

# Shaoqing Dai

*M.Sc in Ecology*

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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, Fujian 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

- SD. Zuo, **SQ. Dai**, Y. Ren. (2019). More fragmented urban form more CO<sub>2</sub> emissions? An comprehensive relationship from the combination analysis across different scales. *Journal of Cleaner Production*. Accepted. doi:10.1016/j.jclepro.2019.118659. [SCI, IF = 6.395]
- 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.hjkxb.2019.0122. [CSCD, in Chinese]
- 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<sub>2</sub> emission reduction in China. *Applied Energy*. 247, 254-269. doi:10.1016/j.apenergy.2019.04.005. [SCI, IF = 8.426]
- GL. Yun, YR. He, YT. Jiang, PF. Dou, **SQ. Dai**. (2019). PM<sub>2.5</sub> 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]

5. 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]
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 = 2.468]
7. **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]
8. 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]
9. 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]
10. 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]
11. 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<sub>2</sub> emissions and uncertainties at the urban scale. *Proceedings of Spatial Accuracy 2018*. 88-90. [EI]
2. **SQ. Dai**<sup>#</sup>, 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 framework for uncertainty propagation in gridded maps of CO<sub>2</sub> emissions: a case study of Jinjiang city, China. *Scientific Reports*. (under review).
2. **SQ. Dai**<sup>#</sup>, 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. **SQ. Dai**, SD. Zuo, Y. Ren. A spatial database of CO<sub>2</sub> emissions and urban form fragmentation for the low carbon urban system in Jinjiang city, China. *Data in Brief*. (submitted).
4. 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).

review).

5. 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).

#### 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 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 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 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(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 Chanlleges of Spatial Stastistics**, *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: 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

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