Shaoqing Dai

M.Sc in Ecology

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Institute of Urban Environment, Chinese Academy of Sciences

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Education

2016-2019 **M.Sc.**, *Institute of Urban Environment,Chinese Academy of Sciences*, University of Chinese Academy of Sciences
Supervised by Prof. Yin Ren
Thesis:*Creating a Carbon Source and Sink Map by Coupling an Ecological Process Model with an Emission Inventory to Study a Carbon Balance*
Major in Ecology — Xiamen, China

2012-2016 **B.Sc.**, *School of Geographical Sciences*, Fuajian Normal University
Supervised by A/Prof. Huixian Jiang
Thesis:*The Planning Location and Design of Smart Campus Based on BIM and GIS:A Case Study of Fujian Normal University*
Major in Geographical Science (National Talents Training Base) — Fuzhou, China

Research Interests

Health Geography; Urban Computing; Spatial-Temporal Big Data; Ecological Modeling and Ecoinformatics; Intergration of Ecology, GIS and RS; Spatial Statistics

Developed Open Software

from 2018 D3L Tool of NASA Satellite
(The program provides a graphical interface to download satellite imagery from NASA, such as MODIS products, MERIS and more information can see http://gisersqdai.top/D3LTool/)

from 2018 Geographical detector in R
(The geographical detector software based on R)

from 2018 GitHub Paper Notebook
(The software for notebook of papers)

Publications

*corresponding author, #co-first author.

Peer-Reviewed Journal Articles

1. PF. Dou, SD. Zuo, Y. Ren, **SQ. Dai**, GL. Yun. (2019). The impacts of climate and land use/land cover changes on water yield service in Ningbo region. *Acta Scientiae Circumstantiae*. *39*(7), 2398-2409. doi:10.13671/j.hjkxxb.2019.0122. [CSCD, in Chinese]
2. Q. Yang, TY. Huang, SG. Wang, JS. Li, **SQ. Dai**, S. Wright, YX. Wang, & HW. Peng.(2019). A GIS-based high spatial resolution assessment of large-scale PV power generation potential and associated CO_2 emission reduction in China. *Applied Energy*. *247*, 254-269. doi:10.1016/j.apenergy.2019.04.005. [SCI, IF = 8.426]
3. GL. Yun, YR. He, YT. Jiang, PF. Dou, **SQ. Dai**. (2019). PM2.5 spatiotemporal evolution and drivers in the Yangtze River Delta between 2005 and 2015. *Atmosphere*. *10*(2), 55-69. doi:10.3390/atmos10020055. [SCI, IF = 2.046]
4. SD. Zuo, **SQ. Dai**, XD. Song, CD. Xu, YL. Liao, WY. Chang, Q. Chen, YY. Li, JF. Tang, W. Man, Y. Ren. (2018). Determining the Mechanisms that Influence the Surface Temperature of Urban Forest Canopies by

Combining Remote Sensing Methods, Ground Observations, and Spatial Statistical Models. *Remote Sensing*. *10*(11), 1814-1832. doi:10.3390/rs10111814. [SCI, IF = 4.118]

5. SD. Zuo, **SQ. Dai**, YY. Li, JF. Tang, Y. Ren. (2018). Analysis of Heavy Metal Sources in the Soil of Riverbanks Across an Urbanization Gradient. *International Journal of Environmental Research and Public Health*. *15*(10), 2175-2198. doi:10.3390/ijerph15102175. [SCI, IF = 2.468]
6. **SQ. Dai**, HX. Jiang, JJ. Li, X. Su, J. Wu, Y. Ren. (2018). Influence of walking environment on robbery, snatch and theft crime in urban area, H city, China. *Scientia Geographica Sinica*. *38*(8), 1235-1244. doi:10.13249/j.cnki.sgs.2018.08.005. [CSCD, in Chinese]
7. GL. Yun, SD. Zuo, **SQ. Dai**, XD. Song, CD. Xu, YL. Liao, PQ. Zhao, WY. Chang, Q. Chen, YY. Li, JF. Tang, W. Man, Y. Ren. (2018). Individual and Interactive Influences of Anthropogenic and Ecological Factors on Forest PM2.5 Concentrations at an Urban Scale. *Remote Sensing*. *10*(4), 521-538. doi:10.3390/rs10040521. [SCI, IF = 4.118]
8. Q. Ye, G. Zeng, **SQ. Dai**, FL. Wang. (2018). Research on the effects of different policy tools on China's emissions reduction innovation. *China Population, Resources and Environment*. *210*(02), 115-122. doi:10.12062/cpre.20170915. [CSCD, in Chinese]
9. Q. Ye, **SQ. Dai**, G. Zeng. (2017). Research on the effects of command-and-control and market-oriented policy tools on China's energy conservation and emissions reduction innovation. *Chinese Journal of Population Resources and Environment*. *16*(1), 1-11. doi:10.1080/10042857.2017.1418273. [ESCI]
10. ML. Li, **SQ. Dai**, JY. Wang, ZJ. Shen. (2016). The Analysis of Urban Spatial Development Pattern in Beijing Based on the Big Data of Government. *Geomatics World*. *23*(3), 20-26. doi:10.3969/j.issn.1672-1586.2016.03.004. [in Chinese]

