

ZHAO YANBO

Department of Grassland Resource and Ecology
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EDUCATION

China Agricultural University

Beijing, China

Masters Student

Sep 2022 – Jun 2025 (expected)

- GPA: 3.89/4.00 (ranked top 1 in the department)
- Courses: Grassland Theoretical Ecology (90), Artificial Intelligence and Geoscience Applications (92), Ecology Seminar (92), An Introduction to Global Change Science (87)
- Selected awards: National Scholarship (~1% in the college)

South China Agricultural University

Guangzhou, China

B.S. in Geographic Information Science

Sep 2018 – Jun 2022

- GPA: 3.98/4.00 (ranked top 1 in the department)
- Courses: Principle and Application of Spatial Analysis (94), Fundamentals and Application of Remote Sensing (94), Application of GIS (93), Development of GIS Software (97)
- Selected awards: First Prize in the ESRI Cup Chinese College Student GIS Software Development Competition (top 3 of ~1,000 participants)

RESEARCH INTERESTS

- The interactions between terrestrial ecosystems and environment under ongoing climate change
- The responses and feedbacks of terrestrial ecosystems carbon-water cycles to climate change
- Remote sensing monitoring and prediction of the impacts of climate extremes on terrestrial ecosystems
- The impacts of climate change and human activities on ecosystems

PUBLICATIONS AND PRESENTATIONS

[Published & Submitted]

- [1] **Yanbo Zhao**, Jie Wang, Geli Zhang, Luo Liu, Jilin Yang, Xiaocui Wu, Chandrashekhara Biradar, Jinwei Dong, Xiangming Xiao, “Divergent trends in grassland degradation and desertification under land use and climate change in Central Asia from 2000 to 2020”, October 2023/**accept**, *Ecological Indicators*, <https://doi.org/10.1016/j.ecolind.2023.110737>
Contribution: Methodology, Visualization, Data curation, Formal analysis, Writing – original draft
- [2] **Yanbo Zhao**, Chuchen Chang, Xiaoli Zhou, Geli Zhang, Jie Wang, “Land use significantly improved grassland degradation and desertification states in China over the last two decades”, January 2024/**accept**, *Journal of Environmental Management*, <https://doi.org/10.1016/j.jenvman.2023.119419>
Contribution: Conceptualization, Methodology, Formal analysis, Writing – original draft, Visualization
- [3] Chuchen Chang, Jie Wang, **Yanbo Zhao**, Tianyu Cai, Jilin Yang, Geli Zhang, Xiaocui Wu, Munkhdulam Otgonbayar, Xiangming Xiao, Xiaoping Xin, Yingjun Zhang, “A 10-m annual grazing intensity dataset in 2015–2021 for the largest temperate meadow steppe in China”, February 2024/**accept**, *Scientific Data*, <https://doi.org/10.1038/s41597-024-03017-5>
Contribution: Conceptualization, Methodology
- [4] Pengpeng Dou, Jie Wang, Zhengzhou Miao, **Yanbo Zhao**, Qian Gao, Jing Huang, Lili Hou, Kaili Wang, Chuchen Chang, Tianyu Cai, Xu Wang, Kun Wang, “Sustainable restoration in sandy lands is challenged by the divergent responses of grassland functional types to disturbance”, November 2023/**accept**, *Ecological Informatics*, <https://doi.org/10.1016/j.ecoinf.2023.102260>
Contribution: Data process
- [5] Xu Wang, Jilin Yang, Jie Wang, Tong Yang, Chuchen Chang, **Yanbo Zhao**, Xiaocui Wu, Geli Zhang, Xiangming Xiao, “Green fodder cultivation improved water-use efficiency in the northeastern part of the Tibetan Plateau”, July 2024/**under review**, *Agricultural Water Management*
Contribution: Methodology

[Ongoing Projects]

- [1] **Yanbo Zhao**, Jie Wang, Yao Zhang, Jilin Yang, “Impacts of soil moisture availability on woody cover change in Tropical savannas”
- [2] Chuchen Chang, **Yanbo Zhao**, Wenchao Liu, Jie Wang, Xu wang, “Mapping grazing intensity dynamics in Xilingol League, China, using annual time series Sentinel-2 and Landsat images”

