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EDUCATION

1997 – 2002	Harvard University <i>Ph. D. in Geophysics</i> , June 2002	Cambridge, MA
1992 – 1997	J. W. Goethe University <i>Diplom (M. Sc.) in Physics</i> , May 1997	Frankfurt am Main

PROFESSIONAL APPOINTMENTS

2016 –	<i>Shell Foundation Distinguished Chair in Geophysics</i> The University of Texas at Austin	Austin, TX
2004 – 2016	<i>Assistant</i> (2004–2009), <i>Associate</i> (2009–2012), <i>Professor of Earth Sciences</i> (2012–2016) University of Southern California	Los Angeles, CA
2002 –2004	<i>Cecil H. and Ida M. Green Postdoctoral Scholar</i> Scripps Institution of Oceanography, U.C. San Diego	La Jolla, CA

VISITING APPOINTMENTS

Summer 2012	Università di Roma TRE, <i>Visiting Professor</i>	Rome
Fall 2010	University of Tokyo, <i>Visiting Associate Professor</i>	Tokyo
Spring 2008	Princeton University, <i>Visiting Fellow</i>	Princeton, NJ

ACADEMIC HONORS

- Fellow, American Geophysical Union, 2015.
- Astor Visiting Fellowship, Oxford University, 2014.
- Friedrich Wilhelm Bessel Award, Humboldt Foundation, 2013.
- C. F. Gauss lecturer, German Geophysical Society, 2008.
- Kavli fellow, National Academy of Sciences, 2007.
- Editor's Citation for Excellence in Refereeing for *Tectonics*, 2007.
- CAREER Award, National Science Foundation, 2007.
- Cecil H. and Ida M. Green Scholarship, Scripps, UCSD, 2002 – 2004.
- Certificate of Excellence in Teaching, Derek Bok Center, Harvard University, 2001.
- Ph. D. Scholarship, German Academic Exchange Service (DAAD), 1998 – 2001.
- Siedler Preis for the best M. Sc. thesis in Physics at Frankfurt University, 1997.
- Haereus Prize for successful course of studies in Physics in the state of Hesse, 1997.

