

# Curriculum Vitae

## Qunshan Zhao

### Contact Details

Urban Big Data Centre  
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Personal Website: <http://qunshanzhao.weebly.com/>

### Education

- 2017 Ph.D. Geography, *Arizona State University*, School of Geographical Sciences and Urban Planning, Tempe, AZ, USA  
**American Association of Geographers “J. Warren Nystrom” Award for the Most Outstanding Research Paper Based Upon a Recent Dissertation** (<https://www.aag.org/award-grant/nystrom/>).
- 2015 M.A. Geography, *Arizona State University*, School of Geographical Sciences and Urban Planning, Tempe, AZ, USA
- 2013 B.E. Remote Sensing Science and Technology, *Wuhan University*, School of Remote Sensing and Information Engineering, Wuhan, Hubei, China

### Academic Appointments

- 2024-present **Professor in Urban Analytics**, Urban Big Data Centre (UBDC), School of Social and Political Sciences, University of Glasgow, UK
- 2020-present **Associate Director**, Urban Big Data Centre (UBDC), University of Glasgow, UK
- 2020-present **Visiting Scholar and PhD Supervisor**, School of Engineering, University of Edinburgh, UK
- 2022-2024 **Senior Lecturer (Associate Professor) in Urban Analytics**, Urban Big Data Centre (UBDC), School of Social and Political Sciences, University of Glasgow, UK
- 2019-2022 **Lecturer (Assistant Professor) in Urban Analytics**, Urban Big Data Centre (UBDC), School of Social and Political Sciences, University of Glasgow, UK

- 2017-2019 **Postdoctoral Research Associate**, Knowledge Exchange for Resilience (KER) and Spatial Analysis Research Center (SPARC), Arizona State University, USA
- 2013-2017 **Research Associate, Teaching Assistant, and Instructor**, School of Geographical Sciences and Urban Planning, Arizona State University, USA

## Research Interests

*Empirical:* Urban Analytics, Urban Green Infrastructure, Building Energy Efficiency and Fuel Poverty, Human Mobility and Activity Space, Urban Resilience, Active Travel and Sustainable Transport, Urban and Regional Planning, Human-Environment Systems.

*Methodology:* GIScience (Geographic Information Systems, Remote Sensing, Spatial Analysis), Machine Learning/Statistics/Deep Learning, Operations Research, Big Data Analytics, Urban Climate Modeling and Instrumentation, Sensor Network.

*Study Area:* United Kingdom, United States, China, Nigeria, Kenya, Nepal.

## Publications

### Refereed Journal Articles

(Total: **28**; First author: **9**; Corresponding author\*: **13**)

- 2024 Guo, Z., **Zhao, Q.**, & Shi, X. (2024). A long-term (1984–2021) wetland classification dataset for the Yangtze River Basin from continuous Landsat image collections. *Total Environment Advances*, 200111. <https://doi.org/10.1016/j.teadva.2024.200111>
- Biakhmetov, B., Li, Y., **Zhao, Q.**, Ok, Y. S., Dostiyarov, A., Park, Y.-K., Flynn, D., & You, S. (2024). Comparing carbon-saving potential of the pyrolysis of non-recycled municipal plastic waste: Influences of system scales and end products. *Journal of Cleaner Production*, 469, 143140. <https://doi.org/10.1016/j.jclepro.2024.143140>
- 2023 Park, Y.\*, **Zhao, Q.\***, Guldman, J., & Wentz, E. (2023). Quantifying the Cumulative Cooling Effects of 3D Building and Tree Shades with High Resolution Thermal Imagery in a Hot Arid Urban Climate.” *Landscape and Urban Planning*, 240, 104874. <https://doi.org/10.1016/j.landurbplan.2023.104874>
- Liu, N., **Zhao, Q.**, Williams, R., & Barrett, B. (2023). Enhanced crop classification through integrated optical and SAR data: A deep learning approach for multi-source image fusion.” *International Journal of Remote Sensing*, 0(0), 1–29. <https://doi.org/10.1080/01431161.2023.2232552>
- Hao, T., **Zhao, Q.\***, & Huang, J.\* (2023). Optimization of tree locations to reduce human heat stress in an urban park.” *Urban Forestry & Urban Greening*, 86, 128017. <https://doi.org/10.1016/j.ufug.2023.128017> (Finalist for RTPI Awards for Research Excellence in the **Early Career Researcher Award** category for Dr Tongping Hao ([link](#)))
- Sinclair, M., Maadi, S., **Zhao, Q.**, Hong, J., Ghermandi, A., & Bailey, N.

- (2023). Assessing the socio-demographic representativeness of mobile phone application data. *Applied Geography*, 158, 102997. <https://doi.org/10.1016/j.apgeog.2023.102997>
- Chen, H., Cao, Y., Feng, L., **Zhao, Q.**, & Torres, J. R. V. (2023). Understanding the spatial heterogeneity of COVID-19 vaccination uptake in England. *BMC Public Health*, 23(1), Article 1. <https://doi.org/10.1186/s12889-023-15801-w>
- 2022 Sun, M., Han, C., Nie, Q., Xu, J., Zhang, F.\*, & **Zhao, Q.\*** (2022). Understanding building energy efficiency with administrative and emerging urban big data by deep learning in Glasgow. *Energy and Buildings*, 273, 112331. <https://doi.org/10.1016/j.enbuild.2022.112331> (NewScientist: [News](#))
- Feng, X., Barcelos, G., Gaboardi, J. D., Knaap, E., Wei, R., Wolf, L. J., **Zhao, Q.**, & Rey, S. J. (2022). spopt: A python package for solving spatial optimization problems in PySAL. *Journal of Open Source Software*, 7(74), 3330. <https://doi.org/10.21105/joss.03330> ([Example1](#))
- Li, Y., **Zhao, Q.**, & Zhong, C. (2022). GIS and urban data science. *Annals of GIS*, 0(0), 1–4. <https://doi.org/10.1080/19475683.2022.2070969>
- Yabiku, S. T., Sullivan, A., York, A. M., **Zhao, Q.**, Glick, J. E., Hall, S. J., Ghimire, D. J., & An, L. Drivers of prohibited natural resource collection in Chitwan National Park, Nepal. *Environmental Conservation*, 1–8. <https://doi.org/10.1017/S0376892922000121>
- 2021 **Zhao, Q.\***, Li, Z., Shah, D., Fischer, H., Solis, P., & Wentz, E. A. (2021) Understanding the interaction between human activities and physical health under extreme heat environment in Phoenix, Arizona. *Health and Place*, 102691. <https://doi.org/10.1016/j.healthplace.2021.102691>
- Yang, J., Shi, Q., Menenti, M., Wong, M. S., Wu, Z., **Zhao, Q.**, Abbas, S., & Xu, Y. (2021). Observing the impact of urban morphology and building geometry on thermal environment by high spatial resolution thermal images. *Urban Climate*, 39, 100937. <https://doi.org/10.1016/j.uclim.2021.100937>
- Beirsto, J., Tian, Y., Zheng, L., **Zhao, Q.\***, & Hong, J. (2021). Identifying locations for new bike-sharing stations in Glasgow: an analysis of spatial equity and demand factors. *Annals of GIS*. <https://doi.org/10.1080/19475683.2021.1936172> (Second most downloaded paper award for papers published in Annals of GIS in 2022)
- Wang, C., Turner, V. K., Wentz, E. A., **Zhao, Q.**, & Myint, S. W. (2021). Optimization of residential green space for environmental sustainability and property appreciation in metropolitan Phoenix, Arizona. *Science of Total Environment*, 763, 144605. <https://doi.org/10.1016/j.scitotenv.2020.144605>
- 2020 Dai, J., Roberts, D. A., Stow, D. A., An, L., & **Zhao, Q.** (2020). Green Vegetation Cover Has Steadily Increased Since Establishment of Community Forests in Western Chitwan, Nepal. *Remote Sensing*, 12(24), 4071. <https://doi.org/10.3390/rs12244071>
- Wu, Y., Zhan, Q., & **Zhao, Q.** (2020). Long-term air pollution exposure impact on COVID-19 morbidity in China. *Aerosol and Air Quality Research*, 20.

<https://doi.org/10.4209/aaqr.2020.07.0413>

**Zhao, Q.\***, Dickson, C., Thornton, J., Solis, P., & Wentz, E. A. (2020). Articulating strategies to address heat resilience using spatial optimization and temporal analysis of utility assistance data of the Salvation Army Metro Phoenix. *Applied Geography*, 122, 102241.

<https://doi.org/10.1016/j.apgeog.2020.102241>

**Zhao, Q.\*** & Wentz, E. A. (2020) Editorial for the Special Issue: “Remote Sensing of Urban Ecology and Sustainability.” *Remote Sensing*, 12(3), 443.

<https://doi.org/10.3390/rs12030443>

Wang, Z., Fan, C., **Zhao, Q.**, & Myint, S. W. (2020) A geographically weighted regression approach to understanding urbanization impacts on urban warming and cooling: A case study of Las Vegas. *Remote Sensing*, 12(2), 222.

<https://doi.org/10.3390/rs12020222>

2019 Wang, C., Li, Y., Myint, S. W., **Zhao, Q.**, & Wentz, E. A. (2019). Impacts of spatial clustering of urban land cover on land surface temperature across Köppen climate zones in the contiguous United States. *Landscape and Urban Planning*, 192, 103668. <https://doi.org/10.1016/j.landurbplan.2019.103668>

**Zhao, Q.\***, Kelley, S., Xiao, F., & Kuby, M. J. (2019). A multi-scale framework for fuel station location: from highways to street intersections. *Transportation Research Part D: Transport and Environment*, 74, 48-64.

