

CURRICULUM VITAE

ZHIHUA WANG, ASSISTANT PROFESSOR

ARIZONA STATE UNIVERSITY

School of Sustainable Engineering and the Built Environment

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EDUCATION

- 2011 Ph.D., Civil and Environmental Engineering, Princeton University
- 2008 M.A., Civil and Environmental Engineering, Princeton University
- 2004 M.Eng, Civil and Environmental Engineering, Nanyang Technological University, Singapore
- 2002 B.Eng, (1st Class Honors), Civil and Environmental Engineering, Nanyang Technological University, Singapore

ACADEMIC APPOINTMENT

- 2012.01 – present Assistant Professor, School of Sustainable Engineering and the Built Environment, Arizona State University
- 2012.04 – present Co-director for Climate System Research, National Center of Excellence on SMART Innovations, Arizona State University
- 2012.08 – present Senior Sustainability Scientist, Global Institute of Sustainability, Arizona State University
- 2011.09 – 2011.12 Post-doctorate Research Associate, Department of Civil and Environmental Engineering, Princeton University
- 2009.02 – 2010.06 Graduate Teaching Assistant, Princeton University
- 2004.04 – 2006.08 Research Project Officer, Nanyang Technological University, Singapore

AREAS OF EXPERTISE

Teaching

Fluid Mechanics for Civil Engineers; Environmental Fluid Mechanics; Hydrometeorology; Atmospheric Convection and Thermodynamics

Research

My primary research interest focuses on the urban environment under the changing climate, including land surface modeling, transport of energy and water, land-atmospheric interactions, and sustainable development of cities.

HONORS AND AWARDS

1. Senior Sustainability Scientist Recognition Award, Arizona State University, 2014
2. Travel Award, Advanced Study Program, National Center for Atmospheric Research, 2010
3. Graduate Prize, Department of Civil and Environmental Engineering, Princeton University, 2006
4. Graduate Scholarship, Nanyang Technological University, 2002
5. Dean's list of distinguished students, Nanyang Technological University, 2001

6. Singapore Department of Education (DOE) Undergraduate Scholarship, Nanyang Technological University, 1998-2002

PUBLICATIONS

Bold students who I advised as a committee chair.

Bold Italic other students who I mentored significantly.

* corresponding author.

Refereed Journal Publications

1. Georgescu M*, Chow, WTL, Wang ZH, Brazel A, Trapido-Lurie B, Roth M, Benson-Lira V (2015) Prioritizing urban sustainability solutions: coordinated approaches must incorporate scale-dependent built environment induced effects, *Environmental Research Letters*, 10: 061001.
2. **Yang J**, Wang ZH*, Kaloush K (2015) Environmental impacts of reflective materials: Is high albedo a 'silver bullet' for mitigating urban heat island?, *Renewable & Sustainable Energy Reviews*, 47: 830-843.
3. **Yang J**, Wang ZH*, Chen F, Miao S, Tewari M, Voogt J, Myint S (2014) Enhancing hydrologic modelling in the coupled WRF-urban modelling system, *Boundary-Layer Meteorology*, 155(1): 87-109.
4. **Song J**, Wang ZH* (2015) Interfacing the urban land-atmosphere system through coupled urban canopy and atmospheric models, *Boundary-Layer Meteorology*, 154(3): 427-448.
5. **Yang J**, Wang ZH* (2014) Land surface energy partitioning revisited: A novel approach based on single depth soil measurement, *Geophysical Research Letters*, 41: 8348-8358.
6. Wang ZH* (2014) Monte Carlo simulations of radiative heat exchange in a street canyon with trees. *Solar Energy*, 110: 704-713.
7. Wang ZH* (2014) A new perspective of urban-rural differences: the impact of soil water advection. *Urban Climate*, 10: 19-34.
8. Huang F, Zhan W*, Ju W, Wang ZH (2014) Improved reconstruction of soil thermal field using two-depth measurements of soil temperatures. *Journal of Hydrology*, 519: 711-719.
9. **Yang J**, Wang ZH* (2014) Physical parameterization and sensitivity of urban hydrological models: Application to green roof systems. *Building and Environment*, 75: 250-263.
10. Ramamurthy P*, Bou-Zeid E, Smith JA, Wang ZH, Baeck ML, Hom J, Welty C (2014) Influence of sub-facet heterogeneity and material properties on the urban surface energy budget. *Journal of Applied Meteorology and Climatology*, 53(9): 2114-2129.
11. Shan WL*, Lu T, Wang ZH, Majidi C (2013) Thermal analysis and design of a multi-layered rigidity tunable composite. *International Journal of Heat and Mass Transfer*, 66: 271-278.
12. **Yang J**, Wang ZH*, Lee T-W (2013) Relative efficiency of surface energy partitioning over

different land covers. *British Journal of Environment and Climate Change*, 3(1): 86-102.

