



IAHR/IWA JOINT COMMITTEE ON URBAN DRAINAGE (JCUD) – MARCH 2024 NEWSLETTER 37

Once per year IWA/IAHR Joint Committee on Urban Drainage (JCUD) publishes a newsletter to inform the community about recent and upcoming activities, events, conferences, and publications in urban drainage.

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Chairman's Thoughts

Dear members of the Urban Drainage community,

As you will see in this newsletter, 2023 was a fantastic year for the Urban Drainage community. In 2023, we had exciting interactions in Lyon at the Novatech Conference, including a fancy new venue and great content. 2024 will be an exciting one with our flagship conference, the International Conference on Urban Drainage, being held in June in Delft, the Netherlands. There are other opportunities to meet at future conferences, including in 2025 at the Urban Drainage Modelling Conference in Innsbruck and in 2026 at both Novatech and Sewer Processes and Networks Conferences. Furthermore, our annual general meeting in Lyon focussed on selecting the location of the 2027 ICUD. We heard from four strong potential host organisations representing Canada, China, Israel and Italy. Read on to find out where we will be seeing you in 2027! A big vote of thanks goes to all of our conference organisers – it is a hard job and the Urban Drainage community benefits greatly from the opportunity to network and share research at these events!



Our newsletter this year features exciting content, hearing about four upcoming leaders in the urban drainage community and seven reports on active research projects from organisations around the globe. I invite you to read these articles and contact these colleagues to explore potential collaborative opportunities.

In the past three years, the JCUD has been actively working to connect with other IWA and IAHR specialist groups. Thanks to the tireless efforts of the team (and a special thanks to Karine), there is potential for cross-cutting collaborations between the JCUD and other international specialist/working groups at both the IWA World Water Congress & Exhibition (Toronto, 2024). Furthermore, the JCUD is a core member in the newly formed IWA Cluster on Wastewater-based Epidemiological Surveillance (<https://wastewaterbasedepidemiologicalsurveillance.net/>). We look forward to continuing to help widen our international reach through such connections.

More recently, we have begun to see some changes in the JCUD's working groups, as shown on our newly launched website (jcupd.org). We are excited to announce new and transformed working groups as part of the JCUD. To support these changes, the JCUD (a big thanks to Alma) has developed some very simple terms of reference for working groups. I would strongly encourage you to join one of these working groups as it is a great way to form new collaborations and partnerships.

This will be my last year as the Chair of the JCUD, after serving on the JCUD Management Committee for almost 10 years. I would like to say a big thanks to the committee members, past and present, for your support. I would like to also say thanks to the wider Urban Drainage community – I look forward to continuing to be part of this community for many years to come!

Yours sincerely,

David McCarthy

Chair of Joint Committee on Urban Drainage

From the Secretary's Desk

General JCUD information. The Joint Committee on Urban Drainage (JCUD) is an active Specialist Group working under both IWA and IAHR. It has, at present time, 12 members including the chair, each offering different global perspectives on urban drainage. The JCUD organises, once every three years, the International Conference on Urban Drainage (e.g. 2014: Malaysia, 2017: Czech Republic, 2021: Australia, 2024: Netherlands, 2027: China). Furthermore, the JCUD oversees various working groups, many of which organise its own three-yearly conference (e.g., Sewer Processes and Networks; Urban Drainage Modelling, Urban Rainfall, etc.). Everyone is most welcome to get engaged in the activities of the JCUD and its working groups. The JCUD attempts to stimulate contacts, exchange and discussion, e.g., by this newsletter (published annually) and by the "urban-drainage" email discussion list (see other call-out box below).

Change in membership. In 2023 we had no changes in the management team. In 2024 open positions are available, see next section for Call for New Members.

Roles and responsibilities. The committee is structured so that the load among the committee is equally weighted and to ensure that our wider members know exactly whom to contact to seek further information about the specific aspects of the JCUD's activities. With new members joining and others leaving also the responsibilities changed and the JCUD elected a new chair: David McCarthy, Australia. The assigned roles and responsibilities for the JCUD committee members are:

- Chair: David McCarthy
- Secretary: Manfred Kleidorfer
- Treasurer: Jon Hathaway
- Awards: Franz Tscheikner-Gratl
- Newsletter: Sylvie Spraakman
- Webmaster: Wan Hanna Melini Wan Mohtar, Job van der Werf
- IWA connect: Ulrich Dittmer
- IWA Specialist Group linking: Karine Borne
- IAHR connector: Juan Pablo Rodríguez Sánchez
- Young Water Professionals relation officer: Takashi Sakakibara
- Working groups coordinator: Alma Schellart
- Event coordinator: John Okedi
- Young members: Job van der Werf

How to contact us? Should you have any questions about or any suggestions for the JCUD, please do not hesitate to get in contact with me or with any of the JCUD members (see list on first pages). It is our desire to facilitate urban-drainage related work in order to contribute to solutions of one of the pressing needs of this world.

Urban drainage email discussion list. The urban drainage email discussion list has been set up in 1998 by David Butler and Manfred Schütze (now managed by Dr Schütze). It is an easy method of getting in touch with urban-drainage researchers and practitioners worldwide. To use the discussion group, you first need to subscribe (to do this, simply email listserv@jiscmail.ac.uk with your first and last name and the text "subscribe urban-drainage"). To send a message to the list, simply insert urban-drainage@jiscmail.ac.uk in your "To:" box and the email will be sent to all members, worldwide. Please do not use for commercial purposes. If you would like more information, visit www.jiscmail.ac.uk/urban-drainage.

Committee Newsletter. This annual newsletter is published to serve the international urban drainage community and meet the requirements of our parent organisations. The main purpose of the newsletter is to facilitate communications and interactions among specialists in our field, rather than to present detailed information. The most recent, and previous, newsletter(s) can be found on our website <http://www.jcud.org>. Both IWA and IAHR now distribute newsletters only electronically, and we share our newsletter on the IWA [JCUD Group on IWA Connect](#) and on the [IAHR website](#). We also distribute the Newsletter to more than 1,200 colleagues on our JCUD mailing list, which is based on the IWA and IAHR memberships, and participation in ICUD and NOVATECH conferences. Please share your electronic newsletter copy (or the link to our website) with colleagues, or refer them to the IAHR, IWA Connect and JCUD websites. Your comments on this newsletter issue and contributions to future newsletters are most welcome.

Our activities. JCUD has steadily resumed its regular schedule of conferences, reaching a level of activity comparable to the pre-pandemic period. After the success of SPN 2022, we had NOVATECH 2023 and are now preparing for ICUD 2024. Looking ahead, we have Urban Drainage Modelling planned for 2025, followed by NOVATECH and SPN in 2026. In a recent decision during our last meeting, JCUD has chosen Ningbo, China as the location for ICUD 2027, which will be organized by Prof. David Zhu, Prof. Haifeng Jia, and Prof. Jean-Luc Bertrand-Krajewski.

In addition to these conferences, we are maintaining the beneficial practices developed during the period when in-person events were not feasible. This includes our series of webinars, which have proven to be an effective way to keep our community engaged and informed, complementing our physical conferences.

IWA Cluster on Wastewater-based Epidemiological Surveillance. JCUD is a member of the new **IWA Cluster on Wastewater-based Epidemiological Surveillance** aiming to connect IWA specialist groups working on this emerging topic (<https://wastewaterbasedepidemiologicalsurveillance.net/>).

New website. We are excited to share with you the launch of our newly redesigned website: <https://jcud.org/>. While it currently houses the valuable information you've always relied on, this upgrade is more than just a facelift. It's a leap towards greater flexibility and the promise of new, enriching content in the near future.

We invite you to explore the new <https://jcud.org/> and grow with us. Your feedback is crucial in this phase of development, so please share your thoughts and suggestions.

Working groups. In 2023, JCUD conducted a review of its working groups. This evaluation led to the closure of several inactive groups, while others are undergoing a process of rejuvenation. Additionally, we have established a new working group focused on Emerging Contaminants, and are in the midst of forming additional groups. See the section in this newsletter for more updates.

Involvement of young members in the management team. We invite young members (PhD students, young PostDocs) to get involved in the committee. The idea is to have young people work closely together with experienced members in the roles mentioned above. If you are interested, please send your CV and a short application (half a page) stating why you are interested to join JCUD and in which role you are interested to david.mccarthy@qut.edu.au (chair) and manfred.kleidorfer@uibk.ac.at (secretary). Applications are always possible.

Best regards,

Manfred Kleidorfer

JCUD secretary

JCUD MANAGEMENT COMMITTEE: Call for NEW member nominations

The Management Committee of the IWA/IAHR Joint Committee on Urban Drainage (JCUD) will have 4 vacancies later this year and is looking for a possible replacement as a part of continuous revitalization of the Committee. Details follow below.

Job description: all members operate in their own way and contribute accordingly. Typical contributions include proposing to organize workshops/conferences and training courses (usually in collaboration with our working groups), organizing or contributing to publications (monographs, or journal review papers), contributing news from their country or region to the Committee's annual newsletter, participating in email discussions, attending JC meetings held annually in conjunction with drainage conferences, and promoting JC activities and visibility in general.

Qualifications: we are looking for colleagues actively involved in any aspect and sector of urban drainage. However, perhaps the most important qualification is having some time to devote to the committee activities and personal initiative in proposing and implementing new activities. One reason why our Committee has been successful in its more than 35 years of operation is our ability to attract highly motivated members to serve on the Committee. The elected candidates must be (or become, within one month of being elected) members of one of the parental organizations (IAHR or IWA), and our statutes allow only one member per country; if your country is already represented on the committee, you may have to wait till there is a vacancy, or even better, simply join in the meantime one of our working groups and start contributing to our efforts that way. The information on Joint Committee and the current membership can be found on our website: www.jcud.org.