<https://doi.org/10.1016/j.trd.2019.07.018>

2018 **Zhao, Q.\***, Sailor, D. J., & Wentz, E. A. (2018). Impact of tree locations and arrangements on outdoor microclimates and human thermal comfort in an urban residential environment. *Urban Forestry & Urban Greening*, 32, 81-91.

<https://doi.org/10.1016/j.ufug.2018.03.022> (“**J. Warren Nystrom**” Award, [News](#))

**Zhao, Q.\***, Yang, J., Wang, Z., & Wentz, E. A. (2018). Assessing the cooling benefits of tree shade by an outdoor urban physical scale model at Tempe, AZ. *Urban Science*, 2(1), 4. <https://doi.org/10.3390/urbansci2010004>

2017 Yabiku, S. T., Glick, J. E., Wentz, E. A., Ghimire, D., & **Zhao, Q.** (2017). Comparing paper and tablet modes of retrospective activity space data collection. *Survey Research Methods*, 11(3), 329-344.

<https://doi.org/10.18148/srm/2017.v11i3.6741>

Kuai, X., & **Zhao, Q.** (2017). Examining healthy food accessibility and disparity in Baton Rouge, Louisiana. *Annals of GIS*, 23(2), 103-116.

<https://doi.org/10.1080/19475683.2017.1304448>

**Zhao, Q.\***, Wentz, E. A., & Murray, A. T. (2017). Tree shade coverage optimization in an urban residential environment. *Building and Environment*, 115, 269-280. <https://doi.org/10.1016/j.buildenv.2017.01.036>

2016 **Zhao, Q.\***, & Wentz, E. A. (2016). A MODIS/ASTER Airborne Simulator (MASTER) Imagery for Urban Heat Island Research. *Data*, 1(1), 7.

<https://doi.org/10.3390/data1010007>

2015 **Zhao, Q.\***, Myint, S. W., Wentz, E. A., & Fan, C. (2015). Rooftop surface

temperature analysis in an urban residential environment. *Remote Sensing*, 7(9), 12135-12159. <https://doi.org/10.3390/rs70912135>

#### *Submitted Journal Articles*

- 2024 Li, Y., **Zhao, Q.**, & Wang, M. (2024). Understanding Urban Traffic Flows in Response to COVID-19 pandemic with Emerging Urban Big Data in Glasgow. Submitted to *Cities*.
- O'Rourke, B., **Zhao, Q.**, Dayán-Fernández, A., Dickson, E., Wang, R., Wang, M., Zhang, L., & Imran, M. (2024). Integrated Geospatial Methods for Multilingual Cities: Combining GPS, Electronically Activated Recorder, and Map-based Ethnographic Interviews. Submitted to *Research Methods in Applied Linguistics*.
- Liu, N., **Zhao, Q.**, Williams, R., & Barrett, B. (2024). Enhanced crop mapping using polarimetric SAR features and time series deep learning: A case study in Bei'an, China.
- Xu, G., Yu, D., Dou, M., Zheng, J., **Zhao, Q.**, Li, Z., & Jiao, L. (2024). Global Urbanization Trends: Outward Sprawl and Inward Densification Measured by Urban Density Contours.
- Wan, L., **Zhao, Q.**, Wang, M., Li, Y. (2024). Role of local planning in tackling regional development disparities in the UK - A job-housing balance perspective.
- Li, Y., **Zhao, Q.**, & Wang, M. (2024). High-resolution traffic flow data from the urban traffic control system in Glasgow.
- Biakhmetov, B., Li, Y., **Zhao, Q.**, Dostiyarov, A., Flynn, D., You, S. (2024). Transportation and process modelling-assisted techno-economic assessment of resource recovery from non-recycled municipal plastic waste.
- Shin, H., Silverman, E., Li, Y., Tian, Y., & **Zhao, Q.** (2024). Did the Implementation of Low Emission Zone in Glasgow Change the Traffic Flow and Air Quality?

#### *Refereed Book and Book Chapter*

- 2023 LIPIcs, Volume 277, GIScience 2023, Complete Volume. (2023). In R. Beecham, J. A. Long, D. Smith, **Q. Zhao**, & S. Wise (Eds.), *12th International Conference on Geographic Information Science (GIScience 2023)* (Vol. 277). Schloss Dagstuhl – Leibniz-Zentrum für Informatik. <https://drops.dagstuhl.de/opus/volltexte/2023/18894>
- 2021 Sarim, M., **Zhao, Q.**, & Bailey, N. Citizen Mobility and the Growth of Infections During the COVID-19 Pandemic with the Effects of Government Restrictions in Western Europe.” In S.-L. Shaw & D. Sui (Eds.), *Mapping COVID-19 in Space and Time: Understanding the Spatial and Temporal Dynamics of a Global Pandemic* (pp. 279–294). Springer International Publishing. [https://doi.org/10.1007/978-3-030-72808-3\\_14](https://doi.org/10.1007/978-3-030-72808-3_14)

Refereed Conference Proceedings

(Total: 18; First author: 6)

- 2024 Ou, Y., Hu, C., & **Zhao, Q.** (2024). *Investigating the Impact of Housing Energy Efficiency on Indoor Environment at Overheating Summer – A Study in Southwark, London*. 32nd Annual Geographical Information Science Research UK (GISRUK), Leeds, United Kingdom. <https://doi.org/10.5281/zenodo.10926876>
- 2023 Feng, Z., **Zhao, Q.**, & Heppenstall, A. (2023). Understanding the Complex Behaviours of Electric Vehicle Drivers with Agent-Based Models in Glasgow. In R. Beecham, J. A. Long, D. Smith, Q. Zhao, & S. Wise (Eds.), *12th International Conference on Geographic Information Science (GIScience 2023)* (Vol. 277, p. 29:1-29:6). Schloss Dagstuhl – Leibniz-Zentrum für Informatik. <https://drops.dagstuhl.de/opus/volltexte/2023/18924>
- Li, Q., & **Zhao, Q.** (2023). Weakly-Supervised Semantic Segmentation of Airborne LiDAR Point Clouds in Hong Kong Urban Areas. 2023 Joint Urban Remote Sensing Event (JURSE), 1–4. <https://doi.org/10.1109/JURSE57346.2023.10144215>
- Li, Q., Wang, M., Cai, Y., Luo, Q., Wang, Z., & **Zhao, Q.** (2023, April 19). *Identifying Tree Preservation Order Protected Trees by Deep Learning in Greater London Area*. 31st Annual Geographical Information Science Research UK (GISRUK), Glasgow, United Kingdom. <https://doi.org/10.5281/zenodo.7839695>
- Li, Y., **Zhao, Q.**, & Wang, M. (2023, April 19). *Analysis The Influencing Factors of Urban Traffic Flows by Using Emerging Urban Big Data*. 31st Annual Geographical Information Science Research UK (GISRUK), Glasgow, United Kingdom. <https://doi.org/10.5281/zenodo.7839683>
- 2022 Li, Y., **Zhao, Q.**, & Wang, M. (2022). ANALYSIS THE INFLUENCING FACTORS OF URBAN TRAFFIC FLOWS BY USING NEW AND EMERGING URBAN BIG DATA AND DEEP LEARNING. *The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, XLIII-B4-2022*, 537–543. <https://doi.org/10.5194/isprs-archives-XLIII-B4-2022-537-2022>
- Chen, H., Cao, Y., Feng, L., & **Zhao, Q.** “Modelling the Covid-19 vaccine uptake rates in a geographical and socioeconomic context: a case study of England.” *30<sup>th</sup> Geographical Information Science Research UK Conference (GISRUK 2022)*. <https://doi.org/10.5281/zenodo.6407133>.
- Sinclair, M., Maadi, S., **Zhao, Q.**, Hong, J., & Bailey, N. Understanding the socio-demographic representation of Tamoco mobile phone app data in Glasgow City Region. *30<sup>th</sup> Geographical Information Science Research UK Conference (GISRUK 2022)*. <https://doi.org/10.5281/zenodo.6411683>.
- 2021 Sinclair, M., **Zhao, Q.**, Bailey, N., Maadi, S., & Hong, J. Understanding the use of greenspace before and during the COVID-19 pandemic by using mobile phone app data. In *11th International Conference on Geographic Information Science*. <https://doi.org/10.25436/E2D59P>

