

CHENGHAO WANG

Postdoctoral Research Fellow

Department of Earth System Science, School of Earth, Energy & Environmental Sciences
Stanford University, Stanford, CA 94305, USA

Office: Yang and Yamazaki Environment and Energy Building (Y2E2), Room 380

Email: chenghao.wang@stanford.edu

Personal website: <https://earth.stanford.edu/people/chenghao-wang>

EDUCATION

Ph.D. in Civil, Environmental and Sustainable Engineering Arizona State University, Tempe, AZ <i>Dissertation: Participatory Roles of Urban Trees in Regulating Environmental Quality</i>	2019
M.S.E. in Civil, Environmental and Sustainable Engineering Arizona State University, Tempe, AZ	2018
B. Eng. in Hydrology and Water Resources Engineering China Three Gorges University, Yichang, China <i>Thesis: Discharge Response to Climate Change and Land Use Change in Qingjiang River Basin</i>	2015
Visiting Student in Environmental Science The Ohio State University, Columbus, OH Hubei Higher Education Outstanding Student Overseas Study Program (2013), sponsored by the Ministry of Education of Hubei Province, China (68 out of over 1 million college students)	2013

ACADEMIC APPOINTMENT

Postdoctoral Research Fellow Jackson Lab (https://jacksonlab.stanford.edu/) Advisor: Dr. Robert B. Jackson Department of Earth System Science & Stanford Woods Institute for the Environment Stanford University, Stanford, CA	2020.01–present
Fellow in Environment and Climate The New Map of Life™ Initiative (http://longevity.stanford.edu/a-new-map-of-life/) Stanford Center on Longevity Stanford University, Stanford, CA	2020.01–present
Graduate Research Associate Urban Environment Research Group (http://www.public.asu.edu/~zwang159/) Advisor: Dr. Zhihua Wang School of Sustainable Engineering and the Built Environment Arizona State University, Tempe, AZ	2015.08–2019.12

RESEARCH INTERESTS

Urban Meteorology and Climatology, Boundary-Layer Meteorology, Atmospheric Transport and Dispersion, Land–Atmosphere Interactions, Sustainable Urban Development, Complex Networks and Systems, Energy Consumption, Hydrologic Modeling, Biogeochemistry (Greenhouse Gases)

PUBLICATIONS

(*: Corresponding Author; †: Equal Contribution)

Refereed Journal Publications

1. **Wang, C.***, Wang, Z.-H., & Ryu, Y.-H. (2021) A single-layer urban canopy model with transmissive radiation exchange between trees and street canyons. *Building and Environment*, 107593, in press. <https://doi.org/10.1016/j.buildenv.2020.107593>.
2. **Wang, C.***, Wang, Z.-H., Kaloush, K. E., & Shacat, J. (2021). Perceptions of urban heat island mitigation and implementation strategies: survey and gap analysis. *Sustainable Cities and Society*, 66, 102687. <https://doi.org/10.1016/j.scs.2020.102687>.
3. Zhang, F.[†], **Wang, C.[†]**, & Wang, Z.-H.* (2020). Responses of natural vegetation to climate in dryland ecosystems: A case study between Xinjiang and Arizona. *Remote Sensing*, 12(21), 3567. <https://doi.org/10.3390/rs12213567>.
4. **Wang, C.**, Wang, Z.-H.*, & Li, Q. (2020). Emergence of urban clustering among U.S. cities under environmental stressors. *Sustainable Cities and Society*, 63, 102481. <https://doi.org/10.1016/j.scs.2020.102481>.
5. **Wang, C.**, Wang, Z.-H.*, & Sun, L. (2020). Early-warning signals for critical temperature transitions. *Geophysical Research Letters*, 47(14), e2020GL088503. <https://doi.org/10.1029/2020GL088503>. [[See media coverage below](#)]
6. **Wang, C.**, & Wang, Z.-H.* (2020). A network-based toolkit for evaluation and intercomparison of weather prediction and climate modeling. *Journal of Environmental Management*, 268, 110709. <https://doi.org/10.1016/j.jenvman.2020.110709>.
7. Yang, J.*[†], Hu, L.*[†], & **Wang, C.** (2019). Population dynamics modify urban residents' exposure to extreme temperatures across the United States. *Science Advances*, 5(12), eaay3452. <https://doi.org/10.1126/sciadv.aay3452>. [[See media coverage below](#)]
8. **Wang, C.**, Wang, Z.-H.*, & Yang, J. (2019). Urban water capacity: Irrigation for heat mitigation. *Computers, Environment and Urban Systems*, 78, 101397. <https://doi.org/10.1016/j.compenvurbsys.2019.101397>.
9. **Wang, C.**, Wang, Z.-H.*, Wang, C. Y., & Myint, S. W. (2019). Environmental cooling provided by urban trees under extreme heat and cold waves in U.S. cities. *Remote Sensing of Environment*, 227, 28–43. <https://doi.org/10.1016/j.rse.2019.03.024>.
10. **Wang, C.**, Li, Q., & Wang, Z.-H.* (2018). Quantifying the impact of urban trees on passive pollutant dispersion using a coupled large-eddy simulation–Lagrangian stochastic model. *Building and Environment*, 145, 33–49. <https://doi.org/10.1016/j.buildenv.2018.09.014>.
11. **Wang, C.**, Wang, Z.-H.*, & Yang, J. (2018). Cooling effect of urban trees on the built environment of contiguous United States. *Earth's Future*, 6(8), 1066–1081. <https://doi.org/10.1029/2018EF000891>. [[Featured as the cover story](#)]
12. Song, J.*, Wang, Z.-H., & **Wang, C.** (2018). The regional impact of urban heat mitigation strategies on planetary boundary-layer dynamics over a semiarid city. *Journal of Geophysical Research: Atmospheres*, 123(12), 6410–6422. <https://doi.org/10.1029/2018JD028302>.
13. **Wang, C.**, Wang, Z.-H.*, Yang, J., & Li, Q. (2018). A backward-Lagrangian-stochastic footprint model for the urban environment. *Boundary-Layer Meteorology*, 168, 59–80. <https://doi.org/10.1007/s10546-018-0338-6>.
14. **Wang, C.***, Wang, C. Y., Myint, S. W., & Wang, Z.-H. (2017). Landscape determinants of spatio-temporal patterns of aerosol optical depth in the two most polluted metropolitans in the United States. *Science of the Total Environment*, 609, 1556–1565. <https://doi.org/10.1016/j.scitotenv.2017.07.273>.
15. **Wang, C.**, & Wang, Z.-H.* (2017). Projecting population growth as a dynamic measure of regional urban warming. *Sustainable Cities and Society*, 32, 357–365. <https://doi.org/10.1016/j.scs.2017.04.010>.

