SHUANG SONG

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No.28 Jinfeng Road, 519080, Zhuhai City, Guangdong Province.

EMPLOYMENT HISTORY

Postdoctoral Researcher *October 2024 - Present*
Max Planck Institute of Geoanthropology, Jena, Germany, 07745.

Postdoctoral Researcher *July 2023 - Present*
The School of Environment, Beijing Normal University, Beijing, China, 100875.

EDUCATION BACKGROUND

Ph.D. in Physical Geography *Sep 2018 - June 2023*
Faculty of Geography, Beijing Normal University, Beijing, China, 100875.

Study of History (The second major) *Sep 2014 - July 2018*
The School of History, Sun Yat-sen University, Guangdong, China, 510275.

B.S. of Science, Physical Geography *Sep 2014 – July 2018*
The School of Geography and Planning, Sun Yat-sen University, Guangdong, China, 510275

PROJECT EXPERIENCE

[Host] **Simulation and Optimization of Agricultural Irrigation Water Use in the Yellow River Basin by Agent-based Modeling**

NSFC Young Scientists Fund (Grantee: ***Shuang Song****)* *2024-Present*

This project focuses on developing an agent-based model to simulate agricultural irrigation under various climate and policy scenarios. By integrating agent adaptability and public goods theory, we aim to identify the key drivers of water usage changes and predict future irrigation demands in response to climate shifts. This work builds on my previous experience with human-environment system modeling, directly contributing to future water management strategies.

[Participate] **Coordination mechanism and regulation strategy of multiple processes of water-sediment-ecology-economy system in the Yellow River Basin**

NSFC Programs for Joint Funds (Grantee: Prof. Enhui Jiang) *2023-Present*

As a key participant in this interdisciplinary project, I contributed to developing a coordinated strategy to manage the interconnected water-sediment-ecology-economy system of the Yellow River Basin. My role included research design, data collection, analysis, and drafting reports. The project explores the feedback mechanisms between environmental changes and socio-economic dynamics, with implications for long-term sustainable development in the region.

[Participate] **Mechanisms of human-natural system coupling and optimization of the Yellow River Basin**

NSFC Major Research Plan (Grantee: Prof. Bojie Fu) *2021-2024*

This large-scale project investigates the coupling mechanisms between human and natural systems, focusing on optimization strategies for sustainable development in the Yellow River Basin. My contributions spanned data analysis, report writing, and project coordination. The research outcomes have been instrumental in improving socio-hydrological models and enhancing our understanding of long-term water resource management.

[Participate] **Sustainability of the socio-hydrological system**

NSFC Excellent Young Scientists Fund (Grantee: Prof. Shuai Wang) *2017-2020*

This project aimed to improve mathematical models of socio-hydrology by examining the dynamic interactions between human activities and water systems in the Yellow River Basin. I was involved in the project's theoretical and empirical aspects, including data collection, model development, and the publication of findings. This experience directly supports my current research on the long-term resilience of human-environment systems.

PUBLICATIONS*

* *Shuang published 20 articles. Only selected* ***TOP10*** *publications are listed here.*

