

# Jiameng Lai

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## Education

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**B.S. of Geographic Information Science, Nanjing University** 2013.09-2017.06

Overall GPA: 4.46/5.0 Major GPA: 4.48/5.0

**M.S. of Cartography and Geographic Information Science, Nanjing University** 2017.09-2020.06 (expected)

Overall GPA: 4.48/5.0 Major GPA: 4.57/5.0

## Research Interests

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- Urban environment; Remote sensing; Urbanization; Land use and land cover change; Land-atmospheric interaction.

## Grants

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2018-2019 **PI**, “Satellite-based attribution analysis and scenario simulation of spatial-temporal evolution of surface urban heat island”, funded by Jiangsu Provincial Education Department, China, **RMB 15,000**.

## Publications

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### Journal articles, In Preparation/Under Review

1. **Lai, J.**, Zhan, W., Voogt, J., Quan, J., Huang, F., Zhou, J., Bechtel, B., Hu, L., Wang, K., Cao, C., and Lee, X., 2019. Synoptic controls on daily variations of nighttime surface urban heat islands under clear-sky. *Remote Sensing of Environment*. (under 2<sup>nd</sup> round of review)
2. **Lai, J.**, Zhan, W., Quan, J., Bechtel, B., Wang, K., Zhou, J., Huang, F., Chakraborty, T., Liu, Z., and Lee, X., 2019. Statistical simulation of next-day nighttime surface urban heat islands. *ISPRS Journal of Photogrammetry and Remote Sensing*. (under review)
3. Liu, Z., Zhan, W., **Lai, J.**, Hong, F., Quan, J., Bechtel, B., Huang, F., and Zou, Z., Surface urban heat island across 2139 global cities: Multi-time scale patterns. (in preparation)
4. Huang, F., Zhan, W., Wang, Z., Voogt, J., Hu, L., Quan, J., Liu, C., Zhang, N., and **Lai, J.**, 2019. The first satellite-based identification of vertical profile of urban heat island from boundary layer to subsurface under clear skies. (manuscript finished and in submission to *Remote Sensing of Environment*)

### Journal articles, Published

5. **Lai, J.**, Zhan, W., Huang, F., Voogt, J., Bechtel, B., Allen, M., Peng, S., Hong, F., Liu, Y., and Du, P., 2018. Identification of typical diurnal patterns for clear-sky climatology of surface urban heat islands. [Remote Sensing of Environment](#)

[Environment](#), 217, 203-220.

6. **Lai, J.**, Zhan, W., Huang, F., Quan, J., Hu, L., Gao, L., and Ju, W., 2018. Does quality control matter? Surface urban heat island intensity variations estimated by satellite-derived land surface temperature products. [ISPRS Journal of Photogrammetry and Remote Sensing](#), 139, 212-227.
7. Liu, Z., Zhan, W., **Lai, J.**, Hong, F., Quan, J., Bechtel, B., Huang, F., and Zou, Z., 2019. Balancing prediction accuracy and generalization ability: A hybrid framework for modelling the annual dynamics of satellite-derived land surface temperatures. [ISPRS Journal of Photogrammetry and Remote Sensing](#), 151, 189-206.
8. Hong, F., Zhan, W., Göttsche, F.M., Liu, Z., Zhou, J., Huang, F., **Lai, J.**, and Li, M., 2018. Comprehensive assessment of four-parameter diurnal land surface temperature cycle models under clear-sky. [ISPRS Journal of Photogrammetry and Remote Sensing](#), 142, 190-204.
9. Huang, F., Zhan, W., Wang, Z., Wang, K., Chen, J.M., Liu, Y., **Lai, J.**, and Ju, W., 2017. Positive or negative? Urbanization - induced variations in diurnal skin - surface temperature range detected using satellite data. [Journal of Geophysical Research: Atmospheres](#), 122(24), 13-229.
10. Zou, Z., Zhan, W., Liu, Z., Bechtel, B., Gao, L., Hong, F., Huang, F., and **Lai, J.**, 2018. Enhanced modeling of annual temperature cycles with temporally discrete remotely sensed thermal observations. [Remote Sensing](#), 10(4), 650.
11. Zou, Z., Huang, F., **Lai, J.**, Liu, Z., and Zhan, W., 2018. Impacts of temporal upscaling methods on calculation of surface urban heat island intensity. *Geography and Geo-Information Science*, 2018(3), 26-31 (in Chinese).