16. Song, J. *, Wang, Z.-H., & **Wang, C.** (2017). Biospheric and anthropogenic contributors to atmospheric CO₂ variability in a residential neighborhood of Phoenix, Arizona. *Journal of Geophysical Research: Atmospheres*, 122(6), 3317–3329. <https://doi.org/10.1002/2016JD026267>.
17. Wang, Z.-H. *, Fan, C., Myint, S. W., & **Wang, C.** (2016). Size matters: What are the characteristic source areas for urban planning strategies? *PLoS ONE*, 11(11), e0165726. <https://doi.org/10.1371/journal.pone.0165726>.
18. Xiao, S. *, **Wang, C.**, Wilkinson, R. J., Liu, D., Zhang, C., Xu, W., Yang, Z., Wang, Y., & Lei, D. (2016). Theoretical model for diffusive greenhouse gas fluxes estimation across water-air interfaces measured with the static floating chamber method. *Atmospheric Environment*, 137, 45–52. <https://doi.org/10.1016/j.atmosenv.2016.04.036>.
19. **Wang, C.**, Liu, J. *, Dong, X., & Yu, D. (2016). Runoff response to RCP scenarios of CMIP5 climate change projections in Qingjiang River Basin. *Journal of Central China Normal University (Natural Sciences)*, 50(3), 449–456. <https://doi.org/10.3969/j.issn.1000-1190.2016.03.023>. (in Chinese)
20. **Wang, C.**, Liu, J. *, Dong, X., & Yu, D. (2016). Research of runoff change in Qingjiang River Basin based on CMIP5 climate model. *Water Resources and Power*, 34(7), 16–20. (in Chinese)
21. **Wang, C.** *, & Li, X. (2015). Primary assessment of the daytime aquatic environment in summer at Three Gorges Reservoir and Yangtze River's Yichang section. *Science and Technology Innovation Herald*, 12(3), 111–114. <https://doi.org/10.3969/j.issn.1674-098X.2015.03.071>. (in Chinese)
22. Xiao, S. *, Yang, H., Liu, D., Zhang, C., Lei, D., Wang, Y., Peng, F., Li, Y., **Wang, C.**, Li, X., Wu, G., & Liu, L. (2014). Gas transfer velocities of methane and carbon dioxide in a subtropical shallow pond. *Tellus B: Chemical and Physical Meteorology*, 66, 23795. <https://doi.org/10.3402/tellusb.v66.23795>.
23. Xiao, S. *, Liu, W., Yang, H., Lei, D., Wang, Y., Peng, F., Li, Y., **Wang, C.**, Zhang C., Li, X., Wu, G., Liu, L., & Ouyang, K. (2014). Extreme methane bubbling emissions from a subtropical shallow eutrophic pond. *Austin Biometrics and Biostatistics*, 1(2), id1006.
24. **Wang, C.**, Xiao, S. *, Li, Y., Zhong, H., Li, X., & Peng, F. (2014). Methane formation and consumption processes in Xiangxi Bay of the Three Gorges Reservoir. *Scientific Reports*, 4, 4449. <https://doi.org/10.1038/srep04449>.
25. **Wang, C.** * (2014). Current research of sediment incipient motion velocity. *Science and Technology Innovation Herald*, 11(27): 32–36. <https://doi.org/10.3969/j.issn.1674-098X.2014.27.014>. (in Chinese)
26. **Wang, C.** *, & Luo Z. (2012). An approach for calculating the outflow of a hydropower plant with guaranteed output under sparse data conditions. *New Technology & New Products of China*, 19: 70–71. <https://doi.org/10.13612/j.cnki.cntp.2012.19.151>. (in Chinese)

Refereed Conference Publications

1. **Wang, C.** * (2020). Landscape phenology and soil moisture dynamics influenced by irrigation in a desert urban environment. *Imaginable Futures: Design Thinking, and the Scientific Method*. Conference paper in: The 54th International Conference of the Architectural Science Association (ANZAScA) 2020, 1–10. Auckland, New Zealand, November 26–27, 2020. (in press)
2. **Wang, C.** * (2014). Research of sustainable development on waterway transportation in China. *Chapter: Transportation Issues in Developing Countries. Main Theme: Application of Nanotechnology in Pavements, Geological Disasters, and Foundation Settlement Control Technology*. *American Society of Civil Engineers (ASCE) Geotechnical Special Publications (GSP)*, 244: 32–39. Conference paper in: Geo-Hubei 2014 International Conference on Sustainable Civil Infrastructure (Geo-Hubei 2014). Yichang, Hubei Province, China, July 20–22, 2014. <https://doi.org/10.1061/9780784478448.005>.
3. Li, X., Chen, P., Ye, Y. *, & **Wang, C.** (2014). Structure design and mechanics calculation of aqueduct model. *Chapter 2: Architecture Science, Civil Engineering, Building and Construction Materials and*

Geoengineering. Main Theme: Materials Science, Civil Engineering and Architecture Science, Mechanical Engineering and Manufacturing Technology. Applied Mechanics and Materials, 488–489: 381–384. Conference paper in: The 2014 International Conference on Advanced Engineering Materials and Architecture Science (ICAEMAS 2014). Xi'an, Shanxi Province, China, January 04–05, 2014. <https://doi.org/10.4028/www.scientific.net/AMM.488-489.381>.

