Dunyu Liu

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Education

Texas A&M University   *College Station, TX, USA*
PHD GEOPHYSICS   *2014 - 2018*

Peking University   *Beijing, China*
MS IN GEOPHYSICS   *2011 - 2014*

Peking University   *Beijing, China*
BS IN GEOPHYSICS   *2007 - 2011*

Professional Experience

2025-present	**Senior Computational Geoscientist**, Institute for Geophysics, The University of Texas at Austin
2021-2025	**Computational Geoscientist**, Institute for Geophysics, The University of Texas at Austin
2018-2020	**Postdoctoral researcher**, Department of Geology & Geophysics, Texas A&M University
2014-2018	**Research and Teaching Assistant**, Department of Geology & Geophysics, Texas A&M University
2011-2014	**Research and Teaching Assistant**, Institute for Theoretical Geophysics, Peking University
2009-2011	**Undergraduate Research and Teaching Assistant**, Institute for Theoretical Geophysics, Peking University

Publications

2025

[18] **Liu, D.**, Becker, TW. : Earthquake Rupture Dynamics From Graph Neural Networks. *J. Geophys. Res. - Solid Earth*, 130(12), e2025JB031981, 2025.

[17] White, K., **Liu, D.**, Persad, G.: Absence of Aerosol Indirect Effect Dependence on Background Climate State in NCAR CESM2. *J. Climate*, **38**, 147–163, https://doi.org/10.1175/JCLI-D-23-0755.1, 2024

2024

[16] Thirumalai, K., DiNezio, PN., Partin, JW., **Liu, D.**, Costa, K., and Jacobel, A.: Future increase in extreme El Niño supported by past glacial changes. *Nature*, https://doi.org/10.1038/s41586-024-07984-y, 2024   [15] **Liu, D.**, Puel, S., Becker, TW., Moresi, L.: Analytical and numerical models of viscous anisotropy: a toolset to constrain the role of mechanical anisotropy for regional tectonics and fault loading. *Geophys. J. Int.*, 239(2), 950–963, https://doi.org/10.1093/gji/ggae296, 2024

[14] Puel, S., Becker, TW., Villa, U., Ghattas, O., **Liu, D.**: Volcanic arc rigidity variations illuminated by coseismic deformation of the 2011 Tohoku-oki M9. *Science Adv.*, 10, 778-797, doi:10.1126/sciadv.adl4264, 2024   [13] Puel, S., Becker, TW., Villa, U., Ghattas, O., **Liu, D.**: An adjoint-based optimization method for jointly inverting heterogeneous material properties and fault slip from earthquake surface deformation data. *Geophys. J. Int.*, 236 (2), 778–797, https://doi.org/10.1093/gji/ggad442, 2024   2023

[12] Xu, X., **Liu, D.**, Lavier, L.: Constraining fault damage zone properties from geodesy: A case study near the 2019 Ridgecrest earthquake sequence. *Geophys. Res. Lett.*, 50, e2022GL101692, 2023

2022

[11] Puel, S., Khattatov, E., Villa, U., **Liu, D.**, Ghattas, O., Becker TW: A mixed, unified forward/inverse framework for earthquake problems: fault implementation and coseismic slip estimate. *Geophys. J. Int.*, 230 (2), 733-758, 2022

[10] Jiang, J. et al: Community-driven code comparisons for three-dimensional dynamic modeling of sequences of earthquakes and aseismic slip. *J. Geophys. Res. - Solid Earth*, 127(3), e2021JB023519, 2022.

[9] **Liu, D.**, Duan, B., Scharer, K., Yule, D.: Observation-constrained multicycle dynamic models of the southern San Andreas and the northern San Jacinto faults: addressing complexity in paleoearthquake extent and recurrence with realistic 2D fault geometry. *J. Geophys. Res. - Solid Earth*, 127(2), e2021JB023420, 2022.

