

## CHUNMIAO ZHENG, PH.D.

*Chair Professor of Water and Environment*

### Contact Information:

Southern University of Science and Technology, Shenzhen, China

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### Education

- 1985-1988 Ph.D., Hydrogeology, with a minor in Civil and Environmental Engineering, University of Wisconsin-Madison, Wisconsin, USA.
- 1983-1984 Postgraduate Studies in Geology and Applied Mathematics, Chengdu University of Technology (formerly Chengdu College of Geology), China.
- 1979-1983 B.S., Geology, specializing in Hydrogeology, Chengdu University of Technology (formerly Chengdu College of Geology), China.

### Employment History

- 2022-present Chair Professor and Director, Shenzhen Institute of Sustainable Development, Southern University of Science and Technology, Shenzhen, China.
- 2022-present Chair Professor and Vice President (Global Engagement), Eastern Institute of Technology, Ningbo, China.
- 2015-2022 Chair Professor and Vice Provost of Global Strategies (2018-22), Founding Dean of School of Environmental Science and Engineering (2015-18), Southern University of Science and Technology, Shenzhen, China.
- 2010-2018 Chair Professor and Founding Director, Institute of Water Sciences, Peking University, Beijing, China (on joint appointment after 2015).
- 1993-2018 George Lindahl III Endowed Professor (2010-18; on leave after 2013), Professor (2002-10), Associate Professor (1997-02), Assistant Professor (1993-97), Department of Geological Sciences, University of Alabama.
- 1988-1993 Senior Hydrogeologist, S.S. Papadopoulos & Associates, Inc., Bethesda, Maryland.

### Professional Experience

- 2018-present Lindahl Professor Emeritus and Adjunct Professor, Department of Geological Sciences, University of Alabama.
- 2006-2009 Visiting Professor and Founding Director, Center for Water Research, Peking University, Beijing, China.
- 2001 Visiting Fellow, University of Sheffield, United Kingdom.
- 2000 Visiting Associate Professor, Stanford University, Palo Alto, California.
- 2000 Visiting Scientist, U.S. Geological Survey, Menlo Park, California.
- 1995 Visiting Fellow, Australian Nuclear Science & Technology Organization, Sydney.
- 1991 Assistant Professional Lecturer, George Washington University, Washington, D.C.

### Awards and Honors

- 2024 **Prince Sultan Bin Abdulaziz International Prize for Water (PSIPW)** (Groundwater category); PSIPW is a leading, global scientific award focusing on cutting-edge innovation in water research (<https://www.psipw.org>)
- 2024 **Highly Cited Researchers 2024**, Clarivate (<https://clarivate.com/highly-cited-researchers/>)
- 2019 **Fellow**, American Geophysical Union (AGU) (<https://eos.org/agu-news/2019-class-of-agu-fellows-announced>)

- 2014 **Distinguished Alumni Award**, Department of Geoscience, University of Wisconsin-Madison, Wisconsin.
- 2013 **O.E. Meinzer Award**, Hydrogeology Division, Geological Society of America (<http://www.geosociety.org/awards/13speeches/meinzer.htm>).
- 2013 **M. King Hubbert Award**, National Ground Water Association. (<https://www.ngwa.org/members/awards/m-king-hubbert-award-recipient>)
- 2012 **Distinguished Lecturer for Hydrology Section**, AOGS-AGU (WPGM) Joint Assembly, Singapore.
- 2009 **Birdsall-Dreiss Distinguished Lecturer**, Hydrogeology Division, Geological Society of America (<https://community.geosociety.org/hydrodivision/aboutus/birdsall-lectures/past>).
- 2008 **DuPont Lecturer**, University of Delaware.
- 2005 **Oliver Lectureship in Hydrogeology**, Jackson School of Geosciences, University of Texas-Austin, Texas.
- 1999 **Fellow**, Geological Society of America.
- 1998 **John Hem Excellence in Science and Engineering Award**, National Ground Water Association.

### Primary Research Interests

- Impacts of global change and emerging contaminants on groundwater sustainability
- Integrated studies of hydrologic and ecological processes at watershed scales
- Surface water-groundwater interactions and their ecological and environmental effects
- Effects of physical and chemical heterogeneities on contaminant transport and remediation
- Novel technologies for green environmental remediation and nature-based carbon sequestration

### Professional Affiliations

- American Geophysical Union (AGU, Fellow)
- National Ground Water Association (NGWA)
- Geological Society of America (GSA, Fellow)
- International Association of Hydrologic Sciences (IAHS)
- Chinese Society for Environmental Sciences (CSES, Fellow)

