JUNLE JIANG

Webpage: https://jjle.github.io

School of Geosciences, Mewbourne College of Earth and Energy
University of Oklahoma, Norman, OK 73019

Email: jiang@ou.edu
Office: +1 (405) 325-3253

RESEARCH INTERESTS

I am interested in the dynamic processes in the Earth's crust and strive to understand their mechanisms, predictability, and societal impacts, with the ultimate goals to improve the assessment and mitigation of geo-hazards and safe, sustainable exploration of geo-energy. My current research is focused on microseismicity, large earthquakes, and crustal deformation due to tectonic and human activities over timescales from seconds to centuries, through integrating laboratory-based physical models and geophysical observations, in particular from Global Navigation Satellite System (GNSS) and Interferometric Synthetic Aperture Radar (InSAR).

EDUCATION

Peking University, Beijing, China	Physics	*B.Sc.*, 2009
Caltech, Pasadena, CA, USA	Geophysics	*M.Sc.*, 2011
Caltech, Pasadena, CA, USA	Computational Science and Engineering	*Ph.D. Minor*, 2014
Caltech, Pasadena, CA, USA	Geophysics	*Ph.D.*, 2016

APPOINTMENTS

Assistant Professor, School of Geosciences, University of Oklahoma	2020/08–present
Postdoctoral Associate, Cornell University	2018/06–2020/07
Green Postdoctoral Scholar, Scripps Institution of Oceanography, UC San Diego	2016/02–2018/05
Research and Teaching Assistant, Seismological Laboratory, Caltech	2009/09–2015/12

PHD DISSERTATION

Jiang, J. (2016), Probabilistic Imaging and Dynamic Modeling of Earthquake Source Processes, California Institute of Technology. doi:10.7907/Z9639MQC. (Advisors: M. Simons & N. Lapusta)

PUBLICATIONS IN REVIEW/PREPARATION

1. Materna, K., A. Barbour, **J. Jiang**, and M. Eneva, A decade of crustal deformation and aseismic slip at the North Brawley Geothermal Field, under review.
2. **Jiang., J.**, B. Erickson, V. Lambert, R. Ando, S. Barbot, C. Cattania, L. Dal Zilio, B. Duan, E. Dunham, A. Gabriel, N. Lapusta, D. Li, M. Li, D. Liu, D. Liu, Y. Liu, S. Ozawa, C. Pranger, Y. van Dinther, Community-driven code comparisons for three-dimensional multiscale modeling of sequences of earthquakes and aseismic slip (SEAS), in preparation for JGR.
3. **Jiang., J.**, N. Lapusta, Persistent earthquake rupture characteristics and stress redistribution on faults with heterogeneous strength, in preparation for JGR.

REFEREED PUBLICATIONS

1. **Jiang, J.**, Y. Bock, and E. Klein (2021), Coevolving early afterslip and aftershock signatures of a San Andreas fault rupture, *Science Advances*, 7, doi:10.1126/sciadv.abc1606. Media Coverage: OU News.
2. **Jiang, J.**, & Lohman, R. B. (2020). Coherence-guided InSAR deformation analysis in the presence of ongoing land surface changes in the Imperial Valley, California. *Remote Sens. Environ.*, 112160, doi:10.1016/j.rse.2020.112160.
3. Erickson, B.*, **J. Jiang***, M. Barall, N. Lapusta, E. M. Dunham, R. Harris, L. Abrahams, K. Allison, J.-P.

Ampuero, S. Barbot, C. Cattania, A. Elbanna, Y. Fialko, B. Idini, J. Kozdon, V. Lambert, Y. Liu, Y. Luo, X. Ma, P. Segall, P. Shi, and M. Wei, The community code verification exercise for simulating sequences of earthquakes and aseismic slip (SEAS), *Seismo. Res. Lett.* (*equal contributions). doi:10/10.1785/0220190248.

