CURRICULUM VITAE

Ye Zhang

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ADDRESS

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302-761-5281 (Cell)
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EDUCATION

2005	Ph.D., Groundwater Hydrology, Indiana University, Bloomington, Indiana; Ph.D. Minor: Scientific Computing
2004	M.S., Groundwater Hydrology, University of Minnesota, Minneapolis, Minnesota; M.S. Minor: Civil Engineering
1998	B.S., Groundwater Hydrology & Engineering Geology, Nanjing University, Nanjing, PR China

ACADEMIC POSITIONS

July 2018 – present	Professor, Dept. of Geology & Geophysics, University of Wyoming (UW), Laramie, WY.
July 2013 – June 2018	Associate Professor, Dept. of Geology & Geophysics, University of Wyoming, Laramie, WY.
Aug. 2007 – June 2013	Assistant Professor, Dept. of Geology & Geophysics, University of Wyoming, Laramie, WY.
Sept. 2005 – July 2007	Turner Postdoctoral Fellow, Dept. of Earth & Environmental Sciences, University of Michigan, Ann Arbor, MI.

PROFESSIONAL LEAVES

Feb. 2015 – May 2015	Visiting Scientist, Division of Computational Earth Sciences (EES-16), Los Alamos National Laboratory, Los Alamos, NM.
Sept. 2014 – Jan. 2015	Visiting Research Associate Professor, Dept. of Civil & Environmental Engineering, Colorado School of Mines, Golden, CO.

OTHER POSITIONS

June 2014 – June 2024	Adjunct Faculty, School of Energy Resources (SER), University of Wyoming, Laramie, WY.
July 2004 – Aug. 2004	Research Intern, Reservoir Characterization Team, Chevron Energy & Technology Company, San Ramon, CA.

JOB DESCRIPTION

30% Teaching 55% Research 10% Service 5% Advising

TEACHING

Spring:	Geostatistics (GEOL 5446), Groundwater Flow & Transport Modeling (GEOL 4030/5030)
Fall:	Geohydrology (GEOL 4444/5444)
Fall (2020)	Reactive Transport Modeling (workshop co-taught with Dr. Peter Lichtner)
Fall & Spring (2022-23)	Dept. Geology & Geophysics Distinguished Lecture Series
Online (2024-)	Fundamentals of Geostatistics (Instats workshop)

PUBLICATIONS IN PROGRESS

† Student for whom Ye is the primary advisor

<u>In Preparation:</u>

Y. Zee Ma, Ye Zhang, Jason Sitchler, Spurious correlations and low correlations in geoscience data analysis, in prep.

Jianying Jiao†, Ahmad H. Askar, Andrew Trautz, Ye Zhang, Tissa H. Illangasekare, Leakage identification in a shallow aquifer: analysis of intermediate-scale laboratory tracer experiments using a transport inverse theory based on local approximate solutions (LAS), in prep.

Under review:

Dongdong Wang†, Ye Zhang, Liqiang Wang, Stochastic joint inversion of hydraulic conductivities and boundary conditions of a heterogeneous aquifer, Stochastic Environmental Research & Risk Assessment, under review.

Christopher Akurugu†, Ye Zhang, Noriaki Ohara, Mark Stacy, Integration of Time-series Cross-correlation with Interpretable Machine Learning Reveals Timing and Pathways of Heterogeneous Recharge in a Semi-Arid Mountain–Front Multilayered Basin Aquifer System, Journal of Hydrology Regional Studies, in review.

PUBLISHED WORKS

Refereed journal articles:

[59] Ye Zhang, Christopher Akurugu†, Noriaki Ohara, Mark Stacy (2025) Mountain front recharge of a Karst aquifer in the Denver Basin, southeastern Wyoming: recharge mechanism & multiyear drought impact, Hydrogeology Journal, in press.

[58] Jianying Jiao†, Kevin Befus, Ye Zhang (2024) Soil contaminants pose delayed but pervasive threat to shallow groundwater, Journal of Hydrology, https://doi.org/10.1016/j.jhydrol.2024.130994

[57] Jianying Jiao†, Ye Zhang, Kevin Befus (2023) Highly parameterized inversion of water table and groundwater depletion rate tested with the High Plains Aquifer, U.S.A., Water Resources Research, https://doi.org/10.1029/2022WR034342

[56] Stephanie Phillips, Brad Carr, Ye Zhang, Brady Flinchum, Shuangpo Ren† (2023) Improved nuclear magnetic resonance estimation of specific yield from boreholes in a semi-arid mountainous aquifer, Groundwater, https://doi.org/10.1111/gwat.13374

[55] Jianying Jiao†, Ye Zhang, Andrew Parsekian, Scott Miller, Reed Maxwell, Minh Nguyen†, Brady Flinchum (2023) Integrated Hydrological Modeling of the No-Name Watershed, Medicine Bow Mountains, Wyoming, Hydrogeology Journal, https://doi.org/10.1007/s10040-023-02712-8

[54] Danchen Li†, Soheil Saraji, Zunsheng Jiao, Ye Zhang (2023) An experimental study of CO2 injection strategies for enhanced oil recovery and geological sequestration in a fractured tight sandstone reservoir, Geoenergy Science & Engineering, https://doi.org/10.1016/j.geoen.2023.212166

[53] Danchen Li†, Ye Zhang, Zunsheng Jiao, Soheil Saraji (2023) Three-dimensional core reconstruction and performance evaluation of CO2 displacement in a tight oil reservoir, Fuel, vol. 349, 128622.

