**Dr. Timothy Masterlark**
*Associate Professor and Mickelson Chair*
*Geodynamics*
*Geology and Geological Engineering*
*South Dakota School of Mines & Technology*

# CV

## Education

- Ph.D. (2000) Hydrogeology/Geophysics, University of Wisconsin-Madison, Advisor: Dr. H.F. Wang
- M.S. (1996) Geophysics/Hydrogeology, University of Wisconsin-Madison, Advisor: Dr. H.F. Wang
- B.S. (1994) Geology/Mathematics, University of Wisconsin-Eau Claire, Mentor: Dr. Lung S. Chan

## Employment & Professional preparation

- Associate Professor (2012 – present), South Dakota School of Mines & Technology
- Associate Professor (2011 – 2012), The University of Alabama
- Assistant Professor (2005 – 2011), The University of Alabama
- Senior Scientist (2001 – 2005), USGS EROS, SD
- Post-doc Research Associate (2000 – 2001), University of Wisconsin-Madison
- Honorary Lecturer (Summer 2000), Hong Kong University
- NASA Research Fellow (1998 – 2000), Earth Systems Science Program
- Teaching Assistant (1994 – 1998), University of Wisconsin-Madison
- Staff Hydrogeologist (Summers of 1995 & 1996), Eder Associates, Madison, WI
- Paratrooper (1986 – 1990), 505$^{th}$ (Panther) Regiment, 82$^{nd}$ Airborne Division, US Army

## Research synopsis and productivity summary

I lead the Geodynamics research group in the Department of Geology and Geological Engineering. The Geodynamic research group develops numerical models of Earth's fluid-solid coupling systems, such as transient magma migration, poroelastic deformation, sequences of earthquakes, tsunami genesis, and hydrofracking. Examples of my research targets include:

- Active volcanoes of the Aleutian Arc, South America, and Iceland
- 2011 M9 Japan Earthquake and Tsunami
- Numerical simulations of fluid-filled fracture propagation in complex media and stress fields

I published 30 peer-reviewed journal articles, 7 conference proceedings papers, 4 invited articles, 1 book chapter, and 83 conference abstracts. I have been a PI for 13 external grant awards. My newly awarded grant from NASA ROSES provides four years of support (2013-2016) for a post-doc at SDSMT. I have collaborative ties with domestic and international universities, government agencies, and private industry.

I am regularly invited to present at national and international conferences and university lectures. I frequently review manuscripts at the request of journal editors and I was recently recognized as Outstanding Reviewer 2012 for *Geophysical Journal International*. NSF Program Officers systematically request my expertise for reviewing proposals and I served as an ad hoc reviewer of the NSF GAGE major facility proposal ($90M).

## Funding

† Awarded directly to PI/Co-I Masterlark / ‡ Total award for collaborative projects

**( Grants, awarded and currently in-force )**

- NSF Geophysics (proposal no. 1316082) *FEM-based inverse methods to estimate nonlinear geometric source parameters of volcano deformation from geodetic data,* 2013-2016, $356,412†

- JAXA 4th ALOS Research Program for ALOS-2 (PI #1342) *Interferometric analysis of JERS-1, ALOS, and ALOS-2 SAR data for Okmok Volcano to constrain dynamic models of magmatic processes,* 2013-2017, SAR data acquisition for new ALOS-2/PALSAR-2 and archived JERS-1/PALSAR-1
- NASA ROSES-Earth Surface and Interior (subcontract no. 1468758), *Near-field postseismic deformation, InSAR observations and modeling,*FY2012-FY2015, $380,607† / $1,015,100‡
- NASA ESSF (10-Earth10F-0200), *Estimating magma behavior within volcanoes having complex internal structures: FEM-based nonlinear inverse methods and InSAR,* 2010- 2013, $90,000†
- NSF Geophysics (EAR-0943943), *Geodetic measurements and mechanical models of the volcano deformation cycle,* 2010- 2013, $88,996† / $279,696‡
- NSF Geophysics/EPSCoR (EAR-0911466), *Unraveling coseismic and postseismic deformation: A prerequisite for analyses of stress-coupling and tsunami genesis,* 2009-2013, $277,215† / $450,745‡

**( Grants, expired awards )**

- NSF Geophysics/MGG (EAR-0810148), *Geodetic measurements and mechanical models of rifting in onshore segments of mid-oceanic ridges,* 2008-2012, $92,390† / $353,846‡
- NASA AL EPSCoR, *Exploring the interior of an active volcano with satellite radar data and numerical models,* 2011-2012, $46,442†
- USGS Volcano Hazards Program/ARRA (Award No. G10AC00039), *Simulating complex volcano deformation systems with finite element models and high performance personal computing clusters,*2010-2011, $125,000†
- NASA New Investigator Program (NNX060F10G-supplement), *The Sumatra-Andaman Subduction Zone: A Natural Laboratory for Earthquake-coupling,* 2007-2009, $111,440†
- NASA New Investigator Program (NNX060F10G), *The Sumatra-Andaman Subduction Zone: A Natural Laboratory for Earthquake-coupling,* 2007-2009 , $211,677†
- U.S. Geological Survey Land Remote Sensing Research Prospectus, FY2004-FY2006, $291,000†
- NASA Earth System Science Fellowship (ESS/98-00000089), 1998-2000, $66,000†

### Equipment from external funding

- Cray CX1 High Performance Cluster, 2010 ($100K, 2012)
  48 cores and 144 GB RAM. This equipment was acquired under USGS Volcano Hazards Program/ARRA (Award No. G10AC00039).
- High Performance Workstations, 2012 ($7K[1], $12K[2])
  Acquired under NSF Geophysics/EPSCoR (EAR-0911466).
  [1] @Xi® MTower™ PCIe, intel® Core™ i7 4.5GHz, 12 compute cores, 64 GB RAM, and 1TB SSD.
  [2] @Xi® MTower™ PCIe, intel® Core™ i7 4.5GHz, 12 compute cores, K20 Tesla GPU, 64 GB RAM, and 1.5TB SSD.

