

Jonathan Wolf

Address

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Education

2019 – 2024	PhD with distinction · Earth and Planetary Sciences · Yale University Advised by Prof. Maureen D. Long
2019 - 2021	Master of Philosophy · Earth and Planetary Sciences · Yale University Advised by Prof. Maureen D. Long
2015 – 2019	Bachelor of Science · Geophysics · University of Münster, Germany Advised by Prof. Christine Thomas

Appointments

2026 - present	Assistant Professor · Earth and Planetary Sciences · University of California, Santa Cruz
2024 - 2026	Miller Institute Postdoctoral Scholar · University of California, Berkeley · Hosted by Prof. Barbara A. Romanowicz and Prof. Weiqiang Zhu
2019 – 2024	Graduate student and teaching assistant · Yale University
05/2019 – 06/2019	Intern · Seismology · German Research Center for Geosciences Potsdam Research focused on Krafla volcano using ambient noise tomography
05/2018 – 02/2019	Student Assistant · Seismology · University of Münster, Germany Research focused on lowermost mantle anisotropy beneath Iceland
09/2017 – 01/2018	Intern · Seismology · Yale University Research focused on lowermost mantle anisotropy beneath Iceland

Honors and Recognition

2024-2027	Miller Institute Postdoctoral Fellowship · \$321,000 in personal and research funds
2024	Study of the Earth's Deep Interior Section Award for Graduate Research · American Geophysical Union · \$500
2023	Phillip M. Orville Prize · Yale University · \$1000 'for an outstanding dissertation in the earth sciences'
2022	Elias Loomis Prize · Yale University · \$1000 'for excellence on studies of physics of the earth'
09/2017 – 01/2018	Studienstiftung des deutschen Volkes scholarship · ~ €7000 For research at Yale University
04/2016 – 02/2019	Studienstiftung des deutschen Volkes scholarship · ~ €27000 Germany's most prestigious scholarship, awarded to <0.5% of top students
10/2015 – 09/2016	Deutschlandstipendium scholarship · €3600 (€1800 deferred) For academic achievements, social engagement & social/family circumstances

I. Peer-reviewed papers (potentially in press)

30. **J Wolf**, F Link (2026), Mantle-driven diffuse deformation of the Indian Ocean lithosphere revealed by seismic anisotropy, *Geology*, doi: 10.1130/G54375.1.
29. **J Wolf**, B Romanowicz, E Garnero, W Zhu, JD West (2026), Widespread deformation at the base of the mantle linked to subducted slabs, *The Seismic Record*, doi: 10.1785/0320260001.
28. **J Wolf**, M Li, B Romanowicz (2026), Mantle deformation records fossil convergent upwelling at Perm Anomaly, *Nature Communications*, doi: 10.1038/s41467-026-71070-2.
27. **J Wolf**, F Link, MD Long, E Garnero, JD West (2026), Subduction-driven mantle flow beneath and around the Philippine Sea Plate from seismic anisotropy, *Earth and Planetary Science Letters*, doi: 10.1016/j.epsl.2026.119827.
26. **J Wolf** (2026), Large-scale flow toward low-velocity anomalies reconciles seismic and geodynamic constraints in the deepest mantle beneath Alaska. *Journal of Geophysical Research: Solid Earth*, doi: 10.1029/2025JB033063.
25. **J Wolf**, B Romanowicz, JD West (2026), Splitting constraints in regions with sparse coverage: Uniformly processed PS measurements from a massive global dataset, *Geophysical Journal International*, doi: 10.1093/gji/ggaf522.
24. E Löberich, **J Wolf**, MD Long (2025), Shear wave splitting characteristics of vertically aligned partial melt discs in a subduction zone back-arc setting, *Physics of the Earth and Planetary Interiors*, doi: 10.1016/j.pepi.2025.107451.
23. **J Wolf**, E Garnero, B Schwarz, K Leng, Y Luo, R Maass, JD West (2025), Detection of lowermost mantle heterogeneity using seismic migration of diffracted S-waves, *Journal of Geophysical Research: Solid Earth*, doi: 10.1029/2025JB031367.
22. Y Luo, MD Long, S Rondenay, SD King, SE Mazza, **J Wolf** (2025), Mantle Transition Zone-penetrating Upwellings beneath the Eastern North American Margin and Beyond, *Journal of Geophysical Research: Solid Earth*, doi: 10.1029/2024JB030005.
21. **J Wolf**, TW Becker, E Garnero, KH Liu, JD West (2025), Comprehensive global dataset of uniformly processed shear-wave splitting measurements, *Geophysical Journal International*, doi: 10.1093/gji/ggaf076.
20. B Fernando, C Charalambous, N Schmerr, TJ Craig, **J Wolf**, et al. (2025), Array-based seismic measurements of OSIRIS-REx's re-entry, *Seismological Research Letters*, doi: 10.1785/0220240339.
19. M. Li, **J Wolf**, E Garnero, MD Long (2024), Flow and deformation in Earth's deepest mantle from geodynamic modeling and implications for seismic anisotropy, *Journal of Geophysical Research: Solid Earth*, doi: 10.1029/2024JB029058.
18. **J Wolf**, DA Frost, A Brewster, MD Long, E Garnero, JD West (2024), Widespread D" anisotropy beneath North America and the northeastern Pacific and implications for upper mantle anisotropy measurements, *Journal of Geophysical Research: Solid Earth*, doi: 10.1029/2024JB029516.
17. **J Wolf**, M Li, MD Long (2024), Low-velocity heterogeneities redistributed by subducted material in the deepest mantle beneath North America, *Earth and Planetary Science Letters*, doi: 10.1016/j.epsl.2024.118867.
16. **J Wolf**, MD Long, T Nissen-Meyer, DA Frost (2024), The expression of mantle seismic anisotropy in the global seismic wavefield, *Geophysical Journal International*, doi: 10.1093/gji/ggae164.
15. **J Wolf**, M Li, MD Long, E Garnero (2024), Advances in mapping lowermost mantle convective flow with seismic anisotropy observations, *Reviews of Geophysics*, doi: 10.1029/2023RG000833.

