David R. Shelly

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EDUCATION

2000 – 2007 **Stanford University,** Stanford, CA
Ph.D., Geophysics, March 2007
- Dissertation title: "The Mechanics of Subduction Zone Tremor and Transient Slip in Japan"
- Ph.D. advisor: Dr. Gregory C. Beroza

1996 – 2000 **Whitman College,** Walla Walla, WA
Bachelor of Arts, Mathematics-Physics, Summa Cum Laude, with Honors in major study
- Honors Thesis: "Polarization Correlations in Pulsed, Vertical-Cavity, Surface-Emitting Lasers."

7/1998 – 11/1998 **Otago University,** Dunedin, New Zealand
- Semester-long study-abroad program coordinated through Whitman College

HONORS AND AWARDS

2012 **Macelwane Medal**, presented by the American Geophysical Union for significant contributions to the geophysical sciences by an outstanding early career scientist.

2012 **Fellow,** American Geophysical Union

2011 **Presidential Early Career Awards for Scientists and Engineers** (PECASE) recipient, the highest honor bestowed by the United States government on science and engineering professionals in the early stages of their independent research careers.

2011 **Charles F. Richter Early Career Award**, Seismological Society of America, awarded to one early career scientist annually for outstanding contributions to the Society

2010 Editor's Citation for Excellence in Refereeing, Geophysical Research Letters

2008 Inaugural recipient of the **Keiiti Aki Young Scientist Award**, American Geophysical Union Seismology Section, given to recognize the scientific accomplishments of a junior scientist who makes outstanding contributions to the advancement of seismology.

RESEARCH AND TEACHING EXPERIENCE

2010-present **Research Seismologist,** Long Valley and Yellowstone Volcano Observatories, U.S. Geological Survey, Menlo Park, CA

2008-2010 **Mendenhall Postdoctoral Fellow,** U.S. Geological Survey, Earthquake Hazards Team, Menlo Park, CA

2007-2008 **Miller Postdoctoral Fellow,** University of California, Berkeley, Department of Earth and Planetary Science

6/2005 – 8/2005 **East Asia and Pacific Summer Institutes, Tokyo, Japan**
- Eight-week program funded by the National Science Foundation and the Japan Society for Promotion of Science sponsoring foreign research experience
- Host Institution: University of Tokyo, Hongo campus
- Host Researcher: Dr. Satoshi Ide, Department of Earth and Planetary Science

2004 – 2006 **Instructor**, Outdoor Education Program, Stanford University
- Responsible for teaching a portion of GES 7, Wilderness Skills, a 1-credit course offered quarterly through the Geological and Environmental Sciences department

6/2004 **Mathematical Geophysics Summer School**, hosted by Colorado School of Mines, Golden, CO

