

Magali I. Billen

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Academic Experience

2013–	Professor, Geophysics, University of California, Davis
2008–2013	Associate Professor, Geophysics, University of California, Davis
2002–2008	Assistant Professor, Geophysics, University of California, Davis
2002–2003	Post-Doctoral Research Fellow, Woods Hole Oceanographic Institution
2001–2002	Post-Doctoral Research Fellow, University of Leeds, UK
1997–2001	PhD in Geophysics, California Institute of Technology
1995–1997	M.S. in Geophysics, California Institute of Technology
1991–1995	B.S. in Physics with Honors, University of Puget Sound
2016–2017	Visiting Professor, Ludwig-Maximillan University, Munich, Germany
2009	Visiting Professor, Northwestern University, Chicago, IL

Awards and Honors

2017	Alexander von Humboldt Foundation Friedrich Wilhelm Bessel Research Award (€45,000)
2014	Kavli Institute, Frontiers of Science, Fellow
2012–2013	National Science Foundation (NSF)–GeoPrisms Distinguished Lecturer
2010–2015	Chancellor’s Fellow, University of California, Davis (\$25,000 Research Funds)
2008–2012	National Science Foundation (NSF)–CAREER Grant (Early Career Award)

Publications in Review

1. Fraters, R.T., Menno and Magali I. Billen, *On the implementation and usability of CPO evolution in geodynamic modelling*, submitted to *Geochemistry, Geophysics, Geosystems*, 2021.

Publications in Press

1. none

⁰Note that co-authors who were graduate students or Post-doctoral scholars working under the direct supervision of Dr. Billen at the time the research was completed are marked by an asterix (*); undergraduate students are marked by a pound sign (#).

Publications

45. **Billen**, M. I., *Deep slab seismicity limited by rate of deformation in the transition zone*, *Sciences Advances*, **6**: eaaz7692, 2020.
44. Boneh, Y., E. Schottenfels, K. Kwong, I. van Zelst, X. Tong, M. Eimer, M. S. Miller, L. Moresi, J. M. Warren, D. A. Wiens, **M. I. Billen**, J. Naliboff, Z. Zhan, *Intermediate-depth earthquakes controlled by incoming plate hydration along bending faults*, *Geophysical Research Letters*, **46**, 1-10, 2019.
 ===== Merit to Professor III, effective 7/1/2019
43. M. I. **Billen** and K. M. Arredondo, *Decoupling of plate-asthenosphere motion caused by non-linear viscosity during slab folding in the transition zone*. *Physics of the Earth and Planetary Interiors*, **281**, 17–30, 10.1016/j.pepi.2018.04.011, 2018.
42. M. I. **Billen**, *Insights into the Causes of Arc Rifting from 2D Dynamic Models of Subduction*, *Geophysical Research Letters*, **44**,1–10, 10.1002/2017GL075061, 2017.
41. Arredondo, K.M.*, and M. I. **Billen**, *Coupled effects of phase transitions and rheology in 2-D dynamical models of subduction*, *Journal of Geophysical Research*, **122**, 10.1002/2017JB014374, 2017.
40. He, Y.*, E. G. Puckett, and M. I. **Billen**, *A Discontinuous Galerkin Method with a Bound Preserving Limiter for Stable Advection of non-Diffusive Fields in Solid Earth Geodynamics*, *Physics of the Earth and Planetary Sciences*, **263**, 23–37, 10.1016/j.pepi.2016.12.001, 2017.
39. Arredondo, K.M.*, and M. I. **Billen**, *The Effects of Phase Transitions and Compositional Layering in Two-dimensional Kinematic Models of Subduction*, **100**, 159–174, 10.1016/j.jog.2016.05.009, 2016.
38. Rodríguez-González*, M. I. **Billen**, A. M. Negredo, L. G. J. Montesi, *Along-strike variation in subducting plate velocity induced by along-strike variation in overriding plate structure: Insights from 3D numerical models*, *Journal of Geodynamics*, **100**, 175–183, 10.1016/j.jog.2016.02.006, 2016.
 ===== Merit to Professor II, effective 7/1/2016
37. Taramón, J., J. Rodríguez-González, A.M. Negredo, and M. I. Billen. *Influence of Cratonic Lithosphere on the Formation and Evolution of Flat Slabs: Insights from 3D Time-dependent Modeling*, *Geochemistry, Geophysics, Geosystems*, **16**, 10.1002/2015GC005940, 2015.
36. **Billen**, M. I., *News and Views: Double Dip (Invited Contribution, Reviewed by Editor)*. *Nature Geoscience*, **8**: 428-429, 2015.
35. Rodríguez-González, M. I. **Billen**, and J., A. M. Negredo, *Non-steady-state Subduction and Trench-Parallel Flow Induced by Overriding Plate Structure*, *Earth and Planetary Science Letters*, **401**, 227–235, 2014.
34. Jadamec*, M., M. I. **Billen** and S. M. Roeske, *Three-dimensional Numerical Models of Flat Slab Subduction and the Denali Fault Driving Deformation in South-Central Alaska*, *Earth & Planetary Science Letters*, 10.1016/j.epsl.2013.06.009, 2013.

