Liuwei Xu

Email: xuliuw1997@ucla.edu

UCLA, LA, CA, 90095 , USA *(+1) 4244409272*

EDUCATION

Ph.D. in Geophysics and Space Physics, Sep 30, 2020 - Dec 12, 2025
(Defense Date : Aug 18, 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 millennia 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., Courboulex, 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

HONORS & AWARDS

- 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

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

PROFESSIONAL SERVICE AND OUTREACH

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.

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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.