Eric M. Dunham

Stanford University
Department of Geophysics   edunham@stanford.edu
397 Panama Mall   http://pangea.stanford.edu/~edunham
Stanford, CA 94305-2215   (650) 725-6989

EDUCATION

2005	PhD Physics, University of California, Santa Barbara
2000	BS Physics with Highest Distinction, University of Virginia

APPOINTMENTS

2022–present	Professor
	Department of Geophysics, Stanford University
2011–present	Affiliated Faculty Member
	Institute for Computational and Mathematical Engineering, Stanford
2015–2022	Associate Professor
	Department of Geophysics, Stanford University
2009–2015	Assistant Professor
	Department of Geophysics, Stanford University
2008–2009	Lecturer on Applied Mathematics
	School of Engineering and Applied Sciences, Harvard University
2007–2009	Research Associate in Geophysics
	Department of Earth and Planetary Sciences, Harvard University
2005–2007	Reginald A. Daly Postdoctoral Fellow
	Department of Earth and Planetary Sciences, Harvard University

HONORS AND AWARDS

2018	Editors' Citation for Excellence in Refereeing for *Journal of Geophysical Research—Solid Earth*
2017	Editors' Citation for Excellence in Refereeing for *Geophysical Research Letters*
2017	Honorable Mention for Best Paper in *Geophysics*
2014	School of Earth Sciences Excellence in Teaching Award, Stanford (one award annually to a faculty member in Stanford's School of Earth Sciences for excellence in teaching)
2013	National Science Foundation CAREER Award ("The Faculty Early Career Development (CAREER) Program is a Foundation-wide activity that offers the National Science Foundation's most prestigious awards in support of junior faculty who exemplify the role of teacher-scholars through outstanding research, excellent education and the integration of education and research within the context of the mission of their organizations.")
2012	Alfred P. Sloan Foundation Fellow ("The Sloan Research Fellowships seek to stimulate fundamental research

by early-career scientists and scholars of outstanding promise. These two-year fellowships are awarded yearly to 126 researchers in recognition of distinguished performance and a unique potential to make substantial contributions to their field.")

2011	Best Poster Award, Society of Industrial and Applied Mathematics (SIAM) Geosciences Conference
2009–2012	Frederick E. Terman Fellow, Stanford (awarded to promising young faculty in science and engineering)
2008	Certificate for Distinction in Teaching, Harvard (given to instructors achieving overall course evaluations of 4.5 or above on 5-point scale)
2008	Nominee for Joseph R. Levenson Memorial Teaching Prize, Harvard (approximately 30 instructors nominated annually by former students)
2007	Editors' Citation for Excellence in Refereeing for *Geophysical Research Letters*
2001–2005	National Defense Science and Engineering Graduate Fellowship
2004	Outstanding Student Paper, American Geophysical Union
2004	UCSB Affiliates Graduate Dissertation Fellowship, UCSB
2004	Student Presentation Award, Seismological Society of America
2002	Outstanding Student Paper, American Geophysical Union
2001	John Cardy Award for strongest academic performance in core first-year graduate classes, UCSB Physics
2000	Parsons Fellowship for outstanding promise in computational science, UCSB Physics
2000	James W. Elkins Award for graduate with most outstanding academic record in physics, UVA Physics
1996–2000	Jefferson Scholar: full academic scholarship for leadership, citizenship, and scholarship, University of Virginia
1999	Phi Beta Kappa

RESEARCH EXPERIENCE

My research focuses on natural hazards and associated phenomena, primarily through theory and computational modeling:

- Earthquake source processes
  - Characterization of strong ground motion and seismic hazard
  - Evolution of fault strength during frictional sliding
  - Coupling of fault slip dynamics with viscoelastic, poroelastic, and elastic-plastic off-fault material response
- Subduction zone hazards
  - Megathrust earthquake rupture dynamics
  - Tsunami generation
  - Fluids and slow earthquakes
- Physical volcanology and volcano seismology
  - Waves in fluid-filled cracks and conduits
  - Seismic and acoustic wave generation by eruptions
- Numerical methods for solid and fluid mechanics and wave propagation
  - High-order accurate finite difference methods

        o Provably stable enforcement of nonlinear interface conditions across frictional faults and fluid-filled cracks
        o Fluid-solid coupling for volcanoes, tsunamis, ice shelves