33. Naliboff*, John B., M. I. **Billen**, T. Gerya and J. Saunders#, *Dynamics of Outer Rise Faulting in Oceanic-Continental Subduction Systems*, *Geochemistry, Geophysics, Geosystems*, 10.1002/ggge.20155, 2013.
32. Valera, J., A. M. Negredo, M. I. **Billen**, and I. Jiménez-Munt. *Lateral migration of a foundering high density root: Insights from numerical modeling applied to the southern Sierra Nevada*. *Lithos*, 189: 77–88, 2013.
31. Arrial*, Pierre-Andre and M. I. **Billen**, *Influence of Geometry and Eclogitization on Oceanic Plateau Subduction*, *Earth & Planetary Science Letters*, **363**, 34–43, 2013.

===== 1 yr. Accelerated Promotion to Professor I, step 1, effective 7/1/2013

30. Jadamec*, M., M. I. **Billen** and O. Kreylos, *Three-dimensional Simulations for Geometrically Complex Subduction with Large Viscosity Variations*, XSEDE Conference Proceedings, 2012.
** Recognized as the Best Science Track Paper and Best Paper of the Conference.
29. Hines*, J. and M. I. **Billen**, *Sensitivity of the Short-to-Intermediate Wavelength Geoid to Rheologic Structure in Subduction Zones*, *Journal of Geophysical Research*, **117**, B05410, 10.1029/2011JB008978, 2012.
28. Arredondo*#, K. and M. I. **Billen**, *Rapid Weakening of Subducting Plates from Trench-Parallel Estimates of Flexural Rigidity*, *Physics of the Earth and Planetary Interiors*, **196–197**, 1–13, 10.1016/j.pepi.2012.02.007, 2012.
27. Jadamec*, M. and M. I. **Billen**, *The Role of Rheology and Slab Shape on Rapid Mantle Flow: Three-dimensional Numerical Models of the Alaska Slab Edge*, *Journal of Geophysical Research*, **117**(B2), 10.1029/2011JB008563, 2012.
26. Vančo, Marek, B. Hamann, O. Kreylos, M. I. **Billen**, and M. Jadamec*, *Distance Field Computation for Geological Slab Surface Data Sets*, *Computing and Visualization in Science*, **14**(4), 143–156, 10.1007/s00791-012-01699-9, 2012.
25. **Billen** M. I., and M. Jadamec*, *Origin of Localized Fast Mantle Flow Velocity in Numerical Models of Subduction*, *Geochemistry, Geophysics, Geosystems*, **13**(1), Q01016, 10.1029/2011GC003856, 2012.
24. Rodríguez-González, J.*, A. M. Negredo and M. I. **Billen**, *The Role of the Overriding Plate Thermal State on Slab Dip Variability and on the Occurrence of Flat Subduction*, *Geochemistry, Geophysics, Geosystems*, **13**(1), Q01002, 10.1029/2011GC003859, 2012.