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- 118 Jolivet, L., Faccenna, C., **Becker, T. W.**, Tesauero, M., Sternai, P., and Bouihol, P. (2018): Mantle flow and deforming continents: From India-Asia convergence to Pacific subduction. *Tectonics*, 37, 2887–2914, doi:10.1029/2018TC005036.
- 117 Holt, A. F.* , Royden, L. H., **Becker, T. W.**, and Faccenna, F. (2018): Slab interactions in 3-D subduction settings: The Philippine Sea Plate region. *Earth Planet. Sci. Lett.*, 489, 72–83.
- 116 Jackson, M. G., **Becker, T. W.**, and Konter, J. G. (2018): Evidence for a deep mantle source for EM and HIMU domains from integrated geochemical and geophysical constraints. *Earth Planet. Sci. Lett.*, 484, 154–167.
- 115 Faccenna, C., Holt, A. F.* , **Becker, T. W.**, Lallemand, S., and Royden, L. H. (2018): Dynamics of the Ryukyu/Izu-Bonin-Marianas double subduction system. *Tectonophys.*, 746, 229–238.
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- 113 Goebel, T. H. W., Kwiitek, G., **Becker, T. W.**, Brodsky, E. E. and Dresen, G. (2017): What allows seismic events to grow big?: Insights from *b*-value and fault roughness analysis in laboratory stick-slip experiments. *Geology*, 44, 815–818.
- 112 **Becker, T. W.** (2017): Superweak asthenosphere in light of upper-mantle seismic anisotropy, *Geochem., Geophys., Geosys.*, 18, 1986–2003, doi:10.1002/2017GC006886.
- 111 Sembroni, A., Kiraly, A., Faccenna, C., Funicello, F., **Becker, T. W.**, Globig, J., and Fernandez, M. (2017): Impact of the lithosphere on dynamic topography: Insights from analogue modeling. *Geophys. Res. Lett.*, 44, 2693-2702, doi:10.1002/2017GL072668.
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- 105 Hashima, A.*, **Becker, T. W.**, Freed, A. M., Sato, H., and Okaya, D. A. (2016): Coseismic deformation due to the 2011 Tohoku-oki earthquake: influence of 3-D elastic structure around Japan. *Earth, Planet., Space*, 68, 159, doi:10.1186/s40623-016-0535-9. (15 p.)
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- 101 Gvirtzman, Z., Faccenna, C., and **Becker, T. W.** (2016): Isostasy, flexure, and dynamic topography. *Tectonophysics*, 683, 255–271.
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- 93 **Becker, T. W.**, Schaeffer, A. J., Lebedev, S., and Conrad, C. P. (2015): Toward a generalized plate motion reference frame. *Geophys. Res. Lett.*, *42*, 3188–3196, doi:10.1002/2015GL063695.
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- 87 Faccenna, C., **Becker, T. W.**, Miller, M. S., Serpelloni, E., and Willett, S. D. (2014): Isostasy, dynamic topography, and the elevation of the Apennines of Italy. *Earth Planet. Sci. Lett.*, *407*, 163–174.
- 86 **Becker, T. W.**, Conrad, C. P., Schaeffer, A. J., and Lebedev, S. (2014): Origin of azimuthal seismic anisotropy in oceanic plates and mantle. *Earth Planet. Sci. Lett.*, *401*, 236–250.
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- 74 Faccenna, C., **Becker, T. W.**, Jolivet, L., and Keskin, M. (2013): Mantle convection in the Middle East: Reconciling Afar upwelling, Arabia indentation and Aegean trench rollback. *Earth Planet. Sci. Lett.*, *375*, 254–269.
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- 72 Platt, J. P. and **Becker, T. W.** (2013): Kinematics of rotating panels of E-W faults in the San Andreas system: what can we tell from geodesy? *Geophys. J. Int.*, *194*, 1295–1301.
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- 68 Steinberger, B., Torsvik, T. H., and **Becker, T. W.** (2012): Subduction to the lower mantle - a comparison between geodynamic and tomographic models. *Solid Earth*, *3*, 415–432.
- 67 Miller, M. S. and **Becker, T. W.** (2012): Mantle flow deflected by interactions between subducted slabs and cratonic keels. *Nature Geosc.*, *5*, 726–730.
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- 62 **Becker, T. W.** (2012): On recent seismic tomography for the western United States. *Geochem., Geophys., Geosys.*, 13, Q01W10, doi:10.1029/2011GC003977. (11 p.)
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- 52 Boschi, L., Faccenna, C., and **Becker, T. W.** (2010): Mantle structure and dynamic topography in the Mediterranean Basin. *Geophys. Res. Lett.*, 37, L20303, doi:10.1029/2010GL045001. (6 p.)
- 51 Faccenna, C., **Becker, T. W.**, Lallemand, S., Lagabrielle, Y., Funiciello, F., and Piromallo, C. (2010): Subduction-triggered magmatic pulses. A new class of plumes? *Earth Planet. Sci. Lett.*, 209, 54–68.
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- 49 Bailey, I. W.* , Ben-Zion, Y., **Becker, T. W.**, and Holschneider, M. (2010): Quantifying focal mechanism heterogeneity for fault zones in central and southern California. *Geophys. J. Int.*, 183, 267–276.
- 48 **Becker, T. W.** (2010): Fine-scale modeling of global plate tectonics. *Science*, 329, 1020–1021.
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- 42 Kaus, B. J. P.* , Liu, Y., **Becker, T. W.**, Yuen, D., and Shi, Y. (2009): Lithospheric stress-states predicted from long-term tectonic models: influence of rheology and possible application to Taiwan. *J. Asian Earth Sci.*, 36, 119–134.
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- 35 Kaus B. J. P.* and **Becker T. W.** (2008): A numerical study on the effects of surface boundary conditions and rheology on slab dynamics. *Bolletino di Geofisica*, 49(2), 177–182.
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- 24 **Becker, T. W.**, Browaeys, J. T.* , and Jordan, T. H. (2007): Stochastic analysis of shear-wave splitting heterogeneity length scales and the origin of seismic anisotropy. *Earth Planet. Sci. Lett.*, 259, 526–540.
- 23 Faccenna, C., Heuret, A., Funiciello, F., Lallemand, S., and **Becker, T. W.** (2007): Predicting trench and plate motion from the dynamics of a strong slab. *Earth Planet. Sci. Lett.*, 257, 29–36.
- 22 Kaus, B. J. P.* and **Becker, T. W.** (2007): Effects of elasticity on the Rayleigh-Taylor instability: implications for large-scale geodynamics. *Geophys. J. Int.*, 168, 843–862.
- 21 Montési, L. G. J., di Toro, G., Simons, F. J., Akber-Knudson, S., **Becker, T. W.**, Billen, M., Deschamps, A., and Kellogg, J. B. (2006): Young scientists focus on the dynamics of the lithosphere, *Eos Trans. AGU*, 87, 44, 482–483.
- 20 **Becker, T. W.** (2006): On the effect of temperature and strain-rate dependent viscosity on global mantle flow, net rotation, and plate-driving forces. *Geophys. J. Int.*, 167, 943–957.
- 19 **Becker, T. W.**, Chevrot, S., Schulte-Pelkum, V., and Blackman, D. K. (2006): Statistical properties of seismic anisotropy predicted by upper mantle geodynamic models. *J. Geophys. Res.*, 111, B08309, doi:10.1029/2005JB004095. (16 p.)
- 18 **Becker, T. W.**, Schulte-Pelkum, V., Blackman, D. K., Kellogg, J. B., and O'Connell, R. J. (2006): Mantle flow under the western United States from shear wave splitting, *Earth Planet. Sci. Lett.*, 247, 235–251.
- 17 Piromallo, C., **Becker, T. W.**, Funiciello, F., and Faccenna, C. (2006): Three-dimensional instantaneous mantle flow induced by subduction, *Geophys. Res. Lett.*, 33, L08304, doi:10.1029/2005GL025390. (4 p.)
- 16 Boschi, L., **Becker, T. W.**, Soldati, G., and Dziewonski, A. M. (2006): On the relevance of Born theory in global seismic tomography. *Geophys. Res. Lett.*, 33 L06302, doi:10.1029/2005GL025063. (4 p.)
- 15 Enns, A., **Becker, T. W.**, and Schmeling, H. (2005): The dynamics of subduction and trench migration for viscosity stratification. *Geophys. J. Int.*, 160, 761–775.