Application procedure: you can either nominate yourself for JCUD membership, or you can nominate another person (ideally after establishing their willingness to serve, otherwise this will have to be done by JCUD), and submit electronically the following two documents to the current JC Chairman, Dr David McCarthy (david.mccarthy@monash.edu), copied to JC secretary Manfred Kleidorfer (Manfred.Kleidorfer@uibk.ac.at): (a) A brief CV, and (b) a statement of activities you would like to contribute to the JC program. Neither document must exceed one page, using a 10-point font or larger.

Deadline: 19th May 2024: The applications received will be distributed to the JCUD members for assessment and voting; the results will be announced after the JC meeting at 9th June 2024

Upcoming Event Announcements



ICUD 2024 | <https://icud2024.org/>

It is a great pleasure and honour to invite you to the 16th International Conference on Urban Drainage (ICUD), to be held June 10-14 2024 in Delft, the Netherlands.

The conference will be held at the heart of the Delft University of Technology, with its long history of water engineering. Situated in the historic city of Delft, where water related issues have always been at the forefront and have left their mark on the landscape and urban design. An intricate network of canals, pumps and weirs control the water levels to ensure rainfall is dealt with without running a risk of flooding, whilst providing opportunities for leisure.

Recognised as the most important international event in the field of urban drainage, the ICUD is held in different parts of the world by groups of active researchers, selected and designated by the ICUD after a competitive assessment of submitted proposals. During the pandemic, the ICUD was held online to keep the long tradition of exchanging the latest research in the field of urban drainage going. In 2024, the conference will be held in-person again in the city of Delft, the Netherlands.

At every ICUD, distinguished guests are invited to present their vision on aspects of the field of urban drainage. We are very proud to announce the following five speakers that will give their keynotes at ICUD 2024: Prof. Dr. Jean-Luc Bertrand-Krajewski, Wendy Francken, Prof. Dr. David McCarthy, Dr. Lena Mutzner and Prof. Dr. Michael Templeton. The speakers and their respective keynote topics can be found below.

The ICUD conference aims to present the latest advances and innovations in fundamental and applied research on urban drainage, considering the themes of metrology, hydrology, hydraulics, water quality and socio-economics. Among its specific interests are urban water quality, in-sewer processes, stormwater management, modelling and control, and asset management. The ICUD strives to maintain its long-standing broad international recognition as a prominent platform for the advancement of scientific knowledge in the field of urban drainage. It considers these activities in the wider context of urban water systems, with the ambition of developing and promoting a sustainable and integrated urban water management.

Urban Drainage Modelling Conference

The Urban Drainage Modelling Conference (UDM) series is a prestigious event organized by the International Working Group on Data and Models, under the IWA / IAHR Joint Committee on Urban Drainage. Since its inception in 1986 in Dubrovnik, former Yugoslavia, the UDM conference has become a global platform, rotating locations across the world including the River Volga, London, Orlando, Dresden, Melbourne, Tokyo, Belgrade, Québec, Palermo, and Costa Mesa.

The 13th iteration of the conference is scheduled for September 15-19, 2025, in Innsbruck, Austria. It will be organized by Manfred Kleidorfer, Wolfgang Rauch, and Robert Sitzenfrei. The conference will cover a broad range of topics related to the modeling of centralized and decentralized urban drainage systems, from traditional pipe networks to innovative blue-green infrastructure, and the digitalization of urban water systems. The call for abstracts is expected to open in mid-2024.

For the latest updates, interested participants and contributors are encouraged to visit the conference website at www.udm2025.org and subscribe to the newsletter. Companies interested in sponsorship opportunities or exhibiting their products and innovations at the conference are invited to reach out via contact@udm2025.org for more information.

17th International Conference on Urban Drainage (ICUD) in 2027 in Ningbo, China

We are pleased to announce that the 17th International Conference on Urban Drainage will be held in Ningbo, China in the summer of 2027.

The proposed theme “For a Green and Sustainable Future” will primarily focus on future approaches and solutions to urban drainage encompassing a broad range of topics with specific attention on sustainable urban development and planning. The conference’s local organizers will be Ningbo University, Tsinghua University, Zhejiang University, and Tongji University. The conference chairs are Dr. David Z. Zhu (Ningbo U. / U. Alberta), Dr. Haifeng Jia (Tsinghua U.), and Dr. Jean-Luc Bertrand-Krajewski (INSA Lyon, France). The chairs of the International Scientific Committee are Dr. Joseph Lee (IAHR President), and Dr. Zhiguo Yuan (Hong Kong City U.). They are world leading researchers on urban drainage with very strong connection to both IWA and IAHR.

Tentative themes for the conference are: Sponge City and Low Impact Development, Drainage System Assessment and Modernization, Climate Adaptation and Resilient Infrastructure, Urban River Water Ecology and Environment. Special topics include Water Energy Nexus, Digital Sewer Management, Integrated Management of Sewers, WWTP and Receiving Water.

Conference key members Dr. David Zhu, Dr. Haifeng Jia, Dr. Jean-Luc Bertrand-Krajewski and Dr. Zhiguo Yuan got together in Oct. 19-22, 2023, during the 3rd International Symposium on Sustainable Urban Drainage in Jiashan, China. The preparation for the 2027 ICUD in Ningbo was discussed among the local organizing committees. More meetings will be scheduled for further discussion. The official website, social medias, conference logo, and detailed information of the 2027 ICUD will be available on the 16th ICUD in Delft. Suggestions or communications with us on the 2027 ICUD is sincerely appreciated.

If you have any suggestions on the 2027 ICUD, or would like to get involved in organizing this important event, please feel free to contact us at: dzhu@ualberta.ca (David Zhu) or qianyu@nbu.edu.cn (Yu Qian).

We are looking forward to seeing you in Ningbo in 2027!





18th International IWA Conference on Wetlands systems for Water Pollution Control

Pascal Molle, INRAE, France

The 18th International Conference on Wetland System for Water Pollution Control (ICWS2024) will take place in Fort-de-France, Martinique from November 24th to 29th 2024. This conference is part of the IWA Specialist Group “Wetland Systems for Water Pollution Control” conference series. It will create a framework for treatment wetland scientists and practitioners to exchange knowledge and advance the overall understanding of those treatment systems. The goal is as well to improve collaboration and experience sharing with the Caribbean region, and Latin America more globally, where interest and research are growing more and more. The conference topics cover many aspects from wetland design optimisation for climate adaptation to water reuse, resource recovery, co-benefits and also include a focus on wetlands (and other NBS) for urban water management (detailed topics [here](#)).

Key dates



Reports from 2023 Events

Learnings from the Novatech 2023 Conference



Organised by the GRAIE, the OTHU and the Metropole de Lyon, the Novatech international conference plays host to the latest innovations in urban water management (and particularly stormwater management), from assets and solutions based on nature to strategies for water-wise territories.

The 11th Novatech event attracted 610 registrants during the week of 3 to 7 July 2023 in Lyon, France.

The conference offered:

- 4 parallel sessions over 3 days + poster sessions, bringing together more than 210 papers
- workshops the first day to explore specific topics in greater depth and bring the different scientific and practitioner communities together.
- field visits the last day, greatly appreciated by international participants, to see what is being done in France, and to give people new inspirations and ideas to bring back home.
- some first-time innovations with poster sessions dedicated to “early progress” projects and a special session on training, pedagogy and teaching (feedback on these from participants was very positive).

A few figures to illustrate the diversity and representativeness of the participants: 610 registrants from 270 organisations; 1/3 international (28 nationalities); 45% international scientists and 55% operational (mainly French). And a new audience: 2/3 of people were attending the conference for the first time and 1/6 of participants were young professionals and researchers.

Themes

This edition of Novatech provided leading-edge knowledge on the following topics:

1. The state of the art in stormwater management at source and nature-based solutions (evapotranspiration, filtration, degradation, role of soil and vegetation).
2. Management and operation of facilities, with a focus on the specific features of certain techniques (rain trees, green roofs, porous pavements) or problems encountered in the field (salt, sediment trapping, micropollutants, vegetation, etc.).
3. Approaches at the scale of the wastewater treatment system or catchment area and the effectiveness of solutions at source in preserving the resource and reducing the impact on receiving environments.
4. The challenges we face in adapting and the enablers we can use to accelerate change in terms of organisation, perceptions, mobilisation, and regulation.



Key findings

The challenge for Novatech is to develop our practices for the sustainable and integrated management of urban water, particularly stormwater. This year's conference provided an opportunity to share inspiring feedback and enlightening research results from around the world, with a view to identifying solutions that will enable us to act.

In addition to the technical aspects, there were four fundamental levers for action identified:

1. **The dissemination and transfer of knowledge.** There is a great deal of knowledge out there, but it is drowned out by a flood (forgive the pun!) of information that is often pessimistic and casts doubt on the word of scientists. We need to communicate better!
2. **Nature in the city.** There is a strong public desire for nature in the city, the essential benefits of which go far beyond our hydrological issues. Trees are becoming a catalyst, particularly for the younger generation. It's time to make the most of it!
3. **We need to mobilise everyone** in a constructive dynamic, drawing on collective intelligence, initiative, and entrepreneurship to overcome the inertia associated with doubt. We need to take risks, dare to innovate.
4. **Public action, supported by a government and elected representatives** who have a vision and share it with the public, by institutions that provide financial support for the paradigm shift, and by departments equipped with the skills and tools to implement this change.

The solutions for integrated, sustainable stormwater management in cities exist, and have been validated and constantly improved through research work. We need now to move on to action, and we need researchers to help us do so!

Find the programme on the conference website: <https://www.novatech2023.org/en/index>

All papers (abstracts and ppt presentations) are available here: <https://vu.fr/tMGpn>

We hope to see you in July 2026 in Lyon!