13. **Sun T**, Wang ZH*, Ni GH (2013) Revisiting the hysteresis effect in surface energy budgets. *Geophysical Research Letters*, 40: 1741-1747.
14. **Sun T***, Bou-Zeid E, Wang ZH, Zerba E, Ni G (2013) Hydrometeorological determinants of green roof performance via a vertically-resolved model for heat and water transport. *Building and Environment*, 60: 211-224.
15. Wang ZH*, Bou-Zeid E and Smith JA (2013) A coupled energy transport and hydrological model for urban canopies evaluated using a wireless sensor network. *Quarterly Journal of the Royal Meteorological Society*, 139: 1643-1657.
16. Lee T-W*, Lee JY, Wang ZH (2012) Scaling of the urban heat island intensity using time-dependent energy balance. *Urban Climate*, 2: 16-24.
17. Wang ZH* (2012) Reconstruction of soil thermal field from a single depth measurement. *Journal of Hydrology*, 464-465: 541-549.
18. Wang ZH* and Bou-Zeid E (2012) A novel approach for the estimation of soil ground heat flux. *Agricultural and Forest Meteorology*, 154-155: 214-221.
19. Wang ZH*, Bou-Zeid E, Au SK and Smith JA (2011) Analyzing the sensitivity of WRF's single-layer urban canopy model to parameter uncertainty using advanced Monte Carlo simulation. *Journal of Applied Meteorology and Climatology*, 50(9): 1795-1814.
20. Wang ZH* and Bou-Zeid E (2011) Comment on "Impact of wave phase difference between soil surface heat flux and soil surface temperature on soil surface energy balance closure" by Z. Gao, R. Horton and H. P. Liu. *Journal of Geophysical Research – Atmospheres*, 116: D08110.
21. Wang ZH*, Bou-Zeid E and Smith JA (2011) A spatially-analytical scheme for surface temperatures and conductive heat fluxes in urban canopy models. *Boundary-Layer Meteorology*, 138(2): 171-193.
22. Wang ZH* (2010) Geometric effect of radiative heat exchange in concave structure with application to heating of steel I-sections in fire. *International Journal of Heat and Mass Transfer*, 53(5): 997-1003.
23. Scherer GW*, Prévost JH and Wang ZH (2009) Bending of poroelastic beam with lateral diffusion. *International Journal of Solids and Structures*, 46(18-19): 3451-3462.
24. Wang ZH, Prévost JH* and Coussy O (2009) Bending of fluid-saturated linear poroelastic beams with compressible constituents. *International Journal for Numerical and Analytical Methods in Geomechanics*, 33(4): 425-447.
25. Wang ZH* and Tan KH (2008) Green's function approach for heat conduction: application to steel members protected by intumescent paint. *Numerical Heat Transfer Part B: Fundamentals* 54(6): 435-453.
26. Wang ZH* and Tan KH (2008) Radiative heat transfer for structural members exposed to

fire: an analytical approach. *Journal of Fire Sciences*, 26(2): 133-152.

27. Au SK*, Wang ZH and Lo SM (2007) Compartment fire risk analysis by advanced Monte Carlo simulation. *Engineering Structures*, 29(9): 2381-2390.
28. Wang ZH* and Tan KH (2007) Temperature prediction of concrete-filled rectangular hollow sections in fire using Green's function method. *Journal of Engineering Mechanics – ASCE*, 133(6): 688-700.
29. Wang ZH* and Tan KH (2007) Temperature prediction for multi-dimensional domains in standard fire. *Communications in Numerical Methods in Engineering*, 23(11): 1035-1055.
30. Wang ZH* and Tan KH (2007) Temperature prediction for contour-insulated concrete-filled CHS subjected to fire using large time Green's function solutions. *Journal of Constructional Steel Research*, 63(7): 997-1007.
31. Wang ZH* and Tan KH (2006) Green's function solution for transient heat conduction in concrete-filled steel CHS subjected to fire. *Engineering Structures*, 28(11): 1574-1585.
32. Wang ZH* and Tan KH (2006) Residual area method for heat transfer analysis of concrete-encased I-sections in fire. *Engineering Structures*, 28(3): 411-422.
33. Wang ZH* and Tan KH (2006) Sensitivity study of time delay coefficient of heat transfer formulations for insulated steel members exposed to fire. *Fire Safety Journal*, 41(1): 31-38.
34. Wang ZH*, Au SK and Tan KH (2005) Heat transfer analysis using a Green's function approach for uniformly insulated steel members subjected to fire. *Engineering Structures*, 27(10), 1551-1562.

