

# 2021 International Workshop on Sustainable Urban Drainage



Ningbo University / University of Alberta / Tsinghua University /  
Zhejiang University / Tongji University

Ningbo, Zhejiang, China

August 5-7, 2021

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## Themes

Modern societies require efficient and sustainable urban infrastructure to reliably handle stormwater and sanitary/wastewater without causing urban flooding or negative impacts on daily life activities and aquatic environments. As a result of climate changes, rapid urbanization and stringent environmental regulations, municipalities worldwide are experiencing significant challenges with maintaining and improving the performances of their urban drainage systems. This workshop will serve as a platform for researchers and practitioners to work together to enhance infrastructure resilience and sustainability.

- Hydraulics in urban hydro-systems
- Smart monitoring and data-driven modeling for urban drainage
- Sediment transport in sewer systems
- Air-water flow in pipe networks
- Climate change, urban water management and reclamation technology (stormwater & wastewater)

## Organizing Committee

### Chair:

David Zhu (朱志伟) Ningbo University / University of Alberta

### Members:

Tong Yu (于彤) University of Alberta

William Zhang (张文明) University of Alberta

Haifeng Jia (贾海峰) Tsinghua University

Yanchen Liu (刘艳臣) Tsinghua University

Yiping Zhang (张仪萍) Zhejiang University

Yongchao Zhou (周永潮) Zhejiang University

Hailong Yin (尹海龙) Tongji University

Jing Sun (孙婧) Tongji University

Shengtao Du (杜升涛) Ningbo University

Huihui Gan (甘慧慧) Ningbo University

Biao Huang (黄标) Ningbo University

Jiachun Liu (刘甲春) Ningbo University

Dingnan Lu (卢鼎南) Ningbo University

Yu Qian (钱宇) Ningbo University

Tibing Xu (徐体兵) Ningbo University

Zhiyuan Yao (姚志远) Ningbo University

Jian Zhang (张建) Ningbo University

## Organizers

Ningbo University

University of Alberta

Tsinghua University

Zhejiang University

Tongji University

## Information

### Conference Venue:

**In-person Meeting:** Anzhong Building in Ningbo University (NO.818 Fenghua Road, Ningbo, Zhejiang, China)

宁波大学安中大楼 2 楼风华厅 / 3 楼碧华厅 (宁波市江北区风华路 818 号宁波大学内)

**Online Meeting:** Tencent Meeting (腾讯会议) / VooV Meeting (腾讯会议国际版)

(See the attachment for instructions)

### Registration:

August 4<sup>th</sup>, 2021, 8:00-20:00

Location: Lobby, The Ningbo University Hotel (宁波大学天唯文博酒店大堂)

August 5<sup>th</sup>, 2021, 8:00-18:00

Location: Fenghua Hall in Anzhong Building (宁波大学安中大楼风华厅外)

August 6<sup>th</sup>, 2021, 8:00-12:00

Location: Fenghua Hall in Anzhong Building (宁波大学安中大楼风华厅外)

### Registration fee:

The conference registration fee will be collected and invoiced by the conference organizer. The organizer will provide conference materials and catering during the event, please pay for your own transportation and accommodation.

**Payment:** The registration fee can be transferred to account below (please note your name and conference name) or paid on site.

Account name: 宁波德泰中研信息科技有限公司

Bank and account number: 中国建设银行宁波市住房城市建设支行

3315019834360000107

Standard	1500RMB	
Student	1000RMB	Student Card Required
Online	500RMB	

### Accommodation:

1. 宁波大学天唯文博酒店 (NO.818 Fenghua Road, Ningbo, Zhejiang, China 宁波市江北区风华路 818 号宁波大学东校门旁)
2. 宁波赛思学术会堂 (NO.266 Siyuan Road, Ningbo, Zhejiang, China 宁波市镇海区思源路 266 号)

### Dining Arrangement:

Meal voucher will be provided for lunch and dinner at Ningbo University Hotel (宁波大学天唯文博酒店).

### Important Notification:

1. Attendee badges are required for attending all conference hall.
2. Any question during the conference please contact committee affairs consultation in the lobby.

