# Christopher W Johnson

Los Alamos National Laboratory
Feynman Distinguished Postdoc Fellow
cwj-seismo.github.io

Earth and Environmental Sciences Division:
Geophysics (EES-17) and Science Program
Office/Applied Energy Program (SPO-AE)


## Appointments

**Richard P. Feynman Distinguished Postdoctoral Fellow** — Los Alamos, NM
Los Alamos National Laboratory, Los Alamos, New Mexico — 2020-present

Projects (1) Seismic waveform processing using machine learning
(2) Deformation models using machine learning
Advisors: Paul Johnson, George Guthrie, and Andrew Delorey

**NSF Postdoctoral Fellow (*Principal Investigator*)** — San Diego, CA
Scripps Institution of Oceanography, Uni. of California San Diego — 2017-2020

Projects (1) Microseismic detection with machine learning
(2) Seismic noise classification describing weak ground motions
(3) Atmospheric processes coupling to the solid Earth with GPS
Advisors: Frank Vernon and Yehuda Ben-Zion *(USC)* - *Seismology*
Adrian Borsa - *Hydrogeodesy*

**NSF Graduate Research Fellowship Program** — Berkeley, CA
Berkeley Seismological Laboratory, University of California Berkeley, — 2012-2017

Projects (1) Surface loading, seasonal stresses, and earthquake modulation
(2) Geothermal induced seismicity
(3) Dynamic earthquake triggering
(4) Fault creep and interseismic deformation
Dissertation: Stress modulation of earthquakes: A study of long and short period stress perturbations and the crustal response
Advisor: Roland Bürgmann

**Undergraduate Research Assistant** — Atlanta, GA
Georgia Institute of Technology — 2010-2012

Projects (1) Deformation in the southern Walker Lane from regional GPS
(2) Geodetic vs. geologic deformation in the southern Walker Lane
Senior Thesis: Measuring present-day strain rates along the Fish Lake Valley fault system, Pacific-North America Plate
Advisors: Kurt L. Frankel and Andrew V. Newman

## Education

**University of California Berkeley** — Berkeley, CA
Ph.D. in Earth and Planetary Science — 08/2017

**Georgia Institute of Technology** — Atlanta, GA
B.Sc. in Earth and Atmospheric Sciences — 05/2012
Highest Honors, Geophysics Track with Research Option

**Georgia Perimeter College** — Clarkston, GA
Associate in Science — 12/2000

## Funding

| | | |
|---|---|---|
| LANL Richard P. Feynman Postdoctoral Fellow, Los Alamos NL | ($354k) | 2020-2023 |
| DOE Shallow crustal properties (Co-I with Yehuda Ben-Zion) | ($200k) | 2019-2022 |
| NASA Earth Surface Interior (Co-I with Estelle Chaussard) | ($50k) | 2019-2021 |
| San Diego Super Computer COMET mini-proposal startup allocation | | 2018-2019 |
| Southern California Earthquake Center (w/ Y. Ben-Zion & F. Vernon) | ($15k) | 2018-2019 |
| National Science Foundation EAR Postdoctoral Fellowship (PI) | ($174k) | 2017-2019 |
| Southern California Earthquake Center (proposal with R. Bürgmann) | ($28k/yr) | 2014-2017 |
| Northern CA Earthquake Hazard Program (proposal with R. Bürgmann) | ($24k) | 2015-2016 |
| National Science Foundation Graduate Research Fellowship Program | ($120k) | 2012-2017 |

## Peer Reviewed Publications

**mentored students

**In-review**

Meng, H., Ben-Zion, Y., **Johnson, C. W.** (*in SRL review*) Analysis of seismic signals generated by vehicle traffic with application to derivation of subsurface Q values.

Dutilleul, P.R.L., **C.W. Johnson**, R. Bürgmann (*in GRL review*) Periodicity analysis of earthquake occurrence and hypocenter depth near Parkfield, California, 1994-2002 versus 2006-2014.

**Johnson, C.W.**, Hulbert, C., Rouet-Leduc, B., Johnson, P.A. (*in GRL review*) Learning the low frequency earthquake intensity on the central San Andreas Fault.

**2020**

[30] **Johnson, C.W.,** Lau, N., Borsa, A. (*in-press Earth Space Science*) An assessment of GPS velocity uncertainty in California.