4. **Wang, C.**, Liu, J.*, & Xuan, Y. (2013). Research on various operation modes of Geheyan hydropower station reservoir in the Qingjiang River. *Main Theme: Advances in Environmental Technologies. Advanced Materials Research*, 726–731: 3486–3491. Conference paper in: The 2013/2nd International Conference on Energy and Environmental Protection (ICEEP 2013), Guilin, Guizhou Province, China, April 19–21, 2013. <https://doi.org/10.4028/www.scientific.net/AMR.726-731.3486>.

Technical Articles and Reports

1. **Wang, C.**, Wang, Z.-H., & Kaloush, K. E. (2020). Critical review and gap analysis of impacts from pavements on urban heat island. Report prepared for *National Asphalt Pavement Association (NAPA)* by *National Center of Excellence (NCE) on SMART Innovations*, 55 pages. Available at: <https://ncesmart.asu.edu/gap-analysis-of-impacts-from-pavements-on-uhi/> (NCE on SMART Innovations).
2. Wang, Z.-H., Kaloush, K. E., & **Wang, C.** (2017). Sustainability and scaling of urban transportation networks (Report No. NTC2016-SU-R-04). Report prepared for *National Transportation Center at Maryland (NTC)*, 33 pages. Available at: <https://mti.umd.edu/project/ntc2016-su-r-04-sustainability-and-scaling-urban-transportation-networks> (NTC) and <https://trid.trb.org/view/1505092> (Transportation Research Board, National Academies of Sciences, Engineering, and Medicine).

INVITED TALKS

1. “Impact of Pavements on Urban Heat Island: A Critical Review and Gap Analysis”. Invited by National Asphalt Pavement Association (NAPA), with Kaloush, K. E. and Wang, Z.-H. (from Arizona State University), panelist webinar, Oct 15, 2020.
2. “Building Sustainable Cities with Trees: How Trees Regulate Urban Thermal Condition and Pollutant Dispersion”. Invited by SEBE Hydrosystems Engineering Seminar Series, Arizona State University, Tempe, AZ, Sep 11, 2019.
3. “Urban Remote Sensing Applications and Implications for Numerical Simulations”. Invited by China Three Gorges University. Yichang, China, May 23, 2018.
4. “Urban Adaptation Strategies toward a Sustainable Built Environment”. Invited by College of Hydraulic & Environmental Engineering, China Three Gorges University. Yichang, China, May 22, 2018.
5. “Participatory Roles of Trees in Influencing Urban Environment Quality”. SEBE Hydrosystems Engineering Seminar Series, Arizona State University, Tempe, AZ, Mar 28, 2018.

ORAL OR POSTER PRESENTATIONS

(*Italic*: Competition Award; *: Presenter)

1. Sun, L.*, **Wang, C.**, & Wang, Z.-H. Climatology of solar radiation in the Contiguous United States (1960–2019). (High school student) Poster: Session—Applied Meteorology and Climatology, American Meteorological Society 20th Annual Student Conference at 101st Annual Meeting. New Orleans, LA, Jan 10–15, 2020. (virtual due to COVID-19)
2. Sun, L.*, **Wang, C.**, & Wang, Z.-H. Long-term solar radiation patterns across the Contiguous United States. (High school student) Poster: Session—Bright STaRS: Bright Students Training as Research Scientists, American Geophysical Union 2020 Fall Meeting. San Francisco, CA, Dec 1–17, 2020. (virtual due to COVID-19)

3. **Wang, C.*** Landscape phenology and soil moisture dynamics influenced by irrigation in a desert urban environment. Oral: Session–Simulation, Prediction & Evaluation, 54th International Conference of the Architectural Science Association (ASA). Auckland University of Technology, Auckland, New Zealand, Nov 26–27, 2020. (virtual due to COVID-19)
4. **Wang, C.***, Li, Q., & Wang, Z.-H. The residence time of pollutants emitted within the urban canopy influenced by street canyon geometry and emission conditions. Oral: Session–Modeling and Monitoring of Air Pollution in the Urban Environment, 21st Joint Conference on the Applications of Air Pollution Meteorology with the Air & Waste Management Association (A&WMA), American Meteorological Society 100th Annual Meeting. Boston, MA, Jan 12–16, 2020.
5. **Wang, C.***, Wang, Z.-H., & Yang, J. Evaluating the potential of irrigation for mitigating urban heat: trade-off between water use and heat mitigation capacity. Poster: Session–Interdisciplinary Sustainable Solutions for Urban Areas, American Geophysical Union 2019 Fall Meeting. San Francisco, CA, Dec 09–13, 2019. <https://doi.org/10.1002/essoar.10501419.1>. Poster URL: <https://agu.confex.com/agu/fm19/meetingapp.cgi/Paper/508535>.
6. **Wang, C.***, Wang, Z.-H., Wang, C. Y., & Myint, S. W. The cooling capacity of urban trees in response to thermal extremes in U.S. cities. Poster: Urban Climate Research Center 2nd Annual Student Poster Competition. Tempe, AZ, Mar 27, 2019.
7. **Wang, C.***, Wang, Z.-H., & Li, Q. Structure of similarity-driven clustering among U.S. cities in response to environmental stressors. Poster: 9th Annual SSEBE Graduate Research Symposium. Tempe, AZ, Feb 22, 2019.
8. **Wang, C.***, & Wang, Z.-H. A statistical view of the Phoenix urban heat island during the past 86 years (1933–2018). Poster: Central Arizona–Phoenix Long-Term Ecological Research (CAP LTER) 21st Annual All Scientists Meeting and Poster Symposium. Scottsdale, AZ, Jan 11, 2019. Poster URL: <https://d3dqsm2futmewz.cloudfront.net/docs/symposia/symp2019/Wang-Wang.pdf>.
9. **Wang, C.***, & Wang, Z.-H. Temperature regulation of the surface cooling rate of urban trees under climatic extremes. Oral: 32nd Conference on Climate Variability and Change, American Meteorological Society 99th Annual Meeting. Phoenix, Arizona, Jan 06–10, 2019.
10. **Wang, C.***, Li, Q., & Wang, Z.-H. Quantifying the impact of urban trees on pollutant dispersion using a coupled LES–Lagrangian stochastic model. Oral: Session–Numerical Studies of Urban Environments, 10th International Conference on Urban Climate/14th Symposium on the Urban Environment (ICUC10). City University of New York, New York City, NY, Aug 06–09, 2018.
11. **Wang, C.***, Wang, Z.-H., Li, Q., & Yang, J. A coupled large-eddy simulation–Lagrangian stochastic modeling framework with applications to urban areas. Oral: Session–Modeling and Observations in Heterogeneous, Complex, and Urban Terrain, including Vegetated Surfaces and Canopies, 23rd Symposium on Boundary Layers and Turbulence/21st Conference on Air-Sea Interaction (23BLT/21ASI). Oklahoma City, OK, Jun 11–15, 2018.
12. **Wang, C.**, Li, Q., & Wang, Z.-H.* Impacts of urban trees on particle dispersion in street canyons: Modeling and applications. Oral: Session–Urban Fluid Mechanics, 8th International Symposium on Environmental Hydraulics (ISEH). University of Notre Dame, Notre Dame, IN, Jun 04–07, 2018.
13. **Wang, C.***, & Wang, Z.-H. Solution or problem? Effects of urban trees on the turbulent transport of airborne pollutant from traffic emission. Poster: Urban Climate Research Center 1st Annual Student Poster Competition. Tempe, AZ, Apr 03, 2018. [*1st Place in the Competition*]
14. **Wang, C.***, & Wang, Z.-H. Numerical simulations of street trees in influencing the urban air quality. Poster: 8th Annual SSEBE Graduate Research Symposium. Tempe, AZ, Feb 16, 2018. [*3rd Place in the Competition*]
15. **Wang, C.***, Wang, Z.-H., Yang, J., & Li, Q. A Lagrangian stochastic urban footprint model: Model development and evaluation. Oral: 20th Joint Conference on the Applications of Air Pollution Meteorology