ADVISING

Postdoctoral Fellows

2022–present	So Ozawa, Fault zone fluid transport and pore pressure dynamics in subduction zones
2017–2020	Martin Almquist, Numerical methods for forward and inverse wave propagation and earthquake sequence modeling (currently Assistant Professor, Department of Information Technology, Division of Scientific Computing, Uppsala University)
2012–2015	Kenneth Duru, Numerical methods for 3D seismic wave propagation and earthquake rupture dynamics (currently Researcher, Australian National University)
2012–2014	Leif Karlstrom, NSF Earth Sciences postdoctoral fellow, Waves in volcanic conduits (currently Associate Professor, Geological Sciences, University of Oregon)
2010–2012	Brittany Erickson, NSF Earth Sciences postdoctoral fellow, Algorithms for earthquake cycles in sedimentary basins (currently Assistant Professor, Department of Computer and Information Science, University of Oregon)
2010–2011	Zijun Fang, Dynamics of geometrically complex faults (currently Numerical geomechanics specialist, Chevron)
2009–2012	Jeremy E. Kozdon, NSF Transformative Computational Science using CyberInfrastructure (CI TraCS) postdoctoral fellow, Numerical methods for seismic wave propagation and earthquake ruptures (currently Associate Professor, Applied Mathematics, Naval Postgraduate School)

Graduate Students

2019–present	Mario Ruiz (PhD student in Geophysics) volcanic eruptions
2022–present	Qing Ji (PhD student in Geophysics) seismic wave generation by hurricanes and atmospheric processes
2019–present	Fred Lam (PhD student in Institute for Computation and Mathematical Engineering) explosive volcanic eruption modeling, marine seismic sources
2019–present	Kate Coppess (PhD student in Physics) seismic wave generation by volcanic eruptions
2018–2022	Nurbek Tazhimbetov (PhD Institute for Computation and Mathematical Engineering) ocean wave interactions with ice shelves (currently software engineer at Taiwan Semiconductor Manufacturing Company (TSMC))
2017–2022	Lauren Abrahams (PhD Geophysics) coupled earthquake-tsunami simulations (currently Design Physicist in the Weapons and Complex Integration Directorate, Lawrence Livermore National Laboratory)
2017–2022	Yuyun Yang (PhD Institute for Computation and Mathematical Engineering) fluid transport and pore pressure evolution in earthquake

sequences (currently RCG Postdoctoral Fellow at Chinese University of Hong Kong)

2017–2020   Ali Kashefi (Engineer Mechanical Engineering) earthquake and hydraulic fracture simulations

2014–2020   Leighton Watson (PhD Geophysics) marine seismic sources (airguns), infrasound from volcanic eruptions (currently postdoctoral fellow, University of Canterbury)

2015–2019   Chao Liang (PhD Geophysics) waves in fluid-filled cracks, application to hydraulic fractures in oil and gas industry and to volcanoes (currently Assistant Professor at Sichuan University)

2015–2016   Bo Prochnow (MS Geophysics) numerical methods for axisymmetric wave propagation in volcanic conduits

2013–2014   Paul Summers (MS Geophysics) volcanic conduit flow models and connection to volcanic tremor (currently PhD student, Stanford University)

2012–2018   Kali Allison (PhD Geophysics) viscoelastic and thermomechanical processes in earthquake cycles (currently CIG postdoc at University of California, Davis)

2012–2018   Gabriel Lotto (MS Institute for Computation and Mathematical Engineering (Computational Geosciences) and PhD Geophysics) generation of tsunamis in a compressible ocean by offshore earthquakes (currently ShakeAlert User Engagement Facilitator, Pacific Northwest Seismic Network)

