

# Hao Zhang

PHD CANDIDATE · GEOPHYSICS

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## Education

### University of Southern California

Los Angeles, CA

PH.D. IN GEOPHYSICS

2021 - 2025

- Advisors: John E. Vidale & Yehuda Ben-Zion

### Peking University

Beijing, China

B.S. IN GEOPHYSICS

2016 - 2020

- Research Advisor: Xiaofei Chen

## Professional Appointments

2021 - 2025 **Graduate Research Assistant**, Department of Earth Sciences, USC

2020 - 2021 **Research Assistant**, Institute of Geophysics, China Earthquake Administration

## Awards & Honors

### AWARDS

2025	<b>Cecil H. and Ida M. Green Postdoctoral Fellowship</b> , UCSD	<i>Declined</i>
	<b>Geophysics Option Postdoctoral Fellowship</b> , Caltech	<i>\$150,000</i>
2024	<b>Earth Sciences Graduate Student Research Award</b> , USC	<i>\$3,000</i>
2023	<b>Earth Sciences Graduate Student Research Award</b> , USC	<i>\$3,000</i>
2020	<b>Distinguished Graduate</b> , PKU	
	<b>Distinguished Graduate</b> , Beijing City	
2019	<b>Outstanding Research Award</b> , PKU	
2017	<b>May Fourth Scholarship</b> , PKU	
	<b>Merit Student</b> , PKU	

## Scientific Publications

### IN PREPARATION

- [11] **Zhang, H.** & Jordan, T. H., Searching for slow precursors to megathrust earthquakes
- [10] Wu, B., Li, B., **Zhang, H.**, Huang, S., Li, G. & Gabriel, A.-A., Near-fault Strong-motion of the 2023 Mw7.8 Kahramanmaraş Earthquake: Insights into High-frequency Radiation Mechanisms
- [9] **Zhang, H.**, Barbot, S., Yang, Z., Zhang, L., Liu, M. & Platt, J., Large megathrust earthquakes in cold mantle wedge corners under lawsonite blueschist facies

### UNDER REVIEW

- [8] **Zhang, H.** & Vidale, J. E., Earthquake high-frequency energy radiation scales with rupture complexity (submitted)
- [7] Zhang, S., Houston, H., Wang, B. & **Zhang, H.**, Mapping of absolute stresses around two California earthquakes reveals a very weak crust (under review for *Nature Communications*)

## PUBLISHED

- [6] Barbot, S., Güvercin, S. E., Zhang, L., **Zhang, H.** & Yang, Z., Thermobaric activation of fault friction (accepted by *Geophys. Res. Lett.*)
- [5] **Zhang, H.**, Vidale, J. E. & 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. & 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.** & 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. & 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. & **Zhang, H.**, 2023. Detection of fault zone head waves and the fault interface imaging in the Xi-anshuihe-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*
- (ii) **Zhang, H.**, 2025. Dynamics and Structure of Subduction Zones Unveiled through Novel Seismic Techniques, Ph.D. Thesis, *Peking University*

## Talks & Conference Contributions

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### INVITED TALKS

- 05/2025 **Seismo Lab Brown Bag Seminar**, Caltech
- 03/2025 **Geophysics and Tectonics 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

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

## Outreach & Service

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### PROFESSIONAL SERVICE

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

### PROJECT INVOLVEMENT

- ChinArray** 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 ChinArray Phase IV in Northeast China.
- FaultScan** 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 fault gauges 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](#)