with the Air & Waste Management Association (A&WMA), American Meteorological Society 98th Annual Meeting. Austin, TX, Jan 07–11, 2018.

16. **Wang, C.***, Wang, C. Y., Myint, S. W., & Wang, Z.-H. Spatial and temporal variability of satellite-based aerosol optical depth in the dynamic urban environment. Poster: CAP LTER 20th Annual All Scientists Meeting and Poster Symposium. Scottsdale, AZ, Jan 05, 2018. Poster URL: <https://d3dqsm2futmewz.cloudfront.net/docs/symposia/symp2018/Wang-etal.pdf>.
17. **Wang, C.***, Upreti, R., Wang, Z.-H., & Yang, J. Impacts of trees on urban environment in the contiguous United States. Poster: Session–Advances in Understanding Land–Atmosphere Interactions in a Changing Environment, American Geophysical Union 2017 Fall Meeting. New Orleans, LA, Dec 11–15, 2017. Poster URL: <https://agu.confex.com/agu/fm17/meetingapp.cgi/Paper/205916>.
18. **Wang, C.*** Evaluating the effects of urban trees on land surface temperature during cold spells. Lightning: Session–Applications of GIS in Sustainable Engineering and the Built Environment, GIS Day 2017, ASU Library Map and Geospatial Hub. Tempe, AZ, Nov 17, 2017.
19. **Wang, C.***, Wang, Z.-H., Yang, J., & Krayenhoff, E. S. Radiative shading effects of trees on the built environment in the contiguous United States. Poster: 3rd Urban Water Innovation Network (U-WIN) Research Team Annual Meeting. Fort Collins, CO, Jul 31–Aug 02, 2017. [2nd Place in the Competition] Poster URL: https://erams.com/UWIN/wp-content/uploads/2017/08/Wang-Radiative-Effects-of-Tress_compressed.pdf.
20. **Wang, C.***, Upreti, R., Wang, Z.-H., & Yang, J. Impact of shade trees on urban hydroclimate for Phoenix and the continental United States. Poster: CAP LTER 19th Annual All Scientists Meeting and Poster Symposium. Scottsdale, AZ, Jan 13, 2017. Poster URL: <https://d3dqsm2futmewz.cloudfront.net/docs/symposia/symp2017/Wang-etal.pdf>.
21. **Wang, C.***, She, Y., Liu, J., Li, X., Li, Y., & Li, X. Emission of greenhouse gases from the Meiziya Reservoir. Oral: 2013–2014 College Students Science and Technology Projects Symposium, China Three Gorges University. Yichang, China, Nov 2014. [First Prize in the Competition]
22. Luo Z.*, **Wang, C.**, Peng, Y., & Liu, W. Optimal reservoir operation for flood control with rainfall forecasting. Oral: 2012–2013 College Students Science and Technology Projects Symposium, China Three Gorges University. Yichang, China, Oct 2013. [Second Prize in the Competition]
23. **Wang, C.***, Li, X., Zhong, H., Ling, W., Zhao, P., & Li, X. Simulating the methane emission from reservoir sediments. Oral: 2012–2013 College Students Science and Technology Projects Symposium, China Three Gorges University. Yichang, China, Oct 2013. [First Prize in the Competition]
24. **Wang, C.***, Luo, Z., Lei, Y., Wang M., & Liu, Y. The development of a hydropower station with flood discharge, power generation, and energy dissipation. Oral: 3rd China National Undergraduate Hydraulic Innovational Design Competition. North China University of Water Resources and Electric Power, Zhengzhou, China, Jul 29–31, 2013. [Second Prize in the Competition]
25. **Wang, C.***, Luo, Z., & Xuan, Y. Evaluation of optimal operation models for Geheyuan Reservoir. Oral: 2011–2012 College Students Science and Technology Projects Symposium, China Three Gorges University. Yichang, China, Oct 2012. [First Prize in the Competition]

PATENTS GRANTED BY SIPO CHINA

(SIPO China: State Intellectual Property Office of the People's Republic of China)

1. **Wang, C.**, Zhao, P., Li, X., Liu, J., She, Y., & Zhong, H. An air sample and inhalable particle sampler. *Utility Model Patent*. Ref. No: CN201420174368.5. Filed: Apr 11, 2014; Patented: Aug 06, 2014. <https://doi.org/10.13140/RG.2.1.3507.6961>.

