

THORSTEN W. BECKER

DEPARTMENT OF EARTH SCIENCES
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November 23, 2009

EDUCATION

1997 – 2002	Harvard University <i>Ph. D. in Geophysics</i> , June 2002 Dissertation: <i>Lithosphere–Mantle Interactions</i> Principal advisor: Richard J. O’Connell <i>M. A. in Geophysics</i> , November 1999	Cambridge, MA
1994 – 1997	J. W. Goethe University <i>Diplom (M. Sc.) in Physics</i> , May 1997 Thesis: <i>Finite element modeling of fault-zone interactions</i> Principal advisor: Harro Schmeling	Frankfurt am Main
1992 – 1994	J. W. Goethe University <i>Vordiplom (~B. Sc.) in Physics</i> , November 1994	Frankfurt am Main

PROFESSIONAL APPOINTMENTS

2009 –	University of Southern California <i>Associate Professor of Earth Sciences</i>	Los Angeles, CA
2004 – 2009	University of Southern California <i>Assistant Professor of Earth Sciences</i>	Los Angeles, CA
Spring 2008	Princeton University <i>Visiting Fellow</i>	Princeton, NJ
2002 – 2004	IGPP, Scripps Institution of Oceanography, UCSD <i>Cecil H. and Ida M. Green Postdoctoral Scholar</i>	La Jolla, CA

FELLOWSHIPS AND ACADEMIC HONORS

- Kavli fellow, National Academy of Sciences Frontiers of Science Symposium, 2007–2009.
- C. F. Gauss lecturer, German Geophysical Society, 2008.
- Editor’s Citation for Excellence in Refereeing for *Tectonics*, 2007.
- National Science Foundation CAREER Award, 2007.
- Cecil H. and Ida M. Green Scholarship, SIO, U. C. San Diego, 2002 – 2004.
- Certificate of Excellence in Teaching, Derek Bok Center, Harvard University, 2001.
- Ph. D. Scholarship of the German Academic Exchange Service, 1998 – 2001.
- Siedler Award 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.

COMMUNITY SERVICE AND SYNERGISTIC ACTIVITIES

- Editor for Geochemistry, Geophysics, Geosystems (G-Cubed), 2009 –
- Editor for Geophysical Journal International, 2004 – 2009.
- Co-Chair, 12th Annual Chinese-American Kavli Frontiers of Science Symposium, Kunming China, September 2009.
- Planning Committee, Southern California Earthquake Center, 2009 –
- Proposal Writing Committee for CIG-II, 2008 – 2009.
- Program committee for the Chinese-American Kavli Frontiers of Science Symposium, National Academy of Sciences, 2007 – 2009.
- Nominations Committee for Tectonophysics Section Officers, American Geophysical Union, 2009 –
- Co-chair, Workshop for Advancing Numerical Modeling of Mantle Convection and Lithospheric Dynamics, Davis CA, July 2008.
- Program Committee for Tectonophysics, American Geophysical Union, 2004 – 2005.
- Proposal Evaluation Committee, National Science Foundation, Geophysics, 2005.
- Proposal Evaluation Committee, United States Geological Survey, National Earthquake Hazard Reduction Program, 2005 – 2007.
- Chair, Numerical Modeling of Mantle Convection and Lithospheric Dynamics meeting, Erice, Sicily, September 2005.
- Chair, MYRES-I: Heat, Helium, Hotspots, and Whole Mantle Convection meeting, San Diego, August 2004.
- Co-Founder and steering committee, Meeting of Young Researchers in the Earth Sciences (MYRES), 2002 – 2005.
- Convener of special sessions
 - 12th Chinese-American Kavli Frontiers of Science Symposium, Kunming, China, 2009.
 - EarthScope National Meeting, Boise ID, 2009.
 - American Geophysical Union Fall Meeting, San Francisco, 2008.
 - Continental Deformation workshop, DIAS, Dublin, 2008.
 - Chinese-American Kavli Frontiers of Science Symposium, Irvine CA, 2008,
 - IRIS Long Range Science Plan for Seismology Workshop, Denver CO, 2008.
 - Gordon Research Conference: Interior of the Earth, South Hadley MA, 2007.
 - American Geophysical Union Joint Assembly, Acapulco, 2007.
 - European Geophysical Union meeting, Nice, 2004.
 - Workshop on Numerical Modeling of Mantle Convection, Hrubá Skála, 2003.
 - European Geophysical Society meeting, Nice, 2000.
- Institutional representative for USC at UNAVCO, 2006 –
- Institutional representative for USC at Computational Infrastructure for Geodynamics, 2004 –