Refereed Journal Articles under Review

35. **Song J**, Wang ZH* (2015) Sensitivity analysis of urban land-atmosphere interactions and its implications to urban planning, *Sustainable Cities and Society*, under review.
36. **Yang J**, Wang ZH* (2015) Optimizing urban irrigation schemes for a trade-off between energy and water consumption, *Energy and Buildings*, under review.
37. **Song J**, Wang ZH*, Myint SW, Wang C (2015) Statistical analysis of local urban climatology of Phoenix Metropolitan area, Arizona, *Urban Climate*, under review.
38. Wang ZH*, **Zhao X**, **Yang J**, **Song J** (2015) Energy saving potentials of shade trees and urban lawns in Phoenix, Arizona, *Applied Energy*, under review.
39. Wang C*, Myint SW, Wang ZH, **Song J** (2015) Spatio-temporal modeling of the urban heat island in the Phoenix Metropolitan area: Land use change implications, *ISPRS Journal of Photogrammetry and Remote Sensing*, under review.
40. **Song J***, Xia J, Zhang L, Wang ZH, Wan H, She D (2015) Continuous hourly streamflow prediction in ungauged basins by regressive regionalization, *Hydrological Processes*,

under review.

41. **Song J**, Wang ZH* (2015) Impacts of mesic and xeric urban vegetation on outdoor thermal comfort and microclimate in Phoenix, AZ, *Building and Environment*.
42. Ryu YH*, Bou-Zeid E, Wang ZH, Smith JA (2015) Realistic representation of urban trees in an urban canopy model, *Boundary-Layer Meteorology*, under review.
43. **Yang J**, Wang ZH*, Georgescu M, Chen F, Tewari M (2015) Assessing the impact of hydrological processes on urban meteorology using an integrated WRF-urban modelling system, *Journal of Hydrometeorology*, under review.
44. Yang L*, Niyogi D, Li Q, Wang ZH, Schmid P, Vose R, Smith JA (2015) Urban signatures in planetary boundary-layer heights: Evidence from high-resolution rawinsonde observations, *Journal of Applied Meteorology and Climatology*.

Refereed Journal Articles in Preparation

45. Huang F, Zhan W*, Voogt J, Hu LQ, Wang ZH, Ju W, Quan J (2015) Coupling temporal upscaling with spatial downscaling for remote sensing of surface urban heat island by incorporation of annual temperature cycle model: A tale of two cities, to be submitted to *Remote Sensing of Environment*.
46. Wang ZH*, Chao F, Myint SW (2015) Patch size effect of urban warming jointly determined by spatial autocorrelation and footprint model, to be submitted to *Environmental Research Letters*.
47. Bou-Zeid E*, **Song J**, Wang ZH, Stone H (2015) Evaporative walls for passive cooling of cities and buildings, to be submitted to *Sustainable Cities and Society*.

Articles in Refereed Conference Proceedings

1. Scherer GW*, Prévost JH and Wang ZH, Finite element analysis of the bending of a saturated beam. In: *Poromechanics IV, Proc. Fourth Biot Conf. on Poromechanics*, eds. H.I. Ling, A. Smyth, R. Betti (DEStech Publications, Lancaster, PA, 2009), pp. 890-895, New York, USA, June 2009.
2. Wong MB*, Tan KH and Wang ZH, Effect of temperature prediction methods on fire resistance of steel members. *Proceedings of the 19th Australasian Conference on the Mechanics of Structures and Materials (ACMSM)*, Christchurch, New Zealand, November 2006.
3. Wang ZH* and Tan KH, Time delay coefficient of temperature formulations in EC3 Part 1-2 and classification of fire protection materials. *Proceedings of 4th international workshop of Structures in Fire*, pp.3-11, Aveiro, Portugal, 2006.
4. Tan KH*, Wang ZH and Au SK, Heat transfer analysis for steel work insulated by intumescent paint exposed to standard fire conditions. *Proceedings of 3rd international workshop of Structures in Fire*, pp. 49-58, Ottawa, Canada, 2004.

5. Wang ZH* and Zhao J, Numerical modeling of stress development in rock under dynamic loading. *Proceedings of 6th National Undergraduate Research Opportunity Programme (NUROP) Congress*, National University of Singapore, Singapore, 2000.

