

Education

Ph.D. 1990, Hydrogeology, Johns Hopkins University, Baltimore, Maryland, USA
M.S. 1985, Geotechnical Engineering, University of British Columbia, Vancouver, BC, Canada
B.S. 1982, Geotechnical Engineering, Wuhan University of Technology, Wuhan, China

Professional Experience

1993–Present: Assistant, Associate, full Professor, University of Colorado Boulder
2020: Visiting Professor, Earth Science Programme, Chinese University of Hong Kong, Hong Kong
2019: Visiting Professor, Dept of Earth Science, ETH Zurich, Switzerland
2015–2019: Chair, Department of Geological Sciences, University of Colorado Boulder, USA
2012–2014: Program Director, Hydrologic Sciences, US National Science Foundation
2010–2011: Blaustein Visiting Professor, Dept of Earth System Science, Stanford University
2010–2011: Visiting Scientist, US Geological Survey, Menlo Park, California, USA
2004: Visiting Scientist, Commonwealth Scientific & Industrial Research Organization, Perth, Australia
2003: Visiting Scientist, BP Institute for Multiphase Flow, University of Cambridge, England
1990–1993: Hydrogeologist, S.S. Papadopulos and Associates, Inc., Bethesda, Maryland, USA

Awards

2019-2020 Fulbright U.S. Scholar Award, Understanding Water-induced Earthquakes in Energy Development
2018, Meinzer Award, Geological Society of America, Hydrogeology Division. It recognizes the author or authors of a publication or body of publications that have significantly advanced the science of hydrogeology. Work related to induced seismicity was cited for this award.
2016, Birdsall-Dreiss Distinguished Lecturer. Geological Society of America, Hydrogeology Division, lecture topics: (1) Fluid Induced Earthquakes, (2) Groundwater Dynamics in Headwater Regions under a Changing Climate.

Selected Professional Service

2018-2020, National Research Council Committee on Catalyzing Opportunities for Research in the Earth Sciences (CORES): A Decadal Survey for National Science Foundation's Division of Earth Sciences.
2012-2014, Leader, US Geological Survey Powell Center working group on Injection Induced Seismicity
2008-2013, Editor, Hydrogeology Journal, Associate Editor: Geofluids (03-16), J. Ground Water (03-07)

Research Projects in Recent Years

US Department of Energy, 2019-2022, PIs: Shemin Ge, Anne Sheehan, Kristy Tiampo, Competing Mechanisms for Injection-Induced Seismicity: Fluid Generated Stress Change or Coulomb Static Stress Transfer.
U.S. National Science Foundation, 2018-2021, PI: Shemin Ge, Dynamic Response of Watershed Subsurface System to Extreme Rainfall Events.
US Geological Survey, 2016-2018, Co-PI: Shemin Ge, Feasibility of Controlling Induced Earthquakes: Seismicity Investigation coupled with Hydrologic Modeling of an Actively Mitigated Class II Disposal Well and Data Collection at New High Rate Wells, Colorado.

- U.S. National Science Foundation, 2013-2017, Co-PI: Shemin Ge, Pathways to Scalable, Efficient and Sustainable Soil Borehole Thermal Energy Storage Systems.
- U. S. National Science Foundation, 2016-2017, Co-PI: Shemin Ge, Workshop on the Subsurface in the American West: Applying Historical and Scientific Lessons from Mining to Contemporary Oil and Natural Gas Development.
- US Geological Survey, 2013-2015, PI: Shemin Ge, Understanding Fluid Injection Induced Seismicity.
- US National Science Foundation, 2011-2014, Co-PI, Shemin Ge, Fluid Flow and Growth of Active Salt Structures at Decadal Timescales: Paradox Basin, Utah.