4. Tymofyeyeva, E., Fialko, Y., **Jiang, J.**, Xu, X., Sandwell, D., Bilham, R., et al (2019). Slow slip event on the southern San Andreas fault triggered by the 2017 Mw8.2 Chiapas (Mexico) earthquake. *J. Geophys. Res. Solid Earth*, 124, doi:10.1029/2018JB016765. Media Coverage: EOS Research Spotlight.
5. Xu, X., L. Ward, **J. Jiang**, B. Smith-Konter, E. Tymofyeyeva, E. Lindsey, A. G. Sylvester, and D. T. Sandwell (2018), Surface creep rate of the Southern San Andreas Fault modulated by stress perturbations from nearby large events, *Geophys. Res. Lett., 45*, 10259–10268, doi:10.1029/2018GL080137.
6. Gombert, B., Z. Duputel, R. Jolivet, M. Simons, **J. Jiang**, C. Liang, E. J. Fielding, and L. Rivera (2018), Strain budget of the Ecuador–Colombia subduction zone: A stochastic view, *Earth Planet. Sci. Lett.*, *498*, 288–299, doi:10.1016/j.epsl.2018.06.046.
7. Fan, W., D. Bassett, **J. Jiang**, P. M. Shearer, and C. Ji (2017), 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.
8. Michel, S., J.-P. Avouac, N. Lapusta, and **J. Jiang** (2017), Pulse-like partial ruptures and high-frequency radiation at creeping-locked transition during megathrust earthquakes, *Geophys. Res. Lett.*, *44*, 8345–8351, doi:10.1002/2017GL074725.
9. **Jiang, J.** and N. Lapusta (2017), Connecting depth limits of interseismic locking, microseismicity, and large earthquakes in models of long-term fault slip, *J. Geophys. Res. Solid Earth, 122*, 6491–6523, doi:10.1002/2017JB014030.
10. Yue, H., M. Simons, Z. Duputel, **J. Jiang**, E. Fielding, C. Liang, S. Owen, A. Moore, B. Riel, J. P. Ampuero and S.V. Samsonov (2016), Depth varying rupture properties during the 2015 Mw 7.8 Gorkha (Nepal) earthquake, *Tectonophysics, 714–715*, 44-54, doi:10.1016/j.tecto.2016.07.005.
11. **Jiang, J.**, and M. Simons (2016), Probabilistic imaging of tsunamigenic seafloor deformation during the 2011 Tohoku-oki Earthquake, *J. Geophys. Res. Solid Earth*, *121*, 9050–9076, doi:10.1002/2016JB013760. Media Coverage: EOS Research Spotlight.
12. **Jiang, J.**, and Y. Fialko (2016), Reconciling seismicity and geodetic locking depths on the Anza section of the San Jacinto fault, *Geophys. Res. Lett.*, *43*, 10663–10671, doi:10.1002/2016GL071113.
13. Bletery, Q., A. Sladen, **J. Jiang**, and M. Simons (2016), A Bayesian source model for the 2004 great Sumatra-Andaman earthquake, *J. Geophys. Res. Solid Earth*, *121*, 5116–5135, doi:10.1002/2016JB012911.
14. **Jiang, J.**, and N. Lapusta (2016), Deeper penetration of large earthquakes on seismically quiescent faults, *Science*, *352*(6291), 1293–1297, doi:10.1126/science.aaf1496. Media Coverage: New Yorker, Phys.org.
15. Duputel, Z., **J. Jiang**, R. Jolivet, M. Simons, L. Rivera, J.-P. Ampuero, B. Riel, S. E. Owen, A. W. Moore, S. V. Samsonov, F. O. Culaciati, and S. E. Minson (2015), The Iquique earthquake sequence of April 2014: Bayesian modeling accounting for prediction uncertainty, *Geophys. Res. Lett.*, *42*, 7949–7957, doi:10.1002/2015GL065402.
16. Bletery, Q., A. Sladen, B. Delouis, M. Vallée, J.-M. Nocquet, L. Rolland, and **J. Jiang** (2014), A detailed source model for the M_w 9.0 Tohoku-Oki earthquake reconciling geodesy, seismology, and tsunami records, *J. Geophys. Res. Solid Earth*, *119*, 7636–7653, doi:10.1002/2014JB011261.
17. Minson, S. E., M. Simons, J. L. Beck, F. Ortega, **J. Jiang**, S. E. Owen, A. W. Moore, A. Inbal, and A. Sladen (2014), Bayesian inversion for finite fault earthquake source models - II: the 2011 great Tohoku-oki, Japan earthquake, *Geophys. J. Int.*, *198*(2), 922–940. doi:10.1093/gji/ggu170.
18. Wei, S., R. Graves, D. V. Helmberger, J.-P. Avouac, and **J. Jiang** (2012), Sources of shaking and flooding during the Tohoku-Oki earthquake: A mixture of rupture styles, *Earth Planet. Sci. Lett.*, *333-334*(C), 91–100, doi:10.1016/j.epsl.2012.04.006.
19. Simons, M., S. E. Minson, A. Sladen, F. Ortega, **J. Jiang**, S. E. Owen, L. Meng, J. P. Ampuero, S. Wei, R. Chu, D. V. Helmberger, H. Kanamori, E. Hetland, A. W. Moore, and F. H. Webb (2011), The 2011 magnitude 9.0 Tohoku-oki earthquake: Mosaicking the megathrust from seconds to centuries, *Science*,

