Dr. Qiming Zheng (Jimmy)

Research Assistant Professor

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Links: Google Scholar / Personal Page / Group page

RESEARCH INTERESTS

My research interests center on the urban-climate-environment nexus. I use remote sensing, GIS and geospatial techniques, environment and climate models, and AI/machine learning approaches to understand global urbanization and its environmental and climatic consequences, and to develop effective mitigation and adaption solutions. My research focus has always been on pushing the envelope on technical bottlenecks, bridging the gap between technical innovation and cutting edge environmental issues, and delivering policy-relevant information for decision-making. My current research focuses on the following themes:

· Remote sensing of urban environment

· Global environmental and climate change

· Land-based climate change mitigation

· Remote sensing image processing techniques and applications

APPOINTMENTS

2023-	**Research Assistant Professor,** Department of Land Surveying and Geo-Informatics, The Hong Kong Polytechnic University (Group leader: Dr. Qihao Weng).
2022-	**Editorial Board member**, ISPRS Journal of Photogrammetry and Remote Sensing
2020-2022	**Postdoctoral Research Fellow**, Centre for Nature-based Climate Solutions, National University of Singapore (Advisor: Dr. Lian Pin Koh)

EDUCATION

2015-2020	**PhD** in Remote Sensing and Geographic Information System, Zhejiang University
2018-2019	**Visiting PhD Student**, Indiana State University (Advisor: Dr. Qihao Weng)
2011-2015	**BS** in Environment and Resources Sciences, Zhejiang University

AWARDS

Total: 14 awards with US$ 38K (International (2), National (2), State (2), University (8))

· 2021, *Remote Sensing* 2021 Best Cover Award, MDPI, CHF 100

· 2020, Provincial Excellent Doctoral Graduate, Department of Education of Zhejiang Province

· 2020, Excellent Doctoral Graduate of Zhejiang University, Zhejiang University

· 2019, National PhD Student Award of China, US$ 5,000

· 2019, Outstanding PhD Student Scholarship, Zhejiang University, US$1,500

· 2019, Student Honors Paper Competition Award (1st place), Remote Sensing Specialty Group of American Association of Geographers, US$ 500

· 2019, IndianaView Student Scholarship Award, IndianaView Consortium (USGS), US$ 750

· 2019, Academic Award for Outstanding Doctoral Candidate (Top 100), Zhejiang University

- 2018, Visiting PhD Student Fellowship, China Scholarship Council, US$ 25,400
- 2018, Graduate Student Travel Award, Zhejiang University, US$ 1,500
- 2017, Outstanding PhD student scholarship, Zhejiang University, US$ 1,500
- 2017, Renchao Wang Scholarship (1st place), Zhejiang University, US$ 1,000
- 2016, Outstanding PhD Student, Zhejiang University
- 2015, TOP 100 Best Undergraduate Thesis, Zhejiang University

PUBLICATIONS

Peer-reviewed articles

(* Corresponding author; Total: 29 published articles; Google Scholar citations: 724, h-index=14)

[1] **Zheng Q***, Ha T, Prishchepov A, et al. The neglected role of abandoned cropland in supporting food security and climate change mitigation. 2022. (Under Revision in *Nature Communications*).

[2] Dong B, **Zheng Q***, et al. Building height estimation with context information. 2023. (Submit to *International Journal of Applied Earth Observation and Geo-information*).

[3] **Zheng Q***, Zeng Y, Koh LP, et al. Decreasing trends of the climate mitigation potential and benefits of natural climate solutions through 2100. (Under preparation)

[4] **Zheng Q**, Seto KC, Zhou Y, You S, Weng Q*. Nighttime light remote sensing for urban applications: progress, challenges, and prospects. *ISPRS Journal of Photogrammetry and Remote Sensing*. 2023.

[5] **Zheng Q***, Weng Q, Zhou Y, et al. Impact of temporal composite on nighttime light (NTL) data and its applications. *Remote Sensing of Environment*. 2022.

[6] **Zheng Q***, Kelly S, Koh LP, et al. Future land-use competition constrains natural climate solutions. *Science of the Total Environment*. 2022.

[7] **Zheng Q*,** Teo HC, Koh LP. Artificial light at night advances spring phenology in the United States. *Remote Sensing*. 2021 (Issue cover story**;** TOP10 notable articles of the season**;** Best cover award of 2021).