### Fellowships, awards, & academic honors

* declined in favor of an appointment to the USGS EROS.

- Outstanding Reviewer, *Geophysical Journal International* (2012)
- NASA Earth System Science Scholar (inducted 2004)
- Outstanding Recent Alumnus Award, University of Wisconsin-Eau Claire (2002)
- Caltech, Texaco Post-doc Fellowship (2001)*
- Princeton University, Harry Hess Post-doc Fellowship (2001)*
- Distinguished Graduate Student Award, University of Wisconsin-Madison (2000)
- Albert & Alice Weeks Best Student Research Paper Award, University of Wisconsin-Madison (2000)
- NASA Earth System Science Fellowship (ESS/98-00000089, 1998-2000)
- Van Hise Fellowship, University of Wisconsin (1998)
- Kappa Mu Epsilon, Mathematics Honor Society (inducted 1993)

## Courses taught

[SDSMT] South Dakota School of Mines & Technology / [UA] The University of Alabama

- [SDSMT/UA] *Geodynamics* (3 cr., graduate): Quantitative expressions for quasi-static geophysical processes, in the context of the Plate Tectonics paradigm. Topics include: boundary value problems, elastic and viscoelastic mechanics; heat conduction and thermoelastic mechanics; and fluid migration and poroelastic mechanics.
- [SDSMT/UA] *Linear Inverse Methods* (3 cr., graduate): Theory and applications of linear inverse methods to quantitatively interpret geologic data. Topics include: model design; matrix assembly, operations, and inverse methods; parameter estimation, uncertainty, and resolution.
- [SDSMT] *Geology Field Camp-Hawaii* (3 cr., undergraduate): Volcano monitoring and hazards of Volcano National Park and surrounding areas from Kilauea to South Point. Subjects include: basaltic lava flows, tephra characterization, volcano monitoring, hazards, ground GPS and Lidar applications.
- [UA] *Dynamic Earth* (4 cr., undergraduate): Survey of the Earth, including plate tectonics, materials, internal & external processes, and natural hazards.
- [UA] *Finite Element Model Application*s (variable credit, graduate): Design and implementation of FEMs to simulate a variety of quasi-static geologic processes, including: elasticity, viscoelasticity, fluid flow in porous media and poroelasticity, and heat flow and thermoelasticity.
- [UA] *Poroelastic Mechanics* (3 cr., graduate): Introduction to the principles of poroelastic mechanics —the physical coupling of pore-fluid pressure and solid-matrix stress in saturated geologic materials.

## Service

**( outreach / synergistic activities )**

- NASA Modeling Guru-Solid Earth (2012-).
- Televised Interviews-WVUA (2010 Haiti quake, 2011 Japan quake), KELO (2005 Sumatra quake).
- USGS Mendenhall Research Fellowship Program-Advisory panel 2012
- USGS Mendenhall Research Fellowship Program-Advisory panel 2011
- Featured Abaqus Academic Researcher, Simulia, Inc., 2007 and 2010
- Judge, MARGINS student prize and Outstanding Student Papers, AGU Fall Meeting 2009
- Convener, AGU Fall Meeting 2009 / Session G09 – Volcano Geodesy: Monitoring and Modeling
- Convener, NSF MARGINS RCL Workshop 2009 / Magmatism: Where, When, and How?
- Fondation des Treilles, Results of the Sumatra earthquake & tsunami offshore survey (2005)
- SEATOS Expedition, Sponsored by The Discovery Channel (2005)
- Outreach Ambassador, USGS National Center for EROS (2004)
- Communications & Outreach Advisory Team, USGS National Center for EROS (2004-2005)

**( industry relations )**

- Simulia, Dassault Systèmes (the makers of Abaqus finite element software) Endorses my research activities and provides in kind cost support to my research group.

**( peer-reviews, journals )**

- *BSSA*
- *EPSL*
- *G*$^3$
- *Geophys. Jour. Int.*
- *Geophys. Res. Lett.*
- *Groundwater*
- *Hydrogeology Journal*
- *J. Geophys. Res.*
- *Nature*
- *Sensors*
- *Studia Geophysica et Geodaetica*
- *Tectonophysics*

**( peer-reviews, proposals and science plans)**

- NASA: Solid Earth & Natural Hazards

- NSF: Geophysics, OCE, CMG, Tectonics, EarthScope, MARGINS, CAREER, GAGE Facility
- USGS: Prospectus Program, Mendenhall Post-doc Program
- NASA Solid Earth Working Group Report
- NSF Earthscope - SEIZE Science Plan
- NERC (UK)
- Portuguese Foundation for Science and Technology, International review panel

**( invited external lectures )**
- Weeks Lecture, University of Wisconsin (2012)
- SDSMT, SD (2012)
- UNAVCO Plenary Speaker, Boulder, CO (2012)
- Guy F. Atkinson Distinguished Lecture Series, University of Utah (2011)
- Michigan State University (2011)
- NASA Jet Propulsion Laboratory (2010)
- Michigan Technical University (2010)
- UNAVCO Plenary Speaker, Boulder, CO (2008)
- University of Colorado (2008)
- USGS Headquarters (2006)
- University of Iceland (2006)
- University of Alabama (2005)
- University of Tennessee (2005)
- Missouri State University (2003)
- University of Wisconsin (2003)
- USGS National Center for EROS (2001)
- Portland State University (2001)
- Princeton University (2001)