- 2020 Vonnak, R. & **Zhao, Q.** “Fuel Poverty and Income Deprivation in Bristol, UK.” *28<sup>th</sup> Geographical Information Science Research UK Conference (GISRUK 2020)*.
- 2019 **Zhao, Q.**, Dickson, C., Thornton, J., Wang, C., Solis, P., & Wentz, E. A. “Optimizing and rebalancing heat-related utility assistance provider-client system of the Salvation Army in Phoenix, Arizona.” *16th International Conference on Computers in Urban Planning and Urban Management (CUPUM 2019)*.
- Zhao, Q.**, Reynolds, R., Wang, C., & Wentz, E. A. “A multidimensional urban land cover change analysis in Tempe, AZ.” *2019 Joint Urban Remote Sensing Event (JURSE 2019)*. IEEE. <https://doi.org/10.1109/JURSE.2019.8808957>
- 2018 **Zhao, Q.**, Fischer, H., Luo, W., & Wentz, E. A. Community resilience in Maricopa County, Arizona, USA: the analysis of indoor heat-related death and urban thermal environment.” In *AutoCarto/UCGIS 2018*, Madison, Wisconsin, USA.
- 2016 **Zhao, Q.**, Wentz, E. A., Fotheringham, A. S., Yabiku, S. T., Hall, S. J., Glick, J. E., Dai, J., Clark, M., & Heavenrich, H. Semi-parametric Geographically Weighted Regression (S-GWR): a Case Study on Invasive Plant Species Distribution in Subtropical Nepal. In *9th International Conference on Geographic Information Science*, Montreal, Canada. <https://doi.org/10.21433/B3118kv3n3bq>
- 2015 Wentz, E. A., & **Zhao, Q.** Assessing validation methods for building identification and extraction. In *2015 Joint Urban Remote Sensing Event (JURSE)* (pp. 1-4). IEEE. <https://doi.org/10.1109/JURSE.2015.7120453>
- 2014 **Zhao, Q.**, Wentz, E. A. & Murray, A. T. Shade optimization in a desert environment. In *8th International Conference on Geographic Information Science*, Vienna, Austria.
- 2012 **Zhao, Q.**, & Kuai, X. Land use classification and accuracy assessment based on image fusion of TM and SPOT5. In *18th China Symposium on Remote Sensing*. (In Chinese)
- Kuai, X., & **Zhao, Q.** Wetland image classification of remote sensing based on support vector machine. In *18th China Symposium on Remote Sensing*. (In Chinese)

#### *Doctoral Dissertation*

- 2017 Zhao, Q. (2017). “*Evaluating the Effectiveness of Tree Locations and Arrangements for Improving Urban Thermal Environment*” [PhD Thesis, ARIZONA STATE UNIVERSITY]. [https://repository.asu.edu/attachments/192532/content/Zhao\\_asu\\_0010E\\_17356.pdf](https://repository.asu.edu/attachments/192532/content/Zhao_asu_0010E_17356.pdf)

#### *Research Datasets*

- 2024 Li, Y., **Zhao, Q.**, & Wang, M. (2024). *High-resolution traffic flow data in Glasgow* [dataset]. Zenodo. <https://doi.org/10.5281/zenodo.12100278>
- Li, Q., **Zhao, Q.**, Quintas Zon, M., Jablon, P. E., Wang, M., Hu, C., Ou, Y., & Sen, S. (2024). *A large-scale Glasgow 3D city models derived from airborne LiDAR point clouds* [Data Collection]. Urban Big Data Centre. <https://doi.org/doi.org/10.20394/opvkevmj>
- 2023 **Zhao, Q.**, Hu, C., Ou, Y., Livingston, M., Wang, M., Hamada, R., & Eccles, P. (2023). *Sensor-enhanced housing survey data for urban heat investigation* [Data Collection]. Urban Big Data Centre. <https://doi.org/10.20394/7w2xw5of>
- 2016 **Zhao, Q.** (2016). *Analysis of rooftop surface temperatures in an urban residential environment* [Data Collection]. Environmental Data Initiative. <https://doi.org/10.6073/PASTA/DD5F47BD551EE9BFDD6E6105BD6C28FA>

#### *Technical Reports or Other Publications*

- 2023 **Zhao, Q.** “Sensor-enhanced housing survey for urban heat investigation” Online blog. Urban Big Data Centre, Glasgow, UK. <https://www.ubdc.ac.uk/news/sensor-enhanced-housing-survey-for-urban-heat-investigation>
- Wu, H., Hu, C., Shrivastava, R., Zhao, M., & **Zhao, Q.** “MSc in Urban Analytics study visit to Aalto University in Finland” Online blog. Urban Big Data Centre, Glasgow, UK. <https://www.ubdc.ac.uk/news/msc-in-urban-analytics-study-visit-to-aalto-university-in-finland>
- 2022 Michel, J., Honle, S., & **Zhao, Q.** “Urban Analytics students dive into urban data” Online blog. Urban Big Data Centre, Glasgow, UK.
- Li, Y., Torres, R., **Zhao, Q.**, & Yao, J. “Reviewing the reproducibility of research at AGILE PhD School” Online blog. Urban Big Data Centre, Glasgow, UK.
- 2021 Barcelos, G., Gaboardi, J., Wolf, L., & **Zhao, Q.** “Open-Source Facility Location Modeling (Spopt) Development” Online blog. Urban Big Data Centre, Glasgow, UK.
- Sinclair, M., **Zhao, Q.**, Hong, J., & Bailey, N. “Are we visiting greenspace differently during the COVID-19 pandemic?” Online blog. Urban Big Data Centre, Glasgow, UK.
- Zhao, Q.** “Seeking talented individuals for our MSc in Urban Analytics in 2021-22.” Online blog. Urban Big Data Centre, Glasgow, UK.
- 2020 Vonnak, R., Sarim, M., & **Zhao, Q.** “Comparison of active travel in global cities using Strava Metro Dashboard data.” Online technical blog. Urban Big Data Centre, Glasgow, UK (Available upon request).
- Sarim, M., **Zhao, Q.**, & Bailey, N. “Analysing the effects of COVID-19 Governmental responses on mobility in major European countries.” Online technical blog. Urban Big Data Centre, Glasgow, UK.
- 2017 Fedorschak, K., Bajaj, V., Kandala, S., Miller, J., Salla, R., Kuby, M., Tong, D.,



Mu, W., & Zhao, Q. "Voting Precinct Design Tool: Resource Optimization for Election Administrators." White paper. ASU Decision Theater Network, Tempe, AZ, USA.

## Research Grants

### *External Funding*

#### *Submitted*

#### *Funded*

- 2024-2025 **Data Lab MSc Scholarship**, Scottish Funding Council, United Kingdom (PI. £18,060 for 3 MSc studentships)
- 2023-2024 **Aalto/Glasgow urban analytics open-source programming camp**, Turing Scheme/University of Glasgow, United Kingdom (PI, 10 MSc students, £120/week for 4-8 weeks visit to Aalto University)
- 2023-2025 **The housing environment and energy panel: monitoring indoor residential environments and energy use via low-cost housing sensors**, the Understanding Society Innovation Panel (Co-PI. PI: Dr Mark Livingston)
- 2023 **Sensor-enhanced housing survey for urban heat investigation in London**, the Bureau of Investigative Journalism (PI. £55,470 (FEC)). The entire project has been funded by *Google News Initiative*, *the Bill & Melinda Gates Foundation*, *Impact on Urban Health and Necessity*. News coverage: [TBIJ1](#), [TBIJ2](#), [TBIJ3](#), [TBIJ4](#), [TBIJ5](#), [UBDC1](#), [UBDC2](#), [The Mirror](#), [UoG](#)
- 2023-2025 **Estimating building energy efficiency and carbon footprint for achieving a net-zero carbon target via urban sensing and AI**, Royal Society International Exchanges, United Kingdom (PI. Grant #IEC\NSFC\223042, £12,000 (FEC))
- 2023 **Development of spopt location modelling package to include the capacitated p-median problem**, AGILE funding initiative (PI. £7,679 (FEC), Demo: <https://www.youtube.com/watch?v=u9EOdfe82Gs>)
- 2023-2025 **Developing and exploring methods to understand human-nature interactions in urban areas using new forms of big data**, Secondary Data Analysis Initiative, Economic and Social Science Council (ESRC), United Kingdom (Co-PI. PI: Dr Michael Sinclair. Grant #ES/W012979/1, £292,306 (FEC))
- 2023-2024 **Data Lab MSc Scholarship**, Scottish Funding Council, United Kingdom (PI. £12,000 for 2 MSc studentships.)
- 2022-2025 **IDEAMAPS: A participatory data-modeling ecosystem for deprived area map production in LMIC cities**, Bill & Melinda Gates Foundation (Co-PI. PI: Prof. João Porto de Albuquerque, \$1,690,337 (FEC))

- 2022-2023 **Aalto/Glasgow urban analytics open-source programming camp**, Turing Scheme/University of Glasgow, United Kingdom (PI, 2 MSc students)
- 2022 **Scottish British Academy Early-Career Researcher Network Hub**, The British Academy, United Kingdom (Co-I, News coverage: [the British Academy](#))
- 2022 **Glasgow 3D city modeling**, Glasgow City Council, United Kingdom (PI. £34,122 (FEC), News coverage: [Glasgow Live](#))
- 2022-2026 **The housing market impacts of buildings energy efficiency regulation.** Scottish Graduate School of Social Science Supervisor-led ESRC Steers PhD Competition, United Kingdom (Grant #ES/P000681/1 (2760675), 3.5 years PhD studentship funding, Third Supervisor with Prof. Nick Bailey and Dr. David McArthur)
- 2022-2026 **Analytical strategies for improving third sector employability services in the post COVID-19 recovery.** Scottish Graduate School of Social Science Supervisor-led ESRC Open Collaborative PhD Competition, United Kingdom (Grant #ES/P000681/1 (2760612), 3.5 years PhD studentship funding, Lead supervisor with Prof. Sharon Wright and Prof. Joao Porto de Albuquerque. External partner: The Salvation Army UK)
- 2022-2023 **Data Lab MSc Scholarship**, Scottish Funding Council, United Kingdom (PI. £18,090 for 3 MSc studentships)
- 2021-2024 **Urban Big Data Centre Data Service Extension Phase 3b and 4**, Economic and Social Science Council (ESRC), United Kingdom (Co-PI. PI: Nick Bailey, Grant #ES/L011921/1, £806,040 and £3,117,260 (FEC))
- 2021 **Urban mobility in Glasgow 2019-21**, Glasgow City Council, United Kingdom (Co-PI. PI: Nick Bailey, £147,819)
- 2021-2022 **Data Lab MSc Scholarship**, Scottish Funding Council and European Social Fund, United Kingdom (PI. £36,180 for 6 MSc studentship)
- 2020-2021 **Urban Big Data Centre Data Service Extension Phase 3a (World Class Labs Infrastructure)**, Economic and Social Science Council (ESRC), United Kingdom (Co-PI. PI: Nick Bailey, Grant #ES/L011921/1, £766,321 (FEC), News coverage: [UKRI1](#), [UKRI2](#)).
- 2020-2022 **Urban Big Data Centre Data Service Extension Phase 3**, Economic and Social Science Council (ESRC), United Kingdom (Co-PI. PI: Nick Bailey, Grant #ES/L011921/1, £1,348,022 (FEC))
- 2020-2021 **Data Lab MSc Scholarship**, Scottish Funding Council and European Social Fund, United Kingdom (PI. £18,090 for 3 MSc studentships)