- 14 Simons, F. J., **Becker, T. W.**, Kellogg, J. B., Billen, M., Hardebeck, J., Lee, C.-T., Montési, L. G. J., Panero, W. and Zhong, S. (2005): *MYRES: A Program to Unite Young Solid Earth Researchers*, *Eos Trans. AGU*, 86, 5, 48–49.
- 13 **Becker, T. W.**, Hardebeck, J. L., and Anderson, G. (2005): Constraints on fault slip rates of the southern California plate boundary from GPS velocity and stress inversions. *Geophys. J. Int.*, 160, 634–650.
- 12 Simons, F. J., **Becker, T. W.**, Kellogg, J. B., Billen, M., Hardebeck, J., Lee, C.-T., Montési, L. G. J., Panero, W. and Zhong, S. (2004): *Young Solid Earth Researchers of the World Unite!*, *Eos Trans. AGU*, 85, 60, 160–161.
- 11 **Becker, T. W.**, Kellogg, J. B., Ekström, G., and O’Connell, R. J. (2003): Comparison of azimuthal seismic anisotropy from surface waves and finite-strain from global mantle-circulation models, *Geophys. J. Int.*, 155, 696–714.
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- 9 **Becker, T. W.** and Boschi, L. (2002): A comparison of tomographic and geodynamic mantle models, *Geochem., Geophys., Geosys.*, 3(1), 1003, doi:10.1029/2001GC000168. (48 p.)
- 8 **Becker, T. W.** and O’Connell, R. J. (2001): Predicting plate velocities with mantle circulation models, *Geochem., Geophys., Geosys.*, 2(12), 1060, doi:10.1029/2001GC000171. (54 p.)
- 7 Faccenna, C., **Becker, T. W.**, Lucente, F. P., Jolivet, L., and Rossetti, F. (2001): History of subduction and back-arc extension in the central Mediterranean. *Geophys. J. Int.*, 145, 809–820.
- 6 **Becker, T. W.** (2000): Deterministic chaos in two state-variable friction sliders and the effect of elastic interactions, in *GeoComplexity and the Physics of Earthquakes*, edited by J. B. Rundle, D. L. Turcotte, and W. Klein, p. 5–26, AGU, Washington DC.
- 5 **Becker, T. W.**, Kellogg, J. B., and O’Connell, R. J. (1999): Thermal constraints on the survival of primitive blobs in the lower mantle. *Earth Planet. Sci. Lett.*, 171, 351–365.
- 4 **Becker, T. W.**, Faccenna, C., O’Connell, R. J., and Giardini, D. (1999): The development of slabs in the upper mantle: insights from experimental and laboratory experiments. *J. Geophys. Res.*, 104, 15,207–15,226.
- 3 **Becker, T. W.** and Braun, A. (1998): New program maps geoscientific data sets interactively. *Eos Trans. AGU*, 79(42), 505–506.
- 2 **Becker, T. W.** and Schmeling, H. (1998): Earthquake recurrence time variations with and without fault zone interactions. *Geophys. J. Int.*, 135, 165–176.
- 1 Dahm, T. and **Becker, T. W.** (1998): On the elastic and viscous properties of media containing strongly interacting in-plane cracks. *Pure Appl. Geophys.*, 151, 1 – 16.

OTHER PUBLICATIONS, MONOGRAPHS, AND THESES

- Behn, M., K. Barnhart, T. W. Becker, J. Brown, E. Choi, C. Cooper, J. Dannberg, N. Gasparini, R. Gassmoeller, L. Hwang, B. Kaus, L. Kellogg, L. Lavier, E. Mittelstaedt, L. Moresi, A. Pusok, G. Tucker, P. Upton, and P. Val (2018): *Whitepaper Reporting Outcomes from NSF-Sponsored Workshop: CTSP: Coupling of Tectonic and Surface Processes April 25–27, 2018; Boulder CO, CSDMS, Boulder CO*, pp. 41.
- Manga, M. and Becker, T. W. (2017): Richard J. O’Connell (1941–2015), *Eos*, 98, doi:10.1029/2017EO086639.
- McGuire, J. J., T. Plank, S. Barrientos, T. W. Becker, E. Brodsky, E. Cottrell, M. French, P. Fulton, J. Gomberg, S. Gulick, M. Haney, D. Melgar, S. Penniston-Dorland, D. Roman, P. Skemer, H. Tobin, I. Wada, and D. Wiens (2017): *The SZ4D Initiative: Understanding the Processes that Underlie Subduction Zone Hazards in 4D*. Vision Document Submitted to the National Science Foundation. The IRIS Consortium, 63 pp.
- Hanson, B., J. Lunn, B. van der Pluijm, J. Orcutt, R. Colwell, S. Trumbore, T. W. Becker, N. Diffenbaugh, R. Pincus, M. Liemohn, U. ten Brink, P. Brewer, M. Zhang, S. A. Hauck II, B. Hubbard, M. Goni, E. Thomas, P. Wilkinson, M. Moldwin, D. J. Knipp, J. Geissman, and M. Clark (2017): Earth and Space Science for the Benefit of Humanity, *Eos, Editor’s Vox*.
- Becker, T. W. (2015): *G-Cubed: Building on 15 years of publishing process-level science*, *Eos*, 96, doi:10.1029/2015EO031977.
- Becker, T. W. and Kaus, B. J. P. (2016): *Numerical Modeling of Earth Systems. An introduction to computational methods with focus on solid Earth applications of continuum mechanics*. v. 1.2, University of Southern California, Los Angeles (224 pages).
Available with Matlab exercises at <http://www-udc.ig.utexas.edu/external/becker/teaching-557.html>.
- Becker, T. W. (2002): *Lithosphere–Mantle Interactions*, Ph.D. thesis, Harvard University, Cambridge MA, <https://doi.org/10.6084/m9.figshare.7130834.v1>.
- Becker, T. W. (1997): *Finite Elemente Modellierung zur Bruchaktivierung in Scherzonen*. M. Sc. thesis (in German), J.W.Goethe University, Frankfurt am Main.

INVITED PRESENTATIONS AND KEYNOTES DURING THE LAST THREE YEARS

- Eidgenössische Technische Hochschule, Zurich, February 2019.
- *PLATES* Sponsor Meeting, UTIG. Austin, TX, February 2019.
- AGU Fall Meeting, Washington DC, December 2018.
- Workshop on *Modeling Earthquake Source Processes*, Caltech, Pasadena CA, October 2018.
- CEREGE, Aix-en-Provence, July 2018.
- Japanese Geoscience Union Meeting, Makuhari Messe, May 2018.
- Japan Agency for Marine-Earth Science and Technology, Yokosuka, May 2018.
- Workshop on *Convection in Nature*, Princeton Center for Theoretical Science, Princeton NJ, February 2018.
- AGU Fall Meeting, New Orleans, LA, December 2017.
- NetherMod Workshop on Mantle and Lithospheric Dynamics, Putten, Netherlands, August 2017.
- CIDER Summer School on *Subduction Dynamics*, Berkeley CA, June 2017.
- Research School of Earth Sciences, Australian National University, Canberra, June 2017.
- *Rodinia 2017 – Supercontinent Cycles and Global Geodynamics*, Townsville, Australia, June 2017.
- Department of Physics, The University of Louisiana at Lafayette, March 2017.
- Department of Geological Sciences, The University of Texas at Austin, March 2017.
- 135 invited presentations between 1998 and 2016.

