

# Curriculum Vitae

## Elie Bou-Zeid, Professor

Department of Civil & Environmental Engineering, Princeton University

Office: E413 Engineering Quadrangle, Princeton, NJ 08544, USA

Tel: +1-609-258-5429 email: ebouzeid@princeton.edu

Lab website: <http://tune.cee.princeton.edu/>

Google scholar profile <http://scholar.google.com/citations?user=OGbrzHAAAAAJ>

Scopus Profile <https://www.scopus.com/authid/detail.uri?authorId=6603009057>

## Research Interests

Urban Climatology and Hydrometeorology, Urban Sustainability, Solar & Wind Energy,  
Environmental Fluid Mechanics & Turbulence, Boundary-Layer Meteorology, Buoyancy Effects in Fluids

## Higher Education

Ph.D. in Environmental Engineering, 2005

Johns Hopkins University, Baltimore, USA

*Dissertation: "Large Eddy Simulation of Atmospheric Boundary Layer Flow over Heterogeneous Surfaces"*

Master of Science in Mechanical Engineering, 2004

Johns Hopkins University, Baltimore, USA

Master of Engineering in Environmental and Water Resources Engineering, 2000

American University of Beirut, Beirut, Lebanon

*Dissertation: "Modeling Leachate Generation and Transport from Waste Disposal at a Former Quarry Site"*

Bachelor of Engineering in Mechanical Engineering, 1997

American University of Beirut, Beirut, Lebanon

## Professional Appointments

Professor, 2018 – ongoing, Princeton University, Civil and Environmental Engineering, Princeton, USA

*With associated faculty appointments in: Mechanical and Aerospace Engineering, Atmospheric and Oceanic Sciences, High Meadows Environmental Institute, Andlinger Center for Energy and the Environment, Princeton Program in Urban Studies, and Center for Information Technology and Policy*

Director, Princeton's School of Engineering and Applied Science "Metropolis Project", 2016-2022

Director, Program in Environmental Engineering and Water Resources, Princeton University, 2017-2021

Associate Professor, 2014 - 2018

Princeton University, Department of Civil and Environmental Engineering, Princeton, USA

Assistant Professor, 2008 – 2014

Princeton University, Department of Civil and Environmental Engineering, Princeton, USA

Postdoctoral Researcher, 2005 – 2008

Swiss Federal Institute of Technology - Lausanne, Environmental Fluid Mechanics Laboratory

Mechanical Engineer in Heating, Ventilation, and Air Conditioning (HVAC) contracting, July 1997 -

October 1997, "Mechanical Engineering Office", Beirut, Lebanon

## Selected Honors, Awards, and Distinctions

---

‘STAC - Distinguished Scientific/Technological Accomplishment Award’, from the Board on the Urban Environment of the American Meteorological Society, 2024

Most cited paper in the Journal of Applied Meteorology and Climatology since 1990:

<https://journals.ametsoc.org/view/journals/apme/apme-overview.xml?contents=most-cited>

Princeton Engineering Commendations for Outstanding Teaching, 2016, 2020, and 2022 for the “Boundary-Layer Meteorology” and the “The Climatological, Hydrological and Environmental Footprints of Cities” courses.

[Beyond Bauhaus - Prototyping the Future Award](#) for our [CityReader Project](#), Landen Der Ideen, Germany, 2019

E. Lawrence Keyes Jr. / Emerson Electric Co. Faculty Advancement Award, the award “recognizes and assists promising junior faculty members” at Princeton University, 2011

Prize of the “Fondation Latsis Internationale” for best research work by a Postdoc or a Ph.D. student across all fields at the Ecole Polytechnique Fédérale de Lausanne, Switzerland, 2009

Abel Wolman Graduate Fellowship, Johns Hopkins University, 2000

Dean’s Honor List, American University of Beirut, School of Engineering, 1997

## Selected Professional Services and Activities

---

### External

Chair, American Meteorological Society’s “Award for Outstanding Contributions to Boundary-Layer Meteorology” committee, since 2024

Chair, American Meteorological Society’s “Boundary Layers and Turbulence” committee, since 2022

Program Chair, 24<sup>th</sup> Symposium on Boundary Layers and Turbulence of the American Meteorological Society, Denver, CO, 2023

Member of the technical advisors group of the [Southwest Urban Corridor Integrated Field Laboratory](#) (a \$20 million urban project funded by DOE), 2023-ongoing

Organizing Committee member for Advanced Study Program at the National Center for Atmospheric Research on “The Atmospheric Boundary Layer: Integrating Complexity Across Disciplines”, 2023

Advisor, [Power Edison](#), New Jersey, USA, 2021 -ongoing

Editor, Journal of the Atmospheric Sciences, American Meteorological Society, since 2020-2025

Member of the Advisory Board of Professors for the Ph.D. Program in Energy and Sustainable Development, University of Perugia, Italy, 2019 – ongoing

Advisory board member for the “Integrating Chemistry and Earth Science” NSF-funded project to infuse Earth Sciences into the Chemistry Curriculum of Baltimore City high schools, 2018 – 2022

Member, New York City Urban Heat Island Working Group, 2014-2015

Member, American Meteorological Society’s “Boundary Layers and Turbulence” committee, 2012 – 2018

Deputy Chair, American Geophysical Union’s Technical Committee on “Large-Scale Field Experimentation”, 2010 – 2012

### In Princeton

Environmental Engineering Undergraduate Track advisor, 2022-ongoing

CEE department representative on the School of Engineering and Applied Science committee for addressing institutional racism, 2020

Member, Princeton-GFDL Cooperative Institute for Modeling the Earth System, Executive Board, 2019-ongoing

Member, Princeton University's Program in Transportation Executive Committee, 2019-ongoing

Member, Princeton Environmental Institute Advisory Committee, 2016-2019

Member, the Tiger Challenge advisory group (a co-curricular program designed to empower students to tackle complex issues and develop innovations using Design Thinking)

Faculty Fellow, Princeton Energy and Climate Scholars (PECS) student group, 2012-ongoing

Academic co-chair, "Princeton Sustainability Committee", tasked with improving the operational sustainability of the university and promoting the use of "campus-as-a-lab", 2010-2014

### Published Journal Papers (Refereed)

---

1. Allouche M., Bou-Zeid E., Iipponen J. (2023), "Unsteady Land-Sea Breeze Circulations in the Presence of a Synoptic Pressure Forcing", *Journal of Geophysical Research - Atmosphere*, 130, e2023JD040708, <https://doi.org/10.1029/2023JD040708>
2. Wang J., Llaguno-Munitxa M., Li Q., Giometto M., Bou-Zeid E. (2025) "Wind Extremes over Built Terrain: Characterization and Geometric Determinants", *Boundary-Layer Meteorology*, 191, 11, <https://doi.org/10.1007/s10546-025-00899-9>
3. Kang J., Zhang B., Zhang Q., Li C., Ma J., Yin J., Yu K., Hu Y., Bou-Zeid E. (2025) "Global urbanization indirectly 'enhances' the carbon sequestration capacity of urban vegetation". *Geography and Sustainability*, in press, <https://doi.org/10.1016/j.geosus.2025.100268>.
4. Huang X., Bou-Zeid E., Vanos J.K., Middel A., Ramamurthy P. (2025) "Urban heat mitigation through misting, and its role in broader blue infrastructure portfolios", *Landscape and Urban Planning*, 256, 105290. <https://doi.org/10.1016/j.landurbplan.2024.105290>
5. Talebpour M., Bou-Zeid E., Welty C., Li D. and Zaitchik B. (2025) "Sensitivity of Fine-Resolution Urban Heat Island Simulations to Soil Moisture Parameterization". *International Journal of Climatology*, 45: e8664. <https://doi.org/10.1002/joc.8664>
6. Zahn E. and Bou-Zeid E. (2024) "Partitioning of water and CO<sub>2</sub> fluxes at NEON sites into soil and plant components: a five-year dataset for spatial and temporal analysis". *Earth System Science Data*, 16, 5603–5624, <https://doi.org/10.5194/essd-16-5603-2024>
7. Katul G., Bragg A., Mammarella I., Liu H., Li Q., and Bou-Zeid E. (2024) "Gas transfer across air-water interfaces in inland waters: From micro-eddies to super-statistics. *Water Resources Research*, 60, e2023WR036615. <https://doi.org/10.1029/2023WR036615>
8. Banerjee T., Katul G. G., Zahn E., Dias N. L., and Bou-Zeid E. (2024) "A single compartment relaxed eddy accumulation method". *Journal of Geophysical Research: Atmospheres*, 129, e2024JD040811. <https://doi.org/10.1029/2024JD040811>

9. Cureau R. J., Bou-Zeid E., Pigliautile I., and Pisello A.L. (2024) "Crowdsourced data as a strategic approach to include the human dimension in outdoor environmental quality assessments". *Science of the Total Environment*, 953, 175925. <https://doi.org/10.1016/j.scitotenv.2024.175925>
10. Fogarty J., Bou-Zeid E., Bushuk M., and Boisvert L. (2024) "How Many Parameters are Needed to Represent Polar Sea Ice Surface Patterns and Heterogeneity?", *Cryosphere*, 18, 4335–4354, <https://doi.org/10.5194/egusphere-2024-532>
11. Allouche M., Sevostianov V. I., Zahn E., Zondlo M. A., Dias N. L., Katul G. G., Fuentes J. D., and Bou-Zeid E. (2024) "Estimating scalar turbulent fluxes with slow-response sensors in the stable atmospheric boundary layer", *Atmospheric Chemistry and Physics*, 24, 9697–9711, <https://doi.org/10.5194/acp-24-9697-2024>
12. Zahn E., Ghannam K., Chamecki M., Moene A.F., Kustas W.P., Good S.P., Bou-Zeid E. (2024) "Numerical Investigation of Observational Flux Partitioning Methods for Water Vapor and Carbon Dioxide", *Journal of Geophysical Research – Biogeosciences*, 129, e2024JG008025, <https://doi.org/10.1029/2024JG008025>
13. Li D., Wang L., Liao W., Sun T., Katul G.G., Bou-Zeid E., Maronga B. (2024) "Persistent Urban Heat" *Science Advances*, 10, eadj7398. <https://dx.doi.org/10.1126/sciadv.adj7398>
14. Chiatti C., Fabiani C., Huang X., Bou-Zeid E., Pisello A.L. (2024) "Exploring the potential of phosphorescence for mitigating urban overheating: first time representation in an Urban Canopy Model", *Applied Energy*, 362, 122984. <https://doi.org/10.1016/j.apenergy.2024.122984>
15. Gerges F., Llaguno-Munitxa M., Zondlo M., Boufadel M., Bou-Zeid E. (2024) "Weather and the City: Machine Learning for Predicting and Attributing Fine Scale Air Quality to Meteorological and Urban Determinants", *Environmental Science & Technology*, 58, 6313–6325. <https://doi.org/10.1021/acs.est.4c00783>
16. Huang X., Bou-Zeid E., Pigliautile I., Pisello A.L., Mandal J. (2024) "Optimizing retro-reflective surfaces to untrap radiation and cool cities", *Nature Cities*, 1, 275–285. <http://dx.doi.org/10.1038/s44284-024-00047-3>
17. Zahn E. and Bou-Zeid E. (2024) "Setting up a Large-Eddy Simulation to Focus on the Atmospheric Surface Layer", *Boundary-Layer Meteorology*, 190, 12, <https://doi.org/10.1007/s10546-023-00841-x>
18. Stein-Montalvo L., Ding, L., Hultmark M., Adriaenssens S., Bou-Zeid E., (2024) "Kirigami-inspired wind steering for natural ventilation", *Journal of Wind Engineering and Industrial Aerodynamics*, 246, 105667. <https://doi.org/10.1016/j.jweia.2024.105667>
19. El-Samra R., Haddad A., Alameddine I., Bou-Zeid E., El-Fadel M. (2024) "Downscaling climatic variables at a river basin scale: Statistical validation and ensemble projection under climate change scenarios", *Climate*, 12, 27. <https://doi.org/10.3390/cli12020027>
20. Gerges F., Boufadel M.C., Bou-Zeid E., Nassif H., Wang J.T.L., (2024) "Long-term prediction of daily solar irradiance using Bayesian deep learning and climate simulation data". *Knowledge and Information Systems*, 66, 613–633. <https://doi.org/10.1007/s10115-023-01955-x>
21. Gerges F., Boufadel M.C., Bou-Zeid E., Nassif H., and Wang J.T.L. (2024) "Downscaling daily wind speed with Bayesian deep learning for climate monitoring" *International Journal of Data Science and Analytics*, 17, 411–424. <https://doi.org/10.1007/s41060-023-00397-6>
22. Lipson M.J., Grimmond, S., Best, M., Abramowitz, G., Coutts, A., Tapper, N., Baik, J.-J., Beyers, M., Blunn, L., Boussetta, S., Bou-Zeid, E., De Kauwe, M.G., de Munck, C., Demuzere, M., Fatichi, S.,