2011–2017   Sam Bydlon (PhD Geophysics) seismic scattering, source complexity, and earthquakes in heterogeneous media (currently Quantitative Product Manager, SigFig)

2011–2016   Ossian O'Reilly (PhD Geophysics) numerical simulation of wave propagation along fluid-filled cracks (currently MTS Software System Design Engineer, AMD)

2011–2016   Brad Lipovsky (PhD Geophysics) source processes of volcanic and glacial tremor (currently Assistant Professor, Department of Earth and Space Sciences, University of Washington)

Graduate Students (departmental "second projects")

2022   Taiyi Wang, injection-induced seismicity during enhanced geothermal systems stimulation

2019   Milad Bader, dual-consistent finite difference methods for acoustic-elastic full-waveform inversion

2018   Ben Mullet, flexural-gravity waves in ice shelves

2017   Weiqiang Zhu, earthquake sequence simulations with fault-zone fluid pressure evolution

2016   Joe Jennings, SBP-SAT finite difference methods for adjoint-based optimization

2016   Elias Heimisson, poroelastic effects in earthquake nucleation

2015   Shanna Chu, shear localization in dynamic rupture models

2015   Guillaume Barnier, tsunami wavefield reconstruction

2014	Lucile Bruhat, supershear transition on nonplanar faults
2012	Kevin Seats, frequency-dependent radiation patterns observed in K-NET and KiK-net data
2012	Ksenia Dmitrieva, physical models of harmonic tremor at Redoubt Volcano, Alaska
2011	Ali Almomin, constraining earthquake dynamic source parameters from strong motion records

Undergraduate Students (summer interns and academic year research)

2010–present	Summer interns working with my group: Hoon Cho, A.J. Delauder, Sebastian Soto, Francisco Nunez (principal advisor: postdoc Jeremy E. Kozdon), Lay Kuan Loh (principal advisor: postdoc Leif Karlstrom), Alex Kinsella, Paul Summers, Gina Belair, Dilia Olivo (principal advisor: PhD student Brad Lipovsky), Ferdinand Harerimana (principal advisor: PhD student Sam Bydlon), Janine Birnbaum (principal advisor: PhD student Brad Lipovsky), Peter Ha Do (principal advisor: PhD student Kali Allison), Bo Prochnow (co-advised with PhD student Ossian O'Reilly), Kirk Ampong, Gabriel Nava, Gabe Epp (principal advisor: PhD student Leighton Watson), Jose Mierzejewski (principal advisor: PhD student Lauren Abrahams), Connery Wood (principal advisor: PhD student Kate Coppess), Emily Dicky (principal advisor: PhD student Fred lam)
2013–2014	Alex Kinsella, source descriptions of complex ruptures on nonplanar faults
2012–2013	Daniel Trugman, kinematic earthquake descriptions based on dynamic rupture simulations (Honors Thesis, recipient of Kennedy Prize for best honors thesis at Stanford in Natural Sciences)
2010–2011	Hoon Cho, far-field radiation from complex earthquake ruptures
2008–2009	Lin Cong, numerical methods for dynamic elastoplasticity (at Harvard)
2007–2009	David Belanger, numerical methods for modeling earthquake ruptures on nonplanar faults (at Harvard)

PROFESSIONAL ACTIVITIES

2022–present	Co-leader of Modeling Collaboratory for Subduction, Steering Committee member of Subduction Zones in 4 Dimensions (SZ4D)
2019–2020	Co-organizer for Megathrust Modeling Workshop, Modeling Collaboratory for Subduction; lead author for community white paper "Megathrust Modeling Workshop Report" reviewing state of field, outstanding science questions, and recommended community actions for advancing subduction zone science through modeling
2019	Co-chair for Numerical Modeling of Earthquake Motions: Waves and Ruptures international workshop, Slovakia
2018–2022	Steering committee member for Modeling Collaboratory for Subduction
2018-2019	Organizing committee member for Modeling Earthquake Source Processes workshop; co-chair of Scientific Committee and second author for community white paper "Modeling earthquake source processes: from tectonics to dynamic rupture" reviewing state of field, outstanding science questions, and recommended community actions for advancing earthquake science through modeling