### Five Representative Papers from the Past Five Years (\*corresponding author)

- Kuang, X., J. Liu\*, B.R. Scanlon, J.J. Jiao, S. Jasechko, M. Lancia, B.K. Biskaborn, Y. Wada, H. Li, Z. Zeng, Z. Guo, Y. Yao, T. Gleeson, J.-P. Nicot, X. Luo, Y. Zou, **C. Zheng\***, 2024, The changing nature of groundwater in the global water cycle, *Science*, 383, eadf0630, doi: 10.1126/science.adf0630.
- Yu, J., Y. Tian\*, X. Wang, T. Sun, M. Lancia, C.B. Andrews, **C. Zheng\***, 2024, Integrated modeling of flow, soil erosion, and nutrient dynamics in a regional watershed: Assessing natural and human-induced impacts, *Water Resour. Res.*, 60(9), doi: 10.1029/2024WR037531.
- Chen, K., X. Chen, J.C. Stegen, J.A. Villa, ..., E.E. Roden\*, **C. Zheng\***, 2023, Vertical hydrologic exchange flows control methane emissions from riverbed sediments, *Environ. Sci. Technol.*, 57(9), 4014–4026, doi: 10.1021/acs.est.2c07676.
- Feng, Y., Z. Zeng\*, T.D. Searchinger, A.D. Ziegler, ..., **C. Zheng\***, 2022, Doubling of annual forest carbon loss over the tropics during the early twenty-first century, *Nature Sustainability*, 5, 444–451, doi: 10.1038/s41893-022-00854-3.
- Ben, Y., C. Fu, M. Hu, L. Liu, M. H. Wong, **C. Zheng\***, 2019, Human health risk assessment of antibiotic resistance associated with antibiotic residues in the environment: A review, *Environmental Research*, 169, 483–493. (Cited over 1,080 times on Google Scholar by 10/2024.)

## Major Books and Computer Software

- National Research Council (NRC), 2012, *Challenges and Opportunities in the Hydrologic Sciences*, The National Academies Press, Washington, D.C., 188 pp. (Chunmiao Zheng was a member of the NRC committee that authored this book report, available at <https://www.nap.edu/catalog/13293/challenges-and-opportunities-in-the-hydrologic-sciences>).
- Zheng, C. and G.D. Bennett, 2009, *Applied Contaminant Transport Modeling*, Chinese Edition, Higher Education Press, Beijing, China, in collaboration with John Wiley & Sons, New York, 417 pp.
- Committee on Chinese Groundwater Science, 2009, *Challenges and Opportunities in Chinese Groundwater Science*, Science Press, Beijing, China, 200 pp. (Chunmiao Zheng was chair of the committee that authored this book report.)
- Zheng, C., and G.D. Bennett, 2002, *Applied Contaminant Transport Modeling, Second Edition*, John Wiley & Sons, New York, 621 pp. (<http://www.wiley.com/WileyCDA/WileyTitle/productCd-0471384771.html>).
- Zheng, C., and G.D. Bennett, 1995, *Applied Contaminant Transport Modeling: Theory and Practice*, Van Nostrand Reinhold (now John Wiley & Sons), New York, 440 pp.
- Zheng, C., and P.P. Wang, 1999, *MT3DMS: A Modular 3-D Multi-species Transport Model for Simulation of Advection, Dispersion and Chemical Reactions of Contaminants in Groundwater Systems; Documentation and User's Guide*, Contract Report SERDP-99-1, U.S. Army Engineer Research and Development Center, Vicksburg, MS, 169 pp. (available at <https://web.archive.org/web/20170129200934/http://hydro.geo.ua.edu/mt3d/>).
- Zheng, C., 1990, *MT3D: A Modular 3-D Transport Model for Simulation of Advection, Dispersion and Chemical Reactions of Contaminants in Groundwater Systems*, Report to the United States Environmental Protection Agency, 170 pp.

## Major Committees and Editorial Boards

- 2023-present Hydrology Fellow Committee, Hydrology Section, American Geophysical Union (AGU)
- 2021-present Founding Editor-in-Chief, *Sustainable Horizons*, an international open-access journal in partnership with Elsevier
- 2019-present Advisory Panel, Section on Environmental Earth Science, National Natural Science Foundation of China
- 2016-present Associate Editor, *Vadose Zone Journal*
- 2015-present Associate Chair, Steering Committee, Major Research Program “Runoff Change in the Headwater Region of China’s Southwestern Rivers and Their Adaptive Management”, National Natural Science Foundation of China
- 2013-2018 Deputy Editor-in-Chief, *Acta Geologica Sinica* (English Edition)
- 2010-2018 Member, Steering Committee, Major Research Program “An Integrated Study of Ecohydrological Processes in the Heihe River Basin”, National Natural Science Foundation of China
- 2010-2015 Associate Editor, *Water Resources Research*
- 2009-2013 Blue Ribbon Panel on “Challenges and Opportunities in the Hydrologic Sciences”, National Research Council, Washington, D.C.
- 2007-2014 Associate Editor, *Journal of Hydrology*
- 2007-2013 President-elect and President, International Commission on Groundwater, International Association of Hydrologic Sciences (IAHS)
- 2005-2015 Standing Committee on Hydrologic Science, National Research Council, Washington, D.C.
- 2005-2007 Treasurer, Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI), Washington, D.C.