14. **J Wolf**, MD Long (2024), ScS shear-wave splitting in the lowermost mantle: Practical challenges and new global measurements, *Seismica*, doi: 10.26443/seismica.v3i1.1128.
13. DA Frost, E Garnero, N Creasy, **J Wolf**, E Bozdag, M Long, A Aderoju, Reynaldo Vite (2024), Heterogeneous mantle effects on the behavior of SmKS waves and outermost core imaging, *Geophysical Journal International*, doi: 10.1093/gji/ggae135.
12. **J Wolf**, M Li, AA Haws, MD Long (2024), Strong seismic anisotropy due to upwelling flow at the root of the Yellowstone mantle plume, *Geology*, doi: 10.1130/G51919.1.
11. **J Wolf**, MD Long, DA Frost (2024), Ultralow velocity zone and deep mantle flow beneath the Himalayas linked to subducted slab, *Nature Geoscience*, doi: 10.1038/s41561-024-01386-5.
10. **J Wolf**, MD Long, M Li, E Garnero (2023), Global compilation of deep mantle anisotropy observations and possible correlation with low velocity provinces, *Geochemistry, Geophysics, Geosystems*, doi: 10.1029/2023GC011070.
9. **J Wolf**, MD Long (2023), Upper mantle anisotropy and flow beneath the Pacific Ocean from PS-SKS splitting, *Geophysical Research Letters*, doi: 10.1029/2023GL104402.
8. **J Wolf**, MD Long (2023), Lowermost mantle structure beneath the central Pacific Ocean: Ultralow velocity zones and seismic anisotropy, *Geochemistry, Geophysics, Geosystems*, doi: 10.1029/2022GC010853.
7. **J Wolf**, DA Frost, MD Long, AO Aderoju, N Creasy, E Garnero, E Bozdag (2023), Observations of mantle seismic anisotropy using array techniques: shear-wave splitting of beamformed SmKS phases, *Journal of Geophysical Research: Solid Earth*, doi: 10.1029/2022JB025556.
6. **J Wolf**, MD Long, N Creasy, E Garnero (2023), On the measurement of Sdiff splitting caused by lowermost mantle anisotropy, *Geophysical Journal International*, doi: 10.1093/gji/ggac490.
5. **J Wolf**, MD Long (2022), Slab-driven flow at the base of the mantle beneath the northeastern Pacific Ocean, *Earth and Planetary Science Letters*, doi: 10.1016/j.epsl.2022.117758.
4. **J Wolf**, MD Long, K Leng, T Nissen-Meyer (2022), Constraining deep mantle anisotropy with shear wave splitting measurements: Challenges and new measurement strategies, *Geophysical Journal International*, doi: 10.1093/gji/ggac055.
3. **J Wolf**, DAD Evans (2022), Reconciling supercontinent cycle models with ancient subduction zones, *Earth and Planetary Science Letters*, doi: 10.1016/j.epsl.2021.117293.
2. **J Wolf**, MD Long, K Leng, T Nissen-Meyer (2022), Sensitivity of SK(K)S and ScS phases to heterogeneous anisotropy in the lowermost mantle from global wavefield simulations, *Geophysical Journal International*, doi: 10.1093/gji/ggab347.
1. **J Wolf**, N Creasy, A Pisconti, MD Long, C Thomas (2019), An investigation of seismic anisotropy in the lowermost mantle beneath Iceland, *Geophysical Journal International*, doi: 10.1093/gji/ggab347.