- 2019-2020 **Urban Big Data Centre Data Service Extension Phase 2**, Economic and Social Science Council (ESRC), United Kingdom (Co-PI. PI: Nick Bailey, Grant #ES/L011921/1, £636,467 (FEC))
- 2019-2020 **Data Lab MSc Scholarship**, Scottish Funding Council and European Social Fund, United Kingdom (PI. £12,060 for 2 MSc studentships)
- 2019-2022 **Ventilation based Planning Methods to Respond Urban Haze Supported by Multi-source Spatial-temporal Big Data**, National Natural Science Foundation of China (¥600,000 in total, Co-PI. PI: Dr. Qingming Zhan, Grant #51878515)
- 2017 **Optimizing Tree Locations and Arrangement for Mitigating Urban Heat Island Effects and Improving Human Thermal Comfort in a Hot Arid Urban Residential Environment**, Dissertation Research Grant, American Association of Geographers (PI. \$1,000, News coverage: [AAG](#))
- 2016 **Imagery Grant**, DigitalGlobe Foundation (12 high resolution remotely sensed imagery of QuickBird, WorldView-1, WorldView-2 and GeoEye-1 in Chitwan, Nepal, PI)
- Imagery Grant**, European Space Agency (1 high resolution remotely sensed imagery of SPOT 6 in Chitwan, Nepal, Co-PI. PI: Dr. Sean Murphy)
- Declined (Selected)*
- 2024 **ESRC Centre for Participatory Data Analytics for Just Urban Sustainable Transformations (AD-JUST)**, Economic and Social Research Council (ESRC), United Kingdom (Co-PI. PI: Joao Porto de Albuquerque)
- Interdisciplinary approaches to understanding multilingual cities and urban human language behaviour**, Royal Society APEX awards 2024, United Kingdom (Co-PI. PI: Bernadette O'Rourke)
- Building a FAIR Digital Footprints Knowledge Graph with Platial Ontology**, Digital Footprints Accelerator, Economic and Social Research Council (ESRC), United Kingdom (Co-PI. PI: Rui Zhu)
- 2023 **Trans-Atlantic Spatial Quantitative Methods (TASQME) research network**, The Royal Society of Edinburgh Research Network, United Kingdom (PI. £20,000 (FEC))
- Uncovering 'vaccine deserts' during Covid-19 pandemic: spatial modelling of vaccine accessibility and uptake across G7 countries**, The British Academy Pandemic Preparedness: Lessons to Learn from COVID-19 across the G7, United Kingdom (Co-PI. £97,054 (FEC))
- 2022 **SEEBEE: Sensing Environmental Equality with Bees using Everyday**

**Equipment**, Engineering and Physical Sciences Research Council (EPSRC), United Kingdom (Co-PI. PI: Jeremy Singer)

2021 **Digital technology, employment opportunities and regional inequality**, Nuffield Foundation, United Kingdom (Co-PI. PI: Jiaqi Ge, Total: £203,484)

**Quantifying the impact of AI on the UK job market using online advert data**, Secondary Data Analysis Initiative, Economic and Social Science Council (ESRC), United Kingdom (Co-PI. PI: Jiaqi Ge, Total: £299,995. Glasgow: £28,276.)

**Research on electric vehicle charging behaviours, new charging points location optimization, and policy promotion in Scotland?** Scottish Graduate School of Social Science Supervisor-led ESRC Steers PhD Competition, United Kingdom (4 years PhD studentship funding, Second supervisor with Dr. Jinhyun Hong)

2020 **New mobility data to understand if shared e-scooter schemes increase active travel and improve population health**, National Institute for Health Research (NIHR) Public Health Research Programme, United Kingdom (Co-PI. PI: Susan Grant-Muller. Total: £1,073,579. Glasgow: £518,879)

**Audience Prediction in a Covid and post Covid world**, Innovate UK, United Kingdom (Academic PI. Business lead: Locomizer Ltd. Total: £169,894. Glasgow: £50,304)

2019 **The University as an Enabler for Sustainable Solutions**, Scottish Funding Council, United Kingdom (£250,000, Co-PI. PI: Dr. Jaime Toney)

**Constructing a Digital Environment Expert Network**, Natural Environment Research Council, United Kingdom (£10,000, PI, invited for final interview)

**Promoting cycling in Scottish cities: how to build effective cycling infrastructure?** Scottish Graduate School of Social Science Supervisor-led ESRC Steers PhD Competition, United Kingdom (4 years PhD studentship funding, Second supervisor with Dr. Jinhyun Hong)

**The Understanding of Ghost City Development in China via Urban Big Data Analytics**, Urban Studies Foundation Postdoctoral Research Fellowships (£160,000, PI. Apply with Dr. Ru Xu)

### *Internal Funding*

#### *Funded*

2024-2025 **Gaelic Connect: a digital hub for Gaelic speakers and learners in the city of Glasgow**, Institutional Joint IAA Application, University of Glasgow, United Kingdom (£43,336, Co-PI. PI: Bernadette O'Rourke)

- 2023      **Sensor-enhanced housing survey**, Urban Studies Research Funding, University of Glasgow, United Kingdom (£500, PI)
- 2022      **Development of spopt location modelling package to include the capacitated p-median problem**, Research Incentivization Funding, Urban Studies, University of Glasgow, United Kingdom (£1,500, PI)
- Individuals’ cycling volumes and socio-demography: Evaluating urban cycling infrastructure using crowd-sourced data**, Early Career Research (ECR) Support Fund, School of Social & Political Sciences, University of Glasgow, United Kingdom £1,000, PI)
- Exploration of the use of new forms of urban big data and sensing technologies for creating a sustainable and healthy urban environment**, Collaboration Development Fund, School of Social & Political Sciences, University of Glasgow, United Kingdom (£3,000, PI, with MIT Sensible City Lab)
- Understanding regional disparity – a job-housing (im)balance perspective**, College Research Fund, College of Social Science; Early Career Research (ECR) Support Fund, School of Social & Political Sciences; Research Incentivization Funding, Urban Studies, University of Glasgow, United Kingdom (£3,247, £1,000, and £1,500, PI)
- 2021      **Understanding multilingual citizens in the city space**, Reinvigorating Research Funding, University of Glasgow, United Kingdom (£37,200, Co-I, PI: Bernadette O’Rourke)
- Classifying City Level Housing Materials by Using Google Street View Images and Deep Learning**, Research Incentivization Funding, Urban Studies, University of Glasgow, United Kingdom (£1,500, PI)
- Exploring human-nature interactions using new forms of data**. College of Social Science Research Fund, University of Glasgow, United Kingdom (£4,945, Co-PI, PI: Nick Bailey and Michael Sinclair)
- 2020      **Mitigating Urban Heat Island Effects through the Intelligent Use of Sustainable Materials**, University of Edinburgh/University of Glasgow Jointly Funded PhD Studentships Project Competition (Theme: Future Cities), United Kingdom (4 years PhD studentship funding, Second supervisor with Dr. Chris Beckett)
- Harnessing Crowd Sourced Big Data for Driving Next Generation Location-Based Services in Future Cities**, University of Edinburgh/University of Glasgow Jointly Funded PhD Studentships Project Competition (Theme: Future Cities), United Kingdom (4 years PhD studentship funding, Second supervisor with Prof. Tughrul Arslan. Project was awarded but the candidate turned down the offer.)

