

## **Dr. Guoquan Wang**

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### **EDUCATION**

- 07/1998—06/2001: Ph.D. in Solid Earth Geophysics, Institute of Geology, China Earthquake Administration, Beijing, China.  
07/1996—06/1998: M.S. in Hydrogeology and Engineering Geology, Nanjing University, Nanjing, China.  
08/1992—06/1996: B.S. in Structural Geology, China University of Geosciences, Wuhan, China.

### **PROFESSIONAL EXPERIENCE**

- 07/2014----xxxxxx: Associate Professor, Department of Earth and Atmospheric Sciences, Department of Civil and Environmental Sciences, University of Houston  
01/2014----xxxxxx: Adjunct Professor, College of Civil Engineering and Architecture, Beijing University of Technology, China  
09/2011----06/2014: Assistant Professor, Department of Earth and Atmospheric Sciences, Department of Civil and Environmental Sciences, University of Houston  
08/2006— 08/2011: Assistant Professor, Department of Geology, University of Puerto Rico at Mayaguez, PR. (Tenured on July 1, 2011)  
07/2004—07/2006: Research Associate, Applied Geophysical Science Laboratories, College of Arts and Sciences, North Carolina A&T State University, NC.  
01/2004—06/2004: Visiting Research Scholar, Multidisciplinary Center for Earthquake Engineering Research (MCEER), University of New York at Buffalo, NY.  
06/2001—12/2003: Postdoctoral Scholar, Institute of Geophysics, Department of Geosciences, University of Munich, Germany.

### **MAJOR AWARD**

NSF CAREER (2009)

### **PROFESSIONAL AFFILIATIONS AND SERVICE**

American Geophysical Union (AGU)  
American Society of Civil Engineering (ASCE)  
Geological Society of America (GSA)  
Seismological Society of America (SSA)  
Editorial Board (2013--present), *Journal of Surveying Engineering*, American Society of Civil Engineers (ASCE).

Editorial Board --Scientific Editor (2013--present), *Journal of Geodetic Sciences*.  
Editorial Board--Executive Editor (2013--present), *Journal of Geophysics & Remote Sensing*.  
Editorial Board (2013—present), *Positioning (POS)*.  
Editor (2014—present), *Geoenvironmental Disasters*, Springer Open Journal

## **RESEARCH INTERESTS**

- (1) Coastal hazards (e.g., faulting, subsidence, wetland loss) in the Gulf Coast area
- (2) Caribbean neotectonics
- (3) GPS seismology, strong earthquake ground motion
- (4) Applications of GPS and LIDAR technologies in natural hazards studies
- (5) Geological hazard risk analysis and mitigation
- (6) Field and structural monitoring and instrumentation
- (7) Numerical modeling---Numerical 3D simulation (e.g., Parallel Super-Computer Numerical Simulation, MPI and Finite Difference Method)

## **RELATED EXPERIENCE AND SKILLS**

- (1) Excellent computer programming skills with Fortran, C/C++, Java, Python, Perl, Matlab, UNIX shell programming; advanced knowledge of Unix/Linux environments.
- (2) Experience in Super-Parallel-Computer (Hitachi SR8000, Leibniz-Rechenzentrum Computing Center Munich, Germany, <http://www.lrz.de>) and MPI (the Message Passing Interface Standard).
- (3) Experience in GPS and LIDAR data process and analysis.
- (4) Broad-band digital seismic data and strong motion data process and analysis.
- (5) Experience in GIS tools (e.g., ArcGIS, GMT)

## **RESEARCH GRANTS**

Summary:

Total research funding received as a PI during the past 9 years (2006-2015) is \$2.0 million (NSF-\$1,535,242; NASA-\$30,000; local agencies-\$407,218).

Total research funding received as a CO-PI is \$6.4 million (NSF-\$6,272,931; Shell Inc. \$62,802).