- Fortuniak, K., Han, B.-S., Hendry, M.A., Kikegawa, Y., Kondo, H., Lee, D.-I., Lee, S.-H., Lemonsu, A., Machado, T., Manoli, G., Martilli, A., Masson, V., McNorton, J., Meili, N., Meyer, D., Nice, K.A., Oleson, K.W., Park, S.-B., Roth, M., Schoetter, R., Simón-Moral, A., Steeneveld, G.-J., Sun, T., Takane, Y., Thatcher, M., Tsiringakis, A., Varentsov, M., Wang, C., Wang, Z.-H. and Pitman, A.J. (2024), Evaluation of 30 urban land surface models in the Urban-PLUMBER project: Phase 1 results. *Quarterly Journal of the Royal Meteorological Society*, 150, 126-169, <https://doi.org/10.1002/qj.4589>
23. Huang W.T.K., Masselot P., Bou-Zeid E., Fatichi S., Paschalis A., Sun T., Gasparrini A., and Manoli G. (2023) "Economic valuation of temperature-related mortality attributed to urban heat islands in European cities", *Nature Communications*, 14, 7438, <https://doi.org/10.1038/s41467-023-43135-z>
  24. Allouche M., Bou-Zeid E., Iipponen J. (2023), "The Influence of Synoptic Wind on Land-Sea Breezes", *Quarterly Journal of the Royal Meteorological Society*, 149, 3198–3219, <https://doi.org/10.1002/qj.4552>
  25. Fogarty J. and Bou-Zeid E. (2023), "The Atmospheric Boundary Layer above the Marginal Ice Zone: Scaling, Surface Fluxes, and Secondary Circulations", *Boundary-Layer Meteorology*, 189, 53–76, <https://doi.org/10.1007/s10546-023-00825-x>
  26. Zahn E., Bou-Zeid E., and Dias N.L. (2023), "Relaxed eddy accumulation outperforms Monin-Obukhov flux models under non-ideal condition", *Geophysical Research Letters*, 50, e2023GL103099, <https://doi.org/10.1029/2023GL103099>
  27. Llaguno-Munitxa M. and Bou-Zeid E. (2023) "Role of Vehicular Emissions in Urban Air Quality: The COVID-19 Lockdown Experiment", *Transportation Research Part D: Transport and Environment*, 115, 103580, <https://doi.org/10.1016/j.trd.2022.103580>.
  28. Gerges F., Boufadel M.C., Bou-Zeid E., Nassif H., Wang, JTL (2023) "Deep Learning-Based Downscaling of Temperatures for Monitoring Local Climate Change Using Global Climate Simulation Data". *World Scientific Annual Review of Artificial Intelligence*, 1, 2250001, <https://doi.org/10.1142/S2811032322500011>
  29. Gerges F., Assaad R.H., Nassif H., Bou-Zeid E., Boufadel M.C. (2023) "A perspective on quantifying resilience: Combining community and infrastructure capitals". *Science of the Total Environment*, 859, 160187, <https://doi.org/10.1016/j.scitotenv.2022.160187>
  30. Nieto H., Alsina M.M., Kustas W.P., García-Tejera O., Chen F., Bambach N., Gao F., Alfieri J.G., Hipps L.E., Prueger J.H., McKee L.G., Zahn E., Bou-Zeid E., McElrone A.J., Castro S.J., Dokoozlian N. (2022) "Evaluating different metrics from the thermal-based two-source energy balance model for monitoring grapevine water stress". *Irrigation Science*, 40, 697–713, <https://doi.org/10.1007/s00271-022-00790-2>
  31. Burchard-Levine V., Nieto H., Kustas W.P., Gao F., Alfieri J.G., Prueger J.H., Hipps L.E., Bambach-Ortiz N., McElrone A.J., Castro S.J. (2022), "Application of a Remote-Sensing Three-Source Energy Balance Model to Improve Evapotranspiration Partitioning in Vineyards", *Irrigation Science*, 40, 593–608, <https://doi.org/10.1007/s00271-022-00787-x>
  32. Allouche M., Bou-Zeid E., Ansorge C., Katul G.G., Chamecki M., Acevedo O., Thanekar S., Fuentes J.D. (2022), "The Detection, Genesis, and Modeling of Turbulence Intermittency in the Stable Atmospheric Surface Layer", *Journal of the Atmospheric Sciences*, 79, 1171–1190, <https://doi.org/10.1175/JAS-D-21-0053.1>
  33. Kustas WP, Nieto H, Garcia-Tejera O, Bambach N, McElrone AJ, Gao F, Alfieri JG, Hipps LE, Prueger



- JH, Torres-Rua A, others (2022) "Impact of advection on two-source energy balance (TSEB) canopy transpiration parameterization for vineyards in the California Central Valley", *Irrigation Science*, 40, pages575–591 , <https://doi.org/10.1007/s00271-022-00778-y>
34. Zahn E., Bou-Zeid E., Good S.P., Katul G.G., Thomas C.K., Ghannam K., Smith J.A., Chamecki M., Dias N.L., Fuentes J.D., Alfieri J.G., Kwon H., Caylor K.K., Gao Z., Soderberg K., Bambach N.E., Hipps L.E., Prueger J.H., Kustas W.P. (2022), "Direct Partitioning of Eddy-Covariance Water and Carbon Dioxide Fluxes into Ground and Plant Components", *Agricultural and Forrest Meteorology*, 315, 108790, <https://doi.org/10.1016/j.agrformet.2021.108790> (featured as the **Editor's choice** for that volume)
  35. Zahn E., Welty C., Smith J.A., Kemp S.J., Baek M-L, Bou-Zeid E. (2021) "The Hydrological Urban Heat Island: Determinants of Acute and Chronic Heat Stress in Urban Streams", *Journal of the American Water Resources Association*, 57, 941-955, <https://doi.org/10.1111/1752-1688.12963>
  36. Talebpour M., Welty C., Bou-Zeid E. (2021) "Development and testing of a fully-coupled subsurface-land surface-atmosphere hydrometeorological model: High-resolution application in urban terrains", *Urban Climate*, 40, 100985, <https://doi.org/10.1016/j.uclim.2021.100985>
  37. Choi B., Bergés M., Bou-Zeid E., Pozzi M. (2021) "Short-term probabilistic forecast of meso-scale near-surface temperature", *Environmental Modelling and Software*, 145, 105189, <https://doi.org/10.1016/j.envsoft.2021.105189>
  38. Allouche M., Katul G.G., Fuentes J.D., and Bou-Zeid E. (2021) "Probability law of turbulent kinetic energy in the atmospheric surface layer", *Physical Review Fluids*, 6, 074601, <https://doi.org/10.1103/PhysRevFluids.6.074601>
  39. Geng X., Katul G.G., Gerges F., Bou-Zeid E., Nassif H., Boufadel M.C. (2021) "A kernel-modulated SIR model for Covid-19 contagious spread from county to continent", *Proceedings of the National Academy of Sciences*, 118, e2023321118, <https://doi.org/10.1073/pnas.2023321118>
  40. González J.E., Ramamurthy P., Bornstein R.D., Chen F., Bou-Zeid E., Ghandehari M., Luvall J., Mitra C., Niyogi D. (2021) "Urban climate and resiliency: A synthesis report of state of the art and future research directions", *Urban Climate*, 38, 100858, <https://doi.org/10.1016/j.uclim.2021.100858>
  41. Zhao L., Oleson K., Bou-Zeid E., Kravenhoff E.S., Bray A., Zhu Q., Zheng Z., Chen C., and Oppenheimer M. (2021), "Global multi-model projections of local urban climates", *Nature Climate Change*, 11, 152–157, <https://doi.org/10.1038/s41558-020-00958-8>
  42. Geng X., Gerges F., Katul G.G., Bou-Zeid E., Nassif H., Boufadel M.C. (2021) "Population agglomeration is a harbinger of the spatial complexity of COVID-19", *Chemical Engineering Journal*, 420, 127702, <https://doi.org/10.1016/j.cej.2020.127702>
  43. Ghannam K. and Bou-Zeid E. (2021) "Baroclinicity and directional shear explain departures from the logarithmic wind profile", *Quarterly Journal of the Royal Meteorological Society*, 174, 443– 464, <https://doi.org/10.1002/qj.3927>
  44. Gideon R.A., Bou-Zeid E. (2021) "Collocating offshore wind and wave generators to reduce power output variability: A Multi-site analysis", *Renewable Energy*, 163, 1548-1559, <https://doi.org/10.1016/j.renene.2020.09.047>.
  45. Pigliautile I, Pisello A. L., and Bou-Zeid E (2020) "Humans in the city: representing outdoor thermal comfort in urban canopy models", *Renewable & Sustainable Energy Review*, 133, 110103, <https://dx.doi.org/10.1016/j.rser.2020.110103>.
  46. Couvreur F., Bazile E., Rodier Q., Maronga B., Matheou G., Chinita M.J. , Edwards J., van Stratum

- B.J.H., van Heerwaarden C.C., Huang J., Moene A.F., Cheng A., Fuka V., Basu S., Bou-Zeid E., Canut G., and Vignon E. (2020) "Intercomparison of Large-Eddy Simulations of the Antarctic Boundary Layer for Very Stable Stratification" *Boundary-Layer Meteorology*, 176, 369–400, <https://dx.doi.org/10.1007/s10546-020-00539-4>.
47. Bou-Zeid E., Anderson W., Katul G.G., and Mahrt, L (2020) "The Persistent Challenge of Surface Heterogeneity in Boundary-Layer Meteorology: A Review", *Boundary-Layer Meteorology*, 177, 227–245, <https://dx.doi.org/10.1007/s10546-020-00551-8>.
  48. Mahrt L and Bou-Zeid E. (2020), "Non-stationary Boundary Layers", *Boundary-Layer Meteorology*, 177, 189–204, <https://dx.doi.org/10.1007/s10546-020-00533-w>.
  49. Li Q, Bou-Zeid E, Grimmond S, Zilitinkevich S, Katul G (2020) "Revisiting the Relation Between the Momentum and Scalar Roughness Lengths of Urban Surfaces", *Quarterly Journal of the Royal Meteorological Society*, 146, 3144–3164, <https://dx.doi.org/10.1002/qj.3839>.
  50. Omidvar H, Bou-Zeid E., Li Q., Mellado J.P., and Klein P. (2020) "Plume or bubble? mixed convection flow regimes and city-scale circulations", *Journal of Fluid Mechanics*, 897, A5, <https://dx.doi.org/10.1017/jfm.2020.360>.
  51. Ghannam K., Poggi D., Bou-Zeid E., Katul G.G. (2020) "Inverse cascade evidenced by information entropy of passive scalars in submerged canopy flows", *Geophysical Research Letters*, 47, e2020GL087486, <https://dx.doi.org/10.1029/2020GL087486>.
  52. Llaguno-Munitxa M. and Bou-Zeid E. (2020) "The environmental neighborhoods of cities and their spatial extent", *Environmental Research Letters*, 15, 074034, <https://dx.doi.org/10.1088/1748-9326/ab8d7e>
  53. Manoli G., Fatichi S., Bou-Zeid E. and Katul G.G. (2020) "Seasonal hysteresis of surface urban heat islands", *Proceedings of the National Academy of Sciences*, 117, 7082–7089, <https://dx.doi.org/10.1073/pnas.1917554117>.
  54. Meili N., Manoli G., Burlando P., Bou-Zeid E., Chow, W. T. L., Coutts A. M., Daly E., Nice K. A., Roth M., Tapper N. J., Velasco E., Vivoni E. R., and Fatichi, S. (2020) "An urban ecohydrological model to quantify the effect of vegetation on urban climate and hydrology (UT&C v1.0)", *Geoscientific Model Development*, 13, 335–362, <https://dx.doi.org/10.5194/gmd-13-335-2020>.
  55. Li Q., Bou-Zeid E. (2019) "Contrasts Between Momentum and Scalar Transport Over Very Rough Surfaces", *Journal of Fluid Mechanics*, 880, 32–58. <https://dx.doi.org/10.1017/jfm.2019.687>.
  56. Manoli G., Fatichi S., Schlöpfer M, Yu K., Crowther T.W., Meili N, Burlando P., Katul G.G., and Bou-Zeid E. (2019) "Magnitude of urban heat islands largely explained by climate and population", *Nature*, 573, 55–60. <https://dx.doi.org/10.1038/s41586-019-1512-9>.
  57. Shah S. and Bou-Zeid E. (2019) "Rate of decay of turbulent kinetic energy in abruptly stabilized Ekman boundary layers", *Physical Review Fluids*, 4, 074602. <https://dx.doi.org/10.1103/PhysRevFluids.4.074602>.
  58. Yang J. and Bou-Zeid E. (2019) "Designing sensor networks to resolve spatio-temporal urban temperature variations: fixed, mobile or hybrid?", *Environmental Research Letters*, 14, 074022, <https://dx.doi.org/10.1088/1748-9326/ab25f8>.
  59. Fabiani C., Pisello A.L., Bou-Zeid E., Yang J., Cotana F. (2019) "Adaptive measures for mitigating urban heat islands: the potential of thermochromic materials to control roofing energy balance", *Applied Energy*, 247, 155–170, <https://dx.doi.org/10.1016/j.apenergy.2019.04.020>.

