

YAN YANG

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Updated on February 20, 2025

EDUCATION AND EMPLOYMENT

Scripps Postdoctoral Scholar	Scripps Institution of Oceanography, UCSD	2024-present
Ph.D. in Geophysics	California Institute of Technology Thesis: Imaging the Earth's near surface with dense seismic observation Advisors: Zhongwen Zhan, Robert Clayton, and Zachary Ross	2019-2024
Ph.D. Minor in Computational Science and Engineering	California Institute of Technology	2019-2024
M.S. in Geophysics	University of Science and Technology of China (USTC) Advisor: Huajian Yao	2016-2019
B.S. in Geophysics	University of Science and Technology of China (USTC) School of the Gifted Young	2012-2016

RESEARCH INTERESTS

My research focuses on imaging the Earth's subsurface and understanding the dynamic interactions between the solid Earth, hydrosphere, and cryosphere, with implications for near-surface geohazards and environmental processes. I leverage large seismic datasets and advanced techniques, such as **distributed acoustic sensing (DAS)** and **machine learning**, to gain new insights into these complex systems.

PUBLICATIONS

† *equal contribution*, * *corresponding author*

- **Peer-Reviewed Articles:**

17. Bird, E., Atterholt, J., Li, J., Biondi, E., Zhai, Q., Li, L., **Yang, Y.**, Fang, J., Wei, X., Hjørleifsdóttir, V., Klesh, A., Kamalov, V., Gunnarsson, T., & Zhan, Z. (2025). Constraining Dike Opening Models With Seismic Velocity Changes Associated With the 2023-2024 Eruption Sequence on the Reykjanes Peninsula. *AGU Advances*, 6(1), e2024AV001516. <https://doi.org/10.1029/2024AV001516>
16. Shen, Z. †, **Yang, Y.** †, Fu, X., Adams, K. H., Biondi, E., Zhan, Z. (2024). Fiber Seismic Sensing of Vadose Zone Soil Moisture. *Nature Communications*, <https://doi.org/10.1038/s41467-024-50690-6>
15. **Yang, Y.***, Clayton, R. W. (2024). Mapping Los Angeles Basin depth with Sp converted phases. *Geophysical Research Letters*, 51, e2024GL111135. <https://doi.org/10.1029/2024GL111135>
14. **Yang, Y.***, Zhan, Z., Karrenbach, M., Reid-McLaughlin A., Biondi, E., Wiens, D. A., Aster, R. C. (2024). Characterizing South Pole Firm Structure with Fiber Optic Sensing. *Geophysical Research Letters*, 51, e2024GL109183. <https://doi.org/10.1029/2024GL109183>