CONFERENCE CONTRIBUTIONS

- 26 in 2018, 30 in 2017, 24 in 2016.
- 377 between 1996 and 2015.

- Scientific Editing:
 - Editor. *Earth and Space Science Open Archive*, 2018 –.
 - Editor. *Geochemistry, Geophysics, Geosystems (G³)*, 2009 – 2019.
 - Editor in Chief. *Geochemistry, Geophysics, Geosystems (G³)*, 2010 – 2017.
 - Editor. *Geophysical Journal International*, 2004 – 2009.
- National Research Council, National Academy of Sciences, *Standing Committee on Seismology and Geodynamics*, 2015 – 2019.
- Proposal Evaluation Committees:
 - German Science Foundation (DFG), 2017.
 - National Science Foundation, 2005, 2010 – 2012.
 - United States Geological Survey, *National Earthquake Hazards Reduction Program*, 2005 – 2007.
- Planning Committee, *Southern California Earthquake Center*. Working group co-leader:
 - *Stress and Deformation Over Time*, 2011 – 2015.
 - *Lithospheric Architecture and Dynamics*, 2009 – 2011.
- Nominating Committees:
 - Computational Infrastructure for Geodynamics, 2012.
 - Tectonophysics Section, American Geophysical Union, 2009 – 2010, 2014 – 2017.
- Workshops, conferences, and network coordination
 - Principal Investigator, *Modeling Collaboratory for Subduction Research Collaboration Network*, 2018–.
 - Reports and community white papers
 - Member, Report Writing Committee, *Modeling Earthquake Source Processes: from Tectonics to Dynamic Rupture*, 2018–2019.
 - Member, Report Writing Committee, *Coupling of Tectonic and Surface Processes*, Boulder CO, April 2018.
 - Member, Report Writing Committee, *The Subduction Zone Observatory Workshop*, 2016–2017.
 - Report Reviewer, *Challenges and Opportunities for Research in Earth Surface and Interior*, NASA, 2016.
 - Conference Organization
 - Member, Advisory Committee, *Computational Engineering and Science for Safety and Environmental Problems (COMPSAFE)*, 2018–2020.
 - Co-Chair and Organizing Committee, *Workshop on Coupling of Tectonic and Surface Processes*, Boulder CO, April 2018.
 - Co-chair, *Collaborative Graduate Training Initiatives in High-Performance Computing for the Solid Earth Sciences*. Committee on Seismology and Geodynamics, National Academy of Sciences, Washington DC, April 2016.
 - Co-chair, *Southern California Earthquake Center (SCEC) workshops*:
 - *Community Stress Model*, Pomona, January 2019.
 - *Community Rheology Model*, Palm Springs CA, September 2015.
 - *Community Stress Model*, Palm Springs CA, September 2015.

- *Community Stress Model*, Pomona CA, October 2014.
- *Community Stress Model*, Menlo Park CA, May 2013.
- *SCEC Community Stress Model*, Los Angeles CA, October 2012.
- *Strategies for Implementing a SCEC Community Stress Model*, Palm Springs CA, September 2011.
- Chair, *CIDER Dynamic Topography Working Group Meeting*, Boulder CO, April 2015.
- Program Committee Member, *Structure and Dynamics of the Oceanic Lithosphere/Asthenosphere System*, Miyagi, Japan, March 2015.
- Chair, *From Mantle to Crust: Continental Formation and Destruction*, CIDER summer school program, Berkeley CA, 2013.
- Chair, *1st Southern California Deep Earth Dynamics Symposium*, Los Angeles CA, 2013.
- Program committee, *Chinese-American Kavli Frontiers of Science Symposium*, National Academy of Sciences, 2007 – 2009.
- Chair, *12th Annual Chinese-American Kavli Frontiers of Science Symposium*, National Academy of Sciences, Kunming, China, September 2009.
- Co-chair, *Advancing Numerical Modeling of Mantle Convection and Lithospheric Dynamics*, Davis CA, July 2008.
- Program Committee for Tectonophysics, American Geophysical Union Fall Meeting, 2004 – 2005.
- Chair, *Numerical Modeling of Mantle Convection and Lithospheric Dynamics*, Erice, Italy, September 2005.
- Chair, *MYRES-I: Heat, Helium, Hotspots, and Whole Mantle Convection*, San Diego CA, August 2004.
- Convener for special sessions
 - *Coupling of Tectonic and Surface Processes*, Boulder, 2018.
 - *American Geophysical Union Fall Meeting*, New Orleans, 2017.
 - *Japanese Geoscience Union Meeting*, Makuhari, Japan, 2017.
 - *UNAVCO Science Meeting*, Broomfield CO, 2016.
 - *American Geophysical Union Fall Meeting*, San Francisco, 2015 (three sessions).
 - 23 special sessions organized before 2015.
- o Conference student awards
 - Outstanding student poster award (OSPA) judge: AGU 2008, 2012, 2014. EGU 2014.
 - Mentor, AGU OSPA Union eLightning Presentation participants, 2017.
- o Summer school teaching and organization and short courses:
 - Steering Committee, *SCEC-ERI Tokyo Summer School on Earthquake Science*, 2013 – 2015.
 - Advisory Committee, *Cooperative Institute for Dynamic Earth Research (CIDER)*, 2013 – 2017.
 - CIDER Summer program participation:
 - *Subduction Dynamics*, Berkeley CA, 2017 (instructor),
 - *Flow in the Deep Earth*, Santa Barbara CA, 2016 (instructor),
 - *From Mantle to Crust: Continental Formation and Destruction*, Berkeley CA, 2013 (chair),
 - *Dynamics of Mountain Building*, Berkeley CA, 2011 (instructor),
 - *Water and Volatiles in the Earth's Mantle and Core*, Santa Barbara CA, 2010 (instructor).
 - Summer short course on *Mapping and Modeling Earth Science Data*, Rome, 2012.

