Jie Song

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EDUCATION

Beijing Normal University (BNU) *2022.09 – 2025.06 (expected)*
M.S. in Systems Science GPA: 3.7/4.0; Rank 3/60 (5%)
Major Courses: Remote Sensing of Agriculture, Advanced Experimental Remote Sensing, Deep Learning & Remote Sensing Automatic Information, Natural Disaster Science, Scientific Computation

Nanjing University of Information Science and Technology (NUIST) *2018.09 – 2022.06*
B.S. in Geographical Information Science GPA: 3.86/5.0; Rank 2/80 (3%)
Major Courses: Physical Geography, Geostatistics, Principles of Remote Sensing, Remote Sensing Digital Image Processing, GIS Applications in Meteorology

FIELDS OF SPECIALIZATION

- GHG emission estimation, carbon dynamics, driving factors, soil mechanisms, and natural climate solutions
- Crop mapping (especially in-season large-scale mapping), timeseries satellite data reconstruction and phenology extraction, crop yield estimation, agricultural disaster loss assessment.

PUBLICATIONS

1. **Song J**, Zhang Z*, Han J. (2024). Accurately retrieving vegetation phenology at high spatial and temporal resolutions based on GEE and multi-source remote sensing data fusion. *National Remote Sensing Bulletin*, 28, 2910-2926. https://dx.doi.org/10.11834/jrs.20232646. (Chinese Core Journal, EI)
2. Han J, Zhang Z*, Xu J, Chen Y, Jägermeyr J, Cao J, Luo Y, Cheng F, Zhuang H, Wu H, Mei Q, **Song J**, Tao F. (2024). Threat of low-frequency high-intensity floods to global cropland and crop yields. *Nature Sustainability*, 7, 1-13. http://dx.doi.org/10.1038/s41893-024-01375-x. (SCI-Q1, TOP, IF = 25.7)
3. Mei Q, Zhang Z*, Han J, **Song J**, Dong J, Wu H, Xu J, Tao F. (2024). ChinaSoyArea10m: a dataset of soybean-planting areas with a spatial resolution of 10 m across China from 2017 to 2021. *Earth System Science Data*, 16, 3213-3231. http://dx.doi.org/10.5194/essd-16-3213-2024. (SCI-Q1, TOP, IF = 11.2)
4. Zhuang H, Zhang Z*, Han J, Cheng F, Li S, Wu H, Mei Q, **Song J**, Wu X, Zhang Z, Xu J. (2024). Stagnating rice yields in China need to be overcome by cultivars and management improvements. *Agricultural Systems*. http://dx.doi.org/10.1016/j.agsy.2024.104134. (SCI-Q1, TOP, IF = 6.1)
5. **Song J**, Shen R*, Jia Y, Hu Y, Qin M, Wang Y, Huang A. (2022). Design and implementation of LAI time series data reconstruction system based on integrated fFiltering method. *Geomatics & Spatial Information Technology*, 45(07), 7196492. (Chinese Journal, CSCD)
6. Wu H, Zhang Z*, Xu J, **Song J**, Han J, Zhang J, Mei Q, Cheng F, Zhuang H, Li S. (2024). Food consumption away from home had divergent impacts on diet nutrition quality across urban and rural China. *Food Security*. Accepted. (SCI-Q1, TOP, IF = 5.6)

RESEARCH PROJECTS

2022.05-present Study on the mechanisms of rice production disasters, disaster risks, and livelihood assessment under climate change, and disaster risk reduction strategies in southeast asia, sponsored by National Natural Science Foundation of China, Participant

Contributions:

(1) A method combining machine learning and mixed-effect models was developed to characterize spatiotemporal dynamics of global methane (CH_4) emissions from rice fields. Driving factors and mitigation potential were investigated. The experiment was based on a newly compiled dataset, which is the most comprehensive dataset available to the best of our knowledge.

(2) A localized remote sensing image fusion algorithm framework was developed based on Google Earth Engine to reconstruct LAI time series and detect more precise vegetation phenology.

