Haoran Hou

+1-405-655-0344 | hhou18@asu.edu | Norman, OK

RESEARCH INTERESTS

Geographical modeling, Urban climate, Extreme heat, Remote sensing application

EDUCATION

University of Chinese Academy of Sciences, Beijing, China

Ph. D., Cartography and Geographic Information System, Advisor: Hongbo Su, June 2023

Fujian Normal University, Fuzhou, China

M. S., Cartography and Geographic Information System, Advisor: Feng Ding, June 2019

Xuchang University, Xuchang, China

B. S., Geographic Information System, June 2015

WORKING EXPERIENCE

The University of Oklahoma, Norman, U.S.

Postdoc, Sustainable URban Futures (SURF) Lab, Advisor: Chenghao Wang, September 2025 – present

Research Center of Eco-Environment, Chinese Academy of Sciences, Beijing, China

Postdoc, Urban Ecological Patterns & Simulations Group, Advisor: Weiqi Zhou, August 2023 – August 2025

Arizona State University, Tempe, U.S.

Visiting Scholar, Hydrosystem Engineering Lab, Advisor: Zhihua Wang, February 2022 – June 2023

Shenzhen Municipal Ecology and Environment Bureau, Shenzhen, China

Research Assistance & Student researcher, Advisor: Weimin Wang, October 2020 – April 2021

GRANTS

Heat Risk Assessment and Mitigation Strategies from a Socio-Ecological System Perspective, China Postdoctoral Science Foundation

January 2024 – August 2025, CNY 240,000.

PROJECTS

Joint Research between China and Brazil on Human Perceived Heat Stress Evaluation and Alleviation, China National Natural Science Foundation

Research Center of Eco-Environment of Chinese Academy of Sciences, summer 2023 – summer 2025

Examining the spatiotemporal variations of extreme heat events across China over the past decades and developing a new framework for a comprehensive approach to address heat stress from meteorological, ecological and societal perspectives.

Impact and Mechanism of Urban Green Space Evolution on Cooling Efficiency and Environmental Equity, China National Natural Science Foundation

Research Center of Eco-Environment of Chinese Academy of Sciences, summer 2024 – summer 2025

Quantifying the evolution of green space cooling efficiency and heat risk at community level in Beijing over the past decades

Terrestrial Emissivity Measurement from a UAV Platform, China National Natural Science Foundation

University of Chinese Academy of Sciences, fall 2019 – spring 2022

Conducted a literature review and integrated a thermal imaging camera and a CO_2 laser on a UAV platform.

Land Surface Energy Exchanges and Anthropologic Heat Release in Urban Areas, Natural Science Foundation of Fujian province

Fujian Normal University, fall 2017 – spring 2018

Evaluated the urban heat island dynamics in Fuzhou City from 1993 to 2016 by using Landsat archive data and applied a location-specific spatial downscaling algorithm for thermal infrared images.

Dynamic Evaluation and Accurate Supervision of the Ecosystem of Fujian Triangle City Cluster, China National Key Research and Development Plan

Fujian Normal University, fall 2016 – spring 2017

Mapped the land cover changes in Fujian Triangle City Agglomeration since 2001 and assessed the natural hazards possibility in this agglomeration by adopting remote sensing data and a three-dimensional evaluation framework.

PUBLICATIONS

1. Zhou, W., Wang, J., **Hou, H.**, Li, J., and Wang, W., 2025. The disparities of urban population exposure to extreme heat in China. *Proceedings of the National Academy of Sciences*, under review.
2. **Hou, H.**, Zhou, W., Wang, J., Yu, M., Cao, J., Wang, Y., Middel, A. and Wang, Z.H., 2025. Urbanization-induced disparity of extreme heat distribution in metropolitan Beijing. *Sustainable Cities and Society*, p.106458.
3. Wang, Y., Wang, Z.H., Rahmatollahi, N. and **Hou, H**., 2024. The impact of roof systems on cooling and building energy efficiency. *Applied Energy*, *376*, p.124339.
4. Wei, C., Qin, H., Ji, J., Wang, W., Hua, Y., Yao, Y., Yu, W., **Hou, H.** and Zhou, W., 2024. Estimating aboveground biomass of urban trees based on ICESat-2 LiDAR and Zhuhai-1 hyperspectral data. *Physics and Chemistry of the Earth, Parts A/B/C*, *135*, p.103605.
5. **Hou, H.**, Longyang, Q., Su, H., Zeng, R., Xu, T. and Wang, Z.H., 2023. Prioritizing environmental determinants of urban heat islands: A machine learning study for major cities in China. *International Journal of Applied Earth Observation and Geoinformation*, 122, p.103411.
6. **Hou, H.**, Su, H., Yao, C., and Wang, Z.H., 2023. Spatiotemporal patterns of the impact of surface roughness and morphology on urban heat island. *Sustainable Cities and Society*, p.104513.
7. Dong, G., Chen, S., Liu, K., Wang, W., **Hou, H.**, Gao, L., Zhang, F. and Su, H., 2023. Spatiotemporal variation in sensitivity of urban vegetation growth and greenness to vegetation water content: Evidence from Chinese megacities. *Science of The Total Environment*, 905, p.167090.
8. **Hou, H.**, Su, H., Liu, K., Li, X., Chen, S., Wang, W., and Lin, J., 2022. Driving forces of UHI changes in China's major cities from the perspective of land surface energy balance. *Science of The Total Environment*, *829*, p.154710.
9. Gao, L., Tang, L., **Hou, H.**, Wang, Y., Mai, Y., He, W., Wang, W., and Su, H., 2021. The spatial-temporal distribution of air pollution and its relationship with landscape pattern in Shenzhen. *Acta Ecologica Sinic*, 41(22): 8758 – 8770. (In Chinese)
10. Lin, J., Chen, W., Qi, X., and **Hou, H.**, 2021. Risk assessment and its influencing factors analysis of geological hazards in typical mountain environment. *Journal of Cleaner Production*, 309, 127077.
11. Lin, J., Lin, M., Chen, W., Zhang, A., Qi, X., and **Hou, H.**, 2021. Ecological risks of geological disasters and the patterns of the urban agglomeration in the Fujian Delta region. *Ecological Indicators*, 125, 107475.
12. **Hou, H.**, Liu, K., Li, X., Chen, S., Wang, W., and Rong, K., 2020. Assessing the urban heat island variations and its influencing mechanism in metropolitan areas of Pearl River Delta, South China. *Physics and Chemistry of the Earth, Parts A/B/C*, *120*, p.102953.
13. **Hou, H.**, Ding F., and Li Q., 2018. Remote Sensing Analysis of Changes of Urban Thermal Environment of Fuzhou City in China in the Past 20 Years. *Journal of Geo-information Science*, 20(3): 385-395. (In Chinese)

CONFERENCES

- International Conference on Urban Science and Sustainability, oral presentation: Guiding urban heat alleviation from the perspective of data-driven methods, Xiamen, China, December 15 – 17, 2023.
- AGU 2022 Fall meeting, oral presentation: Investigate the Spatiotemporal Impacts of Urban Morphology on Land Surface Temperature, Chicago, U.S., December 12 – 16, 2022.

SKILLS

Programming Languages: Python (for data, process, visualization and machine learning algorithms), Javascript (for Google Earth Engine)
Software: ArcGIS, ENVI, Microsoft Office (Word, Excel, and PowerPoint)