## Research Experience

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- Estimating the impact from the quality of satellite land surface temperature (LST) product on the surface urban heat island (SUHI) quantification, funded by [National Key R&D Program of China](#) 2016-2018
  - The possible biases in the satellite-based SUHI quantification were emphasized.
  - The SUHI variations caused by LST quality were quantified for Chinese 86 cities.
- Satellite-based investigation on the typical diurnal pattern of surface urban heat islands, funded by [National Natural Science Foundation of China](#) 2017-2018
  - The SUHI variations over a full diurnal cycle were re-constructed for Chinese 354 cities.
  - Diurnal climatology of SUHI was estimated, and five typical SUHI diurnal patterns were identified.
  - Controls for the SUHI diurnal variations were analyzed.
- Satellite-based attribution analysis and simulation of surface urban heat island, funded by [National Key R&D Program of China](#) 2018-present
  - Vast SUHI variations on the day-to-day scale were quantified and emphasized.

- Significant impact from meteorological conditions on the day-to-day variations in the SUHI were examined.
- A statistical approach to simulating the next-day nighttime SUHI was proposed.
- Integrated geological investigation of Mountain Lu 2015
  - Interdisciplinary field practice with professors in climatology, geology, biology, hydrology, and soil science.

## Conference Presentations

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- *Joint Urban Remote Sensing Event*, Vannes, France (poster & oral) 2019
- *3<sup>rd</sup> Seminar on Thermal Infrared Quantitative Remote Sensing*, Qingdao, China (oral) 2019
- *AGU Fall Meeting*, Washington, DC, America (poster) 2018
- *5<sup>th</sup> Youth Scientist Forum of Earth Science*, Nanjing, China (oral) 2018
- *1<sup>st</sup> International Conference on Urban Informatics*, Hong Kong, China (oral) 2017
- *ISPRS Geospatial week*, Wuhan, China (oral) 2017

## Invited Talk

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- “Experience Sharing in Learning and Scientific Research”. *Special Seminar of Ten-thousand Student Program of Academic Winter Camp in Jiangsu Province*, Nanjing University, China, 2019.
- “Synoptic Controls on Daily Variations of Nighttime Surface Urban Heat Islands under Clear-sky”. *University of Electronic Science and Technology of China*, Chengdu, China, 2018.
- “Experience Sharing in Scientific and Technological Papers Writing”. *Nanjing University*, Nanjing, China, 2018.

## Selected Awards

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- National Scholarship, Nanjing University (1/300) 2018
- First Grade Award, 5<sup>th</sup> Youth Scientist Forum of Earth Science (only 1 student in GIS field) 2018
- Pacemaker to Excellent Postgraduate Student, Nanjing University (1 out of 100) 2018
- Excellent Student, Nanjing University (3 out of 66) 2015
- First Grade Award, University Students’ Innovation Competition in Surveying and Mapping Using Geographic Information Software in Jiangsu Province 2015
- National Encouragement Scholarship, Nanjing University 2014|2015|2016

## Journal Reviewer

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- Sustainable Cities and Society

## Skills

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- Language: Fluent in English; TOEFL: 104 (R30 L27 S22 W25), GRE general: 161 (V) + 170 (Q) + 4.5 (AW)
- Computer: Skilled in C, C++, python, MATLAB, ArcGIS, Origin Pro, Excel, and ENVI