### Contact

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2. Yu Qian 钱宇 [qianyu@nbu.edu.cn](mailto:qianyu@nbu.edu.cn) 18258745517

## Program Overview

BEIJING TIME (UTC/GMT+08:00)

	Thursday August 5	Friday August 6		Friday August 6
	Fenghua Hall	Fenghua Hall	Bihua Hall	Bihua Hall
8:30-9:00	<i>Opening Ceremony</i>	Yiping Guo (郭毅平)	Arturo Leon	Student Paper Presentation and Poster
9:00-9:30	Edward McBean	Jin Li (李瑾)	Musandji Fuamba	
9:30-10:00	Peter Vanrolleghem	Bryan Karney	Steven J Wright	
10:00-10:30	Jeffery Yang	Jinhui Huang (黄津辉)	Jose Vasconcelos	
10:30-10:45	<i>Photo Taking for All Delegates and Tea break</i>	<i>Tea break</i>		
10:45-11:00		Wenming Zhang (张文明)	Ben Hodges	
11:00-11:15	Guohe Huang (黄国和)	Xiaohui Lei (雷晓辉)	Ling Zhou (周领)	
11:15-11:30		Peng Hu (胡鹏)	Gang Pan (潘刚)	
11:30-11:45	Fabian Bombardelli			
11:45-12:00				
12:00	<i>Lunch</i>	<i>Lunch</i>		
13:30-14:00	Shiqiang Wu (吴时强)	Feifei Zheng (郑飞飞)	Hailong Yin (尹海龙)	
14:00-14:30	Haifeng Jia (贾海峰)	Linmei Nie	Yongchao Zhou (周永潮)	
14:30-15:00	Mohamed Ghidaoui	Yaqian Zhao (赵亚乾)	Simon Tait	
15:00-15:30	Adrian Law Wing Keung	Wenxin Huai (槐文信)	Slobodan Djordjevic	
15:30-16:00	<i>Tea break</i>	<i>Tea break</i>		
16:00-16:30	Discussion on research collaboration 16:00-17:30	Yanchen Liu (刘艳臣)	Jingming Hou (侯精明)	
16:30-17:00		Hanqing Lu (卢汉清)	Oral Presentation	
17:00-18:00		Oral Presentation		
18:00	<i>Banquet</i>	<i>Dinner</i>		
20:00	Sanjiangkou Night Tour			

**Fenghua Hall** (风华厅) 地址: 安中大楼 2 楼

**Bihua Hall** (碧华厅) 地址: 安中大楼 3 楼

**Note:**

Plenary and keynote speech will be 30 minutes long including 3 minutes for questions.  
Oral presentation will be 15 minutes long including 3 minutes for questions.

# Program

Wednesday, August 4, 2021		
Time	Room	Activities
8:00-20:00	Ningbo University Hotel Lobby 宁波大学天唯文博酒店大堂	Registration

Thursday, August 5, 2021 (Morning)	
Plenary Session	
Time	Meeting Room
	<b>In-person meeting: Fenghua Hall (风华厅)</b> <b>Online Meeting: Tencent Meeting / VooV Meeting ID : 591 428 653</b>
8:30-9:00	<b>Opening Ceremony</b> <b>Chair: David Zhu 朱志伟</b> (Ningbo University / University of Alberta)
9:00-9:30	Insights into Challenges for Sustainability of Urban Drainage Systems due to Climate Change and Urban Growth <b>Edward McBean</b> (Fellow of the Canadian Academy of Engineering / University of Guelph)
9:30-10:00	Advances in Modelling Particle Transport in Urban Storm and Wastewater Systems <b>Peter Vanrolleghem</b> (Laval University)
10:00-10:30	Rethinking Urban Drainage Systems and Their Engineering Adaptation in the Time of Climate Change <b>Jeffery Yang</b> (US EPA)
<b>10:30-11:00</b>	<b>Photo Taking for All Delegates &amp; Tea Break</b>
11:00-11:30	Development of Rainfall Intensity, Duration, and Frequency Curves over Canada under Climate Change <b>Xiong Zhou, and Guohe Huang*</b> (Fellow of the Canadian Academy of Engineering, Editor in chief: Journal of Environmental Informatic)
11:30-12:00	Time-dependent Turbulent Closures for the Simulation of Flow Past Structures in Urban Drainage <b>Fabian Bombardelli</b> (Editor in chief: Journal of Hydraulic Engineering, University of California)
<b>12:00</b>	<b>Lunch</b>

