Tiantian Zhou

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EDUCATION

Ph.D. **Environmental Sciences,** University of California-Riverside (UCR), CA, USA **Sep. 2018-Oct. 2022**

M.S. **Physical Geography,** Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences (IGSNRR, CAS), Beijing, China **Sep. 2015-Jun. 2018**

B.E. **Hydrology and Water Resources Engineering,** Taiyuan University of Technology (TUT), Taiyuan, China **Sep. 2011-Jun. 2015**

MAIN RESEARCH EXPERIENCES

Postdoctoral Researcher at University of Arizona **Dec. 2023-Present**

Using measurements of isotopic tracers of hydrogen and oxygen to estimate water transit time distributions to develop a reactive transport model of basalt weathering reactions at the hillslope scale

Postdoctoral Researcher at University of California, Davis **Dec. 2022-Nov. 2023**

Numerical modeling of water flow and solute transport (bromide and pesticides) in the vadose zone under agricultural managed aquifer recharge (Ag-MAR)

- Estimated the impact of vadose zone heterogeneity on agricultural managed aquifer recharge;
- Evaluated the impact of Ag-MAR on transport and fates of pesticides.

Research Assistant at UCR **Sep. 2018-Oct. 2022**

Ph.D. dissertation on isotope transport in the vadose zone

- Adapted HYDRUS-1D to simulate the transport of soil water isotopes with evaporation fractionation;
- Quantified the impact of evaporation fractionation on the inverse estimation of soil hydraulic and isotope transport parameters;
- Quantified the impact of soil tension control on isotope fractionation, transport and interpretations of the root water uptake origin.

Research Assistant at IGSNRR, CAS **Sep. 2015-Jun. 2018**

Master thesis on unsaturated soil water movement

- Thesis focused on unsaturated soil water movement in severe and mild saline-alkali drip irrigated cotton fields in an arid region, based on in situ monitoring, stable isotopes tracing and HYDRUS-1D modeling.

Water quality investigation in Circum-Bohai Sea Region

- Focused on the impact of seawater intrusion on freshwater (Funded by Project of China Geological Survey);
- Responsible for water sampling and hydro-chemical/isotopes experiments.

Research Assistant at TUT **Sep. 2011-Jun. 2015**

Undergraduate thesis on groundwater numerical simulation

- Analyzed the impact of Aluminum ore pumping on groundwater quality based on Visual MODFLOW.

Field investigation of saline-alkali soils in Shanxi Province Aug. 6th- Aug. 11th, 2013

- Responsible for interviewing villagers, soil sampling and test (Funded by Natural Science Foundation of Shanxi Province);
- Completed a report on the formation, evolution, and amelioration of saline-alkali soils in Shanxi Province.

MAIN TEACHING EXPERIENCES

2021 **Guest lecturer**, Environmental Science 217: Vadose Zone Processes. Taught a 1.5-hour lecture on the HYDRUS simulation assignment.
2021 **Teaching Assistant**, Environmental Science 002: Environmental Quality. Guided the discussion sections.
2020 **Teaching Assistant**, Environmental Science 002: Environmental Quality. Guided the discussion sections.
Mentoring two graduate students at UC Davis (Wenyi Cui and Kira Waldman) about numerical modeling with DSSAT and PhreeQC software.