332(6036), 1421–1425, doi:10.1126/science.1206731.

INVITED TALK

Berkeley Seismological Laboratory Seminar, UC Berkeley	2021/10
Earthquake Science Center Seminar, USGS	2021/07
School of Geosciences, University of Oklahoma	2020/03
Andes Seminar, Department of Earth and Atmospheric Sciences, Cornell University	2019/09
Department of Earth, Atmospheric and Planetary Sciences, Massachusetts Institute of Technology	2019/03
Department of Geology and Geophysics, Woods Hole Oceanographic Institution	2018/03
Department of Earth, Planetary, and Space Sciences, University of California Los Angeles	2017/03
Scripps Institution of Oceanography, University of California, San Diego	2016/03

SELECTED CONFERENCE PRESENTATIONS

1. **Jiang., J.**, Bock, Y., and E. Klein, Dynamics of early afterslip-aftershock coevolution following the 2004 Parkfield earthquake, SSA Annual Meeting, Apr. 2021 (Oral Presentation).
2. Eiden, E., Devlin, K., Burgi, P., MacQueen, P., Headlam, C., Brill, K.A., Carrillo, C.M., Hamilton, D.S.S., **Jiang., J.**, Barcheck, G. and Hitchcock, P., 2020, December. The IDEEAS Working Group at Cornell University: A New Framework of Collective Leadership for Promoting Justice, Equity, Diversity, and Inclusion in the Geosciences. In *AGU Fall Meeting Abstracts* (Vol. 2020, pp. ED015-0008). (Poster)
3. **Jiang., J.**, and Lohman, R. B., Characterizing tectonic and anthropogenic ground deformation history in the Imperial Valley, California, using Sentinel-1 InSAR time series, AGU Fall Meeting, San Francisco, CA, Dec. 2019 (Oral Presentation).
4. **Jiang., J.** (2019), Perspectives from the SCEC Sequences of Earthquakes and Aseismic Slip (SEAS) Project, SCEC workshop on "How Physics-Based Earthquake Simulators Might Help Improve Earthquake Forecasts," June 18, 2019 (Invited Oral Presentation).
5. **Jiang., J.**, Bock, Y., and E. Klein, Imaging slip evolution on the San Andreas fault due to the 2004 Parkfield earthquake, AGU Fall Meeting, Washington D.C., Dec. 2018 (Oral Presentation).
6. **Jiang., J.**, and Erickson, B. A. Advancing Simulations of Sequences of Earthquakes and Aseismic Slip (SEAS). SCEC Annual Meeting, Sept. 2018 (Invited Oral Presentation).
7. **Jiang., J.** and Y. Fialko, Mechanisms of unsteady shallow creep on major crustal faults, AGU Fall Meeting, New Orleans, LA, Dec. 2017 (Oral Presentation).
8. **Jiang., J.** and M. Simons, Multiscale probabilistic imaging of tsunamigenic seafloor deformation during the 2011 Tohoku-oki earthquake, SSA Fall Meeting, Denver, CO, Apr. 2017 (Invited Oral Presentation).
9. Kirschvink, J. and **J. Jiang**, Potential Seismic and Tsunami Hazard from the Palau Trench, as viewed from molluscan grazing notches in uplifted coral atolls, GSA Annual Meeting, Oct. 2014 (Oral Presentation).
10. **Jiang., J.**, Lapusta, N. and H. Noda, Re-evaluating the seismogenic potential of creeping fault regions: implications from models with rate-and-state friction and enhanced coseismic weakening, AGU Fall Meeting, San Francisco, CA, USA, Dec. 2013 (Invited Oral Presentation).

