

Liuwei Xu

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APPOINTMENTS

Postdoctoral Scholar Research Associate in Geophysics, June, 2026 - Present
Seismological Laboratory, Division of Geological and Planetary Science,
California Institute of Technology, Pasadena, USA

EDUCATION

Ph.D. in Geophysics and Space Physics, Sep 30, 2020 - Dec 12, 2025
University of California-Los Angeles, Los Angeles, USA

B.S. in Geophysics, Sep 1, 2016 - July 1, 2020
Zhejiang University, Hangzhou, China

PUBLICATIONS

- **Xu, L.**, Meng, L., Yunjun, Z., Yang, Y., Wang, Y., Hu, C., Weng, H., Xu, W., Su, E., Ji, C. (2025). Bimaterial Effect and Favorable Energy Ratio Enabled Supershear Rupture in the 2025 Mandalay Earthquake. *Science*, (on cover), 390,476-481. <https://www.science.org/doi/10.1126/science.ady6100>
- **Xu, L.**, Meng, L., & Chu, R. (2025). PKIKP phase back-projection and its application on southern hemisphere earthquake imaging. *Journal of Geophysical Research: Solid Earth*, 130, e2025JB031667. <https://doi.org/10.1029/2025JB031667>
- **Xu, L.**, Meng, L., Xu, W., Lin, Y.-Y., Geng, J., Mohanna, S., & Kawamoto, G. (2025). Unzipping of the conjugate fault system during the 2024 Mw7.4 Hualien earthquake. *Geophysical Research Letters*, 52, e2025GL115218. <https://doi.org/10.1029/2025GL115218>
- **Xu, L.**, Ji, C., Meng, L., Ampuero, J.-P., Yunjun, Z., Mohanna, S., Aoki, Y. (2024). Dual-Initiation Ruptures in the 2024 Noto Earthquake Encircling a Fault Asperity at a Swarm Edge. *Science*, (on cover), 385,871-876. <https://doi.org/10.1126/science.adp0493>
- **Xu, L.**, Yunjun, Z., Ji, C., Meng, L., Fielding, E. J., Zinke, R., & Bao, H. (2023). Understanding the rupture kinematics and slip model of the 2021 Mw 7.4 Maduo earthquake: A bilateral event on bifurcating faults. *Journal of Geophysical Research: Solid Earth*, 128, e2022JB025936. <https://doi.org/10.1029/2022JB025936>
- **Xu, L.**, Mohanna, S., Meng, L., Ji, C., Ampuero, J.-P., Yunjun, Z., Hasnain, M., Chu, R., Liang, C. (2023). The overall-subshear and multi-segment rupture of the 2023 Mw7.8 Kahramanmaraş, Turkey earthquake in millennial supercycle. *Communications Earth & Environment*, 4, 379. <https://doi.org/10.1038/s43247-023-01030-x>
- Bao, H.,† **Xu, L.**,†(co-first author), Meng, L., Ampuero, J.-P., Gao, L., Zhang, H. (2022). Global frequency of oceanic and continental supershear earthquakes. *Nature Geoscience*, 15, 942–949. <https://doi.org/10.1038/s41561-022-01055-5>
- Calais, E., Symithe, S., Monfret, T., Delouis, B., Lomax, A., Courboux, F., ... & **Xu, L.**, Meng, L. (2022). Citizen seismology helps decipher the 2021 Haiti earthquake. *Science*, eabn1045. <https://www.science.org/doi/full/10.1126/science.abn1045>
- Xie, Y., Meng, L., Zhou, T., **Xu, L.**, Bao, H., & Chu, R. (2022). The 2021 Mw 7.3 East Cape earthquake: Triggered rupture in complex faulting revealed by multi-array back-projections. *Geophysical Research Letters*, 49, e2022GL099643. <https://doi.org/10.1029/2022GL099643>

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HONORS & AWARDS

- Outstanding Reviewer of AGU Journal, GRL 2025
- UC President's Dissertation Year Award 2024-2025
- John W. West Research Award of UCLA 2024
- Seismological Society of America (SSA) Travel Grant for Graduate Students 2024
- School on Subduction Zone Processes 2023 Travel Grant 2023
- 3rd Prize of National Mathematics Competition for College Students 2019
- Shizhe-Suya Award, School of Earth Sciences, Zhejiang University 2019
- Outstanding Student Scholarship for Second Prize in Academic, Zhejiang University 2018