**( NSF-sponsored workshops, lead instructor )**
- FEMs of earthquake deformation, University of Alabama, (planned for 2013)
- FEMs of volcano deformation, UNAVCO, (May 2013)
- FEMs of volcano deformation, University of Iceland, (2011)

## Publications

**( standard peer-reviewed journal articles: 30 )**

1. Kyriakopoulos, C., T. Masterlark, S. Stramando, M. Chini, and C. Bignami (2013), Coseismic slip distributin for the M9 2011 Tohoku-Oki earthquake derived from 3D FEM modeling, *Journal of Geophysical Research*, Manuscript No. 2013JB010152R , Accepted for publication.
2. Ali, S.T., K.L. Feigl, B.B. Carr, T. Masterlark, and F. Sigmundsson (2013), Geodetic measurements and numerical models of rifting in Northern Iceland for 1993-2008, *Geophysical Journal International*, Manuscript No. GJI-13-0107.R3, accepted for publication.
3. Grilli, S.T., J.C. Harris, T. Tajalibakhsh, T. Masterlark, C. Kyriakopoulos, J.T. Kirby, F. Shi (2013), Numerical simulation of the 2011 Tohoku tsunami based on a new transient FEM co-seismic source, *Pure and Applied Geophysics*, doi:1007/s00024-012-0528-y, 1333-1359.
4. Ronchin, E., T. Masterlark, J.M. Molist, S. Saunders, and W. Tao (2013), Solid modeling techniques to build 3D finite element models of volcanic systems: An example from the Rabaul caldera system, Papua, New Guinea, *Computers & Geoscience 52*, dx.doi.org/10.1016/j.cageo.2012.09.025, 325-333.
5. Wang, C., X. Shan, C. Wang, X. Ding, G. Zhang, T. Masterlark (2012), Using finite element and okada models to invert coseismic slip of the 2008 Mw 7.2 Yutian earthquake, China from InSAR data, *Journal of Seismology*, doi:10.1007/s10950-012-9324-5. published online.

6. Masterlark, T., K.L. Feigl, M.M. Haney, J. Stone, C.H. Thurber, and E. Ronchin (2012), Nonlinear estimation of geometric parameters in FEMs of volcano deformation: Integrating tomography models and geodetic data for Okmok volcano, Alaska, *Journal of Geophysical Research 117*, doi:10.1029/2011JB008811.
7. Hughes, K.L.H., T. Masterlark, W.D. Mooney (2011), Pore fluid migration and the timing of the 2005 M8.7 Nias earthquake, *Lithosphere*, doi:10.1130/L109.1.
8. Haney, M.M, A. Nies, T. Masterlark, S. Needy, and R. Pedersen (2011), Interpretation of Rayleigh-wave ellipticity observed with multicomponent passive seismic interferometry at Hekla Volcano, Iceland, *The Leading Edge 30*, doi:10.1190/1.3589111, 526-531.
9. Hughes, K.L.H., T. Masterlark, W.D. Mooney (2010) Poroelastic stress-coupling between the M9.2 2004 Sumatra-Andaman and M8.7 2005 Nias earthquakes, *Earth and Planetary Science Letters 293*, doi:10.1016/j.epsl.2010.02.043, 289-299.
10. Masterlark, T., M. Haney, H. Dickinson, T. Fournier, and C. Searcy (2010), Rheologic and structural controls on the deformation of Okmok volcano, Alaska: FEMS, InSAR and ambient noise tomography, *Journal of Geophysical Research 115*, doi:10.1029/2009JB006324.
11. Pedersen, R., F. Sigmundsson, and T. Masterlark (2009), Rheologic controls on inter-rifting deformation of the Northern Volcanic Zone, Iceland, *Earth and Planetary Science Letters 281*, doi:10.1016/j.epsl.2009.02.003, 14-26.
12. Masterlark, T., and K.L.H. Hughes (2008), The next generation of deformation models for the 2004 M9 Sumatra-Andaman Earthquake, *Geophysical Research Letters 35*, doi:10.1029/2008GL035198.
13. Hughes, K.L.H., and T. Masterlark (2008), Slip distribution for the 2004 Sumatra-Andaman Earthquake constrained by both GPS data and tsunami run-up measurements, *Bollettino di Geofisica Teorica ed Applicata 49*, N.2 Supplement, 165-170.
14. Masterlark, T. (2007), Magma Intrusion and deformation predictions: Sensitivities to the Mogi assumptions, *Journal of Geophysical Research 112*, doi:10.1029/2006JB004860.
15. Fisher, D., D. Mosher, J.A. Austin, Jr., S.Gulick, T. Masterlark, and K. Moran (2007), Active deformation across the Sumatran forearc over the December 2004 Mw9.2 rupture, *Geology 35*, doi:10.1130/G22993A.1, 99-102.
16. Masterlark, T., Z. Lu, and R. Rykhus (2006), Thickness distribution of a cooling pyroclastic flow deposit: Optimization using InSAR, FEMs, and an adaptive mesh algorithm, *Journal of Volcanology and Geothermal Research 150*, 186-201.
17. Moran, S.C., O. Kwoun, T. Masterlark, and Z. Lu (2006), On the absence of InSAR-detected volcano deformation spanning the 1995-1996 and 1999 eruptions of Shishaldin Volcano, Alaska, *Journal of Volcanology and Geothermal Research 150*, 119-131.
18. Poland, M., R. Bürgmann, D. Dzurisin, M. Lisowski, T. Masterlark, S. Owen and J. Fink (2006), Constraints on the mechanism of long-term, steady subsidence at Medicine Lake volcano, northern California, from GPS and precise leveling, *Journal of Volcanology and Geothermal Research 150*, 55-78.
19. Lu, Z., T. Masterlark, and D. Dzurisin (2005), Interferometric synthetic aperture (InSAR) study of Okmok volcano, Alaska: Magma supply dynamics and post-emplacement lava flow deformation, *Journal of Geophysical Research 110*, doi:10.1029/2004JB003148, 18 pp.
20. Masterlark, T., and Z. Lu (2004), Transient volcano deformation sources imaged with interferometric synthetic aperture radar: Application to Seguam Island, Alaska, *Journal of Geophysical Research 109*, doi:10.1029/2003JB002568.
21. Lu, Z., R. Rykhus, T. Masterlark, and K. Dean (2004), Mapping recent lava flows at Westdahl volcano, Alaska, using radar and optical satellite imagery, *Remote Sensing of Environment 91*, 345-353.
22. Masterlark, T. (2003), Finite element model predictions of static deformation from dislocation sources in a subduction zone: Sensitivities to homogeneous, isotropic, Poisson-solid, and half-space assumptions, *Journal of Geophysical Research 108*, doi:10.1029/2002JB002296.
23. Lu, Z., C. Wicks, Jr., D. Dzurisin, J. Power, W. Thatcher, and T. Masterlark (2003), Interferometric synthetic aperture radar studies of Alaska volcanoes, *Earth Observation Magazine 12*(3), 8-18.
24. Lu, Z., T. Masterlark, D. Dzurisin, R. Rykhus, and C. Wicks, Jr. (2003), Transient inflation rate detected with satellite interferometry and its implication to the plumbing system at Westdahl volcano, Alaska, *Journal of Geophysical Research 108*, doi:10.1029/2002JB002311.
25. Lu, Z., T. Masterlark, J. Power, D. Dzurisin, C. Wicks, Jr., and W. Thatcher (2002), Subsidence at Kiska volcano, western Aleutians, detected by satellite radar interferometry, *Geophysical Research Letters 29*, doi: 10.1029/2002GL014948.