**Total NSF funding received at UH (2012-2015) as a PI: \$1.2 million.**

(1) **NSF IRES:** US-China Collaboration on Landslide Research and Student Training (Sep. 1, 2015—Aug. 30, 2018, \$245,945.00). **PI: Guoquan Wang**

(2) **NSF TUES** (Transforming Undergraduate Education in Science, Technology, Engineering and Mathematics): Integrating GPS and LIDAR into geosciences education (October 1,

2013—September 30, 2016, \$168,187). **PI: Guoquan Wang**

- (3) **NSF MRI** (Major Research Instrumentation Grant--HoustonNET). MRI: Acquisition of GPS Equipment for Establishing a Continuously Operating Dense GPS Network in Houston Metropolitan Area for Urban Natural Hazards Study (September 1, 2012---August 30, 2014, \$573,391—NSF: \$401,374; UH Matching: \$172,017 for installation, \$125,000 for the operation of the first 5 years). **PI: Guoquan Wang**, Co-PIs: Shuhab Khan (Geosciences), Barry Lefer (Atmospheric Science), Thomas Hsu (Civil Engineering), Ramesh Shrestha (Geodetic Imaging), Paul Mann (Natural Hazards), William Carter (Survey Technology Engineering), Yi-Lung Mo (Structural Engineering), Hassan Moghaddam (Land Surveying), Craig Glennie (Airborne Surveying), Hyongki Lee (Remote Sensing).
- (4) **NSF-CAREER** (Faculty Early Career Development), Integrating Research and Education to Apply High-Rate GPS in Natural Hazards Reduction (September 2009---August 2014, total \$468,431--UPR: 161,922; UH: \$306,509). **PI: Guoquan Wang**.
- (5) **NSF-IF** Program, Collaborative Instrumentation: COCONet (Continuously Operating Caribbean GPS Observational Network), an Infrastructure Proposal for a Multi-hazard Tectonic and Weather Observatory (October 1, 2010---December 31, 2015, \$6,272,931) **PI:** UNAVCO (Meghan M. Miller), **CO-PIs: Guoquan Wang (UH)**, Glen Mattioli (UNAVCO), Karl Feaux (UNAVCO), John Braun (UCAR), Eric Calais (previous co-PI), Mike Jackson (previous co-PI).

Awards Finished:

- (1) 2013 UH QEP Curriculum/Course Development Program, *Enhancing undergraduate new course EOL4332 Geoscience Applications of GPS and LIDAR* (September 1, 2013---August 30, 2014, \$5,000). **PI: Guoquan Wang**
- (2) **Shell Inc.**, Oblique Lidar/Photo Scanning and Construction of Virtual Outcrop: Ferron Sandstone Member, Nielson Wash, Utah. **PI:** Janok P. Bhattacharya, **CO-PIs:** Shuhab Khan, **Guoquan Wang**. 10/15/2011-09/30/2013, \$62,802.
- (3) **NSF-REU** (Research Experience for Undergraduates) Supplement to EAR-0722540, GPS Landslide Monitoring and Education (January 2009—December 2009, \$19,550). **PI: Guoquan Wang**.
- (4) **NSF-REU** (Research Experience for Undergraduates) Supplement to EAR-0722540, Undergraduate Training in GPS Data Processing (November 2007—October 2008, \$17,500). **PI: Guoquan Wang**.

- (5) **NSF-MRI** (Major Research Instrumentation), EAR-0722540, MRI: Acquisition of 15 High-rate GPS units for developing a real broadband earthquake monitoring system in Puerto Rico and the U.S. Virgin Islands (August 2007---July 2009, \$210,200). **PI: Guoquan Wang**; CO-PI: Christa von Hillebrandt, Victor A. Huerfano, Johannes H. Schellekens, and Jose A. Martinez.
- (6) **NASA-Puerto Rico Space Grant**, Introducing GPS and its Applications in Earth Science to Students and Educators of Puerto Rico (April 2008---June 2009, NASA-\$30,000, UPRM Match--\$39,301, Total \$69,301). **PI: Guoquan Wang**; CO-PIs: Christa von Hillebrandt and Jose A. Martinez.
- (7) Ponce Municipal Administration, High-Precision GPS Monitoring for Land Stability Evaluation in the Cerca del Cielo Urbanization, Ponce, Puerto Rico (September 15, 2010---August 31, 2011, \$55,900). **PI: Guoquan Wang**, Co-PI: James Joyce, Fernando Gilbes.
- (8) University of Puerto Rico, Researcher and Development Center SEED Money Grant, Programming Algorithm for Integrating Real-Time GPS and Seismograph Data (December 2006---November 2007, \$5,000). **PI: Guoquan Wang**.
- (9) University of Puerto Rico, College of Arts and Sciences SEED Money Grant, Real-Time Earthquake Magnitude Assessment Using Strong Motion Accelerometer Data (May 2007---April 2008, \$5,000). **PI: Guoquan Wang**.

