

Curriculum Vitae

Fan-Chi Lin

University of Utah
Geology and Geophysics
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Citizenship: Taiwan
Date of Birth: May 31, 1978
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Research Interests

Ambient noise seismology; interferometry; seismic surface waves; seismic tomography; crust and upper mantle structure; wave propagation; seismic anisotropy; seismic attenuation; seismic amplification; dense array; fault zone; basin structure; Yellowstone; volcanic system; hydrothermal system; and geothermal system.

Education

2005 to 2009 Ph.D. University of Colorado at Boulder, USA.

Advisor: Michael Ritzwoller

2003 – 2005 M.S. Drexel University, USA.

Advisor: Guoliang Yang and Steve McMillan

1996 – 2000 B.S. National Tsing Hua University, Taiwan.

Positions Held

2019 – current Associate Professor, Department of Geology and Geophysics, The University of Utah.

2019 – current Visiting Associate Professor, Institute of Earth Sciences, Academia Sinica, Taiwan.

2015 – 2020 Visiting Associate in Geophysics, Seismological Laboratory, California Institute of Technology.

2013 – 2019 Assistant Professor, Department of Geology and Geophysics, The University of Utah.

2011 – 2013 Post Doctoral Scholar, Seismological Laboratory, California Institute of Technology.

2009 – 2011 Research Associate, Department of Physics, University of Colorado at Boulder.

2006 – 2009 Research Assistant, Department of Physics, University of Colorado at Boulder.

2005 – 2006 Teaching Assistant, Department of Physics, University of Colorado at Boulder.

2004 – 2005 Research Assistant, Department of Physics, Drexel University.
2003 – 2004 Teaching Assistant, Department of Physics, Drexel University.
2002 – 2003 Research Assistant, Institute of Molecular Biology, Academia Sinica,
Taiwan.

Honors and Awards

World's Top 2% Scientists, 2021 (doi: 10.17632/btchxktyw.3)
National Science Foundation CAREER Award, 2018
IRIS Early Career Investigators Colloquium Travel Funds, 2018
EarthScope Speaker Series, 2015-2016
SSA Charles F. Richter Early Career Award, 2015
Director's Post Doc Fellowship, Seismological Laboratory, Caltech, 2011
AGU Fall Meeting Outstanding Student Paper Award 2009
Geophysical Journal International Student Author Award 2008.
SEG Denver Geophysical Society Scholarship 2008-2009
SEG GSH/Charlie & Jean Smith Scholarship 2008-2009

External Professional Services

Associate Editor for JGR-Solid Earth (2016 – present)
NSF review panel (2021)
Academia Sinica, Taiwan, Research Scientist Promotion Evaluation (2021)
Member of IRIS Data Services Standing Committee (DSSC; 2018 – 2020)
National Taiwan University 2020 Department of Geosciences Review Committee
AGU Seismology Section 2020 Officers Nominations Committee
SSA Honors Committee (2016 – 2019)
Contributor of 2019 Taiwan Earthquake Research Center Newsletter
SSA 2019 Early-Career Task Committee
Organizer of 2019 Workshop on Frontiers in Seismic Interferometry
Member of IRIS Nominations Committee for 2018 Elections
Session Convener of the DEEP-2018 International Symposium
Special Session Convener /Chair of the 2018 AOGS Annual Meeting
Special Session Convener /Chair of the 2018 SSA Annual Meeting
Instructor of 2017 IRIS USArray Advanced Short Course
Session Convener/Chair of the 2017 AGU Fall Meeting

Special Session Chair of the 2017 SSA Annual Meeting

Member of Transportable Array Advisory Committee (TAAC; 2014 – 2016)

Node Owner/ User Group Meeting Organizer of the 2016 AGU meeting

Selection Committee of the 2016 IRIS Wavefields Demonstration Experiment

Plenary Session Organizer of the 2016 IRIS Workshop

Committee Member of the 2015 National EarthScope Meeting

Peer reviewer for journals (Science, GJI, GRL, JGR, BSSA, EPSL, SRL, Geophysics, Geology, Science Advances, JASA, Encyclopedia of Exploration Geophysics, and TAO), book proposals (Cambridge University Press), and grant proposals (New Zealand Marsden Fund, UK Natural Environment Research Council, Swiss National Science Foundation, and NSF)

Liaison and Judge for AGU Outstanding Student Paper Award

Convener and Chair for Seismology Special Session, WPGM 2010

Internal Services

Member of College IT committee (2018-2022)

SEG/Geophysics Student Chapter Faculty Advisor (2014 – 2019)

Faculty Organizer of 2019 Hawaii Field Trip

Distinguished Lecture Series (DLS) Organizer (Fall 2014)

Hosting 2014 SEG distinguished Lecturer

Member of Department Committees (e.g. Awards and Honors, Research and Learning Tech committee, Instrumentation and Facilities, Graduate Affairs, Undergraduate Affairs, Geophysics course/special fund, Computer, PICP, and Library Liaison)

Funding History

I. Ongoing sponsored projects

NSF GEO: “Collaborative Research: Subsurface plumbing, tremor migration, and eruption cycle of Yellowstone Geysers” (Lead PI; 07/15/2021-06/30/2024, \$299,559 to Utah)

NSF-CAREER: “Advanced Subsurface Imaging Across USArray and Intermountain Seismic Belt Using Dense Seismic Arrays” (PI; 7/1/18 – 6/30/23, \$545,048)

II. Completed sponsored projects

Southern California Earthquake Center (SCEC): “Improving southern California crustal model by jointly inverting Rayleigh wave phase velocity/ellipticity, Love wave phase velocity, and frequency dependent receiver functions” (PI; 02/1/2021-1/31/2022, \$28,000)