13. Lai, V. H., Miller, M. S., Jiang, C., **Yang, Y.**, Magrini, F., Zhan, Z., & McQueen, H. (2024). Passive Seismic Imaging of Urban Environments Using Distributed Acoustic Sensing: A Case Study from Melbourne, Australia. *The Seismic Record*, 4(4), 308-317. <https://doi.org/10.1785/0320240031>
12. Atterholt, J., Zhan, Z., **Yang, Y.**, & Zhu, W. (2024). Imaging the Garlock Fault Zone with a fiber: A limited damage zone and hidden bimaterial contrast. *Journal of Geophysical Research: Solid Earth*, 129, e2024JB028900. <https://doi.org/10.1029/2024JB028900>
11. **Yang, Y.***, Gao, A. F., Azizzadenesheli, K., Clayton, R. W., Ross, Z. E. (2023). Rapid Seismic Waveform Modeling and Inversion with Universal Neural Operators. *IEEE Transactions on Geoscience and Remote Sensing*, vol. 61, pp. 1-12, 2023, Art no. 5906712, <http://doi.org/10.1109/TGRS.2023.3264210>
10. **Yang, Y.***, Clayton, R. W. (2023). Shallow Seismicity in the Long Beach - Seal Beach, California Area. *Seismological Research Letters*, <https://doi.org/10.1785/0220220358>
9. Fang, J., **Yang, Y.**, Shen, Z., Biondi, E., Wang, X., Williams, E. F., et al. (2022). Directional Sensitivity of DAS and Its Effect on Rayleigh-Wave Tomography: A Case Study in Oxnard, California. *Seismological Research Letters*, 94(2A), 887–897. <https://doi.org/10.1785/0220220235>
8. Atterholt, J., Zhan, Z., & **Yang, Y.** (2022). Fault Zone Imaging With Distributed Acoustic Sensing: Body-To-Surface Wave Scattering. *Journal of Geophysical Research: Solid Earth*, 127(11), e2022JB025052. <https://doi.org/10.1029/2022JB025052>
7. **Yang, Y.***, Zhan, Z., Shen, Z., & Atterholt, J. (2022). Fault Zone Imaging With Distributed Acoustic Sensing: Surface-To-Surface Wave Scattering. *Journal of Geophysical Research: Solid Earth*, 127(6), e2022JB024329. <https://doi.org/10.1029/2022JB024329>
6. **Yang, Y.***, Atterholt, J. W., Shen, Z., Muir, J. B., Williams, E. F., & Zhan, Z. (2022). Sub-Kilometer Correlation Between Near-Surface Structure and Ground Motion Measured With Distributed Acoustic Sensing. *Geophysical Research Letters*, 49(1), e2021GL096503. <https://doi.org/10.1029/2021GL096503>
5. **Yang, Y.*†**, Gao, A. F. †, Castellanos, J. C. †, Ross, Z. E., Azizzadenesheli, K., & Clayton, R. W. (2021). Seismic Wave Propagation and Inversion with Neural Operators. *The Seismic Record*, 1(3), 126–134. <https://doi.org/10.1785/0320210026>
4. Li, Z., Shen, Z., **Yang, Y.**, Williams, E., Wang, X., & Zhan, Z. (2021). Rapid Response to the 2019 Ridgecrest Earthquake With Distributed Acoustic Sensing. *AGU Advances*, 2(2). <https://doi.org/10.1029/2021av000395>
3. Zhang, Z., Yao, H., & **Yang, Y.** (2020). Shear wave velocity structure of the crust and upper mantle in Southeastern Tibet and its geodynamic implications. *Science China Earth Sciences*, 63(9), 1278–1293. <https://doi.org/10.1007/s11430-020-9625-3>
2. **Yang, Y.**, Yao, H., Wu, H., Zhang, P., & Wang, M. (2020). A new crustal shear-velocity model in Southwest China from joint seismological inversion and its implications for regional crustal dynamics. *Geophysical Journal International*, 220(2), 1379–1393. <https://doi.org/10.1093/gji/ggz514>
1. **Yang, Y.**, Yao, H., Zhang, P., & Chen, L. (2018). Crustal azimuthal anisotropy in the trans-North China orogen and adjacent regions from receiver functions. *Science China Earth Sciences*, 61(7), 903–913. <https://doi.org/10.1007/s11430-017-9209-9>

AWARDS AND SCHOLARSHIPS

Scripps Postdoctoral Scholar Award	2024
AGU Outstanding Student Presentation Award	2023
GPS Award for Academic Excellence in Research, Caltech	2023
JpGU Outstanding Student Presentation Award	2023
GPS Graduate Fellowship, Caltech	2019

Laurel Scholarship for Graduate Students	2018
First Class Graduate Academic Scholarship	2016, 2017, 2018
Outstanding Undergraduate Graduates of USTC	2016
Outstanding Undergraduate Graduation Thesis	2016
Competition of Physics Research Experimentation of USTC (First Prize)	2015
Outstanding Freshman/Student Scholarship	2012, 2014

