




LSGS RESEARCH SEMINAR

Impacts of Urban Form on Environmental Pollution and Social Justice through Citizen Science

-  **15 JUL 2026 (WED)**
-  **11:00 AM - 12:00 NOON**
-  **Z211, POLYU**
-  **ENGLISH**

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ABSTRACT

Urban form (i.e., the spatial organization and configuration of different urban elements, such as land use patterns, street layouts, and building structures) shapes the landscape patterns, and thus impacts air pollution dispersion, exposure hazards, and environmental justice through street ventilation, greenspace distribution, and human mobility preference. Citizen science, such as smart data (i.e., digital traces that people leave behind during their daily lives) and mobile monitoring, has been recognized as one of the most effective, feasible, acceptable, and economical ways to monitor environmental pollution. In this seminar, we will introduce two projects conducted in Glasgow, UK: 1). Incorporating fine-grained mobility flows from the smart data, Huq (a mobile App), into the Spatial Weight Matrix (SWM) to predict hyperlocal traffic CO₂; and 2). Evaluating Urban Ventilation Corridor (UVC) through mobile monitoring air pollution distribution, Gini coefficients, and explainable machine learning models. These projects provide insightful solutions for urban planning policies to reduce traffic emissions and essential support for improved street ventilation, pollution mitigation, and environmental justice, helping achieve sustainable and just urban transitions for global cities.

BIOGRAPHY

Dr. TIAN is an Assistant Professor at the School of Geography at University College Dublin (UCD) (QS 2027: 100th) since May 2024. He obtained his Ph.D. in Geography from the University of Georgia in 2021. He was an Affiliated Researcher at the Senseable City Lab (SCL) at MIT from 2021 to 2022 and a postdoctoral researcher at the Urban Big Data Center (UBDC) at the University of Glasgow from 2023 to 2024.

His research focuses on optimizing urban planning strategies by integrating spatial data mining, field mobile monitoring, digital image processing, and other methods to study the coupled relationship between the spatiotemporal dispersion of air pollution and urban spatial morphology. To further improve environmental justice, he quantifies disparities in individual exposure to air pollutants and in the distribution of related diseases (e.g., asthma and cardiovascular diseases) across socioeconomic groups, including income, race, age, and residential environment.

Additionally, he has served as the Principal Investigator (PI) for several projects, including Enterprise Ireland's ERC Proposal Support Scheme, UCD Collaboration and Capacity-Building Awards, University of Glasgow's Ambitious Interdisciplinary Research Funding, University of Georgia Graduate School Research Assistantship Block Grants, Summer Doctoral Research Assistantship, and Innovative and Interdisciplinary Research Grant. He has also presented research findings at international academic conferences, including AAG, AGU, CPGIS, GIScience, UCGIS, and AGILE (Association of Geographic Information Laboratories in Europe).

Finally, he also serves on the editorial board of the journal Scientific Reports and as a guest editor for journals, including Transportation Research Part D, Environments, and Environmental Planning B.

Moderator: Prof. Xiao LI, Assistant Professor of LSGS

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