- 2004-2008 Science and Technology Center Site Review Team, National Science Foundation, United States
- 2003-2007 Associate Editor, *Hydrogeology Journal*, International Association of Hydrogeologists (IAH) and Geological Society of America (GSA)
- 1998-2010 Associate Editor and Software Column Editor (2002-2010), *Journal Ground Water*, National Ground Water Association

### **Selected Professional Activities (since 2000)**

- 2024 Scientific Committee, IAH 2024 World Groundwater Congress, Davos, Switzerland, September 8-13, 2024
- 2024 Invited Speaker, [Recent Advances in Modeling Groundwater Dynamics](#), Google/Alphabet-wide Modeling Talk Series, August 27, 2024
- 2024 Organizing Committee and Keynote Speaker, GEWEX Groundwater Workshop, Hokkaido University, Sapporo, Japan, July 6-7, 2024.
- 2024 Organizing Committee and Keynote Speaker, MODFLOW and MORE 2024, Princeton University, NJ, June 2-5, 2024
- 2024 Plenary Speaker, HIC 2024 – 15<sup>th</sup> International Conference on Hydroinformatics, Beijing, May 27-30, 2024
- 2024 Plenary Speaker, First National Congress on Groundwater Resources and Eco-Environment, Wuhan, April 12-15, 2024.
- 2023 Keynote Speaker, First IAHR International Conference on Global Water Security, Changzhou, October 30-November 1, 2023
- 2023 Chair, First International Conference on Eco-geology and Environment, sponsored by Chinese Society for Environmental Sciences, Chengdu, October 27-31, 2023
- 2022 Chair, Plenary Keynote Session, 49<sup>th</sup> IAH Congress, International Association of Hydrogeologists, Wuhan, China, September 19-22, 2022
- 2022 Distinguished Lecturer, Recent Advances in Groundwater Research and Groundwater Management Challenges under Global Change, Center for International Collaboration, Ministry of Water Resources of China, June 28, 2022
- 2022 Distinguished Lecturer, Advances in Groundwater Modeling, Technical Center for Soil, Agriculture, and Rural Ecology and Environment, Ministry of Environment and Ecology, June 4, 2022
- 2022 Distinguished Lecturer, Contaminant transport in heterogeneous aquifers: A critical review of mechanisms and numerical methods of non-Fickian dispersion, Chinese Research Academy of Environmental Science, January 14, 2022
- 2021 Conference Chair, International Conference on Sustainable Technology and Development 2021, Sponsored by Elsevier and Southern University of Science and Technology, Shenzhen, October 31-November 2, 2021.
- 2021 Invited Panelist, Times Higher Education (THE) Asia Summit, Session on “Close integration with industry is essential to problem-solving and producing world-leading research. How is this best achieved?” June 2, 2021
- 2021 Distinguished Lecturer, Challenges and Opportunities for Environmental Water Sciences in China, Yangtze Institute for Conservation and Development, Hohai University, Nanjing, May 14, 2021
- 2020 Invited Panelist, Dialogue with Vice Minister of Science and Technology of China on the trend of international research collaboration, Beijing, December 2, 2020
- 2020 Masters Lecture Series, 50 Years of Contaminant Transport Modeling, Westlake University, Hangzhou, China, October 12, 2020
- 2020 Invited Speaker, Forum on the Future of Sino-US Research Collaboration, National Natural Science Foundation of China, Beijing, September 24-25, 2020

- 2019 Invited Panelist, US-China Environment and Sustainability Forum at the University of Michigan, October 1-2, 2019
- 2019 Co-organizer and Keynote speaker, “MODFLOW and MORE 2019: “Groundwater Modeling and Beyond”, Golden, Colorado, June 2-6, 2019
- 2018-2020 “Paul A. Witherspoon Mid-Career Lecturer in Hydrologic Sciences” Award Committee, American Geophysical Union
- 2018 Planetary Speaker, RISUD Annual International Symposium 2018 (RAIS 2018), Hong Kong Polytechnic University, June 29-30, 2018
- 2018 Keynote Speaker, Computational Methods in Water Resources XXII (CMWR 2018), St. Malo, France, June 3-7, 2018
- 2018 Keynote Speaker, China-US Workshop on Soil Contamination Risk Management and Remediation Technology, University of California, Riverside Palm Desert Center in Palm Desert, California, April 3, 2018
- 2017 Keynote Speaker, Annual Meeting of Chinese Society for Environmental Sciences, Xiamen, China, October 20-22, 2017
- 2017 Organizer, EPRI Workshop on Advanced Hydrogeologic Characterization, Palo Alto, California, August 29, 2017
- 2017 Keynote Speaker, 11<sup>th</sup> International Symposium on Geochemistry of the Earth Surface, Guiyang, China, June 11-16, 2017
- 2017 Co-organizer and Keynote speaker, “MODFLOW and MORE 2017: Modeling for Sustainability and Adaptation”, Golden, Colorado, May 21-24, 2017
- 2016 Chair, 9<sup>th</sup> IAHS Groundwater Quality Conference (Groundwater Quality 2016, GQ16), Shenzhen, China
- 2016 Advisory Panel, Research Program “GEOCON”, Demark Technical University, April 25-26, 2016.
- 2016 Review Panelist, Office of Biological & Environmental Research (BER), Department of Energy, Washington DC, April 4-5, 2016
- 2016 Invited Speaker, Joint KAPSARC-NUS Workshop “Emerging Issues Facing the Water-Energy-Food Nexus in the Middle East and Asia”, Singapore, Jan. 22, 2016
- 2016 Invited Panelist, 9<sup>th</sup> Rosenberg Forum on International Water Policy, Panama City, January 25-28, 2016
- 2015 Scientific Advisory Committee and Keynote Speaker, 42<sup>nd</sup> Congress of International Association of Hydrogeologists, Rome, Italy, September 13-18, 2015
- 2015 Organizing Committee, International Conference “MODFLOW and MORE 2015: Modeling a Complex Word”, Colorado, May 31-June 3, 2015.
- 2014 Co-chair and host, US-China EcoPartnership Conference “Water-Energy Nexus: Sustainability and Global Challenges”, Beijing, China, April 17, 2014.
- 2014 Invited Speaker, Faculty Summit, Microsoft Research, Redmond, Washington, July 14-15, 2014.
- 2013 Chair, International Workshop “Observation and Modeling of Ecohydrological Processes in Inland River Basins: A Vision for Transformative Science”, Beijing, China, July 5-8, 2013.
- 2013 Keynote Speaker, IAH 2013 - 40<sup>th</sup> Congress of International Association of Hydrogeologists, Perth, Australia, September 15-20, 2013.
- 2013 Co-chair, “MODFLOW and MORE 2013 – Translating Science into Practice”, Golden, Colorado, June 2-5, 2013.
- 2013 Co-chair, International Workshop “Managing River Basins as Coupled Human-Natural Systems”, sponsored by US NSF and NSFC, Beijing, May 6-7, 2013.
- 2013 Invited Panelist, Rosenberg International Forum on Water Policy 8<sup>th</sup> Biannual Meeting, Aqaba, Jordan, March 22-25, 2013.