- Summer short course on *Subduction Zone Modeling*, Rome, 2011.
- o Teaching innovations:
 - At the University of Texas at Austin (UT GEOL codes in parentheses):
 - Revised general education class *Introduction to Geology* (303, Spring 2017)
 - Created new undergrad/grad class *Introduction to Geodynamics* (371T/391, Fall 2017)
 - Created new undergrad class *Crises of a Planet* (with Gardner and Mohrig; 302P, Spring 2018)
 - At the University of Southern California, Los Angeles (USC GEOL codes in parentheses, 2004–2016):
 - Revised general education class *Crises of a Planet* (108).
 - Revised geophysics section of undergrad class *Engineering Geology* (305L).
 - Revised undergrad class *Geophysics* (440), including addition of new applied geophysics field work component in Death Valley.
 - New undergrad class *Data Analysis in the Earth and Environmental Sciences* (425, with Emile-Geay).
 - New graduate class *Lithospheric Deformation* (534, with Platt).
 - New graduate class *The Mantle System* (540).
 - New graduate class *Numerical Modeling of Earth Systems* (577, with Kaus)
 - New graduate class *Inverse Theory in the Earth Sciences* (558).
 - New graduate seminars on
 - *Subduction* (with Miller, Spring 2012),
 - *Plate Tectonics Over Time* (Fall 2006),
 - *The Deep Earth* (Spring 2009), and
 - *Strain Localization* (Fall 2009).
- o Computing, visualization, and teaching in Earth Systems Science:
 - Member, CIG Mantle convection and Lithospheric Dynamics working groups, 2010 – 2015.
 - Project leader, open source project *Unified Earth Science Computing Environment* (UGESCE), <http://www-udc.ig.utexas.edu/external/becker/ugesce.html>, 2012 – 2016.
 - Project leader, open source project *Solid Earth Research and Teaching Environment* (SEATREE), <http://geosys.usc.edu/projects/seatree/>, 2008 – 2016.
 - Proposal Writing Committee for *Computational Infrastructure for Geodynamics* (CIG-II, geodynamics.org), 2008 – 2009.
 - Project leader, open source project *iGMT*, <http://www-udc.ig.utexas.edu/external/becker/igmt/>, 1999 – 2009.
- o Other outreach and community activities
 - Applicant evaluation committee, *Geodynamics of the Lithosphere and Deep Earth* REU program, 2016, 2017.
 - Guest lecturer, Computer Science Curriculum, Cate High School, Carpinteria CA, November 2014.
 - Art Gallery tour leader, *Michael Heizer: Actual Size*, Los Angeles County Museum of Art, September 2012.
 - Co-Founder and steering committee, *Meeting of Young Researchers in the Earth Sciences* (MYRES), 2002 – 2005.

- Fieldtrip Leader, Department of Earth and Planetary Sciences, Harvard University, Cambridge MA, 1999 – 2001.
- Departmental representative to the Graduate Student Council, Harvard University, Cambridge MA, 1998 – 2000.
- Web site maintenance for dissemination of research products such as developed software, and sharing of scientific visualizations, *e.g.* for popular science applications (used by museums and *Discover Magazine*, for example), 1997 –
- Journal reviewer for *Nature*, *Nature Geosc.*, *Nature Comm.*, *Science*, *Science Adv.*, *Geology*, *Earth Planet. Sci. Lett.*, *Tectonics*, *Geophys. J. Int.*, *J. Geophys. Res.*, *G-Cubed*, *Geophys. Res. Lett.*, *Phys. Earth Planet. Int.*, *Tectonophysics*, *Lithosphere*, *Pure Appl. Geophys.*, *J. Geodynam.*, and *Adv. Geophys.*.
- Proposal reviewer for U.S. agencies: National Science Foundation (Geophysics, Tectonics, CSEDI, GeoPRISMS, MG&G, IES/CD, EarthScope, OCE, Geoinformatics, MRI, and CMG), NASA, Southern California Earthquake Center, United States Geological Survey, and the US-Civilian Research & Development Foundation.
- Proposal reviewer for international funding bodies: European Research Council, IODP, Natural Environment Research Council (UK), German Science Foundation (DFG), Swiss Science Foundation, Czech Science foundations, Canada's NSERC, ETH Zurich Research Commission, Netherland's NWO, Austria's FWF, The Royal Society of New Zealand, The Marsden Fund, Agence National de la Recherche (France), and the Italian Ministry for Education, University and Research
- Reviewer for Cambridge University Press.

PROFESSIONAL AFFILIATIONS

- American Geophysical Union
- European Geoscience Union
- Japanese Geoscience Union
- Deutsche Geophysikalische Gesellschaft

