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 Geology, China University of Geosciences, Wuhan, China.

PROFESSIONAL EXPERIENCE

09/2018----Present: Professor, Department of Earth and Atmospheric Sciences, University of Houston, Texas, USA.

09/2018----Present: Adjunct Professor, College of Civil Engineering, Beijing University of Technology, Beijing, China

01/2015----Present: Assistant Director, University of Houston Coastal Center (UHCC), Texas, USA.

09/2014----08/2018: Associate Professor, Department of Earth and Atmospheric Sciences, University of Houston, Texas, USA.

09/2011----08/2014: Assistant Professor, Department of Earth and Atmospheric Sciences, University of Houston, Texas, USA.

07/2011—08/2011: Associate Professor, Department of Geology, University of Puerto Rico at Mayaguez, Puerto Rico, USA (Tenured on 7/1/2011).

08/2006—06/2011: Assistant Professor, Department of Geology, University of Puerto Rico at Mayaguez, Puerto Rico, USA.

07/2004—07/2006: Research Associate, Applied Geophysical Science Laboratories, College of Arts and Sciences, North Carolina A&T State University, North Carolina, USA.

01/2004—06/2004: Visiting Research Scholar, Multidisciplinary Center for Earthquake Engineering Research (MCEER), University of New York at Buffalo, New York, USA.

06/2001—12/2003: Postdoctoral Scholar, Institute of Geophysics, Department of Geosciences, University of Munich, Germany.

MAJOR AWARDS

NSF CAREER (2009)

American Society of Civil Engineering (ASCE) Outstanding Reviewer (2015)

University of Houston Teaching Excellence Award for Group Teaching (2019)

RESEARCH INTERESTS

(1) Coastal hazards (e.g., sea-level change, faulting, subsidence, wetland loss) along 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) Structural health monitoring
(7) Numerical modeling---Numerical 3D simulation (e.g., Parallel Super-Computer Numerical Simulation, MPI and Finite Difference Method)

MAJOR REPRESENTATIVE PEER-REVIEWED JOURNAL PUBLICATIONS

(*denotes graduate student/postdoc under my primary supervision)

(1) Zhang, Y., **Wang**, G., Zhu, X., Yu, D., Liang, H., & Wang, X. (2024). Comparative study on land subsidence monitoring and control in the Shandong Plain, China and the Greater Houston Area, USA. Hydrogeology & Engineering Geology, 51(1), 167–178. https://doi.org/10.16030/j.cnki.issn.1000-3665.202301025

(2) **Wang**, G. (2023). A methodology for long-term offshore structural health monitoring using stand-alone GNSS: Case study in the Gulf of Mexico. Structural Health Monitoring, 23(1), 463–478. https://doi.org/10.1177/14759217231169934

(3) **Wang**, G. (2023). The 95 per cent confidence interval of the mean sea-level rate derived from tide gauge data. Geophysical Journal International, 235(2), 1420–1433. https://doi.org/10.1093/gji/ggad311

(4) Yu, X.*, **Wang**, G., Hu, X., Liu, Y., & Bao, Y. (2023). Land subsidence in Tianjin, China: Before and after the South-to-North Water Diversion. Remote Sensing, 15, 1647. https://doi.org/10.3390/rs15061647

(5) Liu, Y.*, **Wang**, G., Yu, X., & Wang, K. (2023). Sentinel-1 InSAR and GPS-integrated long-term and seasonal subsidence monitoring in Houston, Texas, USA. Remote Sensing, 14(23), 6184. https://doi.org/10.3390/rs14236184

(6) Cornelison*, B., & **Wang**, G. (2023). GNSS_Vel_95CI.py: A Python module for calculating the uncertainty of GNSS-derived site velocity. Journal of Surveying Engineering, 149(1), 06022001. https://doi.org/10.1061/(ASCE)SU.1943-5428.0000410

(7) **Wang**, G. (2023). Seasonal subsidence and heave recorded by borehole extensometers in Houston, Texas. Journal of Surveying Engineering, 149(1), 04022018. https://doi.org/10.1061/JSUED2.SUENG-1369

(8) **Wang**, G. (2023). New preconsolidation heads following the long-term hydraulic-head decline and recovery in Houston, Texas. Groundwater, 61(5), 674–691. https://doi.org/10.1111/gwat.13271

