

The 5th China–Japan–South Korea Water Science Research Forum

--Building Secure and Smart Water Systems in the Uncertain Future



Date: November 19~20, 2022

Host: Jilin University, China

Sponsors: Kyoto University, Japan

Chungnam National University, South Korea



Dear Distinguished Professors, Researchers and Friends of
Hydrologic Science and Engineering,

On behalf of the organizing committee, I am delighted to welcome all of you to join us at the “5th China-Japan-South Korea Water Science Research Forum”, one of the subforums of the “2022 China-Japan-South Korea Youth Forum” of the Jilin University. In spite of the difficult time due to the pandemic, I hope this two-day forum could serve as a broad platform for sharing your top-notch research progress, a useful webinar for discussing some of the most urgent research problems, and a friendly bridge connecting the brilliant young scientists from three countries.

The theme of this year’s forum is “Building Secure and Smart Water Systems in the Uncertain Future”, which well resonates with some recent program solicitations with regards to building the smart hydraulic systems and digital twin hydrologic models from multiple governments. Given the more frequently occurred extreme hydrometeorological events such as urban flooding, increasing the resiliency and smartness is the key to build the next-generation hydraulic systems against the uncertainty. Therefore, we set up four sessions on “Urban Flooding and Resilience”, “Watershed Hydrology and Management”, “Urban Hydrometeorology”, and “AI and Smart Water Systems”. Hopefully, these could help us look for a hint of future solutions based on the updates on our current situation.

This forum has luckily received active responses and generous support from distinguished professors and talented young scientists from the three countries. We are confident in the outcomes of this forum and, therefore, would like to welcome all the interested researchers and students to attend and enjoy the forum.

Sincerely,

Prof. Hongyan Li
College of New Energy and Environment
Jilin University

Congratulatory Remarks

2022 年吉林大学
中日韩青年论坛
China-Japan-ROK Youth Forum 2022



Dear Colleagues, Ladies and Gentlemen,
On behalf of the International Water Resources Research Institute in Chungnam National University, South Korea, it is my great pleasure, and also my honor, to welcome all delegates and distinguished guests to this forum.

I would like to express my gratitude to you all for joining this virtual meeting of "The 5th China-Japan-South Korea Water Science Research Forum". Due to the on-going worldwide pandemic, I regret to tell you that we have no choice but to have a virtual meeting for this time.

As someone once said "the show must go on", well, this is not a show but I appreciate your efforts to gather together virtually. I especially thank prof. Li Hongyan, Jilin University, China and prof. Kim Sunmin, Kyoto University, Japan for their endeavors.

This Forum will focus on the current situation, tendency, direction of the research of "Building Secure and Smart Water Systems in the Uncertain Future". This Forum is composed of four sessions such as "Urban Flooding and Resilience", "Watershed Hydrology and Management", "Urban Hydrometeorology" and "AI & Smart Water System".

The state of water resources varies in different regions of the world. Some areas may have severe water scarcity, while some may be suffering from water-related disasters such as flood, and typhoons. Aside from the effects induced by rapid urbanization, and overpopulation, climate change has also been challenging in the field of water resources management.

In due time, climate change will eventually take its toll on every aspects of our lives, regardless of where we are in the world. Researches have been relentlessly conducted in hopes of determining the best mitigation measures against flood, drought, water pollution, and shortage in water supply. These water-related issues cannot be addressed by a single individual, but should be addressed by all individuals from all around the world.

This virtual Forum is organized and hosted by Jilin University, China. These efforts are aimed on sustaining and strengthening academic and practical cooperation amongst academicians and professionals in the Asian region. This virtual meeting further focuses on water resources issues caused by climate change, and water-related disaster mitigation measures. Through this chance, I am optimistic that future collaborations from all participating countries can be attainable. I wish everyone a successful and fruitful session.

Thank you.

Kwansue Jung
Director, International Water Resources Research Institute
Professor, Chungnam National University

Congratulatory Remarks

2022 年吉林大学
中日韩青年论坛
China-Japan-ROK Youth Forum 2022



It is my great pleasure to join The 5th China-Japan-South Korea Water Science Research Forum, and I would like to welcome all of you.

This is my fourth time of participation for this valuable research meeting, and I am so glad that we can continue our meeting on online basis to overcome our physical distances.

