

Wenyuan Fan

Institute of Geophysics and Planetary Physics
Scripps Institution of Oceanography, UC San Diego
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October 24, 2025

RESEARCH INTERESTS

I am interested in earthquakes and environmental seismic events. My research aims to understand these events using novel imaging techniques, dense seismic arrays, numerical modeling, and both onshore and offshore geophysical data collection.

Key Words: Earthquake seismology, Array Seismology, Environmental Seismology, Marine Geophysics, Earthquake Source Kinematic and Dynamic Processes, Earthquake Interaction and Triggering, Waveform Modeling, Subduction Zones

EDUCATION

University of California, San Diego, Ph.D. (Geophysics)	2017
Peking University, M.S. (Geophysics)	2011
Peking University, B.S.	2008

RESEARCH POSITIONS

Professor of Geophysics	07/2025–present
Associate Professor of Geophysics	07/2023–06/2025
Assistant Professor of Geophysics	07/2020–06/2023
Scripps Institution of Oceanography	
University of California, San Diego, La Jolla, CA 92093	
Assistant Professor of Geophysics	01/2019–06/2020
Florida State University, Tallahassee, FL 32306	
Postdoctoral Scholar	09/2017–12/2018
Woods Hole Oceanographic Institution, Woods Hole, MA 02543	

AWARDS

AGU Keiiti Aki Early Career Award	2022
NSF CAREER Award	2022
James Postdoctoral Scholar Funds for Research	2018
2017 China Scholarship Council Award	2018
Woods Hole Oceanographic Institution Postdoctoral Scholarship	2017
Lamont-Doherty Earth Observatory Postdoctoral Fellowship (declined)	2017
AGU Outstanding Student Paper Award (2016)	2017
Founder Scholarship, Peking University	2010
Second Prize, Graduate Student Fellowship, Peking University	2010
First Prize, Graduate Student Fellowship, Peking University	2008-2009
Undergraduate Research Fellowship, Peking University	2007
Second Prize, Geophysical Scholarship of Chinese Academy of Sciences	2006-2007

MENTEES

Postdoctoral Scholars: Haoran Meng (09/2019–09/2021); Jianhua Gong (02/2021–12/2022); Tianze Liu (01/2021–01/2023); Zhe Jia (06/2022–05/2024); Yan Yang (08/2024–present); Fengzhou Tan (10/2024–present)

Ph.D. Students: Nicolas DeSalvio (09/2021–present); Ian Vandeventer (09/2021–present); W.C. Jeremy Wong (09/2021–present); Jing Ci Neo (09/2020–09/2022); Harrison Burnett (07/2023–present); Shaojing Xie (09/2025–present)

MS Students: Xinyu Luo (09/2019–09/2022)

Visiting Scholars: Ryo Okuwaki (09/2019–12/2019; 11/2022–12/2022)

Undergraduate Students: Cameron Wang (01/2021–10/2021); Harrison Burnett (01/2022–07/2023); Jeffrey Nguyen (01/2023–03/2023); Grace Atkisson (01/2023–06/2023); Justine Kroll (06/2024–12/2024); Lisette Ochoa (04/2025–present)

PUBLICATIONS

59. Shearer P. M., **W. Fan**, S. Wei, and C. Rychert, Reflection seismic profiling of mantle structure under the contiguous United States from ambient noise cross-correlation, *Geophys. J. Int.*, 2025.
58. Miao, Y., Y. Huang, J.C. Neo, **W. Fan**, and Z. J. Spica, Assessing the applicability of distributed acoustic sensing in rupture imaging: a case study with the 2022 Michoacán earthquake, *Geophys. J. Int.*, 2025.
57. Yang, Y., **W. Fan**, M. D. Behn, S. B. Das, and J. J. McGuire, Seismic evidence of widespread sediments beneath the Greenland Ice Sheet, *Geology*, 2025.
56. Hardebeck, J. L., N. D. DeSalvio, **W. Fan**, and A. J. Barbour, False positives in the identification of dynamic earthquake triggering, *J. Geophys. Res.: Solid Earth*, 2025.
55. Abercrombie, R. E. et al., Overview of The SCEC/USGS Community Stress Drop Validation Study Using the 2019 Ridgecrest Earthquake Sequence, *Bull. Seism. Soc. Am.*, doi: 10.1785/0120240158, 2025.
54. Jia, Z., **W. Fan**, W. Mao, P. M. Shearer, and D. A. May, Dual mechanism transition controls rupture development of large deep earthquakes, *AGU Advances*, doi: 10.1029/2025AV001701, 2025.
53. Ingale, V. V., R. Parnell-Turner, **W. Fan**, P. J. Talling, and J. Neasham, Hydroacoustic signals recorded by CTBTO network suggest a possible submarine landslide in Trou Sans Fond Canyon, offshore Ivory Coast, March 2024, *Seismological Research Letters*, doi: 10.1785/0220240448, 2025.
52. DeSalvio, N. D., A. J. Barbour, and **W. Fan**, Examining the role of elevated and sustained strain in dynamically triggering earthquakes on Anza section of the San Jacinto Fault, *Bull. Seism. Soc. Am.*, doi: 10.1785/0120240079, 2025.
51. Anderson, E. C., R. Parnell-Turner, R. A. Sohn, and **W. Fan**, Deformation on Rainbow Massif, Mid-Atlantic Ridge, illuminated with microearthquakes detected by machine learning, *Geophys. Res. Lett.*, doi: 10.1029/2024GL111285, 2024.

