists of research experience, either from summer programs or academic year independent studies. During the academic year, students enroll in 499 for a few credits to continue their research with me. On breaks or during the summer, I provide them with hourly pay.

- (*) Resulted in a presentation at a national conference
- (**) Resulted in a peer-reviewed publication
- (***) In-prep for peer-reviewed publication
- (+) Students received a GRFP with my letters written based on our collaborative research

Year	Name	Institution	Research Topics
2025-	Alex Rose	UW-Oceano	Deep Learning with distributed acoustic sensing
2024-	Anjani Mirchandi	UW-AMATH	Deep Learning with distributed acoustic sensing
2023-	Hiroto Bito	UW-ESS	Earthquake Catalog Building offshore Cascadia
2023	Nicholas Wolfe	UW-ESS	Earthquake magnitudes
2023	Informatics Capstone: Rona Guo, Nathan Limono, William Phan, Michael Yung, Matthew Herradura	UW	Distributed Acoustic Sensing web platform
2022	Lucas Swanson	UW-Informatics	Distributed Acoustic Sensing web platform
2022–2023	Francesca Skene (*,***)	UW-ESS	Surface event cataloging: location and characterization
2022–2023	Nick Smoczyk (*,***)	UW-University of Minnesota	Volcano seismology: data mining using ML and template matching
2020–2021	Julian Schmitt (*,+)	Harvard (Ph.D. grad at Caltech)	Ambient noise seismology in Julia – BASIN project

2019	Jared Bryan (*,**,+)	SCEC program – Harvard University - (now Ph.D. grad at MIT)	Ambient noise monitoring of fault zones
2018	Albert Aguilar (*)	IRIS Harvard University - now Ph.D. grad at Stanford	Subduction-zone seismology / data mining
2016	Leore Lavin	Senior Thesis – Harvard	Ambient noise seismology and ground motion prediction
2014	Roy Bowling	Scripps Institution of Oceanography	Ambient noise seismology
2012	Tara Larrue	SURGE program – Stanford University	Ambient noise seismology
2011	Penprapa Wutthijuk	SURGE program – Stanford University	Ambient noise seismology

International PhD Dissertation Reader (dissertation and defense evaluative committee)

2024 Marius Paul Isken, GFZ-Germany
2023 Luc Illien, GFZ-Germany (* I did not participate to his public defense)
2023 Daniel Mattas, Geoazure, Université de Nice, France
2023 Zoe Renat, Université de Lorraine, France
2022 Reza Esfahani, GFZ-Germany (* I did not participate to his public defense)
2019 Kurama Okubo, IPGP-Paris

Postdocs

2022-2024 Dr. Qibin Shi, Earth and Space Sciences, University of Washington
now Postdoctoral Fellow at Rice University
2023-2024 Dr. Kuan-Fu Feng, Earth and Space Sciences, University of Washington,
(now postdoc at U Utah)
2023-2025 Dr. Ethan Williams, Earth and Space Sciences, University of Washington,
now assistant professor at UC Santa Cruz
2023 Dr. Stephanie Olinger, Earth and Space Sciences, University of Washington, now in Climate Tec
2020-2022 Dr. Laura Ermert, Earth and Planetary Sciences, Harvard University
Earth and Space Sciences, University of Washington
(now assistant professor in ISTerre)
2019-2020 Dr. Xiaotao Yang, Earth and Planetary Sciences, Harvard University
(now assistant professor at Purdue)
2019-2020 Dr. Kurama Okubo, Earth and Planetary Sciences, Harvard University
(now researcher at NIED, Japan)
2019 Dr. Zhitu Ma, Earth and Planetary Sciences, Harvard University
(now assistant prof at Tongji University - China)
2018-2019 Dr. Chengxin Jiang, Earth and Planetary Sciences, Harvard University
(now research associate at Australian National University)
2016-2017 Dr. Chris Van Houtte, Earth and Planetary Sciences, Harvard University
2016-2018 Dr. Loïc Viens, Earth and Planetary Sciences, Harvard University
(now researcher at Los Alamos)

