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Shuhui Wang

The University of British Columbia (Okanagan)
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Academic Homepage
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Education

PhD Student in Earth and Environmental Sciences, *The University of British Columbia, Canada* 09/2023 -
Project: *Hydrological Responses to Wildfire at the Watershed Scale in British Columbia, Canada*
Supervisor: Dr. Xiaohua (Adam) Wei

MSc in Soil and Water Conservation Engineering, *Beijing Forestry University, China* 09/2019 - 06/2022
Project: *Non-point Source Pollution and Watershed Management in the Three Gorges Reservoir Region, China*
Supervisors: Dr. Yujie Wang and Dr. Yunqi Wang

BSc in Soil and Water Conservation Engineering, *Beijing Forestry University, China* 09/2015 - 06/2019
Project: *Spatial and Temporal Dynamics of Runoff and Sediment Load in the Three Gorges Reservoir Region, China*
Supervisors: Dr. Yujie Wang and Dr. Yunqi Wang

Research Experience

PhD Program 09/2023 - current
The University of British Columbia Kelowna, Canada

Hydrological responses to wildfires at the watershed scales in BC, Canada
- Analyzed 20 years of historical wildfire data, and quantified burn severity using satellite imagery
- Identified and selected 19 watersheds with burn areas exceeding 5% and over 3 years of post-fire streamflow records for focused analysis
- Applied statistical methods, including quantile regression and double mass curve analysis, to investigate post-fire streamflow turning points.
- Developed and implemented fieldwork plans for observational studies and soil sampling in selected watersheds.
- First-authored a review paper on hydrological responses to wildfire, currently under peer review.

MSc Program / National Key R & D Program of China 11/2018 - 06/2022
Beijing Forestry University Beijing, Hubei and Chongqing, China

Research on developing cost-effective watershed management strategies to reduce non-point source pollution
- Conceived the research project and established the theoretical framework
- Designed 60 Best Management Practice scenarios for watershed management
- Established a simulation-based optimization framework to develop robust and cost-effective watershed management strategies
- Made further optimization on the framework by incorporating several advanced evolutionary algorithms into the framework
- Drafted, edited and first-authored the research article [DOI]

Study on assessing the influencing factors on non-point source pollution
- Conceptualized the research project and developed the theoretical framework
- Established a comprehensive database for the study watershed (watershed properties, field management records, long-term climate data, etc.)
- Identified the critical source areas within the watershed using semi-distributed hydrological model
- Quantified the contribution of each influencing factor to critical source areas, explored the non-linear relationships and potential thresholds that could cause sharp changes in pollution losses with machine learning techniques
- Drafted, edited and first-authored the research article [DOI]

Research on quantifying the effectiveness of vegetated buffer stripes on reducing non-point source pollution
- Assembled experiment apparatus, collected water samples and measured water quality indicators (i.e., sediment, nitrogen and phosphorus) in the laboratory
- Quantified the reduction rates of vegetated buffers on sediment and nutrients, identified the optimal buffer width and vegetation type for the Three Gorges Reservoir Region
- Co-authored the research article [DOI] and co-patented a technique for constructing vegetated buffer stripes[Link]

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Undergraduate Program

11/2018 - 06/2019

Beijing Forestry University — Beijing, Chongqing and Hubei, China

Analysis of runoff and sediment variations in the Three Gorges Reservoir Region

- Developed the research framework
- Conducted statistical analysis of long-term (2002-2017) runoff and sediment load variations in the Three Gorges Reservoir Region using Mann-Kendall test, double mass curve, Sen's slope, etc.
- Quantified the impact of human activity and climate change on runoff and sediment
- Drafted, edited and first-authored the research article [DOI]

Leadership Experience

Team Leader / Innovation and Entrepreneurship Training Program for College Student 06/2017 - 10/2018

Beijing Forestry University — Beijing, China

- Designed the project. This study focused on exploring the effectiveness of vegetation patterns on reducing soil erosion in sloping areas
- Drafted and revised the application materials, raised the funding (5,000 CNY) for the project
- Designed experiments, assembled experimental setups (cultivated grass patterns on soil-bed experimental flume), and conducted experiment (collected water samples, measured sediment loads, etc.)
- Drafted a research report and made the final defense

Teaching Experience

Research Assistant / Innovation and Entrepreneurship Training Program for College Student 06/2020 - 09/2021

Beijing Forestry University — Beijing and Chongqing, China

- Supervised six undergraduate students on the research project that aimed at identifying optimal management practices to mitigate non-point source pollution.
- Prepared and revised application materials for the project
- Developed, registered, and licensed software for selecting optimal management practices [Link]

Publication

Peer-reviewed 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 Reducing Non-point Source Pollution 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]

Manuscripts in Preparation

Wang S., Wei X*., Leach J*., 2024. Hydrologcial impacts (of wildfires in Canada). (*in prep.*)

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Skills

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

Awards and Honors

International Four-Year Doctoral Partial Tuition Award, *The University of British Columbia* 2023
UBC Okanagan Graduate Research Scholarships, *The University of British Columbia* 2023
China Scholarship Council (CSC) Scholarship 2023
First Class Scholarships, *Beijing Forestry University* 2019 —2022
Admission to the Graduate Program without Examination*, *Beijing Forestry University* 2018
Liang Xi Scholarships, *Beijing Forestry University* 2015 — 2018
Liang Xi Academic Class Student, *Beijing Forestry University* 2015

References

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* Granted to students with exceptional academic performance