50. Shearer, P. M., I. C. Vandeventer, **W. Fan**, R. E. Abercrombie, D. Bindi, G. Calderoni, X. Chen, W. Ellsworth, R. Harrington, Y. Huang, T. Knudson, M. Robach, M. Supino, C. Satriano, D. T. Trugman, and J. Zhang, Earthquake source spectra estimates vary widely for two Ridgecrest aftershocks because of differences in attenuation corrections, *Bull. Seism. Soc. Am.*, doi: 10.1785/01202401340, 2024.
49. Kutschera, F., Z. Jia, B. Oryan, J.W.C. Wong, **W. Fan**, and A. A. Gabriel, The Multi-Segment Complexity of the 2024 Mw 7.5 Noto Peninsula Earthquake Governs Tsunami Generation, *Geophys. Res. Lett.*, doi: 10.1029/2024GL109790, 2024.
48. Vandeventer I. C., P. M. Shearer, and **W. Fan**, Ridgecrest aftershock stress drops from P- and S-wave spectral decomposition, *Bull. Seism. Soc. Am.*, doi: 10.1785/0120240133, 2024.
47. Wong, J. W.C., **W. Fan**, and A. A. Gabriel, A quantitative comparison and validation of finite-fault models: The 2011 Tohoku-Oki earthquake, *J. Geophys. Res.: Solid Earth*, doi: 10.1029/2024JB029212, 2024.
46. Burnett, H. J. and **W. Fan**, Imaging microearthquake rupture processes using a dense array in Oklahoma, *Seismica*, doi: 10.26443/seismica.v3i2.1354, 2024.
45. Lin, G. and **W. Fan**, Spatiotemporal variations of in situ V_p/V_s ratios during the 2019 Ridgecrest earthquake sequence suggest fault zone condition changes, *Geophys. Res. Lett.*, doi: 10.1029/2024GL109171, 2024.
44. Gong, J., **W. Fan**, and R. Parnell-Turner, Machine learning-based new earthquake catalog illuminates on-fault and off-fault seismicity patterns at the Discovery Transform Fault, East Pacific Rise, *Geochemistry, Geophysics, Geosystems*, doi: 10.1029/2023GC011043, 2023.
43. Jia, Z., Z. Jin, M. Marchandon, T. Ulrich, A.A. Gabriel, **W. Fan**, P. M. Shearer, X. Zou, J. Rekoske, F. Bulut, A. Garagon, and Y. Fialko, The complex dynamics of the 2023 Kahramanmaraş, Turkey, Mw 7.8–7.7 earthquake doublet, *Science*, doi: 10.1126/science.adi0685, 2023.
42. **Fan W.**, Combining Love and Rayleigh waves in detecting and locating seismic sources, *Geophys. J. Int.*, doi: 10.1093/gji/ggad250, 2023.
41. DeSalvio, N. D. and **W. Fan**, Ubiquitous earthquake dynamic triggering in southern California, *J. Geophys. Res.: Solid Earth*, doi: 10.1029/2023JB026487, 2023.
40. Shearer, P. M. and **W. Fan**, Space–Time Asymmetry in Earthquake Pairs along the Central San Andreas Fault: Evidence for Small Earthquake Links at Long Distances, *The Seismic Record*, doi: 10.1785/0320230002, 2023.
39. Liu, T., J. Gong, **W. Fan**, and G. Lin, In-situ V_p/V_s ratio reveals fault-zone material variation at the westernmost Gofar transform fault, East Pacific Rise,

