JUNLE JIANG

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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

Postdoctoral Associate, Cornell University, NY	2018/06–present
Green Postdoctoral Scholar, Scripps Institution of Oceanography, UC San Diego, CA	2016/02–2018/05
Research and Teaching Assistant, Seismological Laboratory, Caltech, CA	2009/09–2015/12

Research Interests

(i) *Crustal Dynamics*: dynamic earthquake ruptures, interactions between seismic and aseismic processes, observations from geodesy, seismology, and geology, laboratory-based constitutive laws;

(ii) *Earthquake and Tsunami Hazards*: case studies of crustal faults and subduction zones, tsunami generation and propagation, coastal inundation;

(iii) *Computational Geophysics*: FDM/BEM/FEM modeling and CPU/GPU computing;

(iv) *Geophysical Inverse Theory*: optimization approaches and Bayesian inference.

Ph.D. 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)

Peer-Reviewed Publications

1. 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.
2. 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.
3. 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.
4. 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.
5. 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.

6. 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.
7. 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.
8. 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.
9. 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.
10. 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.
11. 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.
12. 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.
13. 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.
14. 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.
15. 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.
16. 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.

Manuscripts in Review/Preparation

1. 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), in review, *Seismo. Res. Lett.* (*equal contributions). EarthArXiv preprint doi:10.31223/osf.io/2dmp5.
2. Jiang, J., and R. Lohman, Characterizing tectonic and anthropogenic deformation in the Imperial Valley, California, using multitemporal InSAR analysis, to be submitted to *Remote Sens. Environ*.
3. Jiang, J., Y. Bock, and E. Klein, Continuous evolution of seismic and aseismic faulting at Parkfield, in prep.
4. Jiang, J. and Y. Fialko, Quantifying laboratory constraints on friction evolution laws, in prep.
5. Jiang, J. and Y. Fialko, Slow slip mechanisms and seismic potential of shallow crustal faults, in prep.
6. Jiang, J., Simons, M., and H. Fattahi, Multiscale imaging of subduction zone megathrust faulting:

Application to the 2010 Maule, Chile earthquake, in prep.

7. Jiang, J., and N. Lapusta, Long-term seismic behavior of faults with heterogeneous strength, in prep.

Selected Conference Presentations

8. 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*).
9. Jiang, J., and Erickson, B. A. Advancing Simulations of Sequences of Earthquakes and Aseismic Slip (SEAS). 2018 SCEC Annual Meeting, Sept. 2018 (*Invited Oral Presentation*).
10. Jiang, J. and Y. Fialko, Mechanisms of unsteady shallow creep on major crustal faults, AGU Fall Meeting, New Orleans, LA, USA, Dec. 2017 (*Oral Presentation*).
11. Jiang, J., and Y. Fialko. Earthquake variability, geodetic coupling, and microseismicity on heterogeneous faults: A case study of the Anza seismic gap. 2017 SCEC Annual Meeting, Sept. 2017.
12. Jiang, J., and M. Simons, Multiscale probabilistic imaging of tsunamigenic seafloor deformation during the 2011 Tohoku-oki earthquake, SSA Fall Meeting, Denver, CO, USA, Apr. 2017 (*Invited Oral Presentation*).
13. 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*).
14. 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

Research Grants

- PI (w/ B. Erickson), 2018/2019 SCEC Award, $45k/$50k, “Advancing Simulations of Sequences of Earthquakes and Aseismic Slip (SEAS).”
- Co-PI (PI Y. Fialko), 2018 SCEC Award, $28k, “Mechanisms of unsteady shallow creep on major crustal faults.”
- Co-PI (PI Y. Fialko), 2017 SCEC Award, $28k, “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 Award, $28k, “Reconciling seismic and geodetic locking depths on the Anza segment of the San Jacinto Fault.”

Workshop Grants

- PI (w/ B. Erickson), 2019 SCEC Award, $12k, “Workshop for Advancing Simulations of Sequences of Earthquakes and Aseismic Slip (SEAS) — Full Dynamics and 3D Effects.”
- PI (w/ B. Erickson), 2018 SCEC Award, $12k, “Workshop for Advancing Simulations of Sequences of Earthquakes and Aseismic Slip (SEAS) — Exploring Complexity and Resolution.”
- PI (w/ R. Harris, B. Erickson), 2017 SCEC Award, $18.5k, “A Joint Workshop: Rupture Dynamics Code Validation and Comparing Simulations of Earthquake Sequences and Aseismic Slip.”

Computational Award

- PI, XSEDE (Extreme Science and Engineering Discovery Environment) award with supercomputer allocation (120K service units for 2017–2019), “Integrated Simulation of Dynamic Earthquakes and Crustal Deformation.”

Honors and Awards

- Green Postdoctoral Fellowship, IGPP, SIO, UCSD, 2016

- Demetriades-Tsafka-Kokkalis Best Thesis Prize in Seismo-Engineering, Prediction, and Protection, Caltech, 2016
- Leadership Award, Graduate Student Office, 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

Teaching Experience

Graduate Teaching Assistant, California Institute of Technology

- *Ge11d/102 Introduction to Geophysics* — Robert Clayton & Mike Gurnis
- *Ge162 Seismology* — Jean-Paul Ampuero
- *Ge161 Plate Tectonics* — Joann Stock
- *Ge293 Computational Geophysics* — Jean-Paul Ampuero, Robert Clayton & Mike Gurnis
- *Ae/ME/Ge266 Dynamic Rupture and Frictional Faulting* — Nadia Lapusta

Guest Lecturer & Discussion Leader, University of California San Diego

- *SIOG237 Space Geodesy Seminar* — Yuri Fialko & David Sandwell

Guest Lecturer, Cornell University

- *EAS2550 Satellite-Based Remote Sensing* — Rowena Lohman
- *EAS7800 Earthquake Record Reading* — Geoffery Abers

Mentoring Experience

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

Leadership Activities

- Co-Leader of SCEC SEAS Modeling Group (2017–present)
- Participant in Postdoctoral Leadership Program, Cornell University (2018–2019)
- Organizer, Geophysics Seminar at IGPP/SIO/UCSD (2016–2018)
- Organizer, Dix Seismological Laboratory Seminar, Caltech (2011–2012)
- Board of Directors, Graduate Student Council, California Institute of Technology
  - 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
  - President (2011–2012); Director for Sports and Outdoor Activities (2010–2011)

Professional Service

- Co-convener and Outstanding Student Paper Award (OSPA) liaison for 2017 AGU Annual Meeting sessions “Earthquake Rupture Revealed by Kinematic Source Imaging”
- Reviewer for USGS Panel on Earthquake Physics and Induced Seismicity, and academic journals including *Geophysical Research Letters*, *Journal of Geophysical Research - Solid Earth, Geophysical Journal International, Pure and Applied Geophysics*, *Tectonophysics*, *Engineering Computations*, and *Natural Hazards and Earth System Sciences*.