- The University of Texas at Austin
 - Jackson School of Geosciences
 - Member, Promotion and Appointments Committee (2016 –)
 - Member, UTIG Director Search Committee (2018 –)
 - Institute for Geophysics
 - Chair, Mentoring Committee (2016 –)
 - Member, Annual Performance Evaluation Committee (2018 – 2019)
 - Chair, Computational Scientist Search Committee (2018)
 - Chair, Promotion Committee (2018)
 - Member, Seminar Committee (2016 –)
 - Member, HPCC Committee (2016 –)
 - Chair, Eleanor Picard Staff Excellence Award Committee (2017)
 - Director's Circle of Excellence, 2016, 2017
 - Department of Geological Sciences
 - Member, Chaired Professorship review committee (2018 – 2019)
 - Executive Committee/Program Leader, *Lithosphere and Deep Earth* (2016 – 2018)
 - Chair, Structural Geology Chair search (2017 – 2018)
 - Chair, Annual Evaluation Committee for LDE (2016 – 2018)
 - Member, Tenure Committee (2017)
 - Bureau of Economic Geology
 - Member, RA Seismologist Search Committee (2018)
- Department of Earth Science, University of Southern California, Los Angeles
 - Member, Tenure Committee (2014, 2015)
 - Member, Merit Review committee (2006, 2010, 2015)
 - Member, USC Earth Sciences delegation to fundraising event at Houston AAPG meeting, 2014
 - Member, Faculty Promotion Committee (2013)
 - Chair, Climate Initiative Committee (2012 – 2013)
 - Member of two Faculty Mentoring Committees (2011 – 2015)
 - Chair, Geophysics Search Committee (2006 – 2007)
 - Member, Search Committee for
 - Geophysics (2013 – 2014)
 - Lithospheric Dynamics (2011 – 2012)
 - Climate Dynamics (2009 – 2010)
 - Geophysics (2007 – 2008)
 - Member, Dean's *College 2020* proposal evaluation panel (2009, 2011)
 - Chair, Computing Committee (2008 – 2016).
 - Undergraduate program adviser (2009)
 - Member, Chair Search Advisory Committee (2006)
 - Representative at *UNAVCO* (2006 – 2016)
 - Member, Computing Committee (2004 – 2008)
 - Representative at the *Computational Infrastructure for Geodynamics* (2004 – 2016)

- Summer undergraduate interns:
 - At UT Austin: Dorothy Linnemann (2017, Scripps College, with Lavier)
 - At USC: Fabienne Stockmann (2014, Münster University), Simon Schneider (2013, Münster University), Kevin Milner³⁷ (2008, USC), Jared Sain³⁷ (2008, USC), Hannah Waterhouse³⁷ (2008, Bryn Mawr College), and Katrin Plenkers (2005, Karlsruhe).
- Undergraduate advisees:
 - At UT Austin: Zel Hurewitz (2017–, UT Austin physics)
 - At USC: Bradford Foley⁴³ (BSc 2008; Assistant Professor, Penn State)
- MSc students:
 - At UT Austin: Kunpeng Liao (MSc 2018; CGG)
 - At USC: Zi-Yu Wu (MSc 2010; Guosen Securities) and Steedman³⁴ (MSc 2006; Iris Environmental)
- PhD students:
 - directly supervised:
 - current: Erin Heilman (2018 –), Simone Puel (2018 –), Wanying Wang (2016–).
 - At USC:
 - Adam Holt^{89,91,92,94,107-109,115,117} (PhD 2016; post-doc, MIT)
 - Michael Kaplan (PhD 2015; medical school)
 - Mélanie Gérard⁶⁴ (PhD 2014; post-doc, MIT)
 - Thomas Goebel^{63, 71, 77, 79, 82, 113} (PhD 2013; research scientist, UCSC)
 - Lisa Alpert^{53,65,75} (PhD 2012; Aera Energy Llc.)
 - Iain Bailey^{40,49,53,65} (PhD 2009; Swiss Re).
 - Committee member:
 - At UT Austin: Keith Minor (external chair, 2019 –), Yanyao Zhang (2018–), Kristina Butler (external chair, 2018–), Chang Lu (2018–), Brandon Schuck (2018–), Chujie Liu (2017–), Lily R. Serach (external chair, 2017–), Brooklyn Gose (2017–), Peter Nelson (2017–).
 - At USC: Jessica Stellman⁹⁵ (2014–), William Schmidt (2015–2016), Xinjiang Xiang (2015), Xin Song (2014–2015), Xin Liu (2014–2015), Beth Paulson (2014–2016), Chris Milliner (2013–2015), Haoran Xia (2013–2015), Francoix Cadieux (PhD 2015), Feng Wang (PhD 2013), Prabu Sellappan (PhD 2013), Whitney Behr (PhD 2011), Zheqiang Shi (PhD 2008), Adam Fischer (PhD 2008), Jeremy Zechar (PhD 2008).

- External PhD reviewer: Angela Maria Gomez Garcia (U Medellin, 2016), Juliane Dannberg (GFZ Potsdam, 2016), Raquibul Hassan (U Sydney, 2016), Rene Gassmüller (GFZ Potsdam, 2014), and Sabin Zahirovic (U Sydney, 2014).
- Member of the Board, International Graduate School, Department of Earth Sciences, Università di Roma TRE, 2014 –.
- Post-docs:
 - current: Matt Weller (2016–) and Rob Porritt (2017–).
 - Lukas Fuchs (2016–2018; post-doc, Frankfurt)
 - Attreyee Ghosh^{44,70} (2008 – 2010; Assistant Professor, Indian Institute of Science, Bangalore)
 - Boris Kaus^{22,33-35,42,64} (2005 – 2006; Professor, Mainz University)
 - Jules Browaeys²⁴ (2006; Geophysicist, Total E&P Norge AS)

CLASSES TAUGHT

- *Sustaining a Planet* (UT GEOL 302P/J): S18, S19 (with Gardner and Mohrig)
General education undergraduate class on all aspects of natural hazards.
- *Tectonic Geodynamics* (UT GEOL 371T/391): S19 (with Faccenna)
Introduction to structural geology, tectonics, and lithospheric geodynamics for undergraduate majors and grad students.
- *Introduction to Geodynamics* (UT GEOL 371T/391): F17
Introduction to mantle and lithospheric geodynamics for undergraduate majors and grad students.
- *Introduction to Geology* (UT GEOL303): S17 (with Shanahan)
General education undergraduate class on all aspects of Geology.
- *Crisis of a Planet* (USC GEOL108): F11 (with Berelson), F12, F13, F14, F15 (with Miller)
General education undergraduate class on natural hazards and global change.
- *Engineering Geology* (USC GEOL305L): S07, S09, S10, S12, S13, S14, S15 (all with Davis and Hammond)
Non-major undergraduate class on the solid Earth with focus on hazards and mitigation.
- *Introduction to Geophysics* (USC GEOL440): S05, S14, S16
Advanced undergraduate and introductory grad class, includes applied geophysics field trip (seismics and gravity methods).
- *Data analysis in the Earth Sciences* (USC GEOL425): F09 (with Emile-Geay)
Introduction to statistics, inverse theory, and time-series analysis for advanced undergraduates and graduate students.