2015	Co-organizer for Engineering Mechanics Institute annual meeting Minisymposium on Computational Methods for Faults, Fault Leakage, and Seismic Hazards
2013	Co-organizer for Seismological Society of America annual meeting special session on Earthquake Source Physics
2012	Chair of National Academy of Sciences, 15th Chinese-American Kavli Frontiers of Science Symposium, Earthquake Mechanics and Forecasting
2011–2019	Co-leader of Southern California Earthquake Center Computational Science disciplinary group and member of Planning Committee
2011	Co-organizer for Seismological Society of America annual meeting special session on Seismicity in Volcanic Environments
2011	Co-organizer for Society of Industrial and Applied Mathematics (SIAM) Geosciences Minisymposium on Computational Challenges in Earthquake Simulation
2010	Delegate for U.S.-Japan Natural Resources Panel on Earthquake Research
2010	Co-convener for International Workshop on Multiscale and Multiphysics Processes in Geomechanics
2009	Co-convener for Southern California Earthquake Center Dynamic Weakening Mechanisms workshop

PROFESSIONAL SERVICE

2019	American Geophysical Union Section Award Committee Chair
2018	American Geophysical Union Section Award Committee Chair
2016	National Science Foundation Review Panelist
2014	United States Geological Survey Review Panelist
2013	United States Geological Survey Review Panelist
2010	United States Geological Survey Review Panelist
2005–2008	Associate Editor, Journal of Geophysical Research

PROFESSIONAL SOCIETIES

2016–present	Society for Exploration Geophysics, member
2010–present	Society for Industrial and Applied Mathematics, member
2002–present	American Geophysical Union, member
2002–present	Seismological Society of America, member

UNIVERSITY AND DEPARTMENTAL SERVICE

2022–present	Director of Graduate Studies, Department of Geophysics
2022–present	Director of SDSS Center for Computation
2021–2022	Fellowships Committee Chair, Department of Geophysics
2018–2022	Director of Stanford Center for Computational Earth and Environmental Science (CEES)
2018	Chair of faculty reappointment committee
2016–2017	Geological Sciences faculty search committee
2016	Invited speaker for Stanford Association of Oregon (lecture for alumni)
2016–2020	Associate Chair for Diversity and Inclusion, Department of Geophysics

2015–2016	Geophysics faculty search committee
2015	Invited speaker for Stanford Club of Marin (lecture for alumni)
2015	Invited speaker for Stanford Admit Weekend (Academic Expo lecture series)
2014–2015	Geophysics faculty search committee
2014	Chair of faculty appointment committee
2014	Invited speaker for Stanford Admit Weekend (Academic Expo lecture series)
2014	Invited speaker for Stanford Alumni Club of the Desert (lecture for alumni)
2013–2014	Department of Geophysics, Admissions Committee
2013–2014	School of Earth Sciences Teaching Task Force
2013	Invited speaker at New Student Orientation (Engaging with Faculty lecture series) for incoming Stanford freshmen
2013	Invited speaker for Stanford Admit Weekend (Academic Expo lecture series)
2012	Invited speaker at New Student Orientation (Engaging with Faculty lecture series) for incoming Stanford freshmen
2011–2017	School of Earth Sciences Council
2011–2012	Department of Geophysics, seminar series organizer
2011	Invited speaker at New Student Orientation (Engaging with Faculty lecture series) for incoming Stanford freshmen
2010–2018	Pre-major advisor to 20 undergraduates
2009–2010	Geophysics undergraduate curriculum committee

TEACHING

GEOPHYS 238: Waves in Solids and Fluids (spring 2021, spring 2023)

GEOPHYS 120/220: Geophysical Mechanics and Dynamics (autumn 2022)

CME 108: Introduction to Scientific Computing (spring 2012, winter 2013, winter 2018, winter 2021, winter 2022, winter 2023)