[52] Wei Wang, Po Chen, Ken Dueker, Ye Zhang, En-jui Lee, Dawei Mu, Ian Keifer, Jianying Jiao† (2021) Coevolution of weathering front and water table, Geophysical Research Letter, vol. 48, e2021GL092916

[51] Shuangpo Ren†, Ye Zhang, Tian-Chyi Jim Yeh, Yuli Wang, Brad Carr (2021) Multiscale hydraulic conductivity characterization in a fractured granitic aquifer: the evaluation of scale effect, Water Resources Research, vol. 57, https://doi.org/10.1029/2020WR028482

[50] Ahmad H. Askar, Tissa H. Illangasekare, Jakub Solovský, Andrew Trautz, Ye Zhang, Radek Fučík (2021) Exploring the impact of uncertainties in source conditions on brine leakage prediction from geologic storage of CO2: intermediate-scale laboratory testing, Water Resources Research, vol. 57, https://doi.org/10.1029/2021WR029679

[49] Minh C. Nguyen†, Morteza Dejam, Mina Fazelalavi, Ye Zhang, Garrett W. Gay, David W. Bowen, Lee H. Spangler, Wade Zaluski, Philip H. Stauffer (2021) Skin factor and potential formation damage from chemical and mechanical processes in a naturally fractured carbonate aquifer with implications to CO2 sequestration, International Journal of Greenhouse Gas Control, vol. 108, 103326

[48] Danchen Li†, Soheil Saraji, Zunsheng Jiao, Ye Zhang (2020) CO2 injection strategies for enhanced oil recovery and geological sequestration in a tight reservoir: an experimental study, Fuel, 284,119013

[47] Ye Zhang, Y. Z. Ma, E Gomez (2020) Comment on “Correlation analysis of element contents and mechanical characteristics of shale reservoirs” by Liu et al. (2018), Marine & Petroleum Geology, 116, 103865

[46] Ye Zhang, Jianying Jiao†, Juraj Irsa† (2019) US Patent, US10309812B1. https://patents.google.com/patent/US10309812B1/en

[45] Jianying Jiao†, Ye Zhang, Liqiang Wang (2019) A new inverse method for contaminant source identification under unknown solute transport boundary conditions, Journal of Hydrology, Vol. 577, 123911

[44] Shuangpo Ren†, Guangqing Yao, Ye Zhang (2019) High-resolution geostatistical modeling of an intensively drilled heavy oil reservoir, the BQ 10 Block, Biyang Sag, Nanxiang Basin, China, Marine & Petroleum Geology, Vol. 104, p. 404-422

[43] Wei Wang, Po Chen, Ian Keifer, Ken Dueker, En-Jui Lee, Dawei Mu, Jianying Jiao†, Ye Zhang, Bradley Carr (2019) Weathering front under a granite ridge revealed through full-3D seismic ambient-noise tomography, Earth & Planetary Science Letters, Vol. 509, p. 66-77

[42] Shengli Li, Ye Zhang, Y. Z. Ma (2018) A comparative study of reservoir modeling techniques and their impact on predicted performance of fluvial-dominated deltaic reservoirs: A discussion, AAPG Bulletin, Vol. 102, No. 8, p. 1659-1663

[41] Dan Zhou, Ye Zhang, Guillaume Gianni, Peter Lichtner, Irina Engelhardt (2018) Numerical modeling of stream-aquifer interaction: quantifying the impact of transient streambed permeability and aquifer heterogeneity, Hydrological Processes, Vol. 32, p.2279–2292

[40] Shuangpo Ren†, Andrew Parsekian, Ye Zhang, Bradley Carr (2018) Hydraulic conductivity calibration of logging NMR in a granite aquifer, Laramie Range, Wyoming, Groundwater, Vol. 57, p. 303-319. *Top cited article* (2019-2020)

[39] Zhenxue Dai, Ye Zhang, Jeffrey M. Bielicki, M Amooie, Mingkan Zhang†, Changbing Yang, Youqin Zou, William Ampomah, Ting Xiao, Wu Jia, Richard Middleton, Mohamad Soltanian, Philp H. Stauffer (2018) Heterogeneity-assisted carbon dioxide storage in marine sediments, Applied Energy, Vol. 225, p. 876-883

[38] Shuangpo Ren†, Samuel Gragg†, Ye Zhang, Bradley Carr (2018) Borehole characterization of hydraulic properties and groundwater flow in a crystalline fractured aquifer of a headwater mountain watershed, Laramie Range, Wyoming, Journal of Hydrology, Vol. 403, p. 66-82

[37] Zhenxue Dai, Ye Zhang, Philp Stauffer, Ting Xiao, Mingkan Zhang†, William Ampomah, Changbing Yang, Youqin Zhou, Mei Ding, Richard Middleton, Mohamad Soltanian, Jeffery Bielicki (2017) Injectivity evaluation for offshore CO2 sequestration in marine sediments, Energy Procedia, Vol. 114, p. 2921-2932

[36] Minh C. Nguyen†, Xu Zhang, Ning Wei, Jun Li, Xiaochun Li, Ye Zhang, Philip Stauffer (2017) An object-based modeling and sensitivity analysis study in support of CO2 storage in deep saline aquifers at the Shenhua site, Ordos Basin, Geomechanics and Geophysics for Geo-energy and Geo-resources, Vol. 3, Issue 3, p 293-314

[35] Minh Nguyen†, Ye Zhang, Jun Li, Xiaochun Li, Bing Bai, Haiqing Wu, Ning Wei, Philip Stauffer (2017) A Geostatistical Study in support of CO2 storage in deep saline aquifers of the Shenhua CCS project, Ordos Basin, China, Energy Procedia, Vol. 114, p. 5826-5835

[34] Mingkan Zhang†, Ye Zhang, Peter Lichtner (2017) Model complexity in simulating scCO2 dissolution, leakage, footprint, and pressure for three-Dimensional hierarchical aquifer, International Journal of Greenhouse Gas Control, Vol.64, p. 284-299

[33] Jianying Jiao†, Ye Zhang, Julian Zhu (2017) Direct hydraulic parameter and function estimation for diverse soil types under infiltration and evaporation, Transport in Porous Media, Vol. 116, Issue 2, p 797-823

[32] Jianying Jiao†, Ye Zhang (2016) Direct method of hydraulic conductivity structure identification for subsurface transport modeling, Journal of Hydrologic Engineering, Vol. 21, Issue 10, 04016033

[31] Jianying Jiao†, Ye Zhang (2016) Multiscale subgrid models of large Eddy simulation for turbulent flows, International Journal of Numerical Methods for Heat and Fluid Flow, Vol. 26, Issue: 5, p. 1380-1390

[30] S-Q Li†, Morteza Akbarabadi, Ye Zhang, Mohammed Piri (2016) An integrated site characterization-to-optimization study for commercial-scale carbon dioxide storage, International Journal of Greenhouse Gas Control, Vol. 44, p. 74–87