[8] **Zheng Q,** Weng Q, Wang K. Characterizing urban changes of 30 global mega-cities using dense nighttime light time series stacks. *ISPRS Journal of Photogrammetry and Remote Sensing*. 2021.

[9] **Zheng Q,** Weng Q, Wang K. Correcting the Pixel Blooming Effect (PiBE) of DMSP-OLS nighttime light imagery. *Remote Sensing of Environment*. 2020.

[10] **Zheng Q,** Weng Q, Wang K. Developing a new cross-sensor calibration model for DMSP-OLS and Suomi-NPP VIIRS night-light imageries. *ISPRS Journal of Photogrammetry and Remote Sensing*. 2019.

[11] **Zheng Q**, Weng Q, Huang L, et al. A new source of multi-spectral high spatial resolution night-time light imagery—JL1-3B. *Remote Sensing of Environment*. 2018.

[12] **Zheng Q**, Jiang R, Wang K, et al. Monitoring the trajectory of urban nighttime light hotspots using a Gaussian volume model. *International Journal of Applied Earth Observation and Geo-information*. 2018.

[13] **Zheng Q***, Wang K. Analysis of the spatio-temporal dynamic of polycentric city using night-time light remote sensing imagery. *IGARSS 2018 - 2018 IEEE International Geoscience and Remote Sensing Symposium*. 2018. (Conference proceeding)

[14] **Zheng Q**, Zeng Y, Deng J, et al. "Ghost cities" identification using multi-source remote sensing datasets: A case study in Yangtze River Delta. *Applied Geography*. 2017.

[15] **Zheng Q**, Deng J, Jiang R, et al. Monitoring and assessing "ghost cities" in Northeast China from

the view of nighttime light remote sensing data. *Habitat International*. 2017.

[16] Zeng Y; **Zheng Q**, Koh LP, et al. Nature-based climate solutions can safeguard the world's threatened species. 2022. (Under review in *Nature Communication*).

[17] Biyun Guo, Deyong Hu, **Zheng Q**. Potentiality of SDGSAT-1 glimmer imagery to investigate the spatial variability in nighttime-lights. *International Journal of Applied Earth Observation and Geo-information.* 2023

[18] Teo HC, Koh LP, **Zheng Q,** et al. Large-scale reforestation can increase water yield and reduce drought risk for water-insecure regions in the Asia-Pacific. *Global Change Biology.* 2022.

[19] Sreekar, R; Zeng, Y; **Zheng, Q**, et al. Nature-based climate solutions for expanding the global protected area network. *Biological Conservation*. 2022.

[20] You S; **Zheng Q**, Wang K, et al. Identifying the spatiotemporal dynamics of forest ecotourism values with remotely sensed images and social media data: a perspective of public preferences *Journal of Cleaner Production*. 2022.

[21] Lin Y, Zhang M, Gan M, Huang L, Zhu C, **Zheng Q**, et al. Fine identification of the supply–demand mismatches and matches of urban green space ecosystem services with a spatial filtering tool. *Journal of Cleaner Production*. 2022.

[22] Teo HC; Zeng Y; Sarira T; Fung TK; **Zheng Q**, et al. Global urban reforestation can be an important natural climate solution. *Environmental Research Letter*. 2021.

[23] Ye Y, Huang L, **Zheng Q**, et al. A feasible framework to downscale NPP-VIIRS nighttime light imagery using multi-source spatial variables and geographically weighted regression. *International Journal of Applied Earth Observation and Geoinformation*. 2021.

[24] Dong B, **Zheng Q**, Wang K, et al. Identifying and Classifying Shrinking Cities Using Long-Term Continuous Night-Time Light Time Series. *Remote Sensing*. 2021.

[25] Ye, Z, **Zheng, Q**, Zhou, R, et al. Mapping and Discriminating Rural Settlements Using Gaofen-2 Images and a Fully Convolutional Network. *Sensors*. 2020. 20(21), 6062.

[26] You S, **Zheng Q**, Lin Y, et al. Specific Bamboo Forest Extraction and Long-Term Dynamics as Revealed by Landsat Time Series Stacks and Google Earth Engine. *Remote Sensing*. 2020.

[27] Ye Y, Deng J, Huang L, **Zheng Q**, et al. Modeling and Prediction of NPP-VIIRS Nighttime Light Imagery Based on Spatiotemporal Statistical Method. *IEEE Transactions on Geoscience and Remote Sensing*. 2020.