Non-Refereed Articles/Technical Reports

1. **Yang J**, Wang ZH and Kaloush K, 2015, *Examining the use of reflective pavements to mitigate urban heat island effect*. Asphalt Pavement Magazine, vol. 33, p. 44-47.
2. **Yang J**, Wang ZH and Kaloush K, 2013, *Unintended Consequence: A Research Synthesis Examining the Use of Reflective Pavements to Mitigate the Urban Heat Island Effect*. National Center of Excellence on SMART Innovations, Arizona State University.
3. Kaloush KE, Wang ZH, **Pourshams-Manzouri T**, Stempihar JJ, 2013, *Asphalt Pavement Temperature Effects on Overall Urban Heat Island, Phase II Report*, prepared for National Asphalt Pavement Association (NAPA).
4. Wang ZH, 2004, *FEMHT – Finite Element Modelling for Heat Transfer: Theoretical and User’s manuals*, Building and Construction Authority (BCA) project report, Singapore.

CONFERENCE PRESENTATIONS

Bold students who I advised as a committee chair.

Bold Italic other students who I mentored significantly.

* presenter.

Oral/Poster Presentations

1. Wang ZH*, **Yang J**. Optimizing urban irrigation schemes for a trade-off between energy and water consumption. In: 9th International Conference on Urban Climate (ICUC9), Toulouse, France, July 20-24, 2015.
2. Wang ZH*, **Song J**. Interfacing the urban land-atmosphere system with a coupled UCM-SCM framework: model development and sensitivity. In: 9th International Conference on Urban Climate (ICUC9), Toulouse, France, July 20-24, 2015.
3. Ryu YH, Bou-Zeid E, Wang ZH*, Smith J. Development and implementation of tree processes in an urban canopy model. In: 9th International Conference on Urban Climate (ICUC9), Toulouse, France, July 20-24, 2015.
4. Yang L, Niyogi D*, Schmid P, Li Q, Wang ZH, Vose R, Smith J. Urban signatures in planetary boundary-layer heights: Evidence from high-resolution rawinsonde observations. In: 9th International Conference on Urban Climate (ICUC9), Toulouse, France, July 20-24, 2015.
5. **Yang J***, Wang ZH, and Kaloush KE. Unintended consequence of cool roofs. In: 2015 Annual Membership Meeting of the Cool Roof Rating Council, Las Vegas, June 2015.
6. **Yang J***, Wang ZH, and Kaloush KE. Pavements and building energy efficiency. In: Transportation Research Board 94th Annual Meeting, Washington DC, January 2015.

7. Wang ZH* and **Yang J**. Estimation of land surface energy partitioning: A novel approach using a single depth soil measurement. In: American Meteorological Society 95th Annual Meeting, Phoenix, AZ, January 2015.
8. **Song J*** and Wang ZH. Impact of built environments on hydroclimate through coupled land-atmospheric modeling, In: American Meteorological Society 95th Annual Meeting, Phoenix, AZ, January 2015.
9. **Yang J***, Wang ZH, Chen F, and Georgescu M. Effect of surface hydrological processes in urban climate with case study of green roofs. In: American Meteorological Society 95th Annual Meeting, Phoenix, AZ, January 2015.
10. **Zhao X*** and Wang ZH. Effect of shade trees on building energy efficiency. In: 17th Annual CAP LTER All-Scientist Meeting. Tempe, AZ, January 2015.
11. **Yang J*** and Wang ZH. Shift of paradigm in urban irrigation: Finding the optimal scheme for building energy efficiency. In: 17th Annual CAP LTER All-Scientist Meeting. Tempe, AZ, January 2015.
12. **Song J*** and Wang ZH, Vivoni ER, Mascaro G, Ruddell BL. Investigating the impacts of urbanization on regional hydrometeorology by coupling an urban canopy model into a distributed hydrological model. In: 17th Annual CAP LTER All-Scientist Meeting. Tempe, AZ, January 2015.
13. **Song J*** and Wang ZH, Effect of landuse landcover changes on urban land-atmosphere interactions. In: 87th AZ Water Annual Conference, Glendale, Arizona, May 2014.
14. **Yang J*** Wang ZH, Chen F, Miao S, Tewari M and Georgescu M. Towards realistic representation of hydrological processes in integrated WRF-urban modeling system. In: European Geosciences Union General Assembly 2014. Vienna, Austria, April 2014.
15. Wang ZH* and **Yang J**. Sensitivity analysis of hydrological modeling in the WRF-Urban modeling system using advanced Monte Carlo simulations, In: American Meteorological Society 94th Annual Meeting, Atlanta, GA, February 2014.
16. **Yang J***, Wang ZH, Chen F, Miao S, and Tewari M. Enhancing hydrological modeling in the coupled WRF-urban modeling system, In: American Meteorological Society 94th Annual Meeting, Atlanta, GA, February 2014.
17. Chen F*, Miao S, Tewari M, Barlage M, **Yang J**, Wang ZH, Meng C, and Ching J. Recent Enhancements to the Integrated WRF-Urban Modeling System, In: American Meteorological Society 94th Annual Meeting, Atlanta, GA, February 2014.
18. **Song J***, **Yang J**, and Wang ZH. Studying urban land-atmospheric interactions by coupling an urban canopy model with a single column atmospheric model. In: 16th Annual CAP LTER All-Scientist Meeting. Tempe, AZ, January 2014.
19. **Yang J***, Wang ZH. Accessing the Potential and Sensitivity of Green Roof System in Mitigating Urban Environmental Problems, In: AZ Water Research Workshop, Tempe, AZ, January 2014.