#### **MAJOR REPRESENTATIVE PEER-REVIEWED JOURNAL PUBLICATIONS**

- (1) Yang, L, G. Wang, Y. Bao, T. J. Kearns, J. Yu (2015). Comparisons of Ground-Based and Building-Based CORS: a Case Study in the Region of Puerto Rico and Virgin Islands. *Journal of Surveying Engineering* (accepted, in press).
- (2) Liu, H. and G. Wang (2015). Delineating relative motion between St. Croix and the Puerto Rico-Virgin Islands block using continuous GPS observations (1995-2014). *International of Geophysics*, 915753, 1-9, <http://dx.doi.org/10.1155/2015/915753>.
- (3) Wang, G-Q., Y. Bao, Y. Cuddus, X. Jia, J. J. Serna, and Q. Jing (2015), A methodology to derive precise landslide displacements from GPS observations in tectonically active and cold regions: A case study in Alaska. *Natural Hazards*, 77:1939-1961, DOI:

10.1007/s11069-015-1684-z

- (4) Kearns, T. J., G.-Q. **Wang**, Y. Bao, J. Jiang, and D. Lee (2015), Current Land Subsidence and Groundwater Level Changes in the Houston Metropolitan Area, Texas (2005-2012), *Journal of Surveying Engineering*, 05015002:1-16, DOI: [10.1061/\(ASCE\)SU.1943-5428.0000147](https://doi.org/10.1061/(ASCE)SU.1943-5428.0000147)
- (5) Antuna J. C., M. Miller, G. Mattioli, K. Feaux, R. Anthes, J. Braun, **G.-Q. Wang**, and A. Robock (2014), Partnering with Cuba: Weather extremes, *Science*, Vol. 345, ISSUE6194, 278.
- (6) Yu, J., G.-Q. **Wang**, T. J. Kearns, and L. Yang (2014), Is there deep-seated subsidence in the Houston-Galveston area? *Int. J. Geophys.*, Article ID 942834, 11Pages, <http://dx.doi.org/10.1155/2014/942834>
- (7) Wang, G.-Q., and T. Soler (2014), Measuring Land Subsidence Using GPS: Ellipsoid Height vs. Orthometric Height, *Journal of Survey Engineering*, 05014004, 1-12. DOI: 10.1061/(ASCE)SU.1943-5428.0000137
- (8) Wang, G.-Q., J. Yu, T. J. Kearns, and J. Ortega (2014), Assessing the accuracy of long-term subsidence derived from borehole extensometer data using GPS observations: case study in Houston, Texas, *Journal of Survey Engineering*, 140(3) 05014001: 1-7, DOI: 10.1061/(ASCE)SU.1943-5428.0000133
- (9) Wang, G.-Q., T. J. Kearns, J. Yu, and G. Saenz (2014), A Stable Reference Frame for Landslide Monitoring Using GPS in the Puerto Rico and Virgin Islands Region, *Landslides* **11(1):119-129**, DOI:10.1007/s10346-013-0428-y
- (10) Wang, G.-Q., J. Yu, J. Ortega, G. Saenz, T. Burrough, and R. Neill (2013), A Stable Reference Frame for Ground Deformation Study in the Houston Metropolitan Area, Texas, *Journal of Geodetic Science*, 3(3), 188-202. DOI:10.2478/jogs-2013-0021
- (11) Wang, G.-Q., T. Soler (2013), Using OPUS for Measuring Vertical Displacements in Houston, TX, *Journal of Surveying Engineering*, 139(3), 126-134, DOI: 10.1061/(ASCE)SU.1943-5428.0000103
- (12) Wang, G.-Q. (2013), Millimeter-Accuracy GPS Landslide Monitoring Using Precise Point Positioning with Single Receiver Phase Ambiguity Resolution: A Case Study in Puerto Rico, *Journal of Geodetic Science*, 3(1), 22-31.
- (13) Wang, G.-Q., J. Joyce, D. Phillips, R. Shrestha, and W. Carter (2013), Delineating and Defining the Boundaries of an Active Landslide in the Rainforest of Puerto Rico Using a