FUNDED RESEARCH AND WORKSHOPS

External Research Grants

PI, 2020 SCEC, $27,000, "Distinguishing between Tectonic and Anthropogenic Processes in the Salton Sea Geothermal Field."

PI, 2017–2021 XSEDE (Extreme Science and Engineering Discovery Environment) Award with an allocation of 120,000 computing units, "Integrated Simulation of Dynamic Earthquakes and Crustal Deformation."

PI (w/ B. Erickson), 2018/2019/2020 SCEC, $45,000/$50,000/$56,000, "Advancing Simulations of Sequences

of Earthquakes and Aseismic Slip (SEAS)."

Co-PI (PI: Y. Fialko), 2018 SCEC, $28,000, "Mechanisms of unsteady shallow creep on major crustal faults."

Co-PI (PI: Y. Fialko), 2017 SCEC, $28,000, "Microseismicity, geodetic coupling, and earthquake variability on heterogeneous faults: A case study of the Anza section of the San Jacinto Fault."

Co-PI (PI: Y. Fialko), 2016 SCEC, $28,000, "Reconciling seismic and geodetic locking depths on the Anza segment of the San Jacinto Fault."

Workshop Grants

PI (w/ B. Erickson), 2020 SCEC, $12,000, "Workshop for Advancing Simulations of Sequences of Earthquakes and Aseismic Slip (SEAS) — Free-Surface effects in 2D/3D models."

PI (w/ B. Erickson), 2019 SCEC, $12,000, "Workshop for Advancing Simulations of Sequences of Earthquakes and Aseismic Slip (SEAS) — Full Dynamics and 3D Effects."

PI (w/ B. Erickson), 2018 SCEC, $12,000, "Workshop for Advancing Simulations of Sequences of Earthquakes and Aseismic Slip (SEAS) — Exploring Complexity and Resolution."

PI (w/ R. Harris, B. Erickson), 2017 SCEC, $18,500, "A Joint Workshop: Rupture Dynamics Code Validation and Comparing Simulations of Earthquake Sequences and Aseismic Slip."

HONORS AND AWARDS

Green Postdoctoral Fellowship, IGPP, SIO, UCSD	2016–2018
Graduate Student Office Leadership Award, Caltech	2016
Demetriades-Tsafka-Kokkalis Best Thesis Prize in Seismo-Engineering, Prediction, and Protection, Caltech	2016
Chinese Government Award for Outstanding Self-Financed Students Abroad	2015
Outstanding Student Paper Award, Tectonophysics Section, American Geophysical Union	2015
Honor for Excellent Graduate, Peking University	2009
Petro China Scholarship, Peking University	2007
Dean's List Award for Academic Excellence, Hong Kong University of Science and Technology	2007
Cannon Scholarship, Peking University	2006

TEACHING

Instructor, University of Oklahoma

GPHY6970 Machine Learning in Geosciences (w/ H. Bedle & M. Pranter; 13 students)	Fall 2021
GPHY5970 Remote Sensing for Crustal Geophysics (7 students)	Fall 2021
GPHY5920 Computational Geophysics (5 students)	Spring 2021
GPHY3440 Mentored Research Experience (1 student)	Spring 2021
GEOL1114 Physical Geology for Scientists and Engineers (37 students)	Fall 2020

Guest Lecturer, Cornell University

EAS2550 Satellite-Based Remote Sensing — Rowena Lohman	Spring 2019 & 2020
EAS7800 Earthquake Record Reading — Geoffrey Abers	Spring 2019

Certification of Completion, Cornell University

"Teaching & Learning in the Diverse Classroom" Course	Summer 2020

Guest Lecturer, Scripps Institution of Oceanography

SIOG237 Space Geodesy — Yuri Fialko & David Sandwell	Spring 2017 & 2018

Graduate Teaching Assistant, California Institute of Technology

Ge11d/102 Introduction to Geophysics — Robert Clayton & Mike Gurnis	Spring 2014
Ge263 Computational Geophysics — Jean-Paul Ampuero, Robert Clayton & Mike Gurnis	Fall 2012

Ge161 Plate Tectonics — Joann Stock — Fall 2011
Ae/ME/Ge266 Dynamic Rupture and Frictional Faulting — Nadia Lapusta — Spring 2011