Book Chapter

1. GL. Yun, SD. Zuo, **SQ. Dai**, XD. Song, CD. Xu, YL. Liao, PQ. Zhao, WY. Chang, Q. Chen, YY. Li, JF. Tang, W. Man, Y. Ren. (2019). Individual and Interactive Influences of Anthropogenic and Ecological Factors on Forest PM2.5 Concentrations at an Urban Scale. *Advances in Quantitative Remote Sensing in China–In Memory of Prof. Xiaowen Li*.316-332.
2. **SQ. Dai**, JJ. Li, SD. Zuo, Y. Ren, HX. Jiang. (2017). Landscape-Scale Simulation Analysis of Waterlogging and Sponge City Planning for a Central Urban Area in Fuzhou City, China. *International Low Impact Development Conference China 2016 : LID Applications in Sponge City Projects*. 251-260. doi:10.1061/9780784481042.028. [EI]

Conference Paper

1. **SQ. Dai**, SD. Zuo, Y. Ren. (2018). High-resolution mapping of direct CO_2 emissions and uncertainties at the urban scale. *Proceedings of Spatial Accuracy 2018*. 88-90. [EI]
2. **SQ. Dai**[#], XM. Zheng, SD. Zuo,Y. Ren. (2018). Improving the prediction accuracy of forest aboveground biomass benchmark map by integrating machine learning and spatial statistics. *Proceedings of Spatial Accuracy 2018*. 80-83. [EI]
3. SD. Zuo, **SQ. Dai**, Y. Ren, ZW. Yu. (2017). Quantifying the linear and nonlinear relations between the urban form fragmentation and the carbon emission distribution. *American Geophysical Union, Fall Meeting 2017, abstract GC21G-1007*.

Papers submitted/under revision

1. **SQ. Dai**, SD. Zuo, Y. Ren. A theoretical framework for uncertainty analysis of CO_2 emissions gridded maps. (*under revision*).
2. **SQ. Dai**[#], XM. Zheng, L. Gao, SD. Zuo, Q. Chen, XH Wei, Y. Ren. Improving non-representative-sample prediction of forest aboveground biomass maps: A combined machine learning and spatial statistical approach. (*under review*).
3. SD. Zuo, **SQ. Dai**, Y. Ren. More fragmentized urban form more CO_2 emissions? An comprehensive relationship from the combination analysis across different scales (*under review*).

Patent

1. Y. Ren, **SQ. Dai**, SD. Zuo, XM. Zheng. A forest inventory biomass estimation model by multi-sources data fusion . (*accepted*).
2. Q. Chen, Y. Ren, XM. Zheng, SD. Zuo. **SQ. Dai**. A mixed-effect model for estimation of large area subtropical

forest biomass. (*under review*).

Software Copyright

1. A water saftety monitation system based on environmental IOT data and InVEST model. V1.0. *RN: 2019SR0517519*. (2019).
2. A water conservation service monitation system based on environmental IOT data. V1.0. *RN: 2018SR745897*. (2018).

Awards & Honors

- 2019.06 The 2nd Grade Scholarship of Yonker Environmental Protection Scholarship — China
- 2019.06 The 1st Grade Scholarship of Institute of Urban Environment, Chinese Academy of Sciences[*top 3*] — Xiamen, China
- 2019.01 The Scientific and Technological Innovation Award of Outstanding Graduate Students of the Ecological Society of China — China
- 2018.11 National Scholarship for M.Sc[*top 2-3%*] — China
- 2018.10 The National 3rd Prize in Urban Big Data Special Committee, Chinese Society for Urban Studies the 2nd Big Data Support Spatial Planning and Design Competition — China
- 2018.07 'Applied Energy' 2018 Summer School Certification — Beijing, China
- 2018.06 Merit Students in the academic year 2017-2018, University of Chinese Academy of Sciences — Beijing, China
- 2018.06 The 2nd Grade Scholarship of Institute of Urban Environment, Chinese Academy of Sciences[*top 15%*] — Xiamen, China
- 2018.06 The 1st Scholarship of Institute of Urban Environment, Chinese Academy of Sciences — Xiamen, China
- 2018.03 The National Winning Award in National Science & Technology Infrastructure Center, 2017 'Sharing Cup' College Student Science and Technology Resource Sharing Service Innovation Contest — China
- 2017.10 'Excellent Volunteer' award of 15th User Conference of Esri China — China
- 2017.06 Merit Students in the academic year 2016-2017, University of Chinese Academy of Sciences — Beijing, China
- 2015.11 The National Winning Award in 2015 Esri Cup National Collegiate Developed Contest in GIS · 3D Modeling and Design — China
- 2015.11 Inovation Scholoarships in the academic year 2014-2015, Fujian Normal University — Fuzhou, China
- 2015.07 The National 3rd Prize in the Smart City Special Event Contest,the 14th Challenge Cup National College Students' Extracurricular Academic Science and Technology Works Contest — China
- 2015.05 The First Annual Fujian Normal University Student Selection, Scientific and Technological Innovation award and Nomination — Fuzhou, China
- 2015.03 The School Wining Award during the 9th Challenge Cup National College Students' Extracurricular Academic Science and Technology Works Contest — Fuzhou, China
- 2014.11 Inovation Scholoarships in the academic year 2013-2014, Fujian Normal University — Fuzhou, China
- 2014.07 The National 3rd Prize in 2014 MathorCup Global Collegiate Mathematical Contest in Modeling — China
- 2014.05 'Excellent League Cadres' in the academic year 2013-2014, Fujian Normal University — Fuzhou, China