GEOPHYS 229: Earthquake Rupture Dynamics (autumn 2014, spring 2019, autumn 2021)

GEOPHYS 287: Earthquake Seismology (spring 2011, spring 2013, spring 2015, autumn 2018)

GEOPHYS 120/220: Ice, Water, Fire (winter 2011, winter 2012, winter 2013, spring 2014, winter 2015, winter 2016, winter 2017, winter 2018, winter 2019)

GEOPHYS 150/250: Geodynamics (spring 2017)

GEOPHYS 385D: Theoretical Geophysics seminar (various topics: Earthquake Rupture Dynamics, autumn, 2011; Fluid Dynamics in Volcanic Eruptions, spring, 2010; Strong Ground Motion and Seismic Hazard, winter 2010)

GEOPHYS 385L: Earthquake Seismology, Deformation, and Stress seminar (every quarter, 2009–2020)

GEOPHYS 385R: Volcano seminar (every quarter, 2016–2018, 2021–present)

AM 202: Physical Mathematics II (spring 2008 at Harvard)

INVITED TALKS (since 2009)

2023	Rice University, Earth, Environmental and Planetary Sciences department seminar
2022	The Geological Fingerprints of Slow Earthquakes Penrose Conference, Santa Catalina Island (keynote presentation)
2021	Caltech, Mechanical Engineering department seminar
2021	Texas A&M, Geology & Geophysics department seminar
2021	Massachusetts Institute of Technology, Earth, Atmospheric, and Planetary Sciences department seminar
2021	American Rock Mechanics Association, Induced Seismicity webinar
2020	University of Southern California, Earth Sciences department seminar
2020	Southern California Earthquake Center Workshop on Dynamic Rupture Group Ingredients Workshop on Fault Friction
2019	American Geophysical Union Fall Meeting
2019	University of Illinois Urbana Champaign, Civil and Environmental Engineering department seminar
2019	Stanford, Physics department seminar
2019	Modeling Collaboratory for Subduction workshop on Megathrust Modeling
2019	Southern California Earthquake Center Workshop on How Physics-Based Earthquake Simulators Might Help Improve Earthquake Forecasts
2019	Southern California Earthquake Center Workshop on 2019 Community Rheology Model Workshop: Testing and Refining the Preliminary CRM
2019	Earthquake Research Institute, University of Tokyo
2019	Modeling tribology: friction and fracture across scales, Lausanne, Switzerland (keynote presentation)
2018	Modeling Earthquake Source Processes workshop, Caltech
2018	ACES (APEC Cooperation for Earthquake Science) International Workshop, Awaji Island, Japan
2018	Southern California Earthquake Center Workshop on Loading of Southern California Faults: Bulk Lithospheric Deformation and/or Localized Ductile Shear Zone Strain
2018	University of California, Merced, Physics department seminar
2017	Columbia/ Lamont-Doherty Earth Observatory department seminar
2017	SEG/SPE Microseismic Technology and Hydraulic Fracture Mechanisms workshop, Houston, Texas (keynote presentation)
2017	Japan Geophysical Union / American Geophysical Union (JpGU/AGU) Joint Meeting, Chiba, Japan.
2017	Scientific Exploration of Induced Seismicity and Stress (SEISMS) workshop, Lamont-Doherty Earth Observatory (keynote presentation)
2016	Southern California Earthquake Center Workshop on the Processes that Control the Strength of Faults and Dynamics of Earthquakes
2016	National Academies Workshop on Improving Understanding of Volcanic Eruptions
2016	Computational Infrastructure for Geodynamics Workshop
2016	Lockheed Martin Advanced Technology Center
2015	Symposium on the Application of Mechanics to Geophysics