[1] **Song, S.**, Wang, S., Jiao, C., et al. **2024b**. "ABSESpy: An agent-based modeling framework for social-ecological systems". en. In: *Journal of Open Source Software* 9.96, p. 6298.
[2] **Song, S.**, Wen, H., Wang, S., et al. **2024d**. "Quantifying the effects of institutional shifts on water governance in the Yellow River Basin: A social-ecological system perspective". en-US. In: *Journal of Hydrology* 629, p. 130638.
[3] **Song, S.**, Wang, S., Wu, X., et al. **2023c**. "Identifying Regime Transitions for Water Governance in the Yellow River Basin, China". en. In: *Water Resources Research* 59.12, e2022WR033819.
[4] **Song, S.**, Wang, S., Wu, X., et al. **2022b**. "Decreased virtual water outflows from the Yellow River basin are increasingly critical to China". English. In: *Hydrology and Earth System Sciences* 26.8, pp. 2035–2044.
[5] Wu, X., Fu, B., Wang, S., **Song, S.**, et al. **2022d**. "Decoupling of SDGs followed by re-coupling as sustainable development progresses". en. In: *Nature Sustainability*.
[6] **Song, S.**, Du, J., Wu, Q., et al. **2021c**. "The responses of *Spinifex littoreus* to sand burial on the coastal area of Pingtan Island, Fujian Province, South China". en. In: *Écoscience*, pp. 1–10.
[7] **Song, S.**, Wang, S., Fu, B., et al. **2021d**. "Improving representation of collective memory in socio-hydrological models and new insights into flood risk management". en. In: *Journal of Flood Risk Management* 14.1.
[8] Wang, S., **Song, S.**, Zhang, J., et al. **2021e**. "Achieving a fit between social and ecological systems in drylands for sustainability". en-US. In: *Current Opinion in Environmental Sustainability* 48, pp. 53–58.
[9] **Song, S.**, Wang, S., Fu, B., et al. **2020**. "Sediment transport under increasing anthropogenic stress: Regime shifts within the Yellow River, China". en-US. In: *Ambio* 49.12, pp. 2015–2025.
[10] **Song, S.**, Wang, S., Fu, B., et al. **2019b**. "Study on adaptive governance of social-ecological system: Progress and prospect". zh-CN. In: *Acta Geographica Sinica* 74.11, pp. 2401–2410.

LECTURES AND OUTREACHES

[1] **Song, S.**, Wang, S., Jiao, C., et al. **2024c**. "Empowering Human-Water System Analysis through ABSESpy: An Agent-Based Modeling Framework of SES". en. In: EGU24. Copernicus Meetings.
[2] **Song, S.**, Wang, S., and Fu, B. **2023b**. "Institutional impacts on the evolution of the Yellow River, China: a perspective from socio-hydrological modelling". en. In: EGU2023. Vienna, Austria: Copernicus Meetings.
[3] **Song, S.**, Wang, S., Fu, B., et al. **2019a**. "Sediment Transport under Increasing Anthropogenic Stress: Regime Shifts Within the Yellow River, China". en. In: AGU Fall Meeting 2019. San Francisco, USA: AGU.

HONORS AND AWARDS

Beijing Excellent Doctoral Thesis (nominated)	*07/2024*
Excellent Doctoral Thesis (Top 1 in Geography)	*04/2024*
2nd in the 8th National Disaster Reduction and Emergency Management Academic Competition	*05/2020*
1st & Best Lecturer in the Third Academic Speech Competition of Beijing Normal University	*05/2019*
1st in the 10th Experimental Science Championship of Systems Science	*11/2018*
Outstanding graduate thesis (Top 1 in Physical Geography)	*06/2018*
Outstanding Project in National College Student Innovation Funding	*04/2017*
1st & Best Lecturer in the 3rd China University Geography Science Presentation Competition	*09/2017*
1st & Most Novel Topic in the 2nd China University Geography Science Presentation Competition	*11/2016*

GRANTS AND SCHOLARSHIPS

Young Scientist Fund of NSFC. (300,000CNY)	*08/2024*
Beijing Normal University Scholarships. (Four-time 1st & once 2nd prize, 58,000 CNY)	*12/2018 - 12/2022*
Graduate Student Academic Ability Competition (Twice 1st & Once 2nd, 8,000 CNY)	*12/2018 - 12/2022*
Chinese National Scholarship (Top 5%, 20,000 CNY)	*12/2020*
Sun Yat-sen University Scholarships. (Twice 1st, 10,000 CNY)	*12/2014 - 12/2018*
"1987" Economic Geography Scholarship (1,500 CNY)	*12/2018*
Guanghua Education Scholarship (3,000 CNY)	*12/2017*
Chinese National Scholarship (Top 5%, 8,000 CNY)	*11/2016*
National College Student Innovation Funding (10,000CNY, Excellent enclosed)	*11/2016*