[29] Dutilleul, P.R.L., **C.W. Johnson**, R. Bürgmann (2020) Marked spatio-temporal point patterns, periodicity analysis and earthquakes: an analytical extension including

hypocenter depth. Environmental and Ecological Statistics, doi:10.1007/s10651-020-00470-4

[28] Snover, D.**, **Johnson, C.W.,** Bianco, M.J., Gerstoft, P. (2020) Deep clustering to identify sources of urban seismic noise in Long Beach, CA. Seismological Research Letters, 1-12, doi: 10.1785/0220200164.

[27] **Johnson, C.W.,** Ben-Zion, Y., Meng, H., Vernon, F.L. (2020), Identifying different classes of seismic noise signals using unsupervised learning. Geophysical Research Letters, 47. doi:10.1029/2020GL088353

[26] Cheng, Y., Ben-Zion, Y., Brenguier, F., **Johnson, C. W.,** Li, Z., Share, P., Mordret, A., Boué, P., Vernon F.L. (2020) Automated method for developing catalog of small earthquakes using data of dense seismic array and nearby stations. Seismological Research Letters, 91 (5): 2862–2871 doi:10.1785/0220200134

[25] **Johnson, C.W.,** Kilb, D., Baltay, A., Vernon F.L. (2020) Peak ground velocity spatial variability revealed by dense seismic array in southern California. Journal of Geophysical Research: Solid Earth, 125. doi:10.1029/2019JB019157.

[24] Xue, L., **C.W. Johnson**, Y. Fu and R. Bürgmann (*2020*) Seasonal seismicity in the Western Branch of the East African Rift System, Geophysical Research Letters, 47, doi:10.1029/2019GL085882

[23] **Johnson, C.W.**, Y. Fu, and R. Burgmann (*2020*) Hydrospheric modulation of stress and seismicity on shallow faults in southern Alaska, Earth and Planetary Science Letters, doi:10.1016/j.epsl.2019.115904

**2019**

[22] Brenguier, F., Boué, P., Ben-Zion, Y., Vernon, F., **Johnson, C. W.**, Mordret, A., et al. (2019) Train traffic as a powerful noise source for monitoring active faults with seismic interferometry. Geophysical Research Letters. 46, 9529– 9536. doi:10.1029/2019gl083438

[21] Meng, H., Ben-Zion, Y., and **Johnson, C. W.** (2019). Detection of random noise and anatomy of continuous seismic waveforms in dense array data near Anza California. Geophysical Journal International. 219 (3), 1463–1473. doi:10.1093/gji/ggz349

[20] **Johnson, C. W.**, Meng, H., Vernon, F., & Ben-Zion, Y. (2019). Characteristics of ground motion generated by wind interaction with trees, structures, and other surface obstacles. Journal of Geophysical Research: Solid Earth, 124. doi:10.1029/2018jb017151

[19] Qin, L., F.L. Vernon, **C.W. Johnson**, and Y. Ben-Zion (2019) Spectral characteristics of daily to seasonal ground motions using coherences at the Piñon Flats Observatory. Bulletin of the Seismological Society of America, 109 (5), 1948-1967. doi.org/10.1785/0120190070

[18] **Johnson, C.W.**, F.L. Vernon, N. Nakata, and Y. Ben-Zion (2019) Atmospheric Processes Modulating Noise in Fairfield Nodal 5 Hz Geophones. Seismological Research Letters, 90 (4), 1612-1618. doi.org/10.1785/0220180383

**2018**

[17] Xu, W., Wu, S., Materna, K., Nadeau, R., Floyd, M., Funning, G., Chaussard, E., **Johnson, C.W.**, Murray, J.R., Ding, X., Bürgmann, R. (2018). Interseismic ground deformation and fault slip rates in the greater San Francisco Bay Area from two decades of space geodetic data. Journal of Geophysical Research: Solid Earth, 123. https://doi.org/10.1029/2018JB016004

[16] Chen, K. H., Tai, H.-J., Ide, S., Byrne, T., **Johnson, C. W.** (2018). Tidal modulation and tectonic implications of tremors in Taiwan. Journal of Geophysical Research: Solid Earth, 123. https://doi.org/10.1029/2018JB015663