2005 **Teaching Assistant**, Geophysics 287, Earthquake Seismology

2002 **Teaching Assistant**, Geophysics 3, Earthquakes and Volcanoes

INVITED PRESENTATIONS

11/2014	Invited speaker, Kavli Frontiers of Science, National Academy of Sciences, Irvine, CA
4/2014	Invited speaker, Department of Terrestrial Magnetism, Carnegie Institute of Washington
1/2014	Invited speaker, Earth Ocean and Atmospheric Sciences Colloquium, University of British Columbia
9/2013	Invited keynote speaker, International Summer School on "Diversity of Earthquakes," Hakone, Japan
6/2013	Invited speaker, ICDP Workshop on Drilling the Eger Rift: Midcrustal earthquake swarms in Western Bohemia / Germany, Potsdam, Germany
8/2012	Invited keynote speaker, Gordon Conference on "Feedback Processes in Rock Deformation," Andover, NH
4/2012	Invited talk, Seismological Society of America Annual Meeting, San Diego, CA
3/2012	Invited speaker, Lamont-Doherty Earth Observatory Earth Science Colloquium
2/2012	Invited speaker, International Conference on a New Perspective of Great Earthquakes Along Suduction Zones, Kochi, Japan
2/2012	Invited speaker, Stanford Geophysics Department Seminar
10/2011	Invited speaker, UC Santa Cruz Geophysics and Planetary Sciences Seminar Series
9/2011	Invited speaker, European Science Foundation Research Conference: Continuing Challenges in Earthquake Dynamics, Obergürgl, Austria
3/2011	Invited colloquium speaker, Indiana University, Bloomington, Indiana
2/2011	Invited speaker, Geological Society of Washington, Washington, D.C.
12/2010	Invited presentation, Statistical Seismology session, AGU Fall Meeting, San Francisco
12/2010	Invited presentation, Fault Tremor and Slow Slip session, AGU Fall Meeting
10/2010	U.S.-Japan Joint Panel on Earthquake Research (UJNR) 8th meeting, Nagaoka, Japan
10/2010	Plenary Speaker, Earthscope Workshop on the Spectrum of Fault Slip, Portland, OR
9/2010	Invited Seminar, University of Wisconsin, Madison
6/2010	Plenary Speaker, 2010 Workshop on Crustal Deformation, Golden, CO
5/2010	Scripps Institution of Oceanography, Earth Section Seminar Series
4/2010	University of California, Santa Barbara, Distinguished Speaker series
9/2009	Plenary Speaker, Southern California Earthquake Center (SCEC) Annual Meeting
4/2009	Carnegie Institute of Washington, Dept. of Terrestrial Magnetism, Washington, D.C.
11/2008	Earthquake Research Institute seminar, University of Tokyo, Japan
10/2008	U.S.-Japan Joint Panel on Earthquake Research (UJNR) 7th meeting, Seattle, WA
10/2008	UC Santa Cruz Seismology Seminar, Santa Cruz, CA
9/2008	Caltech Tectonics Observatory Seminar, Pasadena, CA
8/2008	Presentation to the Scientific Earthquake Studies Advisory Committee (SESAC)
6/2008	USGS Earthquake Hazards Seminar, Menlo Park, CA
2/2008	Plenary Speaker, Earthscope Workshop on Non-volcanic Tremor, Aseismic Slip, and Earthquakes, Sidney, British Columbia, Canada
12/2007	Invited Speaker, AGU Fall Meeting, San Francisco, CA
9/2007	UC Berkeley, Seismological Laboratory Seminar, Berkeley, CA
3/2007	Plenary Speaker, Earthscope National Meeting, Monterey, CA
11/2006	Invited Speaker, U.S.-Japan Natural Resources Panel on Earthquake Research (UJNR) 6th Joint Meeting, Tokushima, Japan.
10/2006	USGS Earthquake Hazards Seminar, Menlo Park, CA
8/2006	UC Berkeley, Seismological Laboratory Seminar, Berkeley, CA
10/2005	California Institute of Technology, Seismological Laboratory Seminar, Pasadena, CA

ADDITIONAL INFORMATION

- Reviews provided for Science, Nature, Nature Geoscience, National Science Foundation, Geophysical Research Letters, Journal of Geophysical Research, Bulletin of the Seismological Society of America, Geophysical Journal International, Earth Planets Space, Annals of Geophysics, Seismological Research Letters, and USGS internal review.
- Session co-convener: 2012 American Geophysical Union (AGU) Fall Meeting; Session chair: 2010 AGU Fall Meeting, 2010 Joint U.S.-Japan Natural Resources Panel on Earthquake Research (UJNR), 2009 AGU Fall

Meeting, 2009 Seismological Society America (SSA) Annual Meeting, 2008 Asian Seismological Commission Annual Meeting, 2006 UJNR Meeting, 2005 AGU Fall Meeting. Student presentation judge: 2012 SSA Meeting, 2010 AGU Meeting.

- Extensive computer skills: daily use of Mac OS X, experience in Linux (including system admin.), programming skills in Matlab, Fortran, Unix C-shell, Perl, and Awk.