[28] Xue X, Lin Y, **Zheng Q,** et al. Mapping the fine-scale spatial pattern of artificial light pollution at night in urban environments from the perspective of bird habitats. *Science of the Total Environment*. 2020.

[29] Fu, Y, Li, J, Weng, Q, **Zheng, Q**, et al. Characterizing the spatial pattern of annual urban growth by using time series Landsat imagery. *Science of the Total Environment*. 2019.

[30] Shahtahmassebi AR, Wu C, Blackburn GA, **Zheng Q**, et al. How do modern transportation projects impact on development of impervious surfaces via new urban area and urban intensification? Evidence from Hangzhou Bay Bridge, China. *Land Use Policy*. 2018.

[31] Xue X, Yu Z, Zhu S, **Zheng Q**, et al. Delineating Urban Boundaries Using Landsat 8 Multispectral Data and VIIRS Nighttime Light Data. *Remote Sensing*. 2018.

[32] Huang L, Wu Y, Zheng Q, **Zheng Q**, et al. Quantifying the Spatiotemporal Dynamics of Industrial Land Uses through Mining Free Access Social Datasets in the Mega Hangzhou Bay Region, China. *Sustainability*. 2018.

[33] Zheng Q, Wang K, Huang L, **Zheng Q**, et al. Monitoring the Different Types of Urban

Construction Land Expansion (UCLE) in China's Port City: A Case Study of Ningbo's Central City. *Sustainability*. 2018

Book chapter

[1] Wang K, Ye Z, Jiang R, **Zheng Q**, et al. Data processing handbook and coastal line dynamic monitoring in *Applications of ZY-02C high-resolution remote sensing data on land resource management* (in Chinese). 2017. CMSP press.

GRANTS

Total: US$ 74K with PI (2) and Co-PI (2)

[1] **PI**: Supporting both food security and climate change mitigation with abandoned cropland: potential and trade-offs. Start-up Fund for RAP under the Strategic Hiring Scheme, the Hong Kong Polytechnic University, Hong Kong. US$32K. 2023-2024.

[2] **PI:** Exploring the spatio-temporal pattern of polycentric cities based on night-time light remote sensing data, Zhejiang University, US$ 7,000, 2019-2020

[3] **Co-PI:** Use of Geo-Artificial Intelligence to Assess the Ecological Impacts of Artificial Light Intrusion in Natural Ecosystems, Microsoft, 2019-2020, US$ 15,000 (**PI:** Dr. Qihao Weng)

[4] **Co-PI:** Coupling urban spatial structure and urban flood assessment based on multi-source remote sensing data, Zhejiang University, 2017-2018, US$ 20,000 (**PI:** Dr. Ke Wang)

[5] **Work package leader.** Understanding the Anthropocene with smart platform. The Ministry of Education (MOE), Social Science Research, Singapore. US$5M (**Co-PI**: Dr. Lian Pin Koh), 2022-2025.

[6] **Work package leader.** Decarbonization and Nature-Based Solutions Research Scope and Rationale. Resort World Sentosa, Singapore. US$ 1M (**Co-PI**: Dr. Lian Pin Koh), 2022-2024.

[7] **Work package leader**. Digital Climate - Building Platform and Solutions for Urban Heat Risk Mitigation and Decarbonization. The Ministry of Education (MOE) Academic Research Fund, Singapore. US$ 200k (**Co-PI**: Dr. Lian Pin Koh), 2022-2025.

[8] **Core member**: Nature for Climate Research Programme (N4CRP)-Ensuring the Credibility and Integrity of the Global Marketplace for Nature-based Climate Solutions, National Research Foundation (Singapore), US$11.0M (**PI**: Dr. Lian Pin Koh)

[9] **Core member:** Spatial Optimization and Allocation of Rural Agriculture Production-Living-Ecology Space under Rural Revitalization Initiative, Natural Science Foundation of Zhejiang Province, 2019-2021.

[10] **Core member:** Application promotion on land and resource management using Chinese high-resolution remote sensing data, The Ministry of Land & Resources of the P.R. China, 2015- 2016.

[11] **Core member:** Land and resource service system for Chinese high-resolution remote sensing data, The Ministry of Land and Resources of the P.R. China, 2014-2016.