[15] Xue, L., R. Bürgmann, D.R. Shelly, **C.W. Johnson**, T. Taira (2018) Kinematics of the 2015 San Ramon, California earthquake swarm: Implications for fault zone structure and driving mechanisms, Earth and Planetary Science Letters, 489. doi.org/10.1016/j.epsl.2018.02.018

[14] María Teresa Ramírez-Herrera, Krzysztof Gaidzik, Steven Forman, Vladimir Kostoglodov, Roland Bürgmann, **Christopher W. Johnson** (2018) Relating the long-term and short-term vertical deformation across a transect of the forearc in the central Mexican subduction zone. *Geosphere*; 14 (2): 419–439. doi: https://doi.org/10.1130/GES01446.1

**2017**

[13] **Johnson, C. W.**, Y. Fu, and R. Bürgmann (2017), Stress models of the annual hydrospheric, atmospheric, thermal, and tidal loading cycles on California faults: Perturbation of background stress and changes in seismicity, Journal of Geophysical Research: Solid Earth, 122. https://doi.org/10.1002/2017JB014778.

[12] Han, L., Z. Peng, **C.W. Johnson**, F.F. Pollitz, L. Li, B. Wang, J.Wu, Q. Li (2017) Shallow microearthquakes near Chongqing, China triggered by the Rayleigh waves of the 2015 M7.8 Gorkha, Nepal earthquake, Earth and Planetary Science Letters. 479 (1), doi:10.1016/j.epsl.2017.09.024.

[11] **Johnson, C. W.**, Y. Fu, and R. Burgmann (2017), Seasonal water storage, stress modulation, and California seismicity, Science, 356(6343), 1161-1164, doi:10.1126/science.aak9547.

[10] Delbridge, B. G., S. Kita, N. Uchida, **C. W. Johnson**, T. Matsuzawa, and R. Bürgmann (2017), Temporal variation of intermediate-depth earthquakes around the time of the M9.0 Tohoku-oki earthquake, Geophysical Research Letters, 44(8), 3580-3590, doi:10.1002/2017GL072876.

**2016**

[9] **Johnson, C.W.**, E.J.Totten**, and R. Bürgmann (2016), Depth migration of seasonally induced seismicity at The Geysers geothermal field, Geophysical Research Letters, 43,6196–6204, doi:10.1002/ 2016GL069546

[8] Chaussard, E., **C.W. Johnson**, H. Fattahi, and R. Bürgmann (2016), Potential and limits of InSAR to characterize interseismic deformation independently of GPS data: application to the southern San Andreas Fault system, Geochemistry, Geophysics, Geosystems, 17, 1214– 1229, doi:10.1002/2015GC006246.

**2015**

[7] **Johnson, C. W.**, and R. Bürgmann (2015), Delayed dynamic triggering: Local seismicity leading up to three remote M≥6 aftershocks of the 11 April 2012 M8.6 Indian Ocean earthquake, Journal of Geophysical Research: Solid Earth, 120, doi:10.1002/2015JB012243.

[6] Dutilleul, P., **C. W. Johnson**, R. Bürgmann, Y. Wan, and Z.-K. Shen (2015), Multi-frequential periodogram analysis of earthquake occurrence: An alternative approach to the Schuster spectrum, with two examples in central California, Journal of Geophysical Research: Solid Earth, 120, doi:10.1002/2015JB012467.

[5] Chaussard, E., R. Bürgmann, H. Fattahi, **C. W. Johnson**, R. Nadeau, T. Taira, and I. Johanson (2015), Interseismic coupling and refined earthquake potential on the Hayward-Calaveras fault zone, Journal of Geophysical Research: Solid Earth, 120, doi:10.1002/2015JB012230.

[4] Chaussard, E, R Bürgmann, H Fattahi, RM Nadeau, T Taira, **CW Johnson**, and I Johanson (2015), Potential for larger earthquakes in the East San Francisco Bay Area due to the direct connection between the Hayward and Calaveras Faults. Geophysical Research Letters, 42, 2734–2741. doi: 10.1002/2015GL063575.

[3] **Johnson, C.W.**, R. Burgmann, and F. F. Pollitz (2015), Rare dynamic triggering of remote M≥5.5 earthquakes from global catalog analysis, Journal of Geophysical Research: Solid Earth, 120, doi:10.1002/2014JB011788.

**2013**

[2] Lifton, Z.M., A. V. Newman, K. L. Frankel, **C.W. Johnson**, and T. H. Dixon (2013), Insights into distributed plate rates across the Walker Lane from GPS geodesy, Geophysical Research Letters, 40, doi:10.1002/grl.50804.