2. **Wang, C.**, Luo, Z., & Peng, L. An automatic flood diversion and aerating system for urban landscape river channels. *Utility Model Patent*. Ref. No: CN201420121440.8. Filed: Mar 18, 2014; Patented: Aug 06, 2014. <https://doi.org/10.13140/RG.2.1.1410.5448>.
3. **Wang, C.** A solar screened water bloom eliminating boat. *Utility Model Patent*. Ref. No: CN201320536201.4. Filed: Aug 30, 2013; Patented: Jun 04, 2014. <https://doi.org/10.13140/RG.2.1.2459.1204>.
4. **Wang, C.**, Luo, Z., Lei, Y., Wang, M., Liu, Y., & Peng, H. A flood discharge, power generation, and energy dissipation hydropower station. *Utility Model Patent*. Ref. No: CN201320661937.4. Filed: Oct 25, 2013; Patented: Apr 02, 2014. <https://doi.org/10.13140/RG.2.1.4556.2726>.
5. **Wang, C.** Spillway impulse water turbine. *Utility Model Patent*. Ref. No: CN201320578623.8. Filed: Sep 18, 2013; Patented: Mar 26, 2014. <https://doi.org/10.13140/RG.2.1.4031.9848>.
6. **Wang, C.** An anti-blocking catch basin lid. *Utility Model Patent*. Ref. No: CN201320535504.4. Filed: Aug 30, 2013; Patented: Feb 12, 2014. <https://doi.org/10.13140/RG.2.1.5080.5603>.
7. **Wang, C.** The water stopper for gas inlet system of gas analyzer. *Utility Model Patent*. Ref. No: CN201320561220.2. Filed: Sep 11, 2013; Patented: Jan 29, 2014. <https://doi.org/10.13140/RG.2.1.2983.4083>.
8. **Wang, C.**, Luo, Z., Lei, Y., Wang, M., Liu, Y., & Peng, H. A flood discharge, power generation, and energy dissipation hydropower station. *Invention Patent*. Ref. No: CN201310508610.8. Filed: Oct 25, 2013; Patented (Public): Jan 22, 2014. <https://doi.org/10.13140/RG.2.1.1082.8648>.
9. **Wang, C.** A multifunctional field environment factor collection work box. *Utility Model Patent*. Ref. No: CN201320535849.X. Filed: Aug 30, 2013; Patented: Jan 01, 2014. <https://doi.org/10.13140/RG.2.1.3180.0168>.

RESEARCH PROJECTS AND GRANTS

Funded Research Projects and Grants during Ph.D. (Arizona State University)

1. *Critical Review and Gap Analysis of Impacts from Pavements on Urban Heat Island* 2018.07–2019.12
Sponsored by National Asphalt Pavement Association, co-sponsored by Urban Climate Research Center and Arizona Pavements/Materials Conference Committee
Role: Graduate Research Associate; PIs: Wang, Z., & Kaloush, K.
2. *Rapid Modifications of Land Surface Temperature during Rainfall: Basics and Implications* 2017.11–2018.01
Sponsored by U.S. Army Research Laboratory, Department of Defense (No. W911NF-15-1-0003)
Role: Graduate Research Associate; PIs: Bou-Zeid, E., Hultmark, M., Wang, Z., & Kaloush, K.
3. *Sustainable Urban Development in the Sun Corridor: Finding Engineering Alternatives through Coupled WRF-urban Land Surface Modeling* 2016.08–2019.02
Sponsored by National Science Foundation (No. CBET-1435881)
Role: Graduate Research Associate; PI: Wang, Z.
4. *Sustainability and Scaling of Urban Transportation Networks* 2016.05–2016.12
Sponsored by National Transportation Center (NTC) @ Maryland (No. DTRT13-G-UTC30)
Role: Graduate Research Associate; PIs: Wang, Z., & Kaloush, K.
5. *SRN: Urban Water Innovation Network (U-WIN): Transitioning Toward Sustainable Urban Water Systems* 2015.08–2017.11
Sponsored by National Science Foundation (No. CBET-1444758)
Role: Graduate Research Associate; PIs: Arabi, M., Pivo, G., Welty, C., Bou-Zeid, E.,

& Haggerty, R.

Funded Research Projects and Grants during B. Eng. (China Three Gorges University)

1. *Quantifying the Emissions of Greenhouse Gases from the Meiziya Reservoir* 2013.09–2015.06
Sponsored by China Three Gorges University and Collaborative Innovation Center for Geo-Hazards and Eco-Environment in Three Gorges Area, Hubei Province (CICGE) (No. SH2013-2014 025, No. CTGU2013-2014 A04)
Role: Student PI; Advisor: Xiao, S.
2. *Major Components of Photochemical Pollution Episodes in Yichang City, China* 2013.09–2014.09
Sponsored by China Three Gorges University (No. SH2013-2014 026)
Role: Research Assistant; Student PI: Yang, C.; Advisor: Xiao, S.
3. *Carbon Emissions from the Three Gorges Reservoir* 2013.06–2015.05
Sponsored by National Natural Science Foundation of China (No. 41101511)
Role: Research Assistant; PI: Xiao, S.
4. *A Hydropower Station with Flood Discharge, Power Generation, and Energy Dissipation* 2013.02–2013.08
Sponsored by China Three Gorges University
Role: Student PI; Advisor: Liu, Y., & Peng, H.
5. *Flood Risk Management with Ensemble Precipitation Predictions* 2012.10–2013.09
Sponsored by National Natural Science Foundation of China (No. 41273110)
Role: Research Assistant; PI: Liu, J.
6. *Simulation of Methane Emission from Reservoir Sediments* 2012.10–2013.06
Sponsored by China Three Gorges University (No. SH2012-2013 003)
Role: Student PI; Advisor: Xiao, S.
7. *Optimal Reservoir Operation for Flood Control with Rainfall Forecasting* 2012.10–2013.05
Sponsored by China Three Gorges University (No. SH2012-2013 006)
Role: Research Assistant; Student PI: Luo, Z.; Advisor: Liu, J.
8. *Evaluation of Optimal Operation Models for Geheyan Reservoir* 2011.10–2012.10
Sponsored by China Three Gorges University (No. SH2011-2012 052)
Role: Student PI; Advisor: Xuan, Y.