2014.05 'Excellent League Leader' in the academic year 2013-2014, School of Geographical Sciences, Fujian Normal University — Fuzhou, China

2013.05 'Excellent League Leader' in the academic year 2012-2013, School of Geographical Sciences, Fujian Normal University — Fuzhou, China

Professional Societies & Activities

from 2019 International Initiative on Spatial Lifecourse Epidemiology (ISLE) **Member**

from 2015 The Subscription Accounts "Sustainable City · Transportation" **Volunteer**

from 2017 International Association of Landscape Ecology of China(IALE-China) **Member**

2016-2017 Green Bike-Transit **Volunteer**

2013-2017 The Geographical Tribune of Youth
Founder, Editor in Chief, Associate Editor, Assistant Editor in Chief

Research Projects

2018-2019 'The construction of Typhoon Disaster Assessment Index Based on GIS and Multi-source Remote Sensing Data in Fujian Province', Open Fund of the Big Data Institute of Digital Natural Disaster Monitoring in Fujian (NDMBD2018001) **Investigator**

2016-2020 'Research on the key technology research and integration demonstration of urban agglomeration ecological security in the Yangtze River Delta', National Key Research and Development Plan(2016YFC0502704) **Investigator**

2015-2018 'Scaling up of carbon sequestration for Eucalyptus plantations based on ETKF-3DVAR hybrid data assimilation', National Natural Science Foundation of China(31470578) **Investigator**

2015-2016 'The Spatiotemporal Difference of Tourism in Fujian Province Based on Spatial Mismatch Theory', The Technological Innovation Plan of University Students, Fujian Normal University(cxxl-2015137) **Investigator**

2015-2016 'The Spatial Optimization Evaluation of Medical Facility Based on GIS in Cangshan District, Fuzhou', The Technological Innovation Plan of University Students, Fujian Normal University(cxxl-2015146) **Investigator**

2014-2015 'The Optimization Model of High Education Staff's Refuge Space Under Earthquake Disater', The Technological Innovation Plan of University Students, Fujian Normal University(cxxl-2014137) **PI**

Presentations

2018.05.27 **The Scale Effect, Zoning Effect of Geographical Features, the Modified Areal Unit Problem and the Chanlleges of Spatial Stastistics**, *11th Chinese R Language Conference*
Renmin University of China, Beijing, China

2018.05.22 **High-Resolution Mapping of Direct CO_2 Emissions and Uncertainties at the Urban Scale**, *13th International Symposium on Spatial Accuracy Assessment in Natural Resources and Environmental Sciences(Spatial Accuracy 2018)*
China National Convention Center, Beijing, China

2017.11.11 **The Environmental Effect of Urban Form on PM2.5: A Case Study of Beijing-Tianjin-Hebei Urban Agglomeration**, *9th Chinese Landscape Eoclogy workshop*
Sanyu Houtel, Guangzhou, China

2017.09.28 **The Assement Platform of Urban Forest Ecosystem Servcie Based on InVEST model and IOT(invited)**, *2rd urban environment long-term monitor and sustainable development workshop*
Shanghai Normal University, Shanghai, China

2016.11.27 **The Criminal Geographical Analysis about Walking Environment of Urban**, *The Workshop of 12th Spatial Behavior and Planning & Spatial-Temporal Behavior and Social Planning Research*
Beijing Union University, Beijing, China

2016.07.01 **Transportation Planning of Smart City on the Basis of Data Augmentation Design Under the Perspective of Humanism: A Case Study of Fuzhou's Cangshan District**, *10th annual conference of International Association of China Planning*

Peking University, Beijing, China

Selected Posters

2017.12.10 **Quantifying the linear and nonlinear relations between the urban form fragmentation and the carbon emission distribution**, *2017 AGU Fall Meeting*

New Orleans, LA, USA.

2017.05.16 **The relationship between the fragmented urban form landscape and the carbon emission distribution at different resolutions**, *9th Lecture of Modern Ecology*

Shanghai, China

2016.06.26 **The Simulation Analysis of Waterlogging and the Sponge City Planning Control of Central Urabn Area in Fuzhou City**, *2016 International Low Impact Development Conference*

China National Convention Center, Beijing, China

Languages

Chinese Native

English First foreign language

Expertise & Skills

Major	GIScience, Remote Sensing, Spatial Statistics, Urban Studies, Environments, Ecological Modelling, Landscape Ecology
Programming	CGA, Python, Fortran, R, Shell, LaTeX, Makrdown, Github
Expertise	QGIS, ArcGIS, ENVI, Erdas Image, PostGIS, City Engine