60. Omidvar H., Bou-Zeid E., and Chiaramonte M. (2019) "Physical determinants and reduced models of the rapid cooling of urban surfaces during rainfall", *Journal of Advances in Modeling Earth Systems*, 11, 1364-1380, <https://dx.doi.org/10.1029/2018MS001528>.
61. Caulton D.R., Lu J., Lane H.M., Buchholz B., Fitts J.P., Golston L.M., Guo X., Li Q., McSpirt J., Pan D., Wendt L., Bou-Zeid E., and Zondlo M.A. (2019) "Importance of Superemitter Natural Gas Well Pads in the Marcellus Shale", *Environmental Science & Technology*, 53, 4747-4754, <https://dx.doi.org/10.1021/acs.est.8b06965>.
62. Freire L.S., Chamecki M., Bou-Zeid E., and Dias N.L. (2019) "Critical flux Richardson number for Kolmogorov turbulence enabled by TKE transport", *Quarterly Journal of the Royal Meteorological Society*, 145, 1551-1558, <https://dx.doi.org/10.1002/qj.3511>.
63. Yang J. and Bou-Zeid E. (2019) "Scale dependence of the benefits and efficiency of green and cool roofs", *Landscape and Urban Planning*, 185, 127-140, <https://dx.doi.org/10.1016/j.landurbplan.2019.02.004>.
64. Omidvar H. and Bou-Zeid E. (2019) "Hacking a soil water content reflectometer to measure liquid level", *Flow Measurement and Instrumentation*, 65, 174-179, <https://dx.doi.org/10.1016/j.flowmeasinst.2018.11.014>.
65. Hezaveh S.H. and Bou-Zeid E. (2018) "Mean Kinetic Energy Replenishment Mechanisms in Vertical-Axis Wind Turbine Farms", *Physical Review Fluids*, 3, 094606, <https://dx.doi.org/10.1103/PhysRevFluids.3.094606>.
66. Bou-Zeid E., Gao X., Ansorge C., and Katul G. (2018) "On the role of return-to-isotropy in wall-bounded turbulent flows with buoyancy", *Journal of Fluid Mechanics*, 856, 61-78, <https://dx.doi.org/10.1017/jfm.2018.693>.
67. Momen M., Bou-Zeid E., Giometto M., Parlange M. (2018) "Modulation of Mean Wind and Turbulence in the Atmospheric Boundary Layer by Baroclinicity", *Journal of the Atmospheric Sciences*, 75, 3797–3821, <https://dx.doi.org/10.1175/JAS-D-18-0159.1>
68. Llaguno-Munitxa M. and Bou-Zeid E. (2018) "Shaping buildings to promote street ventilation: a large-eddy simulation study", *Urban Climate*, 26, 76-94, <https://dx.doi.org/10.1016/j.uclim.2018.08.006>.
69. Omidvar H., Song J., Yang J., Arwatz G., Wang Z.-H., Hultmark M., Kaloush K., Bou-Zeid E. (2018) "Rapid Modification of Urban Land Surface Temperature during Rainfall", *Water Resources Research*, 54, 4245-4264, <https://dx.doi.org/10.1029/2017WR022241>.
70. Hezaveh S.H., Bou-Zeid E., Dabiri J., Kinzel M., Cortina G., Martinelli L. (2018) "Increasing the Power Production of Vertical-Axis Wind-Turbine Farms using Synergistic Clustering", *Boundary-Layer Meteorology*, 169, 275–296, <https://dx.doi.org/10.1007/s10546-018-0368-0>.
71. Caulton D. R., Li Q., Bou-Zeid E., Lu J., Lane H. M., Fitts J. P., Buchholz B., Golston L. M., Guo X., McSpirt J., Pan D., Wendt L., and Zondlo, M. A. (2018) "Quantifying uncertainties from mobile-laboratory-derived emissions of well pads using inverse Gaussian methods", *Atmospheric Chemistry and Physics*, 18, 15145-15168, <https://dx.doi.org/10.5194/acp-18-15145-2018>.
72. Malings C., Pozzi M., Klima K., Bergés M., Bou-Zeid E., Ramamurthy P. (2018) "Surface Heat Assessment for Developed Environments: Optimizing Urban Temperature Monitoring", *Building and Environment*, 141, 143-154, <https://dx.doi.org/10.1016/j.buildenv.2018.05.059>.
73. El-Samra R., Bou-Zeid E., Bangalath H.K., Stenchikov G., El-Fadel M. (2018) "Seasonal and regional



patterns of future temperature extremes: High-resolution dynamic downscaling over a complex terrain", *Journal of Geophysical Research - Atmospheres*, 123, 6669–6689, DOI:10.1029/2017JD027500.

74. Yang J. and Bou-Zeid E. (2018) "Should cities embrace their heat islands as shields from extreme cold?" *Journal of Applied Meteorology and Climatology*, 57, 1309–1320, <https://dx.doi.org/10.1175/JAMC-D-17-0265.1>
75. Ghannam K., Katul G.G., Bou-Zeid E., Gerken T., Chamecki M. (2018) "Scaling and similarity of the anisotropic coherent eddies in near-surface atmospheric turbulence", *Journal of the Atmospheric Sciences*, 75, 943–964, <https://dx.doi.org/10.1175/JAS-D-17-0246.1>.
76. Zhao L., Oppenheimer M., Qing Z., Baldwin J., Ebi K., Bou-Zeid E.; Guan K., Liu X. (2018) "Interactions between urban heat islands and heat waves", *Environmental Research Letters*, 13, 034003, <https://dx.doi.org/10.1088/1748-9326/aa9f73>.
77. Li Q., Bou-Zeid E., Vercauteren N. Parlange M.B. (2018) "Signatures of Air-Wave Interactions over a Large Lake", *Boundary-Layer Meteorology*, 167, 445–468, <https://dx.doi.org/10.1007/s10546-017-0329-z>.
78. El-Samra R., Bou-Zeid E., El-Fadel M. (2018) "What Model Resolution is required in Climatological Downscaling over Complex Terrain?", *Atmospheric Research*, 203, 68–82, <https://dx.doi.org/10.1016/j.atmosres.2017.11.030>.
79. El-Samra R. , Bou-Zeid E., El-Fadel M. (2018) "To What Extent Does High Resolution Dynamical Downscaling Improve the Representation of Climatic Extremes over an Orographically Complex Terrain?", *Theoretical and Applied Climatology*, 134, 265–282, <https://dx.doi.org/10.1007/s00704-017-2273-8>.
80. Momen M., Zheng Z., Bou-Zeid E. Stone H.A. (2017) "Inertial gravity currents produced by fluid drainage from an edge", *Journal of Fluid Mechanics*, 827, 640–663, <https://dx.doi.org/10.1017/jfm.2017.480>.
81. Malings C., Pozzi M., Klima K., Bergés M., Bou-Zeid E., Ramamurthy P. (2017) "Surface Heat Assessment for Developed Environments: Probabilistic Urban Temperature Modeling", *Computers, Environment and Urban Systems*, 66, 53–64, <https://dx.doi.org/10.1016/j.compenvurbsys.2017.07.006>.
82. Momen M. and Bou-Zeid E. (2017) "Analytical reduced models for the non-stationary diabatic atmospheric boundary layer", *Boundary-Layer Meteorology*, 164, 383–399, <https://dx.doi.org/10.1007/s10546-017-0247-0>.
83. Llaguno-Munitxa M., Bou-Zeid E., Hultmark M. (2017) "The influence of building geometry on street canyon air flow: validation of large eddy simulations against wind tunnel experiments", *Journal of Wind Engineering & Industrial Aerodynamics*, 165, 115–130. <https://dx.doi.org/10.1016/j.jweia.2017.03.007>.
84. El-Samra R., Bou-Zeid E., Bangalath H.K., Stenchikov G., El-Fadel M. (2017) "Future intensification of hydro-meteorological extremes: downscaling using the weather research and forecasting model", *Climate Dynamics*, 49, 3765–3785, <https://dx.doi.org/10.1007/s00382-017-3542-z>.
85. Hezaveh S.H., Bou-Zeid E., Lohry M.W., Martinelli L. (2017) "Simulation and wake analysis of a single vertical axis wind turbine", *Wind Energy*, 20, 713–730, <https://dx.doi.org/10.1002/we.2056>.
86. Ramamurthy P., Li D. , Bou-Zeid E. (2017) "High-resolution Simulation of Heatwave Events in New

York City", *Theoretical and Applied Climatology*, 128, 89–102, <https://dx.doi.org/10.1007/s00704-015-1703-8>.

87. Momen M. and Bou-Zeid E. (2017) "Mean and turbulence dynamics in unsteady Ekman boundary layers", *Journal of Fluid Mechanics*, 816, 209-242, <https://dx.doi.org/10.1017/jfm.2017.76>.
88. Salesky S. T., Chamecki M., Bou-Zeid E. (2017) "On the nature of the transition between roll and cellular organization in the convective boundary layer", *Boundary-Layer Meteorology*, 163, 41-68, <https://dx.doi.org/10.1007/s10546-016-0220-3>.
89. Williams O., Hohman T., Van Buren T., Bou-Zeid E., Smits A.J. (2017) "The effect of stable thermal stratification on turbulent boundary layer statistics", *Journal of Fluid Mechanics*, 812, 1039-1075, <https://dx.doi.org/10.1017/jfm.2016.781>.
90. Ramamurthy P. and Bou-Zeid E. (2017) "Heatwaves and urban heat islands: a comparative analysis of multiple cities using a high-resolution numerical model", *Journal of Geophysical Research-Atmosphere*, 122, 168-178, <https://dx.doi.org/10.1002/2016JD025357>.
91. Yang J., Wang Z., Li Q., Vercauteren N., Bou-Zeid E., Parlange M.B. (2017) "A novel approach for unraveling the energy balance of water surfaces with a single depth temperature measurement", *Limnology and Oceanography*, 62, 89–103, <https://dx.doi.org/10.1002/lno.10378>.
92. Wang W., Smith J.A., Ramamurthy P., Baeck M.L., Bou-Zeid E., Scanlon T.M. (2016) "On the correlation of water vapor and CO<sub>2</sub> : Application to flux partitioning of evapotranspiration", *Water Resources Research*, 52, 9452–9469, <https://dx.doi.org/10.1002/2015WR018161>.
93. Parolari A., Li D., Bou-Zeid E., Katul G., Assouline S., (2016) "Climate, not conflict, explains extreme Middle East dust storm", *Environmental Research Letters*, 11, 114013. <https://dx.doi.org/10.1088/1748-9326/11/11/114013>.  
Featured in international media in [English](#), [Hebrew](#), and [Russian](#)
94. Ryu Y.H., Smith J.A., Baeck M.L., Cunha, L.K., Bou-Zeid E., Krajewski, W. (2016) "The Regional Water Cycle and Heavy Spring Rainfall in Iowa: Observational and Modeling Analyses from the IFloodS Campaign", *Journal of Hydrometeorology*, 17, 2763-2784, <https://dx.doi.org/10.1175/JHM-D-15-0174.1>.
95. Li Q., Bou-Zeid E., Anderson W., Grimmond S., Hultmark M. (2016) "Quality and Reliability of LES of Convective Scalar Transfer at High Reynolds Numbers", *International Journal of Heat and Mass Transfer*, 102, 959–970, DOI:10.1016/j.ijheatmasstransfer.2016.06.093.
96. Bradshaw J., Bou-Zeid E., Harris R.H. (2016) "Greenhouse gas mitigation benefits and cost-effectiveness of weatherization treatments for low-income, American, urban housing stocks", *Energy and Buildings*, 128, 911-920, <https://dx.doi.org/10.1016/j.enbuild.2016.07.020>.
97. Kuehni S.M., Bou-Zeid E., Webb C., Shokri N. (2016), "Roof cooling by direct evaporation from a porous roof layer", *Energy and Buildings*, 127, 512-528, <https://dx.doi.org/10.1016/j.enbuild.2016.06.019>.
98. Tomaszewicz M., Abou Najm M., Beysens D., Alameddine I., Bou Zeid E., El-Fadel M. (2016) "Projected climate change impacts upon dew yield in the Mediterranean basin", *Science of the Total Environment*, 566-567, 1339-1348, <https://dx.doi.org/10.1016/j.scitotenv.2016.05.195>
99. Li Q., Bou-Zeid E., Anderson W. (2016), "The impact and treatment of the Gibbs phenomenon in immersed boundary method simulations of momentum and scalar transport", *Journal of Computational Physics*, 10, 237–251, <https://dx.doi.org/10.1016/j.jcp.2016.01.013>.

