

Welcome Message

The East Asian region is experiencing the fastest urbanization in the world, yielding significant economic benefits. However, depending on the stage of development in various areas, it also faces numerous challenges such as the loss of agricultural land, water resource shortages, excessive groundwater extraction, frequent pluvial and fluvial flooding, inadequate water infrastructure, water pollution and environmental degradation. Additionally, issues related to climate change, aging infrastructure, and a declining birthrate alongside an aging population are becoming increasingly evident, highlighting the urgent need for innovation in water resource management and flood disaster response.

Kumamoto Prefecture, known as the "Land of Water," is particularly rich in groundwater, capable of supplying 100% of the drinking water for the city of Kumamoto. While benefiting from these abundant resources, Kumamoto has also experienced frequent water-related disasters caused by typhoons and intense rainfall during the rainy season. Significant events include the Shirakawa Flood in June 1953, the flood in June 1980, the Kumamoto Wide Area Flood in July 2012, and the Kuma River Flood in July 2020. Recently, the first factory of TSMC (Taiwan Semiconductor Manufacturing Company), the world's largest semiconductor foundry, was established in Kikuyo Town, Kumamoto Prefecture, with a second factory planned. The expansion of TSMC is transforming not only the rural areas surrounding the factory but also the broader Kumamoto region, as new industrial, commercial, and residential projects rapidly emerge, making Kumamoto one of the fastest urbanizing areas in Japan.

On behalf of the Local Organizing Committee, I would like to extend a warm welcome to all participants. We are honored to provide this platform here in Kumamoto, where researchers, practitioners, and future leaders from China, Korea, and Japan come together to share the latest research findings and insights on water resources and flood management in the context of urbanization and climate change, fostering a collaborative research and human network. We hope you enjoy your stay in Kumamoto.

This forum is a collaborative event hosted by Kumamoto University and Jilin University, and it is also part of the J-PEAKS program supported by MEXT (Ministry of Education, Culture, Sports, Science and Technology), Japan.

Dr. Hiroshi CHO
Professor of Kumamoto University
Chair of the Local Organizing Committee

Local Organizing Committee

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|--------------------|-----------------|--------------------|
| Hiroaki ITO | Hiroshi CHO | Kei ISHIDA |
| Masahide MATSUMURA | Naoto INAGAKI | Shinya WATANABE |
| Sooyoul KIM | Tomoko MINAGAWA | Yasunori KAWAGOSHI |



The 8th China-Japan-South Korea Water Science Forum

Advances in Water and Flood Management

October 30-31, 2025
KUMAMOTO, JAPAN

Venue

The 100 Anniversary Hall (Faculty of Engineering)
Kurokami South Campus, Kumamoto University

Access

2-minute walk from Kumamoto Daigaku Mae Bus Stop

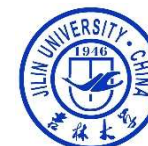
20-minute walk from JR Tokai Gakuen Mae Station

Map: https://ewww.kumamoto-u.ac.jp/en/about/access/access_map/



Organized by

Center for Water Cycle, Marine Environment and Disaster Management, Kumamoto University
College of New Energy and Environment, Jilin University



Visit <https://www.civil.kumamoto-u.ac.jp/river/CJK2025.html> for details.

PROGRAM

Oct. 30

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| 08:30-17:30 | Registration |
| 09:00-09:25 | Opening Address <i>Dr. Jun Ohtani (Vice President, Kumamoto Univ.)</i> Introduction of the forum series <i>Dr. Feng Youcan (Associate Prof., Jilin Univ.)</i> Introduction of the J-PEAKS program <i>Dr. Kei Ishida (Associate Prof., Kumamoto Univ.)</i> |

Keynote Speech

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| Chair: Dr. Hajime Nakagawa (President of Association for Disaster Prevention Research, Japan) | |
| 09:25-10:00 | Eco-fluvial Dynamics and Its Application in Dongting Lake <i>Dr. Hongwei Fang (Vice President of SUSTech /Prof. of Tsinghua Univ.)</i> |