[29] Zee Y. Ma, William R. Moore, Ernest Gomez, William J. Clark, Ye Zhang (2015) Tight gas sandstone reservoirs, part 1: overview and lithofacies, in Unconventional Oil and Gas Resources Handbook: Evaluation and Development, Elsevier, p. 405-427, http://dx.doi.org/10.1016/B978-0-12-802238-2.00014-6

[28] William R. Moore, Zee Y. Ma, Iain Pirie, Ye Zhang (2015) Tight gas sandstone reservoirs, part 2: petrophysical analysis and reservoir modeling, in Unconventional Oil and Gas Resources Handbook: Evaluation and Development, Elsevier, p. 429-448, http://dx.doi.org/10.1016/B978-0-12-802238-2.00015-8

[27] Mingkan Zhang†, Ye Zhang (2015) Multiscale solute transport upscaling for a three-dimensional hierarchical porous medium, Water Resources Research, 51, p. 1688-1709, doi:10.1002/2014WR016202

[26] Jianying Jiao†, Ye Zhang (2015) Functional parameterization for hydraulic conductivity inversion with uncertainty quantification, Hydrogeology Journal, Vol. 23, Issue 3, Page 597-610, doi:10.1007/s10040-014-120205

[25] Jianying Jiao†, Ye Zhang (2015) Tensor hydraulic conductivity estimation for heterogeneous aquifers under unknown boundary conditions, Groundwater, June 4, doi: 10.1111/gwat.12202

[24] Ye Zhang, Guang Yang†, S-Q Li† (2014) Significance of conceptual model uncertainty in simulating carbon sequestration a deep inclined saline aquifer, Journal of Hazardous, Toxic, and Radioactive Waste, doi: 10.1061/(ASCE)HZ.2153-5515.0000246

[23] Jianying Jiao†, Ye Zhang (2014) A method based on local approximate solutions (LAS) for inverting transient flow in heterogeneous aquifers, Journal of Hydrology, Vol. 514, p. 145-149, http://dx.doi.org/10.1016/j.jhydrol.2014.04.004

[22] S-Q Li†, Ye Zhang (2014) Model complexity in carbon sequestration: a design of experiment and response surface uncertainty analysis, International Journal of Greenhouse Gas Control, Vol. 22, p. 123-138, http://dx.doi.org/10.1016/j.ijggc.2013.12.007

[21] Jianying Jiao†, Ye Zhang (2014) Physically-based inversion of confined and unconfined aquifers under unknown boundary conditions, Advances in Water Resources, Vol. 65, p. 43-57, http://dx.doi.org/10.1016/j.advwatres.2013.10.011

[20] Ye Zhang, Juraj Irsa†, Jianying Jiao† (2014) Three-dimensional aquifer inversion under unknown boundary conditions, Journal of Hydrology, Vol. 509, p. 416-429, 10.1016/j.jhydrol.2013.11.024

[19] Ye Zhang (2014) Nonlinear inversion of an unconfined aquifer: simultaneous estimation of heterogeneous hydraulic conductivities, recharge rates, and boundary conditions, Transport in Porous Media, Vol. 102, p. 275-299, DOI: 10.1007/s11242-014-0275-x

[18] Zee Y. Ma, Ye Zhang (2013) A resolution of the happiness-income paradox, Social Indicators Research, doi: 10.1007/s11205-013-0502-9

[17] Ye Zhang (2013) Reducing uncertainty in aquifer flow model calibration with multiple scales of heterogeneity, Groundwater, doi: 10.1111/gwat.1211

[16] Juraj Irsa†, Ye Zhang (2012) A new direct parameter estimation method for steady state flow in heterogeneous aquifers with unknown boundary conditions, Water Resources Research, Vol. 48, W09526, doi:10.1029/2011WR011756

[15] S-Q Li†, Ye Zhang, Xu Zhang, Chungan Du (2012) Geologic modeling and fluid flow simulation of acid gas disposal in western Wyoming, AAPG Bulletin, Vol. 96, No. 4, p. 635-664

[14] Baozhong Liu†, Ye Zhang (2011) CO2 modeling in a deep saline aquifer: a predictive uncertainty analysis using design of experiment, Environmental Science & Technology, Vol. 45, No. 8, p. 3504-3510, DOI: 10.1021/es103187b

[13] S-Q Li†, Ye Zhang, Xu Zhang (2011) A study of conceptual model uncertainty in large scale CO2 storage simulation, Water Resources Research, 47, W05534, doi:10.1029/2010WR009707

[12] BaoZhong Liu†, Ye Zhang, Xu Zhang (2011) Acid gas storage in a deep saline aquifer: a study on parameter and model uncertainty, Journal of Hazardous, Toxic, and Radioactive Waste, Vol. 15, No. 4, doi:10.1061/(ASCE)HZ.1944-8376.0000061

[11] Ye Zhang, BaoZhong Liu†, Carl W. Gable (2011) Homogenization of hydraulic conductivity for hierarchical sedimentary deposits at multiple scales, Transport in Porous Media, Vol. 87, Issue 3, p. 717-737, doi: 10.1007/s11242-010-9711-8

[10] Ye Zhang, Carl W. Gable, Ben Sheets (2010) Equivalent hydraulic conductivity of three-dimensional heterogeneous porous media: an upscaling study base on an experimental stratigraphy, Journal of Hydrology, V. 388, No. 3-4, p. 304-320, doi: 10.1016/j.jhydrol.2010.05.009

[9] Ye Zhang, Carl W. Gable, George Zyvoloski, Lynn Walter (2009) Hydrogeochemistry and gas compositions of the Uinta Basin: a regional scale overview, AAPG Bulletin, V. 93, No. 8, p. 1087-1118, doi: 10.1306/05140909004

[8] Ye Zhang (2008) Hierarchical geostatistical analysis of an experimental stratigraphy, Mathematical Geosciences (formerly, Mathematical Geology), doi:10.1007/s11004-008-9180-6

[7] Ye Zhang, Carl W. Gable (2008) Two-scale modeling of solute transport in an experimental stratigraphy, Journal of Hydrology, Vol. 348, p. 395-411, doi: 10.1016/j.jhydrol.2007.10.017

[6] William Milliken, Marjorie Levy, Sebastian Strebelle, Ye Zhang (2007) The effect of geologic parameters and uncertainties on subsurface flow: deepwater depositional systems, SPE 109950

