



Jenny Suckale

Assistant Professor of Geophysics

 Curriculum Vitae available Online

Bio

BIO

Before joining Stanford in January 2014, I held a position as Lecturer in Applied Mathematics and as a Ziff Environmental Fellow at Harvard. I hold a PhD in Geophysics from MIT and a Master in Public Administration from the Harvard Kennedy School. Prior to joining graduate school, I worked as a scientific consultant for different international organizations aiming to reduce the impact of natural and environmental disasters in vulnerable communities. The goal of my research is to advance our basic understanding and predictive capabilities of complex multi-phase flows that are fundamental to Earth science. I pursue this goal by developing original computational methods customized for the problem at hand. The phenomena I explore range from the microscopic to the planetary scale and space a wide variety of geophysics systems such as volcanoes, glaciers, and magma oceans. I have taught both undergraduate and graduate courses in scientific, planetary evolution, and natural disasters. Since arriving at Stanford in January 2014, I have co-taught GES 118, Understanding Natural Hazards, Quantifying Risk, Increasing Resilience in Highly Urbanized Regions

ACADEMIC APPOINTMENTS

- Assistant Professor, Geophysics

ADMINISTRATIVE APPOINTMENTS

- Research Fellow, Seismic Hazards, GeoForschungsZentrum (GFZ), Potsdam, Germany, (2003-2004)
- Research Fellow, Seismic Hazards, Institute de Recherche pour le Developpement (IRD), Nice, France, (2003-2003)
- Scientific Consultant, Communities at Risk Program, South Pacic Applied Geoscience Commission, Suva, Fiji Islands, (2003-2003)
- Research Assistant, GeoForschungsZentrum (GFZ), Potsdam, Germany., (2002-2002)
- Freelancer, German National Commission for UNESCO, Berlin, Germany, (2001-2002)
- Consultant, South African National Commission for UNESCO, Pretoria, South Africa, (2000-2000)

HONORS AND AWARDS

- Miller Research Fellowship (declined), University of California, Berkeley (2010)
- Ziff Environmental Fellow, Harvard Center for the Environment (2010)
- Graduate Student Research Grant, Geological Society of America (2009)
- Outstanding Student Paper Award, American Geophysical Union, Fall Meeting (2008)
- Graduate Student Research Grant, Massachusetts Institute of Technology (2007 and 2009)
- Presidential Fellow, Massachusetts Institute of Technology (2006-2007)
- McCloy Scholar (comparable to the Rhodes Scholarship. Granted nationwide to six students per year.), German National Merit Foundation (2004-2005)
- Scholarship, Robert Bosch and German National Merit Foundation (2002-2003)

- Scholarship, German National Merit Foundation (1997-2002)

PROGRAM AFFILIATIONS

- Institute for Computational and Mathematical Engineering (ICME)

PROFESSIONAL EDUCATION

- Ph.D, Massachusetts Institute of Technology , Geophysics (2011)
- MPA, Harvard University, Kennedy School of Government , Master of Public Administration (2006)
- M.Sc., Free University Berlin, Germany , Physics (with Distinction) (2002)

LINKS

- Research Group, SIGMA: <https://pangea.stanford.edu/researchgroups/sigma/>

Research & Scholarship

PROJECTS

- Contributing towards reducing tsunami risk in Indonesia - Stanford University, SIGMA group

Teaching

COURSES

2018-19

- GEOPHYSICAL MULTI-PHASE FLOWS: GEOPHYS 385W (Aut, Win, Spr, Sum)
- Sustainable Urban Systems Project: CEE 124Y (Win)
- Sustainable Urban Systems Project: CEE 124Z (Spr)
- Sustainable Urban Systems Project: CEE 224Y (Win)
- Sustainable Urban Systems Project: CEE 224Z (Spr)
- Sustainable Urban Systems Project: GEOPHYS 118Y (Win)
- Sustainable Urban Systems Project: GEOPHYS 118Z (Spr)
- Sustainable Urban Systems Project: GEOPHYS 218Y (Win)
- Sustainable Urban Systems Project: GEOPHYS 218Z (Spr)