20. **Pourshams-Manzouri T***, Stempihar JJ, Kaloush KE, Wang ZH. Pavement effects on near surface air temperature and urban heat island, In: 93rd Annual Meeting of Transportation Research Board, Washington DC, January 2014.
21. **Song J*** and Wang ZH. Studying urban land-atmospheric interactions by coupling an urban canopy model with single column atmospheric models, In: *American Geophysical Union Fall Meeting*. San Francisco, CA, December 2013.
22. Wang ZH* and **Yang J**. Test and sensitivity analysis of hydrological modeling in the coupled WRF-urban modeling system, In: *American Geophysical Union Fall Meeting*. San Francisco, CA, December 2013.
23. **Yang J***, Song J, and Wang ZH. Modeling hydrological processes in the coupled urban-land-atmosphere system. In: 2013 NSF CAP LTER Site Review. Tempe, AZ, September, 2013.
24. **Song J***, **Yang J**, and Wang ZH. Modeling CAP-LTER flux tower measurements using an advanced urban canopy model. In: 15th *Annual CAP LTER All-Scientist Meeting*. Tempe, AZ, January 2013.
25. Wang ZH*, A theoretic framework for coupled heat and moisture transfer in soils. In: 2012 *American Geophysical Union Fall Meeting*. San Francisco, CA, December 2012.
26. Bou-Zeid E*, Wang ZH, Ramamurthy P, Ting S, Li D and Smith JA. The urban water cycle and how it modulates the microclimate and the energy cycle. In 2012 *American Geophysical Union Fall Meeting*. San Francisco, CA, December 2012.
27. Wang ZH, Bou-Zeid E*, and Smith JA. A coupled energy transport and hydrological model for urban canopies. In: *The International Association for Urban Climate (IAUC) Eighth International Conference on Urban Climate*. Dublin, Ireland, August, 2012.
28. Wang ZH*. A unified theoretic framework for reconstructing soil thermal field from single depth measurements. In: 30th *AMS Conference on Agricultural and Forest Meteorology*. Boston, MA, June 2012.
29. Wang ZH*, Bou-Zeid E and Smith JA. A coupled energy transport and hydrological model for urban canopies. In: 2011 *American Geophysical Union Fall Meeting*. San Francisco CA, December 2011.
30. Wang ZH*, Bou-Zeid E and Smith JA. A new urban surface exchange scheme: coupling physically-based energy transport with hydrological model. In: *European Geoscience Union General Assembly 2011*. Vienna, Austria, April 2011.
31. Wang ZH*, Bou-Zeid, Smith JA, Au SK, Miller S and Schreiber D. Towards improving energy budgets in urban canopy models. In: 2010 *American Geophysical Union Fall Meeting*. San Francisco CA, December 2010.
32. Wang ZH, Bou-Zeid E* and Smith JA. Simple models and sensor networks to study flow and energy transport in urban canopies. In: *Ninth Symposium on the Urban Environment*. Keystone CO, August 2010.

33. Wang ZH*, Bou-Zeid E and Smith JA. A sensor network to study turbulent fluxes in urban canopies. In: *Fluid Dynamics & the Global Environment, the 2nd SEAS-AOS-GFDL workshop*, Princeton NJ, May 2010.
34. Wang ZH*, Bou-Zeid E and Smith JA. Application of a sensor network to study the energy budget in urban canopies. In: *90th Annual Meeting of American Meteorological Society*, Atlanta GA, January 2010.

