



IAHR/IWA JOINT SPECIALIST GROUP ON URBAN DRAINAGE NEWSLETTER 35

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

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CHAIRMAN'S THOUGHTS

Dear members of the Urban Drainage community,



This is my first report as the chair of the Joint Committee on Urban Drainage (JCUD). I would like to send my sincere thanks to my predecessor, Jeroen Langeveld, for his inspiration, training and leadership of the JCUD over the last 4 years, which were to say the very least a little bumpy! I would also like to welcome the new members of Management Committee for the JCUD: Franz Tscheikner-Gratl, Sylvie Spraakman, Ulrich Dittmer and Alma Schellart. Thank you in advance for the contributions you will make to the JCUD. If you are interested in being part of our team, there are openings (see section “From the Secretary’s Desk” on the next page!).

I write to you today from Australia, the land where droughts and floods seem to be the only two conditions that are accepted by our island country. I started my journey in the urban drainage as a PhD student trying to collect water samples during 2006, which also happened to be the driest year on record for most parts of Australia. And now in 2022...we have just experienced some of our most devastating urban floods on record. What better time to encourage our urban drainage community members to pull together and continue to help solve the grand urban water challenges? You reading this newsletter is a great first step...

Since our last newsletter, we held two of our international conferences (ICUD2021 and UDM2022). Both conferences had online attendance and UDM2022 even had a small cohort of in-person delegates (for more details, see pages 8-10). At the ICUD2021, we were very pleased to announce the winners of the JCUD Awards: Poul Harremoës Award 2021: Baiqian (Luke) Shi (Monash University), Mid-career Award 2021: David McCarthy (Monash University) and Career Award 2021: Jean-Luc Bertrand-Krajewski (INSA, Lyon). Sincere congratulations once again to Luke and Jean-Luc for these outstanding achievements.

In our last newsletter, we announced our new webinar series. These seminars will be hosted by our working groups and will enable our community to frequently meet and exchange ideas and results/findings. We hope these webinars can act as a bimonthly source of inspiration to our community. For further details, please see page 7, which highlights the outcomes from our second webinar on the Latest Developments in Real Time Monitoring and Control.

This newsletter also contains three very exciting research highlights (see section “News from Related Organizations and Projects”): (1) New guidelines are presented for detecting inflow water in wet weather by applying AI to acoustic data, (2) Co-UDlabs Project is presented to announce a global call for transnational access to 17 urban drainage research facilities, and (3) Smart Water Networks forum (SWAN) is presented to encourage collaboration with this global non-profit organization that strives to bring together water utilities, solution providers, research institutions and industry experts to advance the adoption of “smart”, data-driven solutions for drinking water, wastewater and stormwater networks worldwide.

In closing, I am very much looking forward to seeing you online or in person at one of our upcoming conferences (for details see section “Upcoming Events”), either at SPN 2022, IWA World Water Congress 2022, IAHR World Congress 2022, Novatech 2024, ICUD 2024 and UDM 2025. Otherwise, please stay safe and in good health until we meet again!

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, 11 voting members, 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). 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 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. Thanks to all those who submitted their interest to join the JCUD in 2021. In a virtual meeting just before ICUD 2021 four new members have been elected: Ulrich Dittmer, Germany; Alma Schellart, United Kingdom; Sylvie Spraakman, Canada and Franz Tscheikner-Gratl, Norway. We welcome our new members to the team for the next 3+ years. We also said goodbyes to several long serving member including our chair Jeroen Langeveld. Additionally, also Hiafeng Jia, Lian Lundy, Morten Borup and Tone Merete Muthanna left the JCUD management team. Thank you all for your exceptional service to the JCUD!

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 other 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: Job van der Werf, Dusan Jovanovic
- 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: Dusan Jovanovic, Job van der Werf

Call for new members. In 2022 we do not expect major changes in the JCUD management team, but we still want to fill at least 1 open seat in the JCUD management team. As such, we have launched a call for new members to the JCUD and so if you are an active member of our community and would like to be involved in the JCUD, please apply (see call below). Importantly, we are looking for new members that reside outside of: Austria, Australia, Canada, Colombia, Germany, Japan, New Zealand, Norway, South Africa, United Kingdom and USA,. This is because we have members that already represent these countries and our statutes only allow one member from each country. Young members will also be invited to help with JCUD operations in the near future - join the JCUD mailing list if you want to be kept informed on new young members openings to the JCUD.

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.

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 one vacancy 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: 31st August 2022: The applications received will be distributed to the JCUD members for assessment and voting; the results will be announced sometimes after the JC meeting

NEW JCUD Webinar Series

The JCUD is keen to keep a webinar series going where approximately 3 working groups per year will organise a webinar. If you would be very interested to see a specific webinar topic, then please contact the relevant working group organisers. If you are not sure where it would fit, then please contact the new JCUD Working Groups coordinator Alma Schellart (a.schellart@sheffield.ac.uk) and the JCUD event coordinator John Okedi (john.okedi@uct.ac.za). If you are already in a working group, then please let the JCUD know when would be a good time for your working group to organise a webinar, and the JCUD will stay in touch with the working groups on this. Our last webinar was on April 7 (see report below) and we are expecting to have several more this year – stay tuned!

Report from the 2nd JCUD Webinar – Latest Developments in Real Time Control – April 7, 2022

Job van der Werf, Delft University of Technology.

Secretary of the Real Time Control Working Group and YWP representative on the JCUD.

During the Covid-19 pandemic, the JCUD looked for ways in which the community could keep being engaged together. As the ICUD 2020 was cancelled and replaced with a small online version, the idea to have regular webinars was born. The idea was that the different working groups under the JCUD would invite speakers to present their latest results, either published or non-published. The first webinar was organised by the Drainage Modelling working group in June 2021, and the second instalment was recently held (7th of April 2022), this time organised by the Real Time Control Working group.

Three speakers, all Young Water Professionals who recently obtained their PhDs, were invited to present their latest research, focussing on the many facets of real time control. Martin Oberascher, a post-doctoral researcher at the University of Innsbruck, kicked things off with his presentation on the theoretical large-scale implementation of smart rainwater barrels. He showed how using predictive control could enhance the functioning of rainwater barrels, but critically how inaccurate prediction can significantly reduce the (theoretical) functioning of the system, in some cases even causing downstream CSO events which would otherwise not have occurred (granted, the total CSO volume was still reduced). Although these results are theoretical, first implementations have started with a physical smart rain barrel. However, as with any good research, many bugs and other issues were still arising. Hopefully during the next webinar, some results from this real system are available.

Similarly to Martin, Daniel Xu from Changjiang Institute of Survey, Planning, Design and Research and the University of Melbourne, focussed mainly on stormwater control. However, the main focus here was on the synergies that can be achieved using coordinated forms of control with multiple rainwater storages. Daniel showed the increased potential when considering multiple storage tanks as one, something done frequently in ‘traditional drainage systems’ but less so in stormwater systems. Although these results were promising, some limitations were highlighted, especially the scalability and therefore implementation potential of the control system they used.