[5] Ye Zhang, Mark Person, Carl W. Gable (2007) Representative hydraulic conductivity of hydrogeologic units: insights from an experimental stratigraphy, Journal of Hydrology, Vol. 339, p. 65-78, doi: 10.1016/ j.jhydrol.2007.03.007

[4] Ye Zhang, Carl W. Gable, Mark Person (2006) Equivalent hydraulic conductivity of an experimental stratigraphy - implications for basin-scale flow simulations, Vol. 42, W05404, Water Resources Research, doi:10.1029/2005WR004720

[3] Ye Zhang, Mark Person, Chris Paola, Carl W. Gable, Xian-Huan Wen, J. M. Davis (2005) Geostatistical analysis of an experimental stratigraphy, Vol. 41, W11416, Water Resources Research, doi:10.1029/2004WR003756

[2] Ye Zhang, Mark Person, Enrique Merino, Michael Szpakiewcz (2005) Evaluation of soluble benzene migration in the Uinta Basin, Geofluids, Vol. 5, No. 2, 106-123

[1] Ye Zhang, Mark Person, Enrique Merino (2005) Hydrologic and geochemical controls on soluble benzene migration in sedimentary basins, Geofluids, Vol. 5, No. 2, 83-105

Other Publications

Ye Zhang (2024) Workshop: Introduction to Matlab. Instats Inc. https://doi.org/10.61700/MSTEK9CP5R7GK1290

Ye Zhang (2024) Workshop: Math & Statistics Review for Geostatistics. Instats Inc. https://doi.org/10.61700/QH1XPIXIC2IM51290

Ye Zhang (2024) Workshop: Fundamentals of Geostatistics. Instats Inc. https://doi.org/10.61700/5P94PNFFLRF4W1290

Ye Zhang (2008) Groundwater flow & transport modeling, *Lecture Notes*, 233p.

Ye Zhang (2007) Introduction to groundwater hydrology, *Lecture Notes*, 255p.

Ye Zhang (2007) Introduction to geostatistics, *Lecture Notes*, 140 p.

Ye Zhang (2005) Estimation of representative hydrological parameters using an experimental stratigraphy, *Ph.D. Dissertation*, Dept. of Geological Sciences, Indiana University, 195 p.

Ye Zhang (2004) Geostatistical analysis of an experimental stratigraphy, *M.S. Thesis*, Dept. of Geology and Geophysics, University of Minnesota, 86 p.

Ye Zhang (1998) Leaky foundation modeling with the boundary element method, Hangzhou, China, *B.S. Thesis*, Dept. of Earth Sciences, Nanjing University, 65 p.

CONTRACTS & GRANTS

Funded Projects as PI

Year (2008) Subsurface flow and transport modeling: a quantitative approach to education enhancement, *NASA Space Grant*, #NNG05G165H, $10,000 (PI: Ye Zhang).

Years (2009-2010) A sensitivity analysis of acid gas modeling at Moxa Arch, Wyoming, *UW SER*, $69,552 (PI: Ye Zhang).

Year (2009-2011) Evaluation of CO2 modeling uncertainties in deep saline aquifers: a flow relevance study, *ACS PRF* (PRF# 48773-DNI 8) & *UW SER Matching Grant*, $182,450 (PI: Ye Zhang).

Years (2009-2012) Evaluation of uncertainty in CO2 sequestration modeling: a flow relevance study using experimental stratigraphy and field verification (Teapot Dome, Wyoming), *NSF*, EAR-0838250, $262,416 (PI: Ye Zhang).

Years (2010-2013) An integrated well location optimization study for commercial-scale CO2 storage in a deep saline aquifer, *UW CFSF*, WYDEQ49811ZHNG, $300,300 (PI: Ye Zhang; co-PIs: KJ Reddy, Phil Stauffer).

Years (2012-2013) Groundwater modeling of coalbed methane aquifers of the Powder River Basin, Wyoming, *UW SER*, Ph.D. Energy GA (PI: Ye Zhang).

Years (2012-2015) Model complexity in geological carbon sequestration: a response surface based uncertainty analysis, *DOE Office of Fossil Energy*, DE-FE-0009238, 415,950 (DOE) + 95,343 (*UW SER Matching Grant*) = $511,292 (PI: Ye Zhang; co-PI: Peter Lichtner).

Years (2014-2016) The development of a new subsurface simulation theory for environmental and energy applications, *UW Office of Academic Affairs*, Ph.D. Energy GA (PI: Ye Zhang).

Year (2014-2017) Computational resources awarded (23 million core-hours on Yellowstone Supercomputer; 15,000 hours of DAV; 50 TBs of GLADE project space; and 20 TBs of HPSS), *NCAR-Wyoming Supercomputing Center* (PI: Ye Zhang; co-PI: Peter Lichtner).

Year (2015-2016) Modeling CO2 storage in the Ordos Basin, China, *U.S.-China Clean Energy Research Center*, $45,982 (PIs: Phil Stauffer, Ye Zhang)

Year (2015-2016) The development and verification of integrated surface/subsurface hydrological models at two Wyoming watersheds, *NSF EPSCoR* (*WyCEHG)*, $181,186 (PI: Ye Zhang).

Year (2015-2016) Hydrologic modeling of the WyCEHG watersheds: multiple approaches to modeling coupled systems, *NSF EPSCoR* (*WyCEHG)*, $464,456. (PIs: Scott Miller, Nori Ohara, Thijs Kelleners, Ye Zhang)

Year (2015-2018) Groundwater modeling of the Casper Aquifer, Belvoir Ranch, Cheyenne, *Wyoming Water Research Program*: $196,718 (PI: Ye Zhang)

Year (2016-2017) Shallow subsurface monitoring to improve recharge and hydraulic conductivity estimation for the Casper Aquifer, Belvoir Ranch, Cheyenne, Wyoming, *USGS*, $59,538 (PI: Ye Zhang).

Year (2015-2017) Modeling of CO2 storage and CO2-EOR in the Ordos Basin, China, *UW SER*, Ph.D. Energy GA (PI: Ye Zhang).

Year (2016) Summer workshop: modeling reactive transport in porous and fractured media, *UW SER*, $40,000 (PIs: John Kaszuba, Ye Zhang).