PUBLICATIONS

Journal Publications (Peer-reviewed):

Shelly, D. R. (2015), Complexity of the deep San Andreas Fault zone defined by cascading tremor, Nature Geoscience, doi:10/1038/ngeo2335.

Chamberlain, C. J., **D. R. Shelly**, J. Townend, and T. A. Stern (2014), Low-frequency earthquakes reveal punctuated slow slip on the deep extent of the Alpine Fault, New Zealand, Geochem. Geophys. Geosyst., 15, 2984–2999, doi:10.1002/2014GC005436.

Lewicki, J. L., G. E. Hilley, **D. R. Shelly**, J. C. King, J. P. McGeehin, M. Mangan, and W. C Evans (2014), Crustal migration of CO_2-rich magmatic fluids recorded by tree-ring radiocarbon and seismicity at Mammoth Mountain, CA, USA, Earth and Planetary Science Letters, doi:10.1016/j.epsl.2013.00.832.

Shelly, D. R., D. P. Hill, F. Massin, J. Farrell, R. B. Smith, and T. Taira (2013), A fluid-driven earthquake swarm on the margin of the Yellowstone caldera, *J. Geophys. Res.* Solid Earth, 118, 4872-4886, doi:10.1002/jgrb.50362.

Shelly, D. R., S. C. Moran, and W. A. Thelen (2013), Evidence for fluid-triggered slip in the 2009 Mount Rainier, Washington earthquake swarm, *Geophys. Res. Lett.*, 40, 1506-1512.

Wu, C., **D. R. Shelly**, J. Gomberg, Z. Peng, and P. Johnson (2013), Long-term changes of inter-event times for regular and low-frequency earthquakes in central California, Earth and *Planetary Science Letters*, 368, 144-150.

Johnson, K. M., **D. R. Shelly,** and A. M. Bradley (2013), Simulations of tremor-related creep reveal a weak crustal root of the San Andreas Fault, *Geophys. Res. Lett.* 40, 1300-1305, doi:10.1002/grl.50216.

Hill, D. P., Z. Peng, **D. R. Shelly**, and C. Aiken (2013), S-wave triggering of tremor beneath the Parkfield, CA, section of the San Andreas Fault by the 2011 Tohoku Japan earthquake: observations and theory, *Bull. Seismol. Soc. Am.*, 103(2B), 1541-1550.

Thomas, A. M., R. Bürgmann, **D. R. Shelly,** N. M. Beeler, and M. L. Rudolph (2012), Tidal triggering of low frequency earthquakes near Parkfield, California: Implications for fault mechanics within the brittle-ductile transition, J. Geophys. Res., 117, B05301, doi:10.1029/2011JB009036.

Peng, Z., C. Aiken, D. Kilb, **D. R. Shelly**, B. Enescu (2012), Listening to the 2011 magnitude 9.0 Tohoku-Oki, Japan earthquake, Seismol. Res. Lett., 83(2), 287-293, doi: 10.1785/gssrl.83.2.287.

Shelly, D. R. and D. P. Hill (2011), Migrating swarms of brittle-failure earthquakes in the lower crust beneath Mammoth Mountain, California, *Geophys. Res. Lett.,* doi:10.1029/2011GL049336.

Shelly, D. R. and K. M. Johnson (2011), Tremor reveals stress shadowing, deep postseismic creep, and depth-dependent slip recurrence on the lower-crustal San Andreas fault near Parkfield, *Geophys. Res. Lett.*, L13312, doi:10.1029/2011GL047863.

Shelly, D. R., Z. Peng, D. P. Hill, and C. Aiken (2011), Triggered creep as a possible mechanism for delayed dynamic triggering of tremor and earthquakes, *Nature Geoscience,* 4, 384-388 doi:10.1038/NGEO1141.

Daub, E. G., **D. R. Shelly**, R. A. Guyer, and P. A. Johnson (2011), Brittle and ductile friction and the physics of tectonic tremor, *Geophys. Res. Lett.*, doi:10.1029/2011GL046866.