Nadia Lund (from EnviDan and the TU Denmark) picked up these problems with real time control implementation by looking at the problem from a non-technical perspective. Rather, she focussed on analysing the barriers and drivers that influence the (successful) implementation of RTC for water utilities in Denmark. She showed a comprehensive overview of social, technical, economic and environmental barriers and drivers and touched on the role that academia can play in this. A good discussion ensued, highlighting once more that if we are serious about the implementation of the new real time control techniques, we have to be proactive and work with utilities or local governments to get pilot systems implemented and report on those.

Overall, the webinar was a great success with over 55 attendees from around the world, showing the continued international interest in RTC applied to all forms of drainage systems. The working group hopes to position itself in the future to facilitate more of these webinars and combine the academic work to make a lasting impact on the way urban drainage systems are operated and controlled.

ICUD2021 International Conference on Urban Drainage...RECAP



The 2021 ICUD brought together urban drainage experts covering a variety of conference themes: integrated urban drainage modelling, real time monitoring and control, sensors and their validation, uncertainties in modelling and monitoring, integrated water management, social sciences, flooding and risk, water sensitive urban design, source control, green infrastructure, transport and sewer processes, urban hydrologic processes and receiving environment impacts.

Due to the COVID-19 Pandemic, the ICUD2021 Organising Committee implemented plans to hold the meeting virtually instead of in Melbourne as initially planned. Converting the meeting six weeks before the start was quick and seamless thanks to processes put in place early in the planning process. The staggered program, allowing people from different time zones to attend, was generally well received. The meeting was well attended with 355 delegates representing countries in Europe (147), Australia & New Zealand (85), Canada & USA (37), Asia (44), South America (15) among others. In total, there were 191 oral presentations, 51 poster presentations and 26 soap-box style 5min presentations. Furthermore, four excellent keynote speakers presented their transformational work at the conference: Professor Emma Johnston, Professor Bruce Rittman, Associate Professor Branko Kerkez and Professor Diego Ramirez. Finally, during the closing ceremony of the ICUD2021, the ICUD made several awards during the conference: Poul Harremoës Award 2021 – Winner: Baiqian (Luke) Shi (Monash University), Mid-career Award 2021: David McCarthy (Monash University), Career Award 2021: Jean-Luc Bertrand-Krajewski (INSA, Lyon).

Over 90% of delegates found that the conference met their expectations, although the greater networking opportunities at a face-to-face meeting were undoubtedly missed. The program content received great feedback with 91% of attendees rating the content quality as excellent or very good. Delegates generally found the duration of the conference (4 days) just right and thought that the sessions and breaks were of adequate length. Overall, the delegate experience with the virtual platform (Pheedloop) was very positive, with 100% of attendees finding the platform user friendly. The best-rated features were the live chat function (30%), followed by private messaging (21%) and the Q&A opportunities (17%). Although these statistics are quite promising for future virtual ICUD conferences, almost 80% of delegates declared that they would prefer to attend conferences as a face-to-face events in the future.

The 2024 ICUD will be held in the Netherlands! For more information visit <https://icud2024.org/>

Urban Drainage Modelling Conference 2022 – RECAP



<https://udm2022.org/>

The 12th Urban Drainage Modeling Conference brought together 146 researchers and practitioners to the Southern California Coastal Water Research Project (SCCWRP), in Costa Mesa, California, USA for a 2 ½ -day conference in January 2022 to share technical advances from the international JCUD community. The specialty conference focused on the data, models, and technology evolving to tackle the ever-growing challenges of urban stormwater. SCCWRP was honored to host the conference for it's return to the USA, since the triennial conference series began in 1986. Conference organizers are in the process of making conference content publicly accessible to support ongoing dissemination of the excellent research shared. Please check udm2022.org for access to recordings of oral, poster, keynote, and plenary sessions, as well as special sessions and workshops. Questions should be directed to udm2022@sccwrp.org.

A competitive process overseen by the International Working Group on Data and Models awarded the honor of hosting UDM to Dr. Elizabeth Fassman-Beck (SCCWRP) and Dr. Scott Struck (Geosyntec Consultants). An important objective for the conference organizers was to promote interaction and engagement between urban stormwater researchers in the USA and the international community. With 60 delegates hailing from the USA, 50 from Europe, 5 from developing countries, and representation also from Japan, Taiwan, and Australia, conference organizers were pleased with the opportunity to broaden perspectives of all the researchers attending.

Keynote and plenary speakers delivered thought-provoking messages on the complexity of urban water systems, the dangers of bias and missing data, and a preview of how climate-adapted precipitation forecasts are likely to influence urban drainage modeling. Of the 74 oral presentations and 19 posters with flash presentations, representation and performance of stormwater best management practices (BMPs) was the single largest category of presentations, followed closely by data collection in support of model development, calibration, and validation. Oral and poster presentation abstracts are available online (udm2022.org).

Interactive workshops and special sessions provided important opportunities for delegates to pursue deeper discussion on specialty topics. Common themes from several sessions emerged supporting open-source models and data sharing, acknowledging the role of shared repositories to facilitate logistics. The 'Performance Metrics for Green Stormwater Infrastructure' session identified the extensive differences in design expectations and metrics for measuring performance for stormwater control measures and discussed alternatives for quantifying multiple objectives and metrics. A state of the practice special session on trace contaminants in wet weather embodied the underlying focus of the UDM series: data and models. The trio of presentations explored practical challenges of data

collection logistics, collating results across studies, and whether available data can support robust modeling.

The Best Student Presentation was awarded by the International Working Group on Data and Models to Jean-David Therrien (Université Laval) for work entitled “Using the right wastewater characteristics for early COVID-19 pandemic warning and forecast using deep machine-learning”. The Best Poster was awarded to Dr. Jordyn Wolfand (University of Portland) for work entitled “The Los Angeles River Environmental Flows Project: Managing Trade-offs in Water Reuse and Ecosystem Services” by a committee of conference delegates.

Conference organizers would like to thank the outstanding community of delegates for contributing to UDM’s success, especially in light of shifting dates, locations, and delivery modes. Fortunately, the hybrid format, and local host, SCCWRP (especially the IT department), accommodated last minute shifts in delegate attendance from in-person to online to accommodate the ever-changing health and safety conditions and requirements along with various travel restrictions. About 20 intrepid in-person delegates representing Denmark, Australia, the UK, Taiwan, and the USA stepped up to facilitate a truly unique conference experience. Online delegates stayed awake, or woke up to participate regardless of time zone. Two researchers were available at 2-3 am local/EU time for the live Q&A following their recorded presentations! We want to recognize and thank all of the participants who made this conference special!

The 2025 UDM will be hosted by University of Innsbruck, Austria.



UMDM Participants, January 2022

WORKING GROUP REPORTS

As with many areas of life, the COVID19 pandemic has affected Working Group (WG) activities. 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.