Elodie Brelot, executive director of the Graie, General secretary of Novatech Conferences
Frédéric Cherqui, Université Lyon 1, INSA Lyon, France & Honorary Senior Fellow, University of Melbourne, Australia
& Tim Fletcher, Professor, University of Melbourne, Australia
Co-presidents of the scientific committee of Novatech conferences

40th IAHR Congress

[Full report here](#)

As part of the Vienna Water Conferences 2023, the 40th IAHR World Congress was hosted from 21 to 25 August 2023 in Vienna. Thereby the conference focused on "Rivers - Connecting Mountains and Coasts". Simultaneously the 5th World's Large Rivers Conference and the 30th Danube Conference took place.

The usually bi-annual IAHR World Congress in Vienna took place only one year after a very successful Granada conference, which was postponed due to the COVID-19 pandemic. In Vienna, participants from countries that had experienced travel restrictions until recently were able to join. A total of 1367 attendees from 98 countries were present. The Congress received 1284 abstract submissions, ultimately leading to the selection of 976 oral presentations and 117 poster presentations. Additionally, 274

participants attended the lectures. The gender distribution among the attendees was 77% men and 23% women.

The congress program comprised 148 technical and special sessions, four High-Level Panels (HLPs), four Industry Stream Events, and two master classes. Seven keynote lectures on diverse topics enriched the program ranging from “Large Rivers and Humans” over “Machine learning for earth and climate sciences” to “Climate change impacts on African Hydro-environment

Prior to the congress, two master classes focused on the theme of fluid mechanics as well as small- and large-scale experiments, setting the stage for subsequent discussions. The HLPs featured experts from both research and practice, addressing issues related to rivers, ecohydraulics, digital twins, and Africa. The central theme of the congress was reflected in the HLP on Tuesday (“Rivers - Connecting Mountains and Coasts”), emphasizing the integration of river use and protection. This theme aimed to place rivers at the forefront of discussions, focusing on their current status, future outlook, and strategies for sustainable use and ecosystem services enhancement. This alignment was reinforced by four special sessions on Nature-based Solutions (NbS).

The Vienna Industry Stream Events (VISE) sessions, initially introduced as Granada Industry Stream Events (GISE) the year before, facilitated an interdisciplinary dialogue by bringing together professionals from science, industry, practice, and non-governmental organizations. One VISE session was dedicated to “River restoration and sustainable development”. A special session co-chaired with INBO explored climate change, transboundary river systems, and the connectivity of rivers. The other HLPs centered around themes such as “Ecohydraulics”, “Digital Twins of River Basins”, and “Africa”, while the other three VISE sessions addressed topics such as “Smart technology adaptation in urban water systems for climate resilience”, “Sustainable hydropower”, and “Computational fluid dynamics for water infrastructure”

The technical sessions at the congress covered a wide spectrum of topics:

- River research and management
- Deltas and coastal engineering
- Sediment transport and morphodynamics
- Integrated management of extremes, climate change
- Environment and society
- Urban water and water industry
- Hydraulic engineering and water management
- Computational and experimental methods

In looking at the actual problems for hydro-environmental research and engineering, innovation was recognized as vital, and large-scale physical models were identified as essential tools for improving understanding in domains such as hydrodynamics, sediment transport, morphodynamics, and ecohydraulics.

This congress marked the first in-person meeting after a long period of virtual interactions due to the COVID-19 pandemic. Therefore, social interactions and networking opportunities were pivotal to the success of the event, beginning with the icebreaker welcome reception on Monday, 21 August, at Vienna’s city hall.

4th IAHR Young Water Professionals Congress

[Full report here](#)

The [4th edition of the IAHR YP Congress](#) took place online between Wednesday 22 and Friday 24 of November, 2023.

During these three days, more than 100 posters were presented by young professionals from all over the world, and discussed together with experts and peers.

The Congress was opened by a keynote lecture given by Ehsan Foroumandi on "[Bridging Large Language Models and Earth Sciences: The Dawn of ChatGPT Era](#)", a young professional has shown not only his expertise despite the "young academic age", but also that the YP Congress might be a good opportunity to showcase the work of young scholars.

Over the three days, twelve technical sessions address all IAHR themes, pointing out the interest of the young generation in all water-related topics, spanning from fluid mechanics to hydraulic structures and climate change adaptation. The sessions were chaired by experts coming from both [IAHR Technical Committees](#) and Congress Supporters, a mix of practitioners and scientists that not only mentored the young speakers, but also suggested new ways for collaborating to eventually increase the impact of the YP research and the IAHR community as a whole.

A few highlights of the Congress were

- the constant interactions between speakers and chairs, with speakers sometimes asking questions to expert chairs, to clarify their research questions or to eventually connect to foster future collaborations
- the international character of the Congress, with speakers, chairs and attendees from all over the world, which shown the potentiality of IAHR in connecting people worldwide
- the mixed audience, which was composed of both young researchers and recognized experts, which indicates the interest that seniors have in the studies performed by the younger colleagues, which might eventually result in trans-generational collaborations

Looking at the numbers (130+ submitted abstract, 900+ registrations), the YP Congress proved, once again, to be a key part of IAHR online activities, also because it reaches less developed countries and allow presenters to showcase their work in a more relaxed and friendly manner.

Mixing Processes in Pipes, Sewers & the Natural Environment from Theory to Practice: Workshop Summary

Hosted by the University of Sheffield on 18th & 19th April 2023, and supported by the EPSRC (EP/P012027/1) and IAHR, this workshop was organised by Professor Ian Guymer to bring together researchers, environmental regulators, engineering consultants and water utilities, to hear the latest international research on mixing processes. The workshop was a great success with over 50 people attending the in-person talks each day.

Predicting water quality processes, together with their human and ecological impact, is a major challenge and requires an understanding of mixing processes. In total, 22 presentations from 10 countries, were delivered, highlighting recent advances, and generating robust discussions. Day 1 focussed on mixing in pipes and urban drainage systems, whilst talks on day 2 focussed on environmental flows. Breaks between sessions fostered several useful discussions about the many challenges facing the water industry. At the end of each day, attendees were invited to visit the University of Sheffield's water laboratory facilities.



The presentations are available online:

- Recordings: <https://www.sheffield.ac.uk/mixing-studies/outreach/2023-meeting-summary>
- Slides: <https://doi.org/10.15131/shef.data.23641491>

For details on Mixing Studies at the University of Sheffield, see: <https://www.sheffield.ac.uk/mixing-studies>.

Young Researcher Profiles

This is a new section of the newsletter to recognise upcoming leaders in the Urban Drainage field. Check out the profiles of these folks who are currently or have recently completed their PhDs, and send them a virtual kudos!

Dr. Kelsey Smyth

Doctor of Philosophy, Civil and Mineral Engineering, University of Toronto

Thesis Title: Microplastics Characterization in Stormwater: Pavement Source Evaluation and Treatment Efficiency of a Bioretention Cell

Supervisors: Jennifer Drake and Elodie Passeport

Submission Date: Dec 1, 2023

Abstract: Due to the widespread use of plastic in numerous disciplines, microplastics, a suite of environmental contaminants, are found globally in increasingly large quantities. It is important to characterize all microplastics sources and pathways to better identify solutions that reduce their presence and mitigate their spread in the environment. This thesis had three main objectives: (i) to characterize microplastics in urban stormwater runoff; (ii) to evaluate a bioretention cell's efficiency to remove microplastics from urban stormwater runoff; and (iii) to review the ability of stormwater engineering tools and porous media models to evaluate microplastic removal from stormwater. In characterizing microplastics in stormwater, evaluating their capture via a bioretention cell, and investigating the capacity to model these systems, this thesis supports planning strategies and policies that reduce microplastics production and mitigate their spread in urban stormwater.

Dr. Hafiz Muhammad Abd-Ur-Rehman

Doctor of Philosophy, Civil & Environmental Engineering, University of New South Wales (UNSW)

Thesis Title: Removal of xenobiotic organic compounds from greywater using green walls

Supervisors: Dr Kefeng Zhang (UNSW Sydney, Australia), Ana Deletic (Queensland University of Technology, Australia), Veljko Prodanovic (UNSW Sydney, Australia)

Submission date: 10 Jan 2024

Abstract: The upsurge in urbanization and population growth has intensified the stress on our freshwater supplies, underscoring the demand for decentralized wastewater treatment and recycling. In this context, green walls can offer an aesthetically pleasing method for on-site greywater treatment and reuse in urban areas, providing multiple environmental benefits such as cooling, improved air quality, and biodiversity. However, green walls need to be engineered for removing emerging contaminants from greywater, such as Xenobiotic Organic Compounds (XOCs). These compounds are prevalent in greywater due to the extensive use of household chemicals, such as cleaning products, dyes, detergents, and personal care products and are associated with adverse ecological and health risks. Therefore, this research aims to optimize green walls for XOCs removal, thereby facilitating its use as a decentralized greywater treatment system in urban landscapes.

Angelina Coelho

Doctor of Philosophy, University of Waikato, NIWA (New Zealand)

Thesis Title: Nature Based Solutions and Water Sensitive Urban Design for protecting, enhancing and restoring waterway's wellbeing

Supervisors/advisors: Associate Professor Silvia Serrao-Neumann, Dr Xinyu Fu, Dr Lucy McKergow

Submission date: November, 2025

Abstract: The Water Sensitive City (WSC) paradigm stresses that cities should function as water supply catchments, provide ecosystem services, and comprise water sensitive communities. Aligned with the WSC, the Water Sensitive Urban Design (WSUD) uses nature-based solutions, such as constructed wetlands to prevent urban stream pollution and provide or restore other ecosystem services. This research addresses two knowledge gaps around the WSC paradigm in New Zealand: 1) there's no baseline understanding of the public's literacy on WSUD (water sensitive communities), and 2) there's no consistent scientific evidence on whether constructed wetlands can provide the cooling effect of stormwater (ecosystem services) provided by vegetated areas. A national survey with over 500 respondents collected information about water knowledge, actions, and attitudes to protect the health and well-being of waterways, and water management technologies, to infer WSUD literacy. Case studies in Hamilton are being developed to evaluate if constructed wetlands can effectively reduce the temperature of urban stormwater. Both WSUD literacy and case studies results will be discussed with professionals from the public and private sectors to explore how land use and urban stormwater policies can be improved to protect, enhance, and restore the water quality of urban streams.

