



**Research on Water Resources Change under  
Climate Change and Human Activities in  
Syr Darya River Basin, Central Asia**

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**You are kindly invited to attend the public defense  
of the PhD dissertation of Shan Zou.**

Monday, 29th November, 10:30 CET

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## Summary

Under the increasing global climate change and human activities, the quantity, quality and spatial distribution of water resources in Central Asia have undergone significant changes with more extreme hydrometeorological events, aggravating the uncertainty of water resources, especially for the typical transboundary rivers in Central Asia (e.g., Syr Darya River). This makes that the study of climate and water resources changes in typical cross-border river basins in Central Asia is a research hotspot, as well as the requirement of the sustainable development of arid areas in Central Asia and the ecological environment of the “Silk Road Economic Belt”.

Therefore, the Syr Darya River Basin in Central Asia has been selected in this study. Based on the hydrological data, meteorological data, water consumption and social-economic development data, this study firstly presents the spatial-temporal distribution analysis of the regional climate change in Central Asia, suggesting a significant upward trend in both precipitation and temperature in Central Asia. Then, the study analyzes climate change and explores the correlation between temperature, precipitation and runoff in the Syr Darya River Basin. Finally, the study

constructs a SWAT distributed hydrological model based on the improved glacier module, and then simulates the future water resources in the upper Syr River Basin by using the Coupled Model Intercomparison Project phase 6 (CMIP6) data.

Results can generally provide an in-depth understanding of climate change in Central Asia and changes in water resources in the Syr Darya River Basin, which is of great importance to protect and improve water resources management in Central Asia. Furthermore, the improved methods by combining the SWAT\_Glacier model and multi-resources data are very useful for water resources simulation in data scarce regions in Central Asia.

## About the author

Shan Zou started her academic career at the Chinese Academy of Agricultural Sciences and obtained her Master’s degree in 2017 with a thesis topic of Evaluation of the Development of Creative Leisure Agriculture in Hunan Province. In 2017, she was recommended to a PhD student at the University of Chinese Academy of Sciences and started her doctoral study at Ghent University. In the doctoral programme, her research mainly concentrated on the impact of climate and human activities on the water resources in the Syr Darya River Basin of Central Asia.