COMMUNITY SERVICE AND SYNERGISTIC ACTIVITIES (CONTD.)

- Teaching innovations
 - Updated undergrad class *Geophysics* (USC GEOL440) with applied geophysics field trip,
 - New upper division class *Data Analysis in the Earth and Environmental Sciences* (GEOL425, Fall 2009, with Emile-Gaey)
 - New grad class *Numerical Geodynamics* (GEOL540, with Kaus),
 - New grad class *Lithospheric Geodynamics* (GEOL534, with Platt),
 - New grad seminar on *Plate Tectonics Over Time* (GEOL599, Fall 2006), and
 - New grad seminar on *The Deep Earth* (GEOL599, Spring 2009).
 - New grad seminar on *Strain Localization* (GEOL599, Fall 2009, with Ben-Zion)
- Main author of iGMT, an open-source map making and teaching tool, since 1999 – 2009.
- Project leader, Solid Earth Research and Teaching Environment (SEATREE), <http://geosys.usc.edu/projects/seatree/>, 2008 –.
- Provided two book proposal reviews for Cambridge University Press
- Journal reviewer for *Nature*, *Science*, *Geology*, *Earth and Planetary Science Letters*, *Tectonics*, *Geophysical Journal International*, *Journal of Geophysical Research*, *G-Cubed*, *Geophysical Research Letters*, *Physics of the Earth and Planetary Interiors*, *Tectonophysics*, *Pure and Applied Geophysics*, *Journal of Geodynamics*, and *Advances in Geophysics*.
- Proposal reviewer for
 - NSF (Geophysics, Tectonics, CSEDI, MG&G, CD, EarthScope, OCE, and CMG),
 - European Science Foundation,
 - Swiss Science Foundation,
 - United States Geological Survey,
 - Nederlandse Organisatie voor Wetenschappelijk Onderzoek,
 - Marsden Fund, Royal Society of New Zealand,
 - US Civilian Research & Development Foundation.

MAJOR SERVICE TO THE DEPARTMENT AND THE UNIVERSITY

- Undergraduate program adviser (Fall 2009 –)
- Member, Climate Dynamics Search Committee (2009–)
- Chair, Computing Committee (2008 –)
- Chair, Geophysics Search Committee (2006–2007)
- Member, Geophysics Search Committee (2007–2008)
- Member, Computing Committee (2004–2008)

Submitted:

- S-1 Bailey, I. W.,* Ben-Zion, Y., **Becker, T. W.**, and Holschneider, M.: Quantifying focal mechanism heterogeneity for fault zones in central and southern California. Submitted to *Geophys. J. Int.*, 2009. (<http://geodynamics.usc.edu/~becker/preprints/bbbh09.pdf>)
- S-2 Bullen, A. L., McNamara, A., **Becker, T. W.**, and Ritsema, J.: Global scale models of the mantle flow field predicted by synthetic tomography models. Submitted to *Phys. Earth Planet. Int.*, 2009 (geodynamics.usc.edu/~becker/preprints/bmbr09.pdf).