Dr. Dingkun Yin

Doctor of Philosophy, Tsinghua University

Supervisor: Dr. Haifeng Jia, Prof.

Thesis Title: Assessment and Optimization on Urban Flood Resilience of Green-Grey-Blue Facility

Submission date: December 2023

Abstract: This study, takes Tongzhou District, Beijing, China as the research area, establishes a three-dimensional urban flood resilience evaluation system based on risk-resistance-recovery and develops a comprehensive flood model at the urban scale, and proposes a calculation method for the urban flood resilience index. The results showed that 54.5% of the total area in the study area have a high and relatively high flood resilience while 23.7% with medium flood resilience and 21.8% with the flood resilience below medium level. The overall region belongs to a moderate level of flood resilience. The synergistic effect of the IGGB system on flood resilience indicates that its synergistic effect is mainly reflected in the improvement of resistance and recovery levels, with different indicator values increasing by 3.6%-525.5%. Among them, the storage capacity, average total runoff discharge, and average drainage time are the most sensitive indicators of the synergistic effect. Green facilities mainly reduce regional landscape vulnerability by adjusting the spatial pattern of the blue-green landscape to improve the flood resilience of the IGGB system. After optimization through green, grey and blue measures, the urban flood resilience has increased by 1.8 to 2.1 times compared to the baseline scenario. Considering the long-term uncertainty conditions of urban development and climate change, it is shown that the flood resilience without the establishment of green infrastructure scenarios decreases by 20.8%, while the reduction in the establishment of green infrastructure construction scenarios is 8.9%-16.9%. Among them, the marginal cost of the high proportion green infrastructure scheme fluctuates the least, with an increase of only 17.5%, which is more stable. It should be used as a resilient adaptive scheme for urban

flood resilience under long-term uncertainty. This study can provide methodological support for reasonable evaluation of urban flood resilience and guidance for the construction of urban resilience.

Working Group Reports

During 2023 the JCUD has carried out a review of all the working groups. As a result, some of the working groups which were no longer active have been closed down or are in the process of a 'rebirth'. We have one brand new working group on Emerging Contaminants, and more new working groups are currently being formed.

To create a streamlined and transparent process of maintaining a vibrant and dynamic set of active working groups, the JCUD has created a 'JCUD working groups good practice' document, which is shown at the end of this section. We have reports from several working groups (below), and the list of active working groups and contacts of leadership for those working groups is shown following the reports. If you are part of a working group and have not been in touch with us, please contact the chair and secretary of JCUD with your information.

Call for new working groups!

People interested in creating a new working group under the JCUD, on topics not covered by existing WGs (see [here](#) for the list of existing WGs), are welcome to contact the JCUD to discuss such an initiative (JC Chairman, Dr David McCarthy (david.mccarthy@qut.edu.au), copied to JC secretary Dr Manfred Kleidorfer (Manfred.Kleidorfer@uibk.ac.at).

Rebirth of WSUD/SuDS/BMP/Blue-green/sponge-cities [Name in Progress]

For anyone who is interested in joining the new working group in the area of 'WSUD/SuDS/BMP/Blue-green/sponge-cities...' which is currently in the process of rebirth, following from the closed down of WSUD/SOCOMA and Stormwater Harvesting working groups, please contact **Peter Marcus Bach** and **Luis Angel Sanudo Fontaneda** (peter.bach@ost.ch and sanudoluis@uniovi.es).

Introducing JCUD's New Working Group: Emerging Contaminants

We are delighted to announce the establishment of the "International Working Group on Emerging Contaminants" within JCUD. This dedicated group aims to address the challenges posed by emerging contaminants, including organic chemicals and microplastics/nanoparticles, in urban water systems.

Motivation and Objectives:

The working group is committed to facilitating the exchange of research results, knowledge, data, and guidelines related to emerging contaminants. It will focus on key research areas such as pollutant characterization, monitoring, pollutant sources, management and treatment, as well as environmental and health risk assessment.

Planned Activities 2023-2025:

- Building an active working group (first meeting at ICUD 2024).
- Developing a white paper based on the Novatech 2023 workshop (shared at ICUD 2024).
- Defining and agreeing on a common database for open-access urban water quality data.
- Initiating a webinar series, featuring 2-3 presentations annually on selected topics.

We invite all interested JCUD members to actively participate in our working group and contribute to collective efforts in understanding and addressing emerging contaminants in urban water systems. For

more information and to join the working group, please contact chair Dr. Lena Mutzner (Lena.Mutzner@eawag.ch) or secretary Dr. Kefeng Zhang (Kefeng.zhang@unsw.edu.au).

We look forward to collaborating with you and making significant strides in advancing research and knowledge on emerging contaminants.

International Working Group on Urban Streams

Welcome from the new co-chairs, Prof. Haifeng JIA (Tsinghua University, China) and Prof. Hyunook KIM (University of Seoul, Korea)

It is expected that about the portion of the global population living in the urban environment will reach 70 % by 2050. This rapid urbanization will impact many urban drainages and exacerbate environmental problems. We will face water pollution and ecologic degradation in urban streams as one of the most serious urban problems. However, in different cities, the challenges differ. Despite considerable conservation efforts, many urban streams are still heavily polluted. Improving the water quality, ecologic health, biodiversity and aesthetics of urban streams should be a worldwide priority.

The International Working Group on Urban Streams (IWGUS) aims to promote joint research and academic exchange among the JCUD community. This includes the dissemination of knowledge and technology related to urban stream restoration, including urban watershed environmental planning and management, urban runoff control, and LID BMPs.

IWGUS is open to all the experts and professionals practicing in urban-stream-related fields. Several distinguished senior professors will be invited and act as advisors, along with many active mid-career experts that will contribute to the main body of this working group. Many young scholars or PhD students will also be recruited as volunteers. The diverse expertise, roles and responsibilities of various individuals within the group is key to contributing to the success in achieving the goals of the working group.

All experts and young professionals are welcome to JOIN and CONTRIBUTE to IWGUS !

Please contact: Haifeng JIA (jhf@tsinghua.edu.cn) and Hyunook KIM (h_kim@uos.ac.kr) to get involved.

International Group on Urban Rainfall

IGUR Annual Meeting 2023

The annual meeting of the IGUR in 2023, took place during the UrbanRain workshop in Pontresina, Switzerland on 30 November 2023 as a partially hybrid event. The next annual meeting is scheduled to be held at ICUD in Delft, The Netherlands (9 to 14 June 2024).

IGUR activities

The IGUR has decided to start several initiatives with the help of three working subgroups:

1. Planned IGUR publication on Rainfall-related Consequences of Climate Change on Applications for the Urban Population

A call for contributions has been published, and a structure for this publication is being defined during the coming months. This is coordinated by Simon Beecham (University of South Australia).

2. State-of-the-Art publication on Climate data for the urban drainage community

A subgroup headed by Vincent Pons (NTNU Trondheim) and Lauren Cook (EAWAG) wants to focus on the adequate data preparation from climate models in order to have a state-of-the-art document and project support so that further work can concentrate on climate model run consequences. Today, they argued that there is not enough guidance on how to use such model results for urban hydrological applications.

3. IGUR internal statutes

A third subgroup is concerned with the update of the IGUR statutes which were formulated before the year 2000 and need to be modernised. This subgroup is coordinated by Thomas Einfalt.

Activities with participation of IGUR members

○ OPENSENSE

On the initiative of Czech Technical University CTU, the OPENSENSE COST action on opportunistic precipitation measurements has started in August 2021 (<https://www.cost.eu/actions/CA20136/>, chairman: Vojtech Bares). Objectives are to make data from different sources and devices openly available and to maintain a comparable quality standard.

○ WMO JET OWR: Radar Best Practices Guide

The WMO JET OWR (Joint Expert Team on Operational Weather Radar) has produced the radar best practice guide (BPG) and published parts of it in 2023, the remaining chapters are going to be public in 2024. Details can be found at <https://community.wmo.int/en/activity-areas/imop/wmo-no.8/radar-best-practices-guide>

○ WMO RCP Paris 2024 Olympics

This large-scale Research Demonstration Project (https://www.umr-cnrm.fr/RDP_Paris2024/?page=home) focuses on the 2024 Olympic Games in Paris, and in particular on the prospect of future weather forecasting systems at 100m (or finer) resolution for urban areas. The X-band radar of ENPC and related developments will be involved

○ EU LIFE IP ARTISAN: “Achieving Resiliency by Triggering Implementation of nature-based Solutions for climate Adaptation at a National scale »

The overall ambition of this LIFE IP project (2019-2027, 16,657,712 €, <https://webgate.ec.europa.eu/life/publicWebsite/project/LIFE18-IPC-FR-000007/achieving-resiliency-by-triggering-implementation-of-nature-basedsolutions-for-climate-adaptation-at-a-national-scale>) is to increase the resilience of the country to climate change, by reinforcing French national adaptation to the impacts of climate change. To this end, the project will seek to generalise the use of nature-based solutions wherever appropriate by 2030, in particular in urban systems. A large part of the projects bears on training, coordinated by ENPC.

IGUR website : the website <https://igur.org> is being maintained and developed by Martin Fencel (CTU Prague).