**2012**

[1] Foy, T. A., K. L. Frankel, Z. M. Lifton, **C. W. Johnson**, M. W. Caffee (2012), Distributed extensional deformation in a zone of right-lateral shear: Implications for geodetic versus geologic rates of deformation in the eastern California shear zone-Walker Lane, Tectonics, 31, TC4008, doi:10.1029/2011TC002930.

## Teaching Experience

**University of California San Diego**
**Machine Learning for Physical Applications** Upper division / Graduate course
Assisted Peter Gerstoft with ECE228 Spring 2019

**University of California Berkeley**
**Structural Geology** Upper division
Teaching Assistant Spring 2015 & Spring 2016
2015 Student Instructor Evaluations 6.2 (dept. avg. 5.75)
2016 Student Instructor Evaluations 6.2 (dept. avg. 5.95)

**Case Studies in Earth Systems** Upper division scientific writing
Teaching Assistant Fall 2013, Fall 2014, & Fall 2015

**Georgia Institute of Technology**
**Energy and Society** Lower division scientific writing
Teaching Assistant Spring 2012

**Thermodynamics of Earth Systems** Upper division
Teaching Assistant Fall 2011

## Student Mentoring

Niloufar Abolfathian Co-mentor w/ Y. Ben-Zion for PhD Dissertation. Publication in prep.

Dylan Snover, Co-mentor w/ P. Gerstoft for Masters Thesis. Publication in SRL.

Eoghan Totten, Undergraduate Research Mentor. Publication in GRL.

## Awards and Honors

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|---|---|
| **Richard P. Feynman Postdoctoral Fellow, Los Alamos NL** | 2020-2023 |
| **National Science Foundation EAR Postdoctoral Research Fellowship** | 2017-2019 |
| Louderback Award, Earth and Planetary Science, UC Berkeley | 2017 |
| **National Science Foundation Graduate Research Fellowship Program** | 2012-2017 |
| Earth and Atmospheric Sciences Quarter Century Award, Georgia Tech | 2012 |
| Rutt Bridges Research Initiative Award, Georgia Tech | 2011 |
| Presidential Undergraduate Research Award, Georgia Tech | 2011 |
| Anadarko/SEG Tuition Scholarship | 2011-2012 |
| Geological Society of America, Undergrad Research Grant, Georgia Tech | 2011 |
| Georgia Hope Scholarship | 2008-2011 |

## Invited Talks

GAGE/SAGE 2020 Science Workshop, Breckenridge, Colorado. Probing fault systems using hydrospheric induced stress modulation. August 2020 CANCELED COVID-19

Japan Geoscience Union Meeting 2020, Chiba, Japan. Multiple classes of non-tectonic emergent and impulsive seismic noise identified in continuous waveforms. May 2020 CANCELED COVID-19

University of Southern California, Los Angeles, CA, "Seasonal water storage, stress modulations, and variations in seismicity", November 2019

Los Alamos National Laboratory, Los Alamos, NM, "What's all that seismic noise? Classifying emergent and impulsive signals in continuous waveforms", July 2019

California Institute of Technology, Pasadena, CA, "What's all that seismic noise? Classifying emergent and impulsive signals in continuous waveforms", July 2019

University of Grenoble Alpes, Grenoble, "Climate modulated water storage, the deformation, and California earthquakes" France, June 2019

Institute of Geophysics and Planetary Physics, University of California, San Diego. "Classifying emergent and impulsive seismic noise in continuous waveforms with machine learning models" April 2019

IRIS Workshop 2018, Albuquerque, New Mexico. "Climate modulated water storage, the deformation, and California earthquakes" June 2018

Japan Agency for Marine-Earth Science and Technology (JAMSTEC), Yokohama Institute for Earth Science, Yokohama, Japan. "Climate modulated water storage, the deformation, and California earthquakes" May 2018

Japan Geoscience Union Meeting 2018, Chiba, Japan. "Climate modulated water storage, the deformation, and California earthquakes" May 2018

Institute of Geophysics and Planetary Physics, University of California, San Diego. "Climate modulated water storage, the deformation, and California earthquakes" Feb 2018