USGS EHP: “Salt Lake Valley Community Velocity Model Validation and Improvement: Ambient Noise and Earthquake Surface Wave Analysis Across the Magna Aftershock Array” (PI; 01/01/2021-12/31/2021, \$67,529)

Southern California Earthquake Center (SCEC): “Improving near surface crustal model across southern California by jointly inverting Rayleigh wave phase velocity/ellipticity and receiver functions” (PI; 02/1/2020-1/31/2021, \$27,000)

CDC-NIOSH IPA “Monitoring an underground longwall coal mine with seismic ambient noise tomography” (PI; 8/14/19 – 8/15/20, \$20,000)

Southern California Earthquake Center (SCEC): “Improved lithospheric structure and Moho across Southern California from joint inversion of broadband Rayleigh wave ellipticity/phase dispersion and harmonic receiver functions” (PI; 02/1/2019-1/31/2020, \$32,028)

NSF-RAPID: “Seismic deployment in response to the 2018 Kilauea Lower East Rift Zone eruption and summit explosions” (PI; 6/15/18 – 5/31/19, \$48,510)

NSF-CyberSEES: “Collaborative Research: Real-time Ambient Noise Seismic Imaging for Subsurface Sustainability” (PI; 1/15/15 – 1/14/19, \$404,312 to Utah)

Southern California Earthquake Center (SCEC): “Determination of Shallow Crustal Structure in Southern California and SCEC Community Model Validation Using Ambient-noise-derived Rayleigh Wave Ellipticity” (PI; 05/1/2017-9/30/2018, \$30,000)

University of Utah Research Incentive Seed Grant Program: “Imaging the Cascadia Subduction Zone with unprecedented detail using receiver function and dense geophone arrays” (PI; 01/01/2017-06/30/2018, \$ 17,383)

KAUST Office of Competitive Research Funds: “Collaborative Research: Mapping Faults and Scatterers by Natural Migration of Surface Waves in Earthquake, Exploration, and Engineering Data” (PI; 01/01/2015 - 12/31/2017, \$659,510 to Utah)

USGS EHP: “Collaborative Research: Analysis of a New Broadband Seismic Survey Across the Los Angeles Basin to Determine Velocity and Structure” (PI; 01/01/2017-12/31/2017, \$31,264 to Utah)

State of Utah: “Quantifying Subsurface Flux Between the North and South Arms of the Great Salt Lake: Solving the Causeway Puzzle” (Co-PI; 07/01/14 - 06/30/15, \$ 70,518)

Caltech sub-award, originally from NSF-EarthScope: “Extracting Seismic Core Phases with Array Interferometry” (PI; 07/01/13 - 06/30/16, \$ 40,742)

DOE/NETL: “Enhanced Geothermal System Concept Testing and Development (Phase 2A&B)” (Co-I; 10/1/16 – 3/15/18)

III. Research Gifts

Signal Hill Petroleum: “General Research on Seismic Interferometry” (One Time Research Gift; 8/01/2014, \$50,000)

Publications (PDF files and an up-to-date list available at <http://noise.earth.utah.edu/>)

(*denotes graduate advisee; **denotes postdoctoral advisee)

Citation statistics from Google Scholar: Total citations = 7472; h-index = 33; i10-index: 61.

I. Peer-Reviewed Papers

76. Zeng*, Q., **Lin, F.-C.**, and Allam A.A., 3D Shear Wave Velocity Model of Salt Lake Valley via Rayleigh wave ellipticity across a temporary geophone array, The Seismic Record, in preparation.
75. Wells, D., **Lin, F.-C.**, Pankow, K, Baker, B., and Bartley, J., Combining Dense Seismic Arrays and Broadband Data to Image the Subsurface Velocity Structure in Geothermally Active South-Central Utah, Journal of Geophysical Research: Solid Earth, in review.
74. Berg*, E.M., **Lin, F.-C.**, Schulte-Pelkum, V., Allam, A.A., Qiu, H., Gkogkas*, K., Shallow Crustal Shear Velocity and V_p/V_s across Southern California: Joint Inversion of Short-Period Rayleigh Wave Ellipticity, Phase Velocity, and Teleseismic Receiver Functions, Geophysical Research Letters, 48, e2021GL092626. <https://doi.org/10.1029/2021GL092626>, 2021.
73. Liu*, C.-N., **Lin, F.-C.**, Huang, H.-H., Wang*, Y., Berg*, E.M., and Lin C.-H., High Resolution 3-D Shear Wave Velocity Model of Northern Taiwan via Bayesian Joint Inversion of Rayleigh Wave Ellipticity and Phase Velocity with Formosa Array, 126, e2020JB021610. <https://doi.org/10.1029/2020JB021610>, 2021.
72. Wu*, S.-M., **Lin, F.-C.**, Farrell, J., Keller, W., White, E.B. and Hungerford, J.D., Imaging the subsurface plumbing complex of Steamboat Geyser and Cistern Spring with hydrothermal tremor migration using seismic interferometry. Journal of Geophysical Research: Solid Earth, 126, e2020JB021128. <https://doi.org/10.1029/2020JB021128>, 2021.
71. Gkogkas*, K., **Lin, F.-C.**, Allam, A.A., and Wang*, Y., Shallow Damage Zone Structure of the Wasatch Fault in Salt Lake City from Ambient Noise Double Beamforming with a Temporary Linear Array. Seismological Research Letters, doi: <https://doi.org/10.1785/0220200404>, 2021.
70. Qiu, H., Allam, A.A., **Lin, F.-C.**, and Ben-Zion, Y., Analysis of Fault Zone Resonance Modes Recorded by a Dense Seismic Array Across the San Jacinto Fault Zone at Blackburn Saddle. Journal of Geophysical Research: Solid Earth, p.e2020JB019756., <https://doi.org/10.1029/2020JB019756>, 2020.
69. Wu*, S.-M., **Lin, F.-C.**, Farrell, J., Shiro, B., Karlstrom, L., Okubo, P., & Koper, K., Spatiotemporal Seismic Structure Variations Associated with the 2018 Kīlauea Eruption Based on Temporary Dense Geophone Arrays, Geophysical Research Letters, 47, e2019GL086668, <https://doi.org/10.1029/2019GL086668>, 2020.
68. Berg*, E., **F.-C. Lin**, A.A. Allam, V. Schulte-Pelkum, K. M. Ward**, and W. Shen, Shear Velocity Model of Alaska via Joint Inversion of Rayleigh Wave Ellipticity, Phase Velocities, and Receiver Functions across the Northern US Array, Journal of Geophysical Research: Solid Earth, 125, e2019JB018582, <https://doi.org/10.1029/2019JB018582>, 2020.
67. Wang*, Y., A. Allam, and **F.-C. Lin**, Imaging the Fault Damage Zone of the San Jacinto Fault Near Anza With Ambient Noise Tomography Using a Dense Nodal Array, Geophysical Research Letters, 46, <https://doi.org/10.1029/2019GL084835>, 2019.

