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Education

Master of Science in Soil and Water Conservation, *Beijing Forestry University* 06/2022
Thesis: *Research on Non-point Source Pollution and Best Management Practices planning 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, *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 — 05/2022
Beijing Forestry University *Beijing, Chongqing and Hubei, China*

- **Develop watershed management strategies to reduce Non-point source pollution**
  - Developed 60 Best Management Practice (BMP) scenarios and a database on their effectiveness and costs
  - Developed a simulation-based optimization framework to search the cost-effective watershed management strategies, and compared the performance of several advanced MOEAs. The optimized strategies have a significantly lower cost per unit of pollutant reduction than the commonly used targeting strategies
  - Delivered a presentation on non-point source pollution and watershed management to international graduate students (2022-5-16)
  - First-authored the research manuscript, which has been revised and submitted to the journal (*Journal of Environmental Management*)
- **Assessment of influencing factors on non-point source pollution critical source areas**
  - Collected spatial and attribute data of the study watershed (runoff, soil property, land use, meteorological data, etc.) and applied a semi-distributed model (AnnAGNPS) to identify the critical source areas
  - Applied statistical 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 that watershed managers should be aware of
  - Filtered a set of suitable BMPs to reduce non-point source pollution
  - First-authored the research manuscript, which has been published [DOI]
- **Experimental Research on the Effectiveness of Vegetated Buffer Stripes**
  - Assembled experiment apparatus, cultivated vegetation and collected water samples in the field experiments, measured water quality in the laboratory
  - Quantified the reduction rate of vegetated buffers on sediment, total nitrogen and total phosphorus, identified the optimal stripe width and vegetation type for non-point source pollution reduction in the Three Gorges Reservoir Region
  - Co-authored the research manuscript, which has been published [DOI]
  - Co-designed a construction method for constructing vegetated buffer stripes in sloping areas, which has been published as a patent [Link]
- **Analysis of Runoff and Sediment variations in the Three Gorges Reservoir Region**
  - Analyzed long-term (2002-2017) runoff and sediment loads for the Yangtze River 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, which further validated the ecological impact of the Three Gorges Dam
  - First-authored the research manuscript, which has been published [DOI]

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Teaching Experience

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

- Advised 6 undergraduate students on their research project. This study focuses on developing an efficient and simple tool to identify useful BMPs for non-point source pollution reduction, and provide their construction costs for decision makers
- Presented short teaching sessions and tutorial on the AnnAGNPS model setup
- Prepared and revised the application materials and made the presentation for final defense
- Supervised an undergraduate student and co-developed the BMPs selection system software [Link]

Leadership Experience

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

- Designed the research project. This study focuses on exploring the soil erosion resistance features of different vegetation pattern in sloping areas
- Drafted and revised the application materials, delivered a presentation and raised funding (5k yuan) for the research project
- Organized experiments, assembled experiment apparatus, collected sediment samples and measured sediment loads during after experiment
- Wrote a comprehensive experimental report, drafted the research manuscript, and presented 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*. (Revising)

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*. *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
Data Visualization Tools	AutoCAD, ArcGIS, Illustrator, Photoshop
Technical Models	SWAT, AnnAGNPS, RUSLE, WEPP, SPAW
Laboratory Skills	Experimental Design, Basic Laboratory Techniques (centrifugation, titration, etc.)
Communication	English (IELTs 6.5), Chinese, Cantonese (basic)

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Awards and Honors

First Class Scholarship, *Beijing Forestry University* 2019 — 2021
Postgraduate admission without entrance examination, *Beijing Forestry University* 2018
Liang Xi Scholarship, *Beijing Forestry University* 2016 — 2018
Liang Xi Academic Class Student, *Beijing Forestry University* 2015

References

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