Shelly, D. R. and J. L. Hardebeck (2010), Precise tremor source locations and amplitude variations along the lower-crustal central San Andreas Fault, *Geophys. Res. Lett.,* 37, L14301, doi:10.1029/2010GL043672 (5 pages).

Shelly, D. R. (2010)**,** Periodic, chaotic, and doubled earthquake recurrence intervals on the deep San Andreas Fault, *Science*, 328, 1385-1388, doi:10.1126/science.1189741.

Shelly, D. R. (2010), Migrating tremors illuminate deformation beneath the seismogenic San Andreas fault, *Nature*, 463, 648-652. doi:10.1038/nature0875.

Peng, Z., D. P. Hill, **D. R. Shelly** and C. Aiken (2010), Remotely triggered microearthquakes and tremor in central California following the 2010 Mw 8.8 Chile earthquake, *Geophys. Res. Lett.,* 37, L24312.

Ryberg, R., Ch. Haberland, G. S. Fuis, W. L. Ellsworth, and **D. R. Shelly** (2010), Locating non-volcanic tremor along the San Andreas Fault using a multiple array source imaging technique, *Geophys. J. Int.*, 183, 1485-1500.

Rubinstein, J. R., **D. R. Shelly**, and W. L. Ellsworth (2010), Non-Volcanic Tremor: A Window into the Roots of

Fault Zones, in *New Frontiers in Integrated Solid Earth Sciences,* Springer, pp 287-314.

Shelly D. R. (2009), Possible deep fault slip preceding the 2004 Parkfield earthquake, inferred from detailed observations of tectonic tremor, *Geophys. Res. Lett.*, 36, L17318, doi:10.1029/2009GL039589 (6 pages).

Shelly, D. R., W. L. Ellsworth, T. Ryberg, C. Haberland, G. S. Fuis, J. Murphy, R. M. Nadeau, and R. Bürgmann (2009), Precise location of San Andreas Fault tremors near Cholame, California using seismometer clusters: Slip on the deep extension of the fault?, *Geophys. Res. Lett.*, 36, L01303, doi:10.1029/2008GL036367 (5 pages).

Brown, J. R., G. C. Beroza, S. Ide, K. Ohta, **D. R. Shelly**, S. Y. Schwartz, W. Rabbel, M. Thorwart, and H. Kao (2009), Deep low-frequency earthquakes in tremor localize to the plate interface in multiple subduction zones, *Geophys. Res. Lett.*, doi:10.1029/2009GL040027.

Brown, J. R., G. C. Beroza, and **D. R. Shelly** (2008), An autocorrelation method to detect low frequency earthquakes within tremor, *Geophys. Res. Lett.*, 35, L16305, doi:10.1029/2008GL034560.

Ide, S., K. Imanishi, Y. Yoshida, G. C. Beroza, and **D. R. Shelly** (2008), Bridging the gap between seismically and geodetically detected slow earthquakes, *Geophys. Res. Lett.*, 35, L10305, doi:10.1029/2008GL034014.

Shelly, D. R., G. C. Beroza, and S. Ide (2007), Complex evolution of transient slip derived from precise tremor locations in western Shikoku, Japan, *Geochem. Geophys. Geosyst.*, 8, Q10014, doi:10.1029/2007GC001640, 18 pages.

Shelly, D. R., G. C. Beroza, and S. Ide (2007), Non-Volcanic Tremor and Low Frequency Earthquake Swarms, *Nature*, 446, 305-307, doi:10.1038/nature05666

Ide, S., G. C. Beroza, **D. R. Shelly**, and T. Uchide (2007), A scaling law for slow earthquakes, *Nature*, 447, 76-79, doi:10.1038/nature05780.

Ide, S., **D. R. Shelly**, and G. C. Beroza (2007), Mechanism of deep low frequency earthquakes: Further evidence that deep non-volcanic tremor is generated by shear slip on the plate interface, *Geophys. Res. Lett.,* 34, L03308, doi:10.1029/2006GL028890 (4 pages).