<b>Thursday, August 5, 2021 (Afternoon)</b>	
<b>Plenary Session</b>	
<b>Time</b>	<b>Meeting Room</b>
	<b>In-person meeting: Fenghua Hall</b> (风华厅) <b>Online Meeting: Tencent Meeting /</b> <b>VooV Meeting ID: 591 428 653</b>
13:30-14:00	Hydrodynamic Optimization and Regulation for Environmental Improvement in the River Network of Suzhou City <b>Shiqiang Wu</b> (Vice president of Nanjing Hydraulic Research Institute)
14:00-14:30	Holistic Solution of Urban Water Environment Improvement and the Case Study in Suzhou <b>Haifeng Jia</b> (Tsinghua University)
14:30-15:00	Time Reversal Based Diagnostic System and its Implementation Sewerage and Potable Systems in Hong Kong <b>Mohamed Ghidaoui</b> (Editor in chief: Journal of Hydraulic Research / Hong Kong University of Science & Technology)
15:00-15:30	Data Assimilation in Urban Drainage Tunnel Systems <b>Adrian LAW Wing Keung</b> (Editor in chief: Journal of Hydro Environment Research / Nanyang Technological University)
<b>15:30-16:00</b>	<b>Tea Break</b>
16:00-17:30	Discussion on Research Collaboration
<b>17:30</b>	<b>Banquet</b>

<b>Friday, August 6, 2021 (Morning)</b>		
<b>Session A</b>		
<b>Time</b>	<b>Meeting Room</b>	<b>Chairs:</b>
	<b>In-person meeting: Fenghua Hall</b> (风华厅) <b>Online Meeting: Tencent Meeting</b> <b>/ VooV Meeting ID: 447 450 004</b>	
8:30-9:00 <b>KEYNOTE</b>	Proper Sizing of Bioretention Cells for Urban Stormwater Management Purposes <b>Yiping Guo *</b> , <b>Elizabeth Rowe</b> , and <b>Zhong Li</b> (McMaster University)	
9:00-9:30 <b>KEYNOTE</b>	Smart Sensor Networks and Machine Learning Technologies in Urban Water Systems <b>Nabila Nafsin</b> , <b>Fuad Bin Nasir</b> , and <b>Jin Li*</b> (University of Wisconsin)	
9:30-10:00 <b>KEYNOTE</b>	The Challenge of Achieving Intuitive Expertise in Urban Stormwater Transformations and Predictions <b>Bryan W. Karney</b> (University of Toronto)	
10:00-10:30 <b>KEYNOTE</b>	The Change of Precipitation and Urban Development in Mega Cities: A Case Study of Beijing <b>Jinhui Jeanne Huang*</b> , <b>Chenchao Chang</b> , and <b>Yiheng Chen</b> (Nankai University)	
<b>10:30-10:45</b>	<b>Tea Break</b>	
10:45-11:15 <b>KEYNOTE</b>	Nitrogen Loading in Stormwater From a North American City in the Past 30 Years <b>Xiaoyu</b> , <b>Wenming Zhang *</b> (University of Alberta)	
11:15-11:45 <b>KEYNOTE</b>	The Key Technologies of Intelligent Urban Drainage Management <b>Xiaohui Lei</b> (Institute of Water Resources and Hydropower Research / Hebei University of Engineering)	
11:45-12:00	Shallow Water Modeling of Flooding Propagation Using the LTS Method and Parallel Computing <b>Peng Hu</b> (Zhejiang University)	
<b>12:00</b>	<b>Lunch</b>	



