

# Jonathan Wolf

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## Address

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## Education

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2019 – present	<b>PhD</b> · Geophysics · Yale University Advised by Prof. Maureen D. Long
2019 - 2021	<b>Master of Philosophy</b> · Earth Science · Yale University Advised by Prof. Maureen D. Long
2015 – 2019	<b>Bachelor of Science</b> · Geophysics · University of Münster, Germany Advised by Prof. Christine Thomas

## Appointments

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Upcoming	<b>Miller Institute Postdoctoral Scholar</b> · University of California, Berkeley · Advised by Weiqiang Zhu and Barbara Romanowicz
2019 – present	<b>Graduate student and teaching assistant</b> · Yale University
05/2019 – 06/2019	<b>Intern</b> · Seismology · German Research Center for Geosciences Potsdam Research focused on volcanos in Iceland using ambient noise tomography
05/2018 – 02/2019	<b>Student Assistant</b> · Seismology · University of Münster, Germany Research focused on lowermost mantle anisotropy beneath Iceland
09/2017 – 01/2018	<b>Intern</b> · Seismology · Yale University Research focused on lowermost mantle anisotropy beneath Iceland

## Honors and Recognition

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Upcoming	<b>Miller Institute Postdoctoral Fellowship</b> · \$321,000 in personal and research funds
05/2023	<b>Phillip M. Orville Prize</b> · Yale University · \$1000 'for an outstanding dissertation in the earth sciences'
05/2022	<b>Elias Loomis Prize</b> · Yale University · \$1000 'for excellence on studies of physics of the earth'
09/2017 – 01/2018	<b>Studienstiftung des deutschen Volkes scholarship</b> · ~ €7000 For research at Yale University
04/2016 – 02/2019	<b>Studienstiftung des deutschen Volkes scholarship</b> · ~ €27000 Germany's most prestigious scholarship, awarded to <0.5% of top students
10/2015 – 09/2016	<b>Deutschlandstipendium scholarship</b> · €3600 (€1800 deferred) For academic achievements, social engagement & social/family circumstances

## Publications

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### I. Peer-reviewed papers

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 Bozdog (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, 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 peer-reviewed)**

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**

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 review/revision**

6. M Li, **J Wolf**, E Garnero, MD Long, Flow and deformation in Earth's deepest mantle from geodynamic modeling and implications for seismic anisotropy, doi: 10.22541/essoar.171052495.57595075/v1, in review.
5. **J Wolf**, MD Long, Redistribution of low-velocity heterogeneities through subducted material in the deep mantle beneath North America, in review.
4. **J Wolf**, MD Long, M Li, E Garnero, Advances in mapping lowermost mantle convective flow with seismic anisotropy observations, in review.

3. **J Wolf**, MD Long, Splitting of ScS waves due to lowermost mantle anisotropy: Practical challenges and new global measurements, doi: 10.22541/au.169774188.89948976/v1 (preprint), in review.
2. DA Frost, E Garnero, N Creasy, E Bozdog, **J Wolf**, M Long, A Aderoju, Heterogeneous mantle effects on the behavior of SmKS waves and outermost core imaging, in review.
1. **J Wolf**, MD Long, T Nissen-Meyer, DA Frost, The expression of mantle seismic anisotropy in the global seismic wavefield, doi: 10.22541/essoar.168451055.50512317/v1 (preprint), in review.

#### **V. Manuscripts in preparation**

4. K Leng, C Haindl, B Fernando, W Eaton, **J Wolf**, L Ermert, J Muir, A Walker, A Szenicer, MD Long, J Thiyaalingam, T Nissen-Meyer, A versatile, efficient wavefield solver across scales and complexities: AxiSEM3D, in prep.
3. **J Wolf**, MD Long, DA Frost, AO Aderoju, E Garnero, Differential SKS-SKKS splitting due to lowermost mantle anisotropy beneath North America measured from beamformed SmKS phases, in prep.
2. F Link, **J Wolf**, MD Long, Upper mantle anisotropy beneath the Pacific Ocean from differential splitting intensity tomography, in prep.
1. E Xu, **J Wolf**, M Li, MD Long, Seismic anisotropy beneath Australia: Implications for flow near the edges of large-low velocity provinces, in prep.

#### **Teaching Experience**

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

#### **Student Supervision and mentoring**

**Research advisor** of the following undergrads:

2022-present **Ella Xu** · Yale University  
 Summer 2022 **Paleena Amy** · Washington College  
 Summer 2022 **Daphne (Dede) Chapline** · Pomona College

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

#### **Fieldwork**

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2019-2023	<b>Seismometer monitoring/installing</b> · Yale University · In NH, MA and ME, USA As part of the NEST array project
2019	<b>Seismometer monitoring</b> · 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

- 2021-present **Member of Disability, Mental Health, and Chronic Illness working group** · Yale University, Earth and Planetary Science (EPS) Department
- 2022-2023 **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
- 2020-2022 **Geophysics colloquium student representative** · Yale University, EPS Department
- 2019 - present **Manuscript reviewer**  
For Geophysical Journal International, JGR: Solid Earth, Physics of Earth and Planetary Interiors, 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

- EGU 2023 **Chair and co-convener** · Physics-based earthquake modeling and engineering.
- AGU 2022 **Co-convener** · 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)

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

#### Invited seminars and colloquia

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2024	<b>Seminar at UC Santa Cruz</b> , Structures and dynamic processes in Earth's mantle from seismic anisotropy.
2024	<b>Geological and Planetary Sciences Seminar at Caltech</b> , Structures and dynamic processes in Earth's mantle from seismic anisotropy.
2023	<b>Colloquium at Dublin Institute for Advanced Studies</b> , New insights into deep mantle dynamics from seismic observations.
2023	<b>Seismology seminar at Karlsruhe Institute of Technology</b> , Full-wave modeling using AxiSEM3D.
2023	<b>Colloquium at Karlsruhe Institute of Technology</b> , Probing lowermost mantle dynamics with observations of seismic anisotropy.
2022	<b>Deep Earth Mini Symposium at University of Münster</b> , Probing lowermost mantle dynamics with observations of seismic anisotropy.
2022	<b>Geodynamics Seminar of GFZ Potsdam</b> , Inferring deep mantle dynamics from seismic anisotropy: New constraints and new directions.

New Haven; March 14, 2024