100. Alameddine I., Abi Esber L., Bou Zeid E., Hatzopoulou M., El-Fadel M. (2016), "Operational and Environmental Determinants of In-Vehicle CO and PM2.5 Exposure", *Science of the Total Environmental*, 551-552, 42-50, <https://dx.doi.org/10.1016/j.scitotenv.2016.01.030>
101. Assouline S., Li D., Tyler S., Tanny J., Cohen S., Bou-Zeid E., Parlange M.B., Katul G.G. (2016) "On the variability of the Priestley-Taylor coefficient over water bodies", *Water Resources Research*, 52,150-163, <https://dx.doi.org/10.1002/2015WR017504>.
102. Ryu Y.H., Bou-Zeid E., Wang Z.-H. Smith J.A. (2016) "Realistic representation of trees in an urban canopy model". *Boundary-Layer Meteorology*, 159,193-220, <https://dx.doi.org/10.1007/s10546-015-0120-y>.
103. Momen M. and Bou-Zeid E. (2016) "Large Eddy Simulations and Damped-Oscillator Models of the Unsteady Ekman Boundary Layer", *Journal of the Atmospheric Sciences*, 73, 25-40, <https://dx.doi.org/10.1175/JAS-D-15-0038.1>.
104. Ryu Y.H., Smith J.A., Bou-Zeid E., Baeck M.L. (2016) "The Influence of Land-Surface Heterogeneities on Heavy Convective Rainfall in the Baltimore-Washington Metropolitan Area", *Monthly Weather Review*, 144, 553-573, <https://dx.doi.org/10.1175/MWR-D-15-0192.1>.
105. Katul G.G., Manes C., Porporato A., Bou-Zeid E., Chamecki M. (2015) "Bottlenecks in turbulent kinetic energy spectra predicted from structure function inflections using the Von Karman-Howarth equation" *Physical Review E*, 92, 033009, <https://dx.doi.org/10.1103/PhysRevE.92.033009>.
106. Li D., Katul G.G., Bou-Zeid E. (2015) "Turbulent energy spectra and cospectra of momentum and heat fluxes in the stable atmospheric surface layer", *Boundary-Layer Meteorology*, 157(1), 1-21, <https://dx.doi.org/10.1007/s10546-015-0048-2>.
107. Ramamurthy P., Sun T. Rule K., Bou-Zeid E. (2015) "The Joint Influence of Albedo and Insulation on Roof Performance: A Modeling Study", *Energy and Buildings*, 102, 317-327, <https://dx.doi.org/10.1016/j.enbuild.2015.06.005>.
108. Ramamurthy P., Sun T. Rule K., Bou-Zeid E. (2015) "The Joint Influence of Albedo and Insulation on Roof Performance: An Observational Study", *Energy and Buildings*, 93, 249-258, <https://dx.doi.org/10.1016/j.enbuild.2015.02.040>.
109. Anderson W., Li Q., Bou-Zeid E. (2015) "Numerical simulation of flow over urban-like topographies and evaluation of turbulence temporal attributes", *Journal of Turbulence*, 16 (9), 809-831, <https://dx.doi.org/10.1080/14685248.2015.1031241>.
110. Solecki W., Rosenzweig C., Blake R., de Sherbinin A., Matte T., Moshary F., Rosenzweig B., Arend M., Gaffin S., Bou-Zeid E., Rule K., Sweeny G., Dessy W. (2015) "New York City Panel on Climate Change 2015 Report Chapter 6: Indicators and Monitoring". *Annals of the New York Academy of Sciences*, 1336, 89–106, <https://dx.doi.org/10.1111/nyas.12587>.
111. Ryu Y.H., Smith J.A., Baeck M.L., Bou-Zeid E. (2015) "On the Climatology of Precipitable Water and Water Vapor Flux in the Mid-Atlantic Region of the US". *Journal of Hydrometeorology*, 16, 70-87, <https://dx.doi.org/10.1175/JHM-D-14-0030.1>.
112. Bou-Zeid E. (2015) "Challenging the large eddy simulation technique with advanced a posteriori tests". *Journal of Fluid Mechanics*, 764, 1-4, <https://dx.doi.org/10.1017/jfm.2014.616>.
113. Shah S. and Bou-Zeid E. (2014) "Direct Numerical Simulations of Turbulent Ekman Layers with Increasing Static Stability: Modifications to the Bulk Structure and Second-Order Statistics". *Journal*

of *Fluid Mechanics*, 760, 494-539, <https://dx.doi.org/10.1017/jfm.2014.597>.

114. Shah S. and Bou-Zeid E. (2014) "Very-Large-Scale Motions in the Atmospheric Boundary Layer Educated by Snapshot Proper Orthogonal Decomposition". *Boundary-Layer Meteorology*, 153(3), 355-387, <https://dx.doi.org/10.1007/s10546-014-9950-2>.
115. Hu X., Li D., Hong H., Shifei S., Bou-Zeid E. (2014) "Modeling and Sensitivity Analysis of Transport and Deposition of Radionuclides from the Fukushima Daiichi Accident". *Atmospheric Chemistry and Physics*, 14, 11065-11092, <https://dx.doi.org/10.5194/acp-14-11065-2014>.
116. Ramamurthy P., Bou-Zeid E., Smith J.A., Wang Z., Baeck M.L., Saliendra N.Z., 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, <https://dx.doi.org/10.1175/JAMC-D-13-0286.1>.
117. Ramamurthy P. and Bou-Zeid E. (2014) "Contribution of Impervious Surfaces to Urban Evaporation". *Water Resources Research*, 50(4), 2889-2902, <https://dx.doi.org/10.1002/2013WR013909>.
118. Li D. and Bou-Zeid E. (2014) "Quality and Sensitivity of High-Resolution Numerical Simulation of Urban Heat Islands". *Environmental Research Letters*, 9, 055001, <https://dx.doi.org/10.1088/1748-9326/9/5/055001>.
119. Li D., Bou-Zeid E., Oppenheimer M. (2014) "The Effectiveness of Cool and Green Roofs as Urban Heat Island Mitigation Strategies". *Environmental Research Letters*, 9, 055002, <http://dx.doi.org/10.1088/1748-9326/9/5/055002> + [supplementary material](#).
120. Katul G.G., Porporato A., Shah S., Bou-Zeid E. (2014) "Two phenomenological constants explain similarity laws in stably stratified turbulence". *Physical Review E*, 89, 023007, <https://dx.doi.org/10.1103/PhysRevE.89.023007>.
121. Yang L., Smith J.A., Baeck M.L., Bou-Zeid E., Jessup S.M., Tian F., Hu H. (2014) "Impact of Urbanization on Heavy Convective Precipitation under Strong Large-Scale Forcing: A Case Study over the Milwaukee-Lake Michigan Region", *Journal of Hydrometeorology*, 15(1), 261-278, <https://dx.doi.org/10.1175/JHM-D-13-020.1>.
122. Sun T., Bou-Zeid E., Ni G.-H. (2014) "To Irrigate or not to Irrigate: Analysis of Green Roof Performance via a Vertically-Resolved Hygrothermal Model". *Building and Environment*, 73, 127-137, <https://dx.doi.org/10.1016/j.buildenv.2013.12.004>.
123. Wang L., Li D., Gao Z., Sun T., Guo X., Bou-Zeid E. (2014) "Turbulent transport of momentum and scalars above an urban canopy". *Boundary-Layer Meteorology*, 150(3), 485-511, <https://dx.doi.org/10.1007/s10546-013-9877-z>.
124. Bradshaw J., Bou-Zeid E., Harris R.H. (2014) "Comparing the effectiveness of weatherization treatments for low-income, American, urban housing stocks in different climates", *Energy and Buildings*, 69, 535-543, <https://dx.doi.org/10.1016/j.enbuild.2013.11.035>.
125. Li D., Bou-Zeid E., Barlage M., Chen F., Smith J.A. (2013) "Development and evaluation of a mosaic approach in the WRF-Noah framework", *Journal of Geophysical Research – Atmospheres*, 118 (21), 11,918-11,935, <https://dx.doi.org/10.1002/2013JD020657>.
126. Wang L., Gao Z., Pan Z., Guo X., Bou-Zeid E. (2013) "Evaluation of Turbulent Surface Flux Parameterizations Over Tall Grass in a Beijing Suburb". *Journal of Hydrometeorology*, e-view, <https://dx.doi.org/10.1175/JHM-D-12-0103.1>

127. Li D. and Bou-Zeid E. (2013). "Synergistic interactions between urban heat islands and heat waves: the impact in cities is larger than the sum of its parts". *Journal of Applied Meteorology and Climatology*, 52 (9), 2051–2064, <https://dx.doi.org/10.1175/JAMC-D-13-02.1>.  
**Featured in a podcast by Scientific American (<http://tinyurl.com/HW-UHI-podcast>).**
128. Wang Z., Bou-Zeid E., Smith J.A. (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 (675), 1643–1657, <https://dx.doi.org/10.1002/qj.2032>.
129. Li D., Bou-Zeid E., Baeck M.L., Jessup S., Smith J.A. (2013) "Modeling Land Surface Processes and Heavy Rainfall in Urban Environments: Sensitivity to Urban Surface Representations". *Journal of Hydrometeorology*, 14, 1098–1118, <https://dx.doi.org/10.1175/JHM-D-12-0154.1>.
130. Huang J. and Bou-Zeid E. (2013) "Turbulence and Vertical Fluxes in the Stable Atmospheric Boundary-Layer I: A Large-Eddy Simulation Study". *Journal of the Atmospheric Sciences*, 70(6), 1513–1527, <https://dx.doi.org/10.1175/JAS-D-12-0167.1>.
131. Huang J., Bou-Zeid E., Golaz J.C. (2013) "Turbulence and Vertical Fluxes in the Stable Atmospheric Boundary-Layer II: A Novel Mixing Length Model". *Journal of the Atmospheric Sciences*, 70(6), 1528–1542, <https://dx.doi.org/10.1175/JAS-D-12-0168.1>.
132. Mirocha J., Kirkil G., Bou-Zeid E., Chow F.K., Kosović B. (2013) "Transition and Equilibration of Neutral Atmospheric Boundary Layer Flow in One-Way Nested Large-Eddy Simulations Using the Weather Research and Forecasting Model". *Monthly Weather Review*, 141, 918–940, <https://dx.doi.org/10.1175/MWR-D-11-00263.1>.
133. Katul G.G., Li D., Chamecki M., Bou-Zeid E. (2013) "Mean scalar concentration profile in a sheared and thermally stratified atmospheric surface layer". *Physical Review E*, 87(2), 023004, <https://dx.doi.org/10.1103/PhysRevE.87.023004>.
134. Sun T., Bou-Zeid E., Wang Z., 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. <https://dx.doi.org/10.1016/j.buildenv.2012.10.018>.
135. Talbot C., Bou-Zeid E., Smith J.A. (2012) "Nested mesoscale-large eddy simulations with WRF: performance in real test cases". *The Journal of Hydrometeorology*, 13(5), 1421–1441, <https://dx.doi.org/10.1175/JHM-D-11-048.1>.
136. Li D., Katul G.G., Bou-Zeid E. (2012) "Mean velocity and temperature profiles in a sheared diabatic turbulent boundary layer". *Physics of Fluids*, 24 (10), 105105, <https://dx.doi.org/10.1063/1.4757660>.
137. Myhrvold C., Stone H., Bou-Zeid E. (2012) "What is the use of elephant hair?". *PLoS ONE*, 7(10): e47018. DOI:10.1371/journal.pone.0047018.  
See also list of media articles covering this paper at <http://efm.princeton.edu/News.htm>
138. Li D., Bou-Zeid E., De Bruin H.A.R. (2012) "Monin-Obukhov Similarity Functions for the Structure Parameters of Temperature and Humidity". *Boundary-Layer Meteorology*, 145 (1), 45–67, <https://dx.doi.org/10.1007/s10546-011-9660-y>.
139. Wang Z. and Bou-Zeid E. (2012) "A novel approach for the estimation of soil ground heat flux". *Agricultural and Forest Meteorology*, 154–155, 214–221, <https://dx.doi.org/10.1016/j.agrformet.2011.12.001>.
140. Kirkil G., Mirocha J., Bou-Zeid E., Chow F.K., Kosović B. (2012) "Implementation and Evaluation of



Dynamic Subfilter-Scale Stress Models for Large-Eddy Simulation using WRF”, *Monthly Weather Review*, 140, 266–284, <https://dx.doi.org/10.1175/MWR-D-11-00037.1>.

141. Vercauteren N., Huwald H., Bou-Zeid E., Selker J.S., Lemmin U., Parlange M.B., Lunati I. (2011) “Evolution of Superficial Lake Water Temperature Profile Under Diurnal Radiative Forcing”, *Water Resources Research*, 47, W09522, [DOI:10.1029/2011WR010529](https://doi.org/10.1029/2011WR010529).
142. Wang Z., Bou-Zeid E., Au S.K., Smith J.A. (2011) “Analyzing the Sensitivity of WRF’s Single-Layer Urban Canopy Model to Parameter Uncertainty Using Advanced Monte Carlo Simulation”, *the Journal of Applied Meteorology and Climatology*, 50, 1795–1814, [DOI:10.1175/2011JAMC2685.1](https://doi.org/10.1175/2011JAMC2685.1).
143. Li D. and Bou-Zeid E. (2011) “Coherent Structures and the Dissimilarity of Turbulent Transport of Momentum and Scalars in the Unstable Atmospheric Surface Layer”. *Boundary-Layer Meteorology*, 140(2), 243–262, [DOI:10.1007/s10546-011-9613-5](https://doi.org/10.1007/s10546-011-9613-5).
144. Wang Z. 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”, *the Journal of Geophysical Research – Atmospheres*, 116, D08110, [DOI:10.1029/2010JD015117](https://doi.org/10.1029/2010JD015117).
145. Wang Z., Bou-Zeid E., Smith J.A. (2011) “A spatially-analytical scheme for surface temperatures and conductive heat fluxes in urban canopy models”, *Boundary-Layer Meteorology*, 138(2), 171–193, <https://dx.doi.org/10.1007/s10546-010-9552-6>.
146. Bou-Zeid E., Higgins C., Huwald H., Parlange M.B., Meneveau C. (2010). “Field study of the dynamics and modelling of subgrid scale turbulence in a stable atmospheric surface layer over a glacier”. *the Journal of Fluid Mechanics*, 665, 480–515, <https://dx.doi.org/10.1017/S0022112010004015>.
147. Nadeau D.F., Brutsaert W., Parlange M. B., Bou-Zeid E., Barrenetxea G., Couach G., Boldi M.-O., Selker J., Vetterli M. (2009) "Estimation of Urban Sensible Heat Flux Using a Dense Wireless Network of Observations". *Environmental Fluid Mechanics*, 9, 635–653, <https://dx.doi.org/10.1007/s10652-009-9150-7>.
148. Huwald H., Higgins C., Boldi M., Bou-Zeid E., Lehning M., Parlange M.B. (2009) "Albedo effect on radiative errors in air temperature measurements". *Water Resources Research*, 45, W08431, <https://dx.doi.org/10.1029/2008WR007600>.
149. Bou-Zeid E., Overney J., Rogers B.D., Parlange M.B., (2009) "The Effects of Building Representation and Clustering in Large Eddy Simulations of Flows in Urban Canopies". *Boundary-Layer Meteorology*, 132(3), 415–436, <https://dx.doi.org/10.1007/s10546-009-9410-6>.
150. Vercauteren N., Bou-Zeid E., Huwald H., Parlange M.B., Brutsaert W. (2009) "The estimation of wet-surface evaporation from sensible heat flux measurements". *Water Resources Research*, 45, W06424, [DOI:10.1029/2008WR007544](https://doi.org/10.1029/2008WR007544).
151. Bou-Zeid E., Vercauteren N., Parlange M.B., Meneveau C. (2008) “Scale dependence of subgrid-scale model coefficients: an a-priori study”. *Physics of Fluids*, 20(11), 115106. <https://dx.doi.org/10.1063/1.2992192>.
152. Vercauteren N., Bou-Zeid E., Parlange M.B., Lemmin U., Huwald H., Selker J., Meneveau C. (2008) “Subgrid-scale dynamics for water vapor, heat, and momentum over a lake”. *Boundary-Layer Meteorology*, 128(2), 205–228. <https://dx.doi.org/10.1007/s10546-008-9287-9>.
153. Assouline S., Tyler S., Tanai Y., Cohen S., Bou-Zeid E., Parlange M.B., Katul G. (2008) “Evaporation

