Study of the Land-use and Land-cover change in the Aral Sea basin and its impacts on the Aral Sea shrinking

You are kindly invited to attend the public defense of the doctoral dissertation of

Shuangyan Huang

The defense will take place online on Monday, November 27, 2023, at 09:00 (Brussels time) / 16:00 (China time)

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Summary

The massive desiccation of the Aral Sea has triggered severe ecological problems in the Aral Sea basin (ASB). The ongoing shrinkage should be halted urgently, finding the causes can offer hope for its partial rehabilitation. For a long time, cropland expansion was considered as the main factor. However, our long-term land cover analysis reveals a reduction in cropland from 2001 to 2019. Conversely, our investigation shows intensified hydrological dynamics in the ASB, manifested by a 7.21% increase in annual precipitation and a 10.13% rise in annual evapotranspiration from 1980 to 2019. This study further provides a comprehensive water area inventory for 1,755 lakes and reservoirs in the ASB, estimating their volume changes. Findings reveal a decrease of 126.8 km^3 in permanent water of those lakes and reservoirs, countered by a 59.13 km^3 increase in seasonal water. After more water is conserved in the ASB plain area, evapotranspiration plays a more vital role in the Aral Sea shrinkage.

Examination Committee

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About the Author

Shuangyan HUANG (1992) is a joint PhD candidate at the Department of Geography at Ghent University and the University of Chinese Academy of Sciences. In 2015, she graduated from the China Henan Polytechnic University with a bachelor's degree in Remote Sensing Science and Technology. In 2018, she completed her master's degree in Surveying and Mapping Engineering at the University of Chinese Academy of Sciences. In the same year, she started her Ph.D. studies at the State Key Laboratory of Desert and Oasis Ecology of Xinjiang Institute of Ecology and Geography, and the 3D Data Acquisition research group at Ghent University.