SELECTED HONORS AND AWARDS

2019 Chinese Government Award for Outstanding Self-financed Students Abroad, China Scholarship Council, Ministry of Education, China (500 recipients each year worldwide)	2020
Graduate College Completion Fellowship (twice), Arizona State University	2019
Outstanding Research Award, Graduate and Professional Student Association	2019
1st Place in the Urban Climate Research Center 1st Annual Poster Competition, Global Institute of Sustainability	2018
Teaching Excellence Award, Graduate and Professional Student Association	2018
3rd Place in the Student Poster Competition, 8th Annual SSEBE Graduate Research Symposium	2018
2nd Place (for Runner-up) in the Student Poster Competition, 3rd Urban Water Innovation Network – Annual Meeting	2017
Graduation with Honor (undergraduate student), China Three Gorges University	2015
Best Bachelor's Degree Thesis Award of Hubei Province, Ministry of Education of Hubei Province, China	2015
7th China National Excellent Graduate in Hydraulic Engineering	2015
Outstanding Undergraduate Student in Scientific Research, Engineering Research Center of Eco-environment in Three Gorges Reservoir Region, Ministry of Education	2015

2nd Yangtze River Student - Hubei Province Outstanding Graduate	2015
Outstanding Thesis Award of China Three Gorges University (2.23%)	2015
Second Prize, College Students Outstanding Scientific Achievement Award in Hubei Province, China (No. 2014052)	2015
The Qiu Suo Prize Scholarship, China Three Gorges University (5 out of ~23,000 students)	2015
First Prize Scholarship, Student Merit Award for Outstanding Achievement, China Three Gorges University	2015
China Yangtze Power Co., Ltd. Scholarship	2014
Honorable Mention Award, 4th China National Top 10 Future Hydraulic Stars	2014
Top 10 Outstanding Youths of China Three Gorges University (10 out of ~23,000 students)	2014
Outstanding Exchange Student of China Three Gorges University	2014
Top Grade Scholarship, Student Merit Award for Outstanding Achievement, China Three Gorges University (13 out of ~23,000 students)	2014
Top Grade Scholarship, Student Merit Award for Outstanding Achievement, China Three Gorges University (6 out of ~23,000 students)	2013
Second Prize, 3rd China National Undergraduate Hydraulic Innovational Design Competition	2013
Second Prize, SPRING into Wiley Online Library (China Region), John Wiley & Sons, USA	2013
Top Grade Scholarship, Student Merit Award for Outstanding Achievement, China Three Gorges University (6 out of ~23,000 students)	2013
National Scholarship of China (No. 2012 38592), Ministry of Education, China	2012
First Prize Scholarship, Student Merit Award for Outstanding Achievement, China Three Gorges University	2012
First Prize, Structure Model Design Competition, China Three Gorges University	2012

TRAVEL AWARDS AND GRANTS

<i>International Journal of Environmental Research and Public Health</i> (IJERPH) Travel Award (CHF 800)	2020
Individual Travel Grant for American Geophysical Union 2019 Fall Meeting, Graduate and Professional Student Association (\$950)	2019
Graduate College Travel Award, Arizona State University (\$500)	2019
Individual Travel Grant for 10th International Conference on Urban Climate, Graduate and Professional Student Association (\$950)	2018
Graduate College Travel Award, Arizona State University (\$500)	2018
23rd Symposium on Boundary Layers and Turbulence Travel Award, American Meteorological Society Committee on Boundary Layers and Turbulence (\$300)	2018
Individual Travel Grant for American Meteorological Society 98th Annual Meeting, Graduate and Professional Student Association (\$300)	2018
Individual Travel Grant for American Geophysical Union 2017 Fall Meeting, Graduate and Professional Student Association (\$648)	2017

REVIEWER AWARDS

Global Peer Review Award (2018–2019) – Top 1% Reviewers in Cross-Field, Publons, Web of Science	2019
Global Peer Review Award (2018–2019) – Top 1% Reviewers in Environment and Ecology, Publons, Web of Science	2019
Outstanding Journal Reviewer for <i>Journal of Hydrology</i> , Elsevier	2018
Reviewer Excellence Award, Graduate and Professional Student Association	2018
Global Peer Review Award (2017–2018) – Top 1% Reviewers in Environment and Ecology (Position: #36), Publons, Web of Science	2018

TEACHING EXPERIENCE

Urban Water System Design	2018.10
Course CEE 466/598: combined undergraduate- and graduate level course	
Invited Lecture: “Designing Urban Water System with EPANET”	
Ira A. Fulton Schools of Engineering, Arizona State University, Tempe, AZ	
Fluid Mechanics for Civil Engineers	2018.01–2018.05
Course CEE 341: undergraduate-level core course, 91 students	
Graduate Teaching Associate (lab) (received <i>Teaching Excellence Award</i>)	
Ira A. Fulton Schools of Engineering, Arizona State University, Tempe, AZ	
Fluid Mechanics for Civil Engineers	2016.12–2017.05
Course CEE 341: undergraduate-level core course, 87 students	
Graduate Teaching Associate (lab and lecture)	
Ira A. Fulton Schools of Engineering, Arizona State University, Tempe, AZ	