(9) Yu, X.*, Hu, X., **Wang**, G., Wang, K., & Chen, X. (2022). Machine-learning estimation of snow depth in 2021 Texas statewide winter storm using SAR imagery. Geophysical Research Letters, 49, e2022GL099119. https://doi.org/10.1029/2022GL099119

(10) **Wang**, G. (2022). The 95% confidence interval for the GNSS-derived site velocities. Journal of Surveying Engineering, 148, 04021030. https://doi.org/10.1061/(ASCE)SU.1943-5428.0000390

(11) **Wang**, G., Greuter, A., Petersen, C. M., & Turco, M. J. (2022). Houston GNSS network (HoustonNet) for subsidence and faulting monitoring: Data analysis methods and products. Journal of Surveying Engineering, 148, 04022008. https://doi.org/10.1061/(ASCE)SU.1943-5428.0000399

(12) Liang, S., Gan, W., Xiao, G., **Wang**, G., Dai, C., Zhang, K., Dai, D., Li, Z., Zhang, L., Zhang, Y., et al. (2022). Strong ground motion recorded by high-rate GPS during the 2021 Ms 6.4 Yangbi, China, earthquake. Seismological Research Letters, 93, 3219–3233. http://doi.org/10.1785/0220220013

(13) **Wang**, G., & Bao, Y. (2022). GNSS landslide monitoring aligned to regional reference frames. Acta Geodaetica et Cartographica Sinica, 51(10), 2107–2116. http://doi.org/10.11947/j.AGCS.2022.20220308

(14) Wang, K.*, **Wang**, G., Cornelison, B., Liu, H., & Bao, Y. (2021). Land subsidence and aquifer compaction in Montgomery County, Texas, U.S.: 2000–2020. Geoenvironmental Disasters, 8, 28. https://doi.org/10.1186/s40677-021-00199-7

(15) Zhou, X.*, **Wang**, G., Wang, K., Liu, H., Lyu, H., & Turco, M. J. (2021). Rates of natural subsidence and submergence along the Texas coast derived from GPS and tide gauge measurements (1904-2020). Journal of Surveying Engineering, 147(4), 04021020. https://doi.org/10.1061/(ASCE)SU.1943-5428.0000371

(16) Greuter, A., Turco, M. J., Petersen, C. M., & **Wang**, G. (2021). Impacts of groundwater withdrawal regulation on subsidence in Harris and Galveston counties, Texas, 1978-2020. GeoGulf Transactions, 71, 109–118.

(17) Bao, Y., **Wang**, G., Yu, X., Zhao, R., Xiao, G., Xu, J., & Gan, W. (2021). Northeast China stable reference frame: NEChina20. Geodesy & Geodynamics, 41(9), 899–910.

(18) Bao, Y., Yu, X., **Wang**, G., Zhou, H., Ding, X., Xiao, G., Shen, S., & Zhao, R. (2021). SChina20: A stable geodetic reference frame for ground movement and structural deformation monitoring in South China. Journal of Surveying Engineering, 147(3), 04021006. https://doi.org/10.1061/(ASCE)SU.1943-175428.0000352

(19) Bao, Y., **Wang**, G., Yu, X., Xiao, G., Ding, X., Zhao, R., & Gan, W. (2020). Establishment and application of the stable North China reference frame: NChina20. Earthquake Research in China, 36(4), 788–805.

(20) Ke, X.*, Xie, J., Zhang, Z., Zou, Y., & **Wang**, G. (2020). Quaternary stratigraphic division and paleoenvironmental evolution observed from core LZK1 on Hengsha Island, Shanghai. Acta Geologica Sinica (English Edition), 94(4), 1167–1177. https://doi.org/10.1111/1755-6724.14564

(21) Guo, W.*, Li, P., Bao, Y., Zhang, M., Gao, Y., **Wang**, G., Li, R., & Duan, X. (2020). High-accuracy GPS monitoring of riverbed deformation due to shield tunneling. Journal of Beijing University of Technology, 46(5), 490–499. https://doi.org/10.11936/bjutxb2019030019