Technical Session 1

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| Chair: Dr. Sooyoul Kim (Associate Prof., Kumamoto Univ.) | |
| 10:00-10:20 | Two Decades of Global Water Security and SDG6: Implications for Resilient Water Management in Northeast Asia <i>Dr. Joo-Heon Lee (Joongbu Univ.)</i> |
| 10:20-10:40 | Evaluation of Groundwater Quality Change before and after the 2016 Kumamoto Earthquake <i>Dr. Yasunori Kawagoshi (Kumamoto Univ.)</i> |
| 10:40-11:00 | Digital Watershed Modelling for Qinghai Lake Basin under Climate Change <i>Dr. Jiahong Liu (China Institute of Water Resources & Hydropower Research)</i> |
| 11:00-11:20 | Assessing Flood Vulnerability under Urbanization: A Data-Driven Analysis Using Recent Flood and Socio-Economic Records <i>Dr. Sunmin Kim (Kyoto Univ.)</i> |
| 11:20-11:40 | High-Resolution Modeling of Urban Water-Carbon fluxes: Analysis of Evapotranspiration and Carbon Storage in Beijing <i>Dr. Weiwei Shao (China Institute of Water Resources and Hydropower Research)</i> |
| 11:40-12:00 | A Physics-Deep Learning Hybrid Approach to Extreme Rainfall Forecasting <i>Mr. Xin Huang (Changchun Institute of Technology)</i> |

Luncheon Seminar

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| Chair: Dr. Hiroshi Cho (Prof., Kumamoto Univ.) | |
| 12:00-13:00 | Introduction to the Activities of the Water Research Group at Kumamoto University & Discussion on International Collaborations |

Technical Session 2

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| Chair: Dr. Hiroaki Ito (Associate Prof., Kumamoto Univ.) | |
| 13:00-13:20 | Construction of Virtual Sewer Pipe Networks for Wide-use of Pluvial Inundation |

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| | Model <i>Dr. Kenji Kawaike (Kyoto Univ.)</i> |
| 13:20-13:40 | Rapid Prediction Method for Urban Flood Process and AI Techs for Flood Mitigation <i>Dr. Hou Jingming (Xian Univ. of Technology)</i> |
| 13:40-14:00 | Assessment of Applicability of AI Surrogate Models for Large-Scale Fluvial Flood Simulation <i>Dr. Giha Lee (Kyungpook National Univ.)</i> |
| 14:00-14:20 | Bridge Losses and Restorations after the 2020 Kuma River Flood <i>Dr. Masahide Matsumura (Kumamoto Univ.)</i> |
| 14:20-14:40 | Intelligent Monitoring, Simulation and Prevention Technology for Extreme Urban Flooding Events: A Case Study of Zhengzhou <i>Dr. Chao Mei (China Institute of Water Resources and Hydropower Research)</i> |
| 14:40-15:00 | Flood Management and Biodiversity Conservation in Urban Watersheds of Johor Bahru, Malaysia: A Nature-Based Solutions Perspective <i>Dr. Rei Itsukushima (Kyushu Univ.)</i> |
| 15:00-15:20 | Risk Zoning of Huge Flood based on Coupled Hydrodynamic Model <i>Dr. Tianxu Song (China Institute of Water Resources and Hydropower Research)</i> |
| 15:20-15:30 | Break |

Technical Session 3

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|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chair: Dr. Naoto Inagaki (Assistant Prof., Kumamoto Univ.) | |
| 15:30-15:50 | Setting Design Rainfall Criteria for Urban Drainage Systems <i>Dr. Seungyub Lee (Hannam Univ.)</i> |
| 15:50-16:10 | Characteristics and Countermeasures of Urban Flooding Disaster Chains <i>Dr. Jia Wang (China Institute of Water Resources and Hydropower Research)</i> |
| 16:10-16:30 | Macroplastic Transport Budget in an Upstream River Basin in Indonesia <i>Dr. Ryota Tsubaki (Kobe Univ.)/Ms. Rizki R. Pratama (Nagoya Univ.)</i> |
| 16:30-16:50 | Computational Model for Upstream Migration of Ayu (<i>Plecoglossus altivelis</i>) in An Agricultural Canal considering Tilting Weir Conditions. <i>Dr. Masayuki Fujiwara (Kyoto Univ.)</i> |
| 16:50-17:10 | Restoration of Korean Estuaries <i>Dr. Yeonjoong Kim (Korea Environment Institute)</i> |
| 17:10-17:30 | Development of Environmental Catalysts for Water Purification <i>Dr. Dong Shuangshi (Jilin Univ.)</i> |
| 17:30-17:35 | Closing remarks <i>Dr. Tsugihiko Watanabe (Prof. Emeritus of Kyoto Univ. & Prof. of Kumamoto Univ.)</i> |
| 19:00-21:00 | Reception |

*Oct. 31 Field trip to the Shira River basin