Invited Talks (National and International Meetings)

1. “Urban sustainability research under the changing climate”. Southwest University of Science and Technology, Mianyang, China, 23 May 2013.
2. “The role of water in land surface energy balance: an analytical perspective”. Tsinghua University, Beijing, China, 15 May 2013.
3. “Surface exchange scheme coupling energy and water transport in urban canopies”. Arizona State University, Tempe, 21 April 2011.
4. “Field measurements and numerical modeling of energy transport in urban areas”. University of Southern California, Los Angeles, 30 March 2011.
5. “Transport of surface energetics from urban areas: field measurements and numerical modeling”. Institute of Atmospheric Physics, Chinese Academy of Science, Beijing, 25 Feb 2011.
6. “A Sensor Network Over Princeton – application to the study of urban micrometeorology”. Mid-InfraRed Technologies for Health and Environment (MIRTHE) monthly lecture series, Princeton, 09 Dec 2010.

Invited Talks (Local Professional Meetings)

1. “Urban land-atmosphere interactions: Implications to sustainable city development”. SEBE Environmental Engineering Seminar Series, Arizona State University, Tempe, 18 November 2014.
2. “Sustainable cities under future climate challenges: Measurement, modeling, and adaptation”. SEBE external advisory board meeting, Tempe, 21 February 2013.
3. “Transport of heat and water in canopy layers”. SEBE Environmental Engineering Seminar Series, Arizona State University, Tempe, 17 January 2012.

SPONSORED RESEARCH AWARDS/PROJECTS

ARO: Army Research Office
 ASUF: Arizona State University Foundation
 CAP LTER: Central Arizona Project Long Term Ecological Research
 DOE: Department of Energy
 EPA: U.S. Environmental Protection Agency
 FSE: Ira A. Fulton Schools of Engineering (ASU)
 HUD: Department of Housing and Urban Development
 NASA: National Aeronautics and Space Administration
 NAPA: National Asphalt Pavement Association
 NSF: National Science Foundation
 NTC: National Transportation Center @ Maryland
 SFZ: Science Foundation Arizona
 SRP: Salt River Project Arizona

* represents ASU PI/Co-PI on collaborative research or sub-awards

Funded (Organized Research)

Sponsor	Title	Role	Period	Project total	Wang's portion
NSF	Urban Water Innovation Network (U-WIN): Transitioning Toward Sustainable Urban Water Systems ASU Collaborators: M. Georgescu (PI), E. Mack	Co-PI* (ASU)	9/15/14- 9/14/17	\$1,191,572	\$345,556
NSF	DMUU: DCDC III: Transformational Solutions for Urban Water Sustainability Transitions in the Colorado River Basin	Senior Personnel	4/1/15- 3/31/18	\$4,499,926	\$90,000
CAP LTER	Understanding Urban Warming of Phoenix through Statistical Synthesis of Long-Term Climatic and Land Use Land Cover Datasets Collaborator: S. Myint	PI	5/1/15- 4/31/16	\$16,000	\$8,000
ARO	Rapid Modifications of Land Surface Temperature During Rainfall: Basics and Implications Collaborators: E. Bou-Zeid (Princeton), M. Hultmark (Princeton), K. Kaloush	PI* (ASU)	9/1/14- 8/31/17	\$360,263	\$89,999
NSF	Sustainable urban development in the Sun Corridor: Finding engineering alternatives through coupled WRF-urban land surface modeling Collaborators: E. Vivoni, G. Mascaro, D.	PI	9/1/14- 8/31/17	\$299,838	\$269,854

	White (DCDC)				
CAP LTER	Measuring urban metabolism in Tempe campus using scintillometry (faculty summer support)	PI	5/12/14-8/3/14	\$5,000	\$5,000
NAPA	Effect of pavement materials on building energy efficiency Collaborator: K. Kaloush	PI	7/1/14-6/30/15	\$75,041	\$60,033
NAPA	Unintended consequence of reflective pavements Collaborator: K. Kaloush	PI	3/15/13-12/31/13	\$19,618	\$15,694
SRP	Temperature effects on the water level height measurements Collaborator: T.W. Lee (PI)	Co-PI	09/01/12-08/31/14	\$38,212	\$19,106
FSE	Wireless sensor network in Tempe campus Collaborators: K. Kaloush, D. Childers, E. Vivoni, H. Huang, B. Ruddell, M. Fraser	PI	4/16/12-6/15/12	\$10,000	\$10,000
Total				\$6,515,470	\$913,242