2017-18

- Disasters, Decisions, Development in Sustainable Urban Systems: ESS 118, ESS 218, GEOPHYS 118X, GEOPHYS 218X, GS 118, GS 218, POLISCI 224A, PUBLPOL 118 (Aut)
- Disasters, Decisions, Development in Sustainable Urban Systems (CEE): CEE 124X, CEE 224X (Aut)
- GEOPHYSICAL MULTI-PHASE FLOWS: GEOPHYS 385W (Aut, Win, Spr, Sum)
- Numerical Methods in Engineering and Applied Sciences: AA 214A, CME 207, GEOPHYS 217 (Aut)
- Sustainable Urban Systems Project: CEE 124Y (Win)
- Sustainable Urban Systems Project: CEE 124Z (Spr)
- Sustainable Urban Systems Project: CEE 224Y (Win)
- Sustainable Urban Systems Project: CEE 224Z (Spr)
- Topics in Multiphase Instabilities and Extreme Events: GEOPHYS 306 (Spr)

2016-17

- GEOPHYSICAL MULTI-PHASE FLOWS: GEOPHYS 385W (Aut, Win)

- Numerical Methods in Engineering and Applied Sciences: AA 214A, CME 207, GEOPHYS 217 (Aut)
- Physical Volcanology: GEOPHYS 385R (Aut, Win, Spr)

2015-16

- D³: Disasters, Decisions, Development: ESS 118, ESS 218, GEOPHYS 118, GEOPHYS 218, GS 118, GS 218 (Win)
- D³: Disasters, Decisions, Development: GEOPHYS 160 (Win)
- Numerical Methods in Engineering and Applied Sciences: AA 214A, CME 207, GEOPHYS 217 (Aut)
- Physical Volcanology: GEOPHYS 385R (Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Leighton Watson, Molly Witter

Postdoctoral Faculty Sponsor

Tobias Keller, Ludovic Raess, Katherine Serafin

Doctoral Dissertation Advisor (AC)

Cooper Elsworth, Indraneel Kasmalkar, Paul Summers

Doctoral (Program)

Cansu Culha, Zihan Wei

Postdoctoral Research Mentor

Tobias Keller

Publications

PUBLICATIONS

- **Bistability of buoyancy-driven exchange flows in vertical tubes** *JOURNAL OF FLUID MECHANICS*
Suckale, J., Qin, Z., Picchi, D., Keller, T., Battiato, I.
2018; 850: 525–50
- **Adding a community partner to service learning may elevate learning but not necessarily service** *INTERNATIONAL JOURNAL OF DISASTER RISK REDUCTION*
Suckale, J., Saiyed, Z., Hilley, G., Alvisyahrin, T., Muhari, A., Zoback, M., Truebe, S.
2018; 28: 80–87
- **A residual-based shock capturing scheme for the continuous/discontinuous spectral element solution of the 2D shallow water equations** *ADVANCES IN WATER RESOURCES*
Marras, S., Kopera, M., Constantinescu, E., Suckale, J., Giraldo, F. X.
2018; 114: 45–63
- **Sediment behavior controls equilibrium width of subglacial channels** *JOURNAL OF GLACIOLOGY*
Damsgaard, A., Suckale, J., Piotrowski, J. A., Houssais, M., Siegfried, M. R., Fricker, H. A.
2017; 63 (242): 1034–48
- **Linking social, ecological, and physical science to advance natural and nature-based protection for coastal communities.** *Annals of the New York Academy of Sciences*
Arkema, K. K., Griffin, R., Maldonado, S., Silver, J., Suckale, J., Guerry, A. D.
2017
- **Flow-to-fracture transition in a volcanic mush plug may govern normal eruptions at Stromboli** *GEOPHYSICAL RESEARCH LETTERS*
Suckale, J., Keller, T., Cashman, K. V., Persson, P.