2021

[8] **Liu, D.**, Duan, B., Prush, VB, Oskin, M., Liu-Zeng, J.: Observation-constrained multicycle dynamic models of the Pingding Shan earthquake gate along the Altyn Tagh Fault. *Tectonophys.*, 814, 228948, 2021

2020

[7] **Liu, D.**, Duan, B., Luo, B.: EQsimu, a 3-D finite element dynamic earthquake simulator for multicycle dynamics of geometrically complex faults governed by rate- and state-dependent friction. *Geophys. J. Int.*, 230 (1), 598-609, 2020.

[6] Luo, B., Duan, B, **Liu, D.**: 3D Finite element modeling of dynamic rupture and aseismic slip over earthquake cycles on geometrically complex faults. *Bulletin of Seismological Society of America*, 110 (6), 2619-2637, 2020.

2015-2019

[5] Zhong, S., Wan, Z., Duan, B., **Liu, D.**, Luo, B.: Do earthquake trigger mud volcanoes? A case study from the Southern margin of the Junggar Basin, NW China. *Geological J.*, 54(3), 1223-1237, 2019.   [4] **Liu, D.**, Duan, B.: Scenario earthquake and ground motion simulations in North China: effects of heterogeneous fault stress and 3D basin structure. *Bulletin of Seismological Society of America*, 108(4), 2148-2169, 2018.   [3] Harris, RA, Barall, M., Aagaard, B., Ma, S., Roten, D., Olsen, K., Duan, B, **Liu, D.**, et al.: A suite of exerciese for verifying dynamic earthquake rupture codes. *Seis. Res. Lett.*, 89(3), 1146-1162, 2018.   [2] Duan, B., **Liu, D.**, Yin, A: Seismic shaking in the North China Basin expected from ruptures of a possible seismic gap. *Geophys. Res. Lett.*, 44(10), 1146-1162, 2017

[1] **Liu, D.**, Hu, C., Cai, Y.: Numerical simulation of the dynamic rupture process of the 2011 Tohoku-Oki, Japan, Mw9.0 earthquake. *Chinese J. of Geophys.*, 58(9), 3133-3143, 2015 (in Chinese) convert these to word style that i can copy and paste to my work doc's table

Grants

2025-2028	**Forced Changes in Tropical Pacific Variability from Glacial Times to the Future, Co-PI**, National Science Foundation, Award	*$1,227,787*
2023-2026	**Investigation of climate and weather extremes in a super large ensemble of CAM4 simulations, Co-PI**, Verisk	*$ 300,000*
2024-2026	**Investigating Periodicities in Abyssal Hill Morphology of the Atlantic Ocean: Possible Evidence of Mantle Dynamics, Co-PI**, National Science Foundation, Award 2341367	*$170,516*
2022-2025	**Collaborative Research: Elements: Monitoring Earth Surface Deformation with the Next Generation of InSAR Satellites: GMTSAR, took over PI after the grant was funded in 2023**, National Science Foundation, Award 2209807	*$231,440*
2024	**Generation of Near Source Broadband Ground Motion from Physics-based Dynamic Rupture Simulations: Continuing A Group Modeling Approach towards better Characterizing Seismic Hazard for Engineering Applications, Co-PI**, Sourthern California Earthquake Center, Award 24103	*$12,500*
2023	**Generation of Broadband Ground Motion from Dynamic Rupture Simulations: A Group Modeling Approach towards better Characterizing Seismic Hazard for Engineering Applications, Co-PI**, Southern California Earthquake Center, Award 23121	*$19,750*
2022	**Evolution of ground motion characteristics over earthquake cycle timescales, PI**, Southern California Earthquake Center, Award 22035	*$31,307*
2022	**Generation of Broadband Ground Motion from Dynamic Rupture Simulations: A Group Modeling Approach towards better Characterizing Seismic Hazard for Engineering Applications, Co-PI**, Southern California Earthquake Center, Award 22043	*$16,000*
2021	**Generation of Broadband Ground Motion from Dynamic Rupture Simulations: A Group Modeling Approach towards better Characterizing Seismic Hazard for Engineering Applications, Co-PI**, Southern California Earthquake Center, Award 21010	*$8,000*