===== Merit to Associate Professor III, effective 7/1/2012

23. Obermaier H., M. I. **Billen**, H. Hagen and M. Hering-Bertram, *Visualization and Multivariate Clustering of Scattered Moment Tensors*, *Information Visualization*, **11**, 43–59, 2012.
** Invited paper.
22. Obermaier H., M. I. **Billen**, H. Hagen, M. Hering-Bertram and B. Hamann, *Visualizing Strain Anisotropy in Mantle Flow Fields*, *Computer Graphics Forum*, **30**(8), 2301–2313, 10.1111/j.1467-8659.2011.02036.x, 2011

21. Obermaier H., M. I. **Billen**, H. Hagen and M. Hering-Bertram, *Interactive Visualization of Scattered Moment Tensor Data*, in Visualization and Data Analysis 2011, edited by Pak Chung Wong, Jinah Park, Ming C. Hao, Chaomei Chen, Katy Brner, David L. Kao, Jonathan C. Roberts, *Proceedings of SPIE-IS&T Electronic Imaging*, **SPIE Vol. 7868**, 78680I, 2011.
** Recognized as one of the top five papers of the conference.
 20. Burkett*, E. and M. I. **Billen**, *Three-Dimensionality of Slab Detachment Due to Ridge-Trench Collision: Laterally Simultaneous Boudinage Versus Tear Propagation*, *Geochemistry, Geophysics, Geosystems*, **11**, Q11012, 10.1029/2010GC003286, 2010.
 19. **Billen**, M. I., *Slab Dynamics in the Transition Zone*, *Physics of the Earth and Planetary Interiors*, Special Issue on *Deep Slab and Mantle Dynamics*, **183**(1–2), 296–308, 2010.
 18. Jadamec*, M. and M. I. **Billen**, *Reconciling Rapid 3-D Mantle Flow and Surface Plate Motions Near the Eastern Alaska Slab Edge*, *Nature*, **465**, 338–341, 2010.
- ===== Merit to Associate Professor II, effective 7/1/2010
17. Burkett*, E. and M. I. **Billen**, *Dynamics and Implications of Slab Detachment Due to Ridge-Trench Interaction*, *Journal of Geophysical Research*, **114**, B12402, 10.1029/2009JB006402, 2009.
 16. Thomas, C., and M. I. **Billen**, *Upper Mantle Structure Along a Profile in the SW Pacific*, *Geophysical Journal International*, **176**, 113–135, //10.1111/j.1365-246X.2008.03934.x, 2009.
 15. **Billen**, M. I., *Tectonics: Soaking Slabs (News & Views)*, *Nature Geoscience* **2** (11), 744–746, 10.1038/ngeo674, 2009.
- ===== Promotion to Associate Professor I, effective 7/1/2008
14. Andrews*, E. and M. I. **Billen**, *Rheologic Controls on Slab Detachment*, *Tectonophysics*, **464**, 60-69, 10.1016/j.tecto.2007.09.004, 2009.
 13. **Billen**, M. I., O. Kreylos, B. Hamann, M. Jadamec*, L. H. Kellogg, O. Staadt, D. Y. Sumner, *A Geoscience Perspective on Immersive 3D Visualization*, *Computers & Geosciences*, **34** (9), 1056-1072, 10.1016/j.cageo.2007.11.009, 2008.
 12. **Billen**, M. I., *Modeling the Dynamics of Subducting Slabs*, *Annual Reviews of Earth and Planetary Science*, **36**, 325-256, 10.1146/annurev.earth36.031207.124129, 2008.
 11. Kellogg, L. H., G. W. Bawden, T. Bernardin, M.I. **Billen**, E. Cowgill, B. Hamann, M. Jadamec*, O. Kreylos, D. M. Manaker, J. Rundle, O. Staadt, D. Sumner, D. L. Turcotte, G. H. Weber, *Interactive Visualization to Advance Earthquake Simulation*, *Pure and Applied Geophysics*, **165**, 621–633, 2008.
 10. **Billen**, M. I. and G. Hirth, *Rheologic Controls on Slab Dynamics*, *Geochemistry, Geophysics, Geosystems*, **8**, Q08012, 101029/2007GC001597, 2007.
 9. **Billen**, M. I., E. Cowgill, and E. Buer#, *Determination of Fault Friction from Reactivation of Abyssal-Hill Faults in Subduction Zones*, *Geology*, **35**(9), 819–822, 10.1130/G23847A, 2007.