Department of Geological Sciences, University of Florida, Gainesville, FL. "Climate modulated water storage, the deformation, and California earthquakes" Feb 2018

American Geophysical Union Fall Meeting 2017, New Orleans, LA. "Seasonal water storage, stress modulation and California seismicity" G53B-01 Dec 2017

Institute of Earth Sciences, Academia Sinica, Taipei, Taiwan. Workshop on Seasonal variations in hydrological, atmosphere, and tidal loads, and the association with fault deformation. Keynote Speaker "Evaluating surface loading sources, the background stress orientation, and seismic rate variations" Sept 2017

Dept. of Earth Sciences, National Taiwan Normal Univ., Taipei, Taiwan. "Stress models of the hydrospheric, atmospheric, thermal, and tidal loading: Perturbations to the background stress and changes in seismicity" Sept 2017

Lawrence Berkeley National Lab. Berkeley, CA. "Seasonal stress modulation on active California fault structures" July 2017

Computation in Geophysics Workshop. Denver, CO. "Seasonal stress modulation on active California fault structures" June 2017

EarthScope National Meeting. Anchorage, AK. "Seasonal stress modulation on active California fault structures" May 2017

Department of Geological Sciences, University of Texas at Austin. Austin, TX. "Seasonal loading modulating seismicity on California faults" April 2017

## Conference Talks and Poster Presentations

**Johnson, C. W.**, Ben-Zion, Y., Meng, H., & Vernon, F. L. (2019). Classifying emergent and impulsive signals in continuous seismic waveforms. SCEC Contribution #9564, 2019 SCEC Annual Meeting Poster #065

**Christopher W. Johnson,** Classifying emergent and impulsive seismic noise in continuous waveforms, Machine Learning in Solid Earth Geoscience, 2019. Santa Fe, NM, Oral Presentation.

**Christopher W. Johnson**, Haoran Meng, Frank L. Vernon, & Yehuda Ben-Zion, Earthquake and emergent correlated noise detection from a dense seismic deployment on the San Jacinto Fault, 2018, AGU Fall Meeting, S11E-0415. Washington D.C., Poster Presentation.

Qin, Lei, **Christopher W. Johnson**, Frank L. Vernon, & Yehuda Ben-Zion, Multi-scale study of ground motion coherence in Piñon Flats Observatory, 2018, AGU Fall Meeting, S23C-0531. Washington D.C., Poster Presentation.

Abolfathian, Niloufar, **Christopher W. Johnson,** & Yehuda Ben-Zion, Numerical simulations of stress variations with depth in a model for the San Jacinto fault zone, 2018, AGU Fall Meeting, T51G-0255. Washington D.C., Poster Presentation.

**Christopher W. Johnson**, Haoran Meng, Frank L. Vernon, Nori Nakata, & Yehuda Ben-Zion, Characteristics of ground motion generated by interaction of wind gusts with trees, structures and other obstacles above the surface. SCEC Contribution #8443, 2018 SCEC Annual Meeting Poster #305

Niloufar Abolfathian, **Christopher W. Johnson**, & Yehuda Ben-Zion, Numerical simulations of stress variations with depth in a model for the San Jacinto fault zone. SCEC Contribution #8505, 2018 SCEC Annual Meeting Poster #155

Lei Qin, **Christopher W. Johnson**, Frank L. Vernon, & Yehuda Ben-Zion, Multi-scale study of ground motion coherence in Piñon Flats Observatory. SCEC Contribution #8394, 2018 SCEC Annual Meeting Poster #299

**Johnson, C.W.,** Waveform classification using statistical learning algorithms to characterize data features from a dense deployment of geophones atop an active fault zone, Machine Learning in Solid Earth Geoscience, 2018. Santa Fe, NM, Oral Presentation.

