

Shaoqing Dai

Ph.D Candidate

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Department of Earth Observation Science, ITC, UT



Last updated: February 17, 2020

Education

- 2020.01-present **Ph.D.**, Faculty of Geo-information Science and Earth Observation(ITC), University of Twente
Supervised by Prof. Alfred Stein and Assistant Prof. Peng Jia
Thesis: *Spatial Lifecourse Epidemiology and Health Geography*
Major in Acquisition and quality of geo-spatial information(ACQUAL) 📍 Enschede, Netherlands
- 2016.09-2019.06 **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
- 2012.09-2016.06 **B.Sc.**, School of Geographical Sciences, Fujian Normal University
Supervised by Associate 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; Spatial Lifecourse Epidemiology; Spatial Statistics; Urban Computing; Spatial-Temporal Big Data; Ecoinformatics

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)
- from 2019 rgeoda
rgeoda is a R package for spatial data analysis based on libgeoda and GeoDa(contributor).

Awards & Honors

- 2019.06 China Scholarship Council(CSC) 📍 China
- 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[No.3 in Institute] 📍 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[No.9 in Institute]	 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 Scholarships 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 Scholarships 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

Academic Service & Affiliations

	from 2019	International Initiative on Spatial Lifecourse Epidemiology (ISLE)	Member
	from 2019	GeoDa Center, rgeoda, libgeoda Github Organizations	Member
	from 2015	The Organizations "Sustainable Cities & Mobility"	Volunteer
	from 2018	Aliyunqi Community	Expert
	2017-2019	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

📅 from 2019 Data in Brief, The Journal of Open Source Software

Reviewer

📖 Publications

*corresponding author, #co-first author.

📖 Peer-Reviewed Journal Articles

1. **SQ. Dai**, SD. Zuo, Y. Ren. (2020). A spatial database of CO₂ emissions, urban form fragmentation and city-scale effect related impact factors for the low carbon urban system in Jinjiang city, China. *Data in Brief*. Accepted. doi:10.1016/j.dib.2020.105274. [CiteScore = 0.93]
2. SD. Zuo, **SQ. Dai**, Y. Ren. (2020). More fragmentized urban form more CO₂ emissions? An comprehensive relationship from the combination analysis across different scales. *Journal of Cleaner Production*. 244. doi:10.1016/j.jclepro.2019.118659. [SCI, IF = 6.395]
3. 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]
4. 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 CO₂ emission reduction in China. *Applied Energy*. 247, 254-269. doi:10.1016/j.apenergy.2019.04.005. [SCI, IF = 8.426]
5. GL. Yun, YR. He, YT. Jiang, PF. Dou, **SQ. Dai**. (2019). PM_{2.5} spatiotemporal evolution and drivers in the Yangtze River Delta between 2005 and 2015. *Atmosphere*. 10(2), 55. doi:10.3390/atmos10020055. [SCI, IF = 2.046]
6. 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. doi:10.3390/rs10111814. [SCI, IF = 4.118]
7. 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. doi:10.3390/ijerph15102175. [SCI, IF = 2.468]
8. **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]
9. 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 PM_{2.5} Concentrations at an Urban Scale. *Remote Sensing*. 10(4), 521. doi:10.3390/rs10040521. [SCI, IF = 4.118]
10. 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*. 28(02), 115-122. doi:10.12062/cpre.20170915. [CSCD, in Chinese]
11. 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]
12. 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 PM_{2.5} 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]

Papers submitted/under revision

1. **SQ. Dai**, SD. Zuo, Y. Ren. A framework for uncertainty propagation in gridded maps of CO₂ emissions: a case study of Jinjiang city, China. *Scientific Reports*. (under review).
2. **SQ. Dai**[#], XM. Zheng, L. Gao, SD. Zuo, Q. Chen, XH Wei, Y. Ren. Improving prediction of forest aboveground biomass maps: A combined approach of machine learning with spatial statistical model. *Biogeosciences*. (under review).
3. PF. Dou, SD. Zuo, Y. Ren, M.J. Rodriguez, **SQ. Dai**. Refined water security assessment for sustainable water management: A case study of 15 key cities in the Yangtze River Delta, China. *Journal of Hydrology*. (under review).
4. XF. Pan, H. Li, XR. Yang, JQ. Su, **SQ. Dai**, CX. Li, GJ. Cai, GF. Zhu. Spatio-temporal distribution of syntrophs in paddy soils from Southern China. *Geoderma*. (under review).
5. SY. Xie, CX. Li, J. Li, G. Wang, **SQ. Dai**, Y. Wang, GW. Yu. Treatment of industrial sludge via co-pyrolysis with rice straw for biochar improvement and heavy metals immobilization. *Journal of Cleaner Production*. (under review).