Funded (Other)

Sponsor	Title	Role	Period	Total	Wang's recognition
CAP LTER	2013 CAP LTER graduate student grant for Jiachuan Yang (Ph.D. student)	Advisor	4/15/13-5/14/14	\$2,500	\$2,500
CAP LTER	2013 CAP LTER graduate student grant for Jiyun Song (Ph.D. student)	Advisor	4/15/13-5/14/14	\$2,000	\$2,000

TEACHING

Course Taught (Evaluation scale out of 5, with 5 being the most effective)

Semester	Course	Title	No. of students	Credit	Average score (instructor)	Average score (course)
Spring 15	CEE 598	Atmospheric Convection & Thermodynamics ¹	6	3.0	4.93	4.63
Spring 15	CEE 341	Fluid Mechanics for Civil Engineers	79	4.0	4.17	4.11
Fall 14	CEE 598	Environmental Fluid Mechanics	10	3.0	4.76	4.67
Spring 14	CEE 341	Fluid Mechanics for Civil Engineers	47	4.0	4.38	4.51
Fall 13	CEE 598	Hydrometeorology ¹	10	3.0	4.74	4.49
Spring 13	CEE 341	Fluid Mechanics for Civil Engineers	53	4.0	4.56	4.35
Fall 12	CEE 598	Environmental Fluid Mechanics ¹	6	3.0	4.52	4.64
Spring 12	CEE 341	Fluid Mechanics for Civil Engineers ²	56	4.0	3.97	4.08

¹New course to the University

²New/revised materials for an existing course

New Course Developed

Title	Description
Environmental Fluid Mechanics	This graduate course covers fundamental topics in environmental fluid mechanics, including atmospheric stability, turbulence closure techniques, similarity theory, scalar diffusion and dispersion, land-atmospheric interactions, and evapotranspiration.
Hydrometeorology	Topics covered in this graduate course include terrestrial hydrological cycles, water in meteorology and atmospheric science, microphysics of cloud, soil thermal analysis, land surface processes and soil-vegetation-atmosphere-climate interactions.
Atmospheric Convection & Thermodynamics	This course reviews concepts in thermodynamics with applications to atmospheric and weather systems. Topics include fundamental principles of thermodynamics, atmospheric processes, cloud microphysics, stability and convection, interactions between boundary layers and large scale flows, and introductory non-equilibrium thermodynamic processes.

STUDENT ADVISING

In Progress

- Ph.D. students:
 - Jiyun Song (Starting Fall 2012)
 - Jiachuan Yang (Starting Spring 2013)
 - Chenghao Wang (Starting Fall 2015)

- M.S. students (Thesis option)
 - Ruby Upreti (Starting Fall 2015)

Graduated

- M.S. (Thesis option):
 - Tina Pourshams-Manzouri (Spring 2013; Thesis title: “*Asphalt Pavement Temperature Effects on Overall Urban Heat Island*”, co-advised with K. Kaloush)
 - Jiachuan Yang (Fall 2012; Thesis title: “*Relative efficiency of surface energy budgets over different land covers*”, currently Ph.D. student at ASU)
- MSE:
 - Zheng Zeng (Spring 2014).
- Undergraduate student (Honors student)
 - Hannah Housenga (Spring 2015), co-advised with K. Kaloush (Honor thesis title “Impact of material properties and urban geometry on urban heat island effect”)

Visiting

- Ph.D. students:
 - Xiaoxi Zhao (starting Fall 2014, visiting student from China Three Gorge University)
 - Zheng Zeng (2013.08-2014.06, now Ph.D. student at JSNN of University of North Carolina at Greensboro)
- Undergraduate student
 - David Little (Spring 2013), independent student researcher, Completed report title: “*Statistical Analysis of Urban Heat Island Effect in Phoenix*”

Student Committee Member

- Ara Ko (Ph.D.) – In Progress
- Tiantian Xiang (Ph.D.) – In progress
- Daniel Che (Ph.D.) – Summer 2015
- Houk Paek (Ph.D.) – Spring 2013
- Hernan Moreno Ramirez (Ph.D.) – Summer 2012
- Cody Anderson (M.S.) – Fall 2013
- Thomas Volo (M.S.) – Summer 2013
- Nicole Pierini (M.S.) – Spring 2013
- Gretchen Hawkins (M.S.) – Summer 2012

PROFESSIONAL SERVICE

Member of National Committee

- Member, Board of Urban Environment, American Meteorological Society (2014-2016)