- 2012 Co-organizer, Water Management and Global Challenges: Advances in Technology, Innovation, Health and Policy, Beijing, China, October 15-16, 2012.
- 2012 Keynote Speaker, The 5th International Workshop on Catchment Hydrological Modeling and Data Assimilation (CAHMDA-V), University of Twente, Enschede, the Netherlands, July 9-13, 2012.
- 2012 International Expert on Global Water Crisis, 30<sup>th</sup> Annual Meeting, The InterAction Council, Tianjin, China, May 10-12, 2012.
- 2011 Organizing Committee, International Conference “MODFLOW and More 2011: Integrated Hydrologic Modeling”, Golden, Colorado, June 6-9, 2011.
- 2011 Chair, Forum on International Water Resources, The 4<sup>th</sup> World Economic and Environmental Conference, Beijing, China, September 19-21, 2011.
- 2010 Organizing Committee Chair, International Groundwater Forum 2010, Peking University, Beijing, China, July 8-9, 2010.
- 2010 Co-Director, International Summer School on International River Basin Management, Peking University, China.
- 2010 “Humanity 3000” workshop on the world’s water crisis, Foundation for the Future, Seattle, Washington.
- 2009 International Advisory Committee, HydroPredict 2010 International Conference, Prague, Czech Republic.
- 2009 Keynote Speaker, NovCARE International Conference on Aquifer Characterization, Leipzig, Germany.
- 2009 Luncheon Speaker, California Biannual Groundwater Conference, Sacramento, CA.
- 2009 Keynote Speaker, Ground Water Summit, Tucson, Arizona.
- 2009 International Advisory Committee, “Groundwater Quality 2010” International Conference, Zurich, Switzerland.
- 2009 Organizing Committee, “ModelCARE 2009” International Conference, China University of Geosciences-Wuhan, China.
- 2008 Organizing Committee, “MODFLOW and More 2008” International Conference, Golden, Colorado.
- 2008 Invited Speaker, 33<sup>rd</sup> International Geological Congress, Oslo, Norway.
- 2007 Panel of Experts for *New York Times* on water and environmental issues in China.
- 2007 International Advisory Committee, “ModelCARE 2007”, Copenhagen, Denmark.
- 2007 International Advisory Panel, “Groundwater Quality 2007”, Perth, Australia.
- 2007 International Advisory Committee, “Water Down Under 2008”, Adelaide, Australia.
- 2006 Organizing Committee, International Conference “*MODFLOW and More 2006*,” Colorado School of Mines, Golden, Colorado.
- 2006 Panelist, Research Grant Review Panel for Environmental Remediation Programs, Department of Energy, Washington, D.C.
- 2006 Invited Speaker, Special session on “Innovations in field characterization of physical and chemical heterogeneities,” GSA Annual Meeting, Philadelphia.
- 2006 Invited Seminar Speaker, Department of Hydrology and Water Resources, University of Arizona.
- 2006 Seminar Speaker, University of Tübingen, Germany.
- 2006 Seminar Speaker, University of Sheffield, U.K.
- 2005 Keynote Speaker, 2005 Conference on Ground Water Remediation, National Ground Water Association (NGWA).
- 2005 Panelist, EPRI Arsenic Modeling Workshop, Tampa, Florida.
- 2005 Invited Speaker, Special session on “Field-scale characterization of hydraulic properties,” AGU Fall Meeting, San Francisco.
- 2005 Co-Chair, Working Group on Challenges and Opportunities in Chinese Groundwater Science, National Natural Science Foundation of China.