26. Masterlark, T. and H.F. Wang (2002), Transient stress-coupling between the 1992 Landers and 1999 Hector Mine earthquakes, *Bulletin of the Seismological Society of America 92*, 1470-1486.
27. Marquez-Azúa, B., C. DeMets, and T. Masterlark (2002), Strong interseismic coupling, fault afterslip, and viscoelastic flow before and after the Oct. 9, 1995 Jalisco-Colima earthquake: Continuous GPS measurements from Colima, Mexico, *Geophysical Research Letters 29*, doi:1029/2002GL014702.
28. Masterlark, T., C. DeMets, H.F. Wang, J. Stock, and O. Sanchez (2001), Homogeneous vs. heterogeneous subduction zone models: Coseismic and postseismic deformation, *Geophysical Research Letters 28*, 4047-4050.
29. Masterlark, T., and H. Wang (2000), Poroelastic coupling between the 1992 Landers and Big Bear earthquakes, *Geophysical Research Letters 27*, 3647-3650.
30. Masterlark, T., H. Wang, L. Chan, and Y. Che (1999), Coseismic pore pressure response estimated from tidal band prediction error filtering, *Bulletin of the Seismological Society of America 89*, 1439-1446.

**( conference proceedings, extended abstracts, and white papers: 7 )**

1. Masterlark, T., J. Eichelberger, J. Freymueller, M. Haney, S. Hurwitz, P. Izbekov, J. Larsen, S. Nakada, T. Neal, W. Roggenthen, and C. Thurber (2013), Sampling and In-situ observations of Okmok (SINOOK), *NSF Workshop: Drilling active tectonic and magmatism*, Park City, UT, 5 pp.
2. Grilli, S.T., J.C. Harris, T.S. Tajali-Bakhsh, D.R. Tappin, T. Masterlark, J.T. Kirby, F. Shi, and G. Ma (2012), Recent proagress in the nonlinear and dispersive modeling of tsunami generation and coastal impact: Application to Tohoku 2011, *13emes Journees de l'Hydrodynamique*, Chatou (78), France (translated from French).
3. Grilli, S.T., J.C. Harris, D.R. Tappin, T. Masterlark, J.T. Kirby, F. Shi, G. Ma, and A. Petukhin (2012), Modeling of the Tohoku-oki 2011 tsunami generation and coastal impact: a mixed co-seismic and SMF source, *Geophysics of Slab Dynamics*, Jeju Island, South Korea.
4. Grilli, S.T., J.C. Harris, T. Tajalibakhsh, J.T. Kirby, F. Shi, T. Masterlark and C. Kyriakopoulos (2012), Numerical simulation of the 2011 Tohoku tsunami: Comparison with field observations and sensitivity to model parameters. In *Proc. 22nd Offshore and Polar Engng. Conf.* (ISOPE12, Rodos, Greece, June 17-22, 2012), Intl. Society of Offshore and Polar Engineering, 8 pp.
5. Lu, Z., C. Wicks, J. Power, D. Dzurisin, W. Thatcher, and T. Masterlark (2002), Interferometric synthetic aperture radar studies of Alaska volcanoes, Geoscience and Remote Sensing Symposium, *2002 IGARSS IEEE International*, vol. 1, doi:10.1109/IGARSS.2002.1024984, 191-194.
6. Masterlark, T., C. DeMets, H.F. Wang, O.S. Sanchez, and J. Stock (2001), Homogeneous vs. realistic heterogeneous material-properties in subduction zone models: Coseismic and postseismic deformation, *EarthScope Workshop: Making and Breaking a Continent*, Snowbird, UT, 5pp.
7. Aeschlimann D., P. Lyons, T. Masterlark, K. Hayashi, B. Graf, and R. Vanderby (2000), Repair of cartilage defects with autogenous osteo-chondral transplants (mosaic plasty) in a sheep model, *Transactions of the 46th Annual Meeting of the Orthopedic Research Society 25*, 183, Orlando, FL.