China, Japan and South Korea have similar weather/climate condition as well as hydrological characteristics. At the same time, every country has a bit different aspect of research interest and priority. Without a doubt, it is a very good chance to share our knowledges and experiences on our common interests, also it is a very good opportunity to understand our different viewpoints on our facing challenges in each sectors.

Climate change is one of the most important issue in water resources research. Not only the problem of water abundancy, such as heavy rainfall and flood, but also the problem of water scarcity as drought should be considered comprehensively under the impact of climate change. I believe this research meeting can provide a good chance to discuss our urgent issues in many different aspects and share our knowledge for our better future.

I wish all of you will have a good time together.

Thank you very much.

A handwritten signature in black ink that reads "Kim, Sunmin". The signature is written in a cursive, flowing style.

Sunmin KIM
Associate Professor, Kyoto University

Timetable

Beijing Time

Zoom Meeting: 897 163 0735

Code: 2022

Saturday, November 19, 2022

- | | |
|---------------|---|
| 08: 40–08: 50 | General Introduction |
| 08: 50–09: 00 | Welcoming Remarks |
| 09: 00–12: 10 | Session: Urban Flooding and Resilience |
| 12: 10–13: 30 | Lunch |
| 13: 30–16: 50 | Session: Watershed Hydrology and Management |

Sunday, November 20, 2022

- | | |
|---------------|-----------------------------------|
| 09: 00–12: 10 | Session: Urban Hydrometeorology |
| 12: 10–13: 30 | Lunch |
| 13: 30–16: 40 | Session: AI & Smart Water Systems |
| 16: 40–16: 50 | Closing Remarks |

The 5th China–Japan–South Korea Water Science Research Forum

Saturday, November 19, 2022

| | |
|---|--|
| 08: 40–08: 50 | General Introduction Dr. Youcan Feng –Associate Professor, Jilin University, China |
| 08: 50–09: 00 | Welcoming Remarks Dr. Tianfu Xu –Dean of College of New Energy and Environment, Jilin University, China |
| Session: Urban Flooding and Resilience Moderator: Dr. Jingming Hou | |
| 09: 00–09: 30 | Dr. Zongxue Xu –Vice President, International Association of Hydrological Sciences (IAHS) Distinguished Professor, Beijing Normal University, China Increasing urban resilience on flood/waterlogging disaster: Lessons from the Zhengzhou extreme event |
| 09: 30–10: 00 | Dr. Jingshan Yu –Professor, Beijing Normal University, China Understanding the effects of digital elevation model resolution and building treatment for urban flood modelling |
| 10: 00–10: 30 | Dr. Jiahong Liu –Professor Senior Engineer, China Institute of Water Resources and Hydropower Research, China Flood risk & adaptation: Case study of Beijing City and Daxing International Airport |
| 10: 30–11: 00 | Dr. Jingming Hou –Professor, Xi'an University of Technology, China High-resolution and efficient predicting method for urban flood and its application |
| 11: 00–11: 10 | Coffee Break |
| 11: 10–11: 30 | Chenlei Ye , Beijing Normal University, China; Advisor: Dr. Zongxue Xu Simulation of urban waterlogging processes based on the physical model and data-driven models: Case study in the Fuzhou City |
| 11: 30–11: 50 | Guangzhao Chen , Xi'an University of Technology, China; Advisor: Dr. Jingming Hou Introduction of intelligent rain-flood management platform in Qinhan New Town |
| 11: 50–12: 10 | Jiaxuan Zheng , South China University of Technology, China; Advisor: Dr. Guoru Huang Study on urban flood resilience considering flow velocity and duration of system performance being impacted |
| 12: 10–13: 30 | Lunch |
| Session: Watershed Hydrology and Management Moderators: Dr. Sung-Hoon Kim & Dr. Yujiu Xiong | |
| 13: 30–14: 00 | Dr. Yangbo Chen –Professor, Sun Yat-sen University, China Impact of reservoir operation on inflow flooding |
| 14: 00–14: 30 | Dr. Sung-Hoon Kim –Director, K-Water, South Korea Hybrid machine learning and remote-sensing data applications in water resources management |
| 14: 30–15: 00 | Dr. Yujiu Xiong –Associate Professor, Sun Yat-sen University, China Conserving the unique aquatic ecosystem of the Jiuzhai National Heritage Site |
| 15: 00–15: 10 | Coffee Break |
| 15: 10–15: 30 | Heli Yu , Kyoto University, Japan; Advisor: Dr. Kenji Kawaike Study on the effect of the spur dikes on riverbed deformation in meandering channels employing 3D numerical simulation |
| 15: 30–15: 50 | Changhai Li , Jilin University, China; Advisor: Dr. Hongyan Li Reservoir sediments calculation based on effective shear stress |
| 15: 50–16: 10 | Micah Lourdes Felix , Chungnam National University, South Korea; Advisor: Dr. Kwansue Jung Effects of various spatial interpolation methods on streamflow simulation using SWAT |
| 16: 10–16: 30 | Feng Li , Sun Yat-sen University, China; Advisor: Dr. Yujiu Xiong Water resources and its allocation in Xinjiang: A perspective based on ecosystem services |
| 16: 30–16: 50 | SeonHui Noh , Chungnam National University, South Korea; Advisor: Dr. Kwansue Jung A study to improve the fit of the regression model for calculating the drought index |
| | |