66. Bianco, M.J., P. Gerstoft, K.B. Olsen, **F.-C. Lin**, High-resolution seismic tomography of Long Beach, CA using machine learning, *Scientific Reports*, 9, 14987, doi:10.1038/s41598-019-50381-z, 2019.
65. Trow, A.J., Pankow, K.L., Wang*, Y., and **Lin, F.-C.**, Localized ambient noise tomography over the FORGE Utah site, in Allis, R., and Moore, J.N., editors, *Geothermal characteristics of the Roosevelt Hot Springs system and adjacent FORGE EGS site*, Milford, Utah: Utah Geological Survey Miscellaneous Publication 169-J, 15 p., <https://doi.org/10.34191/MP-169-J>, 2019.
64. Qiu, H., **F-C. Lin**, and Y. Ben-Zion, Eikonal tomography of the Southern California plate boundary region, *Journal of Geophysical Research: Solid Earth*, 124. <https://doi.org/10.1029/2019JB017806>, 2019.
63. Xu, D, B. Song, R. Zhang, Y. Xie, S.-M. Wu*, **F.-C. Lin**, and W. Song, Low-rank matrix completion for distributed ambient noise imaging systems, *Asilomar 2019*.
62. Wu*, S.-M, **F-C. Lin**, J. Farrell, and A. Allam, Imaging the Deep Subsurface Plumbing of Old Faithful Geyser From Low-Frequency Hydrothermal Tremor Migration, *Geophysical Research Letters*, 46. <https://doi.org/10.1029/2018GL081771>, 2019.
61. Wang*, Y., **F-C. Lin**, and K. Ward**, Ambient noise tomography across the Cascadia subduction zone using dense linear seismic arrays and double beamforming, *Geophysical Journal International*, 217(3), pp.1668-1680, 2019.
60. Li, J., **F-C. Lin**, A.A. Allam, Y. Ben-Zion, and G. Schuster, Wave Equation Dispersion Inversion of Surface Waves Recorded on Irregular Topography, *Geophysical Journal International*, 217(1), pp.346-360, 2019.
59. Share, P.-E., A.A. Allam**, Y. Ben-Zion, **F.-C. Lin**, and F.L. Vernon, Structural properties of the San Jacinto fault zone at Blackburn Saddle from seismic data of a dense linear array. *Pure Appl. Geophys.*, DOI: 10.1007/s00024-018-1988-5, 2019.
58. Jiang, C., B. Schmandt, K. Ward**, **F-C. Lin**, and L.L. Worthington, Upper mantle seismic structure of Alaska from Rayleigh and S-wave tomography, *Geophysical Research Letters*, 45, 10,350–10,359. doi:10.1029/2018GL079406, 2018.
57. Valero, M., S. Wang, F. Li, **F-C. Lin**, and W. Song, Real-time Cooperative Analytics for Ambient Noise Tomography in Sensor Networks, *IEEE Transactions on Signal and Information Processing over Networks*, doi:10.1109/TSIPN.2018.2876751, 2018
56. Berg*, E., **F-C. Lin**, A.A. Allam, H. Qiu, W. Shen, and Y. Ben-Zion, Tomography of Southern California via Bayesian Joint Inversion of Rayleigh Wave Ellipticity and Phase Velocity from Ambient Noise Cross-Correlations, *Journal of Geophysical Research: Solid Earth*, 123, 9933–9949. <https://doi.org/10.1029/2018JB016269>, 2018.
55. Ward**, K. M. and **F-C. Lin**, Lithospheric Structure Across the Alaskan Cordillera from the Joint Inversion of Surface Waves and Receiver Functions, *Journal of Geophysical Research: Solid Earth*, doi:10.1002/2018JB015967, 2018.
54. Ward**, K. M., **F-C. Lin**, B. Schmandt, High-Resolution Receiver Function Imaging Across the Cascadia Subduction Zone Using a Dense Nodal Array, *Geophysical Research Letters*, 45, 12,218–12,225. <https://doi.org/10.1029/2018GL079903>, 2018.
53. Xie, L., Y. Xie, S.-M. Wu*, **F.-C. Lin**, & W. Song, Communication efficient signal detection for distributed ambient noise imaging. *Asilomar*, 2018.