STUDENT ADVISING/MENTORING

Thesis Advisor

Segun Steven Bodunde (OU Ph.D. student): Transient deformation in subduction zones — 2021/08–present
Haoyu Li (OU M.S. student): Transient observations of crustal faults — 2021/08–present
Ganiyat Shodunke (OU Ph.D. student): Deformation at geothermal fields — 2021/01–present

Thesis Committee Member

Jiewen Zhang (OU Ph.D student) — 2020/10–2021/06

Research Mentor

Gillian Quiros (UCSD Regents Scholar): Modeling nonlinear dynamical systems — 2017/09–2018/05
Xander Zheng (Caltech SURF student) (w/ M. Simons): InSAR analysis of LA basin aquifers — Summer 2012
Patrick Ferchaud (École Polytechnique exchange student) (w/ N. Lapusta): BEM modeling — Summer 2011

FIELD EXPERIENCES

Campaign GPS survey for the San Jacinto fault, Anza, CA, PI: Y. Fialko — Sept. 2016–2018
Rock sample collection and structure mapping of rock islands, Palau, PI: J. Kirschvink — Mar. 2017
Seismic deployment at Anza, PI: F. Vernon — Apr. 2016
Campaign GPS survey across central Taiwan, PI: S.-B. Yu, Academia Sinica — Dec. 2011
Seismic survey, Salton Seismic Imaging Project (SSIP), PI: J. Stock, Caltech — Mar. 2011

PROFESSIONAL SERVICE & OUTREACH

Reviewer for proposals: NSF (ad hoc & panel), DFG (Deutsche Forschungsgemeinschaft; ad hoc), NASA (panel), and USGS (panel).

Reviewer for journals: Geophysical Research Letters, Journal of Geophysical Research - Solid Earth, Geophysical Journal International, Earth and Planetary Science Letters, Bulletin of the Seismological Society of America, Earth Planets and Space, Earth and Space Science, Pure and Applied Geophysics, Tectonophysics, Remote Sensing, Geosciences, Energies, Sensors, etc.

Co-Leader, SCEC Initiative on Simulations of Earthquake Sequences and Aseismic Slip (SEAS) — 2017–present
Member, OU School of Geosciences Graduate Affairs Committee — 2020–present
Member, OU School of Geosciences Computing Committee — 2020–present
Member, OU Seismic Centennial Committee — 2021–present
Member, OU School of Geosciences Student Awards Committee — 2021–present
Member, OU Mewbourne College of Earth and Energy, Diversity, Equity, Inclusion Committee — 2021–present
Member, OU School of Geosciences Environmental Geophysics Search Committee — Spring 2021
Member, OU School of Geosciences Petroleum Geosciences Vision Committee — Fall 2020
Founding Member, Inclusion, Diversity, and Equity in Earth and Atmospheric Sciences (IDEEAS) Working Group at the Cornell University — 2019–2020
Awardee, Postdoctoral Leadership Program, Cornell University — 2018–2019
Liaison/Judge, Outstanding Student Paper Award (OSPA) of AGU Annual Meeting — 2017–2020
Organizer, Geophysics Seminar at IGPP/SIO/UCSD — 2016–2018
Organizer, Dix Seismological Laboratory Seminar, Caltech — 2011–2012
Member,Board of Directors, Graduate Student Council, California Institute of Technology — 2011–2014

- Director at Large (2013–2014); Treasurer (2012–2013); Option Representative for Geophysics (2011–2013);

Under-Represented Student Advocate (2011–2013)

Executive Committee, Caltech Chinese Students and Scholars Association 2010–2012

- President (2011–2012); Director for Sports and Outdoor Activities (2010–2011)

Outreach tour leader and speaker, Tectonic Observatory and Seismological Laboratory, Caltech 2010–2015

PROFESSIONAL SOCIETIES

Southern California Earthquake Center (SCEC) 2009–present

American Geophysical Union (AGU) 2009–present

Seismological Society of America (SSA) 2012–present

American Association for the Advancement of Science (AAAS) 2012–present

Society of Exploration Geophysics (SEG) 2020–present

Geothermal Research Council (GRC) 2020–present

American Rock Mechanics Association (ARMA) 2020–present