INVITED TALK AND SEMINARS

- Invited Talk, China University of Geosciences, 11/2025
- Brown Bag Seminar, California Institute of Technology, 08/2025
- euSCI Geophysics Seminar, Peking University, 12/2024
- School of Geosciences and Info-Physics Seminar, Central South University, 12/2024
- School of Earth Sciences Seminar, Zhejiang University, 12/2024
- Youth Forum, China Earthquake Administration, 09/2024 and 10/2025
- Lithospheric Dynamics Seminar Series, University of Southern California, 11/2023
- School of Earth Sciences Seminar, Zhejiang University, 08/2023
- School of Earth and Ocean Sciences Seminar, Tongji University, 08/2023

CONFERENCE PRESENTATIONS

- The 2024 Mw 7.4 Hualien Earthquake Fills Seismic Gap On the Longitudinal Valley Fault in Taiwan. AGU fall meeting, 2024. Washington, D.C., USA. Poster presentation.
- Dual-initiation ruptures in the 2024 Mw 7.5 Noto, Japan earthquake encircling a fault asperity at a swarm edge. Statewide California Earthquake Center annual meeting, 2024. Palm Springs, CA, USA. Poster presentation.
- Decoding Ruptures of the 2023 Mw 7.8 and Mw 7.5 Kahramanmaraş Earthquake Doublet: Insights from Seismic and Geodetic Analysis. SSA annual meeting, 2024. Anchorage, AK, USA. Poster presentation.
- Imaging Southern Hemisphere Subduction Zone Earthquakes With Core Phase Back-Projection. School on Subduction Zone Processes 2023. Cargese, France. Poster presentation.
- Decoding Ruptures of the 2023 Mw 7.8 and Mw 7.5 Kahramanmaraş Earthquake Doublet: Insights from Seismic and Geodetic Analysis. AGU fall meeting, 2023. San Francisco, CA, USA. Poster presentation.
- Imaging large earthquakes in the southern hemisphere with core-phase back-projections. AGU fall meeting, 2022. Chicago, IL, USA. Poster presentation.
- Kinematic rupture history of the 2021 M7.3 Madoi earthquake in Qinghai. AGU fall meeting, 2021. Online. Poster presentation.

MEMBERSHIP

American Geophysical Union (AGU), 2020-present
Statewide California Earthquake Center (SCEC), 2019-present
Seismological Society of America (SSA), 2022-present

TEACHING EXPERIENCE

Teaching Fellow: Remote Sensing in Earth Science (EPS-SCI 150, UCLA, Fall 2024)
Teaching Associate: Introduction to Earth Science (EPS-SCI 1, UCLA, Fall 2023)

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Teaching Assistant: Earthquake (EPS-SCI 8, UCLA, Winter 2021, Fall 2022, Winter 2024)

PROFESSIONAL SERVICE AND OUTREACH

Guest Editor: Remote Sensing

Reviewer: Science Advances, JGR: Solid Earth, GRL, GJI, Seismica.

Volunteer/organizer: Explore Your University (a volunteer-run science fair for all ages that brings in thousands of participants from the greater LA area), Special Outreach Event for the South LA Science Academy.

DETAILED RESEARCH EXPERIENCE

Global supershear earthquake observation 2019.7-2022.6

Research Assistant, EPSS, UCLA

Advisor: Prof. Lingsen Meng

- Workflow development that enables automatic download and pre-processing of seismic data.
- Analyzed rupture processes of shallow strike-slip events around the globe since 2000.
- Identify 4 oceanic supershear earthquakes for the first time, and make an estimation for the supershear rate in shallow strike-slip earthquakes (14%).

Joint inversion and BP analysis for global devastating earthquakes 2021.6-present

Research Assistant, EPSS, UCLA

Advisor: Prof. Lingsen Meng and Chen Ji

- Performed joint finite fault inversion and back-projection for global devastating earthquakes.
- Analyzed rupture kinematic and source physics for the 2021 Mw 7.4 Maduo, 2023 Mw 7.8 Turkey, and 2024 Mw 7.5 Noto earthquakes.

Core phase BP

2020.9-2025.9

Research Assistant, EPSS, UCLA

Advisor: Prof. Lingsen Meng

- Expanded the applicable range of Back-Projections by introducing core phase approach
- The new method is useful in imaging earthquakes in the southern hemisphere, which fall beyond the useful range of traditional BPs.

Supershear rupture simulation

2023.9-present

Research Assistant, EPSS, UCLA

Advisor: Prof. Lingsen Meng and Jean-Paul Ampuero

- Performed dynamic simulations on supershear earthquake cycles.
- Explore the friction laws and material properties controlling the occurrence of supershear earthquakes.

Mantle transition zone imaging

2020.1-2021.1

Undergraduate Research Assistant, School of Earth Sciences, ZJU

Advisor: Prof. Yunfeng Chen

- Image mantle transition zone depth and thickness under West Canada and Northwest US with receiver function method.