8. INVITED PRESENTATIONS

Year	Type	Institution
2025	Plenary Speaker	SIAM Geoscience Meeting
2025	Plenary Speaker	Workshop on Earthquake Physics and Applications of Artificial Intelligence to Tectonic Faulting, Italy
2025	Department Seminar	Civil Environmental Engineering, University of Washington
2025	Short Talk	Radcliffe Institute of Advanced Studies, on the road
2025	Department Colloquium	Washington University, Saint Louis
2024	Department Colloquium	University of Southern California
2024	Department Colloquium	University of Southern California
2024	Department Colloquium	University of California, Davis
2024	Department Colloquium	Northern Arizona University
2024	Invited Speaker at Workshop	Passive imaging and monitoring in wave physics: from seismology to ultrasound, Cargese, France.
2024	Plenary Speaker	Statewide California Earthquake Center
2023	Séminaire Departemental	Ecole Normale Supérieure, Paris
2023	Data Science Seminar, eScience Institute	University of Washington
2023	Department Colloquium	Sandia National Lab - GNEM seminar series
2022	Invited to Conference (talk)	x2 American Geophysical Union
2022	Department Colloquium	University of New Mexico
2021	Seismo Colloquium	University of Oregon
2021	Seismo Colloquium	U Utah, Seismo Tea
2021	Department Colloquium	University of Wisconsin
2021	Department Colloquium	Colorado School of Mines
2020	Invited to Conference (talk)	Mexico a traves de los sismos
2020	Department Colloquium	U Washington
2020	Department Colloquium	UC Berkeley
2019	Department Colloquium	Yale University
2019	Seismo Colloquium	University of Washington, seismolunch
2019	Invited to Conference (talk)	EGU, annual meeting, Vienna.
2019	Department Colloquium	Michigan State University
2019	Public Lecture	Victoria University, of Wellington, SN Jepson Lecture, New Zealand
2019	Department Colloquium	GNS-Science, New Zealand
2019	Department Colloquium	Stanford University, Department of Geophysics
2019	Department Colloquium	Tufts University, department of Civil Engineering seminar
2018	Department Colloquium	Brown University
2018	Department Colloquium	Ecole Normale Superieure, Paris
2017	Invited Conference (talk)	AGU,New Orleans.
2017	Department Colloquium	University of Columbia - Lamont Doherty Earth Observatory
2016	Public Lecture	Harvard Museum of Natural History

2016	Department Colloquium	University of Oregon
2016	Department Colloquium	University of New Hampshire, Chapman Colloquium.
2016	Department Colloquium	UC Santa Cruz, Institute of Geophysics and Planetary Physics seminar.
2016	Department Colloquium	Massachusetts Institute of Technology
2015	Department Colloquium	USGS, Menlo Park, Earthquake Hazard Program seminar.
2015	Department Colloquium	University of Victoria, BC, Canada
2015	Department Colloquium	Penn State, Geodynamics seminar.
2015	Department Colloquium	Harvard, Earth and Planetary Sciences
2015	Department Colloquium	UT Austin, Solid Earth seminar.
2015	Department Colloquium	UCLA, seismology/tectonics seminar.
2015	Invited Conference (talk)	HOKUDAN - International Symposium on Active Faulting in the Commemoration of the 20th Anniversary of the 1995 Great Hanshin-Awaji Earthquake, Awaji, Japan.
2015	Invited Conference (talk)	Information Theory and Applications workshop, La Jolla.
2015	Department Colloquium	IGPP-Scripps Institution of Oceanography, UCSD, Geophysics seminar.
2015	Department Colloquium	University of Southern California, Geophysics seminar.
2014	Invited Conference (talk)	Strong Motion, Site Effect, and Risk Evaluation Studies for Future Mega-Quakes, DPRI, Kyoto University, Japan.
2014	Invited Conference (talk)	AGU-SEG Summer Research workshop, Vancouver, Canada.
2014	Department Colloquium	San Diego State University, Department Colloquium.
2014	Department Colloquium	UC Santa Barbara, Department Colloquium.
2014	Department Colloquium	IGPP-Scripps Institution of Oceanography-UC San Diego, Geophysics seminar.
2013	Invited Conference (talk)	AGU, Meeting of the Americas, Cancun, Mexico.
2012	Department Colloquium	Berkeley Seismo Lab, Seismo seminar.
2013	Department Colloquium	Caltech Seismo Lab., Seismo seminar.
2013	Department Colloquium	USGS, Menlo Park.
2013	Department Colloquium	Stanford ICME seminar.
2013	Department Colloquium	Earthquake Research Institute, Tokyo University, Japan.
2013	Department Colloquium	Advanced Industrial Science and Technology, Japan.
2013	Department Colloquium	Disaster Prevention Research Institute, Japan.
2012	Invited Conference (talk)	ACOUSTICS, France
2011	Department Colloquium	Institut de Physique du Globe de Paris, Earthquake seminar.