- *Introductory Graduate Seminar* (USC GEOL505): F11
Introduction to research methods and general academic skills including proposal and presentation preparation.
- *Mechanics of Lithospheric Deformation* (USC GEOL534): S06, F07, F09, F11, F14 (all with Platt)
Introductory graduate class on the mechanics and dynamics of the lithosphere and mantle.
- *The Mantle System* (USC GEOL540): S09
Advanced graduate class on the dynamics and structure of the deep Earth.
- *Numerical Modeling of Earth Systems* (USC GEOL557): F05 (with Kaus), F08, S13, S16
Advanced graduate class on PDE and ODE solution methods with extensive programming exercises focusing on finite difference and element methods.
- *Subduction* (USC GEOL599): S12 (with Miller)
Graduate seminar on the dynamics and structure of subduction zones with focus on data rich environments like USArray imaged North America, Japan, and China.
- *Plate tectonics over time* (USC GEOL599): F06
Graduate seminar on geological, petrological, and geophysical constraints on Earth's heat loss dynamics over the last four billion years.
- *Strain localization* (USC GEOL599): F09 (with Ben-Zion)
Graduate seminar on the role of brittle and ductile damage and grain-size dependent rheologies for the formation of plate boundaries.
- *Geophysics Seminar* (USC GEOL609): F05, S06, S07 (all with Ben-Zion)
Graduate seminar on the physics of earthquakes, faults and plate boundaries.
- *The Global Economy 2030* (USC IR331): F13, F14, F15 (guest lectures)
Regular guest lecture in International Relations class.
- *Mapping and Modeling Earth Science Data* (June 2012)
International short course on computing, UNIX, programming, and visualization as well as analysis of geographic data. Part of the Geodynamics Graduate School at the Università di Roma TRE.
- *Subduction zone modeling* (April 2011)
International short course on modeling of slab dynamics on regional on global scales. Part of the Geodynamics Graduate School at the Università di Roma TRE.
- *Short courses on scientific computing, programming, and mapping* (Su05, F06, Su09, S12)
Introduction to computing, UNIX, programming, and visualization and analysis of geographic data.

FUNDING HISTORY

o Current support:

- *RCN: Planning for a Modeling Collaboratory for Subduction Zone Science.* NSF, EAR-1824343, \$400,000. PI. 09/2018 – 08/2021.
- *Collaborative Research: Multi-scale models of subduction zone earthquake cycle observations.* NSF, EAR-1722680, \$233,467. PI, co-PIs L. Lavier and A. Freed (Purdue). 07/2017 – 06/2019.
- *Geophysical fingerprinting of GPS time series in the western United States: Toward an integrated crustal deformation model* NASA, OSP 201601412-001, \$523,619. PI. 06/2016 – 05/2019.
- *Collaborative Research: Shear-wave splitting and mantle dynamics of the North American plate* NSF-EarthScope, EAR-1460479, \$150,516 (UT component). Co-PI, with K. Liu (PI). 07/2015 – 06/2019.

o Past support:

- *Workshop on coupling of tectonic and surface processes across spatio-temporal scales* NSF, EAR-1746021, \$95,152. Co-PI, with L. Lavier (PI) and M. Behn, 09/2017 – 08/2018.
- *Deep Fault Structure Beneath the Mojave from a High Density, Passive Seismic Profile.* NSF/USGS-SCEC. \$22,000. Co-PI, with W. Behr (PI), 05/2017 – 04/2018.
- *Earth-Life Transitions: Linked geochemical/biotic response to massive volcanic CO₂ injection during the Triassic-Jurassic mass extinction* NSF, EAR-1338329, \$700,000. Co-PI, with F. A. Corsetti (PI), A. J. West, N. M. Levine, and D. J. Bottjer. 08/2013 – 07/2017.
- *Transitions in the Banda Arc-Australia continental collision as a bridge to understanding mantle and lithospheric controls on surface tectonics* NSF-Geophysics/Tectonics, EAR-1250214, \$715,000. Co-PI, with M. S. Miller (PI) and J. West. 07/2013 – 06/2016.
- *Anticipating SCEC5: Towards a Community Rheology Model (CRM) of the Southern California Lithosphere* NSF-USGS/SCEC, \$10,000. PI L. Hearn, co-PIs: Becker, Y. Fialko, G. Fuis, G. Hirth, W. Thatcher, 02/2015 – 01/2016.
- *Reprocessing and geophysical fingerprinting of vertical GPS time series in Southern California: Toward an integrated crustal deformation model* NSF-USGS/SCEC, \$30,000. PI A. Borsa, co-PI: Becker, 02/2015 – 01/2016.
- *Multi-scale stress and strain-rate model analysis for Southern California* NSF-USGS/SCEC, \$21,000. PI, 02/2015 – 01/2016.
- *Lithospheric System Dynamics Graduate Student Scholarship Support Sustaining Chevron-USC Earth Sciences Research Collaboration.* CW994042. Chevron, \$90,000, PI. 08/2014 – to 12/2015.
- *Estimating global subduction mass transport* NSF-Geophysics. EAR-1215720, \$301,618. PI. 09/2012 – 08/2015.