(22) Guo, W.*, **Wang**, G., Bao, Y., Zhang, M., Sun, X., Zhao, R., & Gan, W. (2020). Tilt and settlement monitoring of high-rise buildings using GNSS precise point positioning and seasonal ground deformation. Geomatics and Information Science of Wuhan University, 45(07). https://doi.org/10.13203/j.whugis20190015

(23) Zhao, R., **Wang**, G., Yu, X., Sun, X., Bao, Y., Xiao, G., Gan, W., & Shen, S. (2020). Rapid land subsidence in Tianjin, China derived from continuous GPS observations (2010–2019). Proceedings of the IAHS-the International Association of Hydrological Sciences, 97. https://doi.org/10.5194/piahs-97-1-2020

(24) Agudelo, G.*, **Wang**, G., Liu, Y., Bao, Y., & Turco, M. J. (2020). GPS geodetic infrastructure for subsidence and fault monitoring in Houston, Texas, USA. Proceedings of the IAHS-the International Association of Hydrological Sciences, 97. https://doi.org/10.5194/piahs-97-1-2020

(25) **Wang**, G., Zhou, X., Wang, K., Ke, X., Zhang, Y., Zhao, R., & Bao, Y. (2020). GOM20: A stable geodetic reference frame for subsidence, faulting, and sea-level rise studies along the coast of the Gulf of Mexico. Remote Sensing, 12(3), 350. https://doi.org/10.3390/rs12030350

(26) Xiong, L.*, **Wang**, G., Bao, Y., Zhou, X., Wang, K., Liu, H., Sun, X., & Zhao, R. (2019). A rapid terrestrial laser scanning method for coastal erosion studies: A case study at Freeport, Texas, USA. Sensors, 19(15), 3252. https://doi.org/10.3390/s19153252

(27) Guo, W.*, **Wang**, G., Bao, Y., Li, P., Zhang, M., Gong, Q., Li, R., Gao, Y., & Zhao, R. (2019). Detection and monitoring of tunneling-induced riverbed deformation using GPS and BeiDou: A case study. Applied Sciences, 9(13), 2759. https://doi.org/10.3390/app9132759

(28) Liu, Y.*, Sun, X., **Wang**, G., Turco, M. J., Agudelo, G., Bao, Y., Zhao, R., & Shen, S. (2019). Current activity of the Long Point Fault in Houston, Texas constrained by continuous GPS measurements (2013–2018). Remote Sensing, 11(10), 1213. https://doi.org/10.3390/rs11101213

(29) **Wang**, G., Liu, H., Mattioli, G., Miller, M., Feaux, K., Braun, J. (2019). CARIB18: A stable geodetic reference frame for geological hazard monitoring in the Caribbean region. Remote Sensing, 11, 1-35. https://doi.org/10.3390/rs11060680

(30) Kearns, T. J.*, **Wang**, G., Turco, M., Welch, J., & Tsibanos, V. (2019). Houston16: A stable geodetic reference frame for subsidence and faulting study in the Houston metropolitan area, Texas, U.S. Geodesy & Geodynamics, 10(5), 382-393. https://doi.org/10.1016/j.geog.2018.05.005

(31) Xiong, L.*, **Wang**, G., Bao, Y., Zhou, X., Sun, X., & Zhao, R. (2018). Detectability of repeated airborne laser scanning for mountain landslide monitoring. Geosciences, 8(12), 469. https://doi.org/10.3390/geosciences8120469

(32) **Wang**, G., Bao, Y., Gan, W., Geng, J., Xiao, G., & Shen, J. S. (2018). NChina16: A stable geodetic reference frame for geological hazard studies in North China. Journal of Geodynamics, 115, 10-22. https://doi.org/10.1016/j.jog.2018.01.003

(33) Bao, Y.*, Guo, W., **Wang**, G., Gan, W., Zhang, M., & Shen, J. S. (2018). Millimeter-accuracy structural deformation monitoring using stand-alone GPS: Case study in Beijing, China. Journal of Surveying Engineering, 144(1), 05017007. https://doi.org/10.1061/(ASCE)SU.1943-5428.0000242