- 2005 Co-instructor, 1<sup>st</sup> Geochemical and Reactive Transport Modeling Course, Australia Center for Groundwater Studies, Brisbane, Australia.
- 2005 Invited Lecturer, School of Chemistry, Physics and Earth Sciences, Flinders University of South Australia, Adelaide, Australia.
- 2005 Invited Lecturer, Australia Contaminated Land Consultant Association, Victoria, Australia.
- 2005 Invited Lecturer, Research Center for Deep Geological Environment, AIST, Tsukuba, Japan.
- 2005 Invited Lecturer, Research and Development Center, Nippon-Koei Co., Tokyo.
- 2004 Scientific Advisory Committee, International conference on *Finite-Element Models, MODFLOW, and More 2004*, Karlovy Vary, Czech Republic.
- 2004 Co-instructor, Short course on Groundwater Flow and Contaminant Transport Modeling with Introduction to Data Assessment, Sensitivity Analysis, Model Calibration and Uncertainty Evaluation, Charles University, Czech Republic.
- 2004 Chair, Organizing Committee, International symposium on Earth, Environment, and Human Impacts, IPACES 2004 Annual Meeting and Workshops, Chengdu, China.
- 2004 NSF IGERT Program “GIScience” Advisory Board, SUNY at Buffalo.
- 2003-2004 Chair-elect and Chair, International Professionals for the Advancement of Chinese Earth Sciences (IPACES) .
- 2003 Organizing Committee, International Conference on *MODFLOW and More 2003*, Colorado School of Mines, Golden, Colorado.
- 2003 Invited Seminar Speaker, Department of Earth Sciences, University of Hong Kong.
- 2002 Review Panelist, Global Water Cycle Research Program, US NSF.
- 2002 Invited Speaker, Special session on Use Ground-Water Models to Guide Field Data Collection, AGU 2002 Fall Meeting, San Francisco.
- 2002-2004 Standing Committee on Hydrologic Information Systems, Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI).
- 2002 Peer Reviewer, Assessment of Long-Term Sustainability of Monitored Natural Attenuation of Chlorinated Solvents, SERDP Program, DOD/EPA/DOE.
- 2002 Invited Seminar Speaker, Institute of Applied Geology, University of Tübingen.
- 2001-2003 Instructor, Short course on Reactive Transport Modeling, University of Sheffield, U.K.
- 2001 Scientific Advisory Committee and Keynote Speaker, GQ-2001: 3<sup>rd</sup> International Conference on Groundwater Quality, University of Sheffield, UK.
- 2001 Invited Geology Seminar Speaker, University of Tennessee, Knoxville, TN.
- 2001 Invited Lecturer, Earth Science Symposium, Peking University, China.
- 2001 Organizing Committee and Keynote Speaker, *MODFLOW 2001 and Other Modeling Odysseys*, Colorado School of Mines.
- 2000 Invited Speaker, *International Symposium on Groundwater Contamination*, sponsored by Japanese Association of Groundwater Hydrology, Tokyo, Japan.
- 2000 Lecturer, Short course on Mass Transport in Groundwater, Freiberg University of Mining and Technology, Freiberg, Germany.
- 2000 Invited Speaker, Western Pacific Geophysics Meeting, Tokyo, Japan.
- 2000 Graduate Fellowship Grant Application Review Panel, U.S. EPA, Washington, D.C.

(Continuing to next page for **Publications**)

## Publications

Author or co-author of ~480 peer-reviewed journal articles and six books; A total of over 29,500 citations on Google Scholar, <http://scholar.google.com/citations?hl=en&user=g0FPeQsAAAAJ>, accessed in November 2024.

(\*indicates corresponding author)

- Kuang, X., J. Liu\*, B.R. Scanlon, J.J. Jiao, S. Jasechko, M. Lancia, B.K. Biskaborn, Y. Wada, H. Li, Z. Zeng, Z. Guo, Y. Yao, T. Gleeson, J.-P. Nicot, X. Luo, Y. Zou, **C. Zheng\***, 2024, The changing nature of groundwater in the global water cycle, *Science*, 383, eadf0630, doi: 10.1126/science.adf0630.
- Ma, R., K. Chen, C.B. Andrews, S.P. Loheide, A.H. Sawyer, X. Jiang, M.A. Briggs, P.G. Cook, S.M. Gorelick, H. Prommer, B.R. Scanlon, Z. Guo, **C. Zheng\***, 2024, Methods for quantifying interactions between groundwater and surface water, *Annual Review of Environment and Resources*, 49:623–653, doi: 10.1146/annurev-environ-111522-104534.
- Chen, K., Z. Guo\*, M. Yin, X. Liang, Z. Chang, S. Yang, X. Wei, X. Zhai, **C. Zheng\***, 2024, Using rainfall-induced groundwater temperature response to estimate lateral flow velocity, *Water Resour. Res.*, 60(11), doi: 10.1029/2023WR036715.
- Yu, J., Y. Tian\*, X. Wang, T. Sun, M. Lancia, C.B. Andrews, **C. Zheng\***, 2024, Integrated modeling of flow, soil erosion, and nutrient dynamics in a regional watershed: Assessing natural and human-induced impacts, *Water Resour. Res.*, 60(9), doi: 10.1029/2024WR037531.
- Yin, M., M. Lancia, Y. Zhang, W. Qiu, **C. Zheng\***, 2024, Experimental and modeling insights into mixing-limited reactive transport in heterogeneous porous media: Role of stagnant zones, *Water Research*, 266, doi: 10.1016/j.watres.2024.122383.
- Chen, K., Z. Guo, Y. Zhan, E.E. Roden\*, **C. Zheng\***, 2024, Heterogeneity in permeability and particulate organic carbon content controls the redox condition of riverbed sediments at different timescales, *Geophysical Research Letters*, 51 (11), e2023GL107761.
- Pang, M., E. Du\*, **C. Zheng\***, 2024, Contaminant transport modeling and source attribution with attention-based graph neural network, *Water Resour. Res.*, 60(6), e2023WR035278.
- Hua, S., H. Jing, G. Qiu, X. Kuang, C.B. Andrews, X. Chen, **C. Zheng\***, 2024, Long-term trends in human-induced water storage changes for China detected from GRACE data, *Journal of Environmental Management*, 368, doi: 10.1016/j.jenvman.2024.122253.
- Zhan, Y, Z. Guo\*, S. Ruzzante, T. Gleeson, C.B. Andrews, V. Babovic, **C. Zheng\***, 2024, Assessment of spatiotemporal risks for nationwide groundwater nitrate contamination, *Sci Total Environ*, 947, doi: 10.1016/j.scitotenv.2024.174508.
- Xu, S., S.-C. Hsu\*, E. Du, L. Song, C.M. Lam, X. Liu, **C. Zheng\***, 2024, Agent-based modeling in water science: From macroscale to microscale, *ACS ES&T Water*, doi: 10.1021/acsestwater.3c00574.
- Fan, L., F. Ji, X. Kuang, Z. Guo, R. Zhang, **C. Zheng\***, 2024, Impacts of permafrost degradation on streamflow in the northern Himalayas, *Science China: Earth Sciences*, 67, 1990–2000, doi: 10.1007/s11430-023-1297-4.
- Zhou, Y., X. Liang, E. Ma, K. Chen, K. Schilling, T. Zheng, Y. Zheng, Y.-K. Zhang, **C. Zheng**, 2024, Spectral analysis of hydrological signals to estimate watershed properties considering impacts of unsaturated zone, *Water Resour. Res.*, 60(11), e2023WR036680, doi: 10.1029/2023WR036680.
- Feng, L., Y. Wang, X. Hou, B. Qin, T. Kuster, F. Qu, N. Chen, H.W. Paerl, **C. Zheng**, 2024, Harmful algal blooms in inland waters, *Nature Reviews Earth & Environment*, 5, 631–644, doi: 10.1038/s43017-024-00578-2.
- Gu, X., X. Feng, S. Yang, R. Wang, Q. Zeng, Y. Shangguan, J. Liang, H. Zhou, Z. Li, Z. Lin, **C. Zheng**, Z. Xu, H. Chen, 2024, Photovoltaic-driven dual-oxidation seawater electrolyzer for