- 2017 **Impact of Tree Locations and Arrangements on Outdoor Microclimate and Human Thermal Comfort in a Compact Urban Residential Environment**, Graduate Grants for Research in Urban Ecology and Urban Systems Research, Central Arizona-Phoenix Long-Term Ecological Research (CAP-LTER), Arizona State University (\$4,000, PI)
- 2016 **Validating Microclimate Benefits from Optimal Tree Location Arrangement: a Physical Scale Model Site Field Measurement**, JumpStart Research Grant, Graduate and Professional Student Association (GPSA), Arizona State University (\$500, PI)
- 2015 **Rooftop Surface Temperature Analysis in an Urban Residential Environment**, Graduate Grants for Research in Urban Ecology and Urban Systems Research, Central Arizona-Phoenix Long-Term Ecological Research (CAP-LTER), Arizona State University (\$4,000, PI)
- Tree Shade Effects on House Surface Temperature in an Urban Desert Environment**, Matthew G. Bailey Scholarship Award, School of Geographical Sciences and Urban Planning, Arizona State University (\$1,500, PI)

## Honors and Awards

### *Awards*

- 2024 **Finalist, Early Career Researcher Award**, RTPI Awards for Research Excellence (collaborative publication with Dr Tongping Hao in HKU ([link](#)))
- 2022 **Shortlist, Most Innovative Transport Project of the Year**, Scottish Transport Awards (Glasgow City Council & Urban Big Data Centre – collaborative use of location services data in transport planning in Glasgow)
- 2021 **Fellowship of Recognizing Excellence in Teaching (RET)**, University of Glasgow
- 2020 **Global Young Scientist Award**, World Geospatial Developers Conference
- 2018 **J. Warren Nystrom Award** (An outstanding paper based upon a recent dissertation in geography), American Association of Geographers (News coverage: [AAG](#), [ASU](#))
- 2017 **Graduate Excellence Awards**, College of Liberal Arts and Sciences, Arizona State University
- 2016 **Finalist, Landscape Specialty Group Student Presentation Competition**, American Association of Geographers
- 2013-2014 **University Graduate Fellowship**, Arizona State University
- 2013 **Geographical Sciences Teaching Assistant Award**, School of Geographical Sciences and Urban Planning, Arizona State University
- 2010-2012 **Fellowship for Academic Excellence**, Wuhan University
- 2011 **First Prize in Social Science Research**, Youth Research Center at Wuhan University
- 2010-2011 **Trimble Scholarship**, Wuhan University
- 2010-2011 **Outstanding Student**, Wuhan University

### *Travel Grants*

- 2017            **Graduate College Preparing Future Faculty Travel Award**, Arizona State University
- 2015-2017    **Graduate College Travel Award**, Arizona State University
- 2015           **Conference Travel Grants**, CAP-LTER, Arizona State University
- 2015           **Individual Travel Funding**, GPSA, Arizona State University
- 2014           **John F. Lounsbury Student Travel Scholarship**, School of Geographical Sciences and Urban Planning, Arizona State University

### **Teaching Interests**

Urban Analytics, Urban Data Science, Geographic Information Science, Remote Sensing, Spatial Analysis and Statistics, Location Modeling and Spatial Optimization, Sustainable Urban Environment.

### **Teaching Experience**

Aalto University, Finland

- 2023           Workshop: Introduction to Open-Source Spatial Optimization (<https://github.com/qszhao/Aalto2023-spopt>).

University of Glasgow, United Kingdom

#### *Postgraduate*

- Programming Tools for Urban Analytics (Course Convener, Spring, 2019-now).
- Urban Analytics Group Projects (Course Convener, Spring, 2019-2024).
- Big Data and Urban Analytics (Course Convener/Contributor, Fall, 2019-2022).
- Quantitative Data Analysis (Course Tutor, Fall 2019).

#### *Undergraduate*

- Social & Public Policy 2B: Policy, Politics and Power (Course Contributor, Spring, 2019-2023).
- Big Data, Policy & Power (Course Contributor, Spring, 2021-2023).

Arizona State University, USA

Spring 2017   GIS 461/561: Optimization Fundamentals for Spatial Analysis. (Hybrid course instructor, co-teach with Dr. Heather Fischer)

Fall 2013      GPH 370: Geographic Information Technologies. (Teaching assistant, lab leader and grader)

### **Students/Postdocs Advised**

University of Glasgow

Postdoctoral Research Associates:

- Dr Qiaosi Li (Urban Sensing & Analytics, 2022-2025)
- Dr Grant Tregonning (IDEAMAPS and Sensor Enhanced Housing Survey, 2023-2024, <https://www.linkedin.com/in/granttregonning/>)

- Dr Angela Abascal (IDEAMAPS, 2023 – Now Research Associate in Universidad Pública de Navarra with one of the most prestigious Spanish National Scholarships Juan de la Cierva, <https://www.linkedin.com/in/angela-abascal-imizcoz/>)
- Dr Michael Sinclair (Understanding Urban Mobility with Mobile Phone Data, 2020-2023 – Now Permanent Lecturer in Urban Analytics in Urban Studies and UBDC and the ESRC-SDAI project PI from 2023-2025, <https://www.linkedin.com/in/michael-sinclair-496a25111/>)
- Dr Saeed Maadi (Understanding Urban Mobility with Mobile Phone Data, 2020-2022 – Now Network Performance & Technical Manager in Mobii (National Traffic Control Centre) (<https://www.linkedin.com/in/saeed-maadi-62b940b9/>))
- Dr Chau Man Fung (Sensor Enhanced Housing Survey, 2021 – Now Economic Analyst in UK REACH (<https://www.linkedin.com/in/chau-man-fung-755420b8/>))

#### Ph.D. Students (ongoing):

- Henry Ibitolu (Ph.D. in Civil and Environmental Engineering, University of Edinburgh/University of Glasgow Jointly Funded PhD Studentships, 2020-2025, First supervisor with Dr. Chris Beckett and Dr. Daniel Fosas from Edinburgh)  
Award: the Allianz Climate Risk Research Award 2021 Finalist ([link](#)); University of Edinburgh Delegate to COP27 in Cairo, Egypt; Committee member of the UK Net Zero Carbon Building Standard Committee; Awarded the RENKEI Early Career Researcher Fellowship by the British Council ([link](#)); Member of UK Young Academy ([link](#)).
- Yue Li (Ph.D. in Urban Studies, China Scholarship Council PhD Studentships, 2021-2025, First supervisor with Dr. Mingshu Wang)  
Award: Alan Turing Institute PhD Enrichment Scheme 2022; Postgraduate Representative of QMRG ([link](#)).
- Mohd Sarim (Ph.D. in Urban Studies, SGSSS open competition PhD Studentships with the Salvation Army UK, 2022-2026, First supervisor with Prof. Joao Porto de Albuquerque and Prof. Morag Treanor)
- Zixin Feng (Ph.D. in Urban Studies, China Scholarship Council PhD Studentships, 2022-2026, First supervisor with Prof. Alison Heppenstall)  
Award: Alan Turing Institute Data Study Group 2023; BEHAVE ESSA Summer School 2023 on “Agent-based modelling for social scientist”; Alan Turing Institute PhD Enrichment Scheme 2024.
- Yunbei Ou (Ph.D. in Urban Studies, SGSSS Steers PhD Studentships, 2022-2026, Third supervisor with Prof. Nick Bailey and Dr. David McArthur)  
Award: Alan Turing Institute Data Study Group 2023; Alan Turing Institute PhD Enrichment Scheme 2024.  
Intern: Sensor Enhanced Housing Survey and 3D City Modeling.
- Adenike Oluwatimilehin Shonowo (Ph.D. in Urban Studies, IDEAMAPS PhD Studentships, 2023-2027, Second supervisor with Prof. Joao Porto de Albuquerque)
- Ziyang Guo (Ph.D. in Environmental Sustainability, 2021-2025, Second supervisor with Dr. John Xiaogang Shi)

#### Ph.D. Students (finished):

- Niantang Liu (Ph.D. in Geological and Earth Sciences/Geosciences, 2019-2024, Second supervisor with Dr. Brian Barrett and Dr. Richard Williams, graduated Jun 2024 – Now



Postdoctoral Researcher in Chinese Academy of Agricultural Sciences)

M.Sc. Students:

- Xingyi Du (Glasgow Urban Analytics, IDEAMAPS, 2024)
- Manuella Comerio de Paulo (Glasgow Urban Analytics, IDEAMAPS, 2024)
- Mingkang Wang (Glasgow Urban Analytics, Sensor Enhanced Housing Survey, Job-Housing Balance Analysis, 3D City Modeling, and Multilingual Cities, 2021-2023 – Now Risk Management Analyst in China CITIC Bank, <https://www.linkedin.com/in/mingkangwang-glasgow/>)
- Congying Hu (Glasgow Urban Analytics, Sensor Enhanced Housing Survey, and 3D City Modeling, 2023 – Now Mobility Planner at Sustrans, <https://www.linkedin.com/in/congying-hu/>)
- Rongbo Xu (UCL Urban Analytics, AGILE open-source location allocation modeling, 2023 – Now Software Engineer at Vortexa, <https://www.linkedin.com/in/rongbo-xu-51302b235/>)
- Samuel Honle (Glasgow Urban Analytics, Urban Cycling Analysis, 2022 – Now Transport Modellers at OBB - <https://www.linkedin.com/in/samuelhoenle/>)
- Reka Vonnak (Glasgow Urban Analytics, COVID-19 Mobility Study, 2019-2020 – Now Data Scientist at Dmlab, <https://www.linkedin.com/in/reka-vonnak/>)
- Mohd Sarim (Glasgow Urban Analytics, COVID-19 Mobility Study, 2019-2020 – Now fully-funded PhD students at UBDC, <https://www.linkedin.com/in/mohd-sarim-2296851a8/>)

Academic Visitors:

- Li Tian (Associate Professor, Institute of Geographic Science and Natural Resources, Chinese Science Academy, 2023)
- Pengyu Wang (Master of Science in Geo-information Science and Earth Observation, University of Twente, 2024)
- Qimin Cheng (School of Electronic Information and Communications, Huazhong University of Science and Technology, 2024-25)

Google Summer of Code Students:

