Hao Zhang

PhD Candidate · Geophysics

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Education

University of Southern California — *Los Angeles, CA*
Ph.D. in Geophysics — *2021 - present*
- Advisors: John E. Vidale & Yehuda Ben-Zion

Peking University — *Beijing, China*
B.S. in Geophysics — *2016 - 2020*
- Research Advisor: Xiaofei Chen

Hefei No.1 High School — *Hefei, China*
H.S.D. — *2013 - 2016*

Professional Appointments

2021 - Now **Research Assistant**, Department of Earth Sciences, USC
2020 - 2021 **Research Assistant**, Institute of Geophysics, China Earthquake Administration

Awards & Honors

Awards

2025 **Cecil H. and Ida M. Green Postdoctoral Fellowship**, IGPP, UCSD
Geophysics Option Postdoctoral Fellowship, Caltech

2024 **Earth Sciences Graduate Student Research Award**, USC

2023 **Earth Sciences Graduate Student Research Award**, USC

2020 **Distinguished Graduate**, PKU
Distinguished Graduate, Beijing City

2019 **Outstanding Researech Award**, PKU

2017 **May Fourth Scholarship**, PKU
Merit Student, PKU

Scientific Publications

In preparation

[11] **Zhang, H.** and Jordan, T. H., Searching for slow precursors to megathrust earthquakes

[10] **Zhang, H.** and Vidale, J. E., High-frequency energy radiation from the rupture complexity

[9] Wu, B., Li, B., **Zhang, H**., Huang, S. and Li, G., Nearfield strong-motion of the 2023 M7.8 Kahramanmaraş earthquake and implications for high-frequency radiation mechanisms

[8] **Zhang, H.** et al., Thermobaric controls on metagreywacke friction and implications for megathrust splay faulting

Under review

[7] Barbot, S., Guvercin, S. E., Zhang, L., **Zhang, H.** and Yang, Z., Thermobaric activation of fault friction (under review for *Geophys. Res. Lett.*)

[6] Zhang, S., Houston, H., Wang, B. and **Zhang, H.**, Mapping of absolute stresses around two California earthquakes reveals a very weak crust (under review for *Nature Geo.*)

Published

[5] **Zhang, H.**, Vidale, J. E. and Wang, W., 2025. Aftershocks on the planar rupture surface of the deep-focus Mw 7.9 Bonin Islands earthquake, *The Seismic Record*, **5**(1): 35–43, doi: 10.1785/0320240035

[4] **Zhang, H.**, Vidale, J. E. and Wang, W., 2024. Scattering evidence for an ancient subducted slab using the unique raypath P*PKP, *Geophys. Res. Lett.*, **51**, e2024GL110130, doi: 10.1029/2024GL110130

[3] **Zhang, H.** and Ben-Zion, Y., 2024. Enhancing regional seismic velocity model with higher-resolution local results using sparse dictionary learning, *J. Geophys. Res.*, **129**, e2023JB027016, doi: 10.1029/2023JB027016

[2] **Zhang, H.**, Meng, H. and Ben-Zion, Y., 2023. Lateral variations across the Southern San Andreas Fault Zone revealed from analysis of traffic signals at a dense seismic array, *Geophys. Res. Lett.*, **50**, e2023GL103759, doi: 10.1029/2023GL103759

[1] Wang, L., Zhou, Y., Zhou, S. and **Zhang H.**, 2023. Detection of fault zone head waves and the fault interface imaging in the Xianshuihe-Anninghe Fault Zone (Eastern Tibetan Plateau). *Geophys. J. Int.*, **234**(2), 1000-1100, doi: 10.1093/gji/ggad131

Non-peer reviewed

(i) **Zhang, H.**, 2020. Frequency-Bessel Transform Method to Extract Higher-Mode Rayleigh Dispersion Curves, B.S. Thesis, *Peking University*

Talks & Conference Contributions

Invited Talks

05/2025 **Seismo Lab Brown Bag Seminar**, Caltech
02/2025 **Geophysics Seminar**, UCLA
07/2023 **euSCI Geophysics Seminar**, PKU

Conference Talks

Zhang, H., 12/2024. A broken mirror in the mantle: seismic scattering evidence for an ancient subducted slab and its long-term stagnation. AGU Fall meeting, Washington, D.C.

Zhang, H., 12/2019. A New Method to Detect and Pick the Fault Zone Head Wave Arrivals and its Application in Xiaojiang Fault Zone of West-Southern China. AGU Fall meeting, San Francisco, CA

Teaching Experience

2022 **Crises of a Planet**, Teaching Assistant *USC*
2019 **The Earth Gravity Field**, Teaching Assistant *PKU*

Outreach & Service

Professional Service

2024-2025 **Lithospheric Dynamics Seminar Committee**, member *USC*

Project Involvement

China Array The China Array project is designed to establish systematic broadband seismic observations across the entire mainland of China. It operates in multiple stages and is divided into seven geographic regions based on the country's tectonic framework. In 2019, I participated in the deployment of the China Array in Northeast China.

Fault Scan This project seeks to transform our ability to directly observe transient deformation within the core of active faults. From 2021 to 2024, I participated in the deployment and maintenance of a dense 2D seismic array focused on the San Jacinto Fault.

Rock Friction Database In collaboration with Prof. Sylvain Barbot, we aim to develop a database of frictional properties of natural samples by conducting experiments across a range of thermobaric conditions. This effort seeks to enhance our understanding of the factors governing the behavior of earthquakes.

Media Coverage

01/2025 **Aftershock analysis challenges world's deepest earthquake claim**, *SSA*