Year (2016-2017) Development and verification of a new groundwater inverse theory for quantifying natural recharge in mountain front aquifers, *NSF EPSCoR* (*WyCEHG)*, $50,000 (PI: Ye Zhang; co-PI: Brad Carr).

Year (2017-2018) Stream and riparian groundwater monitoring to improve recharge estimation for the Casper Aquifer, Belvoir Ranch, Cheyenne, Wyoming, *USGS*, $21,302 (PI: Ye Zhang; co-PI: Noriaki Ohara).

Year (2017-2020) Collaborative research: A new inverse theory for joint parameter and boundary conditions estimation to improve characterization of deep formations and leakage monitoring, *NSF*, EAR-1702078, $622,480 (PIs: Ye Zhang, Tissa Illangasekare; Co-PI: Andrew Trautz).

Year (2018-2020) High performance computing in support of subsurface energy and environmental research, computational resources awarded: 5.8 million core-hours on Cheyenne; 10,000 hours of DAV; 8 TBs of Campaign space, *NCAR-Wyoming Supercomputing Center* (PI: Ye Zhang).

Year (2022-2023) Mapping water table dynamics from land surface data using spatiotemporal deep learning, *UW Faculty Grant-in-aid*, 7,500 (PI: Ye Zhang).

Year (2022-2025) Groundwater-supported vegetation refugia as a mechanism of forest recovery in a Rocky Mountain watershed impacted by wildfire, *DOE Environmental System Science*, DE-SC0023308, 1,000,000 (PI: Ye Zhang; Co-PIs: Andrew Parsekian, Brent Ewers, Xiaonan Tai).

Year (2025) Instruments acquisition to support groundwater research and graduate education at the College of Engineering & Physical Sciences, University of Wyoming, *CEPS One-Time Instrument Funding*, 79,715 (PI: Ye Zhang).

Year (2025-2028) Elucidating mountain front aquifer recharge using machine learning, hydrogeochemistry, and groundwater modeling, *Wyoming Water Research Program*, 200,286 (WRP) + 95,259 (UW Match) (PI: Ye Zhang; Co-PIs: Noriaki Ohara; Mark Stacy).

Year (2025-2026) Elucidating karst aquifer recharge dynamics with electrical resistivity tomography, *USGS*, 18,000 (USGS) + 50,617 (UW Match) (PI: Ye Zhang; Co-PI: Bradley Carr).

Year (2025-2026) Identifying drivers of ecohydrological droughts and resilience in the Western U.S. using joint remote sensing & ground-based hydrological measurements, *UW School of Computing*, Undergraduate SURE Award (PI: Ye Zhang; co-PI: Beth McMillan).

Year (2026) From Ground to Orbit: Tracking Snowmelt, Runoff, Groundwater, and Forest Regeneration in the Medicine Bow Mountains Using High-Resolution PlanetScope Data*, NASA CSDA*, 5,000,000 sq km PlanetScope Imaginary (PI: Ye Zhang).

<u>Funded Project as Co-PI</u>

Years (2008-2009) Carbon sequestration monitoring activities, *DOE Office of Fossil Energy*, DE-NT0004730, $2,400,000 (PI: Carol Frost; co-PIs: Ye Zhang et al.).

Year (2011-2014) Collaborative research: CI-WATER, cyberinfrastructure to advance high performance water resource modeling, *NSF*, EPS-1135483, UW portion: $2,564,005 (PIs: Norm

Jones, Fred Odgen; co-PIs: Steven Corbato, Craig Douglas, Kristi Hansen, Laura Hunter, Scott Miller, James Nelson, David Tarboton, Ye Zhang)

Year (2015-2018) MRI: acquisition of hydrogeophysical downhole nuclear magnetic resonance instrument to support research and student training, *NSF*, $408,284 (PI: Andrew Parsekian, co-PIs: Steven Holbrook, Brad Carr, Scott Miller, Ginger Paige, Jianting Zhu, Fred Ogden, Ye Zhang).

Year (2017-2020) CO2 storage modeling at the Kevin Dome pilot injection site, Montana, *DOE Big Sky Carbon Sequestration Partnership*, UW portion: $151,942 (PI: Phil Stauffer; co-PI: Ye Zhang).

Year (2017-2019) PFLOTRAN web application, *DOE Office of Science SBIR/STTR*, $999,992; UW portion: 45,008 (PI: Zhou, Haiyan; co-PIs: Satish Karra, Roelef Versteeg, Ye Zhang).

Funded Project as Sub-Contractor

Year (2018-2021) Integrated assessment of CO2 EOR in Ordos Basin, China, *DOE U.S.-China Clean Energy Research Center*, UW portion: 120,000 (PI: John Jiao).

Projects not funded as PI or co-PI

Information of unfunded projects can be provided upon request.

PROFESSIONAL AFFILIATIONS AND ACTIVITIES

Memberships in professional societies:
American Geophysical Union; Geological Society of America

Grant refereeing:
National Science Foundation; Department of Energy; ACS Petroleum Research Fund; UW School of Energy Resources (SER); Wyoming ISR Uranium Program

Book proposal review:
Cambridge University Press; Oxford University Press; Elsevier; Wiley-Blackwell

Manuscript refereeing:
Water Resources Research; Advances in Water Resources; Transport in Porous Media; Journal of Hydrology; Groundwater; Hydrogeology Journal; Hydrological Processes; Hydrological Sciences Journal; Stochastic Environmental Research & Risk Assessment; Journal of Hydrologic Engineering; Geofluids; Frontiers in Water; The Leading Edge; Environmental Science & Technology; Journal of Hazardous, Toxic, & Radioactive Waste; International Journal of Greenhouse Gas Control; AAPG Bulletin; Energy & Fuels; Journal of Engineering Science & Technology Review

Review panel:
Canada Foundation for Innovation (2019); DOE Environmental System Science (2024; 2025)

Editorial board:
Associate Editor, Hydrogeology Journal (2013-2016);
Associate Editor, Journal of Hydrology (2017-2018);
Academic Editor, Geofluids (2018-)