===== Merit to Assistant Professor IV, effective 7/1/2006

8. Kreylos, O., Bawden, G.W., Bernardin, T., **Billen**, M. I., Cowgill, E. S., Gold, R. D., Hamann, B., Jadamec*, M., Kellogg, L. H., Staadt, O. G. and Sumner, D. Y., *Enabling scientific workflows in virtual reality*, in: Hong Wong, K., Baciou, G. and Bao, H., eds., Proceedings of ACM SIGGRAPH International Conference on Virtual Reality Continuum and Its Applications 2006 (VRCIA 2006), ACM Press, New York, New York, pp. 155-162, 2006.
7. **Billen**, M. I. and G. Hirth, *Newtonian versus Non-Newtonian Upper Mantle Viscosity: Implications for Subduction Initiation*, Geophysical Research Letters, **32**(19), L19304, 2005.
6. **Billen**, M. I. and M. Gurnis, *Constraints on Subducting Plate Strength within the Kermadec Trench*, Journal of Geophysical Research, **110**, B05407, 10.1029/2004JB003308, 2005.

===== Merit to Assistant Professor III, effective 7/1/2004

5. **Billen**, M. I. and G. A. Houseman, *Lithospheric Instability in Obliquely Convergent Margins: San Gabriel Mountains, Southern California*, Journal of Geophysical Research, **109**(B1), B01404 10.1029/2003JB002605, 2004.
4. **Billen**, M. I., M. Gurnis and M. Simons, *Multiscale Dynamic Models of the Tonga-Kermadec Subduction Zone*, Geophysical Journal International, **153**, 359-388, 2003.
3. **Billen**, M. I. and M. Gurnis, *A Comparison of Dynamic Models in the Aleutian and Tonga-Kermadec Subduction Zones*, Geochemistry, Geophysics and Geosystems, **4**(4), 1035, 10.1029/2001GC000295, 2003.

===== Appointment to Assistant Professor II, effective 7/1/2002

2. **Billen**, M. I. and M. Gurnis, *A Low Viscosity Wedge in Subduction Zones*, Earth and Planetary Science Letters, **193**, 227-236, 2001.
1. **Billen**, M. I. and J. Stock, *Morphology and Origin of the Osborn Trough*, Journal of Geophysical Research, **105**, 13481-13389, 2000.

Other Scientific Publications

1. Jadamec*, M., O. Kreylos, M. I. **Billen**, *3D Visualizer Version 1.0: User's Manual for Desktop Environments*, p. 1-56, 2008.
2. **Billen**, M. I., O. Kreylos, L. H. Kellogg, B. Hamann, O. Staadt, D. Y. Sumner, M. Jadamec*, *Study of 3D Visualization Software for Geo-Science Applications*, KeckCAVES Tech. Report 06-01, 2006.
3. Simons, F. J., T. W. Becker, J. B. Kellogg, M. **Billen**, C.-T. A. Lee, L. G. J. Montèsi, W. Panero, S. Zhong, *MYRES: A Program to Unite Young Solid Earth Researchers*, Eos Trans. AGU, **86** (5), 48, 10.1029/2005EO050005, 2005.

4. Simons, F. J., T. W. Becker, J. B. Kellogg, **M. Billen**, J. Hardebeck, C.-T. A. Lee, L. G. J. Montèsi, W. Panero, S. Zhong, *Young Solid Earth Researchers of the World Unite*, *Eos Trans. AGU*, **85**(16), 160, 10.1029/2004EO160011, 2004.

Research Grants

Testing the Thermal Shear Instability Hypothesis for Deep Slab Seismicity, NSF, EAR-Geophysics (#2121800) PI: M. I. **Billen**, 07/01/21–6/30/24, \$386,347.

Upgrade of Computing Facilities to support Geodynamics and Tectonics Research at UC Davis, NSF-GEO, Instrumentation and Facilities (#2026966), 07/01/20–06/30/21, PI: M. I. **Billen**, \$74,981.

Establishing a Collaboration to Improve Integration of Material Science Data into Numerical Simulations of the Earth's Tectonic Plates and Mantle, UC Davis-Israel Collaboration Full Project (\$19,872,66) PI: M. I. **Billen**, Co-PI: Yuval Boneh.