STUDENT ADVISING

Linda Sun	2019.07–present
High school student from Horace Greeley High School, Chappaqua, NY	
Two research projects: (1) long-term (1960–2018) spatial and temporal variability of monthly solar radiation in the contiguous United States; (2) identifying the tipping of historical heat wave events (published in <i>Geophysical Research Letters</i>)	

PROFESSIONAL SERVICE

National or International Committees

- Chair, Bibliography Committee, International Association for Urban Climate (Dec 2020–present)
- Member, Bibliography Committee, International Association for Urban Climate (Mar 2019–Nov 2020)
- Student member, Committee on Meteorological Aspects of Air Pollution, American Meteorological Society (Jan 2018–Jan 2020)

University Committees

- Co-chair, Postdoctoral Advisory Council (PDAC) Committee, School of Earth, Energy & Environmental Sciences, Stanford University (Sep 2020–Aug 2021)
- Committee member, Respectful Community Committee, School of Earth, Energy & Environmental Sciences, Stanford University (Sep 2020–Aug 2021)

Academic Journal Editorial Boards

- Editorial Board Member, Journal *Data in Brief*, published by Elsevier (since Nov 2020)
- Topic Editor, Journal *Sustainability*, published by MDPI (since Oct 2020)
- Review Editor, Editorial Board of Atmospheric and Climate, Journal *Frontiers in Environmental Science*, published by Frontiers (since Dec 2020)
- Reviewer Board Member, Journal *Land*, published by MDPI (since May 2020)
- Reviewer Board Member, Journal *Atmosphere*, published by MDPI (since Feb 2020)
- Reviewer Board Member, Journal *Remote Sensing*, published by MDPI (since Oct 2019)

Chair/Co-chair of Conferences

- Session co-chair with Dr. Jeffrey C. Weil (NCAR), Modeling and Monitoring of Air Pollution in the Urban Environment, 21st Joint Conference on the Applications of Air Pollution Meteorology with the Air & Waste Management Association (A&WMA), American Meteorological Society 100th Annual Meeting. Boston, MA, Jan 12–16, 2020.

Peer Review

Academic Journals

Journals in Atmospheric Science and Meteorology (3 journals): *Atmosphere*, *Atmospheric Pollution Research*, *Quarterly Journal of the Royal Meteorological Society*

Journals in Earth and Planetary Sciences (14 journals): *Climate*, *Earth Systems and Environment*, *Forests*, *Geophysical Research Letters*, *Geosciences*, *Geoscientific Model Development*, *Hydrology*, *International Journal of Digital Earth*, *Journal of Hydrology*, *ISPRS International Journal of Geo-Information*, *Remote Sensing*, *Remote Sensing of Environment*, *SDRP Journal of Earth Sciences & Environmental Studies*, *Water*

Journals in Environmental Science and Engineering (12 journals): *American Institute of Mathematical Sciences (AIMS) Environmental Science*, *Building and Environment*, *Building Simulation*, *Ecological Indicators*, *Ecological Modelling*, *Environmental Pollution*, *Environmental Research Communications*, *Environmental Research Letters*, *Environmental Science and Pollution Research*, *International Journal of Environmental Research and Public Health*, *Science of the Total Environment*, *Simulation: Transactions of the Society of Modeling & Simulation International*

Journals in Urban Climate & Urban Development (5 journals): *Landscape and Urban Planning*, *Sustainability*, *Sustainable Cities and Society*, *Urban Climate*, *Urban Forestry & Urban Greening*

Other Journals (7 journals): *Applied Medical Research*, *Land*, *Land Degradation & Development*, *PLoS One*, *Physica Scripta*, *Sensors*, *South African Geographical Journal*

Summary: 41 journals, of which 37 are indexed in Web of Science

Publons Reviewer Profile (Web of Science): <https://publons.com/author/1379708/chenghao-wang#profile>

Book Chapters

- Kim, Albert S. (Ed.) (2019). *Advanced Computational Fluid Dynamics for Emerging Engineering Processes – Eulerian vs. Lagrangian*. IntechOpen. Invited chapter reviewer in Apr 2019.
- Li, P., & Marrongelle, K. (2012). *Having Success with NSF: A Practical Guide*. John Wiley & Sons. Invited public participation in book review (online) by John Wiley & Sons, Inc. in Oct–Nov 2013.

Book Proposals

- CRC Press, Taylor & Francis Group (2020)

Conferences – Award Judge

- Student Award Judge, Poster Sessions–Atmospheric Chemistry, Aerosols, and Air Quality; Boundary Layer Meteorology; Climate; and Tropical Meteorology, 19th Annual American Meteorological Society Student Conference. Boston, MA, Jan 12, 2020.
- Student Award Judge, 2019 Fall Earth and Space Science Virtual Poster Showcase, American Geophysical Union, Nov 2019.
- Student Award Judge, Session–Urban Design and Planning with Climate, 10th International Conference on Urban Climate/14th Symposium on the Urban Environment. City University of New York, New York City, NY, Aug 06–09, 2018.
- Student Award Judge, Poster Session–Atmospheric Chemistry, Aerosols, and Air Quality, 17th Annual American Meteorological Society Student Conference. Austin, TX, Jan 07, 2018.

Conferences – Reviewer

- Paper reviewer, 2020 International Symposium on Water, Ecology and Environment (ISWEE 2020). Beijing Jiaotong University, Beijing, China, Dec 06–08, 2020.
- Paper reviewer, the 6th International Conference on Water Resource and Environment (WRE 2020). Tokyo University of Agriculture & I-Shou University, Tokyo, Japan, Aug 23–26, 2020.
- Paper reviewer, the 2nd International Workshop on Environment and Geoscience (IWEG 2019). Hangzhou, China, Jul 17–19, 2019.
- Paper reviewer, Session–Environmental Management, Social Development and Economic Development, 7th World Sustainability Forum (WSF 2018). University of International Business and Economics & Tsinghua University, Beijing, China, Sep 19–21, 2018.

