Meng (Matt) Wei

mwei@whoi.edu, (508) 289-4833

APPOINTMENT

2/2011 Postdoctoral Investigator, Woods Hole Oceanographic Institution

EDUCATION

12/2010 **Ph. D. in Earth Sciences**
Scripps Institution of Oceanography, University of California at San Diego
Thesis: "Observations and modeling of shallow fault creep along the San Andreas fault system"
Advisor: David Sandwell

06/2004 **B. S. in Geophysics**
Peking University, Beijing, China
Advisor: John Y. Chen

RESEARCH INTERESTS

- Earthquake faulting
- GPS, InSAR, Geodesy, Static inversion
- Numerical geodynamic modeling
- Dynamic fault slip simulation

TEACHING INTERESTS

- Natural hazards
- Geodynamics
- Remote sensing in earth sciences
- Computational geoscience

PUBLICATIONS

Journal Publications (Peer-reviewed):

Wei, M., Y. Kaneko, Y. Liu, and J. McGuire (2013), Episodic fault creep events in California controlled by shallow frictional heterogeneity, *Nature Geoscience*, doi: 10.1038/NGEO1835.

Wei, M., J. McGuire, and E. Richardson (2012), A slow slip event in the south central Alaska Subduction Zone and related seismicity anomaly, *Geophys. Res. Lett.*, 39, L15309, doi:10.1029/2012GL052351.

Wei, M., D. T. Sandwell, Y. Fialko, and R. Bilham (2011), Slip on faults in the Imperial Valley triggered by the 4 April 2010 Mw 7.2 El Mayor-Cucapah earthquake revealed by InSAR, *Geophys. Res. Lett.,* 38, L01308, doi:10.1029/2010GL045235.

Wei, M., D. T. Sandwell, and B. Smith-Konter (2010), Optimal combination of InSAR and GPS for measuring interseismic crustal deformation, *Advances in Space Research*, 46, 2, 236-249, doi: 10.1016/j.asr.2010.03.013.

Wei, M. and D. T. Sandwell (2010), Decorrelation of ALOS and ERS interferometry over vegetated areas in California, *IEEE Trans. on Geoscience and Remote Sensing*, 48, 2942-2952, doi: 10.1109/TGRS.2010.2043442.

Wei, M., D. Sandwell, and Y. Fialko (2009), A silent Mw 4.7 slip event of October 2006 on the Superstition Hills fault, southern California, *J. Geophys. Res.*, 114, B07402, doi:10.1029/2008JB006135.

Wei, M. and D. T. Sandwell (2006), Estimates of Ridge-Axis Heat Flow from Depth and Age Data, *Tectonophysics,* 417, 325-335.

Other publications:

Wei, M. and D. T. Sandwell (2011), The Mw 7.2 El Mayor-Cucapah Earthquake in Baja California: Extensive Liquefaction Identified in ALOS InSAR Data, *Alaska SAR Facility Newsletter*.

Sandwell, D., R. Mellors, X. Tong, **M. Wei**, and P. Wessel (2011), Open Radar Interferometry Software for Mapping Surface Deformation, *Eos Trans. AGU,* 92(28), doi:10.1029/2011EO280002.

Sandwell, D., R. Mellors, X. Tong, **M. Wei**, and P. Wessel (2011), GMTSAR: An InSAR Processing System based on Generic Mapping Tools, *Scripps Institution of Oceanography Technical Report*.

GRANT AWARDS

1/2013-12/2013 "Static and dynamic triggering of fault creep on strike-slip faults", *the National Science Foundation (NSF)*, $150,000. **PI: Meng Wei**, co-PI: Jeff McGuire.

7/2012-6/2014 "Determining the optimal design of a seafloor geodetic observatory on the Cascadia Subduction Zone", *the WHOI Deep Ocean Exploration Institute (DOEI),* $40,935. **PI: Meng Wei**, co-PI: Jeff McGuire.

1/2012-12/2012 "Investigation of causes and effects of transient deformation on the Superstition Hills Fault with physics based model", *the Southern California Earthquake Center (SCEC)*, $20,000. **PI: Meng Wei**, co-PI: Jeff McGuire.

PENDING GRANT

5/2013-12/2013 "Investigation of causes and effects of transient deformation on the Superstition Hills Fault with physics based model", *the Southern California Earthquake Center (SCEC)*, $20,000. **PI: Meng Wei,** co-PI: Jeff McGuire.

