

EDUCATION

Master of Science in Soil and Water Conservation Engineering, *Beijing Forestry University* 06/2022

Thesis: *Research on Non-point Source Pollution and Watershed Management in a Typical Agricultural Watershed in the Three Gorges Reservoir Region*

Advisors: Dr. Yujie Wang and Dr. Yunqi Wang

Bachelor of Science in Soil and Water Conservation Engineering, *Beijing Forestry University* 06/2019

Thesis: *Research on the Characteristics of Runoff and Sediment Discharge of the Yangtze River in the Three Gorges Reservoir Region*

Advisors: Dr. Yujie Wang and Dr. Yunqi Wang

RESEARCH EXPERIENCE

Full-time Student Researcher / National Key R & D Program of China 11/2018 — 06/2022

Beijing Forestry University

Beijing, Chongqing and Hubei, China

- **Developing watershed management strategies to reduce non-point source pollution**

- Conceptualized the research and developed the theoretical framework
- Designed 60 Best Management Practice (BMP) scenarios and developed a database for watershed management
- Developed a simulation-based optimization framework to search cost-effective watershed management strategies
- Compared the performance of several advanced MOEAs applied to a real-world multi-objective watershed management problem
- Delivered a presentation on non-point source pollution studies and watershed management to international graduate students (2022-5-16)
- First-authored the research manuscript, which was published [\[DOI\]](#)

- **Assessment of influencing factors on non-point source pollution critical source areas**

- Conceptualized the research and developed the theoretical framework
- Collected spatial and attribute data of the study watershed (runoff, soil property, land use, meteorological data, etc.), applied a semi-distributed model (AnnAGNPS) to identify the critical source areas
- Applied machine learning technique to identify the dominant influencing factors of critical source areas, explored the non-linear relationships and potential thresholds that may cause great changes in pollution losses
- Filtered a set of suitable BMPs to reduce non-point source pollution for decision makers
- First-authored the research manuscript, which was published [\[DOI\]](#)

- **Research on quantifying the effectiveness of vegetated buffer stripes**

- Assembled experiment apparatus, cultivated vegetation and collected water samples, measured water quality in the laboratory
- Quantified the reduction rate of vegetated buffers on sediment, total nitrogen and total phosphorus, identified the optimal width and vegetation type of buffer stripes in the Three Gorges Reservoir Region
- Co-authored the research manuscript, which was published [\[DOI\]](#)
- Co-designed a technique for constructing vegetated buffer stripes in sloping areas, which was published as a patent [\[Link\]](#)

- **Analysis of Runoff and Sediment variations in the Three Gorges Reservoir Region**

- Conceptualized the research and developed the theoretical framework
- Analyzed long-term (2002-2017) runoff and sediment loads changes in the Three Gorges Reservoir Region using Mann-Kendall test and Double Cumulative Curve
- Quantified the impact of human activity and climate change on runoff and sediment
- First-authored the research manuscript, which was published [\[DOI\]](#)

TEACHING EXPERIENCE

Graduate Assistant/ Innovation and Entrepreneurship Training Program for College Student 06/2020 — 08/2021
Beijing Forestry University *Beijing and Chongqing, China*

- Supervised 6 undergraduate students on their research project. This study focuses on developing an efficient and effective software to filter practical BMPs to reduce non-point source pollution and calculate their construction costs for decision makers
- Made presentations on remote sensing and hydrological & water quality modeling
- Prepared and revised the application materials, made the presentation for final defense
- Co-developed the BMPs selection system software, which was registered and licensed [\[Link\]](#)

LEADERSHIP EXPERIENCE

Team Leader / Innovation and Entrepreneurship Training Program for College Student 06/2017 — 10/2018
Beijing Forestry University *Beijing, China*

- Conceptualized the research and developed the theoretical framework
- Designed the research project. This study focuses on exploring the effectiveness of different vegetation patterns on soil erosion in sloping areas
- Drafted and revised the application materials, delivered a presentation and raised funds (5k RMB) for the project
- Designed experiments, assembled experimental setups (cultivated grass on a soil-bed experimental flume), collected sediment samples and measured sediment loads
- Wrote the experimental reports, drafted research manuscripts, and made the final defense

PUBLICATION

Journal Articles

- Wang S.**, Wang Y*, Wang Y., Wang Z., 2022. Comparison of multi-objective evolutionary algorithms applied to watershed management problem. *Journal of Environmental Management* 324, 116255 [\[DOI\]](#)
- Wang S.**, Wang Y*, Wang Y., Wang Z., 2022. Assessment of influencing factors on non-point source pollution critical source areas in an agricultural watershed. *Ecological Indicators* 141, 109084 [\[DOI\]](#)
- Wang S.**, Su B., Wang Y*, Wang Y., Zhu J., Fu J., 2021. Change analysis of runoff and sediment in the Three Gorges Reservoir Region in recent 16 years. *Science of Soil and Water Conservation* 19, 69-78 (in Chinese with English abstract) [\[DOI\]](#).
- Wang Z., Wang Y*, Ding X., Wang Y., Yan Z., **Wang S.**, 2022. Evaluation of net anthropogenic nitrogen inputs in the Three Gorges Reservoir Area. *Ecological Indicators* 139, 108922 [\[DOI\]](#)
- Fu J., Wang Y*, Wang Y., Wang C., **Wang S.**, Wang Z., 2020. Effect of herbal buffer on pollutant reduction under different inflow conditions. *Journal of Soil and Water Conservation* 34, 129-134 (in Chinese with English abstract) [\[DOI\]](#).

Patent and Software Copyright

- Wang Y., Wang Z., **Wang S.**, Cui W., 2021. "Best Management Practices (BMPs) Selection System v1.0 For Non-point Source Pollution Control in the Three Gorges Reservoir Area." CN Software Copyright 2021SR215280 [\[Certification\]](#)
- Fu J., Wang Y., Wang Z., **Wang S.**, 2020. "The Construction Method of Vegetated Buffer Stripes for Optimized Flow Routing." CN Patent 110731238 A [\[Link\]](#)

SKILLS

Languages and Tools	R, Python, \LaTeX , HTML
Data Visualization	ArcGIS, AutoCAD, Photoshop, Illustrator
Technical Models	SWAT, AnnAGNPS, RUSLE, WEPP, SPAW
Laboratory Skills	Experimental Design, Laboratory Techniques
Communication	English (Fluent), Mandarin (Native), Cantonese (Elementary)

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Academic Homepage
Google Scholar
ResearchGate
GitHub

AWARDS AND HONORS

First Class Scholarships, <i>Beijing Forestry University</i>	2019 — 2021
MS Admission without Entrance Exam, <i>Beijing Forestry University</i>	2018
Liang Xi Scholarships, <i>Beijing Forestry University</i>	2016 — 2018
Liang Xi Academic Class Student, <i>Beijing Forestry University</i>	2015

REFERENCES

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Professor Shouhong Zhang, Dean

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Professor Yunqi Wang

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