- sustainable lithium recovery, *Proceedings of the National Academy of Sciences*, 121(43), e2414741121, doi: 10.1073/pnas.2414741121.
- Qiu, L. J. He, C. Yue, P. Ciais, **C. Zheng**, 2024, Substantial terrestrial carbon emissions from global expansion of impervious surface area, *Nature Communications*, 15, 6456, doi: 10.1038/s41467-024-50840-w.
- Xiao, K., Y. Wu, F. Pan, Y. Huang, H. Peng, M. Lu, Y. Zhang, H. Li, Y. Zheng, **C. Zheng**, et al., 2024, Widespread crab burrows enhance greenhouse gas emissions from coastal blue carbon ecosystems. *Commun Earth Environ.*, 5, 437, doi: 10.1038/s43247-024-01621-2.
- Akbariforouz, M., Q. Zhao, A. Stocchino, **C. Zheng**, 2024, Evaluating the deformation modulus at representative elementary volume using electrical resistivity tomography, *International Journal of Rock Mechanics and Mining Sciences*, 183, 105935, doi: 10.1016/j.ijrmms.2024.105935.
- He, Y.-J. He, H. Liao, G. Yang, W. Qiu, R. Xuan, G. Zheng, B. Xu, X. Yang, J.T. Magnuson, D. Schlenk, **C. Zheng**, 2024, Perfluorohexanesulfonic acid (PFHxS) impairs lipid homeostasis in zebrafish larvae through activation of PPAR $\alpha$ , *Environ. Sci. Technol.*, 58(37), 16258-16268, doi: 10.1021/acs.est.4c03053.
- Chen, H. Y. Zou, X. Kang, G. Yang, X. Yang, Y. Yao, J.T. Magnuson, X. Cao, W. Qiu, E.G. Xu, **C. Zheng**, 2024, Perfluorooctane sulfonamide induced autotoxic effects on the zebrafish immune system, *Environ. Sci. Technol.*, doi: 10.1021/acs.est.4c01153.
- Shu, Y., B. Han, L. Song, T. Yan, L. Gan, Y. Zhu, **C. Zheng**, 2024, Analyzing the spatio-temporal correlation between tide and shipping behavior at estuarine port for energy-saving purposes, *Applied Energy*, 367, 123382.
- Wu, R., Z. Guo, Y. Zhan, G. Cao, K. Chen, Z. Chang, H. Li, X. He, **C. Zheng**, 2024, Impacts of land surface nitrogen input on groundwater quality in the North China Plain, *ACS ES&T Water*, doi: 10.1021/acsestwater.3c00712.
- Zhu, M., X. Kuang, C. Song, Y. Feng, Q. He, Y. Zou, H. Zhou, **C. Zheng**, 2024, Glacier-fed lakes are significant sinks of carbon dioxide in the Southeastern Tibetan Plateau, *Journal of Geophysical Research: Biogeosciences*, 129 (4), e2023JG007774.
- Feng, Y., K. Jiang, X. Kuang, Y. Yao, S. Liang, K. Yu, J. Liu, **C. Zheng**, 2024, The dual role of meltwater in buffering river runoff in the Yarlung Zangbo Basin, Tibetan Plateau, *Journal of Hydrology: Regional Studies*, 54, 101857, doi: 10.1016/j.ejrh.2024.101857.
- Chang, Z., Z. Guo, K. Chen, Z. Wang, Y. Zhan, W. Lu, **C. Zheng**, 2024, A comparison of inversion methods for surrogate-based groundwater contamination source identification with varying degrees of model complexity, *Water Resour. Res.*, 60 (4), e2023WR036051.
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### Computer Software