International Group on Urban Rainfall (IGUR) <https://igur.org>

Despite the pandemic, IGUR has endeavoured to maintain its activities as high a level as possible. With IGUR Chairman Simon Beecham due to step down after two successful terms, elections for a new Chair began to be organised by February 2021. On, 15 June, 2021 Daniel Schertzer was elected IGUR Chairman. It was also the occasion to select a logo for IGUR

The 2021 IGUR meeting was held online on 29 October 2021 during the ICUD2021 (Melbourne/online), to which many IGUR members participated, including as session conveners. The minutes of this meeting have been published on the IGUR website. This was an opportunity to review recent and future activities, in particular the various conferences of interest for IGUR. Unfortunately, some of them have been postponed or even cancelled. Of particular concern is the case of the UrbanRain conference traditionally held in December at Pontresina (postponed in 2021, to be held elsewhere in 2022). In fact, the meeting focused on two main topics:

- the evolution of recent extreme events (Australia, Germany, US, France...)
- impacts of Covid on urban rainfall research activities, conversely IGUR expertise to fight with Covid?
- The ambition is to produce joint papers on these two topics. The meeting also proceed to a preliminary examination of how to improve the functioning of IGUR and how to enlarge its membership.

Working Group on Real Time Control

Mid-2019, the Working group of Real Time Control got some new life with a new chair and secretary. A website was made, initial email list established through own contacts and plans drawn up to get the Working Group going again. The plan mainly revolved around promoting the group during RTC related sessions during the relevant conferences with informal conversation. Then 2020, the year in which we planned on really getting everything going again, panned out rather differently. This not only meant that the plans we made were no longer viable, but frankly we were a bit preoccupied with the entire pandemic to get this working group going again.

Now, early 2022, with life getting mostly back to normal, the plans for the working group are set back in motion. Kicking things off with the 2nd JCUD webinar with three fantastic YWP speakers on the 7th of April 2022. This will be the stepping stone from which the WG will further expand. With new future members combined with the current members of the working group, we are looking to set a clear objective of the working group, finding ways to facilitate better information exchange for the members and, mainly, attempt to get the whole RTC story from the academic drawing books to more full-scale implementations.

As RTC overlaps with many other urban drainage topics (think about rainwater harvesting for example), more integration within the working groups is also on the agenda, bridging the gap between these different part of the UDS research area.

In short, 2022 and the coming years are shaping up to be an exciting time for the Real Time Control working group.

Contact: Job van der Werf (secretary of the working group) at j.a.vanderwerf@tudelft.nl

International Working Group on Data and Models (IWGDM)

Despite all the limitations COVID19 still caused to the society in general and in particular to the activities of the data and modelling group activities, there are a few events that took place that are worth noting. Thank you to all of you who made the events possible and also to those of you who actively participated!

The Working group hold the 1st webinar about data and models on 7th June 2021. The webinar was chaired by Manfred Kleidorfer (University Innsbruck, Austria), and the programme included the presentation and discussion of the following three papers (presenters highlighted in bold):

- **Peter A. Stentoft, Luca Vezzaro**, P. S. Mikkelsen, M. Grum, T. Munk-Nielsen, P. Tychsen, H. Madsen, R. Halvgaard (2020); Integrated model predictive control of water resource recovery facilities and sewer systems in a smart grid: example of full-scale implementation in Kolding. *Water Science & Technology*, 81(8), 1766–1777. doi: <https://doi.org/10.2166/wst.2020.266>
- **Olivia Bailey**, T. C. Arnot, E. J. M. Blokker, Z. Kapelan, J. A. M. H. Hofman (2019). Predicting impacts of water conservation with a stochastic sewer model. *Water Science & Technology*, 80(11), 2148–2157. doi: <https://doi.org/10.2166/wst.2020.031>
- **Ico Broekhuizen**, Sandoval, S., Gao, H., Mendez-Rios, F., Leonhardt, G., Bertrand-Krajewski, J.L., Viklander, M. (2021). Performance comparison of green roof hydrological models for full-scale field sites. *Journal of Hydrology X*, 12, 100093. doi: <https://doi.org/10.1016/j.hydroa.2021.100093>

The Urban Drainage Modelling (UDM) conference took place in Costa Mesa (California, USA) between 10th and 12th January 2022. UDM was successfully chaired by Elizabeth Fassman-Beck and by Scott Struck; details of the conference can be found in the following link: <https://udm2022.org>. The next UDM Conference will be in 2025 in Innsbruck (Austria).

Looking into 2022, the data and models group plans to organise two webinars following the format of the 1st webinar (see above), and also to hold one or two online meetings during 2022. The online meetings main goal is to allow sharing relevant information about on-going and planned urban drainage initiatives. It serves also to keep the members of the group in contact, following the two years of limited opportunities to meet during conferences. Details about the webinars and online meetings will be communicated via the group email list, and also posted on our webpage: <https://sites.google.com/view/iwgdm>. Please keep in touch!

The future of the SOCOMA and WSUD working groups

Two of the JCUD's working groups are on "Water Sensitive Urban Design" (WSUD) and on "Source Control Management" (SOCOMA). In the past, these groups have both been very active, working on complementary activities, albeit with some clear areas of commonality. However, in recent years, with changes in roles of key group members, including the well-deserved retirement of some, both groups have been less active.

The time has thus come to consider the future of these groups, and most importantly, of their activities. We will come together in a jointly convened workshop at Novatech in June 2023, to discuss:

- What should be the future of each group?
- Should they remain separate or be merged? If merged, what should the new name be?
- Who should be the leaders to take this forward?
- What activities could be undertaken to really add value in this area to the Joint Committee's work?

Come join us at Novatech 2023 to determine the future of all things water-sensitive and source-control!

Megan Farrelly & Tim Fletcher

Working Group on Metrology of Urban Drainage

In august 2021 the open access book 'Metrology in Urban Drainage and Storm water Management: Plug and Pray' was published by IWA publishing, in total 50 colleagues volunteered to contribute to this work, making a wealth of experience available for scientists and practitioners alike. The book can be downloaded for free here: <https://iwaponline.com/ebooks/book/835/Metrology-in-Urban-Drainage-and-Stormwater> . Although the work focusses mainly on monitoring of water quantity in the context of Urban Drainage, generic aspects of metrology are presented as well. The 4th edition of the European Junior` scientists Workshop on Metrology was planned for may 2021, but was cancelled due the Covid 19 crisis, and is scheduled for 15th-21st May 2022 (see <https://ejsw-2022.sciencesconf.org/>). A new aspect in this workshop is a hands-on session in which participants built their own low cost sensing system that will be used to demonstrate metrological key-issues like sensor calibration and data validation.

In parallel to the SPN 10 conference in Graz the WG organises a public WG meeting to discuss further initiatives. Of course we are looking forward to welcome new members of this young WG!

Sewer Systems & Processes Working Group

This Working Group is under the umbrella of The Joint Committee on Urban Drainage, as a group with activities regarding physical, chemical, and biological aspects of sewers. It disseminates information about sewer systems, coordinates research and development activities relating to physical aspects (structure and layout), physical processes (hydraulics and transport of solids), chemical and microbial processes (pollutant occurrence, transformations, and interactions), and interactions where appropriate with sources and destinations such as environment (via overflows) and treatment plants. Activities also relate to system design, operation, rehabilitation/renovation, maintenance, and control, with some overlap to other IWA specialist groups. However, the group acts as a focus for (in-sewer) process activities.