SELECTED AWARDS & SCHOLARSHIPS

- 2022 SSSA Robert Luxmoore Student Travel Award
- 2021/22 ENSC Outstanding Research Award (Graduate Students)
- Dissertation Year Program Award 2022-2023
- Best Oral Presentation Award Runner Up for the 2021 UCR Environmental Sciences Graduate Student Symposium
- Hilda and George Liebig Environmental Sciences Summer Fellowship, UCR, 2020
- Outstanding Graduate Student Scholarship, IGSNRR, 2018 (**top 10% students**)
- Merit Student of University of Chinese Academy of Sciences, UCAS, 2017-2018
- Director scholarship, IGSNRR, 2018 (**top 20% students**)
- First Class Graduate School Scholarship, UCAS (twice, 2015-2016 and 2016-2017, **top 20% students**)
- First Award in the 10th China-Japan-Korea Graduate Student Forum, 2017, China University of Geosciences (Beijing)
- Outstanding volunteer for 33rd International Geographical Congress, Beijing, 2016
- National Endeavor Scholarship for excellent students, 2013-2014, TUT (honored by Ministry of Education, P. R. C, **top 3% students**)
- Pacesetter and Outstanding Undergraduate Student of "Arduous Struggle and Inspirational Success" Scholarship, TUT (twice, 2012-2013 and 2015, **top 2% students**)
- Undergraduate Student Professional Learning Award, TUT (twice, 2011-2012 and 2012-2013, **top 20% students**)
- Undergraduate Student Science and Technology Practice Award, 2013-2014, TUT (**top 10% students**)
- Outstanding Volunteer in Social Practice Summer Program, 2013, TUT
- Second Prize for "Social Practice and Science and Technology for Energy Conservation and Emissions Reduction Competition" of Taiyuan University of Technology, 2013-2014, TUT
- Third Prize for Fourth Mathematics Competition of Taiyuan University of Technology, 2012

PUBLICATIONS

1. **Zhou T.**, E. Levintal, G. Brunetti, S. Jordan, T. Harter, I. Kisekka, J. Šimůnek, H. Dahlke* (2023). Estimating the impact of vadose zone heterogeneity on agricultural managed aquifer recharge: A combined experimental

and modeling study. *Water Research*, https://doi.org/10.1016/j.watres.2023.120781.

2. Nasta P.*, J. Šimůnek, **T. Zhou**, N. Romano, C. Stumpp (2023). Transit times and rainfall contributions to root water uptake and recharge using numerical simulations of isotope transport. *Hydrological Processes*, https://doi.org/10.1002/hyp.14982.
3. **Zhou T.***, J. Šimůnek, P. Nasta, G. Brunetti, M. Gaj, C. Neukum, V. Post* (2023). The Impact of Soil Tension on Isotope Fractionation, Transport, and Interpretations of the Root Water Uptake Origin. *Water Resources Research*, https://doi.org/10.1029/2022WR034023.
4. Imig A., L. Augustin, J. Groh, T. Pütz, **T. Zhou**, F. Einsiedl, A. Rein (2023). Fate of herbicides in cropped lysimeters: 1. Influence of different processes and model structure on vadose zone flow. *Vadose Zone Journal*, https://doi.org/10.1002/vzj2.20265.
5. **Zhou T.***, J. Šimůnek*, I. Braud, P. Nasta, G. Brunetti, Y. Liu (2022). The impact of evaporation fractionation on the inverse estimation of soil hydraulic and isotope transport parameters. *Journal of Hydrology*, https://doi.org/10.1016/j.jhydrol.2022.128100.
6. Liu Y.*, Y. Zheng*, W. Li, **T. Zhou** (2022). Estimating evapotranspiration within a dryland watershed: comparison of eddy-covariance observations, water budget estimates, and satellite-based products. *Hydrological Processes*. https://doi.org/10.1002/hyp.14631.
7. Post V.E.A*., **T. Zhou**, C. Neukum, P. Koeniger, G.J. Houben, A. Lamparter, J. Šimůnek (2022). Estimation of groundwater recharge rates using soil-water isotope profiles: a case study of two contrasting dune types on Langeoog Island, Germany. *Hydrogeology Journal*. https://doi.org/10.1007/s10040-022-02471-y.
8. Liu Y.*, Y. Zheng, W. Li, **T. Zhou** (2022). Evaluating the performance of satellite-based precipitation products using gauge measurement and hydrological modeling: A case study in a dry basin of Northwest China. *Journal of Hydrometeorology*. https://doi.org/10.1175/JHM-D-21-0152.1.
9. **Zhou T.***, J. Šimůnek, I. Braud (2021). Adapting HYDRUS-1D to simulate the transport of soil water isotopes with evaporation fractionation. *Environmental Modelling & Software*, https://doi.org/10.1016/j.envsoft.2021.105118.
10. Han D*., **T. Zhou** (2018). Soil water movement in the unsaturated zone of an inland arid region: Mulched drip irrigation experiment. *Journal of Hydrology*, https://doi.org/10.1016/j.jhydrol.2018.02.012.
11. Han D., **T. Zhou**, Y. Ma, X. Song (2018). Soil water movement through the vadose zone in severe and mild saline-alkali fields in an arid region. *Transactions of the Chinese Society of Agricultural Engineering*, 34(18): 152-159.
12. **Zhou T.**, D. Han*, X. Song, Y. Ma, Y. Zhang (2018). Water movement through the unsaturated zone in severe saline-alkali cotton field in an inland arid region: under water and salt regulation by drip irrigation schedule. *Resources Science*, 2018(4): 818-828.
13. **Zhou T.**, D. Han*, Y. Ma, X. Song, Y. Zhang (2018). Water movement through the unsaturated zone in mild saline-alkali cotton field in an inland arid region: under drip irrigation schedule. *Journal of Arid Zone Resources and Environment*, 32(12): 157-163.