- *Collaborative Research: Reorganization of stresses beneath greater Tokyo after the 2011 Tohoku-Oki M9 earthquake*
NSF-Geophysics, EAR-1215757, \$325,146. Co-PI, with D. Okaya (PI) and A. Freed (Purdue). 07/2012 – 06/2015.
- *Community Stress Model (CSM) Workshop*
NSF-USGS/SCEC, \$12,000. co-PI, with J. Hardebeck et al., 02/2014 – 01/2015.
- *Multi-scale observations of seismic anisotropy as a constraint for stress and deformation along the San Andreas Fault*
NSF-USGS/SCEC, \$30,000. co-PI, PI: M. S. Miller, 02/2014 – 01/2015.
- *2014 SCEC/ERI summer school on Earthquake System Modeling*
NSF-USGS/SCEC, \$40,000. PI, co-PIs: T. Jordan, G. Beroza, 02/2014 – 01/2015.
- *Workshop: Crustal Deformation Modeling*
NSF-USGS/SCEC, \$10,000. co-PI, with B. Aagaard et al., 02/2014 – 01/2015.
- *Embedded geodynamic stress model of the Southern California crust*
NSF-USGS/SCEC, \$30,000. PI, co-PI: T. Parsons, 02/2014 – 01/2015.
- *Continued study of fault mechanics and structure during laboratory stick-slip experiments*
NSF-USGS/SCEC, \$30,000. PI, with C. Sammis. 02/2013 – 01/2014.
- *Weakening, strain localization, and the deep structure of the San Andreas Transform system*
NSF-USGS/SCEC, \$27,000. co-PI, with J. P. Platt (PI). 02/2013 – 01/2014.
- *Community Stress Model Web Interface*
NSF-USGS/SCEC, \$30,000. PI, with J. Hardebeck. 02/2013 – 01/2014.
- *PICASSO: Program to Investigate Convective Alboran Sea System Overturn*
NSF–Continental Dynamics, EAR-0809023, \$275,000. Co-PI, with J. P. Platt and M. S. Miller, 10/2008 – 12/2013.
- *CAREER: Using Upper Mantle Circulation Models to Evaluate the Role of the Asthenosphere:Tectosphere Contrast and Subduction Dynamics for Global Plate Tectonics*
NSF–Geophysics, EAR-0643365, \$511,291. PI. 01/2007 – 12/2012.
- *Steps in lithospheric thickness: Investigating strain localization at major strike slip faults in Southern California*
NSF-USGS/SCEC, \$30,000. Co-PI, with M.S. Miller and J. Dolan. 02/2012 – 01/2013.
- *Fault mechanics and structure during laboratory stick-slip experiments: Can we infer fault properties and stress from acoustic emission statistics?*
NSF-USGS/SCEC, \$30,000. PI, with C. Sammis. 02/2012 – 01/2013.
- *Stress transfer and the structure of lithospheric fault zones?*
NSF-USGS/SCEC, \$30,000. Co-PI, with J. P. Platt. 02/2012 – 01/2013.
- *Collaborative Research: Geodynamic implications of imaged upper mantle heterogeneity beneath the Western United States*
NSF EAR-0910985, \$156,124, PI, with E. Humphreys, 09/2009 – 08/2012.
- *Characterizing fault roughness evolution using acoustic emission and micro-structural analysis of frictional sliding experiments*
NSF/USGS–Southern California Earthquake Center, \$20,000. PI, with D. Schorlemmer and G. Dresen. 02/2011 – 01/2012.

- *Collaborative Research: Thermochemical Models of Mantle Dynamics and Plate Motions*
NSF-Geophysics, EAR-0930046, \$88,885. Co-PI, with B. Buffett. 08/2009 – 07/2012.
- *Bookshelf slip on rotating panels of sinistral faults within the San Andreas Transform system: Can we see the geodetic signal?*
NSF/USGS–Southern California Earthquake Center, \$15,000. Co-PI, with Platt. 02/2010 – 01/2011.
- *Network Inversion Filter with Multiscale Dynamics*
NSF/USGS–Southern California Earthquake Center, \$10,000. PI, with Ghanem, 02/2010 – 01/2011.
- *Multi-Disciplinary Experiments for Dynamic Understanding of Subduction under the Aegean Sea (MEDUSA)*
NSF–Continental Dynamics, EAR-0633879, \$132,760. Co-PI, with L. Royden, 08/2004 – 07/2009.
- *The 3-D strain-rate field in California and its implications for seismic hazard*
USGS-NEHRP, G09AP00005, \$71,113. PI. 01/2009–12/2009.
- *Continued Modeling of Southern California Geodynamics in 3-D: Visco-plastic Models of Fault Loading and Crustal Stress*
NSF/USGS–Southern California Earthquake Center, \$35,000. PI. 02/2009 – 01/2010.
- *Seismological and Geodynamic Investigations of Mantle Anisotropy*
NSF–Geophysics, EAR-0509722, \$212,829. PI. 07/2005 – 12/2008.
- *Continued Modeling of Southern California Geodynamics in 3-D: Visco-plastic Models of Fault Loading and Crustal Stress*
NSF/USGS–Southern California Earthquake Center, \$35,000. PI. 02/2008 – 01/2009.
- *Continued Analysis of Small-scale Strain Patterns Associated with Southern California Earthquakes*
NSF/USGS–SCEC, \$21,000. PI. 02/2007 – 01/2008.
- *A 3-D Visco-plastic Model of Instantaneous Lithospheric Deformation in Southern California*
NSF/USGS–SCEC, \$30,000. PI. 02/2007 – 01/2008.
- *Continued Analysis of Spatio-Temporal Strain Patterns Associated with Southern California Earthquakes*
NSF/USGS–SCEC, \$20,000. PI. 02/2006 – 01/2007.
- *Toward a Comprehensive Model of Mantle Flow and Seismic Anisotropy in the Western U.S.: Using Mineral Physics to Directly link Geodynamics and Seismology*
NSF–Collaborative Study of Earth’s Deep Interior, \$56,940. Co-PI, with D. Blackman. 10/2004 – 09/2006.
- *Analysis of Spatio-Temporal Strain Patterns Associated with Southern California Earthquakes*
NSF/USGS–SCEC, \$20,000. PI. 02/2005 – 01/2006.
- *Meeting of Young Researchers in the Earth Sciences MYRES: A Conference Series and Community Development Initiative*
NSF-EAR, \$63,180. PI. 2004 – 2006.
- Ph. D. Scholarship of the German Academic Exchange Service. PI. 1998 – 2001.