UrbanRain23 workshop

The UrbanRain workshops are a series of workshops initiated by Boris Sevruk (Switzerland) and Janusz Niemczynowicz (Sweden) in 1989 in order to bring together meteorologists and hydrologists and have them discuss on precipitation. The latest edition in December 2023 was co-organized by ETH Zürich with a small contribution by IGUR, but a large participation of IGUR members. It had about 80 participants with about 35 presentations and 30 posters.

Main, recurring topics were:

- Measurements by non-standard instruments (both, point devices and commercial microwave links)
- Quality of measurements
- Nowcasting and uncertainty
- Extremes
- Application of AI techniques
- Various methods of space-time downscaling (e.g. cascade processes), for measurements and for modelling
- Applications of climate change adaptation techniques, and
- Understanding of urban effects and climate effects as seen in measured precipitation data.

All abstracts are available at <https://urbanrain.ethz.ch/program.html>.

Future: The current local organisers Peter Molnar and Paolo Burlando of ETH Zürich will not be available any more for the next editions of UrbanRain. Therefore, an adhoc meeting of relevant Swiss institutions was held and they concluded: Uni Lausanne, Meteoswiss, ETH, EAWAG, EPFL have teamed up as a new working group for the organisation of next UrbanRain. The next edition will be chaired by EAWAG (Joao Leitao and Jörg Rieckermann).

International Working Group on Data & Models (IWGDM)

Written by: João P. Leitão

The topic of data and data sharing was a key topic discussed during 2023. The main IWGDM activities that took place in 2023:

Two workshops took place on 3rd July 2023 during [Novatech 2023](#) (Lyon, France):

Workshop on Urban wet-weather flows: Designing the water quality monitoring of the future was organised by Lena Mutzner (lana.mutzner@eawag.ch | Eawag, Switzerland) and Luca Vezzaro (luve@dtu.dk | DTU, Denmark). Despite extensive efforts over the years, we face a significant data gap in understanding water quality in urban wet-weather flows. The workshop aimed to identify challenges and solutions associated with monitoring urban water quality. The 45 participants discussed three areas: 1) Drivers: Legislation, 2) Issues: Data, and 3) Opportunities: emerging technologies. Topics were supported by introductory presentations: Example of legislation in the UK: Alma Schellart, Future EU legislation and its implementation in Denmark: Luca Vezzaro, Data collection challenges: Kefeng Zhang, How to organise a harmonized urban monitoring: Rodriguez Fabrice, Open Sensors: Dave McCarthy. In

the synthesis, the challenges of monitoring urban water flow and how to move forward were identified, which is foreseen to be published.

Workshop on [Fast models for urban flood simulations: future perspectives in the era of ubiquitous data](#) was organised by João P. Leitão (joaopaulo.leitao@eawag.ch | Eawag, Switzerland) and Peter Bach (peter.bach@ost.ch | OST, Switzerland). This workshop aimed at discussing various applications of numerical models for flood simulations in urban areas and the impacts of data availability and opportunities to share flood data to (i) increase the use of such models and (ii) facilitate the share of data, results and also modelling experiences among researchers and also practitioners. We would like to thank all participants (approx, 40 participants) and in special Antonio Viguera-Rodríguez (aviguera.rodriguez@upct.es | UPCT, Spain) for his excellent presentation and engagement during the workshop.

During Novatech 2023, the members of the IWGDM attending the conference (approx. 15) got together to discuss recent data and modelling experiences and challenges, including the aspects related to the need and benefits of developing a data sharing platform.

Real-Time Control Working Group (RTC)

We are excited to announce the re-invigoration of a working group dedicated to Real-Time Control (RTC), spearheaded by Dr. Matt Bartos and Dr. Baiqian (Luke) Shi as co-chairs, along with Dr. Job van der Werf serving as secretary. As passionate researchers in this field, they have been diligently gathering interest within their networks and are now preparing to officially launch the working group with a workshop at the upcoming ICUD conference.

The workshop will serve as a platform to delve into various aspects of RTC, including opportunities and developments in stormwater management, potential control strategies to achieve water quality objectives, and the fundamental technologies necessary for effective real-time control implementation.

If you share our enthusiasm for advancing RTC and are interested in joining this dynamic working group, collaborating with Matt, Baiqian, Job, and other experts in the field, we encourage you to reach out to Luke (baiqian.shi@monash.edu) for further details on how to get involved.

Working Group on Urban Drainage Asset Management (UDAM)

UDAM: What is it? UDAM is an active working group of the Joint Committee on Urban Drainage, whose goal is to give a platform to everyone working on Urban Drainage Asset Management. Formed in 2018, it now gathers >60 members from 16 countries. If you want to participate join us on <https://form.jotform.co/udam/join>



UDAM members map

In February 2023, we organized the 8th EURO-SAM workshop in Luleå, Sweden. The event gathered 23 participants from Austria, Finland, France, Germany, Norway, the Netherlands, Sweden, Switzerland and UK and was a great opportunity to discuss the most advanced applied research in the field of urban drainage asset management. Few lessons learnt from the 2023 edition:

- The field of automatic sewer defect recognition and condition assessment is very promising: as data availability increases machine learning approaches are getting more and more accurate.
- Failure and condition modelling, from survival analysis to advanced machine-learning is still a growing field to support rehabilitation strategies. Improvements are being achieved in data management, at defect level, financial level, using hybrid approaches or understanding the causes of failure.
- Huge potential seems to lie in integrated asset management, mutualising rehabilitation needs between sewer, water and other urban infrastructures to optimize the total costs of rehab at city scale.
- Asset management of blue-green infrastructure is a promising field for the next few years. Is it possible (and necessary) to implement real-time asset tracking? How to monitor maintenance needs and get an overview of asset condition and annual investment needs? Many questions raised and surely a very relevant field for future research.



The 8th EURO-SAM workshop in Luleå, Sweden

2023 was also a very productive year with the preparation and finalization of the book on Urban Drainage Sewer Asset Management on behalf of the working group. The book editors are Frederic Cherqui, Francois Clemens-Meyer, Franz Tschekner-Gratl and Bert van Duin. It is now in the hand of IWA Publishing; stay tuned for more information soon! We use this opportunity to thank all authors for their priceless contribution. The book titled is “Asset Management of Urban Drainage systems - If anything exciting happens, we’ve done it wrong!” and contains the following chapters:

- Chapter 1: Introduction to Urban Drainage Asset
- Chapter 2: Asset Management in a nutshell
- Chapter 3: Rules and Regulations
- Chapter 4: Investigate the condition of an asset
- Chapter 5: Deterioration processes and modelling in Urban Drainage systems
- Chapter 6: From condition-based to service-based strategies
- Chapter 7: Decision-making in Urban Drainage Asset Management
- Chapter 8: Data management and quality control
- Chapter 9: Operation, Maintenance and Rehabilitation techniques

Finally, we are very glad to invite to join our next EURO-SAM workshop that will be held on September 17th and 18th 2024 in Sheffield, UK, kindly hosted by the University of Sheffield. As always, this 2-day workshop aims to gather European researchers working on the topic of Sewer Asset Management in order to share recent research results and to facilitate collaborations. The workshop is free of charge and open to any researcher. Don’t hesitate to forward the invitation to your colleagues and network; info and registration here

<https://udam.home.blog/euro-sam-2024/>

See you soon !

Nicolas Caradot (chair) from KWB Berlin,
Frédéric Cherqui (vice-chair) from INSA Lyon / University Lyon 1, University of Melbourne
Franz Tschekner-Gratl (secretary) from NTNU Trondheim,
Nathalie Hernandez (secretary) from STEIN Infrastructure Management GmbH

JCUD working groups: how they work & best practices

The IWA/IAHR Joint Committee of Urban Drainage (JCUD) aims for a vibrant and dynamic set of active working groups. The JCUD appreciates that each working group will have their own ways of working suitable to their scope and aims, however, from years of experience the JCUD has gathered examples of good practice. General good practice that the JCUD would expect all their working groups to follow is described below.

Vision and mission. Each working group has its own purpose and goals, and so the activities they take on will vary. Typical activities include: international workshops, webinars, conferences, joint publications such as conference papers, white papers or books.

Chair and secretary. Each working group shall appoint a chair and a secretary for a 3-year period. After the 3 year period, a new chair and a new secretary should be sought. For continuity, the secretary may be appointed as the new chair, however everybody can apply. We expect the chair and secretary to work in different countries. Working groups may also wish to appoint a co-chair and a co-secretary, which may help with attendance of, and visibility in conferences. New appointments should follow a democratic process, with consideration of past chair/secretary geographies and gender.

Reporting. Each working group is to provide a brief summary of their activities and any key developments in their field to the yearly JCUD newsletter, as well as advertise their activities on IWAconnect+ and through the urban drainage mailing list.

Annual meetings. It is expected that each working group has at least one annual meeting (suggested to be held at our flagship conferences: ICUD, Novatech, SPN and/or UDM). The group should make every effort to attend our main ICUD conference every three years, either to host a workshop, a special session or hold a meeting.

Duration. The working groups may be short-lived, come together for a specific aim and then dissolve, or, the working groups may be long standing. However, JCUD will go through a working group evaluation process every 3 years, whereby inactive working groups will be closed down. Inactivity might be defined as those WGs that do not regularly attend our flagship conferences, those that do not contribute to the newsletter, those that do not organise workshops or other events (such as webinars). JCUD can assist with advertisement and organisation of activities to 'regenerate'/'rejuvenate' working groups.

New working groups. To become a new working group, the chair and secretary (or advocate/champion) shall provide a half-page summary of their scope and aim to the JCUD, as well as a 100 words short description of their scope. This scope will be considered by the JCUD in their next meeting (which occurs roughly every 3 to 4 months). Once approved, the group will be listed on the JCUD's website working groups landing page (<https://jcup.org/89-2/>). The JCUD landing page can then link through to a working group's own platform (which could be e.g. a website, mailing list or social media), but we do not require each working group to have their own platform.