52. Kohler, M. D., A.A. Allam**, A. Massari, and **F.-C. Lin**, Detection of building damage using Helmholtz tomography. *Bulletin of the Seismological Society of America* doi: <https://doi.org/10.1785/0120170322>, 2018.
51. Jiang, C., Schmandt, B., Farrell, J., **Lin, F.-C.** and Ward**, K.M., Seismically anisotropic magma reservoirs underlying silicic calderas. *Geology*, doi: <https://doi.org/10.1130/G45104.1>, 2018.
50. Sweet, J.R., K.R. Anderson, S. Bilek, M. Brudzinski, X. Chen, H. DeShon, C. Hayward, M. Karplus, K. Keranen, C. Langston, **F.-C. Lin**, M.B. Magnani, & R.L. Woodward, A Community Experiment to Record the Full Seismic Wavefield in Oklahoma. *Seismological Research Letters*, doi: <https://doi.org/10.1785/0220180079>, 2018.
49. Farrell, J., Wu*, S.-M., Ward**, K.M., & **Lin, F.-C.** Persistent Noise Signal in the Fairfield Nodal Three-Component 5-Hz Geophones. *Seismological Research Letters*, doi: <https://doi.org/10.1785/0220180073>, 2018.
48. Lynner, C., Beck, S. L., Zandt, G., Porritt, R. W., **Lin, F.-C.**, & Eilon, Z. C. Midcrustal deformation in the Central Andes constrained by radial anisotropy. *Journal of Geophysical Research: Solid Earth*, 123. <https://doi.org/10.1029/2017JB014936>, 2018.
47. Jiang, C., B. Schmandt, S.M. Hansen, S. Dougherty, R.W. Clayton, J. Farrell, and **F.-C. Lin**, Rayleigh and S wave tomography constraints on subduction termination and lithospheric foundering in central California, *Earth Planet. Sci. Lett.*, 488, doi:10.1016/j.epsl.2018.02.009, 2018.
46. Bowden, D. C., Tsai, V. C., & **Lin, F.-C.**, Amplification and attenuation across USArray using ambient noise wavefront tracking, *J. Geophys. Res. Solid Earth*, 122, doi:10.1002/2017JB014804, 2017.
45. Wu*, S.-M., K. Ward**, J. Farrell, **F.-C. Lin**, M. Karplus, and R. B. Smith, Anatomy of Old Faithful from subsurface seismic imaging of the Yellowstone Upper Geyser Basin, *Geophys. Res. Lett.*, 44. doi:10.1002/2017GL075255, 2017.
44. Ward**, K.M. & **F.-C. Lin**, On the Viability of Using Autonomous Three-Component Nodal Geophones to Calculate Teleseismic Ps Receiver Functions with an application to Old Faithful, Yellowstone, *Seismological Research Letters*, DOI: 10.1785/0220170051, 2017.
43. Wang*, Y., **F.-C. Lin**, B. Schmandt, J. Farrell, Ambient noise tomography across Mount St. Helens using a dense seismic array, *J. Geophys. Res. Solid Earth*, 122, doi:10.1002/2016JB013769, 2017.
42. Yeck, W., Sheehan, A., Stachnik, J., and **F.-C. Lin**, Offshore Rayleigh Group Velocity Observations of the South Island, New Zealand, from Ambient Noise Data, *Geophys. J. Int.*, 209 (2): 827-841. doi: 10.1093/gji/ggx054, 2017.
41. Valero, M., G. Kamath, J. Clemente, Y. Xie, **F.-C. Lin**, and W.Z. Song, Real-time Ambient Noise Subsurface Imaging in Distributed Sensor Networks, The 3rd IEEE International Conference on Smart Computing (SMARTCOMP 2017), 2017.

40. Shen, W., C. Alvizuri, **F.-C. Lin**, and C. Tape, A one-dimensional seismic model for Uturuncu volcano, Bolivia, and its impact on full moment tensor inversions, *Geosphere*, 13 (1),1–10, doi:10.1130/GES01353.1, 2017.
39. Workman*, E., **F.-C. Lin**, and K. D. Koper, Determination of Rayleigh wave ellipticity across the Earthscope Transportable Array using single-station and array-based processing of ambient seismic noise, *Geophys. J. Int.*, 208 (1): 234-245, doi: 10.1093/gji/ggw381, 2017.
38. Shen, W., M.H. Ritzwoller, D. Kang, Y. Kim, J. Ning, **F.-C. Lin**, W. Wang, Y. Zheng, and L. Zhou, A seismic reference model for the crust and uppermost mantle beneath China from surface wave dispersion, *Geophys. J. Int.*, 206(2), doi:10.1093/gji/ggw175, 2016.
37. Ball, J., A. Sheehan, J. Stachnik, **F.-C. Lin**, W. Yeck, and J. Collins, Lithospheric shear velocity structure of South Island, New Zealand from amphibious Rayleigh wave tomography, *J. Geophys. Res. Solid Earth*, 121, doi:10.1002/2015JB012726, 2016.
36. AlTheyab, A., **F.C. Lin**, G.T. Schuster, Imaging Near-surface Heterogeneities by Natural Migration of Back-scattered Surface Waves, *Geophys. J. Int.*, 204, 1332-1341, doi:10.1093/gji/ggv511, 2016
35. Schmandt, B., **F.C. Lin**, and K. Karlstrom, Distinct crustal isostasy trends east and west of the Rocky Mountain Front, *Geophys. Res. Lett.*, 42, 10,290–10,298, doi:10.1002/2015GL066593, 2015
34. Huang**, H.H., **F.C. Lin**, V. C. Tsai, and K.D. Koper, High-resolution probing of inner core structure with seismic interferometry, *Geophys. Res. Lett.*, 42, doi:10.1002/2015GL066390, 2015
33. Huang**, H.H., **F.C. Lin**, B. Schmandt, J. Farrell, R.B. Smith, and V.C. Tsai, The Yellowstone magmatic system from the mantle plume to the upper crust, *Science*, DOI:10.1126/science.aaa5648, 2015
32. **Lin, F.C.**, M.D. Kohler, and D.S. Weeraratne, March 11, 2011 Tohoku tsunami wavefront mapping across offshore southern California, *J. Geophys. Res.*, 120, 3350–3362. doi: 10.1002/2014JB011524, 2015
31. Bowden, D.C., V.C. Tsai, **F.C. Lin**, Site Amplification, Attenuation and Scattering from Noise Correlation Amplitudes Across a Dense Array in Long Beach, *Geophys. Res. Lett.*, 42: 1360–1367. doi: 10.1002/2014GL062662, 2015
30. Ball, J.S., A.F. Sheehan, J.C. Stachnik, **F.C. Lin**, J.A. Collins, A Joint Monte Carlo Analysis of Seafloor Compliance, Rayleigh Wave Dispersion and Receiver Functions at Ocean Bottom Seismic Stations offshore New Zealand, *Geochem., Geophys., Geosys.*, 15, 5051–5068, doi:10.1002/2014GC005412, 2014
29. **Lin, F.C.** and B. Schmandt, Upper crustal azimuthal anisotropy across the contiguous US determined by Rayleigh wave ellipticity, *Geophys. Res. Lett.*, 41, doi:10.1002/2014GL062362, 2014
28. Schmandt, B. and **F.C. Lin**, P- and S-wave tomography of the mantle beneath the United States, *Geophys. Res. Lett.*, 41, doi:10.1002/2014GL061231, 2014

