

XINJIE HUANG

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EDUCATION BACKGROUND

Ph.D. in Civil and Environmental Engineering

2022-expected 2027

Doctoral certificate in Science, Technology, and Environmental Policy (STEP)

Princeton University, NJ, USA

Supervisors: Prof. Elie Bou-Zeid and Prof. Denise L. Mauzerall

Research area: urban climate modeling, climate adaptation strategies, heat-pollution interaction

M.Phil. in Mechanical Engineering

2020-2022

The University of Hong Kong, Hong Kong

Supervisor: Prof. Jiyun Song

Research areas: urban climate, urban green infrastructure, thermal comfort

Dissertation: unravelling the synergistic effect of urban heat and moisture islands towards healthy cities

B.Eng. in Building Environment and Energy Engineering

2016-2020

Southeast University, Nanjing, China

Supervisor: Prof. Cong Liu

Research areas: indoor air quality, indoor-outdoor air exchanges, ventilation

VISITING APPOINTMENT

Visiting Doctoral Student in School of Architecture, Civil and Environmental Engineering

2025

Ecole polytechnique fédérale de Lausanne (EPFL), Lausanne, Switzerland

Supervisor: Prof. Gabriele Manoli

JOURNAL PUBLICATIONS (*: Corresponding author; †: Equal contribution)

1. Shi, D., Song, J.*, **Huang, X.**, & Chan, P. W. (2025). Modelling and optimization of urban green-blue infrastructure design for city cooling. *Building and Environment*, 279, 113096.

<https://doi.org/10.1016/j.buildenv.2025.113096>

2. Cureau, R.J.*, Pigliautile, I., Kousis, I., **Huang, X.**, Bou-Zeid, E., Pisello, A.L. (2025) On the performance of human thermal stress models in the outdoors against observations. *Energy and Buildings*, 341, 115837.

<https://doi.org/10.1016/j.buildenv.2025.113096>

3. **Huang, X.**, Bou-Zeid, E.*, Vanos, K.J., 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> (Media coverage: [Bloomberg](#))

4. **Huang, X.**, Chang, J. M.-H., Shi, D., Chan, P. W., & Song, J.* (2025). WRF-HEATS coupling: Incorporating human behaviors and city topography into urban heat stress evaluation. *Building and Environment*, 267, 112191.
<https://doi.org/10.1016/j.buildenv.2024.112191>

5. Yang, Y., Cao, C., Bogoev, I., Deetman, C., Dietz, G., Hang, J., Howard, L., **Huang, X.**, Kendall, N., Lai, J., Lam, H., Tam, K., Yoo, C., Zhang, K., & Lee, X.* (2024). Regulation of humid heat by urban green space across a climate wetness gradient. *Nature Cities*, 1(12), 871–879. <https://doi.org/10.1038/s44284-024-00157-y> (Media coverage: [Yale Environment](#))

6. **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(4), 275–285. <https://doi.org/10.1038/s44284-024-00047-3> (Media coverage: [CNN](#) | [Bloomberg](#) | [Princeton Engineering](#) | [Nature Outlook](#) | [IAUC newsletter](#))