News from Related Organizations and Projects

Co-UDlabs Transnational Access to Urban Drainage research infrastructures

European researchers need effective and convenient access to the best research infrastructures in order to conduct research for the advancement of knowledge and technology. To make it possible, the European Commission provides funding to support transnational access to European research infrastructures, ensuring that these are open and accessible to all researchers in Europe and beyond. The objective is to ensure their optimal use and joint development from both academia and industry.

Through its [Transnational Access](#) Programme, [Co-UDlabs](#) has been providing free-of-charge access to its 17 research facilities to allow diverse groups to work collaboratively on key challenges of the urban drainage sector, aiding a faster and more effective uptake of innovative solutions. This was possible by opening three global calls for transnational access:

- The 1st TA call (October 2021-January 2023) awarded 13 projects from 10 countries with access to 10 Co-UDlabs facilities – [Read more](#)
- The 2nd TA call (July-October 2023) has selected 16 projects from 8 countries, which will gain access to 10 of Co-UDlabs' installations – [Read more](#)
- An express 3rd call, finally, was opened from December 15, 2023 to January 5, 2024, to allow all Co-UDlabs facilities to meet their requirements and engage all providers in the activities of the TA programme. Two new proposals are currently being evaluated by an independent panel of experts.

Access to the facilities will start in the next few weeks. Together, the three global TA calls will have given over 200 researchers, technicians, experts, and academics from more than 110 different institutions and 25 countries access to unique facilities to conduct innovative work on urban drainage and contribute to the establishment of a truly open large-infrastructure European network.

The projects selected for funding will work on sustainable urban drainage systems, assets, design, and processes. Co-UDlabs' TA programme covers all logistical, technological, training, and scientific support costs, including accommodation, travel, and sustenance costs for all user-group members that visit the facilities in person.


These projects are expected to foster international collaborations among researchers, practitioners, the industry, and local governments, with the objective of developing innovative solutions and technologies to allow existing UD to innovate for better facing current and future challenges such as increasing urbanization and climate change.

Useful links

Brochure on TA access: https://co-udlabs.eu/wp-content/uploads/2023/05/Brochure_TA_0905_low.pdf

Co-UDlabs video: <https://www.youtube.com/watch?v=KjgBKppROVk>

Sensors for Water Interest Group

 Join the water sensor community with the Sensors for Water Interest Group (SWIG). As a not-for-profit organisation, SWIG serves as a hub for information exchange, ideas generation, and networking within the water and process industries. Its diverse membership includes representatives from sensor manufacturers, distributors, academic institutions involved in sensor research, regulatory bodies, water utility companies, and consultants specialising in water management.

SWIG began as a UK initiative in 1993 with funding from the DTI Advanced Sensor Technology Transfer Programme. Whilst many of our members are based in the UK, we are actively looking to offer events that engage with a wider international community.

SWIG focuses on the application of sensors and related technologies for measurement and control in water and wastewater treatment processes, as well as in natural environments and waters. The group provides a collaborative platform that unites manufacturers, end-users, and researchers in the water sensor community.

SWIG's annual programme of workshops and biennial conference, Sensing in Water, explores practical applications and current challenges in measurement and control for water and wastewater. These events not only facilitate knowledge exchange but also foster collaboration and idea generation among stakeholders in the water sensor landscape. SWIG workshops are hybrid, allowing remote access. Members and attendees are also able to access information from events online.

SWIG actively encourages collaborations among those interested in sensor research, development, and usage for water quality and quantity measurements. For relevant grant-funded research, SWIG can provide a letter of support, facilitate connections with potential partners, and offer a renowned platform for dissemination.

To spotlight emerging talent, SWIG runs a biennial Early Career Researcher Competition, promoting technological developments and novel applications related to water measurements. This initiative aims to stimulate innovation in sensor research and commercial applications.

How to Join

Become a SWIG member and enjoy exclusive benefits, including discounted delegate rates at their events, special discounts with partner companies, regular e-newsletters, workshop announcements, and access to an online archive of past presentations. Connect with fellow enthusiasts on their LinkedIn page and stay in the loop. Whilst SWIG membership offers certain benefits, non-members are also able to attend SWIG events at a standard rate.

Get Involved

Join them at their upcoming events:

- 12th March 2024 @ Kingswood Golf & Country Club, Tadworth UK: "Sensing as a Service"
- 23rd April 2024 @ Online: "Global Webinar: Best Practice and Innovation in Water Sensing"

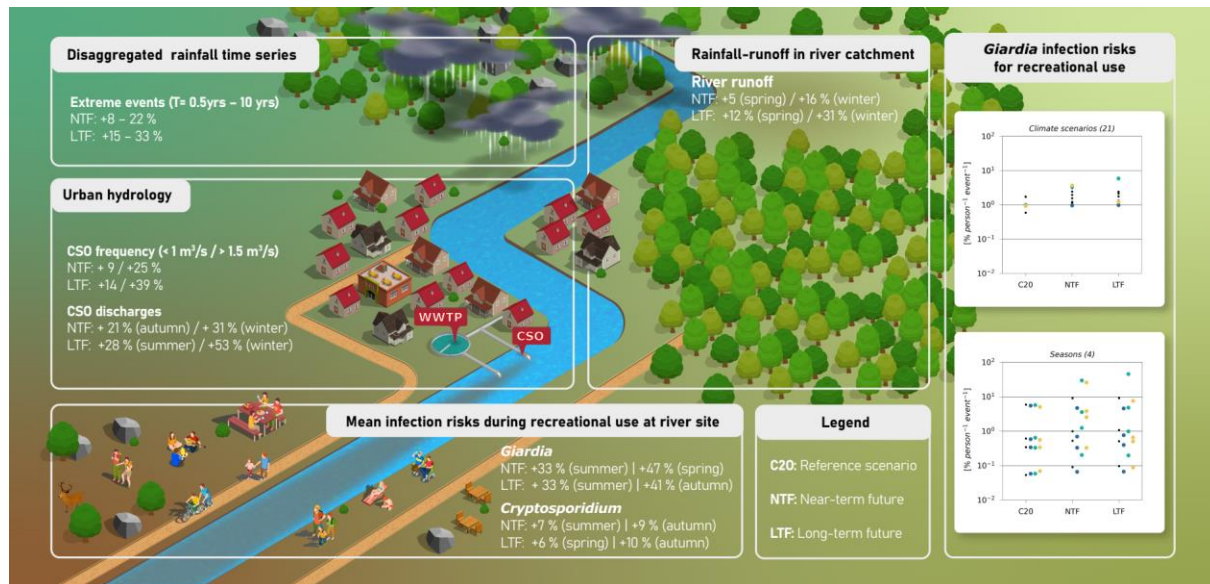
For more information, contact Hannah at info@swig.org.uk, visit the website at www.swig.org.uk or connect with [SWIG LinkedIn](#). Let's explore, collaborate, and innovate together with SWIG!

A probabilistic-deterministic approach for assessing climate change effects on infection risks downstream of sewage emissions from CSOs

by Derx & Müller-Thomy et al., Water Research 247, 120746, 2023

The discharge of pathogens into urban recreational water bodies during combined sewer overflows (CSOs) pose a potential threat for public health which may increase in the future due to climate change.

The aim of this study was to develop a novel probabilistic-deterministic modelling approach for this purpose building on physically plausible generated future rainfall time series. The approach consists of disaggregation and validation of daily precipitation time series from 21 regional climate models for a reference period (1971–2000, C20), a near-term future period (2021–2050, NTF) and a long-term future period (2071–2100, LTF) into sub-daily scale, and predicting the concentrations of enterococci and *Giardia* and *Cryptosporidium*, and infection risks during recreational use in the river downstream of the sewage emissions from CSOs. The approach was tested for an urban river catchment in Austria.



According to a worst-case scenario (i.e. children bathing in the river), the 95th percentile infection risks for *Giardia* and *Cryptosporidium* range from 0.08 % in winter to 8 % per person and exposure event in summer for C20. The infection risk increase in the future is up to 0.8 log₁₀ for individual scenarios. The results imply that measures to prevent CSOs may be needed to ensure sustainable water safety. The approach is promising for predicting the effect of climate change on urban water safety requirements and for supporting the selection of sustainable mitigation measures. Future studies should focus on reducing the uncertainty of the predictions at local scale.

The manuscript can be found as open-access online:

<https://www.sciencedirect.com/science/article/pii/S0043135423011867>

Urban Green DaMS project outcomes (UK)

By Dr Virginia Stovin (v.stovin@sheffield.ac.uk)

The Urban Green DaMS (Design and Modelling of SuDS) project ran from Jan 2019 to Sept 2022, with a primary focus on Bioretention Cells. The project was a collaboration between the University of Sheffield and Newcastle University; more details can be found on our [website](#).