27. Yu, H., B. Guo, S. Hanafy, **F.C. Lin**, G.T. Schuster, Direct detection of near-surface faults by migration of back-scattered surface waves. *SEG Technical Program Expanded Abstracts 2014*: pp. 2135-2139. doi: 10.1190/segam2014-0737.1, 2014
26. **Lin, F.C.**, V.C. Tsai, and B. Schmandt, 3-D crustal structure of the western United States: application of Rayleigh-wave ellipticity extracted from noise cross-correlations, *Geophys. J. Int.*, doi: 10.1093/gji/ggu160, 2014
25. Kao, H., Y. Behr, C. Currie, R. Hyndman, J. Townend, **F.-C. Lin**, M.H. Ritzwoller, S.-J. Shan, and J. He, Ambient seismic noise tomography of Canada and adjacent regions: Part I Crustal structures, *J. Geophys. Res.*, 118, 5865-5887, doi:10.1002/2013JB010535, 2013
24. **Lin, F.C.** and V.C. Tsai, Seismic Interferometry with Antipodal Station Pairs, *Geophys. Res. Letts*, 40, doi:10.1002/grl.50907, 2013.
23. **Lin, F.C.**, D. Li, R. W. Clayton, and D. Hollis, High-resolution 3D shallow crustal structure in Long Beach, California: Application of ambient noise tomography on a dense seismic array, *Geophysics*, 78(4), Q45-Q56, doi:10.1190/geo2012-0453.1, 2013.
22. Savage, M.K., **F.C. Lin**, and J. Townend, Ambient noise cross-correlation observations of fundamental and higher-mode Rayleigh wave propagation governed by basement resonance, *Geophys. Res. Letts.*, 40, doi:10.1002/grl.50678, 2013.
21. **Lin, F.**, V.C. Tsai, B. Schmandt, Z. Duputel, and Z. Zhan, Extracting Seismic Core Phases with Array Interferometry, *Geophys. Res. Letts.*, 40, doi:10.1002/grl.50237, 2013.
20. Shen, W., M.H. Ritzwoller, V. Schulte-Pelkum, and **F. Lin**, Joint inversion of surface wave dispersion and receiver functions: A Bayesian Monte-Carlo approach, *Geophys. J. Int.*, 192(2), 807-836, doi: 10.1093/gji/ggs050, 2013.
19. **Lin, F.**, D. Li, R. W. Clayton, and D. Hollis, Interferometry with a dense 3D dataset, SEG 2012 Extended Abstract, 2012.
18. **Lin, F.**, B. Schmandt, and V.C. Tsai, Joint inversion of Rayleigh wave phase velocity and ellipticity using USArray: constraining velocity and density structure in the upper crust, *Geophys. Res. Letts.*, 39, L12303, doi:10.1029/2012GL052196, 2012.
17. **Lin, F.**, V. Tsai, and M.H. Ritzwoller, The local amplification of surface waves: A new observable to constrain elastic velocities, density, and anelastic attenuation, *J. Geophys. Res.*, 117, B06302, doi:10.1029/2012JB009208, 2012.
16. **Lin, F.** and M.H. Ritzwoller, Apparent anisotropy in inhomogeneous isotropic media, *Geophys. J. Int.*, doi: 10.1111/j.1365-246X.2011.05100.x, 2011.
15. Ritzwoller, M.H., **F. Lin**, and W. Shen, Ambient noise tomography with a large continental seismic array, *Compte Rendus Geoscience*, doi:10.1016/j.crte.2011.03.007, 2011.
14. **Lin, F.** and M.H. Ritzwoller, Helmholtz surface wave tomography for isotropic and azimuthally anisotropic structure, *Geophys. J. Int.*, 186, doi: 10.1111/j.1365-246X.2011.05070.x, 2011.