- J. Geophys. Res.: Solid Earth*, doi: 10.1029/2022JB025310, 2023.
38. Luo, X., **W. Fan**, and Y. Fialko, A joint seismic and space-based investigation of the 2016 Lamplugh Glacier and 2017 Wrangell Mountains (Alaska) landslides, *J. Geophys. Res.: Earth Surface*, doi: 10.1029/2022JF006903, 2023.
 37. Shearer, P. M., H. Meng, and **W. Fan**, Earthquake detection using a nodal array on the San Jacinto fault in California: Evidence for high foreshock rates preceding many events, *J. Geophys. Res.: Solid Earth*, doi: 10.1029/2022JB025279, 2022.
 36. Gong, J. and **W. Fan**, Seismicity, fault architecture, and slip mode of the westernmost Gofar transform fault, *J. Geophys. Res.: Solid Earth*, doi: 10.1029/2022JB024918, 2022.
 35. Neo, J.C., **W. Fan**, Y. Huang, and D. Dowling, Frequency-difference backprojection of earthquakes, *Geophys. J. Int.*, doi: 10.1093/gji/ggac323, 2022.
 34. **Fan, W.**, R. Okuwaki, A. J. Barbour, Y. Huang, G. Lin, and E. S. Cochran, Fast rupture of the 2009 Mw 6.9 Canal de Ballenas earthquake in the Gulf of California dynamically triggers seismicity in California, *Geophys. J. Int.*, 10.1093/gji/ggac059, 2022.
 33. **Fan, W.**, A. J. Barbour, J. J. McGuire, Y. Huang, G. Lin, E. S. Cochran, and R. Okuwaki, Very low frequency earthquakes in between the seismogenic and tremor zones in Cascadia?, *AGU Advances*, 10.1029/2021AV000607, 2022.
 32. Gong, J., **W. Fan**, and R. Parnell-Turner, Microseismicity indicates atypical small-scale plate rotation at the Quebrada transform fault system, East Pacific Rise, *Geophys. Res. Lett.*, 10.1029/2021GL097000, 2022.
 31. Okuwaki, R. and **W. Fan**, Oblique convergence causes both thrust and strike-slip ruptures during the 2021 M 7.2 Haiti earthquake, *Geophys. Res. Lett.*, doi: 10.1029/2021GL096373, 2022.
 30. Okuwaki, R., S. Hicks, T. Craig, **W. Fan**, S. Goes, T. Wright, and Y. Yagi, Illuminating a Contorted Slab with a Complex Intralab Rupture Evolution during the 2021 Mw 7.3 East Cape, New Zealand Earthquake, *Geophys. Res. Lett.*, doi: 10.1029/2021GL095117, 2021.
 29. Lin, G., V. A. Huerfano, and **W. Fan**, Crustal architecture of Puerto Rico using body-wave seismic tomography and high-resolution earthquake relocation, *Seismol. Res. Lett.*, doi: 10.1785/0220210223, 2021.
 28. Meng, H. and **W. Fan**, Immediate foreshocks indicating cascading rupture developments for 527 M 0.9 to 5.4 Ridgecrest earthquakes, *Geophys. Res. Lett.*, doi: 10.1029/2021GL095704, 2021.