9. GRANT SUPPORT

Total Grant support: over $5M. Total grants dedicated to PI Denolle's research funds (no infrastructure), $2.2M. Total brought to UW for research greater than $2M. PI refers to Principal Investigator. SP refers to Senior Personnel. Lead-PI refers to multi-institution grants with lead PI role.

Year	Sponsor	Role	Total to PI	Title	Notes
2025	Jerry Paros	co-PI	$200,000	Multi-Geohazard Monitoring at Mt Rainier	Donor's gift to support multi-geohazard, multi-sensor research at Mt Rainier **Gift**
2025	NSF	co-PI	$735,074	Collaborative Research: CAIG: Framework for Artificial Intelligence-Enhanced Modeling of Wildfire Geohazards (FAIM-WG): Applications for postfire Debris flows across the Western US.	2 institutions, led by Dr. Erkan Istanbull-gluo.
2025	NSF	SP	$62,000	Separating the Signal from the Noise: Promoting Alaskan students' inquiry with geographically relevant seismic data and machine learning technique	CS4All education project.
Pending	NSF	lead-PI	$652,891	Collaborative Research: CAIG: Multi-scale Seismic Wave Physics for Ground Motion Prediction	UW lead institution, collaboration with Stanford University.
2025	NSF	SP	$152,000	R2I2: Cascadia Coastal Community Climate Resilience Innovation Incubator	RCN grant led by Dr Ann Bostrom.

2025	NSF	co-PI	$880,490	Multi-span distributed fiber sensing on the Ocean Observatories Initiative Regional Cabled Array	Infrastructure Grant.
Pending	NSF	co-PI	$3,000,000	NRT: HDR (Harnessing the Data Revolution): Computing for the Environment	NSF Research Training, led by Dorothy Reed (CEE).
2023	NSF	PI	$226,022	Collaborative Research: Slippery when wet? A seismic investigation of slow slip and fault locking along the Alaska-Aleutian subduction zone	3 years. Distributed Acoustic Sensing analysis -funds part for a student/postdoc to provide a data product for seismic imaging.
2023	IRIS-DMC	PI	$98,239	Developing a near-real-time shallow tomography model using DAS and broadband seismometers on the Cloud	2 years. Seismic software development with partial support for my student.
2023	Ecole Normale Supérieure, Paris	PI	3,500€	Visiting Professorship	6/15/2023-7/15/2023. Will teach 2-3 lectures about ambient noise seismology and cloud computing, and start collaboration. **Fellowship**
2022	Southern California Earthquake Center	PI	$35,229	CyberTraining for Seismology: Data Science and HPC	2/1/2022-1/31/2023. Overall was $70K. 2 institutions. UW is the lead. Supports a workshop.