13. **Lin, F.**, M.H. Ritzwoller, and W. Shen, On the reliability of attenuation measurements from ambient noise crosscorrelations, *Geophys. Res. Letts.*, 38, L11303, doi:10.1029/2011GL047366, 2011.
12. **Lin, F.**, M.H. Ritzwoller, Y. Yang, M.P. Moschetti, and M.J. Fouch, Complex and variable crustal and uppermost mantle seismic anisotropy in the western United States, *Nature Geoscience*, 4, 55-61, doi:10.1038/ngeo1036, 2011.
11. Moschetti, M. P., M. H. Ritzwoller, **F. Lin**, and Y. Yang, Crustal shear wave velocity structure of the western United States inferred from ambient seismic noise and earthquake data, *J. Geophys. Res.*, 115, B10306, doi:10.1029/2010JB007448, 2010.
10. **Lin, F.** and M.H. Ritzwoller, Empirically determined finite frequency sensitivity kernels for surface waves, *Geophys. J. Int.*, 182, 923-932, doi: 10.1111/j.1365-246X.2010.04643.x, 2010.
9. Moschetti, M.P., M.H. Ritzwoller, **F. Lin**, and Y. Yang, Seismic evidence for widespread crustal deformation caused by extension in the western USA, *Nature*, 464, Number 7290, 885-889, 8 April 2010.
8. **Lin, F.**, M.H. Ritzwoller, and R. Snieder, Eikonal Tomography: Surface wave tomography by phase-front tracking across a regional broad-band seismic array, *Geophys. J. Int.*, doi: 10.1111/j.1365-246X.2009.04105.x, 2009.
7. Yang, Y., M. H. Ritzwoller, **F. Lin**, M. P. Moschetti, and N. M. Shapiro, Structure of the crust and uppermost mantle beneath the western United States revealed by ambient noise and earthquake tomography, *J. Geophys. Res.*, 113, B12310, doi:10.1029/2008JB005833, 2008.
6. **Lin, F.**, M.P. Moschetti, and M.H. Ritzwoller, Surface wave tomography of the western United States from ambient seismic noise: Rayleigh and Love wave phase velocity maps, *Geophys. J. Int.*, doi:10.1111/j1365-246X.2008.03720.x, 2008.
5. **Lin, F.**, M.H. Ritzwoller, J. Townend, M. Savage, S. Bannister, Ambient noise Rayleigh wave tomography of New Zealand, *Geophys. J. Int.*, doi: 10.1111/j.1365-246X.2007.03414.x, 2007.
4. Bensen, G.D., M.H. Ritzwoller, M.P. Barmin, A.L. Levshin, **F. Lin**, M.P. Moschetti, N.M. Shapiro, and Y. Yang, Processing seismic ambient noise data to obtain reliable broad-band surface wave dispersion measurements, *Geophys. J. Int.*, 169, 1239-1260, doi: 10.1111/j.1365-246X.2007.03374.x, 2007.
3. **Lin, F.**, M. H. Ritzwoller, and N. M. Shapiro, Is ambient noise tomography across ocean basins possible?, *Geophys. Res. Lett.*, 33, L14304, doi:10.1029/2006GL026610, 2006.
2. Yang, Y., **F. Lin** and G. Yang, A temperature control device for single molecule measurements using the AFM, *Rev. Sci. Instrum.*, 77, 063701(1-5), 2006.
1. C-L. Chyan, **F. Lin**, H. Peng, J-M. Yuan, C-H. Chang, S-H. Lin and G. Yang, Reversible Mechanical Unfolding of Single Ubiquitin Molecules , *Biophys. J.* 87, 3995-4006, 2004.

Invited Presentations (since year 2013)

February 2022 – Seismological Laboratory, California Institute of Technology
Title – Investigate Yellowstone hydrothermal system using dense seismic arrays

February 2022 – Department of Earth and Planetary Sciences, University of California, Riverside
Title – High-resolution crustal imaging based on dense seismic arrays: from Yellowstone to Southern California

December 2021 – American Geophysical Union Fall Meeting, San Francisco, CA
Title – Investigating crustal structure with ambient noise across densely distributed seismic arrays

October 2021 – Department of Earth Science, Rice University
Title – Ambient Noise Tomography Across Dense Seismic Arrays: from tectonics, fault zones, to geothermal structure

July 2020 – Taiwan dense array working group
Title – Five-year owner experience with nodal instruments: What have we learned?

June 2020 – Chinese Petroleum Corporation, Taiwan
Title – Shallow crustal imaging based on ambient noise and hydrothermal tremor signals

May 2020 – Department of Earth Sciences, National Cheng Kung University, Taiwan
Title – Shallow Crustal Imaging Based on Dense Seismic Arrays

April 2020 – Department of Earth Sciences, National Central University, Taiwan
Title – Passive seismic imaging across dense seismic arrays

October 2019 – Department of Earth and Environmental Sciences, National Chung Cheng University, Taiwan
Title – Shallow Crustal Imaging Based on Dense Seismic Arrays

September 2019 – Workshop on Frontiers in Seismic Interferometry
Title – Seismic interferometry across dense seismic arrays: high-resolution crustal imaging

September 2019 – TEC Now and Beyond
Title – Imaging detailed crustal structure based on dense seismic

August 2019 – Institute of Petroleum Geology and Geophysics, Russia
Title – Dense Array, hydrothermal tremor, temporal variation, and double beamforming tomography

February 2019 – Department of Earth Sciences, University of Oregon
Title – Imaging Volcanic and Subduction Structures with Dense Geophone Arrays

December 2018 – American Geophysical Union Fall Meeting, DC.

Title – High-Resolution Passive Seismic Imaging Using Dense Geophone Arrays
October 2018 – DEEP-2018 International Symposium, Beijing, China

Title – High Resolution Passive Imaging Using Dense Geophone Arrays
October 2018 – Department of Geosciences, National Taiwan University

Title – High-Resolution Subsurface Imaging Based on Dense Seismic Arrays: from Hydrothermal, Volcano, to Subduction Systems
May 2018 – Yellowstone Volcano Observatory 2018 Coordination meeting, Yellowstone.