Its main activity over the last year has been organizing 10th International Conference on Sewer Processes & Networks (SPN10, <https://www.spn10.com>) to be held August 24-26, 2022, in Graz, Austria, organized by The Institute of Urban Water Management of Graz University of Technology. The topics include sewer system impacts; in-sewer processes; design, re-design and operational issues; monitoring and associated technologies; inspection techniques to obtain information on the functioning of sewer systems; and emerging Issues and new technologies related to sewers. We hope to see as many of you as possible at the SPN10.

Working Group on Urban Drainage Asset Management (UDAM)

Behind the acronym UDAM stands an active working group of the Joint Committee on Urban Drainage, whose goal is to provide a platform to everyone working on Urban Drainage Asset Management ranging from structures, piped network to green and blue infrastructure. Formed in 2018, it gathers now more than 40 members from 16 countries. If you want to participate, find more information and join us on <https://udam.home.blog/>.

- The 9th Leading Edge Conference for Strategic Asset Management (LESAM) will be held on 11-13 May 2022 in Bordeaux, France (<https://lesam2022.colloque.inrae.fr/>). LESAM is the key event for the Asset management community in the water field organized by the French National Research Institute for Agriculture, Food, and the Environment, INRAE and IWA Strategic Asset Management (SAM) Specialist Group. It has been established as the consolidated leading-edge forum where utilities, consultants, regulators, researchers, and asset managers can discuss the main challenges, innovations, and trends in strategic asset management for the water sector worldwide. UDAM will support the conference as part of the scientific committee, as speakers for the keynotes and presentations and participants in the discussions. Most of the high quality works presented in the conference will be submitted to IWA Journals for potential publication, while the extended abstracts will be published in the LESAM proceedings. The UDAM committee is delighted to be part of the LESAM conference to discuss the current state of research and practice, as well as to meet the international colleagues in person after the pandemic.
- UDAM is bundling the efforts of scientific experts and practitioners in the redaction of a book which collates the most recent results in the field of urban drainage with respect to asset management to provide an introduction to the field and serve as knowledge reservoir for practitioners and early-stage researchers alike. The envisioned chapters are the following:
 - Chapter 1: Introduction
 - Chapter 2: The Asset Management principles
 - Chapter 3. Knowledge of the overall system
 - Chapter 4: Regulations and practices worldwide
 - Chapter 5: Investigate the condition of an asset
 - Chapter 6: Deterioration processes and associated models
 - Chapter 7: Condition- based to service-based strategies
 - Chapter 8: Decision making in UDAM
 - Chapter 9: Data management and quality control.
 - Chapter 10: Rehabilitation techniques
 - Chapter 11: Operation and maintenance

If you are interested to participate in one or more of the chapters don't hesitate to contact the working group. The first draft of the book is estimated to be ready for the LESAM Conference (11-13 May, 2022) , where the editors are going to meet to discuss the following steps before the publication, so initiative has to be taken fast.

NEWS FROM IAHR



IAHR Secretariat contacts: Madrid Office: Paseo Bajo Virgen del Puerto 3, 28005 Madrid, Spain; Tel: +34 91 335 7908; Beijing Office: A-1 Fuxing Road, Haidian District, 100038, Beijing, China E-mail: iahr@iahr.org; www.iahr.org.

For more information on IAHR activities and free subscription to the IAHR e-newsletter 'NewsFlash World' <http://bit.ly/iahr-subscribe>

The International Association for Hydro-environment Engineering and Research (IAHR), founded in 1935, is known throughout the world as a leading international organisation of scientists, engineers, professionals, institutions, and companies working together to build a better future for the hydro-environment. IAHR stimulates and promotes research and its application by sharing new research paradigms, networking, creating and disseminating knowledge, informing best water-management practices, and nurturing young professionals. Activities range from river and maritime hydraulics to water resources development and ecohydraulics, through to ice engineering, hydroinformatics and continuing education and training. IAHR stimulates and promotes both research and its application, and by so doing strives to contribute to sustainable development, the optimisation of world water resources management and industrial flow processes. IAHR accomplishes its goals by a wide variety of member activities including: working groups, research agenda, congresses, specialty conferences, workshops and short courses; Journals, Monographs and Proceedings; by involvement in international programmes such as UNESCO, WMO, IDNDR, GWP, ICSU, and by cooperation with other water-related (inter)national organisations. IAHR Knowledge Products help inspire, disseminate, and catalyse state-of-the-art knowledge on hydro-environment science and engineering related issues to achieve a water-sustainable future. The association's portfolio includes seven peer-reviewed journals, four associated journals, a magazine for the hydro-environment engineering community, scientific and technical proceedings, book and paper series. IAHR sponsors the organization of many conferences and symposiums of potential interest to the urban drainage community; for full information, please visit their website www.iahr.org

2021 Events

1st IAHR Online Forum: Hydro-Environmental Challenges, Solutions and Trends for Water Security, 1-9 July 2021

Watch the playback videos! <https://www.iahr.org/index/detail/405>

The Online Forum caters especially for engineers, experts, researchers, and organisations. The Forum is a premier reference for all who are interested in quickly understanding the state of play of the global hydro-environment engineering and research community. IAHR's wide range of Technical Committees and Working Groups make special contributions to highlight the issues and directions in their respective fields.

IAHR Upcoming events



39th IAHR World Congress, Granada, Spain. 19 – 24 June 2022 <https://iahrworldcongress.org/>

From Snow to Sea

Specific topics including Human-water relationships, Snow, river and sediment management, Environmental hydraulics and urban water cycle, Hydraulic structures, Water resources management, valuing and resilience, Computational and experimental methods, Coasts, estuaries and shelves and Extreme events: from droughts to floods will be covered in regular sessions. Special Sessions will also be organized in collaboration with worldwide experts in the different fields.

The Congress will provide a platform for science and practice to meet. A lively exhibition alongside the congress will present the latest developments in equipment, software and instrumentation as well as enhance relevant achievements from practice. Workshops and training events will be offered as well throughout the event.

7th IAHR Europe Congress, Athens, Greece. 7-9 2022 <https://www.iahreuropecongress.org/>

Innovative Water Management in a Changing Climate

This congress aims to provide a platform to renown professionals, researchers, scientists, and engineers, to interact and explore innovative ways to face the challenges on hydro-environmental sciences and their practical applications, share their research and practical experiences, advance the education of younger generations, and challenge and be challenged in lively debates and conversations to ultimately benefit the wellbeing of our world.

XXX Latin American Congress on Hydraulics, Iguassu Falls, Brazil. 7-11 November 2022 <https://www.xxx-congreso-latinoamericano-de-hidraulica.com/en/>

The theme of the Conference includes the four axes of the National Water Policy, to provide an effective response to access to drinking water and sanitation, water for production, adaptation to climate extremes and the development of multipurpose uses generating clean and renewable energy.

23rd IAHR Asia Pacific Division Congress, Chennai, India. 14-17 December 2022. <https://doe.iitm.ac.in/iahrapd2022>

The Asia-Pacific rim has been experiencing floods as well as water problems forcing Researchers to work towards conservation, mitigation and also to cope up with the climate change effects on the water Resources. The 2015 flood in Chennai and the recent mammoth floods in China are examples. The sedimentation hampering smooth transport through navigable rivers, closure of river mouths, coastal erosion are problems that are perineal needing attention. The climate change adds a new dimension to the problems aforementioned. The 23rd IAHR APD Congress will provide an excellent forum for exchange of ideas and experience among scientists, engineers and researchers with a common interest in water environment and hydraulic problems.