Combination of Airborne and Terrestrial LIDAR Data, *Landslides*, 10(4):503-513, DOI:10.1007/s10346-013-0400-x.

- (14) Wang, G.-Q. (2013), Teaching High-Precision GPS to Undergraduates Using Online Processing Services, *Journal of Geoscience Education* 61 (2), 202-212.
- (15) Braun, J. J., E. Calais, K. Dausz, K. Feaux, B. Friesen, G.S. Mattioli, M. M. Miller, J. Normandeau, E. Seider, and G. Wang (2012), COCONet (Continuously Operating Caribbean GPS Observational Network): Infrastructure Enhancements To Improve Sea Level Monitoring, Paper No. 212178, *Geological Society of America* 44(7).
- (16) Braun, J. J., G.S. Mattioli, E. Calais, D. Carlson, T. Dixon, M. Jackson, R. Kursinski, H. Mora-Paez, M.M. Miller, R. Pandya, R. Robertson, and G. Wang (2012), Multi-Disciplinary Natural Hazards Research Initiative Begins Across the Caribbean Basin, *EOS transactions, American Geophysical Union*, 93, 9, DOI:10.1029/2012EO090001.
- (17) Wang, G.-Q. and T. Soler (2012), OPUS for Horizontal Subcentimeter-Accuracy Landslide Monitoring: A Case Study in the Puerto Rico and Virgin Islands Region, *Journal of Surveying Engineering* 138(3):135-143, DOI:10.1061/(ASCE)SU.1943-5428.0000079.
- (18) Wang, G.-Q., F. Blume, C. Meertens, P. Ibanez, and M. Schulze (2012), Performance of high-rate kinematic GPS during strong shaking: observations from shake table tests and the 2010 Chile earthquake (M 8.8), *Journal of Geodetic Sciences*, 2(1):1-16, DOI:10.2478/v10156-011-0020-0.
- (19) Wang, G.-Q. (2012), Kinematics of the Cerca del Cielo, Puerto Rico landslide derived from GPS observations, *Landslides*, 9 (1):117-130, DOI: 10.1007/s10346-011-0277-5.
- (20) Wang, G.-Q. (2011), GPS Landslide Monitoring: Single Base vs. Network Solutions, a case study based on the Puerto Rico and Virgin Islands Permanent GPS Network, *Journal of Geodetic Sciences*, 1(3): 191-203, DOI: 10.2478/v10156-010-0022-3.
- (21) Wang, G.-Q., D. Phillips, J. Joyce, and F. O. Rivera (2011). The integration of TLS and Continuous GPS to study landslide deformation: a case study in Puerto Rico, *Journal of Geodetic Science*, 1(1): 25-34, DOI: 10.2478/v10156-010-0004-5.
- (22) Wang, G.-Q., D. M. Boore, G. Tang, and X.-Y. Zhou (2007). Some observations on colocated and closely spaced 1-second sampled GPS and ground-motion accelerograph data from the 2003 San Simeon (M 6.5), California, earthquake, *Bull. Seism. Soc. Am.* 97, 76-90.