SUPERVISING & TEACHING

Supervisor of student intern/research associate/research assistant

[1] Dennis Tan Wei Jie. 2022-2023. Urban Natural Climate Solution in Southeast Asia. Supervisor of undergraduate student's final year project. (Poster presented in NbS conference 2022, Oxford, UK; Research paper under preparation)

[2] Sean Ng Jing Wen. 2022-2023. Deforestation risk mapping in Southeast Asia. Supervisor of

student intern.

[3] Tim Ha. 2021-2023. Re-use of abandoned cropland: pathways, benefits and cost. Supervisor of research associate.

[4] Nicole Mae Sze Chung. 2021-2022. Verified Carbon Standard projects prospecting with remote sensing images. Supervisor of student intern.

Assistant instructor of undergraduate/graduate students

[5] Shixue You. 2022. Identifying the spatiotemporal dynamics of forest ecotourism values with remotely sensed images and social media data: a perspective of public preferences (Published in *Journal of Cleaner Production*).

[6] Tan Shi Xuan Stanley. 2021. Assessment of current forest biomass estimation methods. Co-instructor of student intern (Research paper under preparation).

[7] Baiyu Dong. 2021. Identifying and classifying shrinking cities using long-term continuous night-time light time series. Research article of doctoral student (Published in *Remote Sensing*).

[8] Shixue You. 2020. Subtropical bamboo forests mapping using dense Landsat time series stacks and Google Earth Engine. Research article of doctoral student (Published in *Remote Sensing*).

[9] Ghali A. 2020. Mapping urban changes over the last two decades in Africa using DMSP-OLS nighttime light remote sensing data. Research article of doctoral student.

[10] Dacheng Zhang. 2018. Study on the Development Trajectory of Urban Agglomeration Based on Nighttime Light Remote Sensing Data. Master thesis.

[11] Ruoei Jiang. 2018. Spatiotemporal changes of urban thermal environment pattern based on time series. Master thesis.

[12] Minqiang Zhou. 2017. "Ghost cities" identification in China using nighttime light data. Undergraduate thesis.

[13] Yue Lin. 2016. Wetland change pattern analysis in Tongxiang city, Yangtze River Delta. Undergraduate thesis.

Academic session & Lecturing

[1] Understanding the Urbanizing Planet with Nighttime Light Imagery. Northeastern University, China, May 22, 2023 (Invited lecture).

[2] Remote Sensing of Urban Environment (Course LSGI 4214 for senior undergraduates). The Hong Kong Polytechnic University. Apr. 4, 2023 (Invited lecture).

[3] Nighttime Light Remote Sensing for Urban Observation (Course LSGI536 for master students). The Hong Kong Polytechnic University. Mar. 30, 2023 (Invited lecture).

[4] Remote Sensing of Urban Landscape (Course GE4214 for senior undergraduates). National University of Singapore. Oct. 18, 2022 (Invited lecture).

[5] Climate Change - Potential of Nature-based Climate Solutions. Civil Service College Singapore & Ministry of Trade and Industry of Singapore. Sept. 7, 2022 (Invited lecture).

[6] Change detection with remote sensing data: theory, method and applications. National University of Singapore, Sept. 3, 2021 (Teaching session).

[7] Geographic Information Systems and Agricultural Modernization, No: 1440001001: Zhejiang University, winter semester, 2019 (Guest Lecturer & Teaching Assistant).

Committee member

[1] Defense of final year project of undergraduate students. The Hong Kong Polytechnic University. Spring, 2023.

[2] Dissertation Defence of Master students. The Hong Kong Polytechnic University. Spring, 2023.

PRESENTATIONS

[1] **Zheng Q**. Supporting both food security and climate change mitigation with abandoned cropland: potential and trade-offs. *American Geophysical Union Fall Meeting 2022*, Dec. 2022, Chicago, USA.

[2] **Zheng Q**. Future land-use competition constrains natural climate solutions. *Nature-based Solutions Conference 2022*, July 2022, Oxford, United Kingdom.

[3] **Zheng Q**, Weng Q. Characterizing urban land changes of global megacities using nighttime light time series. *Symposium 2021 of Group on Earth Observations*, June 2021, Online.

[4] **Zheng Q**. Earth Observation at Night: Nighttime Light Images Open Up New Applications. September 2019. Indiana State University, USA. (Invited talk)

[5] **Zheng Q**. Developing a new cross-sensor calibration model for DMSP-OLS and Suomi-NPP VIIRS night-light imageries. *AAG 2019-Annual Meeting of American Association of Geographers*, April 2019, Washington D.C., USA.

