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### **Education**

Ph.D. 2000 MIT (Seismology).  
B.A. 1994 Washington University, cum laude (Geophysics and Physics)

### **Professional History**

1991- 1995: Research Assistant, Washington University  
1995- 2000: Graduate Research Assistant, Massachusetts Institute of Technology;  
2000- 2001: NSF Earth Sciences Post- Doctoral Fellow, Stanford University;  
2002- 2005 Assistant Scientist, Woods Hole Oceanographic Institution.  
2004 Visiting Assistant Professor in Geophysics, California Institute of Technology  
2005- present Associate Scientist, Woods Hole Oceanographic Institution  
2006 Visiting Associate Professor, The Earthquake Research Institute, University of Tokyo  
2008 Visiting Associate Professor, The Institute of Statistical Mathematics, Tokyo Japan.

### **Honors and Awards**

2001 NSF Earth Sciences Post- Doctoral Fellowship

### **Research Interests and Expertise**

My expertises are in turning recordings of the ground motion produced by earthquakes into information about the basic physical properties occurring within fault- zones during earthquake rupture. I utilize both the dynamic wavefield (seismology) radiated by ruptures and the permanent deformation left behind after the shaking subsides (geodesy). The vast majority of my contributions have focused on the seismicity and deformation of two types of plate boundaries, oceanic transform faults and subduction zones. I developed numerous new analytical techniques including the ability to resolve the “fault- plane ambiguity” that traditionally prevented seismologists from identifying the orientation of earthquake rupture surfaces from the radiated wave field. My research program at WHOI is actively pursuing the connection between rock mechanics processes, fault- zone geology/structure, and individual earthquake ruptures in both transform fault and subduction zone settings. Recently, I have become involved in the design of the ocean bottom seismometer arrays that will be deployed as part of the ORION program’s Regional Cabled Observatory in the northeast Pacific.

### **Teaching Experience :**

Fall 2002, 2005: MIT-WHOI joint program upper- level graduate course (12.755) “Mechanics of Earthquakes and Faulting”. This course covers the processes involved in brittle deformation and the constraints placed on them by rock mechanics, seismology, and geodesy.

Spring 2003: Co-organizer of the WHOI geodynamics seminar on “Catastrophes and Instabilities in solid earth systems”. This course, which has a long history as a core component of the MIT-WHOI joint graduate program, involves students discussing papers and talks from a number of outside speakers organized around a particular theme followed by a ~2 week field trip to examine in detail a relevant site. We focused on earth system instabilities, such as earthquakes, land- slides, and mass extinctions, and the historical physics theories that are attempting to explain the common features among the different systems. The field trip was to various earthquake and volcano related sites in the pacific northwest.

Fall 2003: 2007; MIT-WHOI joint program upper-level graduate reading seminar "Oceanic Faulting and Earthquakes". This reading seminar focused on evaluating the current state of knowledge of how faults form, rupture, and evolve over time in the oceanic lithosphere from its creation at spreading ridges to the deepest earthquakes in subduction zones. Papers from rock mechanics, localization theory, marine geology, and earthquake seismology were discussed.

Spring 2004: Caltech- Ge169: "Slow Earthquakes". This reading seminar covers the wide variety of aseismic slip events that have been observed by geodetic instrumentation in the last ten years, the analysis techniques used to interpret this data, and the rheological models proposed to explain these phenomena.

Spring 2006. MIT-WHOI joint program upper-level graduate class "Advanced Seismology".