NEWS FROM RELATED ORGANIZATIONS AND PROJECTS

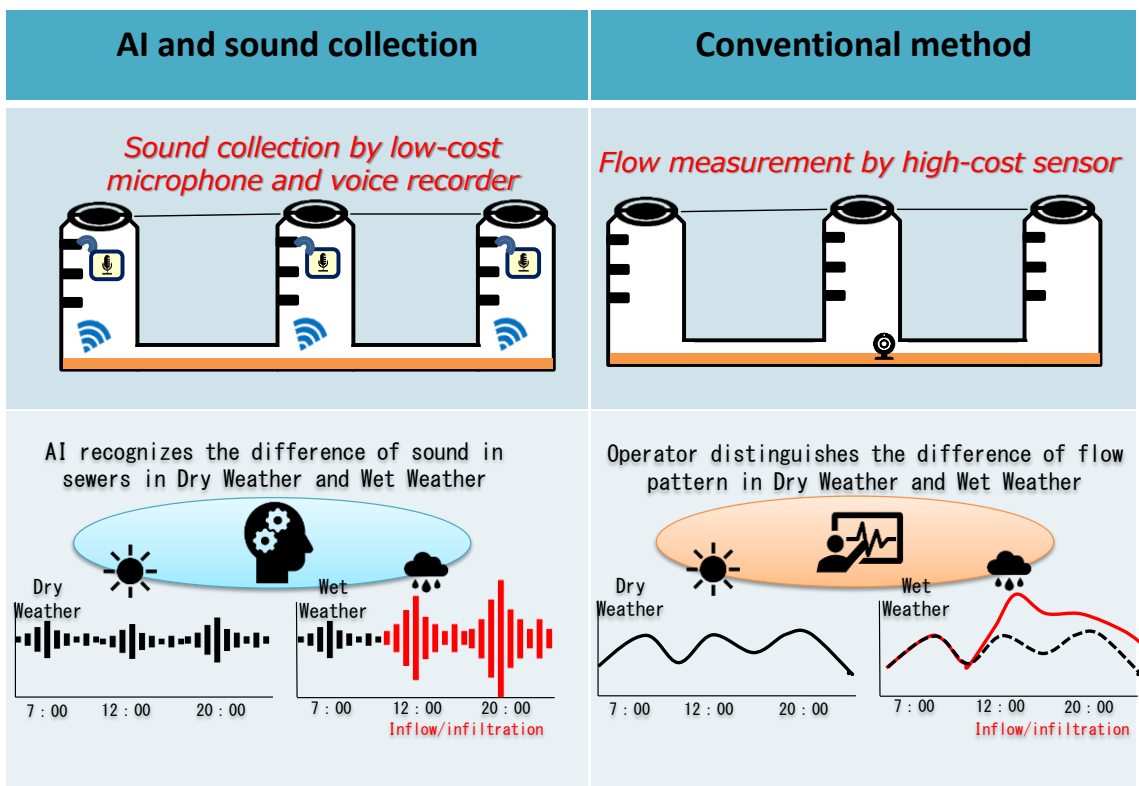
Guideline of introducing technology for detecting inflow water in wet weather by applying AI to acoustic data

Mr. Tatsuro Matsuura: Senior Researcher, Wastewater System Division, Department of Water Quality Control, National Institute for Land and Infrastructure Management (NILIM), Ministry of Land, Infrastructure, Transport and Tourism (MLIT), Japan

In March 2021, MLIT and NILIM released “the Guideline of introducing technology for detecting inflow water in wet weather by applying AI to acoustic data” .

This guideline shows the technology using sound sensors and AI and the method of sewer inflow/infiltration investigation. The background of this technology is based on the difficulties of identifying the exact location of inflow/infiltration in sewers and the high cost of investigation in the case of using flow sensors.

The Study Team, comprised of CTI Engineering Co., Ltd., AIST, Koriyama City, Tsukuba City, Nagoya City, Kobe City, and Kumamoto City, revealed that using data collected by sound sensor consisting of microphone and voice recorder could detect the difference of the Dry Weather Flow and the Wet Weather Flow by applying AI model. According to field surveys in five cities in Japan mentioned above, the Study Team could reduce over 50% of both the time and cost of an investigation. The Study Team, MLIT, and NILIM expect that this technology will be implemented for the investigation of sewer inflow/infiltration and consequently led to the enhancement of improvement project of sewer inflow/infiltration. The Study Team was honored to be awarded a special prize for infrastructure maintenance in 2021 by MLIT.



Co-UDlabs Project and ongoing global call for transnational access to 17 urban drainage research facilities

Jose Anta, University of A Coruña, Spain

Project Coordinator of Co-UDlabs, an EU-funded INFRAIA Starting Community

Co-UDlabs (Building Collaborative Urban Drainage research labs communities) is a four-year Horizon 2020 project (May 2021 – April 2025) in the INFRAIA framework, a funding mechanism designed specifically to establish research networks and communities at large-scale infrastructures. **Co-UDlabs brings together**, in particular, **17 unique ‘field scale’ urban drainage experimental facilities**, hosted by seven research organisations in Europe: the University of A Coruña (Spain), the University of Sheffield (UK), INSA Lyon (France), Aalborg University (Denmark), Deltares (Netherlands), EAWAG (Switzerland) and IKT (Germany).

The experimental facilities are designed for research across a range of disciplines, including urban flooding, run-off pollution, physic-chemical and biological in-sewer processes, sustainable urban drainage systems (SUDS), performance analysis of urban assets, asset deterioration and digital solutions. The consortium also accounts with GRAIE and Euronovia organization (both based in France), involved in the networking activities of the project.

Besides enhancing dialogue, cooperation, and knowledge exchange among the project’s partners, the key goal of Co-UDlabs is to provide access to its research infrastructure to researchers, practitioners, experts, and local utilities and regulators that may not have access to comparable or similar facilities and installations in their own countries. By making their facilities available free of charge, Co-UDlabs partners aim to attract multidisciplinary talent that can provide ideas, innovative approaches, new methods, new uses for existing and emerging technologies and products — with the ultimate goal of establishing a truly collaborative, open, and inclusive European urban drainage innovation community.