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(Continuing to next page for **Funded Research Projects**)

## **Funded Research Projects**

1. Occurrence and transport of agriculture-related microplastics in soil and groundwater, National Key R&D Program of China – Intergovernmental Collaborative Project, 2023-2025, PI (through Southern University of Science and Technology/Eastern Institute of Technology, Ningbo).
2. Novel technologies for green environmental remediation and nature-based carbon sequestration, Office of Research Innovation, Zhejiang Province, 2023-2028, PI (through Eastern Institute of Technology, Ningbo).
3. Funding to establish a research institute for low carbon technologies, City of Ningbo, 2023-2028, PI (through Eastern Institute of Technology, Ningbo).
4. 3D simulation and early warning system for urban water bodies with joint consideration of soil and groundwater quality control, City of Ningbo, 2023-2025, PI (through Eastern Institute of Technology, Ningbo).
5. Guangdong-Hong Kong Joint Laboratory of Soil and Groundwater Pollution Control, Government of Guangdong Province, 2023-2025, PI (through Southern University of Science and Technology).
6. Pollution risk assessment, early warning, and emergency management associated with drinking water source areas, City of Shenzhen, 2021-2024, PI (through Southern University of Science and Technology).
7. Surface water-groundwater interactions and their ecological and environmental effects, University Discipline Innovation Plan, Ministry of Education and Ministry of Science and Technology, 2020-2024, PI (through Southern University of Science and Technology).
8. Roles of anomalous diffusion in groundwater contaminant source identification, in situ remediation and risk assessment: A theoretical and experimental study, National Natural Science Foundation of China, 2020-2024, PI (through Southern University of Science and Technology).
9. Migration and transformation of nutrients across the land-sea interface in the Guangdong-Hong Kong-Macao Greater Bay Area, National Natural Science Foundation of China, 2019-2023, PI (through Southern University of Science and Technology).
10. INFEWS (U.S.-China): Sustainability in the Food-Energy-Water nexus; integrated hydrologic modeling of tradeoffs between food and hydropower in large scale Chinese and US basins, a joint program of National Natural Science Foundation of China and U.S. National Science Foundation, 2018-2022, PI (through Southern University of Science and Technology).
11. Guangdong Provincial Key Laboratory of Soil and Groundwater Pollution Control and Remediation, Government of Guangdong Province, 2017-2020, PI (through Southern University of Science and Technology).
12. Development and application of integrated technologies for groundwater remediation, Leading Talents Program of Guangdong Province, Government of Guangdong Province, 2017-2021, PI (through Southern University of Science and Technology).
13. Seawater intrusion along the eastern coastlines of China and associated environmental impacts, National Key R&D Program of China, 2016-2020, PI (through Southern University of Science and Technology).
14. Building excellence in the field of environmental protection and efficient resource utilization, University Academic Program Enhancement Scheme, Development and Reform Commission of Shenzhen Municipal Government, 2016-2019, PI (through Southern University of Science and Technology).
15. A Comprehensive approach to pollution control and management of urban watersheds, Shenzhen Municipal Government, 2016-2020, PI (through Southern University of Science and Technology).

16. Key Laboratory for Soil and Groundwater Pollution Control of Shenzhen City, Shenzhen Municipal Government, 2015-2017, PI (through Southern University of Science and Technology).
17. Integrated modeling and prediction of the water-ecosystem-economics system in the Heihe River Basin, National Natural Science Foundation of China, 2015-2018, co-PI (through Peking University).
18. Effects of small-scale preferential flow paths on contaminant transport and remediation, National Natural Science Foundation of China, 2014-2018, PI (through Peking University).
19. System behaviors and regulation of ecohydrological processes in the middle and lower Heihe River Basin, National Natural Science Foundation of China, 2013-2016, PI (through Peking University).
20. Risk assessment of groundwater contamination from a REE mining site in Baotou, Inner Mongolia, China Ministry of Environmental Protection, 2013-2016, PI (through Peking University).
21. Development of technical guidelines for comprehensive assessment of groundwater contamination, China Ministry of Environmental Protection, 2011-2016, PI (through Peking University).
22. Field study of contaminant transport processes and numerical model development, China Geological Survey, 2011-2013, PI (through Peking University).
23. Collaborative Research: High-resolution dynamic characterization of transport pathways: providing new insights into subsurface processes, National Science Foundation, 2008-12, PI (through University of Alabama).
24. Optimal management of coastal aquifers against seawater intrusion, Baldwin County, Alabama, NOAA through the state of Alabama, 2008-2009, PI (through University of Alabama).
25. With John Zachara (PI) and 17 co-PIs, Multi-scale mass transfer processes controlling natural attenuation and engineered remediation: An Integrated Field Challenge (IFC) focused on Hanford's 300 Area uranium plume, Department of Energy, 2007-2012, co-PI (through University of Alabama).
26. Accurate determination of groundwater recharge on the North China Plain through environmental tracers and 3D numerical modeling, Sino-German International Collaborative Research Program, National Natural Science Foundation of China, 2010-2012, PI (through Peking University).
27. A Coupled surface water-groundwater model for understanding hydrologic processes and water quality evolution in the North China Plain (NCP), Ministry of Science and Technology of China, 2007-2011, PI (through Peking University).
28. Spatial distribution of groundwater ages in a large sedimentary basin: Numerical simulation and application, National Natural Science Foundation of China, 2007-2009, PI (through Peking University).
29. Collaborative Research: Solute transport in aquifers containing connected high-conductivity networks: theory founded on laboratory and field data, National Science Foundation, 2006-2009, PI (through University of Alabama).
30. Development of modeling methods and tools for predicting coupled reactive transport processes in porous media at multiple scales, Department of Energy, 2006-2009, PI of subaward to University of Alabama.
31. Discrete fracture network models for risk assessment of carbon sequestration in coal, Department of Energy, 2005-2008, PI of subaward to University of Alabama.
32. Sustainable groundwater management of coastal aquifers in Baldwin County, Alabama, NOAA through the state of Alabama, 2005-2007, PI (through University of Alabama).