**( invited articles: 4 )**

1. Masterlark, T. (2010), Exploring the Interior of an Active Volcano with Abaqus and Cray, *ABAQUS Insights May/June*, 19.
2. 4. Masterlark, T. (2007), Simulia Abaqus for disaster modeling, *GEOconnexion International Magazine*, November, 20-25.
3. Masterlark, T. (2007), Modeling earthquakes with realistic simulation software, *R&D Magazine 49*(6), 20-21.
4. Masterlark, T. (2007), What causes tsunamis?, *The University of Alabama Research Magazine 10*, 23.Masterlark, T. (2007), Simulating the M9 Sumatra-Andaman earthquake and tsunami source, *ABAQUS Insights Feb/Mar*, 15.

**( book chapter: 1 )**

1. Masterlark, T. (2011), Chapter 9: Earthquake-coupling, in D.M. Robinson (Ed.), *The Dynamic Earth: Geology 101 Laboratory Manual* (61-70), The University of Alabama.

**( conference presentations & abstracts: 83 )**

* *invite*d

1. Masterlark, T., T. Donovan, K. Feigl, M. Haney, and C. Thurber (2013), Volcano deformation source parameters estimated from InSAR and FEM-based nonlinear inverse methods: Sensitivities to uncertainties in seismic tomography, *AGU-Fall Meeting*, San Francisco, CA.
2. Baraowski, M., T. Masterlark, and D. Zhao (2013), Predicting Seafloor Deformation of the 2011 M9 Tohoku Earthquake by Integrating Geodetic Data and Seismic Tomography with FEMs, *AGU-Fall Meeting*, San Francisco, CA.
3. *Tappin, D.R., S.T. Grilli, J. Harris, 2, R.J. Geller, T. Masterlark, J.T. Kirby, G. Ma, and F. Shi (2013), Earthquake and submarine landslide tsunamis: how can we tell the difference?, *AGU-Fall Meeting*, San Francisco, CA.
4. Uzunlar, N., A. Lisenbee, T. Masterlark, P.V. Sundareshwar, B. Jordan, D.F Kelley, and J. Putkonen (2013), Mapping the globe: Geologically and culturally, *GSA 125th Anniversary Annual Meeting & Expo*, Denver, CO.
5. Tappin, D.R., S.T. Grilli, J.C. Harris, T. Masterlark, J.T. Kirby, F. Shi, and G. Ma (2013), Differentiating earthquake tsunamis from other sources; how do we tell the difference?, *EGU General Assembly*, Vienna, Austria.
6. Masterlark, T., (2013), Probing the magma chamber of an active volcano with InSAR, seismic tomography, and finite element models, *Geomathematics 2013*, Sankt Martin, Germany.
7. Grilli, S., J.C. Harris, T. Masterlark, D. Tappin, T.S. Tajalli Bakhsh, J.T. Kirby, F. Shi, G. Ma (2013), Modeling of the Tohoku-Oki 2011 Tsunami Generation, Far-field and Coastal Impact: A Mixed co-seismic and SMF Source, *Coastal Dynamics 2013*, Bordeaux, France.
8. *Masterlark, T., S.T. Grilli, D.R. Tappin, J.C. Harris, and J.T. Kirby (2012), Seafloor Deformation and Localized Source Mechanisms of the 2011 M9 Tohoku Earthquake and Tsunami, *AGU-Fall Meeting*, San Francisco, CA.
9. Stone, J., and T. Masterlark (2012), Quantitative analysis of volcano deformation FEM domain parameters– A guide for modelers, *AGU-Fall Meeting*, San Francisco, CA.
10. *Grilli, S.T., J.C. Harris, T.S. Tajali Bakhsh, D.R. Tappin, T. Masterlark, J.T. Kirby, F. Shi, and G. Ma (2012), Modeling of the Tohoku-oki 2011 tsunami coastal hazard: effects of a mixed co-seismic and seabed failure source, *AGU-Fall Meeting*, San Francisco, CA.
11. Grilli, S.T, J.C. Harris, D.R. Tappin, T. Masterlark, J.T. Kirby, F. Shi, G. Ma (2012), Did submarine mass failures significantly contribute to the extreme runup of the Tohoku-oki 2011 tsunami in Sanriku?, *AGU-Fall Meeting*, San Francisco, CA.
12. Kyriakopoulos, C., T. Masterlark, M. Chini, C. Bignami, and S. Stramondo (2012), Post-seismic deformation of the 2011 Tohoku earthquake, Japan, *EGU General Assembly*, Vienna, Austria.
13. Kyriakopoulos, C, S. Stramondo, M. Chini, C. Bignami, T. Masterlark, S. Borgstrom, F. Guglielmino, G. Puglisi, and V. Siniscalchi, (2011), The 11 March 2011 Tohoku-Oki (Japan) Megathrust Event: FEM models of Coseismic and Postseismic deformation captured by DInSAR and GPS Data, U51B-0040, *AGU-Fall Meeting*, San Francisco, CA.
14. Kedar, S., T. Masterlark, J.M. Lees, P. Lundgren, and W. Song (2011), Low latency sensor web integration of seismic tomography, InSAR, and deformation models, *AGU-Fall Meeting*, IN11B-1299, San Francisco, CA.
15. *Masterlark, T., K.L. Feigl, M. Haney, J. Stone, C. Thurber, and E. Ronchin (2011), Nonlinear estimation of geometric parameters in finite element models of volcano deformation: Application to the 1997 eruption of Okmok volcano, Alaska, *AGU-Fall Meeting*, S34B-01, San Francisco, CA.
16. Needy, S.K., T. Masterlark, and R. Pedersen (2011), Using linear inverse methods and finite element models to characterize fissure opening based on InSAR observations of the 2000 eruption of Hekla volcano, Iceland, *AGU-Fall Meeting*, G23A-0849, San Francisco, CA.
17. Ohlendorf, S.J., K.L. Feigl, C.H. Thurber, Z. Lu, T. Masterlark (2011), Geodetic Measurements and Numerical Modeling of the Deformation Cycle for Okmok Volcano, Alaska: 1993-2008, *AGU-Fall Meeting*, S31B-2234, San Francisco, CA.
18. Grilli, S., J. Harris, T. Tajalibakhsh, J. Kirby, F. Shi, T. Masterlark, and C. Kyriakopoulos (2011), Numerical simulations of the 2011 Tohoku tsunami generation, propagation and coastal impact : comparison to field observations, with sensitivity analysis to co-seismic source parameters, and model type and resolution, *AGU-Fall Meeting*, NH11A, San Francisco, CA.
19. Masterlark, T., S. Grilli, J. Harris, C. Kyriakopoulos, and W. Tao (2011), Coseismic deformation of the 2011 M9 Tohoku-Oki Earthquake inverted from geodetic data using finite element models: Implications for tsunami genesis and poroelastic stress-coupling, *AGU-Fall Meeting*, U51B-0022, San Francisco, CA.