The project was funded by EPSRC, and we would like to sincerely thank our international academic partners (Jean-Luc Bertrand-Krajewski, Tim Fletcher and Elizabeth Fassman-Beck) and our industrial partners (Severn Trent Water; Newcastle City Council, Dwr Cymru Welsh Water, Environment Agency, Innovyze Limited, Northumbrian Water Group plc, Arup Group and Sheffield City Council) for their enthusiasm, insights and support. Key outcomes include:

- Measurement of ET. We have used controlled experimental columns to quantify Evapotranspiration (ET) rates associated with typical bioretention plants. ET data is important because the amount of stormwater that can be retained is a function of the amount of water that is removed by ET prior to the storm event. ET rates were found to be a function of both plant life cycle and growing media moisture content, with a crop factor of 1.0 being recommended overall (DOI: 10.1016/j.watres.2024.121182).
- Quantification of detention. We have used controlled experimental columns to quantify the detention (runoff delay) effects associated with typical bioretention growing media and planting configurations. Journal Paper in preparation.
- We have undertaken a comprehensive evaluation of a recycled growing media (DOI: 10.3390/w13152014).
- We have demonstrated that a hand-held porometer device (which measures leaf stomatal conductance) can potentially be used to quantify ET in the field (DOI: 10.3390/w13162262).
- We have suggested that continuous simulation modelling should be used to provide a comprehensive characterization of the hydrological performance of vegetated green infrastructure, and also recommended that domestic-scale SuDS should be designed to control 2-10 year return period events; these are smaller events than in the current design guidance. Smaller SuDS provide good year-round stormwater management and may be more affordable/acceptable to property owners. Complementary controls within the wider catchment will be required to accommodate more extreme rainfall events (DOI: 10.1061/JSWBAY.SWENG-495).
- We have developed a novel laboratory technique that allows us to visualize clogging of SuDS growing media by the particles present in road runoff. Clogging is more likely to be a problem when the incoming particles are large compared with the dominant pore size of the growing media (DOI: 10.1080/1573062X.2023.2180394).

At Sheffield, the project has led to an ongoing collaboration with Severn Trent Water, focusing on monitoring the hydrological performance of various SuDS being installed throughout Mansfield as part of a very extensive retrofitting programme.

We are also very pleased to report that both PostDocs employed on the project have now secured lectureship positions: Daniel Green at Heriot Watt University (D.Green@hw.ac.uk) and Simon De-Ville at the University of Liverpool (simon.de-ville@liverpool.ac.uk).

New Green Infrastructures at the University of Calabria in the South of Italy.

By Dr Patrizia Piro

Two innovative green roofs were developed at the University of Calabria during the research project “TOP FREE— Tetti e Orti Pensili a “Filiera corta” per la Riqualificazione di Edifici Esistenti” (Project funded by POR CALABRIA FESR-FSE 2014-2020 — Action 1.1.5 - CUP J29J21001760005). On the roof of the “Residential Center” offices, two green roofs, with a surface area of around 150 m² each, were implemented: an agricultural roof with an innovative drainage layer and a novel multipurpose self-irrigated green roof. The final design of these two green roofs was obtained after several experiments conducted in the LIU (Urban Hydraulic and Hydrology Laboratory). To evaluate the hydraulic efficiency of these two new Green Roofs (GRs), the outflows collected from the GRs are compared with the outflow discharged by an impervious roof located on the same site. For more information on the two green roofs visit www.topfree.info, while some details about the innovative multipurpose green roof are in Pirouz et al. (2023) <https://doi.org/10.3390/hydrology10030057>.



One of the two innovative green roofs (the agricultural one) on the left side and the green wall system on the right side. The pictures were taken by the research team of the LIU.

Another green infrastructure, **a new green wall system**, was developed at the University of Calabria during the National Project “I-BEST - Innovative Building Envelope through Smart Technology” (Project funded by the Italian National Operational Program “Enterprise and Competitiveness” 2014–2020 ERDF – I AXIS - Action 1.1.3. CUP B28I17000290008). The innovative modular Green Wall (GW) system was implemented on the facade of a residential building to manage urban stormwater, by collecting the outflow from the roof. The GW water supply is guaranteed by reusing the GW’s outflow, which is collected in a specific storage tank and distributed through an irrigation system. Several experiments were conducted in the LIU to assess the hydrological efficiency and the nutrient-leaching behavior of this innovative system. More details on the new GW are in Turco et al. (2023) <https://doi.org/10.1080/1573062X.2022.2138461> and Palermo et al. (2023) <https://doi.org/10.1016/j.scitotenv.2023.166301>.

Get in touch

If you would like to find out more about these new green infrastructures and the others located at the University of Calabria, please contact Prof. Patrizia Piro (patrizia.piro@unical.it) - Urban Hydraulic and Hydrology Laboratory (<http://www.ingegneriacivile.unical.it/liu/>) – Department of Civil Engineering – University of Calabria, Italy.

Recent flood challenges in New Zealand and ongoing blue-green projects to mitigate stormwater impact.

By Dr Annette Semadeni-Davies and Dr Karine Borne

In New Zealand, this past year has been all about floods. In January and February 2023, much of the country was hit by three extreme rainfalls. The biggest one occurred on 27 January and dumped an entire summer's worth of rain in Auckland over 1 day (265 mm recorded in 24h) and was estimated as being the 1:200 year rainfall. There were at least four flood phenomena operating in different parts of the city that were exacerbated by land use intensification over recent decades. In the central city, the combined drainage system was quickly at capacity leading to metres of deep flood water turning roads into rivers. In the suburbs, houses built on flood plains were damaged and, in some cases, destroyed by flood. Tropical Cyclone Gabrielle then hit on 9 February causing widespread devastation in town and country across the North Island leaving homes, crops and farm land destroyed, towns isolated without water, food or electricity.



Flooding in Auckland at Beach Haven (a,b), Mt Albert (c) and New Lynn (d) end January 2023 and flooded vehicle in Waimauku, Auckland, during Cyclone Gabrielle (Feb 2023). Photos: courtesy Craig Staton (a,b) and Stuart Mackay (c,d,e)

These events have led to a surge in interest in flood management amongst urban stormwater managers. As a response **Auckland Council** initiated the “[Making Space for Water](#)” programme to help build resilience against future flood events, finding natural solutions to make room for water and improving urban environments. The **Ministry for the Environment** is currently funding regional and local councils to undertake a range of projects, including some urban projects, on the feasibility and co-benefits of Nature Based Solutions for flood management in New Zealand.

NIWA (National Institute for Water and Atmospheric Research), through the Wai āwhā research project, is monitoring the system and catchment-scale effectiveness of Nature Based Solutions for water quality and quantity control ([preliminary results here](#)). The overarching aim is to build a model for predicting stream ecological responses to urban development with various degrees of NBS implementation, to support more effective planning and decision making for improved stream water quality and ecological health.

The **University of Auckland** and Auckland Council have launched a study on green roofs to investigate what plants work best in NZ climate and local conditions and whether they can become food productive landscapes ([Green roof trial blooms with potential - The University of Auckland](#)). Dr Wei-Qin Zhuang (UoA) in collaboration with David Wyllie (Tonkin+Taylor), is developing cost-effective smart sensors designed for rapid assessment of sewer pipe conditions. Building upon their previously successful [RFID-based sensor technology](#), which detects illicit connections, surface flow rates, and water depth, these innovative smart sensors represent a significant advancement in the field of buried infrastructure monitoring and management.

The **University of Canterbury** team (Prof. Aisling' O'Sullivan, Dr Frances Charters, Prof. Tom Cochrane) continue to develop their Storminator™ dissolved metals treatment devices for roof runoff. Frances and Tom are also collaborating with DHI and Christchurch City Council to further develop UC's MEDUSA pollutant load model. Aisling and Dr Hamish Mackey (UC) are supervising a doctorate on the nutrient treatment of grey water in green wall systems using 3D-printed media. Frances, Tom and Prof. Sally Gaw (UC) are collaborating with Dr Zhengwei Li (Building Research Association NZ) on modelling pollutant release rates over various roof materials' lifetimes and the associated environmental impact of building material selection. Frances is supervising a doctorate on assessing co-benefits of stormwater BGI for enhanced social resilience: using evidence from case study sites in post-earthquake Christchurch, New Zealand.

Open Data Sets for Urban Drainage

This section provides a list of sources from which open data for urban drainage can be accessed.

<p>Fluorescent dye traces in four UK sewer networks</p> <p>Description: This dataset describes experimental fluorescent dye traces (temporal concentration profiles) recorded in manholes within combined sewer networks located in four different cities across the United Kingdom. It accompanies the journal article entitled "Quantifying mixing in sewer networks for source localisation" (Sonnenwald et al., submitted). This dataset was collected by Professor Ian Guymer and colleagues. This archive was funded by EPSRC grant EP/P012027/1 and the UK Health Security Agency. Ref: Guymer, I., J. Shuttleworth, O. Bailey, M. Williams, J. Frankland, B. Rhead, O. Mark, M. Wade, and F. Sonnenwald. 2022. Fluorescent dye traces in four UK sewer networks. V1. Sheffield, UK: The Univ. of Sheffield Online Research Data. https://doi.org/10.15131/shef.data.20480241.</p>
<p>The Bellinge data set: open data and models for community-wide urban drainage systems research.</p> <p>Description: A comprehensive data set from a combined sewer system in a 1.7 km² suburban area is presented. Up to 10 years of observations (2010–2020) from level sensors, a flow meter, position and power sensors, rain gauges, X- and C-band weather radars, and a weather station; distributed hydrodynamic models; and CCTV pipe network data are included. This will enable independent testing and replication of results from future scientific developments within urban hydrology and urban drainage system research. Ref: Pedersen, A. N., Pedersen, J. W., Viguera-Rodriguez, A., Brink-Kjær, A., Borup, M., and Mikkelsen, P. S. (2021). The Bellinge data set: open data and models for community-wide urban drainage systems research. <i>Earth System Science Data</i>, 13, p. 4779-4798. https://doi.org/10.5194/essd-13-4779-2021</p>
<p>A decade of monitoring micropollutants in urban wet-weather flows</p> <p>Description: A paper and dataset published this year showed results from micropollutants data in wet-weather discharges from different papers resulting in data from 77 sites from around the world Ref: Mutzner, L., Furrer, V., Castebrunet, H., Dittmer, U., Fuchs, S., Gernjak, W., Gromaire, M.C., Matzinger, A., Steen Mikkelsen, P., Selbig, W.R., Vezzaro, L. 2022 A decade of monitoring micropollutants in urban wet-weather flows: What did we learn? <i>Water Research</i>, 223, 118968. https://doi.org/10.1016/j.watres.2022.118968 (Open Access), Data and code shared in a repository: https://doi.org/10.5281/zenodo.6808401</p>
<p>Urban Drainage dataset from The Brussels Capital Region (Belgium)</p> <p>Description: FLOWBRU, the monitoring network of the Brussels' river and wastewater network, is managed by HYDRIA (https://hydria.be/fr/flowbru-fr/). FLOWBRU monitors rainfall (16 stations), levels and/or flows in the sewer network and storm basins (>50 stations), levels and/or flows of natural water courses (>20 stations), amongst which 5 also measure the surface water quality. All data can be consulted and downloaded freely via de webiste (French and Dutch): Flowbru.be</p>