- Rongbo Xu ([PySAL: spopt Development] P-Median Model with Near-Far Cost Allocation: Guided by Tobler's Law ([Project link](#)), Summer 2023)
- Erin Rosemary (PySal: Open Source Facility Location Modelling (spopt) Development ([Project link](#)), Summer 2022)
- Germano dos Santos (PySal: Open Source Facility Location Modelling (spopt) Development ([Project link](#)), Summer 2021)

External Thesis Assessment Board:

- Shan Yu (MPhil in Land Economy, University of Cambridge, 2023)
- Christian Caton (MRes in Computer Science, University of Warwick, 2022)
- Sree Venkata Satya Praneeth Kadiyam (Master of Science in Geo-information Science and Earth Observation, University of Twente, 2021)

Arizona State University

M.Sc. Students:

- Ryan Reynolds (M.A. in Geography, 2018-2019)
- Dhruvil Shah (M.S. in Computer Science 2018-2019)
- Fan Xiao (Master of Geographic Information Science, 2015-2016)

## Invited Presentations and Workshops

- 2024 School of Geography, University of Leeds. “Understanding Cities by Urban Sensing and Analytics.” Jul 9, 2024.
- AI for Cities Workshop, College of Architecture and Urban Planning, Tongji University, China. “Understanding Cities by AI and Urban Analytics.” Jul 2, 2024.
- CPGIS Educational Webinar Series, GIS & Energy/Environment. “Understanding Cities by Urban Sensing and Analytics.” Mar 15, 2024  
(<https://www.youtube.com/watch?v=Mdm3oCl3rEU&t=2409s>).
- UBDC Data Service Webinar. “Sensor Enhanced Housing Survey.” Mar 6, 2024.
- School of Urban Planning and Design, Peking University Shenzhen Graduate School, China. “Understanding Cities by Urban Sensing and Analytics.” Jan 5, 2024.
- Department of Urban Informatics, Shenzhen University, China. “Understanding Cities by Urban Sensing and Analytics.” Jan 5, 2024.
- School of Environment and Spatial Informatics, Chinese University of Mining and Technology, China (Royal Society International Exchange Partner). “Understanding Cities by Urban Sensing and Analytics.” Jan 4, 2024.
- 2023 The 5<sup>th</sup> International Conference on Natural Resource Management and Public Policy, Huazhong Agricultural University, China. “Optimization of tree locations and arrangements to reduce human heat stress in an urban park.” Dec 1, 2023.
- GeoSPA Talks, Finnish University Network for Geoinformatics, Aalto University, Finland. “Understanding cities by urban sensing and analytics.” Oct 17, 2023.
- University of Connecticut, USA. “Quantifying the Cumulative Cooling Effects of 3D Building and Tree Shades with High Resolution Thermal Imagery in a Hot Arid Urban Climate.” Jul 11, 2023.
- Center for Geographic Analysis, **Harvard University**, USA. “Optimization of tree locations and arrangements to reduce human heat stress in an urban park.” Jul 6, 2023. (<https://gis.harvard.edu/event/optimization-tree-locations-and-arrangements-reduce-human-heat-stress-urban-park>)
- The Sensible City Lab, **Massachusetts Institute of Technology**, USA.

“Understanding cities by sensing and urban analytics.” Jul 5, 2023.

Annals of GIS Award Winners Webinar. Identifying locations for new bike-sharing stations in Glasgow: an analysis of spatial equity and demand factors., May 23, 2023. (Online Presentation)

**Keynote Speech, Finnish Geoinformatics Research Days 2023.** “Understanding building energy efficiency and the use of greenspace with administrative and emerging urban big data in Glasgow.” May 15, 2023.

<https://fiuignet.fi/2023/04/18/geoinformatics-research-days-2023-programme-and-registration/>

College of Oceanography and Space Informatics, China University of Petroleum (Apr 10, 2023); School of Environment, Beijing Normal University (Apr 13, 2023). “Quantifying the Cumulative Cooling Effects of 3D Building and Tree Shades with High Resolution Thermal Imagery in a Hot Arid Urban Climate.”

Deep Learning and Earth Science Seminar (第二届深度学习与地球科学专题研讨会) (online, in Chinese). “Weakly-Supervised Deep Learning of Large-scale Airborne LiDAR Point Clouds Classification in Glasgow (基于大尺度高分辨率 LiDAR 点云和深度学习的城市建筑与植被分类—以格拉斯哥为例)” Apr 1, 2023.

School of Remote Sensing and Information Engineering, Wuhan University (Mar 30, 2023); Centre for GeoData and Analysis, Beijing Normal University (Apr 12, 2023); Aerospace Information Research Institute (Apr 12, 2023) and Institute of Geographic Sciences and Natural Resources Research (Apr 13, 2023), Chinese Academy of Sciences “Optimization of Tree Locations to Reduce Human Heat Stress in an Urban Park.”

Quantitative Spatial Science Seminar, School of Geographical Sciences, University of Bristol. “Understanding building energy efficiency and the use of greenspace with administrative and emerging urban big data in Glasgow.” Mar 8, 2023.

Media and Data Science Seminar, School of Computing Science, University of Glasgow. “Understanding building energy efficiency and the use of greenspace with administrative and emerging urban big data in Glasgow.” Jan 25, 2023.

2022

Spatial Statistics and Spatial Analysis Seminar (中国矿业大学环境与测绘学院学术论坛-空间统计与空间分析专场) (online, in Chinese). “Optimization of tree locations and spatial arrangements to reduce human heat stress in an urban park.” Dec 15, 2022.

Statistics Seminar, School of Mathematics & Statistics, University of Glasgow. “Understanding building energy efficiency and the use of greenspace with

administrative and emerging urban big data in Glasgow.” Nov 14, 2022.

Heat Islands and Inequality Journalism Symposium. “Urban Heat Island and Household Indoor Environment Monitoring.” Sep 13, 2022.

UBDC Employment Data User Group webinar: Adzuna Jobs Listings data. “Exploration of Adzuna jobs listing data.” May 24, 2022.

Graduate Colloquium Series, Department of Geography, University of Northern Iowa, United States. “Designing a Sustainable Urban Environment by Spatial Data Science & Urban Climatology” Feb 18, 2022.

Deep Learning and Earth Science Seminar (第一届深度学习与地球科学专题研讨会) (online, in Chinese). “Understanding Cities by AI and Urban Analytics (基于新型城市数据和深度学习理解城市环境和人类活动)” Jan 8, 2022.

2021 Towards urban analytics 2.0, The Alan Turing Institute and University of Leeds, United Kingdom. “Identifying Tree Preservation Order (TPO) by Multi-source Deep Learning in Greater London Area” Nov 30, 2021.

<https://www.turing.ac.uk/events/towards-urban-analytics-20>

GDSL (Geographic Data Science Lab)-CDRC (Consumer Data Research Centre) Brown Bag Seminar, Department of Geography and Planning, University of Liverpool (online). “Fuel poverty or pandemic mobility? A new insight for private rental housing market and green space visitation from new forms of urban big data.” Jun 17, 2021.

Event: <https://www.eventbrite.com/e/gdsl-cdrc-brown-bag-seminar-with-qunshan-zhao-tickets-156653664327#>

Video: <https://www.youtube.com/watch?v=N17ehdINW88>

MoHeap 2021: Virtual Workshop on Mobility, Health, and Place, University of Zurich (online). “Understanding the interaction between human activities and physical health under extreme heat environment in Phoenix, Arizona.” Jun 8, 2021. Event: <https://sites.google.com/view/moheap/home?authuser=0>

Video: <https://www.youtube.com/watch?v=rJT6h267IBo&t=3s>

Introduction to Adzuna Job Market Data, Glasgow, UK (online). “Understanding the impact of AI and smart technologies on jobs using online job vacancy data.” May 25, 2021.

Event: <https://www.ubdc.ac.uk/education-and-events/events-and-courses/past-events-2021/introduction-to-adzuna-job-market-data-webinar/>

Video: <https://www.youtube.com/watch?v=CEo5vh9BkL4>

School of Engineering, Newcastle University (online) “A multi-scale framework for fuel station location: From highways to street intersections.” Mar 15, 2021.

2020 Kongping Primary School, Ya’an, Sichuan, China (online, in Chinese). “Smart

Cities.” Dec 10, 2020.

SAD 2020 Spatial Analytics + Data Seminar Series 2020, Newcastle University (online). “Articulating strategies to address heat resilience.” Nov 3, 2020.  
<https://www.youtube.com/watch?v=tKYkbKpNPDY&t=67s>

Geoinsider 43, China (online, in Chinese). “Articulating strategies to address heat resilience with Salvation Army utility assistance program/UK higher education system discussion after Brexit.” Oct 30, 2020.  
<https://www.bilibili.com/video/BV1Nv411r7L4>

UBDC Interactive Data Dives, Glasgow, UK (online). “An exploration of fuel poverty in the private rental housing market.” Oct 20, 2020.  
GitHub repo: <https://github.com/qszhao/UBDCDataDives2020>;  
Video: <http://www.ubdc.ac.uk/education-and-events/online-learning/online-tutorials/interactive-data-dives/>

Shenzhen University, Shenzhen, China (online, in Chinese). “Introduction to Urban Analytics: Education and Research.” Sep 23, 2020.

Institute of High Energy Physics, Chinese Academy of Sciences, Beijing, China (online, in Chinese). “International Collaboration and Communication (交流与沟通-国际合作与科技促进)” Sep 18, 2020.