- from three water bodies of different sizes and climates: Measurements and scaling analysis". *Advances in Water resources*, 31(1), 160-172. <https://dx.doi.org/10.1016/j.advwatres.2007.07.003>.
154. Bou-Zeid E., Parlange M.B., Meneveau C. (2007) "On the parameterization of surface roughness at regional scales". *Journal of the Atmospheric Sciences*, 64 (1), 216–227. <https://dx.doi.org/10.1175/JAS3826.1>.
  155. Bou-Zeid E. Meneveau C., Parlange M.B. (2005) "A scale-dependent Lagrangian dynamic model for large eddy simulation of complex turbulent flows". *Physics of fluids*, 17, 025105. <https://dx.doi.org/10.1063/1.1839152>.
  156. Bou-Zeid E., Meneveau C., Parlange M.B. (2004) "Large-eddy simulation of neutral atmospheric boundary layer flow over heterogeneous surfaces: Blending height and effective surface roughness". *Water Resources Research*, 40, W02505. <https://dx.doi.org/10.1029/2003WR002475>.
  157. Bou-Zeid E and El-Fadel M. (2004) "Parametric sensitivity analysis of leachate transport simulations at landfills". *Waste Management*, 24, 681-689. <https://dx.doi.org/10.1016/j.wasman.2004.03.004>.
  158. El-Fadel M., Bou-Zeid E., Chahine W. (2003) "Landfill evolution and treatability assessment of high-strength leachate from MSW with high organic and moisture content". *International Journal of Environmental Studies*, 60, 603-615. <https://dx.doi.org/10.1080/0020723032000069187>.
  159. El-Fadel M. Bou-Zeid E., Chahine W. (2002) "Leachate generation and transport from solid waste disposal at a former quarry site". *Journal of Solid Waste Technology and Management*, 28, 60-70.
  160. Bou-Zeid E and El-Fadel M. (2002) "Climate change and water resources in the Middle East: a vulnerability and adaptation assessment". *ASCE, Journal of Water Resources Planning and Management*, 128(5), 343-355. [https://dx.doi.org/10.1061/\(ASCE\)0733-9496\(2002\)128:5\(343\)](https://dx.doi.org/10.1061/(ASCE)0733-9496(2002)128:5(343)).
  161. El-Fadel M., Bou-Zeid E. Chahine W., Alayli B., (2002) "Temporal variation of leachate quality from pre-sorted and baled MSW with high organic and moisture content". *Waste Management*, 22(3), 269-282. [https://dx.doi.org/10.1016/S0956-053X\(01\)00040-X](https://dx.doi.org/10.1016/S0956-053X(01)00040-X).
  162. El-Fadel, Bou-Zeid, and Chahine, "Long Term Simulations of Leachate Generation and Transport from Solid Waste Disposal at a Former Quarry Site". *Journal of Solid Waste Technology and Management*. 28, 60-70.
  163. El-Fadel M. and Bou-Zeid E (2001) "Climate Change and water resources in the middle east: vulnerability, socio-economic impacts, and adaptation". *Fondazione Eni Enrico Mattei (FEEM) Working Paper No. 46.2001*. <https://dx.doi.org/10.2139/ssrn.278514>.
  164. El-Fadel M. and Bou-Zeid E. (2001) "Economic valuation of greenhouse gas emissions reduction in Lebanon". *International Journal of Environmental Studies*, 58(4), 459-486. <https://dx.doi.org/10.1080/00207230108711344>.
  165. El-Fadel M. and Bou-Zeid E. (1999) "Transportation GHG emissions in developing countries. The case of Lebanon". *Transportation Research Part D: Transport and Environment*, 4(4), 251-264. [https://dx.doi.org/10.1016/S1361-9209\(99\)00008-5](https://dx.doi.org/10.1016/S1361-9209(99)00008-5).

## Books

Bou-Zeid E. and S Sarkar, eds. (expected in 2025) "Environmental Turbulence" Elsevier, ISBN: 9780323958745, lead editor, lead author of two chapters, co-author of one chapter. <https://shop.elsevier.com/books/environmental-turbulence/bou-zeid/978-0-323-95873-8>

## Patents

---

Bou-Zeid E. and M. Momen (2018) "System and method for performing wind forecasting." US Patent Publication number US 2018/0062393 A1, <http://www.freepatentsonline.com/y2018/0062393.html>

## Book Chapters and other Archival Publications

---

Gerges, F., Boufadel, M.C., Bou-Zeid, E., Darekar, A., Nassif, H., Wang, J.T.L. (2023) "Bayesian Multi-head Convolutional Neural Networks with Bahdanau Attention for Forecasting Daily Precipitation in Climate Change Monitoring". In: Amini, MR. et al. (eds). Machine Learning and Knowledge Discovery in Databases. ECML PKDD 2022. Lecture Notes in Computer Science, vol 13717. Springer. [https://doi.org/10.1007/978-3-031-26419-1\\_34](https://doi.org/10.1007/978-3-031-26419-1_34)

Gerges, F., Boufadel, M.C., Bou-Zeid, E., Nassif, H., Wang, J.T.L. (2022) "A Novel Bayesian Deep Learning Approach to the Downscaling of Wind Speed with Uncertainty Quantification". In: Gama, J., et al. (eds). Advances in Knowledge Discovery and Data Mining. PAKDD 2022. Lecture Notes in Computer Science, vol 13282. Springer. [https://doi.org/10.1007/978-3-031-05981-0\\_5](https://doi.org/10.1007/978-3-031-05981-0_5)

Golston L., Davies G., Edwards R., Miller M., Momen M., Nealon T., Bou-Zeid E., Chen M., Hansen M.O.L., Hultmark M., Socolow R. (2019) "Wind Power: An Energy Technology Distillate from the Andlinger Center for Energy and the Environment at Princeton University", Technical Report, <https://acee.princeton.edu/distillates/windpower/#overview>.

Llaguno-Munitxa M., Bogosian B., Bou-Zeid E., Al Tair A., Radcliff D., Fischer S., Youngryel R. (2017) "SEOUL ON-AIR. Augmented Environments for Urban Activism". In *Imminent Commons: The Expanded City*, eds. Zaera-Polo A. and Anderson J.S., Seoul Biennale of Architecture and Urbanism 2017.

El-Fadel M. and Bou-Zeid E. (2003) "Climate change and water resources in the Middle East: vulnerability, socio-economic impacts, and adaptation". In *Climate Change in the Mediterranean*, eds. Giupponi, C. and Schechter, M., Edward Elgar Publishing, Cheltenham, UK.

## Refereed Proceedings Papers

---

1. Chiatti C, Fabiani C, Bou-Zeid E, and Pisello, AL (2024) "Evaluating the potential of persistent luminescence in counteracting urban overheating", Journal of Physics: Conference Series, 2685, 012029, <https://doi.org/10.1088/1742-6596/2685/1/012029>
2. Gerges F., Boufadel M.C., Bou-Zeid E., Nassif H., Wang J.T.L. (2022) "A Novel Deep Learning Approach to the Statistical Downscaling of Temperatures for Monitoring Climate Change". In *Proceedings of the 6th International Conference on Machine Learning and Soft Computing (ICMLSC 2022)*. Association for Computing Machinery, <https://doi.org/10.1145/3523150.3523151>
3. Llaguno-Munitxa M. and Bou-Zeid E. (2021) "Sensing the Environmental Neighborhoods: Mobile Urban Sensing Technologies (MUST) for High Spatial Resolution Urban Environmental Mapping", *Proceedings of the 2020 DigitalFUTURES: The 2<sup>nd</sup> International Conference on Computational Design and Robotic Fabrication*. Eds. Yuan, P.F. et al. Springer, Singapore, pp. 124-133. [https://www.doi.org/10.1007/978-981-33-4400-6\\_12](https://www.doi.org/10.1007/978-981-33-4400-6_12)

4. Yang J. and Bou-Zeid E. (2018) "Greening rooftops to reduce heat islands: how large is large enough?" International Building Physics Conference 2018, Syracuse, NY, USA:  
[http://amz.xcdsystem.com/476EFEC7-D8CF-7470-232B140485F971CA\\_abstract\\_File1159/FinalPaperFileUpload\\_402\\_0619093018.pdf](http://amz.xcdsystem.com/476EFEC7-D8CF-7470-232B140485F971CA_abstract_File1159/FinalPaperFileUpload_402_0619093018.pdf)
5. Li Q., Bou-Zeid E., Yang J., Wang Z.-H. (2018) "Improving the representation of convective heat transfer in an urban canopy model", International Building Physics Conference 2018, Syracuse, NY, USA: [http://amz.xcdsystem.com/476EFEC7-D8CF-7470-232B140485F971CA\\_abstract\\_File1159/FinalPaperFileUpload\\_424\\_0612122558.pdf](http://amz.xcdsystem.com/476EFEC7-D8CF-7470-232B140485F971CA_abstract_File1159/FinalPaperFileUpload_424_0612122558.pdf)
6. Llaguno Munitxa M., Bou-Zeid E., Bogosian B., Al Tair A., Radcliff D., Fisher S., Ryu Y. (2018) "Sensing and information technologies for the environment (SITE); hardware and software innovations in mobile sensing applications", International Building Physics Conference 2018, Syracuse, NY, USA: [http://amz.xcdsystem.com/476EFEC7-D8CF-7470-232B140485F971CA\\_abstract\\_File1159/FinalPaperFileUpload\\_430\\_0630060005.pdf](http://amz.xcdsystem.com/476EFEC7-D8CF-7470-232B140485F971CA_abstract_File1159/FinalPaperFileUpload_430_0630060005.pdf)
7. Fabiani C., Pisello A.L., Bou-Zeid E., and Yang J (2018) "Using advanced urban canopy models to investigate the potential of thermochromic materials as urban heat island mitigation strategies" International Building Physics Conference 2018, Syracuse, NY, USA:  
[http://amz.xcdsystem.com/476EFEC7-D8CF-7470-232B140485F971CA\\_abstract\\_File1159/FinalPaperFileUpload\\_283\\_0627023621.pdf](http://amz.xcdsystem.com/476EFEC7-D8CF-7470-232B140485F971CA_abstract_File1159/FinalPaperFileUpload_283_0627023621.pdf)
8. Omidvar H. and Bou-Zeid E. (2018) "Rapid cooling of urban surfaces during rainfall: physical basis, dominant energy fluxes, and sensitivity to pavement and rainfall properties" International Building Physics Conference 2018, Syracuse, NY, USA: [http://amz.xcdsystem.com/476EFEC7-D8CF-7470-232B140485F971CA\\_abstract\\_File1159/FinalPaperFileUpload\\_400\\_0628030315.pdf](http://amz.xcdsystem.com/476EFEC7-D8CF-7470-232B140485F971CA_abstract_File1159/FinalPaperFileUpload_400_0628030315.pdf)
9. Malings C., Pozzi M., Klima K., Bou-Zeid E., Ramamurthy P., and Bergés M. (2016) "[Optimal Sensor Placement for Urban Heat Risk Response](#)", 13th International Conference on Probabilistic Safety Assessment and Management (PSAM 13). Seoul, Republic of Korea.
10. Teitelbaum, E., Meggers F., Scherer G., Ramamurthy P., Wang L., and Bou-Zeid E., (2015) "ECCENTRIC Buildings: Evaporative Cooling in Constructed ENvelopes by Transmission and Retention Inside Casings of Buildings". Proceedings of the 6th International Building Physics Conference, IBPC 2015, *Energy Procedia*, 78, 1593–1598. <https://dx.doi.org/10.1016/j.egypro.2015.11.218>
11. Wang W., Smith C., So S., Bou-Zeid E., Wysocki G. (2011) "[Wireless Sensor Networks for Monitoring of Atmospheric Chemicals](#)". Optical Instrumentation for Energy and Environmental Applications Conference, Optical Society of America, Austin, TX, Joint Poster Session PV/SOLAR/SOLED/E2 (JWE).
12. Bou-Zeid E., Shah, S., Parlange M.B., Smits, L., Higgins, C., Huwald, H., and Meneveau C. (2010) "[Experimental and numerical investigations of stably stratified atmospheric flows](#)". 16<sup>th</sup> US National Congress of Theoretical and Applied Mechanics, State College, PA, Paper number USNCTAM2010-636.
13. Wang Z-H., Bou-Zeid E., Smith J. A. (2010) "Application of a sensor network to study the energy budget in urban canopies". Proceedings of the 15<sup>th</sup> Symposium on Meteorological Observation and Instrumentation, American Meteorological Society 2010 Annual Meeting, Atlanta, GA. ([paper](#)) ([presentation](#)).