7. 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>
8. **Huang, X.**, & Song, J.* (2023). Urban moisture and dry islands: Spatiotemporal variation patterns and mechanisms of urban air humidity changes across the globe. *Environmental Research Letters*, 18(10), 103003. <https://doi.org/10.1088/1748-9326/acf7d7>
9. **Huang, X.**, Song, J.*, Wang, C., & Chan, P. W. (2022). Realistic representation of city street-level human thermal stress via a new urban climate-human coupling system. *Renewable and Sustainable Energy Reviews*, 169, 112919. <https://doi.org/10.1016/j.rser.2022.112919>
10. Hu, H., **Huang, X.**, Zhao, Y., Qian, H., & Liu, C.* (2022). A new PM_{2.5}-based PM-up method to measure non-mechanical ventilation rate in buildings. *Journal of Building Engineering*, 104351. <https://doi.org/10.1016/j.jobe.2022.104351>
11. **Huang, X.**, Song, J.*, Wang, C., Chui, T. F. M., & Chan, P. W. (2021). The synergistic effect of urban heat and moisture islands in a compact high-rise city. *Building and Environment*, 108274. <https://doi.org/10.1016/j.buildenv.2021.108274>
12. Song, J.*, **Huang, X.**, Shi, D., Lin, W. E., Fan, S., & Linden, P. F. (2021). Natural ventilation in London: Towards energy-efficient and healthy buildings. *Building and Environment*, 195, 107722. <https://doi.org/10.1016/j.buildenv.2021.107722>
13. Du, R., Song, J.*, **Huang, X.**, Wang, Q., Zhang, C., Brousse, O., & Chan, P. W. (2021). High-resolution regional modeling of urban moisture island: Mechanism and implications on thermal comfort. *Building and Environment*, 108542. <https://doi.org/10.1016/j.buildenv.2021.108542>
14. Liu, C.*†, **Huang, X.**†, & Li, J. (2020). Outdoor benzene highly impacts indoor concentrations globally. *Science of The Total Environment*, 137640. <https://doi.org/10.1016/j.scitotenv.2020.137640>

CONFERENCE PAPERS & PRESENTATIONS

1. **Huang, X.**, Kong, Q., Wang, Z.-H., Li, P., Middel, A., Matzarakis, A., Nikolopoulou, M., Huber, M., Vanos, J., Song, J., Li, D., Manoli, G., Pisello, A. L., and Bou-Zeid, E.: The diverging predictions of extreme heat risk indicators, 12th International Conference on Urban Climate ([oral presentation](#)), Rotterdam, The Netherlands, 7-11 Jul 2025, ICUC12-483, <https://doi.org/10.5194/icuc12-483>, 2025.
2. Bou-Zeid, E., **Huang, X.**, Hosseini, E., Fabiani, C., Chiatti, C., Mandal, J., Song, J., Pisello, A. L., and Wang, Z.: Upgrading the Urban Fabric: Novel Technologies for Mitigating Extreme Heat in Cities, 12th International Conference on Urban Climate ([keynote speech](#)), Rotterdam, The Netherlands, 7-11 Jul 2025, ICUC12-865, <https://doi.org/10.5194/icuc12-865>, 2025.
3. Crank, P., **Huang, X.**, Karanja, J., and Nazarian, N.: Meet the AMS Board on Urban Environment, 12th International Conference on Urban Climate ([poster presentation](#) on behalf of AMS board on Urban Environment), Rotterdam, The Netherlands, 7-11 Jul 2025, ICUC12-814, <https://doi.org/10.5194/icuc12-814>, 2025.
4. **Huang, X.**, Bou-Zeid, E., Vanos, J., Middel, A., and Ramamurthy, P.: Misting as a key component of blue infrastructure for urban heat mitigation, 12th International Conference on Urban Climate ([oral presentation](#)), Rotterdam, The Netherlands, 7-11 Jul 2025, ICUC12-316, <https://doi.org/10.5194/icuc12-316>, 2025.
5. **Huang, X.**, Bou-Zeid, E., Vanos, K.J., Middel, A., Ramamurthy, P. Outdoor misting is an effective blue infrastructure solution for urban heat mitigation, [oral presentation](#), AMS 105th annual meeting, New Orleans, LA, USA, Jan. 12-16, 2025.
6. Cureau, R.J., Pigliautile, I., Kousis, I., **Huang, X.**, Bou-Zeid E., Pisello, A.L., Assessing human thermal stress models against observations, 19th SDEWES conference, Rome, Italy, Sept. 8-12, 2024.