WGDC Summit 2020 (全球地理信息开发者大会青年科学家论坛), Beijing, China (online, in Chinese). “A multi-scale framework for fuel station location: From highways to street intersections (多尺度氢能源汽车早期充气站选址优化与分析)” Aug 19, 2020. <http://zhibo.sina.com.cn/tech/wgdcscience>

2019 Geoinsider 6, China (online). “Unveiling the myth of United Kingdom higher education.” Nov 22, 2019. <https://www.bilibili.com/video/BV1Ee411W79c>

Urban Studies Monday Workshop, University of Glasgow, United Kingdom. “Understanding Long-term Heat Resilience by Urban Analytics.” Nov 4, 2019.

Building a Future for the Urban Analytics Blueprints, The Alan Turing Institute and University of Bristol, United Kingdom. “Understanding the Long-term Heat Resilience by Urban Analytics” Oct 17, 2019.  
<https://www.turing.ac.uk/events/building-future-urban-analytics-blueprint>

NERC Constructing a Digital Environment Workshop, Edinburgh, United Kingdom. Oct 16, 2019.  
<https://nerc.ukri.org/innovation/activities/environmentaldata/digitalenv/news/workshops/>

Urban Big Data Centre Research Meeting, University of Glasgow, United

Kingdom. “Urban Analytics Implication for Urban Planning and Public Policy.” May 28, 2019.

SPARC Brown Bag, Arizona State University, USA. “Knowledge Exchange for Resilience.” Mar 20, 2019. (Co-present with KER Executive Director, Dr. Patricia Solís)

Laboratory of Systems Pharmacology and Center for Geographic Analysis, **Harvard University**, USA. “Thrive as cancer cells in forests? Spatial, social, and ecological factors driving the distribution of invasive plant (*Mikania micrantha*) establishment and spread in a biodiversity hotspot in subtropical Nepal.” Jan 10, 2019. (Presentation audio is available online at: <https://gis.harvard.edu/event/thrive-cancer-cells-forests-spatial-social-and-ecological-factors-driving-distribution>)

2018 University of Glasgow, United Kingdom. “Building the MSc in Urban Analytics.” Dec 10, 2018.

Transport Lab, Arizona State University, USA. “Trip-Based Hydrogen Station Location for Central Connecticut: Combining Regional and Micro Scale Modeling.” Nov 14, 2018. (Co-present with Dr. Michael Kuby)

Science and Mathematics Colloquium Series, College of Integrative Sciences and Arts, Arizona State University, USA. “Community resilience in Maricopa County: urban green infrastructure planning and the HeatMapper citizen science project.” Sep 5, 2018.

J. Warren Nystrom Award Presentation, **American Association of Geographers**, USA. “Impact of tree locations and arrangements on outdoor microclimates and human thermal comfort in an urban residential environment.” April 11, 2018. <https://aag.secure-abstracts.com/AAG%20Annual%20Meeting%202018/sessions-gallery/12160>

2017 SPARC Brown Bag, Arizona State University, USA. “Designing a sustainable urban environment by spatial data science and urban climatology.” Nov 14, 2017. Dr. Chao Wang and Dr. Yu Yao’s group, School of Electrical, Computer, and Energy Engineering, Arizona State University, USA. “Fund yourself in the graduate school.” May 3, 2017.

Dr. Kevin Gurney’s group, School of Life Sciences, Arizona State University, USA. “Unveiling the myth of creating sustainable urban desert residential environment.” March 15, 2017.

## Selected Conference Presentations and Posters

2024 Li, Q., & **Zhao, Q.** Constructing a Large-scale 3D Building and Tree Model for Glasgow City via Airborne LiDAR Point Clouds. *43<sup>rd</sup> EARSeL Symposium*, Manchester, United Kingdom, June 17-20, 2024. (Presentation)

- Ou, Y., Hu, C., & **Zhao, Q.** Investigating the Impact of Housing Energy Efficiency on Indoor Environment at Overheating Summer – A Study in Southwark, London. *32nd Annual Geographical Information Science Research UK (GISRUK 2024)*, Leeds, United Kingdom, Apr 9-12, 2024. (Presentation)
- 2023 Ibitolu, H, Beckett, C., **Zhao, Q.**, & Fosas, D. Investigating the Impact of Earthen Building Materials on Urban Neighborhood Climate: A case study of London. *ICUC 11*, Sydney, Australia, August 28-Sep 1, 2023. (Presentation)
- Li, Q., & **Zhao, Q.** Weakly-Supervised Semantic Segmentation of Airborne LiDAR Point Clouds in Hong Kong Urban Areas. *JURSE 2023*, Heraklion Crete, Greece, May 17-19, 2023. (Poster)
- Li, Y., **Zhao, Q.**, & Wang, M. Analysis The Influencing Factors of Urban Traffic Flows by Using Emerging Urban Big Data. *31<sup>th</sup> Geographical Information Science Research UK Conference (GISRUK 2023)*, Glasgow, UK, April 19-21, 2023. (Poster)
- 2022 **Zhao, Q.**, Li, Z., Shah, D., Fischer, H., Solis, P., & Wentz, E. A. Understanding the interaction between human activities and physical health under extreme heat environment in Phoenix, Arizona. *19th International Medical Geography Symposium (IMGS 2022)*, Edinburgh, UK, June 19-24, 2022. (Presentation)
- Sinclair, M., Maadi, S., **Zhao, Q.**, Hong, J., & Bailey, N. Understanding the socio-demographic representation of Tamoco mobile phone app data in Glasgow City Region *30<sup>th</sup> Geographical Information Science Research UK Conference (GISRUK 2022)*, Liverpool, UK, April 5-8, 2022. (Presentation)
- Beirsto, J., Tian, Y., Zheng, L., **Zhao, Q.**, & Hong, J. Identifying locations for new bike-sharing stations in Glasgow: an analysis of spatial equity and demand factors. *2022 Annual Meeting of the American Association of Geographers*, New York, NY, USA, February 25-March 1, 2022. (Online Presentation)
- Sun, M., Han, C., Nie, Q., Xu, J., Zhang, F., & **Zhao, Q.** Understanding building energy efficiency in Glasgow by multi-source deep learning framework. *2022 Annual Meeting of the American Association of Geographers*, New York, NY, USA, February 25-March 1, 2022. (Online Presentation)
- Wang, M., Yang, C., Luo, Q., Wang, Z., & **Zhao, Q.** Identifying tree preservation order (TPO) by deep learning in greater London area. *2022 Annual Meeting of the American Association of Geographers*, New York, NY, USA, February 25-March 1, 2022. (Online Presentation)
- Sinclair, M., Maadi, S., **Zhao, Q.**, Bailey, N., Hong, J., & Ghermandi, A. Advancing home location detection and exploring socio-demographic representativeness of new forms of mobile phone data. *2022 Annual Meeting of the American Association of Geographers*, New York, NY, USA, February 25-March 1, 2022. (Online Presentation)

- 2021 Sinclair, M., **Zhao, Q.**, Bailey, N., Maadi, S., & Hong, J. Understanding the use of greenspace before and during the COVID-19 pandemic by using mobile phone app data. *GIScience 2021*, Online, September 27-30, 2021. (Online Presentation, <https://www.youtube.com/watch?v=WIODfccx89I&t=2141s>)
- Zhao, Q.** “An exploration of fuel poverty in the private rental housing market in City of Glasgow.” *2021 Annual Meeting of the American Association of Geographers*, Seattle, WA, USA, April 7-11, 2021. (Online Presentation)
- 2020 Vonnak, R. & **Zhao, Q.** “Fuel Poverty and Income Deprivation in Bristol, UK.” *28<sup>th</sup> Geographical Information Science Research UK Conference (GISRUK 2020)*, London, UK, July 21-23, 2020. (Online Presentation, <https://www.youtube.com/watch?v=-OWdtLpHko0>)
- 2019 **Zhao, Q.**, Reynolds, R., Li, Y., Wang, C., & Wentz, E. A. “A multidimensional urban land cover change analysis in Tempe, AZ.” *JURSE 2019*, Vannes, France, May 22-24, 2019. (Poster)
- Zhao, Q.**, Li, Z., Thornton, J., Solis, P., & Wentz, E. A. “Optimizing and rebalancing heat-related utility assistance provider-client system at Phoenix, Arizona.” *2019 Annual Meeting of the American Association of Geographers*, Washington D.C., USA, April 3-7, 2019. (Guided poster)
- Zhao, Q.**, Fischer, H., Luo, W., Solis, P., & Wentz, E. A. “Community Resilience in Maricopa County, Arizona, USA: the Analysis of Indoor Heat-related Death and Urban Environment.” *The 99<sup>th</sup> American Meteorological Society Annual Meeting*, Phoenix, Arizona, USA, January 6-10, 2019. (Poster)
- 2018 **Zhao, Q.**, Fischer, H., Luo, W., & Wentz, E. A. “Community resilience in Maricopa county, Arizona, USA: the analysis of heat vulnerable population and urban green infrastructure.” *The 10<sup>th</sup> International Conference on Urban Climate*, New York, New York, USA, August 6-10, 2018. (Presentation)
- Zhao, Q.**, Sailor, D. J., & Wentz, E. A. “Impact of tree locations and arrangements on outdoor microclimates and human thermal comfort in an urban residential environment.” *2018 Annual Meeting of the American Association of Geographers*, New Orleans, Louisiana, USA, April 10-14, 2018. (Presentation)
- 2017 **Zhao, Q.**, Kuby, M. J., & Xiao, F. “Optimal hydrogen station location for central Connecticut by using trip-based modeling at the regional scale.” *UCGIS 2017 Symposium*, Arlington, Virginia, USA, May 23-25, 2017. (Poster)
- Zhao, Q.**, Yang, J., Wang, Z., & Wentz, E. A. “Assessing the cooling benefits of tree shade by a microclimate physical scale model site at Tempe, AZ.” *2017 Annual Meeting of the American Association of Geographers*, Boston, Massachusetts, USA, April 5-9, 2017. (Presentation)