HONORS AND AWARDS
2013-2023, Nielsen Fellow, School of Energy Resources, University of Wyoming
2012, Extraordinary Merit in Research, College of Art & Sciences, University of Wyoming
2005, Turner Postdoc Fellowship, University of Michigan, Ann Arbor, Michigan
2004, Outstanding Academic Achievement, Indiana University, Bloomington, Indiana
2004, Estwing Award, Indiana University, Bloomington, Indiana
2003, Outstanding Academic Achievement, Indiana University, Bloomington, Indiana
1998, GuangHua Scholarship of Nanjing University, Nanjing, PR China
1997, People's Scholarship, Nanjing University, Nanjing, PR China
1996, People's Scholarship, Nanjing University, Nanjing, PR China
1995, People's Scholarship, Nanjing University, Nanjing, PR China

PAPERS PRESENTED/SYMPOSIA/INVITEDLECTURES/PROFESSIONALMEETINGS/WORKSHOPS

Academic Talks

2024, Sabbatical Leave: A time of Intellectual Growth and Adventure, Distinguished Lecture Series, Dept. of Geology & Geophysics, University of Wyoming, Laramie, WY.

2024, Groundwater-supported vegetation refugia as a mechanism of forest recovery in the Medicine Bow Mountains, southeastern Wyoming, DOE Environmental System Science PI Meeting, Reston, VA.

2023, Advances in forest dynamics post-disturbance: observations and models across scales and technologies, AGU Annual Meeting, San Francisco, CA, Convener.

2023, Forest recovery after disturbances facilitated by groundwater: a study at the Medicine Bow Mountains in southeastern Wyoming, Colloquium, Dept. of Geosciences, University of Montana, Missoula, MT.

2022, Mountain is fractured and permeable: implication for water and ecosystem, Geology & Geophysics, Distinguished Lecture Series, University of Wyoming, Laramie, WY.

2022, Mapping water table dynamics from land surface data using spatiotemporal deep learning: a blueprint, School of Computing Seminar Series, University of Wyoming, Laramie, WY.

2022, The mountain is fractured and permeable: implication for water and ecosystem, Water in the West Workshop, Montana State University, Bozeman, MT.

2020, Pumping tests and hydraulic tomography in fractured granite, Laramie Range, Wyoming, Stanford Geothermal Workshop, Stanford University, CA.

2019, Exploring linkages between headwaters and groundwaters for human and ecosystem uses in a changing climate, AGU Annual Meeting, San Francisco, CA, Convener.

2019, Fractured rock characterization at Blair Wallis fractured rock hydrology research well field in southeastern Wyoming, Petroleum Engineering Seminar, Dept. of Petroleum Engineering, University of Wyoming, Laramie, WY.

2018, High performance computing in subsurface modeling, NCAR-Wyoming Days, Laramie, Wyoming, Invited.

2018, The mountain is fractured and permeable: bedrock hydrology of Laramie Range and mountain front areas, SFA Hydrology Meeting, Lawrence Berkeley National Laboratory, Berkeley, CA.

2017, The mountain is fractured and permeable: hydrological connectivity in Laramie Range, southeast Wyoming, AGU Annual Meeting, New Orleans, LA.

2017, Subsurface modeling: upscaling, inversion, and model complexity, Petroleum Engineering Seminar, Dept. of Petroleum Engineering, University of Wyoming, Laramie, WY.

2017, Subsurface modeling: upscaling, inversion, and model complexity and new research on mountain hydrology, Distinguished Lecture Series, Dept. of Geology & Geophysics, University of Wyoming, Laramie, WY.

2017, Hydrological research in the Laramie Range: research highlights, Water Interest Group Meeting, Wyoming Center for Environmental Hydrology & Geophysics, Laramie, WY.

2017, Hydrological connectivity in the Laramie Range: implication for water resources management, Wyoming Water Resources Association Annual Meeting, Sheridan, WY.

2017, New discovery of hydrological connectivity in the mountain West: implications for water resources management, Research & Economic Development Day, University of Wyoming, Laramie, WY.

2015, My sabbatical experience: new research and new thinking, Colloquium, Dept. of Geology and Geophysics, University of Wyoming, Laramie, WY.

2015, Subsurface modeling: upscaling, inversion, and model complexity, Colloquium, Computational Earth Sciences (EES-16), Los Alamos National Lab, Los Alamos, NM.

2015, Subsurface modeling: upscaling, inversion, and model complexity, Colloquium, Dept. of Hydrology & Water Resources, University of Arizona, Tucson, AZ.

2015, Subsurface modeling: upscaling, inversion, and model complexity, Colloquium, Dept. of Earth & Environmental Science, New Mexico Institute of Mine & Technology, Socorro, NM.

2014, Geochemical study of unconventional natural gas in tight sandstones of Uinta Basin, AAPG Geosciences Technology Workshop (Bakken/Three Forks/Plus Emerging Plays), Golden, CO, Invited.

2014, Improving computational efficiency in modelling complex environmental systems (with uncertainty). AGU Annual Meeting, San Francisco, CA, Convener.

2013, Subsurface flow modeling: upscaling, inversion, and model complexity, Colloquium, Dept. of Civil & Environmental Engineering, Colorado School of Mine, Golden, CO.

2013, Simultaneous parameter and boundary condition estimations for heterogeneous confined and unconfined aquifers, Seminar, University of Wyoming Enhanced Oil Recovery Institute, Laramie, Wyoming.

2013, Subsurface flow modeling: upscaling, inversion, and model complexity, Brown Bag Seminar, Los Alamos National Laboratory, EES-16, Los Alamos, New Mexico.

2013, A new direct method of parameter estimation for steady state flow in heterogeneous aquifers with unknown boundary conditions, MODFLOW and MORE, Translating Science into Practice, Golden, Colorado.

2013, Subsurface hydrology: parameter estimation and model complexity, WyCHEG Seminar Series, University of Wyoming, Laramie, Wyoming.

2013, Simultaneous inversion of parameters, source/sink strengths, and boundary conditions for confined and unconfined aquifers, Analysis and Computational Math Seminar Series, Dept. of Mathematics, University of Wyoming, Laramie, Wyoming.

2012, T103, Groundwater model calibration and uncertainty analysis, GSA Annual Meeting, Charlotte, North Carolina, Convener.

2012, New direct method for aquifer inversion with unknown boundary conditions, GSA Annual Meeting, Charlotte, North Carolina.