CONFERENCE PRESENTATIONS

- **Zhou T.**, E. Levintal, G. Brunetti, S. Jordan, T. Harter, I. Kisekka, J. Šimůnek, H. Dahlke, 2023. Estimating the impact of vadose zone heterogeneity on agricultural managed aquifer recharge: A combined experimental and modeling study. 2023 *SSSA annual meeting*, St. Louis, Missouri (Oral Presentation).
- **Zhou, T.**, J. Šimůnek, I. Braud, P. Nasta, G. Brunetti, Y. Liu, 2022. The impact of evaporation fractionation on the

inverse estimation of soil hydraulic and isotope transport parameters. 2022 *SSSA annual meeting*, Baltimore, Maryland (Oral and Poster Presentation).

- **Zhou, T.**, J. Šimůnek, I. Braud. 2021. The Impacts of Evaporation Fractionation on Parameter Estimation and Water Travel Time Calculation with the Isotope Transport Model in HYDRUS-1D. *2021 AGU Fall meeting*, New Orleans, Louisiana (Poster Presentation).
- **Zhou, T.**, J. Šimůnek, I. Braud. 2021. Adapting HYDRUS-1D to Simulate the Transport of Soil Water Isotopes with Evaporation Fractionation. *2021 SSSA Annual Meeting*, Salt Lake City, Utah (Poster Presentation).
- **Zhou, T.**, J. Šimůnek, I. Braud. 2020. Adapting HYDRUS-1D to Simulate the Transport of Soil Water Isotopes with Evaporation Fractionation. *2020 SSSA Virtual Annual Meeting* (5-min Oral and Poster Presentation).
- **Zhou, T.**, J. Šimůnek, Y. Ma. 2019. Analysis of soil water movement in a winter wheat field of North China Plain using stable isotopes. *W3188: Soil, Water, and Environmental Physics Across Scales 2019 Annual Meeting*, Riverside, California (Poster Presentation).
- **Zhou T.**, D. Han. 2017. Conceptual model of soil water movement through a shallow unsaturated zone in an inland arid region. *10th China-Japan-Korea Graduate Student Forum*, China University of Geosciences (Beijing) (Oral Presentation, **First Award**).
- **Zhou T.**, D. Han. 2017. Water movement through a shallow unsaturated zone in an inland arid region: Field drip irrigation experiment under matric potential control. *2017 AGU Fall Meeting*, New Orleans, Louisiana (Poster Presentation).

SKILLS

Programming software: Fortran, Python, R, MATLAB
Technical Software: ArcGIS, HYDRUS, CorelDRAW

PROFESSIONAL SERVICES

- **Manuscript Reviewer**, for Water Resources Research, Journal of Hydrology, Groundwater, Numerical and Analytical Methods in Geomechanics
- **Review Editor,** for Water and Critical Zone (specialty section of Frontiers in Water)
- **Judge**, for Soil Physics and Hydrology Division-Poster and 5 Minute Rapid student competition.

PROFESSIONAL AFFILIATIONS

- 2020 – Present Soil Science Society of America
- 2016 – Present American Geophysical Union

EXTRA-CIRRICULUM ACTIVITIES

Volunteering Activities

- Volunteer for 33rd International Geographical Congress, Beijing, 2016
- Volunteer for 2016 Chinese National Curling Championship for the Disabled, Beijing
- Volunteer for 2016 VOLVO Golf Open Championship of China, Beijing