<p>Open access water related datasets, including of dye traces undertaken in manholes</p>
<p>Description: open access water related datasets, including of dye traces undertaken in manholes, https://doi.org/10.15131/shef.data.13373039 and sewer network . They are all available on the University of Sheffield's Online Research Data site, ORDA, https://orda.shef.ac.uk/.</p>
<p>FloodCitiSense project</p>
<p>Description: The European FloodCitiSense project (Funding: JPI Urban Europe – Smart Urban Futures) explored the potential of citizen observations to monitor urban rainfall and pluvial flooding via the use of low-cost sensors and app reporting. Website link: http://www.floodcitisense.eu/</p>
<p>Event Duration Monitoring (EDM) for CSOs in England and Wales</p>
<p>Description: In England and Wales, an openly available database of annual summaries of Event Duration Monitoring (EDM) for most CSOs in England and Wales was made accessible by the Environment Agency: https://ckan.publishing.service.gov.uk/dataset/event-duration-monitoring-storm-overflows-annual-returns. This data has been used by NGOs such as the River Trust to reveal the spatial extent and size of CSO emissions: https://therivertrust.org/sewage-map. In 2021 around 372,000 spill events with a combined duration of 2,667,452 hours were recorded.</p>
<p>Urban Water Observatory (UWO)</p>
<p>Description: The "Urban Water Observatory" (UWO) is a research project by the Department of Urban Water Management (SWW) of Eawag that collects data on precipitation and discharge processes in the sewage system. The project is supported by the municipality of Fehraltorf, CH. The data is analyzed to improve water protection and optimize municipal storm- and wastewater management. The project will provide an open dataset from January 1st 2019 - December 31st 2021 that includes rainfall data from 13 locations, 6 flow observations, 12 water level measurements, 5 storage tank data, 20 thermal-hydraulic measurements and the wireless sensor network performance (https://uwo-opendata.eawag.ch/). The UWO - Open dataset also contains geographical and SCADA data from the municipality of Fehraltorf and the WWTP of Fehraltorf-Russikon. The data and necessary metadata are expected to be available in the first quarter of 2023 on the Eawag Research Data Institutional Collection (https://opendata.eawag.ch/) and will be made public under a license for scientific and educational purposes.</p>

Upcoming Events

A list of upcoming major IWA conferences is included below to assist with scheduling events to avoid conflicts (gray highlights indicate the JCUD flagship conferences). More events are updated continuously at <https://iwa-network.org/all-events/>

Conference	Date	Place	Website
15th International Conference on Hydroinformatics	May 27-30, 2024	Beijing, China	https://hic2024.scimeeting.cn/en/web/index/1661
16th International Conference on Urban Drainage	June 9-14, 2024	Delft, Netherlands	https://icud2024.org/
IWA World Water Congress & Exhibition	August 11-15, 2024	Toronto, Canada	worldwatercongress.org
18th International Conference on Wetland Systems for Water Pollution Control	November 24-29, 2024	Martinique, France	https://icws2024.web-events.fr/
13th Urban Drainage Modeling Conference	September 15-19, 2025	Innsbruck, Austria	https://www.uibk.ac.at/en/congress/udm2025/
11th International Conference on Sewer Processes and Networks	2026	To be announced	
41st IAHR Congress	June 22-27, 2025	Singapore	https://www.iahr.org/index/detail/201
17th International Conference on Urban Drainage	2027	Ningbo, China	

News from IWA HQ

The LET conference - 19th IWA Leading Edge Conference on Water and Wastewater technologies

The IWA Leading Edge Conference on Water and Wastewater Technologies is designed to be the place where new ideas are introduced and the opportunity is provided to interact with the “best of the best”. This is the global conference where new insights into how pioneering science, technological innovation and leading practices shape the major transformation in water management that is underway.

The LET conference is held in a different country every year. Following a successful 20th anniversary edition in the series held in Daegu in 2023, IWA will be hosting its 19th Leading Edge Conference on Water and Wastewater Technologies in 2024 in Essen, Germany. With its rich history and reputation as an environmental hub, Essen promises to be an ideal host for this prestigious event.

Programme – [IWA-LET](#)

IWA World Water Congress & Exhibition, Toronto, Canada | 11-15 August 2024

The IWA World Water Congress & Exhibition brings together stakeholders and key contacts within the conventional water sector and beyond. It brings together core water sector groups, such as those focused on urban water and urban water services, as well as participants from industry and agriculture, architects and urban planners, soil and groundwater experts and hydrologists, social scientists, the ICT sector, the financial sector, and others.

With a strong representation and contribution from Canada and North America, the IWA Congress & Exhibition is a vital opportunity to learn about the North-Atlantic water challenges and solutions, including through technical site visits. The IWA World Water Congress & Exhibition 2024 follows the resounding success of the 2022 World Water Congress & Exhibition edition held in Copenhagen, Denmark. With a remarkable turnout of nearly 8,900 participants, it was a truly celebrated event.

For comprehensive details, please refer to the link provided below. [IWA World Water Congress & Exhibition – Shaping our water future](#)

News from IWA Publishing

Books

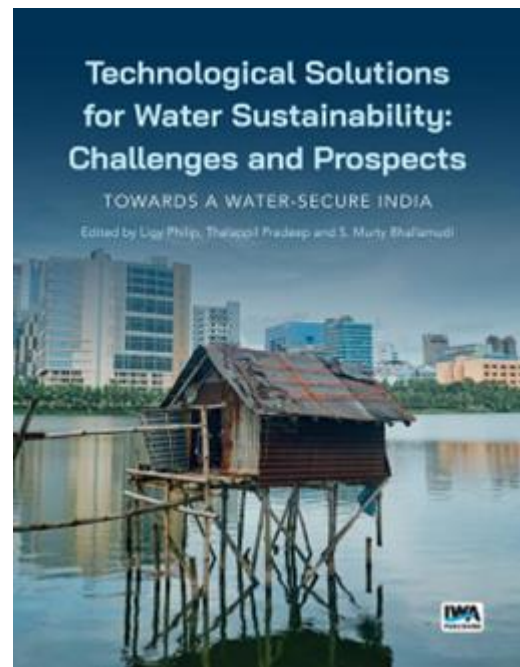
Sustainable urban drainage systems By Balaji Narasimhan, S. Sreethu, Krushil Modi, R. S. Arun, Renato Anelli ...

Book: Technological Solutions for Water Sustainability: Challenges and Prospects: Towards a Water-secure India

Published: 15 November 2023

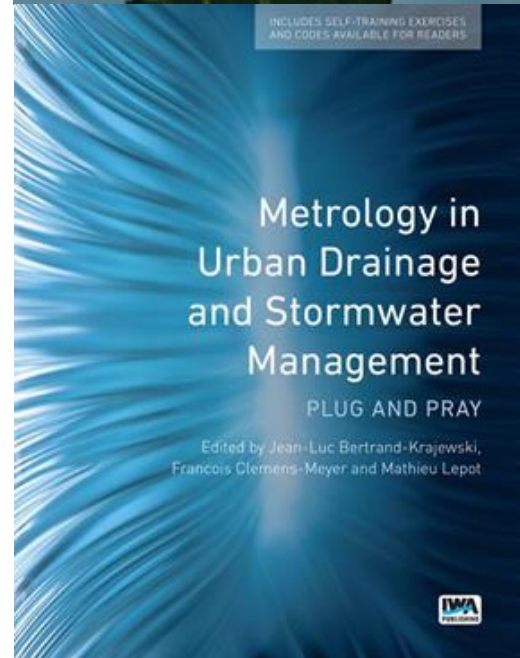
DOI: 10.2166/9781789063714_0255

EISBN: 9781789063714



Metrology in Urban Drainage and Stormwater Management: Plug and Pray

Edited by Jean-Luc Bertrand-Krajewski; Francois Clemens-Meyer; Mathieu Lepot



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News from IWA Learn

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News from IAHR

#iahrWorldCongress

[Join us at the 41st IAHR World Congress in Singapore!](#)

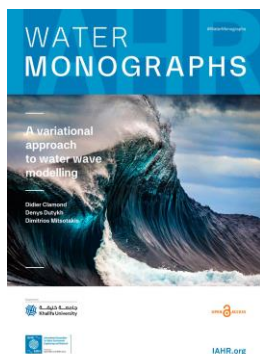


It will take place in Singapore, from 22 to 27 June 2024, under the theme “Innovative Water Engineering for Sustainable Development”. The Congress will focus on the importance of innovative water engineering towards meeting the Sustainable Development Goals (SDGs) and targets related to water resources. Participate in the world’s longest standing and widely recognized global event in the water and environment sector.

[More information here](#)

#iahrWaterMonographs

[New Water Monograph on Variational approach to water waves modelling](#)



This Water Monograph shows the benefit of using relaxed variational methods for the water waves problem. It illustrates the advantage of using a variational principle involving as many dependent variables as possible. Its primary purpose here is to provide a generalized framework for deriving model equations for water waves.

[Read and download for free here!](#)

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Write to us!

The Newsletter is an opportunity to share information: points of view; policy developments; research; activities and events; worldwide. If you have an interesting project, comments, or are planning a conference or workshop, send it to us, including contact point for more information.

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