II. Other contributions (not necessarily peer-reviewed)

4. **J Wolf** (2025), Decoding Deep Mantle Dynamics Through Measurements and Modeling of Seismic Anisotropy and Heterogeneity, PhD thesis, Yale University, Proquest, url: <https://www.proquest.com/docview/3165533920>.
3. **J Wolf** (2024), Seismology Helps Us Understand How Material Flows in Earth's Deepest Mantle, *Eos*, 105, doi: 10.1029/2024EO245021.
2. B Fernando, **J Wolf**, K Leng, T Nissen-Meyer, W Eaton, M Styczinski, A Walker, TJ Craig, J Muir, C Nunn, MD Long (2024), AxiSEM3D - an introduction to using the code and its applications, *EarthArXiv*, doi: 10.31223/X5TH7P.

1. **J Wolf** (2024), Ultralow velocity zone and deep mantle flow beneath the Himalayas are linked to a subducted slab – Research Briefing, Nature Geoscience, doi: 10.1038/s41561-024-01387-4.

III. Data products/Codes

6. K Leng, B Fernando, **J Wolf**, T Heister, L Hwang, T Nissen-Meyer (2026), AxiSEM3D, Zenodo, doi: 10.5281/zenodo.20142089.
5. **J Wolf**, TW Becker, E Garnero, JD West, KH Liu (2025), Additional data/codes concerning "Comprehensive global dataset of uniformly processed shear-wave splitting measurements", doi: 10.5281/zenodo.14834412.
4. M. Li, **J Wolf**, E Garnero, MD Long (2024), Flow and deformation in Earth's deepest mantle from geodynamic modeling and implications for seismic anisotropy, doi: 10.6084/m9.figshare.25330288.v3.
3. **J Wolf**, DA Frost, A Brewster, MD Long, E Garnero, JD West (2024), Additional data/codes concerning "Widespread D" anisotropy beneath North America and the northeastern Pacific and implications for upper mantle anisotropy measurements", Zenodo; doi: 10.5281/zenodo.12739752.
2. **J Wolf**, MD Long, M Li, E Garnero (2023), Global compilation of deep mantle anisotropy observations and possible correlation with low velocity provinces - Dataset, Harvard Dataverse, doi: 10.7910/DVN/EMJLDN.
1. **J Wolf**, DA Frost, MD Long, AO Aderoju, N Creasy, E Garnero, E Bozdog (2022), Observations of mantle seismic anisotropy using array techniques: shear-wave splitting of beamformed SmKS phases – Additional dataset, Zenodo; doi: 10.5281/zenodo.7299651.

IV. Manuscripts in revision/review (*=advisee)

3. A Sun*, **J Wolf**, B Romanowicz, E Garnero, JD West, Uniform automated analysis of Sdiff splitting due to lowermost mantle anisotropy: Caveats and curated global dataset, preprint in review (EarthArXiv, doi: 10.31223/X5JB63).
2. PP Das*, HY Su, **J Wolf**, B Romanowicz, Seismic Evidence for an Ultralow Velocity Zone Beneath the Cape Verde Hotspot, preprint in review (EarthArXiv, doi: 10.31223/X5677B).
1. E Xu*, **J Wolf**, DA Frost, M Li, MD Long, Lowermost mantle anisotropy near Australia using array techniques: Deformation linked to large low velocity province and deep mantle upwelling, in review at Geophysical Research Letters.