Shelly, D. R., G. C. Beroza, S. Ide, and S. Nakamula (2006), Low-frequency earthquakes in Shikoku, Japan and their relationship to episodic tremor and slip, *Nature, 442,* 188-191, doi:10.1038/nature04931.

Shelly, D. R., G.C. Beroza, H. Zhang, C.H. Thurber, S. Ide (2006), High-Resolution Subduction Zone Seismicity and Velocity Structure in Ibaraki, Japan, *J. Geophys. Res.,* 111, B06311, doi:10.1029/2005JB004081 (10 pages).

Segall, P., E. K. Desmarais, **D. R. Shelly**, A. Miklius, and P. Cervelli (2006), Earthquakes triggered by silent slip events on Kilauea volcano, Hawaii, *Nature, 442,* 71-74, doi:10.1038/nature04938.

Zhang, H., C. H. Thurber, **D. R. Shelly**, S. Ide, G. C. Beroza, and A. Hasegawa (2004), High-resolution subducting slab structure beneath Northern Honshu, Japan, revealed by double-difference tomography, *Geology, 32,* 361-364, doi: 10.1130/G20261.1.

*Conference and workshop abstracts and presentations (*indicates invited presentation):*

Shelly, D.R., W. L. Ellsworth, E. K. Montgomery-Brown, D. P. Hill, S. Prejean, M. Mangan (2014), Signatures of Fluid Pressure Triggering, Natural and Induced: Comparing Migrating Earthquake Swarms in Long Valley Caldera, California and Azle, Texas, Abstract S53E-05 presented at the 2014 Fall Meeting, AGU San Francisco, Calif, 15-19 Dec.

Montgomery-Brown, E. K., C. Wicks, J. Langbein, D. Hill, **D. R. Shelly**, J. Svarc, and M. Lisowski (2014), Renewed Inflation of Long Valley Caldera (2011-Present), Abstract V41B-4797 presented at the 2014 Fall Meeting, AGU San Francisco, Calif, 15-19 Dec.

J. Farrell, **D. R. Shelly**, R. B. Smith, C. Puskas, W.-L. Chang (2014), The Mw4.8 Norris Geyser Basin Earthquake of 30 March, 2014 and its Relationship to Crustal Deformation and Seismic Acitivity of the Yellowstone Volcanic System, Abstract S11E-4400 presented at the 2014 Fall Meeting, AGU San Francisco, Calif, 15-19 Dec.

Thomas, A. M., G. C. Beroza, **D. R. Shelly** (2014), Source-time functions of low-frequency earthquakes on the San Andreas fault, Abstract S53C-4539 presented at the 2014 Fall Meeting, AGU San Francisco, Calif, 15-19 Dec.

Zeng, X., C. Thurber, **D. R. Shelly**, N. Bennington, E. Cochran, R. Harrington (2014), 3D P and S Wave Velocity Structure and Tremor Locations in the Parkfield Region, Abstract S23C-4545 presented at the 2014 Fall Meeting, AGU San Francisco, Calif, 15-19 Dec.

Stovall, W., P. Cervelli, and **D. R. Shelly** (2014), Investigating Rapid Uplift and Subsidence Near Norris, Yellowstone, During 2013-2014, Abstract V41B-4796 presented at the 2014 Fall Meeting, AGU San Francisco,

Calif, 15-19 Dec.

Hardebeck, J. L. and **D. R. Shelly** (2014), Aftershocks of the 2014 M6 South Napa Earthquake: Detection, Location, and Focal Mechanisms, Abstract S33F-4927 presented at the 2014 Fall Meeting, AGU San Francisco, Calif, 15-19 Dec.

Peng, Z., **D. R. Shelly**, W. L. Ellsworth, and C. Aiken (2014), Tectonic Tremor along the Parkfield-Cholame Section of the San Andreas Fault Triggered by the 2014 M 6.0 South Napa and Other Regional Earthquakes, Abstract S33F-4929 presented at the 2014 Fall Meeting, AGU San Francisco, Calif, 15-19 Dec.