Selected Publications

- Ellsworth, W.L., D. Giardini, J. Townend, S. Ge, and T. Shimamoto, 2019. Triggering of the Pohang, Korea, Earthquake (Mw 5.5) by Enhanced Geothermal System Stimulation, *Seismological Research Letters*. <https://doi.org/10.1785/0220190102>
- Lee, K.-K., W. L. Ellsworth, D. Giardini, J. Townend, S. Ge, T. Shimamoto, I.-W. Yeo, T.-S. Kang, J. Rhie, D.-H. Sheen, et al. (2019). Managing injection-induced seismic risks, *Science* 364, no. 6442, 730–732, doi: 10.1126/science.aax1878.
- Mu, C., F. Zhang, X. Chen, S. Ge, M. Mu, L. Jia, Q. Wu, T. Zhang. 2019. Carbon and mercury export from the Arctic rivers and response to permafrost degradation, *Water Research* 161, 54-60
- Brown, M.R. and S. Ge, 2018, Distinguishing Fluid Flow Path from Pore Pressure Diffusion for Induced Seismicity, *Bulletin of the Seismological Society of America*, doi.org/10.1785/0120180149.
- Evans, S.G., S. Ge, C. Voss, and N. Molotch, 2018, The role of frozen soil in groundwater discharge predictions for warming alpine watersheds, *Water Resources Research*, 54. doi: 10.1002/2017WR022098.
- Brown, M.R. and S. Ge, 2018, Small earthquakes matter in injection induced seismicity. *Geophysical Research Letters*, 45. <https://doi.org/10.1029/2018GL077472>
- Reed, A.L., A.P. Novelli, K.L. Doran, S. Ge, N. Lu, J.S. McCartney, 2018, Solar District Heating with Underground Thermal Energy Storage: Pathways to Commercial Viability in North America, *Renewable Energy*, doi: 10.1016/j.renene.2018.03.019.
- Başer, T., Y. Dong, A. M. Moradi, N. Lu, K. Smits, S. Ge, D. Tartakovsky, and J. S. McCartney, 2018, Role of Nonequilibrium Water Vapor Diffusion in Thermal Energy Storage Systems in the Vadose Zone, *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, doi:10.1061/(ASCE)GT.1943-5606.0001910
- Brown, M.R., S. Ge, A. F. Sheehan, and J.S. Nakai, 2017, Evaluating the Effectiveness of Induced Seismicity Mitigation: Numerical Modeling of Wastewater Injection near Greeley, *Journal of Geophysical Research: Solid Earth*, 122(8), pp 6569-6582.
- Nakai, J.S., M. Weingarten, A.F. Sheehan, S.L. Bilek, and S. Ge, 2017, A possible causative mechanism of Raton Basin, New Mexico and Colorado earthquakes using recent seismicity patterns and pore pressure modeling. *Journal of Geophysical Research: Solid Earth*, 122. doi.org/10.1002/2017JB014415
- Evans, S.G. and S. Ge, 2017, Contrasting hydrogeologic responses to warming in permafrost and seasonally frozen ground hillslopes, *Geophysical Research Letters*, 44, 1803–1813, doi:10.1002/2016GL072009
- Liu, C.Y., Y. Chia, P.Y. Chuang, C.Y. Wang, S. Ge, and M.H. Teng, 2017, Streamflow Changes in the Vicinity of Seismogenic Fault After the 1999 Chi–Chi Earthquake, *Pure and Applied Geophysics*, doi 10.1007/s00024-017-1670-3
- Catolico, N., S. Ge, and J. McCartney, 2016, Numerical Modeling of a Soil-borehole Thermal Energy Storage System, *Vadose Zone Journal*, doi: 10.2136/vzj2015.05.0078;

