YAOQUAN ZHOU

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RESEARCH INTERESTS

My research focuses on surface water-groundwater interaction in river and coasts. I am also interested in developing interactive methods such as hydraulic tomography to understand subsurface fluid flow and transport.

EDUCATION

August, 2016 **University of Wisconsin-Madison, Madison, WI**
Ph.D. in Geoscience (Hydrogeology)
Thesis: Oscillatory Hydraulic Tomography: Numerical Experiments and Laboratory Studies

June, 2012 **Wright State University, Dayton, OH**
M.S. in Environmental Science (Hydrogeology)
Thesis: The influence of streambed heterogeneity on hyporheic exchange in gravelly rivers

July, 2010 **Beijing University of Chemical Technology, Beijing, China**
B. Eng. in Environmental Engineering

RESEARCH EXPERIENCE

Nov. 2016 – Current **Postdoctoral Researcher**
Prof. Audrey Sawyer, Ohio State University
-Model approaches comparison for estimating submarine groundwater discharge
-Global submarine groundwater discharge estimation and Land-Surface model analysis
-Python programming for automating GIS models

2012-2016 **Graduate Research Assistant**
Prof. Michael Cardiff, University of Wisconsin – Madison
- Developed laboratory sandbox system for hydraulic testing and geologic interpretation
- Inverse modeling and imaging using geostatistical method
- Data-driven simulation of flow and transport in subsurface
- Model error quantification, uncertainty estimation and optimization
- Designed NAPL intrusion and spreading laboratory project.
- NAPL source zone imaging using OHT model
- Numerically studied frequency influence on effective hydraulic conductivity approximation during OHT tests
- Large-scale data analysis using linear algebra, signal processing, regression and etc.
- Developed finite difference numerical models for parameter estimation.
- Performed sensitivity analysis of parameter influence on numerical modeling output

2010-2012 **Graduate Research Assistant**
Prof. Robert Ritzi, Wright State University
- Created groundwater flow and transport model (MODFLOW) to evaluate particle (contaminant) transportation
- Simulated groundwater and surface water interaction mechanism
- Analyzed the influence of heterogeneity on hyporheic zone

2009-2010 **Undergraduate Researcher**
Beijing University of Chemical Technology
-Investigated air pollution treatment conditions and strategies of using a commercial membrane.
-Senior design on waste water treatment process using autoCAD.

TEACHING EXPERIENCE

2010-2012 **Teaching Assistant, Wright State University**
Courses: Advanced Groundwater, Introductory Geology
-Lectured 100 level geology labs from the basic mineral identification to surface processes and natural hazards
-Assisted in class lecture, graded all numerical modeling homework, and hosted office hours on weekly basis

AWARDS AND HONORS

2017 Albert & Alice Weeks Outstanding Student Research Paper Award (UW-Madison)
2014 Geosyntec Student Paper Competition Award (Geosyntec Consultants, Inc)
2007 People's Scholarship Recipient (Beijing)

PUBLICATIONS

Zhou, Y.Q., and Cardiff, M. (2017) Oscillatory Hydraulic Testing as a strategy for NAPL Source Zone Monitoring: Laboratory Experiments*, Journal of Contaminant Hydrology.*

Zhou, Y.Q., Cardiff, M., Lim, D., and Cupola, F. (2016) Aquifer imaging with pressure waves - evaluation of low-impact characterization through sandbox experiments, *Water Resources Research,* doi:10.1002/2015WR017751.

Zhou, Y.Q., Ritzi, W. R., Soltanian, M. R., and Domonic, D.F. (2014). The Influence of Streambed Heterogeneity on Hyporheic Flow in Gravelly Rivers, *Groundwater*. V. 52, Issue 2, 206-216.

