

Peiyuan Li, Ph.D.

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Education

- 2017 – 2021 Ph.D. in Civil, Environmental and Sustainable Engineering
Arizona State University, Tempe, USA
Dissertation: Biogenic Impact of Urban Vegetation on Carbon and Heat Dynamics in the Built Environment
Advisor: Dr. Zhihua Wang
- 2014 – 2016 M.S. in Environmental Engineering
University of Michigan, Ann Arbor, USA
Advisor: Dr. Brian R. Ellis
- 2010 – 2014 B.E. in Hydrology and Water Resources
Hohai University, Nanjing, China

Appointments

- Postdoctoral Researcher** | Prairie Research Institute, University of Illinois 2022 – current
Assessment of optimum nature-based solutions for Chicago region using regional climate and machine learning models.
Supervisor: Dr. Ashish Sharma
- Graduate Research Assistant** | Arizona State University 2017 – 2021
Biogenic CO₂ exchange modeling in the built environment.
Advisor: Dr. Zhihua Wang
- Graduate Research Assistant** | University of Michigan 2015 – 2017
Reactive transport modeling of CO₂ sequestration in fractured basalt.
Advisor: Dr. Brian R. Ellis
- Undergraduate Research Assistant** | Hohai University 2013 – 2014
Runoff separation based on iodine isotope.
Advisor: Dr. Peng Yi

Research Interests

Urban meteorology and climatology, Land-atmosphere interactions, Urban land surface modeling, Regional climate modeling, Sustainable urban development, Hydrologic modeling, Statistical learning in urban climate, Plant physiology.

Peer-Reviewed Journal Publications

- Li, P., Wang, C., Wang, Z.-H. (2021) Assessing the impact of urban irrigation on biogenic CO₂ exchange in the built environment using coupled WRF-urban modeling framework. In preparation.
- Li, P., Xu, T., Wei, S., Wang, Z.-H. (2021) Multi-objective optimization of urban environmental system design using machine learning. *Computers, Environment and Urban Systems*. Under review.

- Chen, L., Yang, J., Li, P. (2021) Modelling the effect of BIPV window in the built environment: Uncertainty and sensitivity. *Building and Environment*. doi:10.1016/j.buildenv.2021.108605
- Li, P., Wang, Z.-H. (2021) Environmental co-benefits from urban greening for mitigating heat and carbon emissions. *Journal of Environmental Management*, 293(112963). doi: 10.1016/j.jenvman.2021.112963
- Li, P., Wang, Z.-H. (2021) Uncertainty and sensitivity analysis of modeling plant CO₂ exchange in the built environment. *Building and Environment*, 189(107539). doi:10.1016/j.buildenv.2020.107539
- Li, P., Wang, Z.-H. (2020) Modeling carbon dioxide exchange in a single-layer urban canopy model, *Building and Environment*, 184(107243). doi:10.1016/j.buildenv.2020.107243
- Li, P., Wang, Z.-H. (2020) A nonequilibrium thermodynamic approach for surface energy balance closure. *Geophysical Research Letters*, 47, e2019GL085835. doi:10.1029/2019GL085835
- Li, P., Wang, Z.-H. (2019) Estimating evapotranspiration over vegetated surfaces based on wet patch patterns. *Hydrological Research*, 50 (4) pp.1037–1046. doi:10.2166/nh.2019.034
- Menefee, A.H., Li, P., Giammar, D.E., Ellis, B.R. (2017) The roles of transport limitations and mineral heterogeneity in carbonation of fractured basalts. *Environmental Science & Technology*, 51(16) pp. 9352-9362 doi:10.1021/acs.est.7b00326

Selected Conferences & Talks

- Li, P., Xu, T., Wei, S., Wang, Z.-H., Oral: Assessment and multi-objective optimization of urban environmental system design using a machine learning approach. American Geophysical Union fall meeting, 2021
- Li, P., Wang, C., Wang, Z.-H., Oral: Estimating the impact of urban irrigation on carbon dioxide exchange using a coupled WRF-UCM and photosynthesis model. American Geophysical Union fall meeting, 2021
- Li, P., Invited Talk: Urban Vegetation on heat and CO₂ emissions: modeling, uncertainty, and applications. ASU Hydrosystems Engineering Seminar Series, 2021
- Li, P., Wang, Z.-H., Oral: Modeling and sensitivity analysis of carbon dioxide exchange in urban environment. 101st American Meteorological Society annual meeting, 2021
- Li, P., Wang, Z.-H., Poster: Environmental co-benefits from urban greening for mitigating heat and carbon emissions. ASU School of Sustainable Engineering and the Built Environment 11th Symposium, 2021 (2nd place award)
- Li, P., Wang, Z.-H., Poster: Carbon dioxide exchange in urban areas: modeling, uncertainties, and sensitivity analysis. American Geophysical Union fall meeting, 2020
- Li, P., Wang, Z.-H., Oral: Modelling biogenic and anthropogenic carbon dioxide exchange in urban area - a data fusion approach. Architectural Science Association conference, 2020
- Li, P., Wang, Z.-H., Poster: A novel method to estimate actual evapotranspiration using soil moisture and meteorological measurements. 99th American Meteorological Society annual meeting, 2019
- Li, P., Invited Talk: Novel Perspectives towards the uncertainties in surface energy balance. ASU Hydrosystems Engineering Seminar Series, 2020
- Li, P., Wang, Z.-H., Poster: Living in a steam engine? Surface energy imbalance revisited in the light of non-equilibrium thermodynamics. ASU School of Sustainable Engineering and the Built Environment 9th Symposium, 2019
- Li, P., Wang, Z.-H., Poster: A novel method to estimate evapotranspiration from natural vegetated surfaces. ASU Urban Climate Research Center Poster Event, 2018

Menefee, A.H., Li, P., Giammar, D.E., Ellis, B.R., Oral: CO₂ storage in fractured basalt: Coupling experimental analyses with reactive transport modelling. Goldschmidt Conference, Yokohama, Japan, 2016

Teaching Experience

CEE 341 Fluid Mechanic for Civil Engineers | Ira A. Fulton Schools of Engineering, ASU
Graduate Teaching Associate (lab), 2018 Fall, 2019 Spring, 2019 Fall semesters, ~90 students per semester.

Award

2021 Dean's Dissertation Award, Ira A. Fulton Schools of Engineering, ASU: a prestigious award in recognition of excellence in dissertation research.

2021 Completion Fellowship, Graduate College, ASU: a \$9,600 fellowship and 1 credit hour tuition in recognition of extraordinary academic achievements towards graduation.

2020 Engineering Graduate Fellowship, Ira A. Fulton Schools of Engineering, ASU: a \$1,000 fellowship in recognition of extraordinary academic achievements.

2012, 2013 Merit Student Award, Hohai University: a yearly award for undergraduates with excellent academic performance.

Professional Membership

American Geophysical Union (AGU), member since 2019

American Meteorological Society (AMS), member since 2019

Professional Service

Reviewer for Archived Journals

Science of the Total Environment, PLOS ONE

ASU GPSA reviewer

Research/Teaching Award reviewer 2019 - 2020

Relevant Skills

Language: English, Chinese

Programming: MATLAB, R, Python, Fortran

Software: ArcGIS, ERDAS Imagine, MODFLOW, EPANET, HEC-HMS, NetLogo, Adobe Master Collection