2023.02-2024.09 Regional agricultural disaster risk study based on crop model simulations and multi-source data assimilation techniques – a case study of drought risk in wheat in north china, sponsored by National Natural Science Foundation of China, Participant

Contributions:

A regional adaptation spectra-phenology integration method combined with K-means and dynamic time warping was developed to map soybean-planting areas across China on Google Earth Engine.

2020.04-2021.07 Design and development of LAI time series data reconstruction system based on integrated filtering method, sponsored by China National University Student Innovation Development Program, **Principal Investigator**

Contributions:

A data reconstruction system based on ArcGIS Engine and ENVI was developed using C# and IDL programming. The system integrates multiple algorithms and supports the full automation of the LAI data reconstruction process.

2020.08-2020.12 National grid meteorological disaster risk assessment system, sponsored by State Grid Corporation of China, **Co-Investigator**

Contributions:

An automated mapping script based on Python was developed, incorporating modular processes such as data cleaning and layer overlay, to automatically generate various maps required by the State Grid Corporation. This system achieved 95% automation of the mapping workflow.

SOFTWARE COPYRIGHT

1. **Independent Copyright Holder**. Deep Learning-Based Remote Sensing Monitoring System for Red Tide, developed using Python, Registration No.: 2022SR1329360.
2. **Song J**, Hu Y, Jia Y. Remote Sensing LAI Time Series Data Reconstruction and Analysis System, developed using C#, Registration No.: 2021SR0133598.
3. **Independent Copyright Holder**. Remote Sensing Image Data Processing Service System, developed using Python, Registration No.: 2022SR1316173.
4. **Independent Copyright Holder**. Remote Sensing Model Simulation Informatization System, developed using Python, Registration No.: 2022SR1275544.

AWARDS

2021	Third Prize of BeiDou-cup China Adolescents Science & Technology Innovation Contest (National)
2021	Honorable Mention of Mathematical Contest In Modeling (MCM/ICM)
2021	First Prize of Lan Qiao Cup National Software and information technology professionals competition (Python Programming) (Provincial)
2019	First Prize of Chinese Mathematics Competitions (CMC) (Provincial)

HONOURS

2023	School Merit Student (BNU)
2022	Outstanding Graduate Student of Jiangsu Province (Jiangsu Province)
2021	Excellent Student Cadre of Jiangsu Province (Jiangsu Province)
2019-2022	School Merit Student (NUIST)
2019-2022	School Excellent Student Cadre (NUIST)

SCHOLARSHIP

2023-2024	First Prize of Academic Scholarship (BNU)
2021	National Scholarship
2019, 2020, 2022	First Prize of Academic Scholarship (NUIST)

EXTRACURRICULAR ACTIVITIES

CONFERENCES

11/2023 The Conference of Agriculture & Rural Big Data, Hainan, China

- Oral presentation: Dynamics of global CH_4 emissions from rice cultivation and their driving factors

06/2023 National Quantitative Remote Sensing Academic Forum, Chengdu, China

- Poster: Rapid extraction of large-scale phenology at high spatial and temporal resolutions

TEACHING ASSISTANT EXPERIENCE

2023 Spring **Course**: Agricultural Disasters

Main duties performed:

- Prepare class registers and updating learners' records
- Support the teacher with marking students' assignments
- Support the teacher with teaching GIS software (ArcGIS)

2023 Fall **Course**: Safety Statistics

Main duties performed:

- Prepare class registers and updating learners' records
- Support the teacher with marking students' assignments
- **Teaching**: R progamming in Statistics

2024 Spring **Course**: Resource Inventory and Security Assessment

Main duties performed:

- Prepare class registers and updating learners' records
- Support the teacher with marking students' assignments
- **Teaching**: application of GEE in resource inventory and mapping

JOURNAL REVIEWER

- *European Journal of Agronomy*

ADDITIONAL INFOMATIONS

- Skills: Machine learning; Remote sensing image process and analysis; GIS spatiotemporal analysis; Statistic modeling; Crop model (MCWAL)
- Proficient software: ENVI, ArcGIS, SPSS
- Proficient programming languages: Python, R, MATLAB, Javascript (GEE), C#, Fortran, IDL, C
- Languages: English, Mandarin (Native)
- Hobbies: Swimming, Calligraphy