2012, Subsurface fluid flow modeling in heterogeneous media: insights gained & ongoing research, Distinguished Lecture Series, Dept. of Geology & Geophysics, University of Wyoming.

2012, Upscaling & complexity in modeling hierarchical subsurface reservoirs, Annual Meeting of the International Society for Porous Media, West Lafayette, Indiana, Invited.

2012, Upscaling & complexity in subsurface modeling: insights gained & ongoing Research, Colloquium, Dept. of Ecosystem Science and Management, University of Wyoming, Laramie.

2011, CO2 modeling in a deep saline aquifer: a predictive uncertainty analysis using design of experiment, AGU Annual Meeting, San Francisco, CA.

2011, H121. Multiscale and coupled complexity in geologic carbon sequestration. AGU Annual Meeting, San Francisco, CA, Convener.

2011, Statistical methods in subsurface simulation, Colloquium, Dept. of Statistics, University of Wyoming, Laramie.

2011, Design of experiment in carbon sequestration modeling, 2nd CFSF Workshop on Porous Media, Laramie, Wyoming.

2011, Hydrogeochemistry & gas chemistry of Uinta Basin: implication for genesis & migration of unconventional gas, AAPG E-Symposium (online), Workshop Instructor, http://www.aapg.org/career/training/online/e-symposia/details/articleid/1436/green-river-shales-geochemical-basin-study#1809117-overview

2011, Hydrogeochemistry & gas chemistry of Uinta Basin: implication for genesis & migration of unconventional gas, AAPG Geoscience Technology Workshop, Resource Plays in Tight Unconventional Reservoirs: Multi-Disciplinary Technological Challenges and Solutions, Banff, Alberta, Canada, Invited.

2011, Upscaling & model complexity in subsurface flow simulation: insights gained & ongoing research, Colloquium, Dept. of Geosciences, Colorado State University, Fort Colin, CO.

2011, Design of experiment & response surface modeling of CO2 sequestration in deep saline aquifers, AGU Hydro Days, Fort Colin, CO.

2010, Geostatistics in subsurface flow & transport modeling: select topics & future research, WyGISC Forum, University of Wyoming.

2010, Multi-Scale, multi-variance, and multi-dimensional upscaling in groundwater flow and solute transport modeling, Ground Water Summit, National Groundwater Association Annual Meeting, Denver, CO.

2009, Dealing explicitly with complexity: evaluation of hydrogeologic framework models in capturing subsurface flow and solute transport in an experimental stratigraphy, AGU Annual Meeting, Section H21, Invited.

2009, Estimation of CO2 storage and leakage for the Nugget Sandstone, Moxa Arch, Wyoming, USA, DOE Moxa Arch Carbon Sequestration Project, Third Quarter Workshop, Laramie, Wyoming.

2009, Estimation of CO2 storage and leakage for the Nugget Sandstone, Moxa Arch, Wyoming, USA, DOE Moxa Arch Carbon Sequestration Project Second Quarter Workshop, Laramie, Wyoming.

2008, CO2 modeling in the Nugget Sandstone, Moxa Arch, Wyoming, USA, DOE Moxa Arch Carbon Sequestration Project, First Quarter Workshop, Laramie, Wyoming.

2008, Dealing explicitly with complexity: evaluation of hydrogeologic models on capturing flow and transport using an experimental stratigraphy, Colloquium, Department of Mathematics, University of Wyoming, Laramie, Wyoming.

2006, Solute transport modeling in an experimental stratigraphy, AGU Annual Meeting, San Francisco, California.

2006, Representative hydraulic conductivity of model units: insights from an experimental stratigraphy, GSA Annual Meeting, Philadelphia, Pennsylvania.

2006, Dealing explicitly with complexity: an upscaling analysis and evaluation of layer-cake hydrogeologic models based on an experimental stratigraphy, Colloquium, Department of Geology & Geophysics, University of Wyoming, Laramie, Wyoming.

2006, Modeling coupled flow, heat, and mass transfer in the deep subsurface: a case study of benzene migration from oil reservoirs in the Uinta Basin, Colloquium, Department of Geology & Geophysics, University of Wyoming, Laramie, Wyoming.

2005, Emerging and innovative approaches to groundwater flow modeling, GSA Annual Meeting, Philadelphia, Pennsylvania, Convener.

2005, Benzene migration in sedimentary basins, Smith Lecture Series, Department of Geological Sciences, University of Michigan, Ann Arbor, Michigan.

2005, Upscaling for representative hydraulic conductivity based on an experimental stratigraphy, Colloquium, Department of Geology & Geophysics, University of Minnesota, Minneapolis, Minnesota.

2004, Estimation of representative flow and transport parameters using an experimental stratigraphy, Colloquium, Department of Hydrology and Water Resources, University of Arizona, Tucson, Arizona.

2004, Flow relevance study on the Mahakam upper channel-levee system, Final Project Presentation, ChevronTexaco, San Ramon, California.

2003, Benzene migration in sedimentary basins, AAPG Annual Meeting, Salt Lake City, Utah, Invited.

2002, Benzene migration in the Uinta Basin, AAPG Hedberg Conference, Vancouver, Canada.

Workshops & Seminars

2024-present, Instructor, Geostatistics, Instats, *online*

2020-present, Co-Instructor, Reactive Transport Modeling, *online*

2005, Instructor, Introduction to Geostatistics, Department of Geological Sciences, Indiana University, Bloomington, Indiana.

2004, Instructor, Introduction to SUPCRT92, Department of Geological Sciences, Indiana University, Bloomington, Indiana.

2004, Instructor, Computing on Unix Systems, Department of Geological Sciences, Indiana University, Bloomington, Indiana.