MRAC–Evolution of Lattice-Preferred Orientation in 3D Models of Subduction (9 million core hours), XSEDE (NSF Funded Super Computing Center), 7/1/20–6/30/21. PI: M. R. T. Frater, Co-PI: M. I. **Billen**

===== *Merit to Professor III, effective 7/1/2019*

Integrating the LPO Constraint into 3D Subduction Dynamics Simulations, NSF, EAR-Geophysics (#1620618), PI: M. I. **Billen**, 07/01/16–06/30/19, \$299,947.

===== *Merit to Professor II, effective 7/1/2016*

Development and Implementation of Software Elements using State-of-the-Art Computational Methodology to Advance Modeling Heterogeneities and Mixing in Earth's Mantle, NSF, SSE, (#1440811), PI: E. Gerry Puckett, Co-PI: M. I. **Billen**, 08/01/14–07/31/17, \$487,115.

===== *1yr. Accelerated Promotion to Professor I, step 1, effective 7/1/2013*

Supplement to: Dynamic Linkages between the Transition Zone & Surface Plate Motions in 3D Models of Subduction, NSF, EAR-Geophysics (#1246864), PI: M. I. **Billen**, 01/01/13–12/31/15, \$43,737.

Dynamic Linkages between the Transition Zone & Surface Plate Motions in 3D Models of Subduction, NSF, EAR-Geophysics (#1246864), PI: M. I. **Billen**, 01/01/13–12/31/15, \$267,118.

Postdoctoral Fellowship: 3D Numerical Models of the Dynamic Generation of Outer Rise Faults, NSF, EAR-MARGINS (#1049660), PI: M. I. **Billen**, 01/01/11–12/31/12 (no cost extension through 09/31/13), \$179,947.

===== *Merit to Associate Professor III, effective 7/1/2012*

Upgrade of Computing Facilities for Solid Earth Geodynamics Research at UC Davis. NSF-IF (#0929759, ARRA), PI: M. I. **Billen**, Co-I: L. H. Kellogg, 07/01/09 - 06/21/10, \$75,000.

===== *Merit to Associate Professor II, effective 7/1/2010*

CAREER: When Subduction Fails: Dynamical Models of Oceanic Plateau Collision and Crustal-Fragment Emplacement, NSF-CAREER, Geophysics & Tectonics (#0748818), PI: M. I. **Billen**, 01/01/08–12/31/12 (no cost extension through 12/31/13), \$488,312.

CI-TEAM Implementation Project: Enabling Interactive Visual Exploration and Remote Collaboration for the Geosciences and Physical Sciences, NSF-Cyberinfrastructure (#0753407), PI: L. H. Kellogg, Co-I's: M. I. **Billen**, J. Crutchfield, B. Hamann, D. Sumner, 04/01/08–12/31/10 (no cost extension through 9/31/12), \$920,672.

Workshop for Advancing Numerical Modeling of Mantle Convection and Lithosphere Dynamics, NSF-EAR, Geophysics & Tectonics (#0822371), PI: M. I. **Billen**, 07/01/08–06/30/09, \$30,000.

CSEDI: Collaborative Research: The Dynamics of Plume-Trench Interaction: Samoa-Tonga, NSF-CSEDI (#0652924), PI: Stan Hart, Co-PI's: M. I. **Billen**, C.Kincaid, Co-I's: M. Behn, T. Collins, G. Hirth, 06/01/07–05/31/10, \$139,214 (UCD's portion of grant).

===== *Promotion to Associate Professor I, effective 7/1/2008*

Geodynamic Framework for the Tectonic Trigger of Late Neogene Deformation in Southern Alaska, NSF-EAR, Tectonics (#0537995), PI: M. I. **Billen**, Co-I: S. Roeske, 01/01/06 – 12/31/08, \$244,367.

Dynamics of Slab Detachment, NSF-EAR, Geophysics (#0337376), PI: M. I. **Billen**, 01/01/04–12/31/06, \$157,209.

Keck Center for Active Visualization in Earth Sciences (KeckCAVES), W. M. Keck Foundation, PI: L. H. Kellogg, Co-I's: M. I. **Billen**, E. Cowgill, B. Hamann, J. Rundle, J. Rustad and D. Turcotte, 01/01/04–12/31/06, \$1,000,000.

