

CHUNYU ZHAO

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Research interests: Computer Vision for Remote Sensing; Long-Term Earth Observation; AI for Geoscience.

RESEARCH APPOINTMENT

Peking University | College of Environmental Sciences and Engineering

Research Assistant | Supervisor: Dr. Jing Cheng, Assistant Professor (chengj10@pku.edu.cn)

07.2026–Present

- Develop and validate high-resolution global agricultural data products, generating datasets on cropland extent, land and water management, cropping intensity, and agricultural productivity.
- Use these products to investigate spatiotemporal changes in global agriculture and their relationships with climate and environmental change.

EDUCATION

Beijing Normal University | State Key Laboratory of Remote Sensing and Digital Earth

Master’s degree in Remote Sensing Science and Technology | Supervisor: Prof. Zhiqiang Xiao (zhqxiao@bnu.edu.cn)

09.2023–07.2026

- GPA: 3.6/4.0 | Merit-based direct admission
- Member of the Multiscale Satellite Remote Sensing (MUSES) R&D team (<https://muses.bnu.edu.cn/>)

Courses: optical remote sensing; microwave remote sensing; remote sensing inversion and data assimilation methods; remote sensing image processing and practice; remote sensing applications; principles and methods of remote sensing; principles and methods of geographic information systems.

China University of Geosciences (Beijing) | School of Earth Sciences and Resources

Bachelor’s degree in Resources Prospecting Engineering | Thesis advisor: Prof. Gongwen Wang (gwwang@cugb.edu.cn)

09.2019–07.2023

- WAM: 86.84/100 | GPA: 3.43/4.0 | top 10%
- Outstanding graduate of CUGB

Courses: advanced mathematics; surveying; computer language programming (C++); college chemistry; college physics; geosciences; remote sensing geology.

PUBLICATIONS

Peer-reviewed journal articles

- Wang, A., Xiao, Z.*, **Zhao, C.**, Li, J., Zhang, Y., Song, J., & Yang, H. (2026). An Enhanced CycleGAN to Derive Temporally Continuous NDVI from Sentinel-1 SAR Images. *Remote Sensing*, 18(1), 56. (**JCR Q2; CAS Zone 2; IF=4.3**).
- Zhao, C.**, Xiao, Z., Zhang, Y., Yuan, C., & Yang, J.* (2025). Alteration Mineral Information Extraction Based on Image Super-Resolution Technology. *International Journal of Applied Earth Observation and Geoinformation*, 144, 104872. (**JCR Q1; CAS Zone 1 Top-tier; IF=8.6; first author**).
- Zhao, C.**, Liu, Y.*, & Zhang, X. (2023). Application of Analytic Hierarchy Process in Optimal Allocation of Colorado River Under Drought Background. *Shaanxi Water Resources*, 2023(3), 26-29. (*In Chinese; first author*).

Submitted and in-preparation manuscripts

- Zhao, C.**, Wang, A., Zhou, X., Xiao, Z.*, Yang, H., & Song, J. (2026). Mapping Annual Dynamics of Aquatic Macrophytes in Baiyangdian wetland (2000 – 2024) Using Landsat Time Series and Deep Learning. *Remote Sensing*. (**Under review; first author**).
- Zhao, C.**, et al. Temporal Scale Extension of LAI Products Derived from Satellite Observations Using Deep Neural Networks. (*In preparation; first author*).

Conference paper

- Zhao, C.**, Xiao, Z.*, Song, J., Yang, H., & Zhang, Y. (2025). Time-Scale Extension Algorithm of MUSES LAI Products Using Image Super-Resolution. *IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Brisbane, Australia.

* Corresponding author.

PRESENTATIONS

Time-Scale Extension Algorithm of MUSES LAI Products Using Image Super-Resolution

		Oral
1.	The 45th IEEE International Geoscience and Remote Sensing Symposium	Brisbane, Australia 08.2025
2.	The 7th National Forum on Quantitative Remote Sensing	Changchun, China 07.2025

RESEARCH EXPERIENCE

1. NSFC project

Participant

01.2025–06.2026

Integrated Remote Sensing Inversion and Spatiotemporal Extension of Vegetation Feature Parameters

➤ Developed spatial downscaling algorithms using deep learning and image super-resolution to enhance the spatiotemporal consistency of global remote sensing parameter products.

➤ Designed parameter inversion algorithms to generate global remote sensing parameter products.
2. Geological Environment Monitoring and Forecasting

Participant

05.2024–12.2024

Research on Remote Sensing Assessment Methods for Water Conservation Functions of Ecosystems and Analysis of Spatial and Temporal Distribution Changes

➤ Conducted ecological field surveys in Baiyangdian wetland, recording over 200 GPS locations and measuring leaf area index (LAI) at more than 20 key sampling sites.

➤ Analyzed vegetation distribution and temporal trends over 25 years; co-authored the Ecological Survey Report on Baiyangdian wetland.
3. Undergraduate Thesis, CUGB

01.2023–07.2023

Remote sensing alteration extraction and mineralization prediction in Zhenghe Xiangluping, Fujian

➤ Independently performed X-ray fluorescence (XRF) analysis on nearly 200 ore samples to systematically characterize their elemental composition.

➤ Delineated five major and three secondary mineralization targets in the Xiangluping mining area.

STUDENT RESEARCH PROJECTS

1. Student Innovation and Entrepreneurship Training Program

S202211415201

Leader

01.2022–12.2022

Remote Sensing of Porphyry Copper Alteration using ASTER Data

Municipal Level

➤ Led and organized more than 10 project coordination meetings to keep the research on track. The project was recognized as a municipal-level project and was successfully completed.

➤ Processed ASTER data in ENVI 5.6 to extract hydrothermal alteration minerals in Duolong, Tibet; performed mapping and spatial analysis in ArcMap 10.8.

Supported by the National Key R&D Program: Global Paleogeographic Reconstruction and Deep-Time Big Data Key Technologies (2018YFE0204204).
2. Student Innovation and Entrepreneurship Training Program

X202111415269

Leader

01.2021–12.2021

Microwave Synthesis of Perovskite Quantum Dots and Morphology Control Strategies

University Level

➤ Designed and conducted systematic optimization experiments by varying one parameter at a time.

Supported by: Laboratory Platform – Student-Initiated Research Projects.

HONORS AND AWARDS

First-Class Academic Scholarship (2023)	BNU	English: IELTS 6.5 overall (Listening 6.0, Reading 7.0, Writing 6.0, Speaking 6.0);
Second-Class Academic Scholarship (2019-2022, 2025)	BNU, CUGB	Tools: Python; MATLAB; ArcGIS; ENVI; Adobe Illustrator
Third Prize	4th Energy Conservation and Emission Reduction Competition	CUGB
	5th “Green+” Innovation Competition	CUGB
	17th Tsinghua National Environmental Technology Competition (North China Division)	CUGB

LANGUAGE AND SKILLS

RESEARCH INTERESTS

My research lies at the intersection of **remote sensing, computer vision, long-term Earth observation, and artificial intelligence for Earth science**. My current work focuses on integrating multi-source data to develop fine-resolution global agricultural datasets covering the period 1990–2025, with the aim of characterizing long-term changes in cropland use and agricultural management, while examining their links to agricultural productivity and environmental change. Methodologically, I am particularly interested in super-resolution, multimodal data fusion, and spatiotemporal reconstruction to improve the spatial and temporal completeness of Earth observation data. I apply these methods to the development of long-term LAI and agricultural datasets, and also explore AI applications in Earth science, including alteration mineral mapping, mineral prospectivity prediction, and long-term monitoring of wetland aquatic vegetation using remote sensing time series.