7. **Huang, X.**, Bou-Zeid, E., Pigliautile, I., Pisello, A.L., Mandal, J., Retro-reflective surfaces for mitigating urban overheating: application, evaluation, and optimization, [oral presentation](#), AGU annual meeting, San Francisco, CA, USA, Dec. 11-15, 2023.
8. Song, J., **Huang, X.**, Shi, D., Development of a street-level human thermal stress prediction and warning system in Hong Kong, [oral presentation](#), AMS 103rd Annual Meeting, online, Jan. 8-12, 2023.
9. **Huang, X.**, Song, J., The synergistic effect of urban heat and moisture islands in a compact high-rise city: mechanisms and mitigation strategies, [poster presentation \(outstanding poster presentation award\)](#), AMS 102nd Annual Meeting, online, Jan. 23-27, 2022.
10. Song, J., **Huang, X.**, Urban climate-human coupling system: model development and case study, [poster presentation](#), AMS 102nd Annual Meeting, online, Jan. 23-27, 2022.
11. Xia, F., **Huang, X.**, Tian, E., Mo, J., An electrostatically assisted air filter for removing indoor bioaerosols. Paper 609. The 11th International Symposium on Heating, Ventilation and Air Conditioning (ISHVAC 2019), Harbin, China, July 12-15, 2019. 2016YFE0102300-03, 51722807, 51521005.

INVITED TALKS

1. "Understanding urban heat stress with a solution-oriented mindset", invited by École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland, May 28, 2025
2. "Understanding urban heat stress with a solution-oriented mindset", invited by Università degli Studi di Perugia (UNIPG), Perugia, Italy, Jun. 26, 2025
3. "Understanding and mitigating urban heat stress with a solution-oriented mindset", invited by Department of Civil and Environmental Engineering, Princeton University, Princeton, NJ, USA, Mar. 29, 2025
4. "Understanding and mitigating urban heat stress: towards localized cooling solutions", invited by Yale-NUIST Center on Atmospheric Environment, webinar, Oct. 25, 2024

HONORS, AWARDS, AND FUND

School of Engineering and Applied Science Award for Excellence (for advanced graduate students who have performed at the highest level as scholars and researchers, 16 students per year), Princeton, NJ, USA (media coverage: Princeton CEE)	2025
High Meadows Environmental Institute-Science, Technology, and Environmental Policy Fellowship (HMEI-STEP) Fellowship (4-5 students per year) , Princeton University, NJ, USA	2024-2026
SEAS Travel Grant Award , School of Engineering and Applied Science, Princeton University, NJ, USA	2025
Travel awards , Department of Civil and Environmental Engineering, Princeton University, NJ, USA	2024, 2025
First Year Fellowship in Science and Engineering , Princeton University, NJ, USA Outstanding Poster Presentation Award , the AMS's 13 th Conference on Environment and Health on 102 nd Annual Meeting, online	2022-2023 2022
Postgraduate Scholarship , the University of Hong Kong, Hong Kong	2020-2022
National First Prize in Energy Saving & Emission Reduction Competition (Top 2%, team leader), Ministry of Education, China (media coverage: Southeast University)	2019
Student Research Fund as the student PI in the National Research Training Program for University Students, Ministry of Education, China	2018

TEACHING EXPERIENCE

Assistant in Instruction at Princeton University Courses: CEE305 Environmental Fluid Mechanics CEE474 Science and Solutions for Cities on a Changing Planet	2023-2024
Teaching Assistant at the University of Hong Kong Courses: MECH3408 Mechanics of fluids; MECH2414 Thermofluids; ENVM8013 Air and noise pollution control and management; MECH4429 Integrated capstone experience (research mentor for three final-year undergraduate students)	2020-2022

PROFESSIONAL SERVICE

Board member

- Board on the Urban Environment, American Meteorological Society (2024-2026)

Conference chair

- Co-chair, Sessions 13C and 14C, Cities and Climate Change I and II, AMS 105th annual meeting, Jan. 12-16, 2025, New Orleans, LA, USA.

Thesis committee member

- Student: Lena Karch, master's thesis on Building archetypes definition and parameters derivation for modelling building energy fluxes in Canton of Vaud and Geneva, EPFL, Jun. 4, 2025

Peer review

- Journals in the field of building science:
Building and Environment, Building Simulation, Journal of Building Engineering
- Journals in the field of environmental science:
Geomatics, Natural Hazards and Risk, Environmental Research Letters, Stochastic Environmental Research and Risk Assessment
- Journal in the fields of meteorology and climatology:
Geophysical Research Letters, Meteorological Applications, Theoretical and Applied Climatology
- Interdisciplinary journals:
Scientific Reports, npj Urban Sustainability