20. Tao, W., T. Masterlark, Z.-K. Shen, and E. Ronchin (2011), Poroelastic Coupling of the Zipingpu Reservoir and the 2008 Mw7.9 Wenchuan Earthquake, China, *AGU-Fall Meeting*, NH13C-1394, San Francisco, CA.
21. Tung, S., L.S. Chan, and T. Masterlark (2011), Finite element model of the 2008 M=8 Wenchuan earthquake and deformation of the Longmenshan thrust belt, *AGU-Fall Meeting*, T23C-2418, San Francisco, CA.
22. Pedersen, R., F. Sigmundsson, E. de Zeeuw-van Dalfsen, and T. Masterlark (2011), Magma accumulation, migration and evolution at a spreading segment-Inferences from geophysical data and FEM models, *AGU-Fall Meeting*, V32A-04, San Francisco, CA.
23. Tao, W., T. Masterlark, Z.-K. Shen (2011), Poroelastic Coupling of the Zipingpu Reservoir and the 2008 Mw7.9 Wenchuan Earthquake, China, *IUGG*, Melbourne, Australia.
24. * Masterlark, T., J. Stone, and K.L. Feigl (2010), Calibrating nonlinear volcano deformation source parameters in FEMs: The pinned mesh perturbation method, *AGU-Fall Meeting*, San Francisco, CA.
25. Stone, J., T. Masterlark, and K.L. Feigl (2010), Mesh parameterization opens the door to FEM-based inverse methods for estimating nonlinear source parameters of volcano deformation, *AGU-Fall Meeting*, San Francisco, CA.
26. * Ali, T., K. Feigl, C.H. Thurber, T. Masterlark, and F. Sigmundsson (2010), Geodetic measurements and models of rifting in Northern Iceland for 1993-1998, *AGU-Fall Meeting*, San Francisco, CA.
27. Nies, A., M. Haney, T. Masterlark, S. Needy, and R. Pedersen (2010), Monitoring the structure of Hekla Volcano, Iceland, with a temporary seismic network, *AGU-Fall Meeting*, San Francisco, CA.
28. Tao, W., Z. Shen, T. Masterlark, C. Hu, and K. Wang (2010), Numerical models of coseismic slip and strain energy release along listric thrust faults: Application to the 2008 Ms 8.0 Wenchuan earthquake, *AGU-Fall Meeting*, San Francisco, CA.
29. * Masterlark, T. (2010), Exploring the interior of an active volcano with deformation models, 77th *Annual Meeting of the Southeastern Section of the American Physical Society*, Baton Rouge, LA.
30. Masterlark, T., M. Haney, H. Dickinson, T. Fournier, and C. Searcy (2009), Rheologic and structural controls on the deformation of Okmok volcano, Alaska: FEMs, InSAR, and ambient noise tomography, *AGU-Fall Meeting*, San Francisco, CA.
31. Feigl, K.L., T. Masterlark, Z. Lu, S. Ohlendorf, and C.H. Thurber (2009), Geodetic Measurements and Mechanical Models of Cyclic Deformation at Okmok Volcano, Alaska, *AGU-Fall Meeting*, San Francisco, CA.
32. Pedersen, R., T. Masterlark, F. Sigmundsson, and B. Ófeigsson (2009), Using finite element modeling (FEM) to investigate complex inter-eruptive deformation pattern observed at Hekla volcano, Iceland, *AGU-Fall Meeting*, San Francisco, CA.
33. Dickinson, T. Masterlark, K.L. Feigl, R. Pedersen, and F. Sigmundsson (2009), Finite Element Models for the deformation of the Askja volcanic complex and rift segment, Iceland., *AGU-Fall Meeting*, San Francisco, CA.
34. Ali, T., K. Feigl, T. Masterlark, B.B. Carr, F. Sigmundsson, and C.H. Thurber (2009), Geodetic Measurements and Numerical Models of Rifting in Northern Iceland for 1993–1999, *AGU-Fall Meeting*, San Francisco, CA.
35. Hughes, K.L.H., and T. Masterlark (2009), Pore pressure recovery and Coulomb stress evolution following the 2004 M9 Sumatra-Andaman Earthquake, *AGU-Fall Meeting*, San Francisco, CA.
36. * Hughes, K.L.H., and T. Masterlark (2009), Pore Pressure recovery following the 2004 Sumatra-Andaman earthquake advances the timing of the 2005 Nias earthquake, *GSA Annual Meeting 2009*, Portland, OR.
37. Masterlark, T., and M. Haney (2009), FEMs of transient volcano deformation: Accounting for rheologic contrasts, *MARGINS - RCL: Synthesis and new perspectives*, Charleston, SC.
38. * Pedersen, R., F. Sigmundsson, and T. Masterlark, (2009), Rheologic controls on inter-rifting deformation of the Northern Volcanic Zone, Iceland, *EGU General Assembly*, Vienna, Austria.
39. Masterlark, T., M. Haney, H. Dickinson, T. Fournier, and C. Searcy (2009), Rheologic and structural controls on the deformation of Okmok volcano, Alaska, from InSAR and ambient seismic noise, *GSA Southeastern Meeting 2009*, St. Petersburg, FL.
40. Masterlark, T., and K.L.H. Hughes (2008), FEMs of seismogenic deformation: Accounting for material property contrasts associated with the subducting slab, *NSF MARGINS SEIZE workshop: The next decade of the Seismogenic Zone Experiment*, Mt. Hood, OR.
41. Fisher, D.M., D. Mosher, J.A. Austin, S.P.S. Gulick, T. Masterlark, and K. Moran (2008), Variations in shallow structure across the Sumatran Forearc based on a high resolution single-channel seismic reflection survey, *NSF MARGINS SEIZE workshop: The next decade of the Seismogenic Zone Experiment*, Mt. Hood, OR.