Title – Studying Yellowstone volcanic and hydrothermal system using dense geophone arrays
April 2018 – Department of Geosciences, University of Alaska Fairbanks.

Title – Dense geophone arrays, passive imaging, and Yellowstone
November 2017 – Institute of Earth Sciences, Academia Sinica, Taiwan.

Title – Imaging volcanic and hydrothermal systems using dense seismic arrays
November 2017 – Department of Earth Sciences, National Central University, Taiwan.

Title – Imaging volcanic and hydrothermal systems using dense seismic arrays
November 2017 – Taiwan Earthquake Research Center Annual meeting, Taiwan

Title – High resolution seismic imaging across dense seismic arrays and its implication on earthquake hazard assessment
August 2017 – IRIS Short Course, Indiana University

Title – Constructing noise cross-correlation wavefields with dense geophone arrays
June 2017 – Cargese Summer School, Corsica, France

Title – Passive seismic imaging based on dense geophone arrays
February 2017 – Department of Geophysics, Stanford University

Title – Passive seismic imaging based on dense arrays: from US continent to Old Faithful Geysers
November 2016 – Department of Geoscience, University of Wisconsin-Madison

Title – Imaging the Yellowstone Magmatic and Hydrothermal System Using Seismic Tomography
October 2016 – Department of Earth, Atmospheric, and Planetary Sciences, Purdue U.

Title – Imaging the Yellowstone Magmatic and Hydrothermal System Using Seismic Tomography
September 2016 – Earth Science and Engineering, KAUST, Saudi Arabia

Title – Imaging the Yellowstone Magmatic and hydrothermal system using seismic tomography
June 2016 – Institute of Earth Sciences, Academia Sinica, Taiwan

Title – Subsurface Imaging based on Ambient noise and Geophone Arrays

April 2016 – Seismological Society of America Annual Meeting, two invited talks

Title – Joint inversion of Rayleigh wave ellipticity and phase velocity across USArray

Title – Shallow Crustal Imaging Using Dense Geophone Arrays

April 2016 – Department of Earth Sciences, University of Southern California

Title – Seismic Interferometry and Tomography Across USArray – Imaging Interior Earth Structure from Upper Crust to Inner Core

March 2016 – Department of Earth Science, Rice University

Title – Seismic Interferometry and Tomography Across USArray – Imaging Interior Earth Structure from Upper Crust to Inner Core

February 2016 – Department of Geology and Geophysics, University of Hawaii

Title – Seismic Interferometry and Tomography Across USArray – Imaging Interior Earth Structure from Upper Crust to Inner Core

January 2016 – School of Earth and Atmospheric Sciences, Georgia Tech

Title – Seismic Interferometry and Tomography Across USArray – Imaging Interior Earth Structure from Upper Crust to Inner Core

December 2015 – American Geophysical Union Fall Meeting, two invited talks

Title – Constructing a 3D Crustal Model Across the Entire Contiguous US Using Broadband Rayleigh Wave Phase Velocity and Ellipticity Measurements

Title – Resolving High-Resolution Continental Scale 3D Crustal Structure Using Rayleigh Wave Phase Velocity and Ellipticity

December 2015 – Department of Geosciences, Colorado State University

Title – Seismic Interferometry and Tomography Across USArray – Imaging Interior Earth Structure from Upper Crust to Inner Core

November 2015 – Department of Earth and Planetary Sciences, U of New Mexico

Title – Seismic Interferometry and Tomography Across USArray – Imaging Interior Earth Structure from Upper Crust to Inner Core

October 2015 – Department of Geology, Utah State University

Title – Seismic Interferometry and Tomography Across USArray – Imaging Interior Earth Structure from Upper Crust to Inner Core

October 2015 – Geology/Physics/Astronomy Departments, U of Wisconsin-Whitewater

Title – Seismic Interferometry and Tomography Across USArray – Imaging Interior Earth Structure from Upper Crust to Inner Core

July 2015 - Department of Geophysics, Wuhan University, Wuhan, China

Title – Seismic Interferometry and Tomography Across USArray – Imaging Interior Earth Structure from Upper Crust to Inner Core

July 2015 - Institute of Geodesy and Geophysics, Chinese Academy of Sciences, Wuhan

Title – Seismic Interferometry and Tomography Across USArray – Imaging Interior Earth Structure from Upper Crust to Inner Core

February 2015 – CSIM Consortium Meeting, Houston, TX

Title – Overview of Ambient Noise Seismology

January 2015 – Chinese Association for Science and Technology at Utah, Salt Lake City

Title – Subsurface Imaging Using Seismic Noise

December 2014 – American Geophysical Union Fall Meeting, San Francisco, CA

Title – Constructing 3D isotropic and azimuthally anisotropic crustal models across USArray using Rayleigh wave phase velocity and ellipticity: inferring continental stress field

October 2014 – Center for Earthquake Research and Information, University of Memphis

Title – Shallow earth imaging with seismic interferometry

July 2014 – Asia Oceania Geosciences Society 11th Annual Meeting, Sapporo, Japan

Title – Extracting Seismic Body Waves Using Earthquake Coda Interferometry

July 2014 – School of Earth and Space Sciences, University of Science and Technology of China, Hefei, China