**Johnson, C.W.,** Y. Fu, and R. Bürgmann, Seasonal variations in shallow Alaska seismicity and stress modulation from GRACE derived hydrological loading, 2017 AGU Fall Meeting. G31A-0894. New Orleans, LA, Poster Presentation

Dutilleul, P., **C.W. Johnson**, and R. Bürgmann, Multifrequential periodogram and phase analyses of earthquake numbers and hypocenter depths in central California, 2017 AGU Fall Meeting. S53B-0703. New Orleans, LA, Poster Presentation

**Johnson, C. W.**, Fu, Y., & R. Bürgmann, Stress models of the annual hydrospheric, atmospheric, thermal, and tidal loading cycles on California faults: Perturbation of background stress and changes in seismicity, 2017 SCEC Annual Meeting, Palm Springs, CA, Poster

**Johnson, C.W.,** Y. Fu, and R. Bürgmann, Stress Modulation on Active Faults, 2017 Northern California Earthquake Hazards Workshop, Nasa Ames, Moffett Field, CA, Poster

**Johnson, C.W.**, Y. Fu, and R. Bürgmann, Seasonal stress modulation on active California fault structures, 2016 AGU Fall Meeting. G41A-03. San Francisco, CA, Oral Presentation

**Johnson, C.W.**, R. Bürgmann, Y. Fu, and P. Dutilleul, Seasonal stress modulation on active California fault structures, 2016 SCEC Annual Meeting, Palm Springs, CA, Poster

**Johnson, C.W.**, R. Bürgmann, Y. Fu, and P. Dutilleul, Seasonal Water Storage, the Resulting Deformation and Stress, and Occurrence of Earthquakes in California, 2016 UNAVCO Workshop, Hydrology Section. Boulder, CO. Poster

**Johnson, C.W.**, R. Bürgmann, Y. Fu, and P. Dutilleul, Seasonal Water Storage, the Resulting Deformation and Stress, and Occurrence of Earthquakes in California, AGU 2015 Fall Meeting. G54A-05. San Francisco, CA, Oral Presentation

**Johnson, C.W.**, R. Bürgmann, Y. Fu, and P. Dutilleul, Seasonal water storage, the resulting deformation and stress, and the occurrence of earthquakes in California, 2015 SCEC Annual Meeting, 236. Palm Springs, CA. Poster

Chaussard, E., **C. W. Johnson,** H. Fattahi, and R. Bürgmann, Potential, limits, and best practices for characterization of interseismic deformation with InSAR, 2015 SCEC Annual Meeting, 200. Palm Springs, CA. Poster

**Johnson, C.W.**, R. Bürgmann, and F. Pollitz, Global Catalog Analysis Shows That Dynamic Triggering Or Shadowing Of Remote M≥5.5 Earthquakes Is Rare. 2014 AGU Fall Meeting S22A-05. San Francisco, CA, Oral Presentation

**Johnson, C.W.**, Roland Burgmann, and Pierre Dutilleul, Seasonal stress loading and periodic seismicity in California, 2014 SCEC Annual Meeting, 103. Palm Springs, CA. Poster

**Johnson, C.W.** and R. Burgmann, 2013, Spatial and temporal global seismicity patterns following large magnitude earthquakes. 2013 AGU Fall Meeting S51B-2359, San Francisco, CA. Poster

**Johnson, C.W.**, and R. Burgmann, Seismicity in the central Gulf of California region following the Mw 8.6 2012 Indian Ocean earthquake, 2013 SCEC Annual Meeting, 097. Palm Springs, CA. Poster

**Johnson, C.W.**, Frankel, K.L., Newman, A.V., Lifton, Z.M., 2011, Measuring present- day strain rates along the Fish Lake Valley fault system, Pacific-North America plate boundary. AGU Fall Meeting, TT51B-2332. San Francisco, CA. Poster

## Synergistic Activities

**Workshops**

Mar 2019 Machine Learning in Solid Earth Geosci., LANL, Santa Fe, NM
Sept 2018 SCEC Community Rheology Workshop, Palm Springs, CA
June 2018 IRIS Workshop, Albuquerque, NM
Mar 2018 UNAVCO Annual Workshop, Boulder, CO
Feb 2018 Machine Learning in Solid Earth Geosci., LANL, Santa Fe, NM
Oct 2017 EarthScope Hydrogeodesy Workshop, SIO, La Jolla, CA
Sep 2017 Institute of Earth Sciences, Academia Sinica, Taipei, Taiwan
Jun 2017 Computation in Geophysics Workshop. Golden, CO
Jan 2017 USGS Earthquake Hazards Workshop, Menlo Park, CA
Oct 2016 State of Stress in the Earth, LANL, Santa Fe, NM
Sep 2016 SCEC Community Geodetic Model Workshop
Mar 2016 UNAVCO Annual Workshop, Boulder, CO
Jan 2016 USGS National Hazards Workshop, Menlo Park, CA
Sep 2014 SCEC Community Geodetic Model, Palm Springs, CA
Jul 2014 UNAVCO GMTSAR Workshop, Longmont, CO
Jul 2014 CIG PyLith Workshop, Palo Alto, CA
Oct 2013 Statistics and Triggering of Earthquakes, Banff, Canada

