Zengjun Guo

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Google Scholar

Research Interests

- **Urban Resilience & Disaster Risk Reduction:** resilience assessment of critical infrastructure systems and their interactions with human responses under compound hazards.
- **Climate Risk Modeling & Adaptation:** probabilistic simulation of climate extremes and scenario-based projections of their impacts across regions and sectors.
- **Urban Analytics & GeoAI:** large-scale spatiotemporal data and geospatial machine learning to characterize human mobility and network dynamics during disasters.

Education

Peking University, China *Sep 2024–Present*
M.Sc. in **Territorial Spatial Planning**
GPA: 3.84/4.0

Nankai University, China *Sep 2020–Jun 2024*
B.Mgmt. in **Urban Management**
GPA: 3.85/4.0 (ranked 1st)

University of Glasgow, UK *Sep 2022–Jun 2023*
Exchange Student in **Urban Studies**
GPA: 18.3/22.0 (First-Class)

Research Experience

School of Urban Planning and Design, Shenzhen Graduate School, Peking University
Graduate Researcher *Shenzhen, China | Sep 2024–Present*
Advisor: Dr. Junqing Tang

- Generated synthetic commuting OD matrices with GlODGen and tropical cyclone tracks from CMIP6 forcing; coupled C15–TCR wind–rain modeling, asset valuation, and network assignment to assess global urban road damage and mobility disruption.
- Assessed older-adult exposure and healthcare mismatches under tropical cyclones in 52 Chinese coastal cities; projected annual hospital asset losses to more than double under SSP5-8.5, with climate change amplifying aging-driven exposure growth by 19.7–32.8%.
- Reconstructed Mangkhut's wind–rain evolution with ER11 and GMCP and processed 2.5 billion mobile-phone records to reveal coast–inland resilience gaps and future inland vulnerability shifts.

Key Laboratory of Earth Surface System and Human-Earth Relations (MNR)
Research Group Member *Shenzhen, China | Oct 2023–Present*
Advisors: Dr. Junqing Tang and Prof. Pengjun Zhao

- Proposed a human–environment–disaster coupling theory, introduced the marginal constraint effect to define disaster risk as an endogenous constraint, and validated the theory using evidence from the 2021 Zhengzhou "7 · 20" flood.
- Mapped flood-induced shelter demand–supply mismatches across 21 cities with GHS-SMOD and developed an interactive spatial decision system for targeted emergency resource allocation.
- Refined and applied a DBN–ARIMA framework across nine Pearl River Delta cities, identifying four 2015–2021 resilience trajectories and projecting a widening Guangzhou–Shenzhen-centered core–periphery pattern through 2026.

Selected Publications & Manuscripts

Articles and Manuscripts

1. **Guo, Z.**, An, M., Ye, L., Zhao, P., Tang, J.* 2026. Risk pattern and spatiotemporal evolution of healthcare-service supply in China's coastal cities under tropical-cyclone wind disasters. **Acta Geographica Sinica** (under review). (In Chinese)
2. Tang, J., **Guo, Z.**, Lyu, W., Zhao, P.* 2026. The geographical connotation of resilient-city research: human–environment relationships under disaster-risk constraints. **Progress in Geography**, 45(4), 683–694. (In Chinese)

3. Tang, J., Lyu, W., Zhao, P.*, Huang, F., Li, J., Fan, C., Lu, Q., Wang, J., Ye, L., **Guo, Z.** 2026. Human mobility dynamics for cost-effective flood emergency resource allocation. **Nature Sustainability**. doi:10.1038/s41893-026-01886-9.
4. **Guo, Z.**, Tang, J.*, Huang, F., Zhao, P.* Climate change amplifies tropical cyclone risks to road transport and electricity supply across human settlements. *In preparation.*
5. Huang, F.†, **Guo, Z.**†, Lyu, W., Zhao, P., Tang, J.* Assessing the 15-minute city during extreme urban floods: Evidence from Shenzhen and Zhengzhou, China. *In preparation.*
6. Wang, J., Tang, J.*, **Guo, Z.**, Zhao, P. 2026. Assessing spatial–temporal resilience of road transportation against extreme typhoon hazards in coastal cities: a case study in Shenzhen, China. **Journal of Transport Geography** (major revision).
7. Wang, T., Xu, T.Z.*, Feng, H., **Guo, Z.**, Poo, M.C.-P., Tang, J., Ng, A.K.Y. 2026. Enhancing port resilience to typhoon disasters: a framework for recovery optimization and shipping network impact assessment. **Transport Policy**, 180, 104029.
8. Tang, J., Han, S., **Guo, Z.**, Ye, L., Wang, H.* 2026. Urban resilience assessment of the Guangdong–Hong Kong–Macao Greater Bay Area based on a dynamic Bayesian network model. **Journal of Natural Disasters** (minor revision). (In Chinese)

Book chapter

9. **Guo, Z.**, Tang, J. 2026. Japan's comprehensive efforts to mitigate damage from earthquake hazards (Ch. 11). In J. Tang, Q. Lu, P. Zhao, I. Brilakis, T. Broyd & L. Chen (Eds.), **Resilient Cities under Global Climate Change: From Principles to Applications**. Edward Elgar Publishing.

Honors & Awards

1. 2026 National Scholarship for Graduate Students, Ministry of Education of China.
2. 2026 Pacemaker to Merit Student, Peking University.
3. 2026 First Prize, 10th Chengyuan Cup Planning Decision Support Model Design Competition.
4. 2025, 2026 Second Prize, Peking University Academic Science & Technology Competition.
5. 2025 Third Prize, Esri Cup China University GIS Software Development Contest.
6. 2024 National Second Prize, Undergraduate Innovation & Entrepreneurship Training Program.
7. 2024 Outstanding Undergraduate Thesis, Nankai University.
8. 2024 Outstanding Graduate, Nankai University.
9. 2024 Huadan Scholarship in Political Science, Nankai University.
10. 2021, 2023 First-Class Scholarship, Nankai University.
11. 2022 Tianjin Municipal Government Scholarship, Tianjin Municipal Education Commission.

Conference Presentations

- **Oral Presentation:** "The Geographic Connotation of Resilient-City Research: An Exploration of Disaster-Risk-Constrained Human–Earth Relationships," 13th International Conference on Population Geographies (ICPG), Nanjing, China, Jun 2026.
- **Oral Presentation:** "Human–Environment Relationships under Disaster-Risk Constraints: A Preliminary Theoretical Exploration of the Geographic Connotation of Resilient-City Research," 2026 Spring Annual Meeting of the Geographical Society of China, Chongqing, China, Apr 2026.

Academic Service

- Committee Member, Sub-Society for Postgraduate Students, Geographical Society of China, 2025–Present.

Skills & Languages

Programming	Python; R; Stata; MATLAB; SQL; JavaScript; HTML/CSS.
GIS & Modeling	ArcGIS; GeoScene Pro; QGIS; CLIMADA; GeNIe Modeler.
Development	Git/GitHub; LaTeX.
Languages	Mandarin (native); English (fluent, IELTS **8.0**).