

ZHEN LI

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80401

EDUCATION

Colorado School of Mines	Golden, CO
Ph.D. , Civil and Environmental Engineering	August 2020
Dissertation: Water and heat transport in shallow subsurface soil and across the soil-air interface	
China University of Petroleum	Qingdao, China
M.S. , Reservoir Engineering	June 2016
B.S. , Petroleum Engineering	June 2013

RESEARCH EXPERIENCE

Lawrence Berkeley National Laboratory & University of Arizona	Berkeley, CA
Postdoctoral research associate, Advisor: Dr. William J. Riley	2020- present
<ul style="list-style-type: none">• Study interaction between hydrological, thermal, microbial and plant process in a ecosystem• Integrate genome information to ecosystem models to improve prediction of greenhouse gas emission	
Colorado School of Mines & University of Texas at Arlington TX	Golden, CO & Arlington,
Research Assistant, Advisor: Dr. Kathleen M. Smits	2016-2020
<ul style="list-style-type: none">• Evaluated different modeling concepts to describe mass & energy transfer in the shallow subsurface soil and across the soil-air interface• Studied the effect of vertical heterogeneity on surface fluxes and subsurface soil conditions• Developed a mechanistically-based soil surface resistance model to improve predictions of surface fluxes in large-scale models	
Forschungszentrum Jülich GmbH	Jülich, Germany
Visiting student researcher, Advisor: Dr. Jan Vanderborght	Summer 2019
<ul style="list-style-type: none">• Conducted field experiments to study the effect of the roughness on soil evaporation	
Lawrence Berkeley National Laboratory	Berkeley, CA
Visiting student researcher, Advisor: Dr. William J. Riley	Summer 2017
<ul style="list-style-type: none">• Modeled the coupled heat and moisture flow in subsurface soil	
China University of Petroleum	Qingdao, China
Research Assistant, Advisor: Dr. Qihong Feng	2013 – 2016
<ul style="list-style-type: none">• Investigated the slippage and adsorption effect on gas transport in shale formations using the lattice Boltzmann pore-scale model• Estimated the oil distribution of reservoirs using reservoir numerical simulation	

PEER-REVIEWED PUBLICATIONS

Li, Z., Vanderborght, J., & Smits, K.M. (2020) The effect of the top soil layer on moisture and evaporation dynamics. *Vadose Zone Journal*. 19:e20049.

Li, Z., Vanderborght, J., & Smits, K. M. (2019). Evaluation of model concepts to describe water transport in shallow subsurface soil and across the soil–air Interface. *Transport in Porous Media*, 128(3), 945-976.

Schwartz, M., **Li, Z.**, Sakaki, T., Moradi, A., & Smits, K. M. (2019). Accounting for temperature effects on the performance of soil moisture sensors in sandy soils. *Soil Science Society of America Journal*, 83(5), 1319-1323.

Wang, S., Feng, Q., Javadpour, F., Xia, T., & **Li, Z.** (2015). Oil adsorption in shale nanopores and its effect on recoverable oil-in-place. *International Journal of Coal Geology*, 147, 9-24.

CONFERENCE PROCEEDINGS

Cui, R., Feng, Q., **Li, Z.**, Guo, F., Yan, A., Liu, S., ... Chen, X. (2016, June 13). Improved oil recovery for the complex fault-block and multilayered reservoir with edge water. Society of Petroleum Engineers. doi:10.2118/180868-MS.

Feng, Q., **Li, Z.**, Wang, S., Han, X., Ge, P., Xia, T., & Sun, C. (2014, December 8). Development of thin layer ultra-heavy oil reservoirs with horizontal well steamflooding and treatment technology for steam breakthrough. Society of Petroleum Engineers. doi:10.2118/172869-MS.

CONFERENCE PRESENTATIONS

Li, Z., Riley, W. J., Brodie, E., Bouskill, N., Chang, K. Y., Grant, R. F., ... & Saleska, S. R. (2021, December). Integration of genome-informed microbial traits in ecosystem models reveals divergent methane productions in thawing permafrost (2021) | VIRTUAL, New Orleans, LA. **Talk**

Li, Z., Schneider, J., Vanderborght, J., Tang, J., & Smits, K. A Dry Surface Layer Based Bare Soil Evaporation Model: Development and Evaluation. American Geophysical Union Fall Meeting., 2020 | VIRTUAL. Poster

Li, Z., & Smits, K. M. The Evolution of the Dry Surface Layer for the Soil Evaporation Quantification. ASA, CSSA and SSSA International Annual Meetings (2020) | VIRTUAL, Phoenix, AZ. **Talk**

Li, Z., Schneider, J., Vanderborght, J., & Smits, K. M. Understanding soil-air interactions affected by soil surface heterogeneity based on in situ measurements, American Geophysical Union Fall Meeting. San Francisco, CA, Dec 2019. poster

Ndegwa, N., **Li, Z.**, & Smits, K. M. An experimental study of evaluating the effect of litter layer on soil evaporation. College of Engineering Innovation Day, Arlington, TX. April 2019. poster

Li, Z., and Smits, K.M. Evaporation behavior analysis from layered soil and its application to estimate the soil property profile, American Geophysical Union Fall Meeting. Washington, DC. Dec 2018. poster

Li, Z., and Smits, K.M. Experimental and modeling study of water transport in layered porous media and across land-atmosphere interface, American Geophysical Union Fall Meeting. New Orleans, LA, Dec. 2017. poster

Li, Z., and Smits, K.M. Experimental and numerical investigation of evaporation from layered soil, Gordon Research Conference. American Geophysical Union Fall Meeting. Newry, ME, Jul. 2017. poster

Li, Z., and Smits K.M. Effect of mulch layer on evaporation from soil, MODFLOW and More Conference, Golden, CO, May 2017. poster

AWARDS and GRANTS

DAAD RISE Professional Scholarship, German Academic Exchange Service, Germany 2019

REU Program Grants, University of Texas at Arlington 2018

Edna Bailey Sussman Foundation Fellowship and Exceptional Merit Award, Sussman Foundation 2017

Academic Excellence Scholarship, China University of Petroleum 2010-2015

Outstanding Graduates of Class 2013, China University of Petroleum	2013
Outstanding Bachelor Thesis Award, China University of Petroleum	2013
National Innovation Program Grants for College Students, China University of Petroleum	2012
National Undergraduate Scholarship, the Ministry of Education, China	2012

SKILLS and TECHNIQUES

Proficient in numerical simulation software (COMSOL and HYDRUS) and matlab

Basic use of groundwater flow software (MODFLOW), reservoir simulation software (ECLIPSE and CMG) and C

Laboratory and field experimental techniques

ACTIVITIES and MEMBERSHIP

Convener, AGU Fall meeting 2021 session “Illuminating Genes-to-Ecosystems-to-Genes Feedbacks in Model Ecosystems”

Reviewer, Vadose Zone Journal (VZJ), Water Resources Research (WRR), Geophysical Research Letters (GRL)

Member, Committee member of Unsaturated Zone in American Geophysical Union (AGU), National Ground Water Association (NGWA), Soil Science Society of America (SSSA)

In the news

- Rusch, E., 2018. Tutoring program aims to grow future scientists, engineers. Published 8 January, 2018. <https://www.minesnewsroom.com/news/tutoring-program-aims-grow-future-scientists-engineers>
 - Earth and Space Science News (EoS) magazine, Postcards from the field, Greetings from the lysimeters of Forschungszentrum Jülich, Germany, <https://eos.org/postcards-from-the-field>. Published on 23 August 2019.
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