Computing Time Grants (1 SU = 1 hour of compute time on 1 CPU)

MRAC-Renewal: Simulations of Subduction Dynamics: Rheology & Tectonics (1,000,000 SUs), TERAGRID (NSF-funded HPC Center), PI: M. I. **Billen**, 05/01/10–04/30/11.

MRAC: Simulations of Subduction Dynamics: Rheology & Tectonics (750,000 SUs), TERAGRID (NSF-funded HPC Center), PI: M. I. **Billen**, 05/01/09–04/30/10.

MRAC: High Performance Computing for Model of Alaskan Dynamics (500,000 SUs), TERAGRID (NSF-funded HPC Center), PI: M. I. **Billen**, 05/01/08–04/30/09.

Graduate Theses Supervised

Arredondo, Katrina, *Effect of Phase Transitions on Slab Dynamics*, PhD, 2016.

Bikoba, John, *Shear Instability as a Viable Mechanism for Deep Seismicity and Evidence for Slab Detachment caused by a Secondary Plume in the Tonga Subduction Zone*, MS, 2015.

Rodríguez-González, Juan (Co-Advisor with Ana Moreno-Negredo: Dpto. de Geofísica y Meteorología, Universidad Complutense de Madrid), *Numerical Modeling of Subduction Processes in 2D and 3D*, PhD, 2013.

Hines, Joy, *Sensitivity of the short-to-intermediate wavelength geoid to rheologic structure in subduction zones*, MS, 2011.

Andrews, Erin, *Dynamics of Slab Detachment of Subducted Tectonic Plates: Rheologic Controls and Ridge-Trench Interactions*, PhD, 2010.

Jadamec, Margarete, *Three-Dimensional Lithosphere and Mantle Dynamics: Models of the Subduction-Transform Plate Boundary System in Southern Alaska*, PhD, 2008.

Post-doctoral Scholars Supervised

Naliboff, John (2011-2013): Simulations of Outer Rise Faulting

Arrial, Pierre-Andre (2010-2012): Simulations of Oceanic Plateau Subduction

Vanco, Marek (Co-Advised, 2008–2010): 3D Slab Reconstruction from Point Clouds

Undergraduate Students Supervised

Nicolas Desalvio (2021): Python scripts for teaching introductory geophysics

Crystal Lee (2020): Slab thermal structure

Tears, Hanna (2016): Investigating Slab Deformation Using the KeckCAVES

Moon, Sarah (2016): Outer Rise Faulting Statistics

Nelson, Tim (2014-2015): 2D Mantle Convection in Aspect

Zabalza, Christine (2012-2013): Plate Kinematics and Slab Dip.

Saunders, Jessie (2010-2013): Outer Rise Fault Mapping and Statistics. (PhD, U. of Washington)

Arredondo, Katrina (2006-2009): Admittance Constraints on Subducting Plate Strength. (PhD, UC Davis)

O'Banion, Matt (2008): 3D Slab Reconstruction from Point Clouds User Manual. (MS, Oregon State Univ.)

Snyder, Alex (2007): Mapping Outer Rise Faults. (MS, CSU, Monterey Bay)

Buer, Eric (2005): Frictional Strength of Outer Rise Faults. (MS, U. of Washington)

Invited Talks (last 5 years)

- 2021 Deep Slab Seismicity Limited by Rate of Slab Deformation in the Transition Zone, given at Carnegie Institution of Washington, Caltech, and CSU-Sacramento)
- 2020 Deep Earthquake Triggering Limited by Rate of Slab Deformation in the Transition Zone, given at Lamont Doherty Earth Observatory, and Geodynamics & Tectonics International Virtual Seminar
AGU, Spatial Distribution of Deep Earthquakes Tied to Strain-rate Variations in Slabs
- 2019 IUGG, Montreal, Canada, Current Limitations and Future Directions in Modeling Slab Dynamics
Gordon Research Conference on the Solid Earth, Slabs as Agents of Material Recycling
Harvard University, Deep earthquake triggering limited by rate of slab deformation in the transition zone
AGU, The Role of Compositionally-dependent phase transitions in slab deformation and trench motion
AGU, Slabs as Agents of Mixing and Material Recycling
- 2018 Charles University, Prague, Czech Republic, Department of Mathematics and Physics Research Seminar
Brown University, Earth, Environmental and Planetary Sciences Colloquium
MIT, Department of Earth, Atmospheric and Planetary Sciences Colloquium
University of Münster, Germany, Department of Physics Colloquium
ETH, Zurich Switzerland
CIDER Summer Institute, Geodynamics Instructor
- 2017 Ludwig-Maximilian University, Munich
University of Münster, Department of Geophysics
Geological Society of America (GSA), (two talks in separate sessions)
CIDER Summer Institute, Invited Research Talk
- 2016 CIDER Summer Institute, Geodynamics Instructor