Co-UDlabs in a nutshell

- The [Co-UDlabs website](#), with a full description of the project’s activities, training, publications, and calendar
- Co-UDlabs’ [Ideas Marketplace](#), to **share your ideas, proposals, needs, and requests** to be matched with the ideas and projects of other researchers and practitioners
- The [Co-UDlabs Transnational Access Call hub](#), with information about the call and soon more details about the **2nd Call to be opened in October 2023**
- Our [Contact Form](#) to subscribe to our **Stakeholder Database** to receive Co-UDlabs news and updates on our initiatives

Overview of the 17 facilities of the Co-UDlabs Research Infrastructure



Co-UDlabs
COLLABORATIVE URBAN DRAINAGE
RESEARCH LABS COMMUNITIES

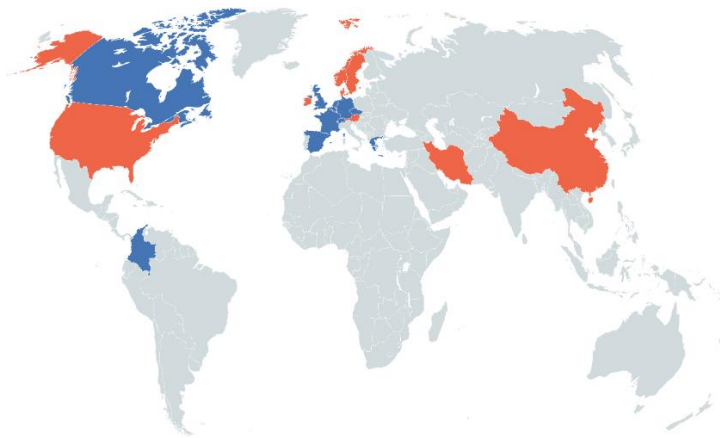
Report on Co-UDlabs activities

Co-UDlabs continues to develop a large community of stakeholders, academics, practitioners, as well as local regulators and representatives of water utilities and enterprises. This is the target audience for all Co-UDlabs activities: not just the transnational access, but also webinars, workshops, training videos, and scientific publications linked to the outcomes and results of the project's initiatives.

In October 2021, Co-UDlabs organised an [introductory webinar](#) in the framework of Deltares' International Software Days, introducing its activities and research infrastructure to an audience of over 150 attendees. In November 2021, partners at IKT, the Institute of Underground Infrastructure in Germany, organised an [international workshop](#) with members of utilities, local government, regulators, and research institutions, sparking a debate on the key priorities, needs, and potential solutions for urban drainage research and innovation in Europe. These events paved the way to Co-UDlabs' first ['Hackathon' event](#): junior research groups, practitioners, and other relevant stakeholders were invited to 'compete' to find innovative and ground-breaking solutions and ideas for the common challenges of UDS. These ideas were gathered in the Co-UDlabs' Ideas Marketplace, a permanent repository for ideas, designed to enhance dialogue, team-building and matchmaking among diverse, young, and interdisciplinary research groups from all over the world.

For the 1st call for transnational access, Co-UDlabs received 15 proposals from 60 institutions in 11 countries applying for access at 11 different Co-UDlabs facilities. More than hundred researchers and practitioners were

involved in the user groups that submitted their proposals, and 96 of them would be first-time users of the facilities. This shows how effective the call has been in reaching new research actors and new UD policy stakeholders, making them familiar with Co-UDlabs and the resources it offers to address the common challenges of sustainability and urban drainage today.



Overview of the countries of origin of the TA proposals' group leaders (blue) and countries hosting other user group member institutions (dark orange)

The proposals were extremely diverse. 55% of all users have an academic background, while the rest come from private sector, utilities, local governments, and other key stakeholders. Group leaders too came from a diverse background, with proposals being led by both CEOs and junior and senior researchers. At least 8 PhD students in their early career stage have been included in the user-groups. A total of nearly 400 days of transnational access will be awarded in this 1st call, a great hands-on opportunity to learn how to improve the process, increase dialogue and cooperation, and contribute to UDS innovation from a live, inclusive network. **All information on Co-UDlabs' 2nd TA call, which will open in October 2023, will be available on the project's website. The Ideas Marketplace will stay open all the time to facilitate dialogue and the cross-fertilisation of ideas, approaches, and methods.**

Next steps for Co-UDlabs: webinars, training, and other initiatives

The consortium will be very active in the coming months with various training, dissemination, and peer learning activities. We plan to organise some workshops as side events of main relevant international congresses. For instance, at [Sewer Processes and Network Conference](#) (August 2022) we plan to show a free web toolbox aimed to improve sensor data calibration and handling. We also plan to organise two workshops at [IWA World Water Congress & Exhibition](#) (September 2022) and [NOVATECH-Lyon](#) (June 2023). Our definitive programme of free webinars, in-hands training and a link to our YouTube channel will be available by the end of April in our website. We also collaborate in the organization of [European Junior Scientist Workshop \(EJSW\) on UD monitoring](#). All Co-UDlabs training activities can be easily browsed [online](#).

Contact information: contact@co-udlabs.eu



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101008626

Environmental and Water Resources Institute

Dr. Jon Hathaway, University of Tennessee

Description

The Environmental and Water Resources Institute (EWRI) of the American Society of Civil Engineers (ASCE) is home to 11 Technical Councils working on an array of water and environmental issues related to urban drainage, stormwater management, water, wastewater, and groundwater, etc. Additional councils serve to address student and professional engagement, develop standards, and organize the annual World Water and Environmental Congress (among other activities). ASCE-EWRI members can **network, connect, engage and share** experiences, industry information and best practices, seek and share advice, exchange resources and build relationships. Visit <http://collaborate.ewrinstitute.org/>

EWRI continues to welcome participation by the international community. There are three councils that may be of particular interest to the JCUD:

- Municipal Water Infrastructure Council - dedicated to evaluating the costs and performance of municipal water infrastructure and promoting findings to practitioners nationwide
- Water, Wastewater & Stormwater Council - mission is to provide a forum for Civil Engineers, Regulators and other Urban Infrastructure Professionals to explore the evolving practices of stormwater, stream and lake pollution treatment, conveyance, controls, modeling and management.
- Urban Water Resources Research Council - objective is to stimulate and guide water resources research and to disseminate knowledge, research results, and other significant project outcomes to water resource professionals

Each council has task committees dedicated to our water challenges. The focus of these committees ranges from risk and resilience, to modeling stormwater systems, to updating the profession on advances in stormwater control measures.

Recent Efforts

- Continued work on the International Stormwater BMP database. In 2020, an updated analysis of the International Stormwater BMP database was completed, with the database now housing over 790 BMP performance data sets (<http://www.bmpdatabase.org/>).
- A new Task Committee investigating the impacts of climate change on stormwater controls was established. The committee intends to develop a “Forum” style manuscript in 2022 for submittal to the *Journal of Sustainable Water in the Built Environment*.
- The Operations & Maintenance of Stormwater Control Measures Conference was held in March, 2022, in Wilmington, North Carolina, USA, with roughly 275 attendees. The conference highlighted advances in operation and maintenance of gray and green stormwater control infrastructure, including design for maintenance, O&M training programs, new maintenance approaches, advances in municipal program management and implementation, life cycle cost analysis, lessons from the field, and more. Look for the next O&M conference in 2024 in Austin, Texas!

Upcoming Events

- In 2022, EWRI is hosting the annual World Environment and Water Resources Conference (June 5-8, 2021) in Atlanta, Georgia, USA (<https://www.ewricongress.org/>).
- Planning for the 2023 International Low Impact Development Conference is underway. The conference will take place in Oklahoma City, Oklahoma, USA with dates to be announced soon.

- Planning for the 2024 Operations & Maintenance of Stormwater Control Measures Conference is underway. The conference will take place in Austin, Texas, USA, with dates to be determined.