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(35) Zhou, X.*, **Wang**, G., Bao, Y., Xiong, L., Guzman, V., & Kearns, T. J. (2017). Delineating beach and dune morphology from massive terrestrial laser scanning data using the generic mapping tools. Journal of Surveying Engineering, 143(4), 04017008. https://doi.org/10.1061/(ASCE)SU.1943-5428.0000223

(36) Xiong, L.*, **Wang**, G., & Wessel, P. (2017). Anti-aliasing filtering for deriving high-accuracy DEMs from TLS data: Case study at Freeport, Texas. Computers & Geosciences, 100, 125-134. https://doi.org/10.1016/j.cageo.2016.11.006

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(38) Lyu, H., **Wang**, G., Shen, J. S., Lu, L., & Wang, G. (2016). Analysis and GIS mapping of flooding hazards on 10 May 2016, Guangzhou, China. Water, 447(8). https://doi.org/10.3390/w8100447

(39) Yang, L.*, **Wang**, G., Huerfano, V., von Hillebrandt-Andrade, C. G., Martínez-Cruzado, J. A., & Liu, H. (2016). GPS geodetic infrastructure for natural hazards study in the Puerto Rico and Virgin Islands region. Natural Hazards, 83(1), 641-665. https://doi.org/10.1007/s11069-016-2344-7

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(42) Yang, L.*, **Wang**, G., Bao, Y., Kearns, T. J., & Yu, J. (2016). Comparisons of ground-based and building-based CORS: A case study in the Puerto Rico and Virgin Islands region. Journal of Surveying Engineering, 142(3), 05015006. https://doi.org/10.1061/(ASCE)SU.1943-5428.0000155

(43) **Wang**, G., Welch, J., Kearns, T. J., Yang, L., & Serna, J. (2015). Introduction to GPS geodetic infrastructure for land subsidence monitoring in Houston, Texas, U.S.A. Proceedings of the Ninth International Symposium on Land Subsidence, Nov. 15-19, 2015, Nagoya, Japan. Proc. IAHS, 92, 1–7. https://doi.org/10.5194/piahs-92-1-2015

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(48) Yu, J.*, **Wang**, G., Kearns, T. J., & Yang, L. (2014). Is there deep-seated subsidence in the Houston-Galveston area? International Journal of Geophysics, 942834, 1-11. https://doi.org/10.1155/2014/942834

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(50) **Wang**, G., Yu, J., Kearns, T. J., & Ortega, J. (2014). Assessing the accuracy of long-term subsidence derived from borehole extensometer data using GPS observations: Case study in Houston, Texas. Journal of Surveying Engineering. https://doi.org/10.1061/(ASCE)SU.1943-5428.0000133

(51) **Wang**, G., Kearns, T. J., Yu, J., & Saenz, G. (2014). A stable reference frame for landslide monitoring using GPS in the Puerto Rico and Virgin Islands region. Landslides, 11(1), 119-129. https://doi.org/10.1007/s10346-013-0428-y

(52) **Wang**, G., Yu, J., Ortega, J., Saenz, G., Burrough, T., & Neill, R. (2013). A stable reference frame for ground deformation study in the Houston metropolitan area, Texas. Journal of Geodetic Science, 3(3), 188-202. https://doi.org/10.2478/jogs-2013-0021

(53) **Wang**, G., & Soler, T. (2013). Using OPUS for measuring vertical displacements in Houston, TX. Journal of Surveying Engineering, 139(3), 126-134. https://doi.org/10.1061/(ASCE)SU.1943-5428.0000103

(54) **Wang**, G. (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. https://doi.org/10.2478/jogs-2013-0001

(55) **Wang**, G., Joyce, J., Phillips, D., Shrestha, R., & Carter, W. (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. https://doi.org/10.1007/s10346-013-0400-x

(56) **Wang**, G. (2013). Teaching high-precision GPS to undergraduates using online processing services. Journal of Geoscience Education, 61(2), 202-212. https://doi.org/10.5408/12-295.1

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(63) **Wang**, G., Phillips, D., Joyce, J., & Rivera, F. O. (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. https://doi.org/10.2478/v10156-010-0004-5

(64) **Wang**, G., Boore, D. M., Tang, G., & Zhou, X.-Y. (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. Bulletin of the Seismological Society of America, 97, 76-90.

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