14. Talbot C. Bou-Zeid E., Smith J.A. (2010) "Multiscale Atmospheric Simulations Over a Complex and Heterogeneous Terrain: Surface Variability and Land-Atmosphere Interactions". Proceedings of the 22<sup>nd</sup> Conference on Climate Variability and Change the 24<sup>th</sup> Conference on Hydrology, American Meteorological Society 2010 Annual Meeting, Atlanta, GA. ([paper](#)) ([presentation](#)).
15. Bou-Zeid E., Huwald H., Lemmin U., Selker J.S., Meneveau C., Parlange M.B. (2007) "[Atmospheric surface layer turbulence over water surfaces and sub-grid scale physics](#)". pp.517-519 in *Advances In Turbulence XI*, Proceedings of the 11th EUROMECH European Turbulence Conference, June 25-28, 2007, Porto, Portugal, Editors: J.M.L.M. Palma and A.Silva Lopes Springer Proceedings in Physics 117, Springer, Heidelberg, ISBN 978-3-540-72603-6
16. Parlange M.B., Bou-Zeid E., Huwald H., Chamecki M., Meneveau C. (2007) "[SNOHATS: Stratified atmospheric turbulence over snow surfaces](#)". pp.520-522 in *Advances In Turbulence XI*, Proceedings of the 11th EUROMECH European Turbulence Conference, June 25-28, 2007, Porto, Portugal, Editors: J.M.L.M. Palma and A. Silva Lopes Springer Proceedings in Physics 117, Springer, Heidelberg, ISBN 978-3-540-72603-6
17. Bou-Zeid E., Meneveau C., Parlange M.B. (2004) "[Applications of the Lagrangian dynamic model in LES of turbulent flow over surfaces with heterogeneous roughness distributions](#)". Paper number HT-FED2004-56127, Proceedings of the 2004 ASME Heat Transfer/Fluids Engineering Summer Conference, July 11-15, 2004, Charlotte, North Carolina, USA.
18. Bou-Zeid E., Meneveau, C., Parlange M.B. (2004) "[Comparison of four eddy-viscosity SGS models in large-eddy simulation of flows over rough walls](#)". Paper number HT-FED2004-56126, Proceedings of the 2004 ASME Heat Transfer/Fluids Engineering Summer Conference, July 11-15, 2004, Charlotte, North Carolina, USA.
19. Pahlow M, Bou-Zeid E, Parlange M.B. (2001) "[Entrainment into the atmospheric boundary layer: LIDAR observations and LES simulations](#)". Proceedings of the 2001 International Symposium on Environmental Hydraulics, Tempe, Arizona, December 5-8.
20. El-Fadel M. and Bou Zeid E. (1999) "[Transportation emissions in Lebanon: extent and mitigation](#)". In *Urban Transport V: Urban Transport and the Environment for the 21st Century, volume 5*, Sucharov L.J., ed, WIT Press, Southampton, UK, pp. 149-158.

---

### Unrefereed or Archives Scientific Publications

- Wang J., Llaguno-Munitxa M., Li Q., Giometto M., and Bou-Zeid E. (2024) "Wind Extremes over Built Terrain: Characterization and Geometric Determinants". PREPRINT (Version 1), Research Square. <https://doi.org/10.21203/rs.3.rs-4732657/v1>. Under review in *Boundary Layer Meteorology*
- Fogarty J., Bou-Zeid E., Bushuk M., Calaf M., Allouche M., Ghannam K. (2024) "Numerical Simulations of Satellite-Sensed Surface Maps in the Marginal Ice Zone". *ESS Open Archive*. <https://doi.org/10.22541/essoar.172251979.90440727/v1>, Under review in *JGR-Atmospheres*
- Allouche M., Bou-Zeid E., and Iipponen J. (2024), "Unsteady Land-Sea Breeze Circulations in the Presence of a Synoptic Pressure Forcing". *ESS Open Archive*. <https://doi.org/10.22541/essoar.170542134.41279506/v1>, Under review in *JGR-Atmospheres*



- Shapiro A., Anderson W., Mironov D., Bou-Zeid E., Grachev, A. (2023) “Celebrating the Career of Evgeni Fedorovich: Explorer of the Boundary-Layer Realm and Ambassador for the Community”. *Boundary-Layer Meteorology*, **189**, 1–3, <https://doi.org/10.1007/s10546-023-00828-8>
- Bou-Zeid E. (2022) “An Equitable Technological Future for Cities”, *The Sci Tech Lawyer - The American Bar Association Science & Technology Law Section*, Winter 2021 Edition, 18, 10-13.
- Smith A.K., Barth M., Boos W.R., Bou-Zeid E., Kawatani Y., Lee S., Mechem D., Remer L., Rozoff C., van den Heever S., Wang Z., Wicker L., Yang P. (2020) “Data Availability Principles and Practice”. *Journal of Atmospheric Sciences*, **77**, 3983–3984, <https://dx.doi.org/10.1175/JAS-D-20-0303.1>.
- Zahn E., Welty C., Smith J.A., Kemp S.J., Baeck M-L, Bou-Zeid E. (2021) “The Hydrological Urban Heat Island”, *Urban Clime News - Quarterly Newsletter of the International Association for Urban Climate*, Issue 82 – December 2021, 9-15, <http://www.urban-climate.org/wp-content/uploads/newsletter/IAUC082.pdf>
- Manoli G, Fatichi S, Katul GG and Bou-Zeid E (2020) “Magnitude and seasonality of global surface urban heat islands: A coarse-grained approach”, *Urban Clime News - Quarterly Newsletter of the International Association for Urban Climate*, Issue 76 - June 2020, 10-15, <http://www.urban-climate.org/newsletters/IAUC076.pdf>
- Omidvar H., Bou-Zeid E., et al. (2018) “Rapid drop of surface temperature in urban terrain during rainfall: Physical representation and reduced models”, *Urban Clime News - Quarterly Newsletter of the International Association for Urban Climate*, Issue 69 - September 2018, 12-15,
- Li D. and Bou-Zeid E. (2014) “Heat waves in urban areas: impacts and mitigation”. *Urban Clime News - Quarterly Newsletter of the International Association for Urban Climate*, Issue 53 - September 2014, 7-14, <http://urban-climate.org/newsletters/IAUC056.pdf>
- Li Q. and Bou-Zeid E. (2018) “Contrasts Between Momentum and Scalar Transport Over Very Rough Surfaces” arXiv: 1812.03238 [physics. flu-dyn], <https://arxiv.org/abs/1812.03238>.
- Margulis, S. and Bou-Zeid E. (2010) “Large-scale field experiments in hydrology: What have we learned and where do we go from here?” AGU Hydrology Section Newsletter, December 2010, pp. 28-30, <http://hydrology.agu.org/pdf/AGUHydro-201012.pdf>.

### Selected Invited Keynote Talks, Seminars, Webinars, and Panels

---

- 2025: ● MIT, Department of Civil and Environmental Engineering  
 ● Harvard University, Earth and Planetary Sciences  
 ● NSF NHERI Computational Modeling and Simulation Center (SimCenter)  
 ● Harvard University, Urban Heat Resiliency Design Workshop  
 ● University of California - San Diego, Department of Mechanical and Aerospace Engineering  
 ● University of California - Irvine, Department of Civil and Environmental Engineering  
 ● Panelist on “[Bridging Scale Gap and Increasing Resilience in Communities](#)” at the 105<sup>th</sup> Annual Meeting of the American Meteorological Society
- 2024: ● Global Network of Networks of Integrated Urban Services for Healthy and Smart Cities, 2024 Workshop, Cornell Tech, NYC,  
 ● AGU Fall meeting 2024: invited talk in session “City and Climate Extremes: Scientific and

Community Perspectives”, Washington, DC

☛ Spring School on Transition and Turbulence, Brazilian Association of Mechanical Engineers and Scientists

☛ Chemistry in the Arctic: Clouds, Halogens, and Aerosols (CHACHA) Workshop

☛ Baltimore Ecosystem Study Long Term Ecological Research Network, Annual Meeting

☛ Australasian Fluid Mechanics Society Seminar Series (online)

☛ Rutgers University: Environmental and Occupational Health Sciences Institute

2023: ☛ AGU Fall meeting 2023: invited talk in session “Understanding Land-Atmosphere Interactions Through the Lens of Surface Fluxes and Other Drivers”, San Francisco, CA

☛ Argonne National Lab, DOE: Keynote talk at the “Workshop on Land-Atmosphere Exchanges in Complex Urban Landscapes: From Process Diagnosis to Climate Impacts”

☛ Symposium on Flow, Turbulence, and Wind Energy, Organized by Johns Hopkins University in San Juan, PR

☛ New Jersey Institute of Technology, Symposium on “Green Infrastructure in Newark, NJ”

☛ Boston University, Faculty of Computing & Data Sciences

☛ Coupling of Land and Atmospheric Subgrid Parameterizations, Climate Process Team @ GFDL

☛ Princeton University: Urban Climate in Megacities Symposium

☛ Keynote talk at the 2<sup>nd</sup> Annual Innovations in Climate Resilience Conference, Columbus Ohio

2022: ☛ Princeton University: High Meadows Environmental Institute Faculty Seminar

☛ Harvard University: Earth and Planetary Sciences

☛ University of Innsbruck, Austria : Keynote talk in the “100 years of turbulence” workshop

☛ Princeton University: Center for Information Technology Policy

☛ American Bar Association: Internet of Things 2022. Panel on “Tomorrowland Express: Managing the Risks and Opportunities of Smart Communities”

☛ University of Oslo, Norway: Department of Geosciences

☛ University of Bergen, Norway: Bergen Offshore Wind Center

☛ Wageningen University, the Netherlands: Meteorology and Air Quality Division

☛ Delft University of Technology, the Netherlands: Civil Engineering and Geosciences

☛ Technical University of Hamburg, Germany: Institute of Geo-Hydroinformatics

☛ Leibniz University of Hannover, Germany : Institute of Meteorology and Climatology

☛ University of Cologne, Germany: Institute of Geophysics and Meteorology

☛ Royal Meteorological Institute of Belgium, Brussels, Belgium

☛ University of Cambridge, UK: Isaac Newton Institute, Mathematical aspects of turbulence: where do we stand?: Wall-bounded turbulence: beyond current boundaries,

☛ U.C. Louvain, Belgium: Architecture, Architectural Engineering and Urban Planning

☛ University of Strasbourg, France: Earth and Environment Institute

☛ University of Strasbourg, France: Image, City, and Environment Lab

☛ Princeton Plasma Physics Laboratory, The Ronald E. Hachter “Science on Saturdays” Lecture for high school students and teachers ([link to video](#))

☛ University of Perugia, Italy: Department of Engineering, Interuniversity Research Center

☛ IBM’s Thomas J. Watson Research Center

2021: ☛ AGU Fall meeting 2021: invited talk in session “Advances in Understanding Climate, Vegetation, Soil, Topographic, Precipitation Processes, and Their Subgrid-Scale Parameterization at the Watershed and Larger”

☛ New Jersey Institute of Technology: chapter of the National Academy of Inventors, Sustainable

- Societies and Climate Change: The Quest for Sustainable Global Solutions workshop.
- ☉ Brookhaven National Lab” Department of Environmental and Climate Sciences
  - ☉ University of Maryland Baltimore County: Center for Urban Environmental Research and Education.
  - ☉ Princeton University: Department of Mechanical and Aerospace Engineering
- 2020: ☉ Stanford University: Fluid Mechanics Seminar Series
- ☉ Northeastern University: School of Architecture, webinar on cities and urbanization
  - ☉ Swiss Federal Institute of Technology - Zürich, Future Cities Lab’s web conference: Ecosystem Services in Urban Landscapes
- 2019: ☉ American Geophysical Union: Fall 2019 meeting, invited talk in session “Interdisciplinary Sustainable Solutions for Urban Areas”
- ☉ Samsung Research America, Mountain View, CA
  - ☉ Rutgers University: Department of Civil and Environmental Engineering.
  - ☉ International Summer School on “Urban resilience in a changing world: energy, safety and wellbeing challenges”, University of Perugia, University of Rome - Sapienza, UNESCO
  - ☉ Federal University of Parana: Brazil, Department of Environmental Engineering
  - ☉ Federal University of Santa Maria, Brazil: Department of Physics
  - ☉ University of Sao Paulo, Brazil: Department of Atmospheric Sciences.
- 2018: ☉ American Geophysical Union: Fall 2018 meeting, invited talk in session “Urban Areas and Global Change”
- ☉ Columbia University: Department of Earth and Environmental Engineering
  - ☉ 55PLUS Organization of Princeton, NJ
  - ☉ Argonne National Laboratory: invited talk in the workshop “Workshop on High Reynolds Number Flow Simulations on Exascale Platforms”
  - ☉ International Conference on Urban Climate, 2018 meeting: invited talk in session “Numerical Studies of Urban Environments II”
  - ☉ Bridgewater-Raritan High School, iSTEM club
  - ☉ University of Rochester: Department of Mechanical Engineering
  - ☉ IEEE Integrated STEM Education Conference: Keynote Talk, <https://tinyurl.com/ybaepy9h>
  - ☉ University of Minnesota, Saint Anthony Falls Lab: Keynote Speaker at the Edward Silberman Student Award Ceremony
- 2017: ☉ Stevens Institute of Technology, Department of Civil, Environmental and Ocean Engineering
- ☉ Seoul National University, College of Agriculture and Life Sciences
  - ☉ Yonsei University, Department of Atmospheric Sciences
  - ☉ Princeton Plasma Physics Laboratory, The Ronald E. Hachter “Science on Saturdays” Lecture for high school students and teachers
  - ☉ Notre Dame University, Department of Civil and Environmental Engineering
  - ☉ University of Washington, Department of Mechanical Engineering
- 2016: ☉ Tiger Talks in the City “Smart Solutions for Smart Cities” panel participant
- ☉ Brookhaven National Lab, Symposium on “Energy & water cycles in the urban-natural system: challenges and opportunities
  - ☉ University of Perugia, Italy, Department of Engineering, Interuniversity Research Center
  - ☉ 2016 MIRTHe+ Symposium on Regional Air Quality Monitoring, and Urban Sensing in Safety and Security Applications, City College of New York