V. More manuscripts in prep. (ask me if interested)

Teaching Experience

Spring 2024	The Geology of North America through its National Parks (EPS210) Teaching Fellow · Yale University · for undergrads
04/2023	Global Tectonics field trip to Oman (EPS 212) · Grad student helper · Yale University · for undergrads
02/2023	Seismology 101 crash course · Instructor · Yale University · for undergrads
06/2022	AxiSEM3D crash course · Instructor · Yale University · for Yale seismology group
06/2022	Introduction to seismology course · Instructor · Yale University · for undergrads
Spring 2022	Applied Numerical Methods for Differential Equations (ENAS441/ENAS748/MENG441) Teaching Fellow · Yale University · for grads and undergrads
Fall 2019	Introduction to Earth and Environmental Physics (Phys342) Teaching Fellow · Yale University · for grads and undergrads

Student Supervision and mentoring

Research advisor of the following graduate students:

2026-present **Daria Kuzovkova** · UC Santa Cruz

Research advisor of the following undergrads:

2025-present **Leo Pedersen** · UC Berkeley

2024-present **Alex Sun** · UC Berkeley · For Alex's first-authored publication, see above

2024-2025 **Jeren Gochyyeva** · UC Berkeley

2022-present **Ella Xu** · Yale University · For Ella's first-authored publication, see above

Summer 2022 **Paleena Amy** · Washington College

Summer 2022 **Daphne (Dede) Chapline** · Pomona College

2018 – 2019 **Freshmen mentor** · University of Münster

Fieldwork

2019-2024 **Seismometer monitoring/installing** · Yale University · In NH, MA and ME, USA
Mainly as part of the NEST array project · multiple times per year

2019 **Seismometer monitoring** · German Research Center for Geosciences · In Germany, Austria and Italy
As part of the AlpArray project

2018 **Seismics, Seismology, Magnetotellurics, Magnetics, GPR; joint analysis** · University of Münster
As part of an undergraduate field trip

2017 **Seismometer monitoring** · Yale University · In CT, USA
As part of the SEISConn project

Service

2026 - present **Alternate Representative to the EarthScope Consortium** · University of California, Santa Cruz

2024 - present **Proposal review panels**
French National Research Agency (France); European Research Council (European Union)

2022-2024 **Co-leader of Disability, Mental Health, and Chronic Illness working group** · Yale University, EPS Department

2022-2023 **IDEA (Inclusion, Diversity, Equity, Anti-racism) committee member** · Yale University, EPS Department

2021-2024 **Member of Disability, Mental Health, and Chronic Illness working group** · Yale University, Earth and Planetary Science (EPS) Department

2020-2022 **Geophysics colloquium student representative** · Yale University, EPS Department

2020 - present **Manuscript reviewer**
For AGU Advances; Earth and Planetary Science Letters; Geochemistry, Geophysics, Geosystems; Geophysical Journal International; Geophysical Research Letters; Journal of Geophysical Research: Solid Earth; Nature Communications; Nature Geoscience; Physics of Earth and Planetary Interiors; Scientific Reports; Seismica; Seismological Research Letters; Surveys in Geophysics; Science Advances; Tectonophysics

2018-2019 **Treasurer of Student Council** · University of Münster, Geophysics Department

2017-2019 **Member of Student Council** · University of Münster, Geophysics Department

Activities at scientific meetings

- AGU 2025 **Chair** · Seismic Anisotropy from Surface to Core, oral and poster session.
- EGU 2023 **Chair and co-convenor** · Physics-based earthquake modeling and engineering.
- AGU 2022 **Co-convenor** · Seismology Contributions: Structural Seismology 1-9.
- AGU 2022 **Co-Chair** · Seismology Contributions: Structural Seismology 1 (Oral), 8 (Poster), 9 (Poster).