Member of College Committees

- Search Committee of Hydrology and Water Resources Engineering Faculty Position (2013-2014)
- CESE Scholarship Committee (2012-present)

National Meeting Activities

- Coordinator of national conferences
 - Joint Board of Urban Environment Conferences with 30th Conference of Hydrology, In: 96th American Meteorological Society Annual Meeting, New Orleans, LA January, 2016.
- Session Chair/Co-chair of national conferences
 - 11th Symposium on the Urban Environment, In: 94th American Meteorological Society Annual Meeting, Atlanta, GA, January, 2014.
- Evaluator of student presentation
 - 9th International Conference on Urban Climate (ICUC9), Toulouse, France, July 2015.

Referee

Peer-Reviewed Journals (34 in total)

- *Acta Meteorologica Sinica* (*Impact Factor*: 1.116)
- *Advances in Atmospheric Sciences* (*Impact Factor*: 1.479)
- *Aeolian Research* (*Impact Factor*: 2.309)
- *Agricultural and Forest Meteorology* (*Impact Factor*: 3.762)
- *Atmosphere-Ocean* (*Impact Factor*: 1.398)
- *Boundary-Layer Meteorology* (*Impact Factor*: 2.470)
- *Building and Environment* (*Impact Factor*: 3.341)
- *Climatic Change* (*Impact Factor*: 3.430)
- *Energy* (*Impact Factor*: 4.844)
- *Energy and Buildings* (*Impact Factor*: 2.884)
- *Environmental Modelling & Software* (*Impact Factor*: 4.420)
- *Fire Safety Journal* (*Impact Factor*: 0.957)
- *Geophysical Research Letters* (*Impact Factor*: 4.196)
- *Hydrology and Earth System Sciences* (*Impact Factor*: 3.535)
- *International Journal of Heat and Mass Transfer* (*Impact Factor*: 2.383)
- *International Journal of Numerical Methods for Heat and Fluid Flow* (*Impact Factor*: 1.399)
- *International Journal of Thermal Sciences* (*Impact Factor*: 2.629)
- *Journal of Arid Environment* (*Impact Factor*: 1.641)
- *Journal of Climate* (*Impact Factor*: 4.435)

- Journal of Earth System Science (*Impact Factor: 1.040*)
- Journal of Geophysical Research – Atmospheres (*Impact Factor: 3.426*)
- Journal of Geophysical Research – Earth Surface (*Impact Factor: 3.426*)
- Journal of Hydrology (*Impact Factor: 3.053*)
- Journal of Hydrometeorology (*Impact Factor: 3.645*)
- Journal of Industrial Ecology (*Impact Factor: 3.227*)
- Journal of Structural Engineering – ASCE (*Impact Factor: 1.504*)
- Quarterly Journal of the Royal Meteorological Society (*Impact Factor: 3.252*)
- Remote Sensing of Environment (*Impact Factor: 6.393*)
- Renewable & Sustainable Energy Reviews (*Impact Factor: 5.901*)
- Soil Science Society of America Journal (*Impact Factor: 1.721*)
- Sustainable Cities and Society (*Impact Factor: N.A.*)
- Theoretical and Applied Climatology (*Impact Factor: 2.015*)
- Urban Climate (*Impact Factor: N.A.*)
- Water Resources Research (*Impact Factor: 3.549*)

Book Proposal Review

- Barry R, and Blanken P, 2015, Microclimates and Local Climates, Cambridge University Press.
- Brutsaert W, 2014, Hydrology – An Introduction, 2nd Edn. Cambridge University Press.

Review Panel

- US Environmental Protection Agency (EPA) STAR Fellowship (2015)
- US Environmental Protection Agency (EPA) STAR Fellowship (2013)

Proposal Review

- National Science Foundation (NSF), Hydrological Science Program (2013-2015)
- Army Research Office (ARO), Basic Research Science Proposal (2014-2015)

Conference Review

- 94th American Meteorological Society Annual Meeting (2014)
- 94th Annual Meeting of the Transportation Research Board (2014)
- 93rd Annual Meeting of the Transportation Research Board (2013)
- 92nd Annual Meeting of the Transportation Research Board (2012)
- ASME International Mechanical Engineering Congress and Exposition (2008)

PROFESSIONAL MEMBERSHIPS

- American Meteorological Society (AMS), member since 2009, member of Board of Urban Environment since 2014/01
- American Physical Society (APS), member since 2009
- American Geophysical Union (AGU), member since 2010
- International Association for Urban Climate (IAUC), member since 2010

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