- Duke University, Workshop on Wireless Intelligent Sensor Networks (WiSeNet)
- Baltimore Ecosystem Study Long Term Ecological Research Network, 2016 Annual Meeting
- 2015: ➤ American Geophysical Union, Fall 2015 meeting, invited talk in session “A52B: Atmospheric Boundary Layer Processes and Turbulence”
- 13<sup>th</sup> US National Congress on Computational Mechanics, invited talk in the mini-symposium on “Large eddy and direct numerical simulations with geophysical applications”
- Commonwealth Scientific and Industrial Research Organisation (CSIRO), Weather & Renewable Energy, CSIRO Oceans & Atmosphere Flagship
- Melbourne University, Department of Mechanical Engineering
- Monash University, Department of Civil Engineering
- Monash University, School of Geography & Environmental Science
- 2014: ➤ National Center for Atmospheric Research, Mesoscale & Microscale Meteorology Division
- Carnegie Mellon University, Department of Civil and Environmental Engineering
- Johns Hopkins University, Center for Environmental and Applied Fluid Mechanics
- University of Reading (UK), Department of Meteorology (two talks)
- City University of New York CREST Institute & Brookhaven National Laboratory workshop on Developing a Strategy to Advance Our Understanding of the Urban Environment and Its Impact on Local and Regional Weather and Climate”
- Arizona State University, School of Sustainable Engineering and the Built Environment
- Columbia University, Sustainable Development (SDEV) program
- 2013: ➤ The New York City Panel on Climate Change (NPCC2), Climate Risk Information Report on Climate Change Indicators and Monitoring Workshop (short talk + panel discussions).
- Stony Brook University, Institute for Terrestrial and Planetary Atmospheres, School of Marine and Atmospheric Sciences.
- Traversing New Terrain in Meteorological Modeling, Air Quality and Dispersion Conference, University of California at Davis.
- Urban Landscapes and Climate Change workshop, Argonne National Laboratory
- National Weather Center Colloquium, NOAA & Oklahoma University School of Meteorology
- 2012: ➤ American Geophysical Union, Fall 2012 meeting, invited talk in session “EP31E. Aeolian Processes and Desert Landscape Development: Feedbacks Among Atmospheric Boundary Layer Turbulence, Sediment Transport, and Morphodynamics II.”
- American Geophysical Union, Fall 2012 meeting, invited talk in session “H53N. Water Quality and Quantity in Urban Systems: Energy Budgets, Microbes, and Human Interactions”
- University of Virginia, Department of Environmental Sciences
- Energy Path 2012: America’s Sustainable Energy Future, <http://energypath.org/energypath2012/Home.aspx>
- 2011: ➤ Oregon State University, Department of Biological and Ecological Engineering and College of Atmospheric and Oceanic Sciences
- The Chinese Academy of Science, Institute of Atmospheric Physics, Beijing, China
- University of Illinois at Urbana-Champaign, Department of Civil and Environmental Engineering
- King Abdullah University of Science and Technology (KAUST), Invited lecture in the Red Sea Research Center Symposium, Jeddah, Saudi Arabia.
- Columbia University, Department of Applied Physics and Applied Mathematics, Colloquium in Climate Science

- ☛ University of Maryland at Baltimore County, Center for Urban Environmental Research and Education
- 2010: ☛ Pennsylvania State University, Department of Meteorology  
☛ John Wyngaard's Retirement Symposium, Pennsylvania State University
- 2009: ☛ Massachusetts Institute of Technology, Department of Civil & Environmental Engineering  
☛ Patterns in Soil-Vegetation-Atmosphere Systems Monitoring, Modelling and Data Assimilation, International Workshop, Invited Keynote Lecture, Aachen, Germany  
☛ European Geosciences Union, General Assembly 2009, Vienna, invited talk in the session: Scaling, subgrid models, downscaling and parameterization
- 2008: ☛ Geophysical Fluid Dynamics Laboratory, National Oceanic and Atmospheric Administration  
☛ Imperial College London, Institute for Mathematical Sciences, 3d-IMS Turbulence Workshop: Informal discussions on fractal-generated turbulence, London, UK.  
☛ King's College London, Department of Geography, London, UK.
- 2007: ☛ Harvard University, Division of Engineering and Applied Sciences  
☛ Rice University, Department of Civil and Environmental Engineering  
☛ University of Houston, Department of Earth And Atmospheric Sciences  
☛ University of Washington – Seattle, Department of Atmospheric Sciences  
☛ Drexel University – Philadelphia, Department of Civil and Environmental Engineering  
☛ City University of New York, Department of Civil Engineering  
☛ University of Surrey, Environmental Flow Research Centre, Surrey, UK.
- 2006: ☛ Mathematisches Forschungsinstitut Oberwolfach, Workshop on Mathematical Theory and Modelling in Atmosphere-Ocean Science, Oberwolfach , Germany.  
☛ ETH Swiss Federal Institute of Technology at Zurich, Institute of Hydromechanics and Water Resources Management, Zurich, Switzerland.  
☛ American University of Beirut, Department of Civil and Environmental Engineering, Lebanon.
- 2005: Cornell University, Department of Civil and Environmental Engineering
- 2003: Virginia Polytechnic Institute and State University, Department of Engineering Science & Mechanics

## Editorial Positions and Reviews

---

Editor: Journal of the Atmospheric Sciences (2020 - 2025)

Associate Editor: ARC Geophysical Research (2024 – ongoing)

Editorial Board: Advances in Water Resources (2014 - 2020)

*Papers for Atmospheric Sciences Journals:* Bulletin of the American Meteorological Society, Journal of the Atmospheric Sciences, Boundary-Layer Meteorology, Journal of Applied Meteorology and Climatology, Journal of Hydrometeorology, Journal of Geophysical Research – Atmospheres, Monthly Weather Review, Geophysical Research Letters, Atmospheric Environment, Atmospheric and Oceanic Science Letters, Quarterly Journal of the Royal Meteorological Society, Agricultural and Forest Meteorology, Eos, Journal of Atmospheric and Oceanic Technology, Weather and Forecasting, Urban Climate, Atmospheric Research, Scientific Online Letters on the Atmosphere, Theoretical and Applied Climatology.



*Papers for Fluid Mechanics Journals:* Journal of Fluid Mechanics, Physics of Fluids, Computers and Fluids, Journal of Turbulence, Environmental Fluid Mechanics, Theoretical and Computational Fluid Dynamics, Physical Review - Fluids.

*Papers for Hydrology and Water Resources Journals:* Water Resources Research, Advances in Water Resources, Journal of Hydrology, Hydrological Processes, Transport in Porous Media, Water International, Hydrology and Earth System Sciences

*Other Journals:* Proceedings of the National Academy of Science (PNAS and PNAS nexus), Journal of Environmental Engineering, Environmental Science and Technology, Environmental Engineering Science, Physics and Chemistry of the Earth, Environmental Management, Journal of the Air and Waste Management Association, Waste Management and Research, Journal of Applied Mathematics, Limnology and Oceanography, Wind Energy, Journal of Renewable and Sustainable Energy, IEEE Transactions on Geoscience and Remote Sensing, Geoscientific Model Development, Energy, Environmental Modelling & Software, PLoS ONE, Scientific Reports, Nature Communications, Geophysical Model Development, Science Advances, Solar Energy, Journal of Computational Physics, Sustainable Cities and Society, International Journal of Heat and Mass Transfer, Fractals, Building and Environment

*Proposal reviews and panel participations:* US National Science Foundation (various programs), German Research Foundation, Natural Environment Research Council (NERC) of the UK, Swiss National Science Foundation, Czech Science Foundation, Natural Sciences and Engineering Research Council of Canada (NSERC), Netherlands Organisation for Scientific Research, US Environmental Protection Agency, US Army Research Laboratory, American Chemical Society – Petroleum Research Fund, École Polytechnique Fédérale de Lausanne fellowship program.

*Book proposal reviews:* Oxford University Press, Wiley Press

### Current Ph.D. Students, Postdoctoral Researchers and Visiting Students

*Ph.D. Students:* Jing Wang, Xinjie Huang, Erfan Hosseini, Harunari Soeda, Alejandra Almonte

*Postdocs:* Einara Zahn, Paul Ro Yi, Keer Zhang, Mohammad Abed El Rahman Hammoud

### Previously Advised Students and Postdoctoral Researchers

*Postdocs:*

- ➊ Lucia Stein-Montalvo, 2024, now Assistant Professor at Northwestern University
- ➋ Firas Gerges, 2024, now Director of Engineering at DTxPlus
- ➌ Khaled Ghannam, 2019, now assistant professor at Northeastern University, Boston, USA
- ➍ Maider Llaguno Munitxa, 2019, now associate professor at Université Catholique de Louvain, Belgium
- ➎ Jiachuan Yang, 2018, now associate professor at Hong Kong University of Science and Technology
- ➏ Dana Caulton, 2018, co-advised with Mark Zondlo, now assistant professor at the U. of Wyoming
- ➐ Young-Hee Ryu, 2015, now assistant professor at Yonsei University Seoul, South Korea
- ➑ Prathap Ramamurthy, 2014, now associate professor at The City University of New York
- ➒ Steve Jessup, 2013, now assistant professor at SUNY - The College of Brockport
- ➓ Jing Huang, 2012, now Senior Researcher at Clean Power Research
- ➔ Charles Talbot, 2011, now researcher in École des Mines de Saint-Étienne, France

#### *Ph.D. Students:*

- ☉ Joseph Fogarty, 2024, now Water Resource Engineer at the Delaware River Basin Commission
- ☉ Einara Zahn, 2023, now postdoctoral researcher in my lab at Princeton
- ☉ Mohammad Allouche, 2022, now postdoctoral researcher at Lawrence Livermore National Lab
- ☉ Hamidreza Omidvar, 2018, now Chief Technology Officer at Mitigate, Norway
- ☉ Mostafa Momen, 2016, now assistant professor at the University of Houston
- ☉ Qi Li, 2016, now associate professor at Cornell University
- ☉ Seyed Hossein Hezaveh, 2016, now data scientist at CareFirst BlueCross BlueShield
- ☉ Stimit Shah, 2014, now Senior Principal Software Engineer at Cadence Design Systems
- ☉ Dan Li, 2013, now associate professor at Boston University
- ☉ Zhihua Wang, 2011, now associate professor at Arizona State University

#### *Masters Students:*

- ☉ Yinzheng Jin, 2013, co-advised with Professor Warren Powell, started a tech company in China.
- ☉ Xiang Gao, 2017, in Mechanical and Aerospace Engineering Department.