The 5th China–Japan–South Korea Water Science Research Forum

Sunday, November 20, 2022

| Session: Urban Hydrometeorology Moderator: Dr. Kenji Kawaike | |
|---|---|
| 09: 00–09: 30 | Dr. Guoyu Qiu –Professor, Peking University, China Progress and challenges of urban ecohydrology |
| 09: 30–10: 00 | Dr. Guoru Huang –Professor, South China University of Technology, China Analysis on spatio–temporal evolution characteristics of the extreme rainfall in the Pearl River Delta under high urbanization |
| 10: 00–10: 30 | Dr. Kenji Kawaike –Professor, Kyoto University, Japan Numerical simulation of inundation flow caused by heavy rainfall in Japan |
| 10: 30–11: 00 | Dr. Long Yang –Associate Professor, Nanjing University, China The upper tail of flood peaks over China |
| 11: 00–11: 10 | Coffee Break |
| 11: 10–11: 30 | Dr. Zhuoran Luo – Lecturer, North China Electric Power University, China Seasonal variation of dry/wet islands considering urban artificial water dissipation |
| 11: 30–11: 50 | Zhe Shi , Peking University, China; Advisor: Dr. Guoyu Qiu Evaluation of shading and cooling effect of Ficus Microphylla in subtropical city |
| 11 : 50–12 : 10 | Jinghan Zhang , Nanjing University, China; Advisor: Dr. Long Yang Model–based probable maximum precipitation (PMP): Implications for design storms under a changing climate |
| 12: 10–13: 30 | Lunch |
| Session: AI & Smart Water Systems Moderator: Dr. Sunmin Kim | |
| 13: 30–14: 00 | Dr. Haixing Liu –Professor, Dalian University of Technology, China Leaks monitoring and diagnosis in urban water supply system |
| 14: 00–14: 30 | Dr. Seungyub Lee –Assistant Professor, Hannam University, South Korea Potential application of parameter calibration model for water distribution system digital twin model |
| 14: 30–15: 00 | Dr. Sunmin Kim –Associate Professor, Kyoto University, Japan Selection of input variables in ANN for hydrological forecasting |
| 15: 00–15: 30 | Dr. Giha Lee –Associate Professor, Kyungpook National University, South Korea Various hydrological applications using machine learning techniques |
| 15: 30–15: 40 | Coffee Break |
| 15: 40–16: 00 | Shugao Xu , Beijing Normal University, China; Advisor: Dr. Jingshan Yu Study on short–term urban precipitation pattern based on machine learning |
| 16: 00–16: 20 | Ning Zhang , Chungnam National University, South Korea; Advisor: Dr. Kwansue Jung Inference to parameters of Nash Model based on dynamic transport properties of channel networks |
| 16: 20–16: 40 | Yu Gu , Sun Yat–sen University, China; Advisor: Dr. Yangbo Chen Updating parameters of a physically–based disturbed hydrological model for flood forecast |
| 16: 40–16 : 50 | Closing Remarks Dr. Kwansue Jung – Professor, Chungnam National University, South Korea |