Patent

1. Y. Ren, **SQ. Dai**, SD. Zuo, XM. Zheng. A forest inventory biomass estimation model by multi-sources data fusion . (under review)
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 safety monitoring system based on environmental IOT data and InVEST model. V1.0. RN: 2019SR0517519. (2019).
2. A water conservation service monitoring system based on environmental IOT data. V1.0. RN: 2018SR745897. (2018).

Conference Paper & Abstract

1. JJ. Li, YP. Liu, **SQ. Dai**, KY. Xiang, HX. Jiang, WQ. Chen. (2019). The night light uncovers city's weight—A case study on estimating construction materials in Fuzhou, China. *10th International Conference on Industrial Ecology, abstract 320*
2. **SQ. Dai**. (2018). The Scale Effect, Zoning Effect of Geographical Features, the Modified Areal Unit Problem and the Challenges of Spatial Statistics. *11th Chinese R Language Conference, abstract*
3. **SQ. Dai**, SD. Zuo, Y. Ren. (2018). High-resolution mapping of direct CO₂ emissions and uncertainties at the urban scale. *Proceedings of Spatial Accuracy 2018*. 88-90. [EI]
4. **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]
5. 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*.
6. **SQ. Dai**, Y. Ren, SD. Zuo, M. Dai, P. Chen, Z. Wang, LX. Xu, JW. Qi, GL. Yun. (2017). The Environmental Effect of Urban Form on PM_{2.5}: A Case Study of Beijing-Tianjin-Hebei Urban Agglomerations. *9th Chinese Landscape Ecology workshop, abstract*.
7. Q. Ye, G. Zeng, **SQ. Dai**, FL. Wang. (2017). Research on the Effects of Different Policy Tools on China's Energy Conservation and Emissions Reduction Innovation Based on the Panel Data of 285 prefectural-level municipalities. *2017 annual conference of the Chinese geographical society, economic geography and Specialized Committee Abstracts Proceedings, abstract*.
8. **SQ. Dai**, Y. Ren, SD. Zuo. (2017). The relationship between the fragmented urban form landscape and the carbon emission distribution at different resolutions. *9th Lecture of Modern Ecology, abstract*.
9. **SQ. Dai**, HX. Jiang, JJ. Li, X. Su, J. Wu, K. Chen. (2016). The environmental crime analysis based on WalkScore







and CGT model, a case study of H city. *The Workshop of 12th Spatial Behavior and Planning & Spatial-Temporal Behavior and Social Planning Researchg*, abstract.

10. **SQ. Dai**, HX. Jiang, JJ. Li, QW. Xu. (2016). 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*, abstract 1813.
11. **SQ. Dai**, HX. Jiang, JJ. Li. (2016). The Simulation Analysis of Waterlogging and the Sponge City Planning Control of Central Urabn Area in Fuzhou City. *2016 International Low Impact Development Conference*, paper 391.











Open Dataset & Code

1. **SQ. Dai**, SD. Zuo, Y.Ren. (2019). GISerDaiShaoqing/Urban-Carbon-Dioxide-sources-gridded-maps-and-its-determination-in-Jinjiang-city 0.3 (Version 0.3) . [Data set]. Zenodo. <http://doi.org/10.5281/zenodo.3566072>.

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 CO₂ 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 Ecology 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 Urban 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 Expertise CGA, Python, Fortran, R, Shell, LaTeX, Markdown, Github
QGIS, ArcGIS, ENVI, Erdas Image, PostGIS, City Engine