33. Reliability considerations in groundwater remediation system and monitoring network design, DuPont Company, 2005-2006, PI (through University of Alabama).
34. Development of information infrastructure for hydrological sciences, National Science Foundation, 2004-2005, PI of subaward to University of Alabama.
35. Groundwater study of Ft. Morgan Peninsula, Baldwin County, NOAA through the state of Alabama, 2004-2005, PI (through University of Alabama).
36. Further development of the MT3DMS contaminant transport model for linkage with the Army Risk Assessment Modeling System, Army Engineer Research and Development Center, 2003-2004, PI (through University of Alabama).
37. Further development of the ModGA code for contaminant source identification, DuPont Company, 2003-2004. PI (through University of Alabama).
38. Acquisition of geophysical field equipment for earth science research and teaching at the University of Alabama, NSF, 2002-2004, Co-PI.
39. With Jimmy Jiao (University of Hong Kong), Modification of regional groundwater regimes by large-scale land reclamation, Research Grants Council of Hong Kong, 2002-2005, Co-PI (through University of Alabama).
40. Collaborative Research: A systematic study of solute transport influenced by preferential flow paths at the decimeter and smaller scales, NSF, 2001-2005, PI (through University of Alabama). Field demonstration of transport optimization modeling for reducing the costs of groundwater pump-and-treat systems, Department of Defense Environmental Security Technology Certification Program (ESTCP), 2000-2003, PI (through University of Alabama).
42. Further development of the ModGA code for monitoring network design optimization, DuPont Company, 2002-2003. PI (through University of Alabama).
43. With Amy Ward (Project Director, University of Alabama) and 17 others at University of Alabama and University of New Mexico, Integrated Graduate Education Research Training (IGERT) Program in Freshwater Sciences, NSF, 1999-2004, co-investigator and leader of the solute transport research theme (through University of Alabama).
44. With Jimmy Jiao (University of Hong Kong), Origin and evolution of abnormal fluid pressures in the Shiwu area in northeastern China, Research Grants Council of Hong Kong, 1999-2002, Co-PI (through University of Alabama).
45. Multi-fractal scaling of hydraulic conductivity distributions and the effect on plume-scale contaminant transport, National Science Foundation, 1997-2000, PI of subaward to University of Alabama.
46. Subsurface site characterization via a computer-aided tool, Gulf Coast Hazardous Substance Research Center, US EPA, 1998-2000, Co-PI (through University of Alabama).
47. Development and application of a multicomponent solute transport simulator for the Department of Defense Groundwater Modeling System (GMS), US Army Engineer Research and Development Center, 1996-2000, PI (through University of Alabama).
48. Incorporation of variably saturated flow and contaminant transport in the groundwater flow and transport optimization model ModGA, DuPont Chemical, 1998-1999, PI (through University of Alabama).
49. Modeling biologically reactive contaminant transport and natural attenuation, Pacific Northwest National Laboratory, Department of Energy, 1997-1998, PI (through University of Alabama).
50. A global optimization approach for parameter identification in contaminant transport modeling, U.S. Environmental Protection Agency, 1995-1997, PI (through University of Alabama).
51. Development of a simulation-optimization model for groundwater management and remediation designs, DuPont Company, 1995-1998, PI (through University of Alabama).



52. Parameter identification using genetic algorithms, DuPont Company, 1995-1996, PI.
53. Simulation of reactive tracer transport in a strongly heterogeneous aquifer, Cray Research, Inc., 1995-1996, PI (through University of Alabama).
54. Augmentation of optimal policy selections to groundwater contaminant transport model MT3D (Phases I and II), USGS through Alabama Water Resources Research Institute, 1994-1995, Co-PI (through University of Alabama).
55. Development of an advanced contaminant fate and transport simulator for Cray supercomputers, Cray Research, Inc., 1994-1995, PI (through University of Alabama).
56. An investigation of underpressured geological formations for disposal of hazardous wastes, State of Alabama through UA School of Mines and Energy Development, 1994-95, PI (through University of Alabama).
57. A graduate fellowship to support Ph.D. research in hydrogeology, S.S. Papadopulos & Associates, Inc., 1994-1995, PI (through University of Alabama).