- (23) Wang, G.-Q., G. Tang, C. R. Jackson, X.-Y. Zhou, and Q. Lin (2006). Strong ground motions observed at the UPSAR during the 2003 San Simeon earthquake (M 6.5) and the 2004 Parkfield earthquake (M 6.0) , *Bull. Seism. Soc. Am.* 96, S159-S182.
- (24) Wang, G.-Q., G. Tang, D. M. Boore, G. V. Burban, C. R. Jackson, X.-Y. Zhou, and Q. Lin. (2006). Strong surface waves observed in the Western Coastal Plain of the Taiwan Island from one aftershock of the 1999 Chi-Chi, Taiwan, Earthquake, *Bull. Seism. Soc. Am.* 96, 821-845.
- (25) Wang, G.-Q., and X.-Y. Zhou (2006). Three-Dimensional Finite-Difference Simulations of Strong Ground Motions during the 1720 Shacheng Earthquake of Yanhuai Area, Beijing, China using a Stochastic Finite-Fault model, *Soil Dyn. Earthquake. Eng.* 26 (10), 960-982.
- (26) Tong, M., **G.-Q. Wang**, and G. C. Lee (2005). Time derivative of earthquake acceleration, *Earthquake Engineering and Engineering Vibration*, 4(1), 1-16.
- (27) Wang, G.-Q., D. M. Boore, H. Igel, and X.-Y. Zhou (2004). Comparisons of ground motions from five aftershocks of the 1999 Chi-Chi, Taiwan Earthquake with empirical predictions largely based on data from California, *Bull. Seism. Soc. Am.* 94, 2198-2212.
- (28) Wang, G.-Q., D. M. Boore, H. Igel, and X.-Y. Zhou (2003). Some observations on colocated and closely-spaced strong ground motion records of the 1999, Chi-Chi, Taiwan Earthquake, *Bull. Seism. Soc. Am.* 93, 674-693.
- (29) Wang, G.-Q., X.-Y. Zhou, P. Z. Zhang, and H. Igel (2002). Characteristics of amplitude and duration for near fault strong ground motion from the 1999 Chi-Chi, Taiwan, Earthquake, *Soil Dyn. Earthquake. Eng.* 22, 73-96.
- (30) Wang, G.-Q., X.-Y. Zhou, Z. J. Ma, and P. Z. Zhang (2001). A preliminary study on the randomness of response spectra of the 1999 Chi-Chi, Taiwan, Earthquake, *Bull. Seism. Soc. Am.* 91, 1358-1369.
- (31) Wang, G.-Q., X.-Y. Zhou, Z. J. Ma, and P. Z. Zhang (2001). Data files from a preliminary study on the randomness of response spectra of the 1999 Chi-Chi, Taiwan, Earthquake, *Bull. Seism. Soc. Am.* 91, 1388-1389.

## **PEER-REVIEWED ARTICLES IN CONFERENCE PROCEEDINGS**

Wang, G.-Q., J. Welch, T. J. Kearns, L. Yang, and J. Serna (2015), Introduction to GPS geodetic infrastructure for land subsidence monitoring in Houston, Texas, U.S.A. The proceeding of the Ninth International Symposium on Land Subsidence, Nov. 15-19, 2015, Nagoya, Japan.

Woo, G., **G.-Q. Wang**, and G. Tang (2006). Insights from Parkfield array data for probabilistic modeling (Article), Proceedings of 8th U.S. National Conference on Earthquake Engineering, 18-22 April 2006, San Francisco, California.

Su G. W., **G.-Q. Wang**, Z. J. Ma (1998). Some Preliminary Discussion on Natural Disaster Risk and its Assessment, Proceedings of the First China-Japan Conference on Risk Assessment and management, P.224—231.

## **BOOK REVIEW**

Wang, G.-Q. (2011), A comprehensive reference for OPUS, “GORS and OPUS for Engineers” edited by T. Soler, Monograph of new and collected articles provides first “one-stop” resource for using key National Geodetic Survey services, *Inside GNSS*, September/October 2011, 93-94.