

# Shaoqing Dai

*M.Sc in Ecology*

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Last updated: March 24, 2019

## 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: *Mapping of carbon emission and sink based on coupling ecological processing model with emission inventory*  
Major in Ecology Xiamen, China
- 2012-2016 **B.Sc.**, School of Geographical Sciences, Fujian Normal University  
Supervised by A/Prof. Huixian Jiang  
Thesis: *The simulation model of building site location and construction based on data augmented design and BIM: a case study of Fujian Normal University*  
Major in Geographical Science (National Talents Training Base) Fuzhou, China

## Research Interests

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

8. 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 = 1.704]
7. 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 = 3.406]
6. 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 = 2.145]

5. **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]
4. 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 = 3.406]
3. 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]
2. 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]
1. 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. **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

6. **SQ. Dai**, SD. Zuo, & Y. Ren. High-resolution mapping of direct CO<sub>2</sub> emissions and uncertainties at the urban scale. (*submitted*).
5. **SQ. Dai**<sup>#</sup>, XM. Zheng, SD. Zuo, & Y. Ren. Improving the Prediction Accuracy of Forest Aboveground Biomass Map by Integrating Machine Learning and Spatial Statistics. (*submitted*).
4. SD. Zuo, **SQ. Dai**, Y. Ren, R. Zhou, & ZW. Yu. More fragmented urban form more CO<sub>2</sub> emissions? An comprehensive relationship from the combination analysis across different scales (*submitted*).
3. ZF. Wu, **SQ. Dai**, W. Man, Q. Chen, SD. Zuo, JF. Tang, YY. Li, Y. Ren. Interactive effects of human activity and environmental factors on variation in urban forest surface temperature. (*under review*).
2. LY. Cai, SD. Zuo, ZF. Wu, GL. Yun, XM. Zheng, **SQ. Dai**, Y. Ren. Effects of different green spaces on air PM2.5 in the winter in Southeast China at landscape scales. (*under review*).
1. Q. Yang, TY. Huang, SG. Wang, JS. Li, **SQ. Dai**, S. Wright, YX. Wang, & HW. Peng. A GIS-based high spatial resolution assessment of large-scale PV power generation potential and associated CO<sub>2</sub> emission reduction in China. (*under review*).

#### Patent

1. Q. Chen, Y. Ren, XM. Zheng, SD. Zuo. **SQ. Dai**. A mixed-effect model for estimation of large area subtropical forest biomass. (*under apply*).

#### Awards & Honors

- |  |         |   |   |
|--|---------|---|---|
|  | 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 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 Innovation 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 Winning Award during the 9th Challenge Cup National College Students' Extracurricular Academic Science and Technology Works Contest 📍 Fuzhou, China
- 📅 2014.11 Innovation 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

## 👥 Professional Societies & Activities

- 📅 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, Chief Editor, Subeditor, Assistant Chief Editor**

## 🏛️ 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(cxsl-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(cxsl-2015146)  
**Investigator**
- 📅 2014-2015 'The Optimization Model of High Education Staff's Refuge Space Under Earthquake Disaster', The Technological Innovation Plan of University Students, Fujian Normal University(cxsl-2014137) **PI**

## 🗨 Presentations

- 📅 2018.05.27 **The Scale Effect, Zoning Effect of Geographical Features, the Modified Areal Unit Problem and the Challenges of Spatial Statistics**, *11th Chinese R Language Conference*  
📍 Renmin University of China, Beijing, China
- 📅 2018.05.22 **High-Resolution Mapping of Direct CO<sub>2</sub> 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**, *9th Chinese Landscape Ecology workshop*  
📍 Sanyu Hotel, Guangzhou, China
- 📅 2017.09.28 **The Assessment Platform of Urban Forest Ecosystem Service Based on InVEST model and IOT(invited)**, *2nd 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 **Quantifying the linear and nonlinear relations between the urban form fragmentation and the carbon emission distribution**, *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*  
📍 Beijing, China

## 🗨 Languages

Chinese Native

English First foreign language

## 💻 Expertise & Skills

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