Talks and Posters at scientific meetings (*=invited)

- AGU 2025 **Jonathan Wolf***, Talk: Constraints on Lowermost Mantle Dynamics From a Massive Seismic Dataset.
- CIG 2025 Fernando+(**Wolf**), Talk: Seismic modelling for the next generation of planetary science missions.
- SSA 2025 **Jonathan Wolf***, Talk: Seismic anisotropy suggests Pacific Plate motion change as cause of Hawaiian–Emperor Bend.
- CBRDG 2025 **Jonathan Wolf***, Talk: Constraints on the cause of the Hawaiian-Emperor Bend from seismic anisotropy. (Symposium in Cambridge, UK, celebrating Barbara Romanowicz's 75th birthday)
- AGU 2024 Xu+(**Wolf**), Talk: Lowermost Mantle Anisotropy Near Australia Estimated Using Array Techniques: Deformation Linked to Large Low Velocity Province and Deep Mantle Upwelling.
- AGU 2024 Garnero+(**Wolf**), Poster: Automated seismological data products from massive global earthquake waveform datasets.
- AGU 2024 **Wolf+**, Poster: Six million global *KS shear-wave splitting measurements uniformly processed with an optimized splitting toolkit, SplitRacer_4bigdata.
- AGU 2024 **Wolf+**, Poster: Lowermost mantle heterogeneity detected using seismic migration of diffracted S-waves.
- CBTO 2024 Fernando+(**Wolf**), Talk: High-frequency seismoacoustics simulations with AxiSEM3D
- SEDI 2024 **Jonathan Wolf**, Poster: Dynamics and structure of the lowermost mantle beneath North America and the surrounding regions
- LPSC 2024 Nunn+(**Wolf**), Poster: Global-scale seismic modeling for the next generation of planetary science missions
- AGU 2023 **Jonathan Wolf***, Talk: Deformation near ultralow velocity material in the deep mantle.
- AGU 2023 Xu+(**Wolf**), Poster: Investigating lowermost mantle anisotropy near Australia using a beamforming approach.
- AGU 2023 Löberich+(**Wolf**), Poster: Shear Wave Splitting Characteristics of Aligned Partial Melt Configurations in Subduction Zone Settings.
- AGU 2023 Aderoju+(**Wolf**), Poster: An Iterative Beamforming Methodology Applied to SmKS waves.
- GRS/GRC 2023 **Wolf & Long**, Poster: Probing lowermost mantle dynamics with observations of seismic anisotropy, (Gordon Research Seminar/Gordon Research Conference.)
- EGU 2023 **Wolf & Long**, Talk: Slab-driven transport of ultra-low velocity material in the deep mantle.

GAGE/SAGE 2023	Jonathan Wolf* , Talk: Probing lowermost mantle dynamics with observations of seismic anisotropy.
AGU 2022	Wolf+ , Talk: Slab-driven flow at the base of the mantle beneath the northeastern Pacific Ocean.
AGU 2022	Wolf+ , Poster: Reconciling observations of deep mantle anisotropy beneath the Pacific Ocean with predictions from mantle flow models.
AGU 2022	Löberich+ (Wolf) , Poster: Effects of Partial Melt in the Uppermost Mantle on SKS Splitting: Global Wavefield Simulations and potential Applications.
AGU 2022	Frazer+ (Wolf) , Poster: Improving Shear-wave Splitting Estimates with Multiple-taper Spectral Analysis.
EGU 2022	Wolf+ , Talk: Differential SKS-SKS splitting due to lowermost mantle anisotropy beneath Northern America from beamformed SmKS phases.
AGU 2021	Wolf+ , Poster: Improving resolution of mantle seismic anisotropy using array techniques: Shear wave splitting of beamformed SmKS phases.
AGU 2021	Aderoju+ (Wolf) , Talk: Documenting SmKS Slowness, Back Azimuth, and Travel Time Anomalies using Seismic Array Methodologies.
AGU 2021	Wolf+ , Poster: Constraining deep mantle anisotropy with shear wave splitting measurements: Challenges and new measurement strategies.
SFW 2021	Jonathan Wolf* , Talk: Using full-wave simulations to better understand lowermost mantle anisotropy (Seismology Frontiers Workshop, 2021, at Tokyo Tech).
AGU 2020	Wolf+ , Poster: Full-wave modeling of lowermost mantle anisotropy scenarios using AxiSEM3D.
EGU 2018	Wolf+ , Poster: Seismic anisotropy in the lowermost mantle beneath Iceland and implications for mantle flow.