[6] **Zheng Q**, Wang K. Analysis of the spatio-temporal dynamic of polycentric city using night-time light remote sensing imagery. *IGARSS 2018 - 2018 IEEE International Geoscience and Remote Sensing Symposium*, July 2018, Valencia, Spain.

[7] **Zheng Q**, Wang K. Monitoring "ghost cities" in China from the view of night-time light remote sensing data. *Workshop of "Sustainable Systems and Societies: energy, environment and policy frameworks"*, November 2016, Campinas, Brazil.

PROFESSIONAL ACTIVITIES

Editorship

[1] **Editorial Board member**, *ISPRS Journal of Photogrammetry and Remote Sensing*. 2022-present

[2] **Guest editor**. *Remote Sensing*. Special Issue: Remote Sensing Imagery For Mapping Economic Activities. 2021-2022

Conference

[1] **Session co-convener.** The promises and pitfalls of nature-based climate solutions. *European Geosciences Union General Assembly 2023*. April 2023, Vienna, Austria

[2] **Session panel**. Session: Urbanization, Coastal Vulnerability, and Sustainability (VI): Earth at Night - What can and can't be seen? *AAG 2019-Annual Meeting of American Association of Geographers*, April 2019, Washington D.C., USA.

[3] **Session chair**. Session: Remote Sensing Image Classification. *5th International Workshop on Earth Observation and Remote Sensing Applications*, June 2018, Xi'an, China.

Award & grant reviewer

[1] AGU 2022: Outstanding Student Presentation Awards program;

Journal reviewer (Total: 133)

ISPRS J Photogramm Remote Sens (24)	Int J Appl Earth Obs Geoinf. (5)

Remote Sensing of Environment (7)	PNAS-Nexus (2)
IEEE TGRS (1)	Applied Geography (8)
IEEE Access (7)	Energy Efficiency (1)
Sustainable Cities and Society (1)	International Journal of Remote Sensing (4)
Scientific Report (2)	Journal of Cleaner Production (2)
IEEE J-STARS (26)	Advances in Space Research (1)
Science of the Total Environment (1)	Earth System Science Data (1)
Cities (1)	Environmental Research Letters (5)
Remote Sensing (6)	Geo-Spatial Information Science (3)
Int J Digit Earth (3)	Remote Sensing Applications (2)
Building and Environment (5)	Remote Sensing Letter (1)
GIScience & Remote Sensing (6)	Journal of Environmental Management (3)
Annual of GIS (1)	Journal of Spatial Science (1)
Envir Res: Infrastructure and Sustainability (1)	IEEE TGRS Letter (2)

SKILLS

- **English**: TOEFL iBT (105/120, Reading: 28, Listening: 27, Speaking: 23, Writing: 27);
- **Technical Tools**: ArcGIS/ArcGIS Pro/ArcPy, Matlab, Python, R, Google Earth Engine, Linux, HPC, ENVI, Weka, eCognition;

PROFESSIONAL MEMBERSHIP

American Association of Geographers	IEEE Geoscience and Remote Sensing Society
American Geophysical Union	International Society for Photogrammetry and Remote Sensing

REFERENCES

Dr. Lian Pin Koh (Postdoc supervisor)
Awardee of Returning Singaporean Scientists Scheme
Director, Centre for Nature-based Climate Solutions
Chair Professor of Conservation, Department of Biological Sciences
Vice Dean, Faculty of Science
National University of Singapore, Singapore
E-mail: lianpinkoh@nus.edu.sg

Dr. Qihao Weng (PhD advisor)
Academia Europaea\AAAS\IEEE\ASPRS\AAG Fellow
Editor-in-Chief of ISPRS Journal
Chair Professor of Geomatics and Artificial Intelligence
Hong Kong Polytechnic University, Hong Kong SAR, China
E-mail: qihao.weng@polyu.edu.hk / qhweng@gmail.com

Dr. Ke Wang (PhD advisor)

Deputy Dean, The Rural Development Academy

Professor, College of Environmental and Resource Sciences

Zhejiang University, Hangzhou, China

E-mail: kwang@zju.edu.cn

Dr. Miguel Román (Leading scientist in my research field)

Project leader, NASA's Terra, Aqua, and Suomi NPP's Land discipline

Director, Earth from Space Institute

University Space Research Association, MD, U.S.

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