Journal

Please consider the ***Journal of Sustainable Water in the Built Environment*** as a venue for publishing your work (<https://ascelibrary.org/journal/jswbay>). All papers are encouraged to have design or regulatory implications that are applicable to moving the profession forward. The scope covers sustainable stormwater management and broader water systems interactions. Subjects include urban stormwater quantity, quality, hydrology, characterization, treatability, and impacts; water harvesting; urban water ecosystem services; sustainable urban watershed management; urban streams; combined sewer overflow/stormwater interactions; urban energy/water interactions; on-site/decentralized water and wastewater systems, life cycle analysis; and related policy, implementation, and economics.

Contact

For more information on the activities of the Urban Water Resources Research Council, contact Jane Clary, Chairperson (clary@wrightwater.com).

Smart Water Networks Forum (SWAN)



Smart Water Networks forum (SWAN) is a global non-profit organization that strives to bring together water utilities, solution providers, research institutions and industry experts to advance the adoption of “smart”, data-driven solutions for drinking water, wastewater and stormwater networks worldwide.

In the organization we have several groups working with specific topics, including Digital Twins, Data-as-a-Service and smart metering, where a variety of members are contributing to the development and understanding by attending online meetings including the annual conference. We invite members of the JCUD newsletter to join and collaborate with SWAN. Further details can be found at www.swan-forum.com.

Working groups:

Digital Twin Work group

The group has the aim of developing a common strategy for Digital Twin technology to drive operational efficiency by bringing together global utilities, solution providers, and leading industry thought leaders. The group is split in four subgroups, each focusing on different subjects: Holistic Architecture, Digital Twin Lifecycle, BIM & Asset Management and Outcomes and Applications.

See further details at <https://swan-forum.com/digital-twin-work-group/>.

Community of Practice: Data-as-a-Service

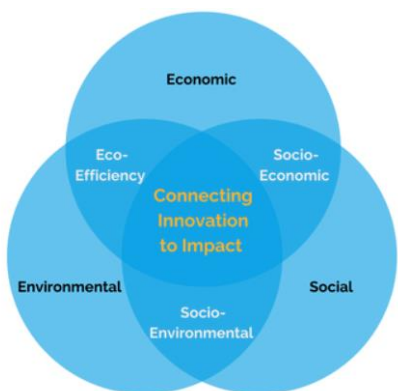
The group has the aim of advancing the DaaS business model to transform how smart water utilities gather, share, and analyse data on demand.

See further details at <https://swan-forum.com/data-as-a-service/>.

Community of Practice: Smart Metering

Supporting utilities to advance smart metering at every size and stage of implementation.

See further details at <https://swan-forum.com/smart-metering/>.



This year the **12th Annual SWAN Conference** will be held in Washington DC, May 24-26, 2022. This year's theme, "Connecting Innovation to Impact" will focus on the economic, social, and environmental impact of data-driven water and wastewater solutions and feature 40+ leading, global utility speakers. You are more than welcome and can register at www.swan-2022.com.

Workshops in Digital Twin, Data-as-a-Service will be held the May 24th.

UPCOMING EVENTS

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

Conference	Date	Place	Website
39th IAHR World Congress	19.-24. June 2022	Granada, Spain	https://iahrworldcongress.org/
10th International Conference on Sewer Processes and Networks	24.- 26 Aug 2022	Graz, Austria	https://www.tugraz.at/events/spn10/home/
IWA World Water Congress	11.-15. Sept 2022	Copenhagen, Denmark	https://worldwatercongress.org/
Wetlands Systems to Water Pollution Control	November 6-10, 2022	Bangkok, Thailand	http://www.icws2022.com/
11th Novatech Conference	July 2023	Lyon, France	https://www.novatech.graie.org/a_index.php
16th International Conference on Urban Drainage	19-23 June 2024	Delft, Netherlands	https://icud2024.org/
13th Urban Drainage Modeling Conference	September 2025	Innsbruck, Austria	

NEWS FROM IWA HQ

IWA World Water Congress & Exhibition registration are now open

All of us in IWA are relieved and thrilled that the countdown to the World Water Congress and Exhibition in Copenhagen has re-started. The Nordic region is a world leading hub for technology and innovation, making it the ideal location for the Congress; a space to inspire change, stimulate innovative research and for sharing of best practices for a water wise world. For those who are thirsty for the latest trends and solutions to build water back better, and eager to re-connect and broaden their networks, this Congress is the opportunity. We look forward to welcoming IWA members, water professionals and organisations from all over the world to wonderful Copenhagen in September, 2022.



[World Water Congress & Exhibition](#)

Register Here <https://iwa-network.glueup.com/event/50779/register/>

Selected books



Pathways to Water Sector Decarbonization, Carbon Capture and Utilization

Zhiyong Jason Ren & Krishna Pagilla

ISBN: 9781789061789

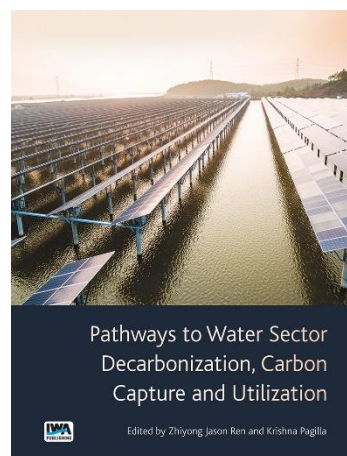
April 2022 • 350 pages • Paperback

IWA Members price: £ 71.00 / US\$ 107.00 / € 89.00

Also available as an Open Access ePDF

<https://www.iwapublishing.com/books/9781789061789/pathways-water-sector-decarbonization-carbon-capture-and-utilization>

The water sector is in the middle of a paradigm shift from focusing on treatment and meeting discharge permit limits to integrated operation that also enables a circular water economy via water reuse, resource recovery, and system level planning and operation. This book aims to fill an important gap for different stakeholders to gain knowledge and skills in this area and equip the water community to further decarbonize the industry and build a carbon-free society and economy. The book goes beyond technology overviews, rather it aims to provide a system level blueprint for decarbonization.



Resilience of Water Supply in Practice: Experiences from the Frontline

Leslie Morris-Iveson & St. John Day

ISBN: 9781789061611

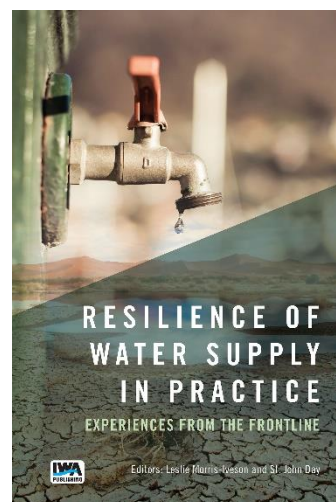
December 2021 • 210 pages • Paperback

IWA Members price: £ 49.00 / US\$ 74.00 / € 61.00

Also available as an Open Access ePDF

<https://www.iwapublishing.com/books/9781789061611/resilience-water-supply-practice-experiences-frontline>

This book is primarily addressed to organisations and practitioners involved in planning, designing, managing and financing water supply programmes in urban and rural settings. Water Resilience in Practice is co-edited by two experienced water sector professionals and reviews resilience in water supply service delivery in the form of a series of case studies from different economic contexts – ranging from low-income and fragile states to upper-income countries. It documents real experiences and reflects on the initiatives different service providers apply to strengthen resilience in practice.