COMMITTEES

Department of Geology & Geophysics
Graduate Admission Committee: 2007-2008; 2015-2016; 2017-2018; 2018-2019 (Chair); 2024-2025; 2025-2026
Marketing Committee: 2023 (Chair)
Website Committee: 2023-present
Assessment Committee: 2016-2017; 2021-2022; 2023-2024
Computer Committee: 2007-2011; 2013-2014 (Chair); 2020-2022 (Chair); 2023-2025
Curriculum Committee: 2011-2013; 2016-2017
Chevron Scholarship Committee: 2015-2020
Faculty search committee: 2025-2026

Member of Other Committees
WRESE (Water Resources/Environmental Science & Engineering), 2007-2015
CFSF (SER Center of Fundamentals of Subsurface Flow), 2008-present
Search Committee: NSF EPSCoR WyCEHG Postdoc cluster hire, 2013-2015

Search Committee: Watershed hydrologist, 2015-2016
Search Committee: WyACT Earth systems modeler, 2022-2023
Internal Advisory Board: School of Computing, 2022-2025
University of Wyoming Faculty Senate, 2025-present

STUDENT ADVISING/GRADUATE SUPERVISION

Undergraduate Advisees
Brandon Rumph, Logan Maclean, Michael Tharby, Denial Nichols, Virginia Marcon, Eric Easley, Brandon Sadler, John Schmidt, Justin Stern, Amy Henline, Jeffrey Ingram, Tabetha Johnson, David Shafer, Tabetha Wolf, John Gram, Leslie Logan, Zoey Meyers, Jacob Moore, Aaron Naccarato, James Ramsay, Ryan Selvius, Derek Smith, Cody Staudt, William Latner Straley, Elizabeth Johnson, David Lere, Thomas Rohn, Emmy Wickiser, Samuel Gragg, Thomas Lozier, Jordan Short, Nathan Swaim, Noah Kolis, Raven Shelton, Junkyu Shin, Korissa Straub, Joshua Riffee, Khoi Nguyen, John Pulick, Patrick Rapciak, Kymbre Skersies, Ross Riley

Undergraduate Research Assistants
Huilong Yang (Fall, 2008), Ju Sheng (Fall, 2008), Erin Larney (Fall, 2008), Anna da Silva (Summer, 2015), Dylan Perkins (Spring, 2015), Samuel Gragg (Fall, 2016; Spring & Summer, 2017), Samuel Coker (Summer & Fall, 2017), Charles Lallatin (Spring & Summer, 2022); Jesse Morris (Summer, 2025); Korrin Sutherburg (Fall & Spring, 2025-2026); Morgan Bugg (Fall & Spring, 2025-2026)

Past Graduate Advisees
Guang Yang (MS); Ye Li (PhD); Dongdong Wang (MS); Yifan Zhang (MS); Minh Nguyen (PhD); Jianying Jiao (PhD); Danchen Li (PhD); Christopher Akurugu (MS);

Current Graduate Advisees
Chris Akurugu (PhD); Hannah Carney (PhD); Mohammed Mahathee Hossain (MS);

Current Graduate Committee Chairmanships
Chris Akurugu (PhD); Hannah Carney (PhD); Mohammed Mahathee Hossain (MS);

Current Graduate Committee Memberships (excluding those chaired)
___2__ MS
___5__ PhD

Undergraduate Honor Thesis
Samuel Gragg

Student Awards/Scholarships

Guang Yang	Outstanding Academic Award (2012);
Ye Li	Chevron Scholarship (2013);
Dongdong Wang	Roy J. Shlemon Student Travel Grant (2014);
Minh Nguyen	Chevron Travel Grant (2016);

Minh Nguyen	Academic Affair Summer Scholarship (2016);
Fangyu Gao	Chevron Travel Grant (2017);
Samual Gragg	Meritorious Undergraduate Research Grant (2017);
Hannah Carney	Rhoads Hydrology Scholarship (2024)
Korrin Sutherburg	UW School of Computing SURE Scholar (2025-2026)

POSTDOCTORAL STUDENTS/RESEARCH ASSOCIATES

Shuiquan Li (Postdoc); Baozhong Liu (Research Associate II); Juraj Irsa (Postdoc); Mingkan Zhang (Postdoc), Jianying Jiao (Postdoc)

OTHER ACTIVITIES/ACCOMPLISHMENTS

Regular participant of UW activities that do not fall into formal committees

UW-NCAR: workshops & meetings (once a semester, each ~1 days);
UW HPC meetings (1 meeting a semester, each ~0.5 days);

Visiting Scholars/Outstanding students sponsored

2011, Dr. Zee Ma (Principal Geoscientist of Schlumberger, Inc.), SER Distinguished Lecture Series (duration: 1 week);
2015, Prof. Gour-Tsyh (George) Yeh, Penn State (duration: 2 days);
2016, Dan Zhou, Visiting Ph.D. candidate, Institute of Bio- and Geosciences, TU Freiberg, Germany (duration: 3 months);
2016, Shuangpo Ren, Visiting Ph.D. candidate, Dept. of Petroleum and Natural Gas Engineering, China University of Geosciences, Wuhan, P.R. China (duration: 2 years);

Service to the university/state/community

2008, Provide free hydrological consulting to the city of Powell on basement leakage issues related to irrigation return flow, Wyoming.

2007, Represent the University of Wyoming in the EPSCoR Cyberinfrastructure Assessment Workshop, Lexington, Kentucky.

Media coverage

2013, Radio Interview for Wyoming PBS on acid gas disposal and carbon sequestration in western Wyoming.

2013, Boomerang, “Professor’s subsurface computer models have real-world applications” http://www.laramieboomerang.com/articles/2013/09/24/news/doc5240fa85e86df723436051.txt

2014, Wyoming Carbon Capture and Storage Technology interview, http://origin.library.constantcontact.com/download/get/file/1109382325661-34/WCTI+Interview+with+Ye+Zhang.pdf

2018, Mountain hydrology, Wyoming PBS television: https://www.youtube.com/watch?v=54POr7uoMyg&t=6s

2019, American Geophysical Union, “Postcard From the Field” https://americangeophysicalunion.tumblr.com/post/183118329923/dear-agu-hello-from-the-blair-wallis-fractured

2019, Wyoming Rural Electric News (WREN), “Lightning Speed: Researchers use Supercomputer to Predict Weather and Water”.

2020, In-Situ, “Univ. of Wyoming Success Story: Hydrogeology of the Laramie Range and Mountain Front in Wyoming”.

2022, UW Institutional Marketing: “UW’s Zhang Receives $1M Grant to Study How Forests Naturally Recover After Disturbances”. http://www.uwyo.edu/uw/news/2022/10/uws-zhang-receives-1m-grant-to-study-how-forests-naturally-recover-after-disturbances.html