

Xiaojun Ge

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Relevant Research Skills

Field Experimentation

Hydrological monitoring device usage
On-site water quality monitoring

Multi-depth soil profile & coring sampling
Soil/Water GHG sampling (chamber), forest flux (tower)

Microbial and Genetic Analysis

16S rRNA amplicon sequencing
qPCR (Quantitative Polymerase Chain Reaction)

QIIME2 analysis: phylogeny, QC & visualization
Functional gene annotation & analysis

Instrumental operation and maintenance

- Automated & continuous flow analyzers
- UV-Vis spectroscopy
- CRDS (Cavity Ring-Down Spectroscopy)
- Mass spectrometry

- HPLC (High-performance liquid chromatography)
- LC-MS/MS
- Gas Chromatography

Nutrient Transformation

- ^{15}N isotopic tracing method

- Sediment incubation

Soil Physicochemical Measurement

- Soil enzyme activity assays
- Soil aggregate and stability measurement

- Soil sesquioxide quantification
- Nutrient fractionation separation (C, N, P)

Software Skills

- R
- GIS

- MATLAB
- Microsoft Office (Word, PowerPoint, Excel)

Research Experience

Research Assistant

Institute of Guangxi Zhuang Autonomous Region Institute of Metrology & Test, Nanning, China

Development and validation of a high-resolution carbon sink assessment system for plantations **Nov. 2022 - Present**

- Integrated multi-scale data with machine learning approaches to optimize carbon sink model parameters
- Conducted cross-validation of various carbon sink accounting methods to improve estimation accuracy
- Quantified uncertainties in carbon sink models of plantation forest

Collaboratively Trained Students

Supervisor: Zaijian Yuan

Institute of Eco-environmental and Soil Sciences, Guangdong Academy of Science, China

Technology Integration and Demonstration of Manure Pollution Ecological Treatment in Swine Farms Project

Sep. 2020 – June 2022

- Led the design and establishment of mesocosm constructed surface flow constructed wetlands.
- Participated in the design and construction of field-scale surface-flow constructed wetland.
- Teamed with group colleagues to refine wetland and execute isotope experiments
- Experimentally studied the impact of antibiotic exposure time on nitrogen gross transformation rates.
- Routinely monitored and quantitatively analyzed the impact of sustained antibiotic exposure on nitrogen removal efficiency and pathways in wetlands.
- Revealed changes in the microbial community of wetlands under long-term antibiotic exposure.

Nanling Forest National Field Observation and Research Station Project

May. 2020 – Dec. 2021

- Participated in establishing soil monitoring plots and collecting soil samples.
- Analyzed soil physicochemical properties along different altitudinal gradients and across various seasons.
- Investigated the relationships between carbon fractions, soil physicochemical properties, and the microbial community.

- Developed a portable rainfall simulation device for several hydrological projects.
- Designed a variety of experiments with team members.
- Implemented field rainfall simulations experimental with two graduate students for two months.
- Compared the soil stability, sesquioxides, and nutrients fraction composition of DVRT with traditional tillage.
- Quantitatively assessed the risk of soil erosion and nutrient loss under DVRT.
- Provided further understanding of the effect of DVRT on hydrological ecology.

Publications

1. Risks and drivers of nitrogen and phosphorus runoff loss Loads from sludge woodland application strategies under extreme rainfall conditions. **(Co-first-Author)** *in preparation.*
2. Effects of deep vertical rotary tillage on sheet erosion processes during sugarcane growth in *Latosolic Red Soil* cultivation area. **(First Author)** *in preparation.*
3. Effect of deep vertical rotary tillage on aggregate stability and fragmentation mechanism of Latosolic Red Soil. **(First Author)** *Submitted.*
4. Effect of Short- and Long-Term Antibiotic Exposure on Microbially Mediated Nitrogen Reduction-Oxidation Process in Sediment of Surface-Flow Constructed Wetland. **(First Author)** *in preparation.*
5. Temporal and Spatial Variation Characteristics and Source Analysis of Agricultural Non-point Source Pollution Load in Guangdong During the Past 20 Years. **(First Author)** 2022.
DOI: <https://doi.org/10.12357/cjea.20230523>
6. Temporal Characteristics and Influencing Factors of Agricultural Net Carbon Sink in Guangxi from 1978 to 2021. **(First Author)** 2024.
7. Effects of biochar application on the loss characteristics of Cd from acidic soil under simulated rainfall conditions. **(Fourth Author)** 2022.
DOI: <https://doi.org/10.1007/s11356-022-21623-x>.

Education & Honor

South China Normal University, M.S. in Environmental Science & Engineering**Sep. 2019 – June 2022****Thesis:** Study on the effect and mechanism of antibiotics on nitrogen removal in constructed wetland in non-point source pollution of livestock treatment**Rewards:** 3 years of school-level scholarships of South of China Normal University (2019–2021)**Guangxi Normal University**, B.S. in Environmental Science**Sep. 2014 – June 2018**

References

Prof. Zaijian Yuan: Director and Professor, Department of Non-Point Source Pollution Control and Soil and Water Conservation, Institute of Eco-environmental and Soil Sciences, Guangdong Academy of Sciences**Email:** zjyuan@soil.gd.cn | **Phone:** (86) 18898323672**Dr. Xianli Xu:** Professor, Institute of Subtropical Agriculture, CAS; Member of the IALE-China Council**Email:** xianlixu@isa.ac.cn | **Phone:** (86) 0731-84619760**Dr. Dr. Jing Zhu:** Associate Professor, College of Environment and Resources, Guangxi Normal University**Email:** zhuj@gxnu.edu.cn | **Phone:** (86) 13647738900