**Peer Review**

AGU Advances (1x)
Earth and Planetary Science Letters (2x)
Geochemistry, Geophysics, Geosystems (1x)
Geophysical Journal International (1x)
Geophysical Research Letters (5x)
Nature Communication (1x)
NSF proposal (1x)
Journal of Geophysical Research: Solid Earth (8x)
Pure and Applied Geophysics (2x)
Science Advances (1x)
Seismological Research Letters (2x)

**Community Outreach**

Sally Ride Junior Academy Instructor, San Diego CA. 2018

EPS Department Coordinator for Bay Area Science in Schools outreach program organized by Community Resources for Science (crscience.org) from 2015-2017.

Lead activities for the Berkeley Seismological Laboratory outreach program. Involvement includes developing lesson plans for earthquakes, faulting, earthquake safety, and preparedness for the $6^{th}$ – $8^{th}$ grade level. Travel to local middle schools, with a focus on underrepresented communities, and give 1-2 hour lessons with a lab component on earthquake faulting, liquefaction, and safety.

**Media Coverage**

Kornei, K. (2019), Wind-triggered ground shaking masks microseismicity, Eos, 100, https://doi.org/10.1029/2019EO130989. Published on 20 August 2019.

Something You Probably Didn't Expect From the Huge Sierra Snowpack: Earthquakes, Craig Miller, *NPR station KQED*, 06/15/2017

San Andreas Fault Earthquakes Are Triggered by Winter Rain and Snow, Scientists Discover, Hannah Osborne, *Newsweek*, 06/15/2017

Shifting water weight can trigger small earthquakes in California, Warren Cornwall, *Sciencemag*, 06/15/2017

Seasonal water changes may trigger earthquakes, UC Berkeley researchers say, Jana Katsuyama, *KTVU*, 06/16/2017

Rain and snow help stress out earthquake faults, A little bit, Mary Beth Griggs, *Popular Science*, 06/15/2017

How Rain and Snow Could Play a Role in Triggering Earthquakes, John Perritano, *How Stuff Works*, 06/22/2017

Snow and rain tug on earthquake faults in California, Maria Temming, *Science News*, 07/03/2017

**Affiliations**

American Geophysical Union, since 2010
Seismological Society of America, since 2013
UNAVCO / WInSAR, since 2012
Southern California Earthquake Center, since 2012

## Skills and Experiences

**Computation**

Computing: Python, Matlab, Fortran, C, BASH
San Diego Super Computer COMET: HPC Singularity environments
Data processing: ISCE, GMTSAR, ObsPy, Scikit-learn, Tensorflow/Keras
Document/Presentation: Office platform, Adobe Suite

**Field and Lab**

Nov 2019 San Jacinto FZ geophone array deployment
Nov 2018, San Jacinto FZ Seismic Network Maintenance
Jul-Aug 2018, San Jacinto FZ 400 geophone array deployment
Feb 2018, Anza, CA Geophone deployment
Nov 2017, Anza-Borrego Seismic Network Maintenance
Sept 2016, GPS campaign for Hayward Fault
Aug 2014, Rapid GPS deployment following South Napa earthquake
Dec 2013, Mapping and geochronology at Mission Creek Fault, CA
May 2012 – June 2012, GPS campaign and mapping in the ECSZ
May 2011 – June 2011, GPS campaign and mapping in the ECSZ
March 2011, Mapping active tectonics in the eastern Sierra Nevada
May 2010 – June 2010, GPS campaign and sample collection in ECSZ.
Technician Cosmogenic Nuclide Lab, Georgia Tech, 2010-2012

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|---|---|
| **Previous Employment** | Diesel Technician, Kelly Comm. Truck Center, Atlanta, GA, 2000-2004<br>Master Level Technician, Tom's Truck Center, Santa Ana, CA, 2004-2006<br>Master Level Technician, Adobe Comm. Trucks, Atlanta, GA, 2007-2008<br>*ASE Master Level Technician Medium/Heavy Trucks (2003-2008)* |
| **Language** | English (native)<br>Spanish (can communicate) |