Zach Perzan

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Appointments

Assistant Professor 2024 –
Department of Geoscience
University of Nevada, Las Vegas

Education

Ph.D. **Earth System Science, Stanford University** 2024
Gerald J. Lieberman Fellow
NSF Graduate Research Fellow

B.A. **Geology (Honors), Middlebury College** 2015
Summa Cum Laude

Honors & Awards

NSF Postdoctoral Fellowship, *National Science Foundation* 2023
Preparing Future Professors Fellowship, *Stanford University* 2022
Gerald J. Lieberman Fellowship, *Stanford University* 2021
Outstanding Paper, *Computational Methods in Water Resources* 2020
Outstanding Paper, *Stanford Deep Learning Symposium* 2019
NSF Graduate Research Fellowship, *National Science Foundation* 2017
National Award for Excellence in Research, *Council on Undergraduate Research* 2015
White Outstanding Research Award, *Middlebury College* 2015
Outstanding Paper, *Vermont Geological Society* 2014

Publications

Manuscripts under review (indicates student author)*

13. L. Wang, T. Babey, **Z. Perzan**, S. Pierce, M. Briggs, K. Boye and K. Maher. Quantifying groundwater response and uncertainty in beaver-influenced mountainous floodplains using machine learning-based model calibration.

Journal articles

12. T. Dai*, K. Maher and **Z. Perzan** (2025). Machine learning surrogates for efficient hydrologic modeling: Insights from stochastic simulations of managed aquifer recharge, *Journal of Hydrology*. [link]

11. K. Maher and **Z. Perzan** (2024). Reactive transport as a scientific framework. In A. Shahar (Ed.), *Treatise on Geochemistry* (Third edition). Elsevier: Amsterdam. [link]

10. T. Babey, **Z. Perzan**, S. Pierce, D.B. Rodgers, L. Wang, R. Carroll, J.R. Bargar, K. Boye and K. Maher (2024). Mountainous floodplain connectivity in response to hydrological transitions, *Water Resources Research*. [link]
9. **Z. Perzan** and K. Maher (2024). Transport, dispersion and degradation of nonpoint source contaminants during flood managed aquifer recharge, *Vadose Zone Journal*. [link]
8. **Z. Perzan**, G. Osterman and K. Maher (2023). Controls on flood managed aquifer recharge through a heterogeneous vadose zone: hydrologic modeling at a site characterized with hydrogeophysics, *Hydrology and Earth System Sciences*. [link]
7. **Z. Perzan** and T. Chapin (2023). WellSTIC: A cost-effective sensor for point dilution tests to measure groundwater velocity in shallow aquifers, *Water Resources Research*. [link]
6. T. Babey, K. Boye, B. Tolar, M. Engel, et al. (2022). Simulation of anoxic lenses as exporters of reactivity in alluvial aquifer sediments, *Geochimica et Cosmochimica Acta.* [link]
5. **Z. Perzan**, T. Babey, J. Caers, et al. (2021). Local and global sensitivity analysis of a reactive transport model simulating floodplain redox cycling, *Water Resources Research.* [link]
4. Q. Li, L. Wang, **Z. Perzan,** J. Caers, et al. (2021). Global sensitivity analysis of a reactive transport model for mineral scale formation during hydraulic fracturing, *Environmental Engineering Science*. [link]
3. J. Damerow, C. Varadharajan, et al. (2021). Sample identifiers and metadata to support data management and reuse in multidisciplinary ecosystem sciences, *Data Science Journal.* [link]
2. J. Munroe, **Z. Perzan** and W. Amidon (2016). Cave sediments constrain Pleistocene advance of the Laurentide ice sheet in the Champlain Valley, *Journal of Quaternary Science*. [link]
1. A. Schroth, C. Giles, P. Isles, Y. Xu, **Z. Perzan** and G. Druschel (2015). Dynamic coupling of iron, manganese and phosphorus behavior in water and sediment of shallow ice-covered eutrophic lakes, *Environmental Science & Technology*. [link]

Invited Talks

Hydrogeophysics Session, *AGU Fall Meeting*	2024
Pardee Keynote Symposium, *GSA Annual Meeting*	2024
Groundwater Recharge Session, *GSA Annual Meeting*	2024
Environmental Geophysics Seminar, *Stanford University*	2024
Earth Science Seminar, *Dartmouth College*	2024

Major Research Funding

Understanding the impacts of managed aquifer recharge on the water balance in intensively managed basins — 2025 – 2028
NSF Hydrologic Sciences ($290,925)
Single PI

Monitoring aquifer recharge dynamics in the deep vadose zone using borehole nuclear magnetic resonance logging 2024 – 2026
USDA Cooperative Agreement ($200,000)
Single PI

Identifying controls on focused groundwater recharge across scales 2023
NSF EAR-PF ($180,000)
Single PI (awarded but declined)

TEACHING

Instructor of Record

Contaminant Hydrogeology (GEOL 475/675) Spring 2025
University of Nevada, Las Vegas

Seminar in Geoscience (GEOL 491) Spring 2025
University of Nevada, Las Vegas

Introduction to Geochemistry (GEOL 330) Fall 2024
University of Nevada, Las Vegas

Indigenous Environmental Justice (ESS 226) Spring 2022
Stanford University

Teaching Assistant

Intro. to Environmental Science (ENVS 110) Spring 2022
University of San Francisco

Contaminant Hydrogeology (ESS 221) Winters 2019 – 2023
Stanford University

Elements of Oceanography (GEOL 161) Fall 2013 – 2014
Middlebury College

Pedagogical Training

Preparing Future Professors Program, *University of San Francisco* 2022
Designing a Learning-centered Syllabus Workshop, *Stanford University* 2022
Universal Design for Learning Workshop, *Stanford University* 2022
National Environmental Justice Education and Teaching Workshop 2021
Equitable Assessments Workshop, *Stanford University* 2021

Mentorship

Master's students:

Sam Poppenhouse, Geoscience, University of Nevada, Las Vegas	2024 –
Timothy Dai, Computer Science, Stanford University	2022 – 2024
Ziyan Wu, Environmental Engineering, Stanford University	2019 – 2021

Undergraduate students:

Chanel Koh, Computer Science, University of Nevada, Reno	2024 –
Marc Berghouse, Earth System Science, Stanford University	2018 – 2021
Bailey Lewis, Environmental Science, Central Wyoming College	2019 – 2020
Cassie Weed, Environmental Science, Central Wyoming College	2019 – 2020
Diana Velazquez, Earth System Science, Stanford University	2019
George Sims, Environmental Science, Central Wyoming College	2018 – 2019
Dustin Proctor, Environmental Science, Central Wyoming College	2018 – 2019

Service and Outreach

Graduate Coordinator, Online Water Resources MS Program 2024 –
University of Nevada, Las Vegas

Instructor, Reactive Transport Workshop 2024 –
NSF Reactive Transport Research Coordination Network

Small Business Research Advisor 2019 –
Quantitative BioSciences, Inc.

K-12 Outreach Events, Northern Arapaho Tribe 2019 –
Wind River Indian Reservation, Wyoming

Instructor, Data-Model Integration Workshop 2024
NSF Critical Zone Research Coordination Network

Session Chair, Groundwater-Surface Water Interactions 2022
American Geophysical Union Fall Meeting

Ad Hoc Proposal Reviewer 2022
DOE Biological and Environmental Research Program

Reviewer for: Water Resources Research, Hydrology and Earth System Sciences, Environmental Science & Technology, Environmental Modelling and Software, Hydrological Processes, Journal of Hydrology, Science of the Total Environment