## Publications

- 1) Wiens, D. A., J. J. McGuire, and P. J. Shore, "Evidence for Transformational Faulting from Deep Double Seismic Zone in Tonga", *Nature*, **364**, 790-793., 1993.
- 2) Wiens, D. A., J. J. McGuire, P. J. Shore, M. G. Bevis, K. Draunidalo, G. Prasad, and S. P. Helu, "A Deep Earthquake Aftershock Sequence and Implications for the Rupture Mechanism of Deep Earthquakes." *Nature*, **372**, 540-543, 1994.
- 3) Wiens, D. A., and J. J. McGuire, The 1994 Bolivia and Tonga events: Fundamentally different types of deep earthquakes?, *Geophys. Res. Lett.*, **22**, 2245-2248, 1995.
- 4) McGuire, J. J. and D. Wiens, "A Double Seismic Zone in New Britain and the Morphology of the Downgoing Plate", *Geophys. Res. Lett.*, **22**, 1965-1968, 1995.
- 5) McGuire, J. J., P. F. Ihmlé, and T. H. Jordan, "Time-Domain Observations of a Slow Precursor to the 1994 Romanche Transform Earthquake", *Science*, **274**, 82-85, 1996.
- 6) McGuire, J. J., D. A. Wiens, P. J. Shore, and M. G. Bevis, "The March 9th, 1994 Deep Tonga Earthquake: Rupture Outside the Seismically Active Slab." *J. Geophys. Res.*, **102**, 1997.
- 7) Wiens, D. A. and J. J. McGuire, Aftershocks of the March 9, 1994 Tonga earthquake: The strongest known deep aftershock sequence, *J. Geophys. Res.*, **105**, 19067-19083, 2000.
- 8) McGuire, J. J. and T. H. Jordan, "Further Evidence for the Compound Nature of Slow Earthquakes: The Prince Edward Island Earthquake of April 28, 1997", *J. Geophys. Res.*, **105**, 7819-7828, 2000.
- 9) McGuire, J. J., L. Zhao, and T. H. Jordan, Rupture Dimensions of the 1998 Antarctic Earthquake from Low-Frequency Waves, *Geophys. Res. Lett.*, **27**, 2305-2308, 2000.
- 10) McGuire, J. J., L. Zhao, and T. H. Jordan, "Teleseismic inversion for the 2nd-degree moments of earthquake space-time distributions", *Geophys. J. Intl.*, **145**, 661-678, 2001.
- 11) McGuire, J. J., T. H. Jordan, and J. Lin, Complexities of Transform Boundaries in the Oceans, in "Plate Boundary Zones", ed Stein and Freymueller, AGU, Washington D.C. 2002.
- 12) McGuire, J. J., L. Zhao, and T. H. Jordan, "Predominance of Unilateral Rupture for a Global Catalog of Large Earthquakes", *Bull. Seism. Soc. Am*, **92**, 3309-3317, 2002.

- 13) Perez-Campos, X., J. J. McGuire, and G. C. Beroza, Resolution of the Slow Earthquake/Apparent Stress Paradox for Oceanic Transform Fault Earthquakes, *J. Geophys. Res.*, **108**, doi:10.1029/2002JB002312, 2003.
- 14) Miyazaki, S. J. J. McGuire, and P. Segall, A Transient Subduction Zone Slip Episode in Southwest Japan Observed by the Nationwide GPS Array, *J. Geophys. Res.*, **108**, 10.1029/2001JB000456, 2003.
- 15) McGuire, J. J. Immediate Foreshock Sequences of Oceanic Transform Earthquakes on the East Pacific Rise, *Bull. Seism. Soc. Am.*, **93**(2) 948-952, 2003.
- 16) McGuire, J. J., and P. Segall, "Imaging of Aseismic Slip Transients recorded by continuous GPS arrays", *Geophys. J. Intl.*, **155**, doi.10.1111/j.1365-246X.2003.02022.x., 2003.
- 17) McGuire, J. J., Estimating the finite source properties of small earthquake ruptures, *Bull. Seismol. Soc. Am.*, **94**, 377-393, 2004.
- 18) Ide, S., G. C. Beroza, and J. J. McGuire, Imaging Earthquake Source Complexity, in "Seismic Earth: Array Analysis of Broadband Seismograms", *Geophysical Monograph Series*, **157**, 280p, 2005.
- 19) McGuire, J. J., M. Boettcher, and T. H. Jordan, Foreshock Sequences and Earthquake Predictability on East Pacific Rise Transform Faults, *Nature*, **434**, 457-461, 2005.
- 20) McGuire, J. J. and Y. Ben-Zion, High-resolution imaging of the Bear Valley section of the San Andreas Fault at seismogenic depths with fault zone head waves and relocated seismicity, *Geophys. J. Intl.*, **163**, 152-164, 2005.
- 21) Miyazaki, S., P. Segall, J. McGuire, T. Kato, and Y. Hatanaka, Spatial and Temporal evolution of Stress and Slip-rate during the 2000 Tokai Slow earthquake, *J. Geophys. Res.*, **111**, doi:10.1029/2004JB003426, 2006.
- 22) Lewis, M., Y. Ben-Zion, and J. J. McGuire, Imaging the deep structure of the San Andreas Fault south of Hollister with joint analysis of fault-zone head and direct P wave arrivals, *Geophys. J. Intl.*, **169**, 1028-1042, doi:10.1111/j.1365-246X.2006.03319.x, 2007.
- 23) Lohman, R. and J. J. McGuire, Earthquake swarms driven by aseismic creep in the Salton Trough, *J. Geophys. Res.* **112**, B04405, doi:10.1029/2006JB004596, 2007.
- 24) Llenos, A. L. and J. J. McGuire, Influence of forearc structure on the extent of great subduction zone earthquakes, *J. Geophys. Res.* **112**, B09301, doi:10.1029/2007JB004944, 2007.
- 25) McGuire, J. J., Seismic Cycles and Earthquake Predictability on East Pacific Rise Transform Faults, *Bull. Seism. Soc. Am.* **98**, 1067-1084, 2008.
- 26) Brooks, B. A., J. H. Foster, J. J. McGuire, and M. Behn, Submarine Landslides and Slow Earthquakes: Monitoring Motion with GPS and Seafloor Geodesy, submitted to Springer Complexity Encyclopedia on Complexity in Earthquakes, Tsunamis, and Volcanoes, and Forecasting and Early Warning of their Hazards (<http://refworks.springer.com/complexity>), 2008.