2021	Murdock Charitable Trust Fund	co-I	$950,000	UW FiberLab	UW PI Lipovsky is lead. My role has cost-sharing on computing and seismic instrumentation. My lead is the cyberinfrastructure of the data generated by the equipment. **Equipment**
2021	The Lucile and David Packard Foundation	PI	$50,00	URG2: URG2: Undergraduate Research in Geosciences for UnderRepresented Groups	10/1/2021-9/30/2022. Overall was $180,000, 7 institutions. UW was the lead, and I organized a 4-day workshop at Pack Forest, WA. Supports undergraduate research.
2021	National Science Foundation	co-PI	$995,817	CyberTraining: Implementation: Medium: GeoSMART: Developing a Machine Learning workforce for earth science studies through training and curriculum development	9/1/2021-8/31/2024. OAC-2117834 CSSI, lead PI Nicoleta Cristea. I have 2mos/year student, 0.8mo for me. I led 1/3 of the project by developing a new graduate-level course (ESS 469/569)

2021	National Science Foundation	PI	$660,591	Collaborative Research: Frameworks: Seismic COmputational Platform for Empowering Discovery (SCOPED)	09/01/2021-8/30/2025. OAC-2103701, Multi-Institution grant. lead-PI Carl Tape (University of Alaska Fairbanks), total project budget $3.5M. UW leads the cloud workflows and training from observational seismology.
2020	Southern California Earthquake Center	PI	$33,307	Aftershock patterns and co-seismic off-fault damage elucidate dynamic rupture processes on the 2019 Ridgecrest earthquake sequence	#20010. 1 year. Declined.
2019	Harvard University David Rockefeller Center for Latin American Studies	PI	$85,00	Monitoring Seismic Hazards in Mexico City using Grillo, a Low-Cost Earthquake Early Warning System	1 year. We purchased equipment for the non-profit Grillo. They ended up deploying in Haiti and Puerto Rico.
2019	Harvard Data Science Initiative	PI	$27,210	Ambient-noise seismology using Cloud Computing	Supported student to develop cloud workflows
2019	National Science Foundation	PI	$167,804	Collaborative Research: Cross-Validation of Empirical and Physics-based ground motion predictions	. Multi-Institution with San Diego State University (Kim Olsen). Denolle was the lead PI. 04/15/2019-3/31/2021, EAR-1850015. $ 59,460.0 transferred to UW.
2018	Southern California Earthquake Center	PI	$28,085	Data Collection for Virtual Earthquakes on Cajon Pass	2/1/2018-1/31/2019. #18125. Fieldwork support.

2018	National Science Foundation	PI	$504,315	CAREER: Dynamics of surface rupturing thrust earthquakes	EAR-1749556, 2124722 7/1/2018-6/30/2023. **CAREER award**, supported graduate student and postdoc research. $ 274,605.00 transferred to UW.
2017	Southern California Earthquake Center	PI	$25,000	Static and dynamic source parameters of global strike-slip earthquakes	2/1/2018-1/31/2019. #16246. Support a visiting master student's research.
2017	National Science Foundation	PI	$324,495	Collaborative Proposal - PREEVENTS Track 2: Cascadia Scenario Earthquakes: Source, Path, and implications for Earthquake Early Warning	08/01/2017-7/31/2020. Lead PI on the project is Yihe Huang (U Michigan). ICER-1663827. Support several years of postdocs for research.
2017	The Lucile and David Packard Foundation	PI	$875,000	Changing Basin, Changing Hazards	11/15/2017-11/14/2023. Supporting multiple postdocs and a PI for research, along with a small amount for computing. $442,451 transferred to UW. **Fellowship**
2016	Southern California Earthquake Center	PI	$26,173	Epistemic uncertainties in ground motion prediction from virtual earthquakes	#16246, 2/1/2016-1/31/2017. basic research.
2016	Southern California Earthquake Center	PI	$20,000	Basin Response to Virtual Earthquakes on the San Jacinto Fault and the Itoigawa-Shizuoka Fault	#15036, 2/1/2015-1/31/2016. basic research.