<b>Friday, August 6, 2021 (Afternoon)</b>		
<b>Session A</b>		
<b>Time</b>	<b>Meeting Room</b>	<b>Chairs:</b>
	<b>In-person meeting: Fenghua Hall (风华厅)</b> <b>Online Meeting: Tencent Meeting / VooV Meeting ID: 447 450 004</b>	
13:30-14:00 <b>KEYNOTE</b>	Hydraulic Modeling of Sanitary Sewer Networks <b>Feifei Zheng</b> (Zhejiang University)	
14:00-14:30 <b>KEYNOTE</b>	Assessment of Pollutant Sources from Different Land Use Types and their Impacts on Water Quality <b>Chang Tong, Linmei Nie*</b> (Centre for Sustainable Development and Innovation, CSDI WaterTech, Oslo, Norway)	
14:30-15:00 <b>KEYNOTE</b>	Where Do We Stand to Oversee Constructed Wetland Technology for Wastewater Treatment? <b>Yaqian Zhao</b> (Xi'an University of Technology)	
15:00-15:30 <b>KEYNOTE</b>	Numerical and Analytical Simulation of Suspended Sediment Concentration Profile in Vegetated Channel Flows <b>Wenxin Huai</b> (Wuhan University)	
<b>15:30-16:00</b>	<b>Tea Break</b>	
16:00-16:30 <b>KEYNOTE</b>	Title: To be confirmed <b>Yanchen Liu</b> (Tsinghua University)	
16:30-17:00 <b>KEYNOTE</b>	Title: To be confirmed <b>Hanqing Lu</b> (Ningbo Urban Drainage Co., Ltd)	
17:00-17:15	Planning a Safe Floodway and Using a Sports Facility to Prevent Urban Flooding <b>Karl Hannes Lundin</b> (Oslo MetroPolitan University)	
17:15-17:30	Environmental and Economic Assessment on Green and Grey Infrastructures by System Dynamics Modeling <b>Yangbo Tang</b> (Yangtze River Eco-Environmental Engineering Research Center)	
17:30-17:45	3D Numerical Investigation of Coarse Sediment Particle Movement in a Horizontal Sewage Pipe <b>Runyu Xie</b> (Sichuan University)	
17:45-18:00	A Five Equations Model for Gas-water Two-phase Flow in a Pipeline <b>Zijian Xue</b> (Hohai University)	
<b>18:00</b>	<b>Dinner</b>	

<b>Friday, August 6, 2021 (Morning)</b> <b>Session B</b>		
<b>Time</b>	<b>Meeting Room</b>	<b>Chairs:</b>
	<b>In-person meeting: Bihua Hall</b> (碧华厅) <b>Online Meeting: Tencent Meeting /</b> <b>VooV Meeting ID: 100 708 601</b>	
8:30-9:00 <b>KEYNOTE</b>	Geysers in Sewer Systems and Physics-based AI for CSO Mitigation <b>Arturo S. Leon</b> (Florida International University)	
9:00-9:30 <b>KEYNOTE</b>	Title: To be confirmed <b>Musandji Fuamba</b> (École Polytechnique de Montréal)	
9:30-10:00 <b>KEYNOTE</b>	Sewer Geysers: a Critical review of Current Knowledge <b>Steven Wright</b> (University of Michigan)	
10:00-10:30 <b>KEYNOTE</b>	Advancing the Applicability of SWMM to Represent Dynamic Unsteady Flows in Urban Water Systems <b>Jose Vasconcelos</b> (Auburn University)	
<b>10:30-10:45</b>	<b>Tea Break</b>	
10:45-11:15 <b>KEYNOTE</b>	Computational Structure For the New SWMM5+ Hydraulics Engine <b>Ben Hodges*</b> , <b>Edward D. Tiernan</b> , <b>Gerardo Riaño-Briceño</b> , <b>Sazzad Sharior</b> , <b>Cheng-Wei Yu</b> , and <b>Eric Jenkins</b> (University of Texas at Austin)	
11:15-11:45 <b>KEYNOTE</b>	Transient Flow with Entrapped Air Pocket in Urban Stormwater Drainage System <b>Ling Zhou</b> (Hohai University)	
11:45-12:00	Statistical Analysis of Sewer Odour Based On Complaint Data <b>Gang Pan</b> (Tianjin University)	
<b>12:00</b>	<b>Lunch</b>	