Metrology in Urban Drainage and Stormwater Management: Plug and pray

Jean-Luc Bertrand-Krajewski, Francois Clemens & Mathieu Lepot

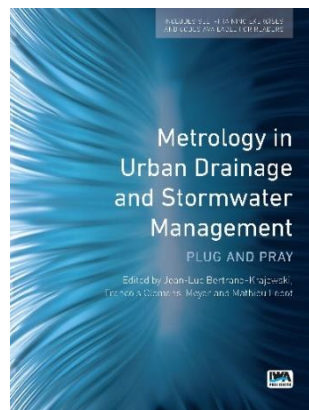
ISBN: 9781789061321

July 2021 • 488 pages • Paperback

IWA Members price: £ 101.00 / US \$ 152.00 / € 126.00

<https://www.iwapublishing.com/books/978178906102/metrology-urban-drainage-and-stormwater-management-plug-and-pray>

This book presents the advancements made in applied metrology in the field of Urban Drainage and Storm water Management over the past two decades in scientific research as well as in practical applications. Given the broadness of this subject (measuring principles, uncertainty in data, data validation, data storage and communication, design, maintenance and management of monitoring networks, technical details of sensor technology), the focus is on water quantity and a sound metrological basis. The book offers common ground for academics and practitioners when setting up monitoring projects in urban drainage and storm water management.



Selected journal papers



Green infrastructure and climate change impacts on the flows and water quality of urban catchments: Salmons Brook and Pymmes Brook in north-east London

(OPEN ACCESS)

Gianbattista Bussi, Paul G. Whitehead, Rosie Nelson, John Bryden, Christopher R. Jackson, Andrew G. Hughes, Adrian P. Butler, Catharina Landström, Helge Peters, Simon Dadson & Ian Russell

Journal: Hydrology Research

<https://doi.org/10.2166/nh.2022.013>



A review of climate change effects on practices for mitigating water quality impacts

(OPEN ACCESS)

Thomas Johnson, Jonathan Butcher, Stephanie Santell, Sara Schwartz, Susan Julius & Stephen LeDuc

Journal: Journal of Water and Climate Change

<https://doi.org/10.2166/wcc.2022.363>



Public policy: urban stormwater in a paradigm shift, is it the end or just the beginning?

(OPEN ACCESS)

Carlos Novaes & Rui Marques

Journal: Water Science & Technology

<https://doi.org/10.2166/wst.2022.127>



Urban stormwater management for sustainable and resilient measures and practices: a review

(OPEN ACCESS)

Lakshmi Raghu Nagendra Prasad Rentachintala, M. G. Muni Reddy & Pranab Kumar Mohapatra

Journal: Water Science & Technology

<https://doi.org/10.2166/wst.2022.017>

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IAHR White Paper Series

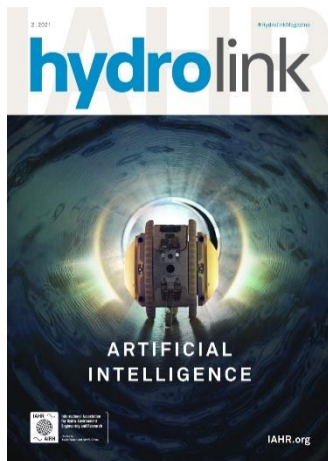


Pathways towards democratization of hydro-environment observations and data **FREE ACCESS**

<https://www.iahr.org/library/infor?pid=8934>

This cross-sectorial white paper highlights key future developments that contribute to the democratization of hydro-environment observations and data, considering democratization as the transition towards more shared and affordable access to information by the scientific community, stakeholders, and society in general. A natural example of democratization can be found in the increasing application of citizen science to monitor flow and in the emergency response to natural hazards. Nevertheless, many other types of flow observations can also benefit from recent innovations to enhance their accessibility and outreach potential.

IAHR Magazine

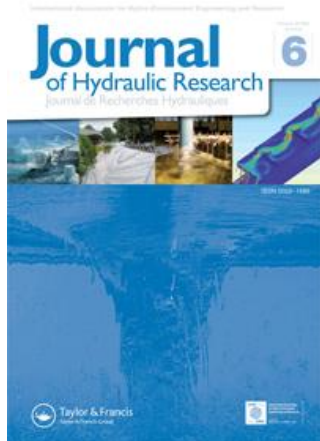


HydroLink 2021-2 Artificial Intelligence <https://www.iahr.org/library/hydrolink?hid=328> **FREE ACCESS**

This issue was coordinated by the international expert in smart water systems Professor Dragan Savic https://www.iahr.org/individual-member/user?member_no=17374, known for his firm belief in bridging science to practice in the wider water sector and utilities in general.

Concepts like Digital Twins and autonomous robotics for water and sewer networks are included in this issue.

IAHR Journals



From the Journal of Hydraulic Research -JHR-

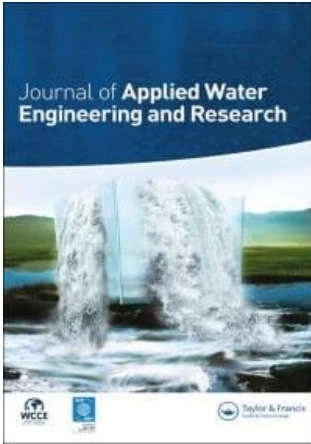
Discussion on Computational fluid dynamics for sub-atmospheric pressure analysis in pipe drainage **FREE FOR IAHR MEMBERS**

<https://iahr.tandfonline.com/doi/full/10.1080/00221686.2021.1944923#.YkWByShBw2w>

By Mohsen Besharat, Oscar Enrique Coronado-Hernández, Vicente Samuel Fuertes-Miquel, Maria Teresa Viseu and Helena Margarida Ramos, J. Hydraulic Res. 58(4), 2020, 553–565, 10.1080/00221686.2019.1625819

Pages 1031-1034 | Volume 59, 2021 - Issue 6

From the Journal of Applied Water Engineering and Research -JAWER-



Empirical evaluation of proposed treatment unit for saline wastewater softening

https://iahr.tandfonline.com/doi/full/10.1080/23249676.2020.1787248#.YkV_KihBw2w

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Characterization and analysis of sediments in stormwater drainage for reuse.

<https://iahr.tandfonline.com/doi/full/10.1080/23249676.2021.1884618#.YkWAbihBw2w>

Carlos Peña-Guzmán, Jeimmy Cárdenas ,Amelia Pérez, Andrés Torres and Karen Mora-Cabrera

Pages 230-240 | Volume 9, 2021, 3

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Water Reuse Applications Across Industries in Advanced Economies
12 May 2022 | 15:00 BST

WEBINAR
Complete ammonia oxidizers – a new pathway in the nitrification process
25 May 2022 | 14:00 BST

COURSE
Modelling Sanitation Systems - IHE Delft
2 May 2022 | Online

WEBINAR
Monitoring, Modelling and Mitigating Nitrous Oxide – Masterclass 2
18 May 2022 | 11:00 BST

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