University Grants and Awards

(#: number of proposals or applications reviewed)

- Individual Travel Grant for Academic Conference, Graduate and Professional Student Association (GPSA) Travel Grant Program, Arizona State University (Aug 2017–Aug 2019, 60)
- Career Development Grant, GPSA Travel Grant Program (Jan 2018–Aug 2019, 7)
- Internship and Interview Travel Grant, GPSA Travel Grant Program (Aug 2017–Aug 2019, 3)
- Jumpstart Seed Research Grant, GPSA Jumpstart Program (Oct 2017, Feb 2018, Apr 2018, Apr 2019, 6)
- Independent and Terminal (Dissertation/Thesis) Research Grant, GPSA Graduate Research Support Program (Oct 2017, Feb 2018, Oct 2018, Jan 2019, Feb 2019, Aug 2019, 17)
- Teaching Excellence Awards (TEA), GPSA (Oct–Nov 2017, Sep–Oct 2018, 7)

MEDIA COVERAGE

- *New report on pavement and urban heat islands.* By David Sailor from Urban Climate Research Center, Dec 6, 2020: <https://sustainability.asu.edu/urban-climate/2020/12/new-report-on-pavement-and-urban-heat-islands/>.
- *Climate change: Scientists look at 20th century data, heat extremes for early-warning signals.* By Down To Earth, Jul 16, 2020: <https://www.downtoearth.org.in/news/climate-change/climate-change-scientists-look-at-20th-century-data-heat-extremes-for-early-warning-signals-72328>.
- *A análise de dados pode prever tendências do aquecimento global, ondas de calor.* By PaginaJornal, Jul 15, 2020: <https://paginajornal.com/a-analise-de-dados-pode-prever-tendencias-do-aquecimento-global-ondas-de-calor/> (in Portuguese)
- *Scientists identify early warning signals of heat waves.* By Chrissy Sexton from Earth.com, Jul 15, 2020: <https://www.earth.com/news/scientists-identify-early-warning-signals-of-extreme-heat-waves/>.
- *Data analytics can help predict global warming trends and heat waves.* By Sarah Jonas from sciencenewsnet.in, Jul 15, 2020: <https://sciencenewsnet.in/data-analytics-can-help-predict-global-warming-trends-and-heat-waves/>
- *Data analytics can predict global warming trends, heat waves.* Interview by Theresa Grant from Arizona State University, Jul 15, 2020: <https://asunow.asu.edu/20200715-solutions-data-analytics-can-predict-global-warming-trends-heat-waves> (Also in Stanford Earth Matters: <https://earth.stanford.edu/news/data-analytics-can-predict-global-warming-trends-heat-waves#gs.aziuee>; Phys.org: <https://phys.org/news/2020-07-analytics-global-trends.html>).
- *“Current improvements shouldn’t be seen as a silver lining for climate change and air pollution.”* Interview by Laura Tejero from Stanford Center on Longevity, May 28, 2020: <https://www.linkedin.com/feed/update/urn:li:activity:6671822568506429440>.
- *“Yes. Pollution is decreasing with the lockdowns. But will it last?”* Interview by Laura Tejero from Stanford Center on Longevity, May 28, 2020: <https://www.facebook.com/152886394753816/videos/2668626896759540/>.

- *Air pollutant emissions have decreased drastically across the world due to worldwide lockdowns.* Interview by Laura Tejero from Stanford Center on Longevity, May 28, 2020: <http://longevity.stanford.edu/#videos>.
- *Can trees pollute cities?* Papers cited by Zhihua Wang from Arizona State University in an opinion piece in *Atmósfera*, May 27, 2020: <https://opinion.atmosfera.unam.mx/can-trees-pollute-cities/>.
- *“Current improvements will certainly bounce back. We really need to change our lives in the future.”* Interview by Laura Tejero from Stanford Center on Longevity, May 13, 2020: <https://www.youtube.com/watch?v=kJ5PNe3jnMY>.
- *Daily commutes might worsen exposure to heat waves.* Interview by Nicholas Gerbis from KJZZ 91.5 FM, Dec 23, 2019: <https://science.kjzz.org/content/1365021/daily-commutes-might-worsen-exposure-heat-waves>.
- *Assessing heat wave risk in cities as global warming continues.* By Bob Yirka from Phys.org, Dec 19, 2019: <https://phys.org/news/2019-12-cities-global.html>.
- *How planning for extreme temperatures builds better, safer cities.* By Nina Pullano from Inverse, Dec 18, 2019: <https://www.inverse.com/article/61833-city-extreme-temp-planning>.
- *Heat waves expose city dwellers to higher temperatures than forecast.* By Donna Lu from New Scientist, Dec 18, 2019: <https://www.newscientist.com/article/2228028-heat-waves-expose-city-dwellers-to-higher-temperatures-than-forecast/>.
- *Trees and the public good.* Paper cited by Bill Schlesinger from Duke University & Cary Institute of Ecosystem Studies, May 28, 2019: <https://blogs.nicholas.duke.edu/citizenscientist/trees-and-the-public-good/> (also in a guest blog published by Clean Air Carolina: <https://cleanaircarolina.org/2019/05/guest-blog-trees-and-the-public-good/>)

PROFESSIONAL MEMBERSHIPS

- American Geophysical Union (AGU), member since 2017
- American Meteorological Society (AMS), member since 2016, student member of the Committee on Meteorological Aspects of Air Pollution Jan 2018–Jan 2020
- International Association for Urban Climate (IAUC), member since 2016, member of the Bibliography Committee since Mar 2019
- American Institute of Chemical Engineers (AIChE), undergraduate student member 2014-2015
- Wiley Science Advisors in Life, Earth & Environmental Sciences, John Wiley & Sons, Inc., member 2013–2016

Last updated: January 04, 2021