Peer-reviewed Journal Contributions:

- 43 Ghosh, A.,* **Becker, T. W.**, and Zhong, S.: Effects of lateral viscosity variations on the geoid. In press at *Geophys. Res. Lett.*, 2009. (<http://geodynamics.usc.edu/~becker/preprints/gbz09.pdf>)
- 42 Foley, B.[×] and **Becker, T. W.**: Generation of plate-like behavior and mantle heterogeneity from a spherical, visco-plastic convection model. *Geochem., Geophys., Geosys.*, 10, Q08001, doi:10.1029/2009GC002378, 2009 (20 pages).
- 41 Kaus, B. J. P.* , Liu, Y., **Becker, T. W.**, Yuen, D., and Shi, Y.: Lithospheric stress-states predicted from long-term tectonic models: influence of rheology and possible application to Taiwan. *J. Asian Earth Sci.*, 36, 119–134, 2009.
- 40 Castelnau, O., Blackman, D. K. and **Becker, T. W.**: Numerical simulations of texture development and associated rheological anisotropy in regions of complex mantle flow. *Geophys. Res. Lett.*, 36, L12304, doi:10.1029/2009GL038027 2009. (6 pages)
- 39 Bailey, I. W.* , **Becker, T. W.**, and Ben-Zion, Y.: Patterns of co-seismic strain computed from southern California focal mechanisms. *Geophys. J. Int.*, 177, 1015-1036, 2009.
- 38 **Becker, T. W.** and Faccenna, C. (2009): A review of the role of subduction dynamics for regional and global plate motions. In: *Subduction Zone Geodynamics, Int. J. Earth Sci.*, 3–34, Springer Verlag, Berlin. (geodynamics.usc.edu/~becker/preprints/bf07.pdf)
- 37 Qin, Y., Capdeville, Y., Montagner, J.-P., Boschi, L., and **Becker, T. W.** (2009): Reliability of mantle tomography models assessed by spectral-element simulation. *Geophys. J. Int.*, 177, 125–144, 2009.
- 36 Milner, K.[×], **Becker, T. W.**, Boschi, L., Sain, J.[×], Schorlemmer, D. and H. Waterhouse[×] (2009): The Solid Earth Research and Teaching Environment: a new software framework to share research tools in the classroom and across disciplines. *Eos Trans. AGU*, 90, 12 (1 page).
- 35 **Becker, T. W.**, Conrad, C. P., Buffett, B. and Müller, R. D. (2009): Past and present seafloor age distributions and the temporal evolution of plate tectonic heat transport. *Earth Planet. Sci. Lett.*, 278, 233-242.
- 34 Kaus, B. J. P.* , Steedman, C.* , and **Becker, T. W.** (2008): From passive continental margin to mountain belt: insights from analytical and numerical models and application to Taiwan. *Physics Earth Planet. Int.*, 171, 235–251.