Invited seminars and colloquia

2026	SeismoLab seminar at California Institute of Technology.
2025	Seminar at Utrecht University , Mantle dynamics from top to bottom.
2024	Colloquium at Zhejiang University , New insights into global deep Earth structure and dynamics from automated analyses of a massive seismic dataset.
2024	University of Southern California's Lithosphere Dynamics Seminar , New insights into global deep Earth structure and dynamics from automated analyses of a massive seismic dataset.
2024	Berkeley Seismo Lab Seminar , Automated, global analyses of deep Earth structure from a massive dataset: Preliminary results, data products, and ways forward.
2024	Seminar at UC Santa Cruz , Structures and dynamic processes in Earth's mantle from seismic anisotropy.
2024	Geological and Planetary Sciences Seminar at Caltech , Structures and dynamic processes in Earth's mantle from seismic anisotropy.
2023	Colloquium at Dublin Institute for Advanced Studies , New insights into deep mantle dynamics from seismic observations.
2023	Seismology seminar at Karlsruhe Institute of Technology , Full-wave modeling using AxiSEM3D.

- 2023 **Colloquium at Karlsruhe Institute of Technology**, Probing lowermost mantle dynamics with observations of seismic anisotropy.
- 2022 **Deep Earth Mini Symposium at University of Münster**, Probing lowermost mantle dynamics with observations of seismic anisotropy.
- 2022 **Geodynamics Seminar of GFZ Potsdam**, Inferring deep mantle dynamics from seismic anisotropy: New constraints and new directions.

Media coverage

- 2026 **ScienceDaily** · “Hidden forces are warping Earth deep beneath the surface” · <https://www.sciencedaily.com/releases/2026/04/260422044632.htm>
- 2026 **SciTechDaily** · “1,800 Miles Down: Scientists Uncover Mysterious Movements at the Edge of Earth’s Core” · <https://scitechdaily.com/1800-miles-down-scientists-uncover-mysterious-movements-at-the-edge-of-earths-core/>
- 2026 **Scienmag** · Science News · “Mantle Deformation Reveals Perm Anomaly Upwelling” · <https://scienmag.com/mantle-deformation-reveals-perm-anomaly-upwelling/>
- 2026 **Seismological Society of America** · News · “Global Map Shows Deep Mantle Deformation Is Linked to Subducted Slabs” · <https://www.seismosoc.org/news/global-map-shows-deep-mantle-deformation-is-linked-to-subducted-slabs>
- 2025 **Science** · News · “Ancient tectonic plates are oozing along Earth’s core” · <https://www.science.org/content/article/ancient-tectonic-plates-are-oozing-along-earth-s-core>
- 2024 **EOS** · “Seismology Helps Us Understand How Material Flows in Earth’s Deepest Mantle” · <https://eos.org/editors-vox/seismology-helps-us-understand-how-material-flows-in-earths-deepest-mantle>
- 2024 **Massachusetts Green High Performance Computing Center** · “Investigating Mantle Flow Through Analyses of Earthquake Wave Propagation” · www.mghpcc.org/project/investigating-mantle-flow-through-analyses-of-earthquake-wave-propagation/
- 2024 **Nature Geoscience** · Research briefing · “Ultralow velocity zone and deep mantle flow beneath the Himalayas are linked to a subducted slab” · <https://www.nature.com/articles/s41561-024-01387-4>
- 2024 **Phys.org** · “Researchers discover ultra-low velocity zone beneath the Himalayas” · www.phys.org/news/2024-03-ultra-velocity-zone-beneath-himalayas.html
- 2024 **Yale News** · “Revelations from deep beneath the Himalayas” · <https://news.yale.edu/2024/03/26/insights-outcomes-revelations-deep-beneath-himalayas>
- 2024 **Yale** · Department of Earth & Planetary Sciences: “Insights & Outcomes” · “Revelations from deep beneath the Himalayas” · www.earth.yale.edu/news/insights-outcomes-revelations-deep-beneath-himalayas
- 2023 **EarthScope** · Researcher Spotlight · “Probing Lowermost Mantle Dynamics with Observations of Seismic Anisotropy” · www.earthscope.org/app/uploads/2023/03/Wolf.pdf

Santa Cruz; July 1, 2026