2014	American Geophysical Union Fall Meeting (two invited talks)
2014	Southern California Earthquake Center Annual Meeting (plenary lecture)
2014	Shell Technology Centre, Amsterdam, Rock and Fluid Physics: Academic and Industrial Perspectives Conference
2014	Computational Infrastructure for Geodynamics Crustal Deformation Modeling Workshop
2014	Incorporated Research Institutions for Seismology, Grand Challenges in Faulting and Deformation Processes (plenary lecture)
2014	Seismological Society of America Annual Meeting
2014	Penn State
2014	Caltech
2013	Lockheed Martin Advanced Technology Center
2013	University of British Columbia, Earth and Ocean Sciences
2013	King Abdullah University of Science and Technology
2012	American Geophysical Union Fall Meeting
2012	International Workshop of Special Project for Reducing Vulnerability for Urban Mega Earthquake Disasters, Matsushima, Japan
2012	University of California, Berkeley, Earth and Planetary Sciences
2012	U.S. Geological Survey, Earthquake Science Seminar
2012	International Conference on a New Perspective on Great Earthquakes Along Subduction Zones, Kochi, Japan
2011	American Geophysical Union Fall Meeting
2011	University of California, Santa Cruz
2010	U.S.-Japan Natural Resources Panel on Earthquake Research, Nagaoka, Japan
2010	U.S. Geological Survey, Earthquake Science Seminar
2010	University of California, Berkeley, Berkeley Seismological Laboratory
2010	University of Oregon
2010	Lawrence Livermore National Laboratory
2010	University of California, Berkeley, Applied Mathematics
2010	Lockheed Martin Advanced Technology Center
2009	U.S. Geological Survey, Earthquake Science Seminar

PUBLICATIONS
(available at http://pangea.stanford.edu/~edunham/publications/publications.html)

(* indicates student advisee, **postdoctoral advisee, at time when majority of work on project/publication was completed)

*Yang, Y., E. M. Dunham, Influence of creep compaction and dilatancy on earthquake sequences and slow slip, in review at *Journal of Geophysical Research*.
*Tazhimbetov, N., **M. Almquist, J. Werpers, E. M. Dunham, Simulation of flexural-gravity wave propagation for elastic plates in shallow water using an energy-stable finite difference method with weakly enforced boundary and interface conditions, in review at *Journal of Computational Physics*.

*Abrahams, L. S., *J. E. Mierzejewski, E. M. Dunham, Bromirski, P. D., Ocean surface gravity wave excitation of flexural gravity and extensional Lamb waves in ice shelves, *Seismica*, 2(1), doi:10.26443/seismica.v2i1.213.

Dunham, E. M., J. Zhang, D. Moos (2023), Constraints on pipe friction and perforation cluster efficiency from water hammer analysis, SPE-212337-MS, Paper presented at the SPE Hydraulic Fracturing Technology Conference and Exhibition, The Woodlands, Texas, USA, doi:10.2118/212337-MS.

*Bader, M., **M. Almquist, E. M. Dunham (2023), Modeling and inversion in acoustic-elastic coupled media using energy-stable summation-by-parts operators, *Geophysics*, doi:10.1190/geo2022-0195.1.

*Lam, F. Y. K., E. M. Dunham (2023), Influence of port opening dynamics on the acoustic signature of pneumatic marine seismic sources, *Geophysics*, doi:10.1190/geo2022-0346.1.

*Abrahams, L. S., L. Krenz, E. M. Dunham, A.-A. Gabriel, T. Saito (2023), Comparison of methods for coupled earthquake and tsunami modeling, *Geophysical Journal International*, **234**(1), 404–426, doi:10.1093/gji/ggad053.

Erickson, B. A., J. Jiang, V. Lambert, M. Abdelmeguid, M. Almquist, J.-P. Ampuero, R. Ando, S. Barbot, C. Cattania, A. Chen, L. Dal Zilio, E. M. Dunham, A. Elbanna, A.-A. Gabriel, T. W. Harvey, Y. Huang, Y. Kaneko, J. E. Kozdon, N. Lapusta, D. Li, M. Li, C. Liang, Y. Liu, S. Ozawa, C. Pranger, P. Segall, Y. Sun, P. Thakur, C. Uphoff, Y. van Dinther, *Y. Yang (2023), Incorporating full elastodynamic effects and dipping fault geometries in community code verification exercises for simulations of earthquake sequences and aseismic slip (SEAS), *Bulletin of the Seismological Society of America*, doi:10.1785/0120220066.