- 33 Platt, J. P., Kaus, B. J. P.* and **Becker, T. W.** (2008): The San Andreas transform system and the tectonics of California: an alternative approach. *Earth Planet. Sci. Lett.*, 274, 380–391.
- 32 Faccenna, C., Rossetti, F., **Becker, T. W.**, Danesi, S., and Morelli, A. (2008): Recent extension driven by mantle upwelling at craton edge beneath the Admiralty Mountains (Ross Sea, East Antarctica). *Tectonics*, 27, TC4015, doi:10.1029/2007TC002197, 2008. (13 pages)
- 31 Funicello, F., Faccenna, C., Heuret, A., Di Giuseppe, E., Lallemand, S., and **Becker, T. W.** (2008): Trench migration, net rotation and slab-mantle coupling. *Earth Planet. Sci. Lett.*, 271, 233–240.
- 30 Boschi, L., **Becker, T. W.**, and Steinberger, B. (2008): On the statistical significance of correlations between synthetic mantle plumes and tomographic models. *Physics Earth Planet. Int.*, 167, 230–238.
- 29 **Becker, T. W.** (2008): Azimuthal seismic anisotropy constrains net rotation of the lithosphere. *Geophys. Res. Lett.*, 35, L05303, doi:10.1029/2007GL032928. (5 pages)
- 28 **Becker, T. W.**, Kustowski, B., Ekström, G. (2008): Radial seismic anisotropy as a constraint for upper mantle rheology. *Earth Planet. Sci. Lett.*, 267, 213–227.
- 27 Boschi, L., **Becker, T. W.**, and Steinberger, B. (2007): Mantle plumes: dynamic models and seismic images. *Geochem. Geophys. Geosyst.*, 8, Q10006, doi:10.1029/2007GC001733 (20 pages).
- 26 **Becker, T. W.**, Ekström, G., Boschi, L., and Woodhouse, J. (2007): Length scales, patterns, and origin of azimuthal seismic anisotropy in the upper mantle as mapped by Rayleigh waves. *Geophysical J. Int.*, 171, 451–462.
- 25 Loyd, S. J.* , **Becker, T. W.**, Conrad, C. P., Lithgow-Bertelloni, C., and Corsetti, F. A. (2007): Time-variability in Cenozoic reconstructions of mantle heat flow: plate tectonic cycles and implications for Earth’s thermal evolution. *Proceed. Nat. Acad. Sci.*, 104, 14266–14271.
- 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., Funicello, 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 pages).
- 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.**, Funicello, F., and Faccenna, C. (2006): Three-dimensional instantaneous mantle flow induced by subduction, *Geophys. Res. Lett.*, *33*, L08304, doi:10.1029/2005GL025390 (4 pages).
- 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 pages).
- 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.
- 10 Felzer, K. R., **Becker, T. W.**, Abercrombie, R. E., Ekström, G., and Rice, J. R. (2002): Triggering of 1999 Mw 7.1 Hector Mine earthquake by aftershocks of the 1992 Landers earthquake, *J. Geophys. Res.*, *107*(B9), doi:10.1029/2001JB000911 (13 pages).
- 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 pages).
- 8 **Becker, T. W.** and O'Connell, R. J. (2001): Predicting plate velocities with mantle circulation models, *Geochem., Geophys., Geosys.*, *2*(12), doi:10.1029/2001GC000171 (54 pages).
- 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, 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

Extended, reviewed abstracts:

- 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.

Monographs:

- Becker, T. W.: *Lithosphere–Mantle Interactions*, Ph. D. thesis, Harvard University, Cambridge MA, April 2002 (geodynamics.usc.edu/~becker/thesis.tp.times10.pdf).
- Becker, T. W.: *Finite Elemente Modellierung zur Bruchaktivierung in Scherzonen*. M. Sc. thesis (in German), Frankfurt University, January 1997.

CONFERENCE CONTRIBUTIONS

- 18 in 2009, 27 in 2008.
- More than 105 between 1996 and 2007.

INVITED PRESENTATIONS (LAST TWO YEARS)

- Workshop on Modeling of Mantle Convection and Lithospheric Dynamics, Braunwald, Switzerland, June 2009.
- Gordon Meeting on the Interior of the Earth, South Hadley MA, June 2009.
- University of Oregon, Eugene, April 2009.
- Rice University, Houston TX, March 2009.
- University of Colorado at Boulder, January 2009.
- AGU Fall Meeting, San Francisco, CA, December 2008 (two talks).
- Continental Deformation workshop, DIAS, Dublin, November 2008.
- University of California at Riverside, October 2008.
- Rheology Grand Challenge Workshop, MIT, Cambridge MA, August 2008.
- CIDER Summer School on the Deep Earth, Santa Barbara CA, July 2008.
- The University of Chicago, June 2008.
- University of Texas at Austin, May 2008.
- Yale University, New Haven CT, April 2008.
- DGG Gauss lecture, European Geosciences Meeting, Vienna, April 2008.