Teaching Experience

Undergraduate	GEL 17: Earthquakes & Natural Hazards (2010, 2013) GEL 50: Physical Geology (2010, 2011, 2014, 2015, 2016, 2019) GEL 56: Introduction to Geophysics (2019, 2020-Spr, Fall) GEL 101: Earth Dynamics II: Convergent and Collisional Processes (2005, 2006, 2007) GEL 161: Exploration Geophysics (2004, 2006) GEL 161: Geophysical Field Methods (2007, 2008, 2009, 2012, 2014, 2015, 2016, 2019, 2021) GEL 150B: Geological Oceanography (2004, 2005)
Graduate	GEL 219 Fracture and Flow of Rocks (2004, 2005, 2007, 2010, 2012, 2016, 2019) GEL 217: Subduction Dynamics (2006, 2008, 2011, 2015) GEL 390: Teaching Methods & Proposal Writing in Geology (2010, 2012, 2014, 2015, 2016)
Note*	Department Administration Teaching Release, Fall 2018 Sabbatical Leave Winter 2017, Fall 2017 – Spring 2018 Parental Leave Fall 2013; Modified Duty Winter, Spring 2014 (twins) Parental Leave Fall 2011; Modified Duty Winter 2012 Sabbatical Leave Winter, Spring 2007

Continuing Education

2007	National Association of Geoscience Teachers (NAGT) Workshop on Teaching Geophysics (presenter, attendee)
2006	Cooperative Institute for Deep Earth Research (CIDER) workshop (attendee, research project leader)
2004	NAGT Workshop on Research, Teaching and Service for New Geoscience Faculty

Professional Service (last 5 years)

2020-2021	Faulting and Earthquakes Working Group, SZ4D
2018–2021	Steering Committee Member, NSF-funded RCN:Planning a Modeling Collaboratory for Subduction Zone Science
2018	Nominating Committee, Computational Infrastructure for Geodynamics (CIG)
2018	AGU Committee Member, Tectonophysics Section Early Career Award Committee
2015 – 2018	Executive Committee, Computational Infrastructure for Geodynamics (CIG)

Public Service

2011-2013	ask-a-geologist UCD Geology Dept. e-mail list (1 of 3 faculty to respond to public enquiries via e-mail)
2006–2012	Created (2006) and managed the UCD New Faculty Network – an informal network for building a community among new faculty at UCD
2011	Spent day providing scientific analysis and interviews for local Sacramento news media in response to the March 10, 2011 Tohoku, Japan Earthquake and Tsunami

Department Service (last 5 years)

2021–present	Department Executive Committee, Vice Chair for Graduate Program
2020–present	Earth and Planetary Sciences Graduate Program (Chair)
2018	Undergraduate Curriculum Revision Committee, In-charge of finalizing and submitting documents to university
2017–2018	Geology Graduate Program, Chair for Educational Policy and Fellowships, Graduate Student Advisor
2012–2016	Geology Graduate Program (Chair)
2015–2016	Earth and Planetary Materials, Search Committee, Member
2014–2016	Undergraduate Curriculum Revision Committee, Member
2014–2020	Space Committee
2010–present	Geophysics Minor Advisor

University Service (last 5 years)

2015–2016	MPS Community Cluster Advisory Committee, Chair
2015–2016	Convener for 12 ADVANCE New Faculty Launch Committees in MPS
2012–2016	ADVANCE Mentorship & Networking Initiative Committee
2012–2016	Graduate Council, Educational Policy Committee