TEXTBOOK: Machine Learning in the Geoscience: Open-Access Jupyter Book **(link)** A jupyter-text

book for a graduate-level machine learning class. Ongoing development includes asynchronous teaching materials and curated data sets for homework. Associated Course Github repository **(link)** with homework sets. The context for this work is that there is no textbook to teach machine learning in the geosciences and that most researchers learn on the fly. This textbook aims to formally introduce ML concepts and toolkits in the graduate-level classroom. The significance of this work will be the adoption of this material in other geoscience programs. The University of Arizona and UC Berkeley expressed interest in contributing to their own course.

SOFTWARE: Ambient-noise seismology package Open-source software in observational seismology is eclectic and mostly maintained by single users. I have written two proposals to the NSF to gather the community around a few flagship codes. We are the only group developing the Julia ecosystem in seismology and are developing core codes.

1. **noisepy**: A open-source python package to process ambient noise seismological data at large scale. As of 08/21/2023, the package was forked 60 times, starred 122, and is now maintained by 15 contributors, software engineers, and scientists. It is taught at virtual workshops.
2. **SeisNoise**: A open-source python package to process ambient noise seismological data at large scale in Julia. As of 04/2/2023, the package was forked 17 times, starred 50, and is now maintained by 1 contributor. SeisNoise represents the core cross-correlation package that is used by at least 3 group members. It is particularly powerful, but I am starting a community effort to develop the ecosystem.

DATASETS: EarthML4PNW: A GitHub organization with curated data sets for data relevant to Pacific Northwest geosciences. Our first package was published as a Seismic Data Set. We are using GitHub to version-control the curated data set and hope to improve the quality of the metadata through research investigation.

11. PUBLICATIONS

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[63] **Denolle, M**arine and Shi, Qibin and Clements, Tim and Viens, Loic and Rodriguez-Tribaldos, Veronica and Cotton, Fabrice, Ambient Field Seismology in Critical Zone Hydrological Sciences, Comptes Rendu Geosciences - Sciences de la Terre, X, X, (**2025**), doi: `inpress`.

[62] Ni, Yiyu and **Denolle, M**arine and Thomas, Amanda and Hamilton, Alex and Münchmeyer, Jannes and Wang, Yinzhi and Bachelot, Loïc and Trabant, Chad and Mencin, David, A Global-scale Database of Seismic Phases from Cloud-based Picking at Petabyte Scale, Seismica, 4, no. 2, (**2025**), doi: `10.26443/seismica.v4i2.1738`.

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12. RECENT PRESENTATIONS

1. Denolle M, Tape C, Bozdag E, Waldhauser F, Wang Y. SCOPED Update: a Cloud and HPC software platform for computational seismology. InAGU Fall Meeting Abstracts **2023** Dec (Vol. **2023**, No. 288, pp. S11C-0288).
2. AGU **2024** "SCOPED Update: a Cloud and HPC software platform for computational seismology" Denolle M, Tape C, Bozdag E, Waldhauser F, Wang Y.
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5. Source Characterization of Surface Events in the Pacific Northwest. Denolle, M. A., Skene, F., Smoczyk, N., Ni, Y., Kharita, A., **2024** April; 95(2B). 1113/6783601/srl-2024136.1 SSA annual meeting **2024**.
6. Stevens NT, Hartog R, Ni Y, Hutko A, Denolle M, Wright AK, De Cristofaro J. Applying Machine Learning Salves to Network Build-Out "Growing Pains" at the Pacific Northwest Seismic Network. Seismological Research Letters. **2024** April; 95(2B). 1113/6783601/srl-2024136.1 [SSA **2024** Poster]
7. Köpfli, Manuela, Denolle, M.A., Gaete-Elgueta, V., and Lipovsky, B. **2024**. Integrating Seismic Network and Distributed Acoustic Sensing to Assess Slope Failure Hazard at Mount Rainier. AGU, Session S015 - Environmental Seismology: A Geophysical Tool to Study Surface and Near-Surface Processes
8. Köpfli, Manuela, Denolle, M.A., Thelen, W.A., Makus, P., and Malone, S.D. **2023**. Probing Precursory Signals To Mt. St. Helens Eruption concealed in the Ambient seismic Field. AGU, Session V025: Seismic and Acoustic Signals of Volcanic Unrest and Eruption: from Source Characterization to Monitoring Applications