*Wang, T., E. M. Dunham (2022), Hindcasting injection-induced aseismic slip and microseismicity at the Cooper Basin Enhanced Geothermal Systems Project, *Scientific Reports*, **12**, 19481, doi:10.1038/s41598-022-23812-7.

*Coppess, K., E. M. Dunham, **M. Almquist (2022), Ultra and very long period seismic signatures of unsteady eruptions predicted from conduit flow models, *Journal of Geophysical Research*, **127**(6), e2022JB024313, doi:10.1029/2022JB024313.

Dvory, N. Z., *Y. Yang, E. M. Dunham (2022), Models of injection-induced aseismic slip on height-bounded faults in the Delaware Basin constrain fault-zone pore pressure changes and permeability, *Geophysical Research Letters,* **49(11), e2021GL097330, doi:10.1029/2021GL097330.

*Wang, T., *Coppess, K., Segall, P., Dunham, E. M. , Ellsworth, W. L. (2022) Physics-based model reconciles caldera collapse induced static and dynamic ground motion: application to Kilauea 2018, *Geophysical Research Letters*, **49**(8), e2021GL097440, doi:10.1029/2021GL097440.

Jiang, J., Erickson, B. Lambert, V., Ampuero, J.-P., Ando, R., Barbot, S., Cattania, C., Dal Zilio, L., Duan, B., Dunham, E. M., Gabriel, A.-A., Lapusta, N., Li, D., Li, M., Liu, D., Liu, Y., Ozawa, S., Pranger, C., van Dinther, Y. (2022) Community-driven code comparisons for three-dimensional dynamic modeling of sequences of earthquakes and aseismic slip (SEAS), *Journal of Geophysical Research*, **127**(3), e2021JB023519, doi:10.1029/2021JB023519.

*Bader, M., **M. Almquist, E. M. Dunham (2021) Acoustic-elastic waveform modeling and inversion using energy-stable summation-by-parts finite-difference operators, In

First International Meeting for Applied Geoscience & Energy (pp. 2445-2449). Society of Exploration Geophysicists, doi:10.1190/segam2021-3579516.1.

*Watson, L. M., E. M. Dunham, D. Mohaddes, J. Labahn, T. Jaravel, and M. Ihme (2021), Infrasound radiation from impulsive volcanic eruptions: Nonlinear aeroacoustic 2D simulations, *Journal of Geophysical Research*, 126, e2021JB021940, doi:10.1029/2021JB021940.

Krenz, L., C. Uphoff, T. Ulrich, A.-A. Gabriel, *L. S. Abrahams, E. M. Dunham, and M. Bader (2021), 3D acoustic-elastic coupling with gravity: The dynamics of the 2018 Palu, Sulawesi earthquake and tsunami, Accepted at the *International Conference for High Performance Computing, Networking, Storage and Analysis 2021*, doi:10.1145/1122445.1122456.

*Yang, Y., and E. M. Dunham (2021), Effect of porosity and permeability evolution on injection-induced aseismic slip, *Journal of Geophysical Research*, **126**(7), e2020JB021258, doi:10.1029/2020JB021258.

*Allison, K. L., and E. M. Dunham (2021), Influence of shear heating and thermomechanical coupling on earthquake sequences and the brittle-ductile transition, *Journal of Geophysical Research*, **126**(6), e2020JB021394, doi:10.1029/2020JB021394.

Almquist, M., and E. M. Dunham (2021), Elastic wave propagation in anisotropic solids using energy-stable finite differences with weak boundary and interface conditions, *Journal of Computational Physics*, **424, 109842, doi:10.1016/j.jcp.2020.109842.

Dunham, E. M., A. Thomas, T. W. Becker, C. Cattania, J. Hawthorne, J. Hubbard, G. C. Lotto, J.-A. Olive, and J. Platt (2020), Megathrust Modeling Workshop Report, Modeling Collaboratory for Subduction RCN, doi:10.31223/X5730M.