In review (pdf available upon request):

Zhou, Y.Q., Befus, K.M., Sawyer, A. H., David, C.H. (in review) Opportunities and challenges in computing fresh groundwater discharge to continental coastlines: A multimodel comparison for the United States Gulf and Atlantic Coasts, *Water Resources Research*

Zhou, Y.Q., Sawyer, A. H., David, C.H. Famiglietti, J. S. (in review) Global estimates of submarine groundwater discharge reveal heightened threat of saltwater intrusion to mid-latitude aquifers, *Nature Geoscience*

In preparation

Zhou, Y.Q., and Cardiff, M. (in preparation), Possible causes for observed frequency dependence in aquifer parameters obtained under periodic pumping tests, *Groundwater*

Lim, D., Cardiff, M., **Zhou, Y.Q.,** Barrash, W. (in preparation) Tomographic Characterization via Oscillatory Pumping Tests at the Boise Hydrogeophysical Research Site, *Water Resources Research*

Cardiff, M., Lim, D., **Zhou, Y.Q.** (in preparation) OHT3DINV: An efficient 3-D code for oscillatory and steady-state hydraulic tomography applications, *Environmental Modeling and Software.*

CONFERENCE PRESENTATIONS

Zhou Zhou, Y.Q., Befus, K., Sawyer, A., David, C., 2017. Model-based approaches to quantify groundwater flows from land to sea, **AGU Annual Meeting**, San Francisco, CA. (poster H13H-1495)

Zhou, Y.Q., Cardiff, M., 2015. Oscillatory Hydraulic Tomography for NAPL Source Zone Characterization: Sandbox Experiment Demonstration, **AGU Annual Meeting**, San Francisco, CA. (poster H43F-1573)

Zhou, Y.Q., Cardiff, M., Lim, D. 2015. Oscillatory Flow Testing In A Laboratory Sandbox – Validation Of Oscillatory Hydraulic Tomography. **NovCare Conference**, Lawrence, Kansas. (Oral)

Zhou, Y.Q., Cardiff, M., Lim, D., Cupola, F., 2014. Oscillatory Flow Testing in a Sandbox – Towards Oscillatory Hydraulic Tomography, **AGU Annual Meeting**, San Francisco, CA. (poster H51B-0607)

Zhou, Y.Q., Cardiff, M., 2013. Oscillatory Hydraulic Tomography: Testing the theory using a sandbox. **AGU Annual Meeting**, San Francisco, CA. (poster H13D-1376)

Cardiff, M., **Zhou, Y.Q.,** 2012. Improving Aquifer Imaging and Long-term Monitoring with Oscillatory Signals: Oscillatory Hydraulic Tomography. **AGU Annual Meeting**, San Francisco, CA. (poster H33l-1440)

Zhou, Y.Q., Ritzi, W. R., Domonic, D.F., Soltanian, M. R., 2012. Modeling the Influence of Heterogeneity on Hyporheic-Zone Processes. **North Central GSA meeting**, Dayton, OH. (poster)

INVITED TALKS

Zhou, Y.Q., 2017. Understanding groundwater flow across scales from boreholes to continents, Ohio State University, Columbus, Ohio

Zhou, Y.Q., 2017. Understanding groundwater flow across scales from boreholes to continents, Kent State University, Kent, Ohio

Zhou, Y.Q., 2017. Understanding submarine groundwater discharge at a continental scale, Jet Propulsion Laboratory, Pasadena, California

Zhou, Y.Q., 2017. Understanding groundwater flow at the borehole scale – Oscillatory Hydraulic Tomography, University of Wyoming, Laramie, Wyoming

WORKSHOPS/FIELD TRIPS ATTENDED

Aug, 2014	High Throughput Computing Training in Open Grid Science School, UW-Madison
May, 2014	Geologic Interpretation of Well Logs Courses by Wes Ingram from Weatherford Laboratories
Feb, 2014	Sequence-Stratigraphy Course by Art Donovan from BP
July, 2013	Field hydro-geophysical research at Boise Hydro-geophysical Research site, Boise, ID
Aug, 2012	COMSOL user workshop in Milwaukee, WI
April, 2012	Karst aquifer field trip at North Central GSA meeting in Dayton, OH

PROFESSIONAL AFFLIATIONS

Memberships:
American Geophysical Union (AGU)
Geological Society of America (GSA)
American Association of Petroleum Geologists (AAPG)
National Ground Water Association (NWGA)

Scientific Reviewer:
Water Resources Research
Ground Water
Journal of Hydrogeology