2016; 43 (23): 12071-12081

- **Rapid ice flow rearrangement induced by subglacial drainage in West Antarctica** *GEOPHYSICAL RESEARCH LETTERS*
Elsworth, C. W., Suckale, J.
2016; 43 (22): 11697-11707
- **Determining conditions that allow a shear margin to coincide with a Rothlisberger channel** *JOURNAL OF GEOPHYSICAL RESEARCH-EARTH SURFACE*
Platt, J. D., Perol, T., Suckale, J., Rice, J. R.
2016; 121 (7): 1273-1294
- **Collective properties of injection-induced earthquake sequences: 2. Spatiotemporal evolution and magnitude frequency distributions** *JOURNAL OF GEOPHYSICAL RESEARCH-SOLID EARTH*
Dempsey, D., Suckale, J., Huang, Y.
2016; 121 (5): 3638-3665
- **Collective properties of injection-induced earthquake sequences: 1. Model description and directivity bias** *JOURNAL OF GEOPHYSICAL RESEARCH-SOLID EARTH*
Dempsey, D., Suckale, J.
2016; 121 (5): 3609-3637
- **Subglacial hydrology and ice stream margin locations** *JOURNAL OF GEOPHYSICAL RESEARCH-EARTH SURFACE*
Perol, T., Rice, J. R., Platt, J. D., Suckale, J.
2015; 120 (7): 1352-1368
- **Deformation-induced melting in the margins of the West Antarctic ice streams** *JOURNAL OF GEOPHYSICAL RESEARCH-EARTH SURFACE*
Suckale, J., Platt, J. D., Perol, T., Rice, J. R.
2014; 119 (5): 1004-1025
- **Deformation-induced melting in the margin of Whillans ice stream (B2), Siple Coast, Antarctica, and implications for ice-stream dynamics** *Journal of Geophysical Research*
Suckale, J., Platt, J., Rice, J. R.
2014; 119
- **Crystals stirred up: 2. Numerical insights into the formation of the earliest crust on the Moon** *JOURNAL OF GEOPHYSICAL RESEARCH-PLANETS*
Suckale, J., Elkins-Tanton, L. T., Sethian, J. A.
2012; 117
- **Crystals stirred up: 1. Direct numerical simulations of crystal settling in nondilute magmatic suspensions** *JOURNAL OF GEOPHYSICAL RESEARCH-PLANETS*
Suckale, J., Sethian, J. A., Yu, J., Elkins-Tanton, L. T.
2012; 117
- **Reply to the comment by Mike R. James et al. on "It takes three to tango: 2. Bubble dynamics in basaltic volcanoes and ramifications for modeling normal Strombolian activity"** *JOURNAL OF GEOPHYSICAL RESEARCH-SOLID EARTH*
Suckale, J., Hager, B. H., Elkins-Tanton, L. T., Nave, J.
2011; 116
- **It takes three to tango: 2. Bubble dynamics in basaltic volcanoes and ramifications for modeling normal Strombolian activity** *JOURNAL OF GEOPHYSICAL RESEARCH-SOLID EARTH*
Suckale, J., Hager, B. H., Elkins-Tanton, L. T., Nave, J.
2010; 115
- **It takes three to tango: 1. Simulating buoyancy-driven flow in the presence of large viscosity contrasts** *JOURNAL OF GEOPHYSICAL RESEARCH-SOLID EARTH*
Suckale, J., Nave, J., Hager, B. H.
2010; 115
- **Large to Moderate Seismicity Induced by Hydrocarbon Production** *The Leading Edge*
Suckale, J.
2010; 29: 310-319

- **Probabilistic Seismic Hazard Model for Vanuatu** *BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA*
Suckale, J., Gruenthal, G.
2009; 99 (4): 2108-2126
- **High-resolution seismic imaging of the western Hellenic subduction zone using teleseismic scattered waves** *GEOPHYSICAL JOURNAL INTERNATIONAL*
Suckale, J., Rondenay, S., Sachpazi, M., Charalampakis, M., Hosa, A., Royden, L. H.
2009; 178 (2): 775-791
- **INDUCED SEISMICITY IN HYDROCARBON FIELDS** *ADVANCES IN GEOPHYSICS, VOL 51*
Suckale, J.
2009; 51: 55-106