[Oral & Poster Presentations]

Yanbo Zhao, “Divergent trends in grassland degradation and desertification under land use and climate change in Central Asia from 2000 to 2020”. China Quantitative Remote Sensing Forum 2023, Chengdu, China (Poster)

RESEARCH EXPERIENCE

China Agricultural University (Department of Grassland Resources and Ecology)

Beijing, China

Master's Thesis Research

Research on the Effects of Summer Compound Extreme Drought and Heatwave Events on Vegetation Growth

- Calculated the frequency, duration, and severity of compound dry and hot events (CDHEs), alongside individual extreme drought and heatwave events, employing Run Theory
- Utilized vegetation indices and solar-induced chlorophyll fluorescence (SIF) as proxies for vegetation growth, further validating these observations against Gross Primary Production (GPP) measurements obtained from the ChinaFlux network
- Applied Theil Sen's Slope and Mann Kendall test to discern the trend of CDHEs, and applied a sensitivity analysis method to assess the long-term effects of CDHEs on vegetation growth across different ecosystems and climatic zones

China Agricultural University (Department of Grassland Resources and Ecology)

Beijing, China

Research Assistant to Professor Jie Wang

Oct 2023 – Present

Research on the Driving Mechanisms of Woody Plant Encroachment

- Employed a Python-based approach on a Linux-configured workstation for global-scale data processing and analysis
- Implemented multiprocessing techniques to enhance the efficiency of data processing, contributing to improved analytical performance
- Applied various attribution methods, including multiple linear regression, ridge regression, stepwise multiple linear regression, and machine learning techniques (mainly Random Forest Algorithm), structural equation model (SEM)
- Currently dedicated to analyzing the effect of soil moisture availability on woody plants cover change in tropical savannas

China Agricultural University (Department of Grassland Resources and Ecology)

Beijing, China

Research Assistant to Professor Jie Wang

Jun 2022 – Oct 2023

Research on vegetation dynamics and responses to climate change and human activities

- Proficient in utilizing Google Earth Engine for data processing and analysis, encompassing tasks such as quality control, mask creation, trend analysis, regression analysis, and residual trend analysis. Independently managed the entire experimental process
- Demonstrated skills in creating visual representations using tools such as Python, ArcGIS, Origin, and Photoshop. Independently executed the production of plots and illustrations
- First-authored 2 articles, published in *Ecological Indicators* and *Journal of Environmental Management*

South China Agricultural University (Department of Geographic Information)

Guangzhou, China

Research Assistant to Professor Yilun Liu

Dec 2020 – Nov 2021

Research on an online platform for mobile vendors management

- Designed and built the database for the platform using PostgreSQL, comprising 7 relational entities, 6 relationships, and ~50 attribute details
- Simulated the creation of 1000+ data records for functional testing of the platform, encompassing data such as geographical coordinates, personal names, and vendor types
- Established the backend system using the Node.js and Express framework, and developed ~50 functional APIs, contributing to a codebase 3500+ lines

SELECTED AWARDS AND HONORS

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| • National Scholarship (~1% in the college) | 2023 |
| • First-class Student Scholarship in recognition of academic excellence (ranked top 1 in the department) | 2023 |
| • Admission Scholarship (only for recommended students) | 2022 |
| • First Prize in ESRI Cup GIS Software Development Competition (top 3 of ~1,000 participants) | 2021 |
| • Second-class Student Scholarship (~10% in the college, rank top 1 in the department) | 2021 |
| • First-class Student Scholarship (~1% in the college) | 2019 |

ADDITIONAL INFORMATION

Computer and Language Skills

- Programming languages: Python, JavaScript, R, Java, C#
- Operating system: Windows, Linux
- Software: ArcGIS, Google Earth, Google Earth Engine, Origin, SPSS, Adobe Photoshop

- Language: IELTS: 7.5 (Listen:8.5; Reading:8; Writing:6.5; Speaking:7.0)

References Information

- Jie Wang, Professor, China Agricultural University, jiewang178@cau.edu.cn
- Yao Zhang, Assistant Professor, Peking University, zhangyao@pku.edu.cn
- Geli Zhang, Professor, China Agricultural University, geli.zhang@cau.edu.cn