***Shelly, D. R.** (2013), Fluid-driven earthquake swarms at Mount Rainier and Yellowstone Volcanic Areas, USA, ICDP Workshop on Drilling the Eger Rift: Midcrustal earthquake swarms in Western Bohemia / Germany, Potsdam, Germany, June 4-5, 2013.

Shelly, D. R., D. P. Hill, F. Massin, J. Farrell, and R. B. Smith (2013), Migrating activity of the 2010 Madison Plateau, Yellowstone National Park, earthquake swarm: evidence for fluid triggering?, Earthscope National Meeting, Raleigh, North Carolina, May 13-15, 2013.

Massin, F., J. Farrell, T. A. Taira, D. R. Shelly, G. P. Waite, and R. B. Smith (2013), Multiplet earthquake relocations and stress models of the Yellowstone Volcanic Field and implications of volcanic-tectonic interactions, *Seismol. Res. Lett.,* Annual Meet. Abstracts, 84(2): 297.

Shelly, D. R., D. P. Hill, F. Massin, J. Farrell, and R. B. Smith (2013), Migrating activity of the 2010 Madison Plateau, Yellowstone National Park, earthquake swarm: evidence for fluid triggering? *Seismol. Res. Lett.,* Annual Meet. Abstracts, 84(2): 297.

Shelly, D.R., S. C. Moran, D. P. Hill, F. Massin, J. Farrell, and R. B. Smith (2012), Dynamics of Migrating Earthquake Swarms at Yellowstone and Mount Rainier Volcanic Areas: Evidence for Fluid Triggering?, oral presentation for the 9th U.S. Japan Natural Resources Panel (UJNR), Lakewood, Colorado, USA.

***Shelly, D. R.** (2012), Tremor activity on the lower-crustal San Andreas fault, Gordon Research Conference on Feedback Processes in Rock Deformation, Andover, New Hampshire, August 19-24, 2012.

***Shelly, D. R.** and D. P. Hill (2012), Migrating Swarms of Brittle-Failure Earthquakes in the Lower Crust Beneath Mammoth Mountain California, *Seismol. Res. Lett.,* Annual Meet. Abstracts, 83(2): 399.

Beeler, N.M., A. Thomas, R. Bürgmann, and **D. R. Shelly** (2012), Modulation of tectonic tremor by the tides: physical models descended from Leon Knopoff with application to the deep San Andreas, *Seismol. Res. Lett.,* Annual Meet. Abstracts, 83(2): 362.

Shelly, D. R., D. P. Hill, J. Farrell, F. Massin, and R. B. Smith (2012), Migrating activity of the 2010 Madison Plateau, Yellowstone National Park, earthquake swarm: evidence for fluid triggering?, Abstract V13B-2836 presented at 2012 Fall Meeting, AGU San Francisco, Calif., 3-7 Dec.

Moran, S. C., **D. R. Shelly**, and W. A. Thelen (2012), The September 20-22, 2009 earthquake swarm at Mount Rainier, Washington: Evidence for triggering by fluid injection, Abstract V11A-2735 presented at 2012 Fall Meeting, AGU San Francisco, Calif., 3-7 Dec.

Massin, F., J. Farrell, R. B. Smith, and **D. R. Shelly** (2012), Multiplet earthquake relocations and stacked waveform inversions in the Yellowstone volcanic field and implications for volcanic-tectonic interactions, Abstract V13B-2833 presented at 2012 Fall Meeting, AGU San Francisco, Calif., 3-7 Dec.

Wu, C., **D. R. Shelly**, P. A. Johnson, J. S. Gomberg, and Z. Peng (2012), Long-term changes in regular and low-frequency earthquake inter-event times near Parkfield, CA, Abstract S41C-04 presented at 2012 Fall Meeting, AGU San Francisco, Calif., 3-7 Dec.