STUDENTS AND POST-DOC ADVISING

- Post-docs: Attreyee Ghosh (08 –), Boris Kaus (05–06; assist. prof. ETH Zürich), Jules Browaeys (06; post-doc UT Austin)
- Graduate: Lisa Alpert, Mélanie Gérard, Thomas Göbel, Michael Kaplan, Zi-Yu Wu. Iain Bailey (PhD 09; with Ben-Zion), Clare Steedman (MSc 06; consulting), Katrin Plenkens (MSc 06; PhD cand. GFZ Potsdam).
- Thesis committee member: Whitney Behr, Shiqing Xu, Zheqiang Shi, Adam Fischer (PhD 08), Jeremy Zechar (PhD 08), Ilene Cooper (MSc 06).
- Undergraduate: Bradford Foley (BSc 08; PhD cand. Yale)
- Summer interns: Kevin Milner (USC, now at SCEC), Jared Sain (USC), Hannah Waterhouse (Bryn Mawr College)

PROFESSIONAL AFFILIATIONS

- American Geophysical Union
- Deutsche Geophysikalische Gesellschaft
- Centers:
 - Southern California Earthquake Center
 - Computational Infrastructure for Geodynamics (Mantle convection and Lithospheric Dynamics working groups)
 - UNAVCO

CLASSES TAUGHT (USC CODES GIVEN IN PARENTHESES)

- *Engineering Geology* (with Profs. Davis and Hammond; GEOL305L, S07, S09)
Plate tectonics; Earth's Deep Interior; Rock rheology; Shallow Applied Geophysical Methods; Earthquakes: seismicity, seismotectonics; Seismic Hazard; Earthquake Engineering.
- *Introduction to Geophysics* (GEOL440, S05)
Solid earth geophysics in the context of the dynamic Earth: Gravity, magnetic field, earthquakes, seismic waves, applied seismics, deep Earth composition and dynamics. Includes applied geophysics field trip (seismics and gravity methods).
- *Data analysis in the Earth Sciences* (with Prof. Emile-Geay, GEOL425, F09)
Review of calculus, linear algebra, and probability theory in the context of the Earth sciences. Basic data and time series analysis, filtering, parameter estimation, inverse theory.
- *Mechanics of Lithospheric Deformation* (with Prof. Platt; GEOL534, S06, F07, F09)
Application of continuum mechanics to the deformation and dynamics of the lithosphere and mantle. An introductory geodynamics class with particular emphasis on the connections between geophysical and geological research.
- *Advanced Geodynamics* (GEOL540, F05, F08)
Analytical and numerical methods for the quantitative analysis of geodynamical problems of the lithosphere and mantle. Introduces the finite element and finite difference method using Matlab.
- *Plate tectonics over time* (GEOL599, F06)
Geological, geophysical, and geochemical constraints for the thermal evolution of the Earth are discussed with particular focus on issues regarding the emergence, style and continuity of plate-tectonics over the last four billion years.
- *The Deep Earth* seminar (GEOL599, S09)
Seminar on mantle dynamic processes from the lithosphere to the core. Surveys topics in mantle convection, seismological imaging, geochemistry, and petrology.
- *Strain-localization* seminar (with Prof. Ben-Zion; GEOL599, F09)
Seminar on the mechanisms and consequences of strain localization in the brittle and ductile domain as applied to fault system mechanics and plate tectonics.
- *Geophysics Seminar* (with Prof. Ben-Zion; GEOL609, F05, S06, S07)
Seminar on the physics of earthquakes, faults and plate boundaries including continuum and fracture mechanics, lithospheric dynamics, statistical physics, rock mechanics experiments, seismological observations of the earthquake source, observed patterns of earthquakes and faults.
- *Topics in Geodynamics* (GEOL790, S05)
Applications of continuum physics to geological problems; fundamental physical processes necessary for an understanding of plate tectonics.

CLASSES TAUGHT (CONTD.)

- *Short course on scientific computing and programming* (Su05, F06, Su09)

Introduces the UNIX operating system and scientific workflow tools using a brief survey-type overview. Addresses scientific programming, project management, and numerical modeling tools. Discussion of programming languages with focus on C.

FUNDING HISTORY

Current Support:

- *Collaborative Research: Geodynamic implications of imaged upper mantle heterogeneity beneath the Western United States* NSF-EAR 0910985, \$156,124, 09/2009 - 08/2011. (PI. 0.5 mo summer, 1 yr post-doc)

- *Collaborative Research: Thermochemical Models of Mantle Dynamics and Plate Motions.* NSF-Geophysics, EAR-0930046, \$88,885, 08/2009-07/2011.