<b>Friday, August 6, 2021 ((Afternoon) Session B</b>		
<b>Time</b>	<b>Meeting Room</b>	<b>Chairs:</b>
	<b>In-person meeting: Bihua Hall</b> (碧华厅) <b>Online Meeting: Tencent Meeting /</b> <b>VooV Meeting ID: 100 708 601</b>	
13:30-14:00 <b>KEYNOTE</b>	Low-cost Detection Techniques for Urban Drainage Network <b>Hailong Yin</b> (Tongji University)	
14:00-14:30 <b>KEYNOTE</b>	Source Apportionment of Surface Water Pollution and Urban Flood Prediction in Urban Polders of Jiaxing <b>Yongchao Zhou</b> (Zhejiang University)	
14:30-15:00 <b>KEYNOTE</b>	Title: Implications of Model Uncertainty for Investment Decisions to Manage Intermittent Storm Overflows <b>Simon Tait</b> (University of Sheffield)	
15:00-15:30 <b>KEYNOTE</b>	Recent Advances in Multidisciplinary Research on Urban Water Modelling and Management <b>Slobodan Djordjević</b> (University of Exeter)	
<b>15:30-16:00</b>	<b>Tea Break</b>	
16:00-16:30 <b>KEYNOTE</b>	Title: To be confirmed <b>Jingming Hou</b> (Xi'an University of Technology)	
16:30-16:45	Multifunctional Evaluation and Optimization of Green-grey Coupled Runoff Control System <b>Zijing Liu</b> (Tsinghua University)	
16:45-17:00	Model Tests for the Erosion Resistance of Bimodal Soil around Defective Sewer Pipes <b>Yuhao Jiang</b> (Hefei University of Technology)	
17:00-17:15	Experimental Study on the Assessment of Extraneous Water into Sewer System by in-sewer Temperature Indicator <b>Rui Ding</b> (Hefei University of Technology)	
17:15-17:30	Combined Sewer Overflow and Flooding Reduction through a Safe Real-Time Control based on Multi-Reinforcement Learning, Model Predictive Control, and Q Value Improvement <b>Wenchong Tian</b> (Tongji University)	
<b>18:00</b>	<b>Dinner</b>	

<b>Saturday, August 7, 2021 (Morning)</b> Student paper Presentation and Poster		
<b>Time</b>	<b>Meeting Room</b>	<b>Chairs:</b>
	<b>In-person meeting: Fenghua Hall (风华厅)</b> <b>Online Meeting: Tencent Meeting / VooV</b> <b>Meeting ID: 140 577 336</b>	
8:30-8:45	Numerical Study on Clogging Effect of Catch Basin Grate Inlets Using FLUENT <b>Xiangdong Li *, Xinzai Peng, Wenming Zhang</b> (University of Alberta)	
8:45-9:00	Emission of Hydrogen Sulfide on the Turbulent Water Surface <b>Letian Sun *, Wenming Zhang, and David Z. Zhu</b> (University of Alberta)	
9:00-9:15	Numerical Simulation of Bubbly Jets in Crossflow <b>Huan Zhang *, Wenming Zhang</b> (University of Alberta)	
9:15-9:30	Land Cover based Simulation of Urban Stormwater Runoff <b>Haibin Yan *, Arlette Fernandez, David Z. Zhu, Wenming Zhang, Mark R.</b>	
9:30-9:45	Stratification and Hydrodynamics in Stormwater Ponds in Calgary, Alberta <b>Ahmed, S.*, Zhang, W., Zhu, D.Z., Loewen, M.R., Mahmood, K., and van Duin, B</b> (University of Alberta, City of Calgary)	
9:45	<b>Tea Break</b>	
12:00	<b>Lunch</b>	

## Poster List

Room: Fenghua Hall (风华厅)

Time: 10:00 – 12:00, August 7, 2021

The poster should be of the size: 90cm (width)×120cm (height)

	Title and Authors
1	Degradation of Norfloxacin by Peroxymonosulfate Activated with the Nanocomposites of Carbon Nano-onions Modified Graphitic Carbon Nitride <b>Qiongji Jiang, Huihui Gan *</b> , Zhiwei Zhu, Yin Huang, Dingnan Lu, Yanqing Yang, Weike Zhang (Ningbo University)
2	Particle-scale Erosion Modeling of the Sediments with a Wide Particle Size Distribution <b>Chen Chen, Yao Tang, Yunmin Chen</b> (Zhejiang University)
3	Analytical Modeling of the Soil Permeability Considering the Particle Size Distribution <b>Yao Tang , Haohao Wei</b> (Zhejiang University)
4	Nanobubbles Assisted Photocatalysis on TiO <sub>2</sub> Nanorod arrays under Visible Light <b>Shuo Pan *</b> , Huihui Gan, David Z. Zhu (Ningbo University)
5	Simulation of impact pressure on solid walls by a mesh-free method <b>Jinlong Zuo, Tibing Xu*</b> , Hanbin Gu, David Z. Zhu (Ningbo University)
6	Hydraulic loading rate changed the microeukaryotic community in constructed wetland <b>Peiyong Kan*</b> , Zhiyuan Yao, David Z. Zhu (Ningbo University)
7	Hydraulic loading rate drove bulk substrate and root-associated microbiota shift: Insight into nutrient removal in constructed wetland from microbial assemblage and co-occurrence pattern <b>Nan Zhang *</b> , Zhiyuan Yao, David Z. Zhu (Ningbo University)