Peterson, D. E., C. H. Thurber, **D. R. Shelly**, N. L. Bennington, and J. R. Brown (2012), Tomographic imaging of the tectonic tremor zone beneath the San Andreas fault in the Parkfield region, Abstract S41A-2420 presented at 2012 Fall Meeting, AGU San Francisco, Calif., 3-7 Dec.

Skoumal, R., H. V. Colella, S. G. Holtkamp, M.R. Brudzinski, K. M. Schlanser, **D. R. Shelly**, E. Cabral-Cano, A. Arciniega-Ceballos, Tectonic tremor locations using template matching of low frequency earthquakes, Abstract S33B-2526 presented at 2012 Fall Meeting, AGU San Francisco, Calif., 3-7 Dec.

Shelly, D.R., S. C. Moran, D. P. Hill, F. Massin, J. Farrell, and R. B. Smith (2012), Dynamics of Migrating Earthquake Swarms at Yellowstone and Mount Rainier Volcanic Areas: Evidence for Fluid Triggering?, European Seismological Commission Workshop on Volcano Seismology, El Hierro, Canary Islands, Spain, September 14-21, 2012.

Shelly, D.R., S. C. Moran, D. P. Hill, F. Massin, J. Farrell, and R. B. Smith (2012), Dynamics of Migrating Earthquake Swarms at Yellowstone and Mount Rainier Volcanic Areas: Evidence for Fluid Triggering?, Southern California Earthquake Center Annual Meeting, Palm Springs, California, USA, September 9-12, 2012.

***Shelly, D. R.** (2012), Dynamics of San Andreas Fault tremor and implications for deformation in both strike-slip and subduction environments, International Conference on a New Perspective of Great Earthquakes along

Subduction Zones, Kochi, Japan, February 28-March 1, 2012.

***Shelly, D. R.** (2011), Impacts of static and dynamic stress changes on tremor and creep along the lower-crustal San Andreas Fault, European Science Foundation Conference on "Continuing Challenges in Earthquake Dynamics: New Methods for Observing and Modelling a Multi-Scale System, Obergurgl, Austria, September 24-29, 2011.

Shelly, D. R. and D. P. Hill (2011), Migrating swarms of brittle-failure earthquakes in the lower crust beneath Mammoth Mountain, California, Abstract V31H-08 presented at 2011 Fall Meeting, AGU San Francisco, Calif., 5-9 Dec.

Aiken, C., Z. Peng, **D. R. Shelly**, and D. P. Hill (2011), Comprehensive analysis of triggered tremor around the Parkfield-Cholame section of the San Andreas Fault, Abstract S13A-2247 presented at 2011 Fall Meeting, AGU San Francisco, Calif., 5-9 Dec.

Thomas, A., N. M. Beeler, R. Bürgmann, and **D. R. Shelly** (2011), The frequency dependence of friction in experiment, theory, and observations of low frequency earthquakes, Abstract S23B-2249 presented at 2011 Fall Meeting, AGU San Francisco, Calif., 5-9 Dec.

Hill, D. P., **D. R. Shelly**, Z. Peng, and C. Aiken (2011), Tectonic tremor beneath the Parkfield section of the San Andreas Fault Triggered by Shear and Surface waves from the Mw 9.0 Tohoku-Oki, Japan, Earthquake, Abstract S23B-2250 presented at 2011 Fall Meeting, AGU San Francisco, Calif., 5-9 Dec.

Schlanser, K. M., M. R. Brudinski, S. G. Holtkamp, and **D. R. Shelly** (2011), Tectonic tremor locations along the western Mexico subduction zone using stacked waveforms of similar events, Abstract S23B-2262 presented at 2011 Fall Meeting, AGU San Francisco, Calif., 5-9 Dec.