- 2016 **Zhao, Q.**, Wentz, E. A., Fotheringham, A. S., Yabiku, S. T., Hall, S. J., Dai, J., Clark, M., & Heavenrich, H. “Semi-parametric geographically weighted regression (S-GWR): a case study on invasive plant species distribution in subtropical nepal.” *GIScience 2016*, Montreal, Canada, September 27-30, 2016. (Poster)
- Zhao, Q.**, Wentz, E. A., Fotheringham, A. S., Yabiku, S. T., Hall, S. J., & Dai, J. “Socio-ecological factors influence to invasive plant species distribution in community forests ecosystems in subtropical Nepal” *2016 Annual Meeting of the American Association of Geographers*, San Francisco, California, USA, March 29-April 2, 2016. (Presentation)
- 2015 **Zhao, Q.**, Zhan, S., Kuai, X., & Zhan, Q. “Spatio-temporal analysis of urban heat island and urban metabolism by satellite imagery over the Phoenix metropolitan area” *AGU 2015 Fall Meeting*, San Francisco, California, USA, December 14-18, 2015. (Poster)
- Zhao, Q.**, Myint, S. W., & Wentz, E. A. “Rooftop surface temperature analysis in urban residential environment.” *2015 Annual Meeting of the Association of American Geographers*, Chicago, Illinois, USA, April 21-25, 2015. (Presentation)
- Zhao, Q.**, & Wentz, E. A. “Assessing validation methods for building identification and extraction.” *JURSE 2015*, Lausanne, Switzerland, March 30-April 1, 2015. (Presentation and poster)
- 2014 **Zhao, Q.**, Wentz, E. A., & Murray, A. T. “Shade optimization in a desert environment.” *2014 Annual Meeting of the Association of American Geographers*, Tampa, Florida, USA, April 8-14, 2014. (Presentation)
- 2012 **Zhao, Q.**, & Kuai, X. “Land use classification and accuracy assessment based on image fusion of TM and SPOT5.” *The 18<sup>th</sup> China Symposium on Remote Sensing*, Wuhan, Hubei, China, October 20-23, 2012. (Presentation)

## Professional Service

### *Membership of Learned Societies*

- 2021-present Secretary, RGS-IBG Quantitative Methods Research Group (<https://qmrq.github.io/>).
- 2018-2021 Board Member, Spatial Analysis and Modeling Specialty Group, American Association of Geographers (<http://sam-aag.org/history.html>).

### *External Roles*

- 2022-present Grant Assessment Panel Member, Secondary Data Analysis, Economic and Social Research Council (<https://www.ukri.org/opportunity/esrc-responsive-mode-secondary-data-analysis-round-two/> and <https://www.ukri.org/publications/membership-of-the-esrc-grant-assessment->

[panels/](#)).

- 2022-present Member, ESRC Future Data Services Programme Board  
2023-present Programme External Examiner, MSc Urban Informatics, King's College London.  
2022 Programme External Examiner, MSc Urban Analytics and Visualisation, University of Warwick.

#### *Conference Organization Committee*

- 2023-present Member of GIScience Steering Committee (<https://gisciencesteering.github.io/GIScienceInfo/index.html>)  
2024 Programme Co-Chair, Alan Turing Institute Urban Analytics Programme Event 2024.  
2023-2024 Programme Co-Chair, AGILE 2024 (<https://agile-online.org/conference-2024>).  
2022-2023 Programme Chair, GIScience 2023 (<https://giscience2023.github.io/>).  
2023 Local Organization Committee Member, CPGIS 2023 (<https://www.cpgis.org/conferences/ConferenceDefault.aspx?ID=2079>).  
2023 Program Committee, LocBigDataAI 2023 (<https://lbs.icaci.org/locbigdata2023/>).  
2023 Program Committee, the 4th Spatial Data Science Symposium (SDSS 2023) (<http://sdss2023.spatial-data-science.net/>).  
2022-2023 Local Organizing Committee Member, GISRUK 2023 (<https://gisruk.org/gisruk-2023/>).  
2022 Program Committee, the 3rd Spatial Data Science Symposium (SDSS 2022) (<http://sdss2022.spatial-data-science.net/index.html>).

#### *Editorial Appointments*

- 2021-present Editorial Board, the Urban Book series, Springer (<https://www.springer.com/series/14773>).  
2021-2023 Guest Editor, *Remote Sensing*, Advances in Remote Sensing of Land-Sea Ecosystems (with Dr. Jiwei Li and Dr. Di Yang. [Link to the Special Issue.](#))  
2019-2020 Guest Editor, *Annals of GIS*, [GIS and Urban Data Science](#) (with Dr. Yijing Li and Dr. Chen Zhong)  
2018-2019 Guest Editor, *Remote Sensing*, Remote Sensing of Urban Ecology and Sustainability (with Prof. Elizabeth A. Wentz. [Link to the Special Issue.](#))

#### *Research Grant Proposal Reviewer*

- *UK Research and Innovation Talent Peer Review College Member*
- *UK Research and Innovation – Economic and Social Research Council (ESRC)*
- *UK Research and Innovation – Engineering and Physical Sciences Research Council (EPSRC)*
- *UK Research and Innovation – Global Challenges Research Fund*
- *US National Science Foundation Graduate Research Fellowship Program (GRFP)*
- *US University of Wisconsin-Milwaukee Discovery and Innovation Grant*
- *France CY Initiative – CY Generations, CY Cergy Paris Université*
- *Canada Social Sciences and Humanities Research Council (SSHRC) Insight Grants*

### Journal Reviewer

- *Journal of Geophysical Research: Atmospheres*
- *Energy Policy*
- *IEEE Geoscience and Remote Sensing Letters*
- *Environment and Planning B: Urban Analytics and City Science*
- *Annals of GIS*
- *Sustainable Cities and Society*
- *PeerJ*
- *Sustainability*
- *Ecosystem Health and Sustainability*
- *Transportation Research Record*
- *Royal Society Open Science*
- *Journal of Transport Geography*
- *Sustainable and Resilient Infrastructure*
- *ISPRS International Journal of Geo-Information*
- *Land Degradation & Development*
- *Computers, Environment, and Urban Systems*
- *International Journal of Remote Sensing*
- *PLOS ONE*
- *Landscape and Urban Planning*
- *Atmosphere*
- *Natural Hazards*
- *Journal of the American Water Resources Association*
- *Urban Forestry & Urban Greening*
- *Transactions in GIS*
- *Professional Geographer*
- *Scientific Data*

### Book Chapter Reviewer

- “*Integrating Scale in Remote Sensing and GIS*”, CRC Press, Taylor & Francis Group.
- “*Human Dynamics in Smart Cities*”, Springer.

### Professional Service

- 2023            Session Chair, *New Forms of Data*, GIScience 2023, Leeds, UK.
- 2023            Session Chair, *Remote Sensing*, CPGIS2023, London, UK.
- 2021-2022      Session Co-organizer, *Symposium on Scale in Spatial Analytics and Modeling: Scaling and Analysis on Urban Big Data*, 2022 Annual Meeting of the American Association of Geographers, New York, USA (<https://aag-annualmeeting.secure-platform.com/a/solicitations/19/sessiongallery/2891>)
- 2019-2021      Session Chair and Co-organizer, *Urban Data Science: Methods, Models, and Applications for Our Changing Cities*, 2020 Annual Meeting of the American Association of Geographers, Denver, Colorado, USA (<https://aag.secure-abstracts.com/AAG%20Annual%20Meeting%202020/sessions-gallery/25255>) and 2021 Annual Meeting of the American Association of Geographers, Seattle, Washington, USA (<https://aag.secure-abstracts.com/AAG%20Annual%20Meeting%202021/sessions-gallery/27313>) (Virtual Sessions).
- 2018-2019      Bibliography Committee Member, International Association for Urban Climate
- 2017            Session Chair and Co-organizer, *Urban green infrastructure: geospatial and climate application*, 2018 Annual Meeting of the American Association of Geographers, New Orleans, Louisiana, USA (<https://aag.secure-abstracts.com/AAG%20Annual%20Meeting%202018/sessions-gallery/457>).
- 2017-2018      Science Advisor, NASA DEVELOP National Program

2015            Session Co-Chair, *Applications of urban remote sensing*, Joint Urban Remote Sensing Event (JURSE) 2015, Lausanne, Switzerland.

*University Service*

2019-2024    Programme Convener, MSc in Urban Analytics, Urban Studies, School of Social and Political Sciences, University of Glasgow

2021-2022    School Ethics Forum Member, School of Social and Political Sciences, University of Glasgow

2020-2021    Core Member, Research Integrity and Openness Working Group, Urban Studies, School of Social and Political Sciences, University of Glasgow

2015-2016    Secretary, ASU Student Chapter of American Society for Photogrammetry & Remote Sensing (ASPRS).

**Professional Society Membership**

American Association of Geographers

Chinese Professionals in Geographic Information Sciences

International Association for Urban Climate

IEEE Geoscience and Remote Sensing Society

Association of British Chinese Professors

Royal Geographical Society