27. Okuwaki, R., **W. Fan**, M. Yamada, H. Osawa, and T.J. Wright, Identifying landslides from continuous seismic surface waves: a case study of multiple small-scale landslides triggered by Typhoon Talas, 2011, *Geophys. J. Int.*, doi:/10.1093/gji/ggab129, 2021.
26. **Fan, W.**, A. J. Barbour, E. S. Cochran, and G. Lin, Characteristics of frequent dynamic triggering of microearthquakes in Southern California, *J. Geophys. Res.*, doi: 10.1029/2020JB020820, 2020.
25. **Fan, W.**, J. J. McGuire, and P. M. Shearer, Abundant spontaneous and dynamically triggered submarine landslides in the Gulf of Mexico, *Geophys. Res. Lett.*, doi: 10.1029/2020GL087213, 2020.
24. ten Brink, U., Y. Wei, **W. Fan**, J. Granja-Bruña, and N. Miller, Mysterious tsunami in the Caribbean Sea following the 2010 Haiti earthquake possibly generated by dynamically triggered early aftershocks, *Earth Planet. Sci. Lett.*, doi: 10.1016/j.epsl.2020.116269, 2020.
23. **Fan, W.**, J. J. McGuire, C. D. de Groot-Hedlin, M. A.H. Hedlin, S. Coats, and J. W. Fiedler, Stormquakes, *Geophys. Res. Lett.*, 46(22), 12909-12918, doi: 10.1029/2019GL084217, 2019.
22. Neely, J. S., Y. Huang, and **W. Fan**, Earthquake rupture characteristics along a developing transform boundary, *Geophys. J. Int.*, 219(2), 1237-1252, doi: 10.1093/gji/ggz357, 2019.
21. **Fan, W.**, S. S. Wei, D. Tian, J. J. McGuire and D. A. Wiens, Complex and diverse rupture processes of the 2018 Mw 8.2 and Mw 7.9 Tonga–Fiji deep earthquakes, *Geophys. Res. Lett.*, 46(5), 2434-2448, doi: 10.1029/2018GL080997, 2019.
20. **Fan, W.**, C. D. de Groot-Hedlin, M. A.H. Hedlin, and Z. Ma, Using surface waves recorded by a large mesh of three-element arrays to detect and locate disparate seismic sources, *Geophys. J. Int.*, 215(2), 942-958, doi: 10.1093/gji/ggy316, 2018.
19. **Fan, W.** and J. J. McGuire, Investigating microearthquake finite source attributes with IRIS Community Wavefield Demonstration Experiment in Oklahoma, *Geophys. J. Int.*, 214(2), 1072-1087, doi: 10.1093/gji/ggy203, 2018.
18. **Fan, W.** and P. M. Shearer, Coherent seismic arrivals in the P-wave coda of the 2012 Mw 7.2 Sumatra earthquake: water reverberations or an early aftershock?, *J. Geophys. Res.*, 123(4), 3147-3159, doi: 10.1002/2018JB015573, 2018.
17. **Fan, W.**, D. Bassett, J. Jiang, P. M. Shearer, and C. Ji, Rupture evolution of the 2006 Java tsunami earthquake and the possible role of splay faults, *Tectonophysics*, 721, 143-150, doi: 10.1016/j.tecto.2017.10.003, 2017.
16. **Fan, W.** and P. M. Shearer, Investigation of back-projection uncertainties with M6 earthquakes, *J. Geophys. Res.*, 122(10), 7966-7986, doi: 10.1002/2017JB014495,

2017.

15. **Fan, W.** and P. M. Shearer, Local near instantaneously dynamically triggered aftershocks of large earthquakes, *Science*, 353, 1133-1136, doi: 10.1126/science.aag0013, 2016.
14. **Fan, W.**, P. M. Shearer, C. Ji, and D. Bassett, Multiple branching rupture of the 2009 Tonga–Samoa earthquake, *J. Geophys. Res.* 121(8), 5809-5827, doi:10.1002/2016JB012945, 2016.
13. Mai, P. M., D. Schorlemmer, M. Page, J.-P. Ampuero, K. Asano, M. Causse, S. Custodio, **W. Fan**, G. Festa, M. Galis, et al., The earthquake-source inversion validation (SIV) project, *Seismol. Res. Lett.* 87(3), 690-708, doi:10.1785/0220150231, 2016.
12. **Fan, W.** and P. M. Shearer, Fault interactions and triggering during the 10 January 2012 Mw 7.2 Sumatra earthquake, *Geophys. Res. Lett.*, 43, 1934-1942, doi:10.1002/2016GL067785, 2016.
11. Melgar, D., **W. Fan**, S. Riquelme, J. Geng, C. Liang, M. Fuentes, G. Vargas, R. M. Allen, P. M. Shearer, E. J. Fielding, Slip segmentation and slow rupture to the trench during the 2015, Mw8.3 Illapel, Chile earthquake, *Geophys. Res. Lett.*, 43, 961-966, doi:10.1002/2015GL067369, 2016.
10. Denolle, M. A., **W. Fan**, and P. M. Shearer, Dynamics of the 2015 M7.8 Nepal earthquake, *Geophys. Res. Lett.*, 42, 7467-7475, doi:10.1002/2015GL065336, 2015.
9. **Fan, W.** and P. M. Shearer, Detailed rupture imaging of the 25 April 2015 Nepal earthquake using teleseismic P waves, *Geophys. Res. Lett.*, 42, 7467-7475, doi:10.1002/2015GL064587, 2015.
8. **Fan, W.**, Y. Chen, Y. Tang, Sn Zhou, Y. Feng, H. Yue, H. Wang, G. Jin, S. Wei, Y. Wang, Z. Gai, and J. Ning, Crust and upper mantle velocity structure of the eastern Tibetan plateau and adjacent regions from ambient noise tomography, *Chinese J. Geophys.* (in Chinese), 58(5), 1568-1583, doi:10.6038/cjg20150510, 2015.
7. **Fan, W.**, P. M. Shearer, and P. Gerstoft, Kinematic earthquake rupture inversion in the frequency domain, *Geophys. J. Int.* 199, 1138–1160, doi:10.1093/gji/ggu319, 2014.
6. Yue, H., Y. Chen, E. Sandvol, J. Ni, T. Hearn, S. Zhou, Y. Feng, Z. Ge, A. Trujillo, Y. Wang, G. Jin, M. Jiang, Y. Tang, X. Liang, S. Wei, H. Wang, **W. Fan**, and Z. Liu, Lithospheric and upper mantle structure of the northeastern Tibetan Plateau, *J. Geophys. Res.*, 117, B05307, doi:10.1029/2011JB008545, 2012.
5. Tang, Y., Y. Chen, H. Wang, S. Zhou, J. Ning, Y. Yang, Z. Ding, R. Liu, Y. Feng, P. Li, C. Yu, S. Wei, and **W. Fan**, Ambient noise tomography in