Title – Seismic interferometry and tomography: from shallow to deep

May 2014 – Department of Earth and Planetary Sciences Department, UC Santa Cruz

Title – Seismic interferometry and tomography: from shallow to deep

December 2013 – American Geophysical Union Fall Meeting, San Francisco, CA

Title – Probing the earth with EarthScope USArray

November 2013 – Interferometry Workshop, KAUST, Saudi Arabia

Title – Seismic interferometry and tomography: from shallow to deep

May 2013 – Arrays in Global Seismology Workshop, Raleigh, NC

Title – Probing the Deep Earth with Seismic Interferometry

May 2013 – EarthScope National Meeting, Raleigh, NC

Title – Seismic interferometry and tomography: from shallow to deep

April 2013 – IRIS Webinar Series

Title – Seismic tomography and interferometry: from shallow to deep

April 2013 – Department of Earth, Planetary, and Space Sciences, UC Los Angeles

Title – Seismic tomography and interferometry: from shallow to deep

March 2013 – Department of Earth and Atmospheric Sciences, Cornell

Title – Seismic tomography and interferometry: from shallow to deep

March 2013 – Department of Geological Sciences, Brown University

Title – Seismic tomography and interferometry: from shallow to deep

February 2013 – Department of Geology and Geophysics, University of Utah

Title – Seismic tomography and interferometry: from shallow to deep

February 2013 – School of Earth Sciences, The Ohio State University

Title – Seismic tomography and interferometry: from shallow to deep

February 2013 – Department of Earth & Environmental Science, New Mexico Tech

Title – Seismic tomography and interferometry: from shallow to deep

February 2013 – School of Earth and Space Exploration, Arizona State University

Title – Seismic tomography and interferometry: from shallow to deep

January 2013 – Scripps Institution of Oceanography, UC San Diego

Title – Seismic tomography and interferometry: from shallow to deep

January 2013 – Earth System Science Programme, The Chinese University of Hong Kong

Title – Seismic tomography and interferometry: from shallow to deep

Advising & Mentoring

I. Postdoctoral Advisees

Current postdoctoral advisees:

Kuan-Fu Feng (since 06/01/2022)

Past postdoctoral advisees:

Kevin Ward (09/01/2016 – 07/31/2018)

- Current position: Assistant Professor, South Dakota School of Mines & Technology

Amir Allam (07/01/2015 – 6/30/2017)

- Current position: Assistant Research Professor, University of Utah

Hsin-Hua Huang (09/01/2014 – 8/31/2016)

- Current position: Associate Research Fellow, Academia Sinica, Taiwan

Jamie Farrell (01/01/2015 – 06/30/2015)

- Current position: Assistant Research Professor, University of Utah

Oner Sufri (05/01/2015 – 06/30/2015)

- Current position: Data Scientist at IBM

II. Student Advisees

Current graduate advisees:

Cheng-Nan Liu (PhD student; since 09/09/2021)

Santiago Rabade (PhD student; since 01/15/2019)

Konstantinos Gkogkas (PhD student; since 01/15/2019)

Qicheng Zeng (PhD student; since 09/01/2020)

Past graduate advisees:

Sin-Mei Wu (PhD student; graduated 2020)

- Current position: Postdoc, ETH Zurich

Elizabeth Berg (PhD student; graduated 2021)

- Current position: Scientist, Sandia National Laboratories

Yadong Wang (PhD student; graduated 2019)

- Current position: Senior scientist, Halliburton R&D center, Singapore

Eli Workman (MS student; graduated 2016)

- Current position: Senior data analyst specialist, Ensco Inc.

Thesis committee membership (excluding advisees):

Erin Bessette-Kirton (PhD, current), Utah

Alysha Armstrong (MS, current), Utah

Nicholas Forbes (MS, current), Utah

Daniel Wells (PhD, current), Utah

Kevin Mendoza (PhD, current), Utah

Monique Holt (PhD, 2021), Utah

Guanning Pang (PhD, 2021), Utah

Maria Valero (PhD, 2019), University of Georgia

Andy Trow (MS, 2018), Utah

Lisa Linville (PhD, 2017), Utah

Yao Yao (PhD, 2016), Utah

Chase Batchelor (MS, 2016), Utah

Michael Jungle (MS, 2016), Utah

Abdullah AlTheyab (PhD, 2016), KAUST

Undergraduate advisees:

Chloe Barry (05/15/2021 – current)

Matthew Miller (06/01/2018 – 12/31/2018)

Patrick Cunningham (07/05/2018 – 08/15/2018)

James McVey (07/12/2018 – 08/15/2018)

Andy Trow (05/15/2015 – 05/31/2016)

III. Visiting scholar and student

Hitoshi Matsuzawa (graduate student; Hokkaido University, Japan; 05/20/2019 – 7/11/2019)

Cheng Li (graduate student; USTC, China; 01/16/2017 – 5/09/2017)

Ching-Yu Cheng (graduate student; NCU, Taiwan; 10/27/2016 – 12/09/2016)

Santiago Rábade (graduate student; UNAM, Mexico; 10/31/2016 – 12/09/2016)

Kaixiang Wang (undergraduate; USTC, China; 06/24/2016 – 8/24/2016)

Zhaoguo Wang (PhD; Northwest University, China; 02/01/2015 – 1/31/2016)

Teaching

GEO 2500 – Wasatch in the Field (co-teach; Fall 2018, Fall 2020, & Fall 2021)

GEO 3010 – Geophysics (Spring 2015, Spring 2016, & Spring 2018)

GEO 3030 – Living with Quakes (online; Fall 2018 & Spring 2019)

GEO 3100 – Dynamic Earth (co-teach; Fall 2020 & Fall 2021)

GEO 5210/6211 – Seismology I (Fall 2014)

GEO 5220/6222 – Seismology II: Seismic Imaging (Spring 2017, Spring 2018, Spring 2021, & Spring 2022)

GEO 5920-003/6920-004 – Seismic Interferometry (Spring 2014 & Fall 2015)

GEO 6220/7220 – Theoretical Seismology (Spring 2017)