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10. Ni, Y., Denolle, M. A., Shi, Q., Lipovsky, B., Pan, S., Kutz, J. N., Wavefield Reconstruction of Distributed Acoustic Sensing with Machine Learning: Lossy Compression and Wavefield Separation. [SSA **2024** Oral]
11. Shi, Q., Williams, E. F., Lipovsky, B. P., Denolle, M. A., Wilcock, W. S. D., Kelley, D. S., and Schoedl, K. (**2025**) Multiplexed Distributed Acoustic Sensing Offshore Central Oregon. Seismological Research Letters, 96 (2A): 784–800. doi: `https://doi.org/10.1785/0220240460`
12. Shi, Q., Denolle, M. A., Ni, Y., Williams, E. F., You, N. (**2025**). Denoising Offshore Distributed Acoustic Sensing Using Masked Auto-Encoders to Enhance Earthquake Detection. JGR: Solid Earth, 130, e2024JB029728. `10.1029/2024JB029728`
13. Kharita, A., Denolle, M., West, M. **2023**. Discrimination between icequakes and earthquakes in southern Alaska: an exploration of waveform features using random forest algorithm. Geophysical Journal International. `https://doi.org/10.1093/gji/ggae106` (Example from earlier references if needed.)
14. Williams, E. F., Denolle, M., Abadi, S., Aderhold, K., Bodin, P., Gaete-Elgueta, V., Wilcock, W. S. (**2024**). Cook Inlet DAS (CIDAS) , BADGER experiments: Studying structure, seismicity, ocean waves, and acoustics offshore southern Alaska with hybrid networks integrating distributed acoustic sensing and seismometers. AGU24.
15. Goestchel, Q., B. Horeh, E., Williams, E. F., Ragland, J., Bouffaut, L., Abadi, S. , amd Wilcock, W. S. (**2024**). Distributed acoustic sensing for underwater passive acoustic monitoring of biophonic, geophonic, and anthropogenic sources—University of Washington Lab tour. The Journal of the Acoustical Society of America, 156(4_Supplement), A62-A62.
16. Shi, Q., M. Denolle, K. Feng, S. Jeffrey, T. Nissen-Meyer, and E. F. Williams (**2024**) Monitoring Soil Moisture With Distributed Acoustic Sensing in the Agricultural Setting. SSA **2024** Annual Meeting.
17. Williams, E. F., M. Denolle, P. Bodin, and J. H. Steidl (**2024**) A Decade of the Seattle Liquefaction Array. SSA **2024** Annual Meeting.
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19. Bodin, P., E. F. Williams, Q. Shi, Y. Ni, B. P. Lipovsky, E. M. Golos, V. Gaete-Elgueta, M. Denolle, K. Aderhold, and S. Abadi (**2024**) Take the Cook Inlet DAS earthquake challenge! SSA **2024** Annual Meeting.
20. Shi, Q., M. Denolle, Y. Ni and E. F. Williams (**2024**) Enhancing Seismic Monitoring in Cook Inlet, Alaska: Integration of Distributed Acoustic Sensing with the Existing Seismic Network for Advanced Earthquake Denoising, Detection and Location. SSA **2024** Annual Meeting.
21. Kharita A, Denolle M., Hutko A.R, (**2024**), Towards Building a Machine Learning Based Automatic Detection System for Surface Events in the Pacific Northwest [SSA **2024** Poster]
22. Feng, K. F., Denolle, M., and Ni, Y. (**2024**). Measuring Shallow Seismic Attenuation in the Pacific Northwest of the United States Using Ambient Noise Seismology [SSA **2024** Poster]