AWARDS

2009 Editors' Citation for Excellence in Refereeing for *Geophysical Research Letters*
2002 Canon Scholarship and Outstanding Students Prize, Peking University, China

INVITED TALKS

12/2012 Shallow frictional heterogeneity explains episodic fault creep events in California, Peking University, Beijing, China

12/2012 Shallow frictional heterogeneity explains episodic fault creep events in California, USTC, Hefei, China

04/2012 Surface changes on Earth detected from space - application of InSAR and GPS to geo-hazard challenges and tectonic problems, GNS Science, Lower Hutt, New Zealand

02/2012 Aseismic slip transients on strike-slip and subduction faults - implications for fault mechanics, the Earth Observatory of Singapore, Singapore

12/2011 Searching for Strain Transients in PBO GPS data, AGU Fall Meeting, San Francisco, CA

12/2011 Numerical modeling of shallow fault creep triggered by nearby earthquakes, AGU Fall Meeting, San Francisco, CA

09/2011 Network Strain Filter and its applications on GPS data, Strain Transient Workshop, SCEC Annual Meeting, Palm Springs, CA

11/2009 Decorrelation of ALOS and ERS interferometry over vegetated areas in California, 3rd ALOS Joint PI Symposium, Hawaii

06/2008 Creep event on the Superstition Hills fault, Tectonics seminar, University of California Los Angeles, CA

12/2006 ALOS Interferometry, AGU Fall meeting, San Francisco, CA

EDITORIAL SERVICES

Reviewer for

- Geophysical Research Letters
- Journal of Geophysical Research, Solid Earth
- Bulletin of the Seismological Society of America
- National Science Foundation

RESEARCH EXPERIENCES

2/2011–present Postdoctoral Investigator, Woods Hole Oceanographic Institution
- Numerical simulation of continental strike-slip faults
- Geodetic observation and inverse modeling of subduction zones
- Finite element modeling of strain accumulation in subduction zones with heterogeneous continental crust

9/2004–12/2010 Graduate Student Researcher, Scripps Institution of Oceanography, UCSD
- Observations and modeling of shallow fault creep along the San Andreas fault system
- Development of software and algorithms to efficiently process geodetic data

TEACHING AND MENTORING EXPERIENCES

Spring 2013 Mentoring Ben Webber, an undergraduate student at McGill University
- Gave advice on project planning
- Provided instructions on static slip inversion of slow slip events

Summer 2012 Lecturer, Brushing Up Mathematical Skills for Engineers & Scientists, WHOI
- Prepared and gave lectures on linear algebra, calculus, and Matlab to first-year graduate students

Fall 2007 Teaching Assistant, Remote Sensing, University of California San Diego
- Planned and advised lab experiments on remote sensing data processing
- Evaluated homework

FIELD EXPERIENCES

2006 and 2008 Campaign GPS survey, Salton Trough, CA
- Measured the precise location of geodetic benchmarks near the San Andreas Fault using Ashtech GPS receivers
- Incorporated the data into the catalogue of southern California geodetic dataset

2006 and 2010 Field survey of fault surface slip, Superstition Hills Fault, CA
- Identified the surface trace of a silent slip event on the fault
- Measured slip offset along the fault trace

COMMUNITY SERVICES

2011-2012 Postdoctoral Association Committee, WHOI
2011-2012 International Committee, WHOI

POSTER PRESENTATIONS

Sandwell, D. T., **M. Wei**, X. Tong, and B. R. Smith-Konter (2011), Intergrating GPS and InSAR to resolve strain rates along the San Andreas Fault System: contributions from ALOS-1/2 and DysDyni, IEEE International Geoscience and Remote Sensing Symposium, Abstract #2175.

Wei, M., D. T., Sandwell, and B. R., Smith-Konter (2009), Relationship between fault creep and shallow stress accumulation rate, *EOS Trans. AGU,* Fall Meet. Suppl., abstract #T21D-1859.

Wei, M. and D. T. Sandwell (2008), Asymmetric velocity across the San Andreas Fault System: the effects of fault dip, *EOS Trans. AGU*, Fall Meet. Suppl., S21B-1828.

Sandwell D. T., B. Smith-Konter, and **M. Wei** (2008), Imaging crustal deformation along the San Andreas Fault System with ALOS InSAR and GPS", IEEE International Geoscience & Remote Sensing Symposium.

Wei, M., D. T. Sandwell, and Y. Fialko (2006), Resolving shallow creep events on the southern San Andreas Fault, SCEC Annual Meeting.