*Abrahams, L. S., *K. L. Allison, and E. M. Dunham (2020), Earthquake sequence dynamics at the interface between an elastic layer and underlying half-space in antiplane shear, *Journal of Geophysical Research*, **125**(12), e2020JB020007, doi:10.1029/2020JB020007.

*Zhu, W., *K. L. Allison, E. M. Dunham, and *Y. Yang (2020), Fault valving and pore pressure evolution in simulations of earthquake sequences and aseismic slip, *Nature Communications*, **11**, 4833, doi:10.1038/s41467-020-18598-z.

*Maurer, J., E. M. Dunham, and P. Segall (2020), Role of fluid injection on earthquake size in dynamic rupture simulations on rough faults, *Geophysical Research Letters*, **47**(13), e2020GL088377, doi:10.1029/2020GL088377.

Almquist, M., and E. M. Dunham (2020), Non-stiff narrow-stencil finite difference approximations of the Laplacian on curvilinear multiblock grids, *Journal of Computational Physics,* **408(1), 109294, doi:10.1016/j.jcp.2020.109294.

Brodsky, E. E., J. J. Mori, L. Anderson, F. M. Chester, M. Conin, E. M. Dunham, N. Eguchi, P. Fulton, R. Hino, T. Hirose, M. Ikari, T. Ishikawa, T. Jeppson, Y. Kano, J. Kirkpatrick, S. Kodaira, W. Lin, Y. Nakamura, H. Rabinowitz, C. Regalla, F. Remitti, C. Rowe, D. Saffer, S. Saito, J. Sample, Y. Sanada, H. Savage, T. Sun, S. Toczko, K. Ujiie, M. Wolfson-Schwehr, and T. Yang (2020), The state of stress on the fault before, during and after a major earthquake, *Annual Review of Earth and Planetary Sciences*, **48**, 2.1-2.26, doi:10.1146/annurev-earth-053018-060507.

Bruhat, L., Y. Klinger, A. Vallage, and E. M. Dunham (2020), Influence of fault roughness on surface displacement: from numerical simulations to coseismic slip distributions, *Geophysical Journal International*, **220**(3), 1857-1877, doi:10.1093/gji/ggz545.

Erickson, B. A., J. Jiang, M. Barall, N. Lapusta, E. M. Dunham, R. Harris, *L. S. Abrahams, *K. L. Allison, J.-P. Ampuero, S. Barbot, C. Cattania, A. Elbanna, Y. Fialko, B. Idini, J. E. Kozdon, V. Lambert, Y. Liu, Y. Luo, X. Ma, M. B. McKay, P. Segall, P. Shi, M. van den Ende, and M. Wei (2020), The community code verification exercise for simulating sequences of earthquakes and aseismic slip (SEAS), *Seismological Research Letters*, **91**(2A), 874–890, doi:10.1785/0220190248.

*Liang, C., and E. M. Dunham (2020), Lava lake sloshing modes during the 2018 Kilauea Volcano eruption probe magma reservoir storativity, *Earth and Planetary Science Letters,* **535**(1), 116110, doi:10.1016/j.epsl.2020.116110.

*Liang, C., J. Crozier, **L. Karlstrom, and E. M. Dunham (2020), Magma oscillations in a conduit-reservoir system, applications to very long period (VLP) seismicity at basaltic volcanoes-Part II: Data inversion and interpretation at Kilauea Volcano, *Journal of Geophysical Research*, **125**(1), e2019JB017456, doi:10.1029/2019JB017456.

*Liang, C., **L. Karlstrom, and E. M. Dunham (2020), Magma oscillations in a conduit-reservoir system, applications to very long period (VLP) seismicity at basaltic volcanoes-Part I: Theory, *Journal of Geophysical Research*, **125**(1), e2019JB017437, doi:10.1029/2019JB017437.

Lapusta, N., E. M. Dunham, et al. (2019), Modeling earthquake source processes: from tectonics to dynamic rupture, Report to the National Science Foundation.

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