My role involves co-advising a post-doc and supervising a grad student on research regarding plate driving and global mantle dynamics. (co-PI; 2 yr grad student)

- *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, 02/2009 – 01/2010.

Continuation grant, see below (PI: 1 mo. summer, 4 mo. post-doc).

- *The 3-D strain-rate field in California and its implications for seismic hazard,* USGS-NEHRP, G09AP00005, \$71,113, 01/2009–12/2009.

My role involves supervising and assisting a grad student with crustal strain-rate computations. (co-PI: 1 mo. summer, 1 yr grad)

- *PICASSO: Program to Investigate Convective Alboran Sea System Overturn.* NSF–Continental Dynamics, EAR-0809023, funding estimate: \$551,474, 10/2008 – 12/2013

My role involves performing and supervising geodynamical modeling of lithospheric delamination and subduction (co-PI: 2.5 mo. summer, 5 yr grad)

- *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, 01/2007 – 12/2012.

My role involves implementing a five year research program on understanding upper mantle dynamics with focus on the effects of continents and slabs on asthenospheric dynamics. (PI: 2 mo. calendar, 18 mo. post-doc, 7.5 yr grad, 5 mo. undergrad)

- *Multi-Disciplinary Experiments for Dynamic Understanding of Subduction under the Aegean Sea (MEDUSA).* NSF–Continental Dynamics, EAR-0633879, \$132,760, 08/2004 – 07/2009.

My role involves geodynamic modeling of mantle flow and plate motions in the Mediterranean in the context of geological observations. (co-PI: 7.5 mo. summer)

FUNDING HISTORY (CONTD.)

Past Support:

- *Seismological and Geodynamic Investigations of Mantle Anisotropy*. NSF–Geophysics, EAR-0509722, \$212,829, 07/2005 – 12/2008.

My role involves global mineral physics and geodynamic modeling of upper mantle anisotropy and flow. (PI: 3 mo. summer, 3 yr grad)

- *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, 02/2008 – 01/2009.

Continuation grant, see below (PI: 1 mo. summer, 4 mo. post-doc).

- *Continued Analysis of Small-scale Strain Patterns Associated with Southern California Earthquakes*. NSF/USGS–Southern California Earthquake Center, \$21,000, 02/2007 – 01/2008.

Continuation grant, see below. (PI: 1 yr grad)

- *A 3-D Visco-plastic Model of Instantaneous Lithospheric Deformation in Southern California*. NSF/USGS–Southern California Earthquake Center, \$30,000, 02/2007 – 01/2008.

My role involves supervising geodynamical modeling of how faults are driven by mantle flow and edge loads. (PI: 1 mo. summer, 4 mo. post-doc).

- *Continued Analysis of Spatio-Temporal Strain Patterns Associated with Southern California Earthquakes*. NSF/USGS–Southern California Earthquake Center, \$20,000, 02/2006 – 01/2007. Continuation grant, see below. (PI: 1 yr grad)

- *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, 10/2004 – 09/2006.

My role as leading investigator involved geodynamic and seismological modeling of seismic anisotropy and mantle flow. (co-PI: 12 mo. post-doc salary; no formal PI rights as post-doc at UCSD)

- *Analysis of Spatio-Temporal Strain Patterns Associated with Southern California Earthquakes*. NSF/USGS–Southern California Earthquake Center, \$20,000, 02/2005 – 01/2006.

My role involved conducting and supervising research on seismic strain release and fault mechanics. (PI: 1 yr grad)

- *Meeting of Young Researchers in the Earth Sciences MYRES: A Conference Series and Community Development Initiative*. NSF-EAR, \$63,180, 2004 – 2006.

Funding for a conference series and community support activities. (co-PI; no formal PI rights as post-doc at UCSD)

- Ph. D. Scholarship of the German Academic Exchange Service, 1998 – 2001.

Three year, highly competitive scholarship for graduate studies abroad. Funded part of my research assistantships during my PhD.