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24. Feng, K. F., Denolle, M., and Ni, Y. (**2023**). Investigating seismic attenuation across the Pacific Northwest of the United States using the ambient noise. [AGU **2023** Poster]
25. Feng, K. F., Lin, F. C., Denolle, M., and Huang, H. H. (**2022**). Investigating near-surface hydrological responses on crustal seismic velocity variations in subtropical and semi-arid regions. [AGU **2022** Poster]
26. Kharita, A., and Denolle, M. (**2023**, December). Classification of Seismogenic Events in the Pacific Northwest. In AGU Fall Meeting Abstracts (Vol. **2023**, No. 393, pp. S31E-0393).
27. Kharita, A., Denolle, M., West, M. E. (**2022**, December). Muti-Station Analysis of Icequakes and Earthquakes in Southern Alaska using Random Forests. In AGU Fall Meeting Abstracts (Vol. **2022**, pp. S42D-0182).
28. Kharita A., Denolle M., Hutko A.R, Hartog, R.H, Malone S., Exploring Machine Learning and Deep Learning Models for Seismic Event Classification in the Pacific Northwest [SCEC **2024** annual meeting]
29. Ni, Y., Denolle, M. A., Shi, Q., Lipovsky, B., Pan, S., Kutz, J. N., Wavefield Reconstruction of Distributed Acoustic Sensing with Machine Learning: Lossy Compression and Wavefield Separation. [SSA Fiber-Optic Sensing Poster]
30. Ni, Y., Lipovsky, B., Denolle, M. A., Time-lapse Imaging of Shallow Subsurface with Dark Fiber in Northern Seattle. [AGU **2023** Poster]
31. Ni, Y., Hutko, A., Skene, F., Hartog, R., Denolle, M. A., Malone, S., Wright, A., A Curated Pacific Northwest Seismic Dataset. [SSA **2023** Poster]
32. Ni, Y., Denolle, M. A., Alterman, N., Fatland, R., Lipovsky, B., Knuth, F., An Open-source Object Storage for Distributed Acoustic Sensing. [GAGE-SAGE Community Workshop Poster]
33. Ni, Y., Pan, S., Kutz, J. N., Lipovsky, B., Denolle, M. A., Neural Implicit Compact Representation Compress Distributed Acoustic Sensing Data. [AGU **2022** Poster]
34. Ni, Y., Pan, S., Kutz, J. N., Lipovsky, B., Denolle, M. A., Implicit Neural Compact Representation to Compress Distributed Acoustic Sensing Data. [SCEC **2022** Poster]
35. Ni, Y., Pan, S., Kutz, J. N., Lipovsky, B., Denolle, M. A., Implicit Neural Compact Representation of the OOI DAS Data. [Northeast Pacific OOI Workshop Poster]
36. Ni, Y., Denolle, M. A., Data-Discovery the Earth GeoDynamical Systems in the Pacific Northwest. [SSA **2022** Poster]
37. Ni, Y., Denolle, M. A., Data-Discovery the Earth GeoDynamical Systems in the Pacific Northwest. [UW AI Institute in Dynamic Systems Launch Event Poster]
38. Bito, H., Ni, Y., Krauss, Z., Shi, Q., Denolle, M. Probing Further the Cascadia Initiative Data to Detect New Offshore Events in October **2012**. [SSA **2024** Poster]
39. Bito, H., Shi, Q., Ni, Y., McBrearty, I. W., Krauss, Z., Stevens, N., Denolle, M., Beroza, G. C. Probing Further the Cascadia Initiative Data to Detect New Offshore Events in **2010**-**2015**. [USGS Conference Poster, **2025**]