north China craton, *Chinese J. Geophys.*, (in Chinese), 54(8), 2011-2022, doi:10.3969/j.issn.0001-5733.2011.08.008, 2011.

4. Tang, X., **W. Fan.**, Y. Feng., Y. Tang., Y. J. Chen, and L. Zhu, Phase velocity tomography of Rayleigh wave in Xinjiang from ambient noise, *Chinese J. Geophys.* (in Chinese), 54(8), 2042-2049, doi:10.3969/j.issn.0001-5733.2011.08.011, 2011.
3. Jiang, M., S. Zhou, E. Sandvol, X. Chen, X. Liang, Y. Chen, and **W. Fan**, 3-D lithospheric structure beneath southern Tibet from Rayleigh-wave tomography with a 2-D seismic array, *Geophys. J. Int.* 185, 593-608, doi:10.1111/j.1365-246X.2011.04979.x, 2011.
2. Wei, S., Y. Chen, E. Sandvol, S. Zhou, H. Yue, G. Jin, T. Hearn, M. Jiang, H. Wang, **W. Fan**, Z. Liu, Z. Ge, Y. Wang, Y. Feng, and J. Ni, Regional earthquakes in northern Tibetan Plateau: Implications for lithospheric strength in Tibet, *Geophys. Res. Lett.*, 37, L19307, doi:10.1029/2010GL044800, 2010.
1. Tang, Y., Y. Feng, Y. Chen, S. Zhou, J. Ning, S. Wei, P. Li, C. Yu, and **W. Fan**, Receiver function analysis at Shanxi Rift, *Chinese J. Geophys.*, (in Chinese) 53(9), 2102-2109, doi:10.3969/j.issn.0001-5733.2010.09.010, 2010.

TEACHING

Lecturer, Graduate, SIOG 200c, Geophysical Research Skills, UCSD	2025–present
Lecturer, Graduate, SIOG 223b, Geophysical Data Analysis, UCSD	2024–present
Lecturer, Graduate, SIOG 239, Seismology Seminar, UCSD	2023–present
Lecturer, Graduate, SIOG 227c, Advanced Seismology II, UCSD	2023–present
Lecturer, Undergraduate, SIO 161, Seismology, UCSD	2022–present
Lecturer, Undergraduate/graduate, Introduction to Geophysics, FSU	2020
Lecturer, Undergraduate, Introductory Earth Science, FSU	2019
Guest lecturer, Graduate, Seismic interferometry, SDSU	2015
TA, Undergraduate, Seismological Experiment Practice Course, PKU	2010
TA, Undergraduate, Introduction to Earthquakes, PKU	2010
TA, Undergraduate, Methods of Mathematical Physics, PKU	2009

AFFILIATIONS

American Geophysical Union (AGU)
 Seismological Society of America (SSA)
 Southern California Earthquake Center (SCEC)

FIELD WORK

Greenland, subglacial tremor, 20 days in total
 Gofar cruise, R/V Atlantis, 30 days in total
 KCT nodal experiment, 3 days in total
 LEEP (Lake Erie Earthquake Project), 7 days in total.
 North China craton array project, 35 days in total.
 Necessarray project, 16 days in total.
 INDEPTH IV project, 15 days in total.