42. Dickinson, H. T. Masterlark, F. Sigmundsson, B. Ofeigsson, and E. Sturkell (2008), Numerical models of deformation of the Askja volcano complex and rift segment, Iceland, driven by plate divergence, *GSA Annual Meeting 2008*, Houston, TX.
43. Hughes, K.L.H., and T. Masterlark (2008), Delayed triggering of the 2005 Nias Earthquake by the 2004 Sumatra-Andaman Earthquake, *GSA Annual Meeting 2008*, Houston, TX.
44. Masterlark, T., and H. Dickinson (2008), Surface deformation caused by mass flux from a magma chamber having a viscoelastic rind, *IAVCEI General Assembly 2008*, Reykjavik, Iceland.
45. Dickinson, H., T. Masterlark, F. Sigmundsson, and E. Sturkell (2008), Magmatic migration and storage in the Askja volcano complex and rift segment, Iceland, *IAVCEI General Assembly 2008*, Reykjavik, Iceland.
46. Masterlark, T. and H. Dickinson (2008), Volcano deformation models: Exploring problem domain configurations via FEMs, *UNAVCO Science Workshop 2008*, Boulder, CO.
47. Masterlark, T., and K.L.H. Hughes (2007), Evolution of Deformation, Pore Pressure, and Coulomb Stress Following the M9 Sumatra-Andaman Earthquake, *AGU-Fall Meeting*, San Francisco, CA.
48. Hughes, K.L.H., and T. Masterlark (2007), Designing a Geologically Satisfying Model of the 2004 Sumatra-Andaman Earthquake, *AGU-Fall Meeting*, San Francisco, CA.
49. * Fisher, D., D. Mosher, J. Austin, S. Gulick, K. Moran, and T. Masterlark (2007), Results from SCS Profiling of the Sumatra accretionary prism: insights into tsnamigenesis, *AGU-Fall Meeting*, San Francisco, CA.
50. Hughes, K., and T. Masterlark (2007), Simulating the postseismic poroelastic and viscoelastic deformation of the M9 Sumatra-Andaman earthquake: A nexus of Geology and Geophysics, *GSA Annual Meeting*, Denver, CO.
51. Masterlark, T., and K. Hughes (2007), The next generation of coseismic deformation models for subduction zones: Honoring tectonic structure in both forward and inverse models, *Subduction Zone Geodynamics Conference*, Montpellier, France.
52. Masterlark, T. (2006), Deformation of the M9 Sumatra-Andaman earthquake: Accounting for tectonic structures via FEMs, *AGU-Fall Meeting*, San Francisco, CA.
53. * Pedersen R., T. Masterlark, F. Sigmundsson, T. Árnadóttir, and K.L. Feigl (2006), Inter-rifting deformation in the Northern Volcanic Zone, Iceland, *AGU-Fall Meeting*, San Francisco, CA.
54. Fisher, D., D. Mosher, J. Austin, S. Gulick, T. Masterlark, and K. Moran (2006), Active deformation across the Sumatran forearc over the December 2004 M9.3 rupture, *GSA Annual Meeting*, Philadelphia, PA.
55. Masterlark, T. (2006), Magma intrusion and deformation predictions, *IAVCEI: Walker Symposium on Advances in Volcanology*, Reykholt, Iceland.
56. * Masterlark, T. (2006), FEMs of dislocations within a subduction zone, *Workshop on Community Finite Element Models for Fault Systems and Tectonic Studies*, Golden, CO.
57. Masterlark, T. (2005), Poroelastic coupling of the recent M9 and M8.7 Sumatra-Andaman earthquakes, *AGU-Fall Meeting*, San Francisco, CA.
58. * Masterlark, T. (2005), Simulating subduction zone deformation, *Fondation des Treilles-Tsunami Expedition 2005*, Les Treilles, France.
59. Masterlark, T. (2005), Deformation and stress models, *USGS Land Remote Sensing Science Fair*, Reston, VA.
60. Masterlark, T. (2004), Magma intrusion estimated from InSAR data: Sensitivities to homogeneous, isotropic, Poisson-solid and half-space assumptions, *AGU-Fall Meeting*, San Francisco, CA.
61. Schmitt, S.V., C. DeMets, J. Stock, O. Sanchez, T. Masterlark, and B. Marquez-Azua (2004), Toward an improved understanding of subduction zone mechanics: Finite element modeling results from the Jalisco GPS project, 1993-2004, *AGU-Fall Meeting*, San Francisco, CA.
62. Rykhus, R., Z. Lu, T. Masterlark, and K. Dean (2004), Lava Flow Mapping at Westdahl Volcano, Alaska, Using SAR and Optical Satellite Imagery, *AGU-Fall Meeting*, San Francisco, CA.
63. * Masterlark, T. (2004), Magma intrusion characteristics inverted from InSAR data of the 1997 eruption of Okmok volcano, Alaska: Sensitivities to common deformation model assumptions, *First Symposium for the Earth System Scholars*, Adelphi, Maryland.
64. Lu, Z., T. Masterlark, and D. Dzurisin (2004), Interferometric Synthetic Aperture Radar (InSAR) Study of Okmok Volcano, Alaska, 1992-2003: Magma Supply Dynamics and Post-emplacement Lava Flow Deformation, *ENVISAT Symposium*, Austria.
65. Masterlark, T., and Z. Lu (2003), Thickness distribution of a cooling pyroclastic flow deposit: Optimization using InSAR, FEMs, and an adaptive mesh algorithm, *AGU-Fall Meeting*, San Francisco, CA.