- Weingarten, M., S. Ge, J.W. Godt, B.A. Bekins, J.L. Rubinstein 2015, High-rate injection is associated with the increase in U.S. mid-continent seismicity, *Science*, 348(6241), pp 1336-1340,
- McGarr A., B. Bekins, N. Burkardt, J. Dewey, P. Earle, W. Ellsworth, S. Ge, S. Hickman, A. Holland, E. Majer, J. Rubinstein, A. Sheehan, 2015, Coping with Earthquakes Induced by Fluid Injection, *Science*, 20 February, 347(6224), pp830-831
- Evans, S.G., S. Ge, and S. Liang, 2015, Analysis of groundwater flow in mountainous, headwater catchments with permafrost, *Water Resource Research*, 51, doi:10.1002/2015WR017732
- Ge, S. and S. Gorelick, 2015. Groundwater and Surface Water. In: *Encyclopedia of Atmospheric Sciences*, 2nd edition, Vol 3, pp. 209–216, Editors: G.R. North, J. Pyle and F. Zhang.
- Ball, L., J.S. Caine, and S. Ge, 2014, Controls on groundwater flow in a semiarid folded and faulted intermountain basin, *Water Resources Research*, 50, doi:10.1002/2013WR014451
- Reitman, N., S. Ge, and K. Mueller, 2014, Groundwater flow and its effect on salt dissolution in Gypsum Canyon watershed, Paradox Basin, southeast Utah, USA, *Hydrogeology Journal*, doi: 10.1007/s10040-014-1126-0
- Weingarten, M. and S. Ge, 2014, Insights into water level response to seismic waves: A 24 year high-fidelity record of global seismicity at Devils Hole, *Geophysical Research Letters*, 41, doi:10.1002/2013GL058418
- Keranen, K., M. Weingarten, G.A. Abers, B. Bekins, and S. Ge. 2014. Sharp increase since 2008 induced by massive wastewater injection. *Science*. 25 July, 345(6195), pp448-451
- Ge, S., 2013, A book review for Permafrost Hydrology By Ming-ko Woo, *Arctic, Antarctic, and Alpine Research*, 45(4), pp. 615–617
- Post, V., J. Groen, H. Kooi, M. Person, S. Ge, and M. Edmunds, 2013, Offshore fresh groundwater reserves as a global phenomenon, *Nature*, 74 (504), p71-78, doi:10.1038/nature12858
- Yin, L., Y. Zhou, S. Ge, D. Wen, E. Zhang, and J. Dong, 2013, Comparison and modification of methods for estimating evapotranspiration using diurnal groundwater level fluctuations in arid and semiarid regions, *Journal of Hydrology*, 496, p9-16.
- Screaton, E.J. and S. Ge, 2012, The impact of megasplay faulting and permeability contrasts on Nankai Trough subduction zone pore pressures, *Geophysical Research Letters*, 39, L22301, doi:10.1029/2012GL053595.
- Ge., S., J. McKenzie, C.I. Voss, Q. Wu, 2011, Exchange of groundwater and surface-water mediated by permafrost response to seasonal and long term air temperature variation, *Geophysical Research Letters*, 38, L14402, doi:10.1029/2011GL047911, L14402
- Liang, S., S. Ge, L. Wan, and J. Zhang, 2010, Can climate change cause the Yellow River to dry up?, *Water Resource Research*, doi:10.1029/2009WR007971
- Jiang, X.W., L. Wan, X.-S. Wang, S. Ge, and J. Liu, 2009, Effect of exponential decay in hydraulic conductivity with depth on regional groundwater flow, *Geophysical Research Letters*, 36, 24, doi:10.1029/2009GL041251
- Ge, S., M. Liu, N. Lu, J. Godt, and G.Luo, 2009, Did the Zipingpu Reservoir Trigger the 2008 Wenchuan Earthquake? *Geophysical Research Letters*. 36, L20315, doi:10.1029/2009GL040349.
- Ge, S., Q. B. Wu, N. Lu, G. L. Jiang, and L. Ball, 2008, Groundwater in the Tibet Plateau, western China, *Geophysical Research Letters*, 35, L18403, doi:10.1029/2008GL034809.
- Robertson, Gregory; S. Ge, P. Cutillo, 2007, An investigation of regional tectonic strain on water levels in Devils Hole, *Geophysical Research Letters*, 34, L23308, doi:10.1029/2007GL031630.