#### *Visiting Graduate Students:*

- ☉ Roberta Jacoby Cureau, 2023, University of Perugia
- ☉ Chiara Chiatti, 2022, University of Perugia
- ☉ Ran Wang, 2019-2020, The Chinese University of Hong Kong
- ☉ Ilaria Pigliautile, 2018, University of Perugia
- ☉ Claudia Fabiani, 2017, University of Perugia
- ☉ Maider Llaguno Munitxa, 2013-2016, Swiss Federal Institute Technology – Zurich
- ☉ Xiaofeng Hu, 2013, Tsinghua University
- ☉ Renalda El-Samra, 2013, American University of Beirut
- ☉ Ting Sun, 2012, Tsinghua University

#### *Undergraduate Senior Theses Supervised:*

- ☉ Jonathan Bradshaw, 2010: Cost-effectiveness of weatherization in low-income urban housing stock
- ☉ Thomas Maltbaek, 2011: Optimal mitigation strategies for the urban heat island effect
- ☉ Emily Moder, 2013: A decision-making model for building energy retrofits
- ☉ Christopher Hamm, 2014: Pushing the envelope: the feasibility of passive house integration in the United States
- ☉ Taylor Morgan, 2016: Understanding the water-energy nexus: a Princeton university case study
- ☉ Ingrid Yen, 2016: Novel methods for measuring heat exchanges between urban facets and the atmosphere
- ☉ Hope Lorah, 2017: The water-energy nexus in large cities
- ☉ Christie Jiang, 2017: Improving urban climate data collection: assessment and redesign of Tsinghua's meteorological sensor network
- ☉ Alistair Berven, 2017: Improving algae growth for carbon sequestration and biofuel production
- ☉ Roan Gideon, 2018: Integrated Wave and Offshore Wind Energy Farms: Benefits and Challenges
- ☉ Tobi Ayeni and Jess Hunt, 2020
- ☉ Eli Kalfaian, 2021
- ☉ Philip Maruri and Jovan Aigbekaen (ECE department), 2022
- ☉ Joshua Zelek, 2023

See list of other undergraduate and high-school advisees at <http://efm.princeton.edu/People.htm>

### Awards to students and postdocs while working in Bou-Zeid's lab

---

- ➊ Xinjie Huang, Science, Technology, and Environmental Policy (STEP) Fellowship from The High Meadows Environmental Institute and the Princeton School of Public and International Affairs, 2024
- ➋ Einara Zahn, “Lorenz G. Straub Award” award from St. Anthony Falls Lab at the University of Minnesota, a national prize awarded to the best dissertation in the area of hydraulic engineering, ecohydraulics, or related fields, 2023
- ➌ Erfan Hosseini, Best Poster Award, Andlinger Center for Energy and the Environment, Princeton University, e-ffiliates retreat AND again at the 2023 Annual Meeting
- ➍ Einara Zahn, Walbridge Fund Graduate Award for Environmental Research, Princeton University, 2021
- ➎ Mohammad Allouche, The Princeton School of Engineering and Applied Science’s Award for Excellence, 2020 and 2021
- ➏ Einara Zahn, The William G. Bowen Merit Fellowship of Princeton University, 2019
- ➐ Hamidreza Omidvar, the Mary and Randall Hack '69 Graduate Award, Princeton Environmental Institute
- ➑ Maider Llaguno Munixta, selected to participate in MIT’s CEE Rising Stars program.
- ➒ Qi Li, Fellowship in Geophysical Fluid Dynamics at Woods Hole Oceanographic Institution
- ➓ Qi Li, student presentation award at the 9<sup>th</sup> ICUC/12<sup>th</sup> AMS symposium on the urban environment
- ➔ Qi Li, Wu Prize for Excellence from the Princeton Engineering Office of Graduate Affairs
- ➕ Stimit Shah, Selected to Participate in Argonne Training Program for Extreme-Scale Computing
- ➖ Dan Li, “Award for Outstanding Students Abroad” from Chinese Government
- ➗ Dan Li, Outstanding Student Paper Award in AGU's Fall Meeting 2012.
- ➘ Dan Li, Wu Prize for Excellence from the Princeton Engineering Office of Graduate Affairs
- ➙ Undergrad student team co-led by Elie Bou-Zeid, EPA’s National Sustainable Design competition “P3: People, Prosperity and the Planet” for their project “Power in a Box”  
(<http://www.princeton.edu/main/news/archive/S33/55/56I53/index.xml?section=topstories>)

### Teaching at Princeton (co-taught courses are in italics)

---

- ➊ Science and Solutions for Cities on a Changing Planet (undergraduate and graduate, CEE 444, 2024-ongoing)
- ➋ Boundary Layer Meteorology (graduate, CEE 588, 2010-ongoing)
- ➌ Flow and Turbulence in Geophysical Systems (graduate, CEE 599, 2021-ongoing)
- ➍ The Climatological, Hydrological and Environmental Footprints of Cities (undergraduate, CEE 474, 2020 and 2022)
- ➎ Cities in the 21<sup>st</sup> Century: The Nexus of Climate, Water and Energy Challenges (graduate & undergraduate, Springs of 2013 and 2017)
- ➏ Environmental Engineering Laboratory (undergraduate, CEE 308, 2017)
- ➐ Environmental Engineering Fundamentals I: Atmospheric and Surface Processes (graduate, CEE 501, 2008-2011)

- ➊ Introduction to Environmental Engineering (undergraduate, CEE 303, once in 2009)
- ➋ Engineering Projects in Community Service (EPICS): undergraduate, EGR, one three-year sequence. Student team in the course won a 90,000 USD grant through EPA's national "P3: People, Prosperity and the Planet Student Design Competition for Sustainability" for their project "Power in a Box", which aims to develop a portable hybrid wind-solar renewable energy system that fits in a shipping container (<http://www.princeton.edu/main/news/archive/S33/55/56153/index.xml?section=topstories>).
- ➌ **Teaching at Other Institutions:** Taught a one-week short course on "The Urban Environment: Microclimatology, Thermal Transport and Hydrology" at Tsinghua University, Department of Hydraulic Engineering, July 2011. (see lectures at <http://efm.princeton.edu/Urban%20Lectures.htm>).

## Membership in Professional Societies

---

- ➊ American Geophysical Union (AGU)
- ➋ American Physical Society (APS)
- ➌ European Geosciences Union (EGU)
- ➍ American Meteorological Society (AMS)
- ➎ International Association for Urban Climate (IAUC)

## Selected Funded Research (role, budget, start date, duration), ongoing projects underlined

### M. S. Chadha Center for Global India, Princeton University

#### "The benefits of emerging mobility in India for air pollution, heat, and carbon mitigation"

PI	\$ 74,823	May 2025	1 year
----	-----------	----------	--------

### Environmental Protection Agency (through city of Newark)

#### "Community Change - Newark"

co-PI	\$136,000	Feb 2025	3 years
-------	-----------	----------	---------

### Department of Energy, ARPA-E program

#### "HydroNet: Integrated Photonic System for Hydrogen Leak Localization, Quantification and Monitoring"

co-PI	\$1,700,000	Jan 2025	3 years
-------	-------------	----------	---------

### National Science Foundation

#### "NSF Convergence Accelerator Track L: UAV-assisted dual-comb spectroscopic detection, localization, and quantification of multiple atmospheric trace-gas emissions"

co-PI	\$ 650,000	Jan 2024	1 year
-------	------------	----------	--------

### Exploratory Energy Research Fund of Princeton University

#### "Beyond Electricity Generation: Innovations in Urban Photovoltaics to Co-Optimize Energy Supply and Demand"

PI	\$ 299,815	Sep 2023	2 years
----	------------	----------	---------

### High Meadows Environmental Institute, Princeton University

#### "Design and Optimization of Agrivoltaic Farms"

PI	\$150,000	Sep 2023	2 years
----	-----------	----------	---------

School of Engineering and Applied Science Innovation Funds, Princeton University  
 “Machine Learning for Understanding and Forecasting Urban Heat Islands”

PI	\$150,000	Jun 2023	2 years
----	-----------	----------	---------

The Cooperative Institute for Modeling the Earth System (NOAA-Princeton U. collaboration)

“Parametrization of atmosphere-surface exchanges in the marginal ice zone”

PI	\$295,000	Feb 2023	3 years
----	-----------	----------	---------

Samsung Corporation

“Hybrid Sensing and Simulation Technology for Air Quality”

PI	\$450,000	Nov 2019	4 years
----	-----------	----------	---------

National Science Foundation

“Meteorological Islands: How the Atmosphere Interacts with Large Individual Patches of Heterogeneity”

PI	\$ 557,420	Aug 2021	4 years
----	------------	----------	---------

National Science Foundation

“MCA: In flux: the role of dynamic urban greenspace in energy, water and carbon cycling”

Institutional PI	\$54,172	Sep 2021	3 years
------------------	----------	----------	---------

Andlinger Center for Energy and the Environment

“Data-Enhanced Computational Modeling of Wake Effects and their Uncertainties in Offshore Wind Farms”

co-PI	\$300,000	Jan 2021	2 years
-------	-----------	----------	---------

Princeton Environmental Institute

“The Atmospheric and Oceanic Wakes of Offshore Wind Turbines and Their Effects on Local Marine Environments”

co-PI	\$150,000	Jul 2020	2 years
-------	-----------	----------	---------

Department of Defense, Army Research Office

“Understanding and predicting the complex wind, temperature, and concentration patterns over built surfaces”

PI	\$399,971	Jun 2020	3 years
----	-----------	----------	---------

The Cooperative Institute for Modeling the Earth System (NOAA-Princeton U. collaboration)

“Coastal microscale dynamics and their parametrization”

PI	\$ 304,820	Feb 2020	3 years
----	------------	----------	---------

School of Engineering and Applied Science Innovation Funds, Princeton University

“Evapotranspiration and Carbon Flux Partitioning”

PI	\$100,000 of \$100,000	Jan 2019	1 year
----	------------------------	----------	--------

Princeton’s Campus as lab Initiative

“Technological innovations to mitigate exposure to air pollution”

PI	\$75,000 of \$149,000	May 2018	1 year
----	-----------------------	----------	--------



National Science Foundation “PREEVENTS Track 2: Collaborative Research: SHADE: Surface Heat Assessment for Developed Environments”			
Institutional PI	\$305,763 of \$820,762	Sep 2017	4 years
Princeton’s School of Engineering Innovation Funds “Augmented reality for environmental visualization”			
PI (sole)	\$75,000	Feb 2016	14 months
Princeton Environmental Institute, Climate Grand Challenge “Baroclinicity in the Lower Atmosphere”			
PI (sole)	\$149,500	Sep 2016	2 years
Siebel Energy Institute “Novel physically-driven approaches for multiscale wind-energy forecasting”			
PI (sole)	\$50,000	Apr 2016	1 year
HKF technology “Short Term Wind Forecasting for Energy Applications”			
PI	\$149,000	Feb 2016	1 year
Princeton University & GFDL, Cooperative Institute for Climate Science “Exchange Mechanisms in the Urban Boundary Layer”			
co-PI	\$25,000 of \$99,500	Mar 2016	3 years
National Science Foundation, Sustainability Research Network “Urban Water Innovation Network (UWIN)”			
Institutional PI	\$380,000 of \$ 1,149,346	Jul 2015	5 years
Department of Defense, Army Research Office “Rapid Modifications of Land Surface Temperature During Rainfall: Basics and Implications”			
PI	\$210,264 of \$ 360,262	Jan 2015	3 years
National Oceanic and Atmospheric Administration, Office of Oceanic and Atmospheric Research “Distribution of fugitive methane emissions in the Marcellus Shale”			
co-PI	Total grant budget of \$ 598,451	Aug 2014	3 years
National Science Foundation, Program of Environmental Sustainability Grant supplement for international collaboration with the Urban Micromet group at the University of Reading under the “United States and United Kingdom Clean Water Collaboration”			
co-PI	\$40,767 of \$40,767	Sep 2013	1 year
Princeton University, the Princeton Environmental Institute Organization of a Workshop on “The Climatic and Environmental Impacts of Urbanization”			
PI	\$15,600 of \$15,600	Sep 2013	1 year

Princeton University, The Helen Shipley Fund			
"Health Risks of Urban Inhabitants Under a Warmer Climate"			
PI	\$148,800 of \$148,800	Feb 2013	2 years
Princeton University & GFDL, Cooperative Institute for Climate Science			
The Response of a Turbulent Boundary Layer to a Step Change in Stabilizing Surface Heat Flux.			
co-PI	\$69,500 of \$139,000	Feb 2013	2 years
Department of Energy - Greater Philadelphia Innovation Cluster (GPIC) for Energy-Efficient Buildings			
"Roofing for the Region - Cool, Vegetative or Black: Experimental Evaluation and Modeling "			
PI	\$112,500 of \$193,250	Jan 2012	1 year
National Science Foundation, Program of Environmental Sustainability			
Grant supplement for international collaboration with the American University of Beirut on the USAID funded project "A collaborative approach towards Integrated Water Resources Management in the Litani river basin: Opportunities for climate change adaptation and socio-economic growth"			
co-PI	\$59,415 of \$59,415	Sep 2012	1 year
Princeton University, Siebel Energy Grand Challenge			
"Vertical Axis Wind Turbine Farms: Modeling and Optimization"			
PI	\$100,000 of \$200,000	Sep 2011	2 years
Princeton University, Andlinger Center for Energy and the Environment			
"Wet walls from the pore-scale to the city-scale: a study of a novel passive cooling approach"			
PI	\$25,000 of \$50,000	Jul 2011	1 years
Princeton University, MIRTHE Internal Research Grant			
"Integrating MIRTHE Sensors into Wireless Meteorological Sensing Networks"			
PI	\$90,000 of \$90,000	Jul 2011	1 year
Princeton University, School of Engineering and Applied Science			
"Water in China"			
co-PI	\$166,000 of \$500,000	Apr 2011	3 years
National Science Foundation, Water Sustainability and Climate Solicitation			
"Collaborative Research, WSC-Category 2: Regional Climate Variability and Patterns of Urban Development - Impacts on the Urban Water Cycle and Nutrient Export"			
co-PI	\$599,954 of \$5,000,000	Jan 2011	5 years
National Science Foundation, Physical and Dynamical Meteorology Program			
"The effect of surface heterogeneity and mesoscale variability on the dynamics of stable atmospheric boundary layers"			
PI	\$370,902 of \$370,902	Sep 2010	3 years
Princeton University, MIRTHE Internal Research Grant			
"Integrating MIRTHE Sensors into Wireless Meteorological Sensing Networks"			
PI	\$108,000 of \$108,000	Jul 2010	1 year

National Science Foundation, Chemical, Bioengineering, Environmental, and Transport Systems			
“RAPID: Wind Energy and Rainwater Harvesting Solutions for Sustainable Recovery of Haiti”			
co-PI	Total grant budget: \$102,000	May 2010	1 years
Princeton University, High Meadows Sustainability Fund			
“A Sensor Network over Princeton”			
PI	Total grant budget of \$323,160	Apr 2009	2 years
Princeton University, Siebel Energy Grand Challenge			
“Experimental and Numerical Studies of Stably Stratified Turbulent Boundary Layers”			
PI	\$149,000 of \$254,500	Jul 2009	2 years
Princeton University, MIRTHE Internal Research Grant			
“Integrating MIRTHE Sensors into Wireless Meteorological Sensing Networks”			
PI	\$102,000 of \$102,000	Jul 2009	1 year