INVITED TALKS AND SEMINARS

EPS Department Colloquium, Harvard University	03/2025
Berkeley EPS Department Seminar, University of California, Berkeley	02/2025
International Symposium on Polar Sciences, Shanghai	11/2024
Berkeley Seismo Lab Seminar, University of California, Berkeley	10/2024
SeismoTea Seminar, University of Utah	10/2024
SSA Photonic Seismology Meeting	10/2024
SAGE/GAGE Community Science Workshop	06/2024
Geophysics Seminar, University of California, Los Angeles	04/2024
IGPP Geophysics Seminar, Scripps Institution of Oceanography, University of California, San Diego	01/2024
Lithospheric Dynamics Seminar, University of Southern California	01/2024
AGU Annual Meeting	12/2023
Geophysics Seminar, Stanford University	11/2023
Brown Bag Seminar, Caltech	11/2023
GMP Guest Seminar, Lawrence Livermore National Laboratory	06/2023
Japan Geoscience Union Meeting	05/2023

GRANTS

Scripps Postdoctoral Scholar Award	2024-2026
SSA Photonic Seismology Travel Grants	2024
USGS Award G22AP00067 , PI: Zhongwen Zhan	2022
DAS-based Vs30 mapping and fine-scale anatomy of the Ridgecrest earthquake ground motion	
Yan Yang contributed to the writing of the proposal and execution of the work.	
SCEC Award 22019 , PI: Robert Clayton	2022
Using Converted Phases to Image the Bottom of the Los Angeles Basin	
Yan Yang contributed to the writing of the proposal and execution of the work.	
SCEC Award 21034 , PI: Robert Clayton	2021
Seismicity Along the Newport-Inglewood Fault Using Dense Arrays	
Yan Yang contributed to the writing of the proposal and execution of the work.	

PROFESSIONAL SERVICE

Convener	SSA Annual Meeting	2025
	Session: Fiber-optic Sensing Applications in Seismology	
	AGU Annual Meeting	2024
	Session: Investigating Environmental Processes through Fiber-Optic Sensing	
Organizer	SSA Photonic Seismology	2024
	Session: Exploring the Frontier of Environmental Processes using Fiber-optic Sensing	
Organizer	Caltech Seismological Laboratory Seminar	2022

Reviewer Science Advances
 Geophysical Research Letters
 Journal of Geophysical Research: Solid Earth
 IEEE Transactions on Geoscience and Remote Sensing
 Geophysical Journal International
 Seismological Research Letters
 Bulletin of the Seismological Society of America
 Geophysics

TEACHING

Teaching Assistant	Seismology (Caltech Ge 162)	Spring 2023
	Geophysical Data Analysis and Seismic Imaging (Caltech Ge 165)	Fall 2021
	Earth and Environment (Caltech Ge 1)	Spring 2021
	Advances in Geophysics (USTC)	Fall 2017
Guest Lecturing	Fiber-optic seismology	Caltech, Fall 2021
	Environmental seismology	UCSD, Winter 2025

FIELD EXPERIENCE

Deployment of nodal arrays around the San Jacinto Fault, CA	11/2024
Deployments and retrievals of nodal seismometers in the San Fernando Valley, CA	10/2023
Deployment of soil moisture sensors in Ridgecrest, CA	10/2023
Deployment and maintenance of DAS in Ridgecrest, CA	2021-2024
Deployment and maintenance of DAS in Owens Lake, CA	2021-2023
Deployments and retrievals of nodal seismometers in the Los Angeles Basin, CA	06/2022

MEDIA COVERAGE

Caltech News, “Seismic Detectors Measure Soil Moisture Using Traffic Noise”, https://www.caltech.edu/about/news/seismic-detectors-measure-soil-moisture-using-traffic-noise	2024
SSA News, “Hundreds of Very Shallow Earthquakes Detected in California’s Long Beach and Seal Beach”, https://www.seismosoc.org/news/hundreds-of-very-shallow-earthquakes-detected-in-californias-long-beach-and-seal-beach/	2023
EOS Research Spotlights, “Fiber-Optic Cables Can Produce High-Resolution Underground Maps”, https://eos.org/research-spotlights/fiber-optic-cables-can-produce-high-resolution-underground-maps	2022