Bürgmann, R., A. Thomas, A. M. Freed, and **D. R. Shelly** (2011), Strong Rocks and Weak Faults in the Lower Crust of California, Abstract T21C-05 presented at 2011 Fall Meeting, AGU San Francisco, Calif., 5-9 Dec.

Peng, Z., C. Aiken, D. L. Kilb, **D. R. Shelly**, and B. Enescu (2011), Listening to data from the 2011 magnitude 9.0 Tohoku-Oki, Japan, earthquake, Abstract ED51B-0753 presented at 2011 Fall Meeting, AGU San Francisco, Calif., 5-9 Dec.

Peterson, D. E., C. H. Thurber, E. D. Montgomery-Brown, J. R. Brown, and **D. R. Shelly** (2011), Identifying and locating tectonic tremor beneath the San Andreas Fault near Parkfield, CA, with the PASO array, Abstract S23B-2265 presented at 2011 Fall Meeting, AGU San Francisco, Calif., 5-9 Dec.

Mangan, M., W. C. Evans, C. D. Farrar, D. P. Hill, S. Ingebritsen, R. Klinger, J. McFarland, M. S. Shulz, **D. R. Shelly**, D. A. Stonestrom, and M. P. Waldrop, Interdisciplinary study of magmatic carbon dioxide at Mammoth Mountain, California, Abstract V21A-2485 presented at 2011 Fall Meeting, AGU San Francisco, Calif., 5-9 Dec.

***Shelly, D. R.,** (2010), Variations in tremor activity and implications for lower crustal deformation along the central San Andreas Fault, Abstract S12A-03 presented at 2010 Fall Meeting, AGU San Francisco, Calif., 13-17 Dec.

***Shelly, D. R.**, Periodic, chaotic and doubled recurrence intervals on the deep San Andreas Fault: Implications for large earthquakes?, Abstract S44B-02 presented at 2010 Fall Meeting, AGU San Francisco, Calif., 13-17 Dec.

Hill, D.P., and **D. R. Shelly** (2010), Lower crustal earthquake swarms beneath Mammoth Mountain, California – evidence for the magmatic roots to the Mammoth Mountain mafic volcanic field?, Abstract V32B-05 presented at 2010 Fall Meeting, AGU San Francisco, Calif., 13-17 Dec.

Thomas, A., R. Bürgmann, and **D. R. Shelly** (2010), Tidal triggering of LFEs near Parkfield, CA, Abstract S12A-04 presented at 2010 Fall Meeting, AGU San Francisco, Calif., 13-17 Dec.

Daub, E. G., **D. R. Shelly**, R. A. Guyer, and P. A. Johnson (2010), The dynamics of tectonic tremor throughout the seismic cycle, Abstract S23A-2121 presented at 2010 Fall Meeting, AGU San Francisco, Calif., 13-17 Dec.

Peng, Z., **D. R. Shelly**, D. P. Hill, and C. Aiken (2010), Tremor evidence for dynamically triggered creep events on the deep San Andreas Fault, Abstract S12A-05 presented at 2010 Fall Meeting, AGU San Francisco, Calif., 13-17 Dec.

***Shelly, D.R.** (2010), Variations in tremor activity and implications for lower crustal deformation along the central San Andreas Fault, California, Earthscope Workshop on the Spectrum of Fault Slip, Portland, Oregon (October 2010).

***Shelly, D.R.** (2010), Variations in tremor activity and implications for lower crustal deformation along the central San Andreas Fault, invited oral presentation for the 8th U.S. Japan Natural Resources Panel (UJNR), Nagaoka, Japan.

***Shelly, D.R.** (2010), Tectonic tremor beneath the San Andreas Fault: Implications for lower crustal deformation, 2010 Crustal Deformation Modeling Workshop, Computational Infrastructure for Geodynamics, Golden, Colorado.

Shelly, D. R., D. P. Hill, and A. M. Pitt (2010), Tracking Long Period Earthquakes Beneath Mammoth Mountain California, *Seismol. Res. Lett.,* Annual Meet. Abstracts, 81(2): 380.

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