- 27) McGuire, J. J., F. J. Simons, and J. A. Collins, Analysis of Seafloor Seismograms of the 2003 Tokachi-Oki Earthquake Sequence for Earthquake Early Warning, submitted to Geophys. Res. Lett. 2008.

**Invited talks:**

- 1999: Caltech  
2000: Univ. of Hawaii, Univ of Southern California, Woods Hole Oceanographic Institution, Georgia Institute of Technology  
2001: Univ. of California- Berkeley, Univ. of North Carolina, North Carolina State Univ., Woods Hole Oceanographic Institution,  
2002: Lamont- Doherty Earth Observatory, MIT, Univ. of Rhode Island  
2003: Univ. of California- Berkeley, Caltech  
2004: Univ. of Southern California, Caltech, UCLA, Johns Hopkins, LDEO, Fall AGU  
2005: Harvard University, Princeton University  
2006: Univ. of Southern California, Univ. of Tokyo DEPS, Univ. of Tokyo ERI, NIED Tskuba, JAMSTEC- IFREE,  
2007: SSA annual meeting.  
2008: Kyoto University DPRI, Univ. of Tokyo ERI, Brown Univ

**Students/Post- docs**

Post- doctoral Advisor for: Rowena Lohman (now Assistant Prof. at Cornell)  
Doctoral Advisor for: Margaret Boettcher, PhD 2005 (now Assistant Prof. at UNH, joint w/ J. G. Hirth and T. H. Jordan); Andrea Llenos (current), and Emily Roland (current)

**Field Experience**

1. R/V Kilo Moana, October 2005 cruise to deploy acoustic extensometers on the Hilina Slump feature associated with the collapse of the Kilauea volcano.
2. R/V Kilo Moana, June 2006 cruise to recover acoustic extensometers from the Hilina Slump.
3. R/V Thomas Thompson, Dec 2007- Jan 2008, Chief Scientist, cruise to deploy 40 Ocean bottom seismometers and seafloor geodesy equipment at the Quebrada, Discovery, and Gofar transform faults of the East Pacific Rise.
4. R/V Marcus Langseth, April- May 2008, Chief Scientist, active source seismic refraction experiment to study the Quebrada and Gofar transform faults of the East Pacific Rise.

**Service:**

Associate Editor, J. Geophys. Res., 2005- present- , Member of the IRIS Standing Committee for the Global Seismic Network 2008- , USGS NEHRP proposal panel (2008), Thesis committee for Brian De Martin, Andrea Llenos, Emily Roland, and Trish Gregg (MIT- WHOI JP), Qualifying Exam committee for Michael Lewis (USC).