66. Lu, Z., and T. Masterlark (2003), Magma supply dynamics of Okmok volcano inferred from interferometric SAR, *AGU-Fall Meeting*, San Francisco, CA.
67. * Lu, Z., D. Dzurisin, T. Masterlark, J. Power, and C. Wicks (2003), InSAR studies of Alaskan volcanoes, *European Space Agencey –Fringe Workshop*, Frascati, Italy.
68. * Masterlark, T., and Z. Lu (2002), Tomography of coupled poroelastic and magma-intrusion deformation sources, revealed by InSAR: Application to Seguam volcano, *AGU-Fall Meeting*, San Francisco, CA.
69. Masterlark, T., and Z. Lu (2002), Thermoelastic contraction of a pyroclastic flow deposit, erupted from Augustine volcano, Alaska, Observed with InSAR, *AGU-Fall Meeting*, San Francisco, CA.
70. Lu, Z., and T. Masterlark (2002), Magma supply dynamics at Westdahl volcano, Alaska, modeled from satellite radar interferometry, *AGU-Fall Meeting*, San Francisco, CA.
71. Rykhus, R., Z. Lu, C. Wicks Jr., J. Power, D. Dzurisin, and T. Masterlark (2002), Surface deformation over Akutan Island, Alaska, during the 1996 seismic swarm, revealed by both C-band ERS and L-band JERS radar interferometry, *AGU-Fall Meeting*, San Francisco, CA.
72. * Lu, Z., C. Wicks, D. Dzurisin, T. Masterlark (2002), J. Power, W. Thatcher, and R. Rykhus, InSAR studies of Alaska volcanoes, *EarthScope workshop on active magmatic systems*.
73. * Moran, S., Z. Lu, T. Masterlark, and D. Mann (2002), Seismicity, deformation, and magmatism at Unimak Island, Alaska: Scientific opportunities and recommendations for Earthscope instrument deployments, *EarthScope workshop on active magmatic systems*.
74. Masterlark, T., Z. Lu, S.C. Moran, and C.W. Wicks (2001), Inflation rate of Shishaldin volcano inferred from two-way stress coupling, *AGU-Fall Meeting*, San Francisco, CA.
75. Sánchez, O., W. Hutton, C. DeMets, T. Masterlark, and J. Stock (2001), Deformation in the Colima-Jalisco region from mixed-mode GPS measurements: Evidence for re-locking of the Rivera plate subduction interface, GPS-03, *Mexican Geophysical Union Annual Meeting*, Puerto Vallarta, México.
76. * Masterlark, T., C. DeMets, O. Sánchez, and J. Stock (2001), Quasi-static stress coupling initiated by the 1995 Mw=8 Jalisco-Colima earthquake, *AGU-Fall Meeting*, San Francisco, CA.
77. Masterlark, T., and H. Wang (2000), Regional fault mechanics following the 1992 Landers earthquake, *GSA Annual Meeting*, Reno, NV.
78. Masterlark, T., and H. Wang (1999), An exact poroelastic analysis of shear potential along the Big Bear fault due to the Landers earthquake, *AGU-Fall Meeting*, San Francisco, CA.
79. Masterlark, T., and H. Wang (1998), Analysis of postseismic deformation following the 1992 Landers, California, earthquake, *AGU-Fall Meeting*, San Francisco, CA.
80. Masterlark, T., H. Wang, L. Chan, and Y. Che (1996), Identification of multi-frequency water level anomalies with predictive filtering methods, *AGU-Fall Meeting*, San Francisco, CA.
81. Masterlark, T., H. Wang, L. Chan, and Y. Che (1996), Analysis of groundwater anomalies associated with the Datong-Yanggao earthquake swarm using predictive filtering techniques, *IASPEI Regional Assembly in Asia*, Tangshan, China.
82. Masterlark, T., and L. Chan (1994), Directional dependency of hydraulic conductivity in rock masses with multiple fracture sets, *North-Central GSA Meeting*, 26, 53, Kalamazoo, MI.
83. Masterlark, T., and L. Chan (1994), Geologic applications of fractal geometry and chaos mathematics, *UW-Eau Claire Undergraduate Research Day*, Eau Claire, WI.