

# IAHR ANNUAL REPORT 2019



International Association  
for Hydro-Environment  
Engineering and Research

Hosted by  
Spain Water and IWHR, China

TOGETHER WE LEAD  
HYDRO-ENVIRONMENT  
SCIENCE AND ENGINEERING

Hosted by:



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DE ESPAÑA

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MINISTERIO  
PARA LA TRANSICIÓN ECOLÓGICA  
Y EL RETO DEMOGRÁFICO



AGENDA  
2030



Dirección General del Agua  
Dirección General de la Costa y el Mar



# IAHR ANNUAL REPORT 2019

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# IAHR ON THE MOVE IN 2019



**Professor Joseph Hun-wei Lee**  
IAHR President

For many governments around the world, water and environment issues are accorded ever higher priorities. The global challenges of population growth, urbanisation, and climate change give rise to many infrastructure needs for which innovative engineering and research play important roles.

Throughout 2019, our international network of leading scholars, practitioners, and researchers – with its unique family spirit – has continued to produce high quality publications and mount events to share and promote exchanges on the latest research advances and best practices in water and environment engineering. Most notably we have revamped the association’s governance structure to more align our work with the needs of the global water community in a rapidly changing world.

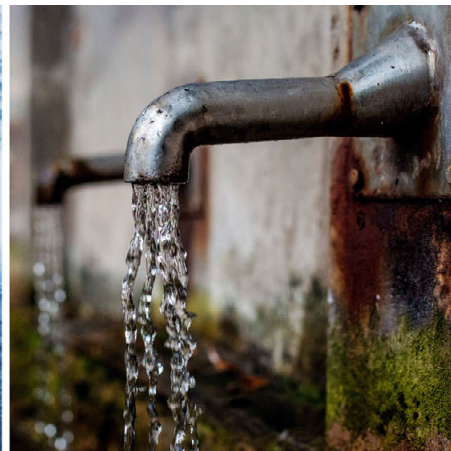
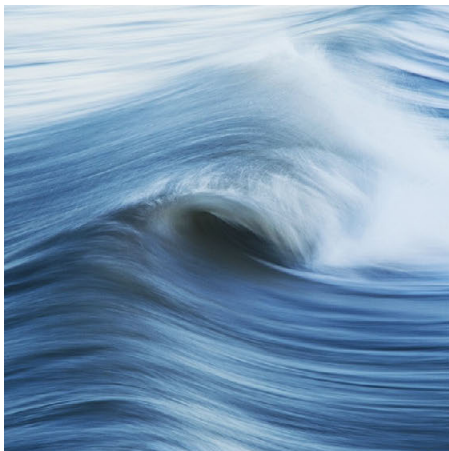
IAHR is on the move, and 2019 has been a year for setting out our path towards the future through the development of new strategic directions to:

- Increase global presence – develop new connections with major regions of the world including Africa and with other global forums.
- Inspire, disseminate, and catalyse state of the art knowledge by building a platform to create and stimulate thinking and to foster innovations and new water industries.
- Promote diversity and enhance international collaboration.

IAHR connects the research, practice, and knowledge agendas to real world hydro-environment issues. Indeed, ‘Water connecting the world’ was the theme of the 38th IAHR World Congress held in September in Panama City. Our flagship event brought together experts from all over the world to share knowledge, meet high-level speakers, and get first-hand exposure to an iconic hydraulic structure of foremost importance – the Panama Canal. The congress also showcased a global forum on ‘Adaptive management in the face of climate change’, just ahead of the UN Climate Action Summit. The extensive cutting-edge work by our technical community in key and emerging areas that include artificial intelligence (AI) and smart water management, eco-hydraulics and nature based solutions at the interface of ecology, fluid mechanics, and hydrology, hydraulic structures and river sedimentation, flood control, and water resources management was also featured.

I would like to express my deep appreciation to the current and former members of the IAHR Council and Executive Committee, with whom I have had the pleasure to collaborate in 2019.

Thanks are also due to the excellent work of the regional divisions, technical committees, and working groups as well as our Secretariat and all of our partners. This annual report highlights some of our activities and gives a reflection of our proud heritage whilst we build towards a brighter future.





**Tom Soo**  
IAHR Executive Director

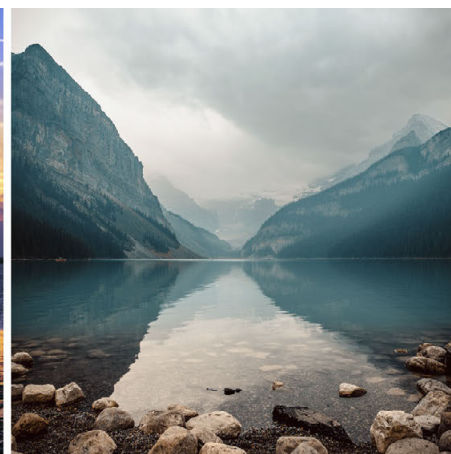
2019 heralded an exciting new start for me as I joined as Executive Director with this incredible and historic community that makes up the International Association for Hydro-environment Engineering and Research. I am pleased to report that the association realised many activities during 2019, revolving around our technical and regional communities, the IAHR World Congress which we held in Panama City in September, and our leading-edge publications. Some (but unfortunately not all!) of these action highlights are presented in this annual report.

The global secretariat with its two offices in Madrid, Spain, and Beijing, China, focused on working with the Executive Committee and Council to continually improve support and engagement with IAHR members and their activities, as well as maintain IT functions, improve communications, and foster healthy finance

and administration. The secretariat also supported the strengthening of the IAHR governance, as the association welcomed in a newly elected Council, a newly adopted constitution and by-laws, and worked to prepare a new, four-year strategic plan.

The myriad of complex development challenges raised by unprecedented demographic shift, climate change, and intrinsic change is a call to our global community to accelerate knowledge discovery in the Hydro-Environment sector to enable better understanding and technical solutions that are in harmony with nature and society.

IAHR seeks to provide the platform for members and partners alike to build a strong, vibrant network that advances all of our works.





# IAHR

## A VIBRANT COMMUNITY OF PEOPLE AND ORGANISATIONS

The International Association for Hydro-environment Engineering and Research (IAHR) 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.

2019 was a year of momentum for the entire IAHR community. The celebration of the 38th IAHR World Congress, the international conferences and symposiums organised by the regional divisions, the General Members Assembly, the creation of new technical committees and working groups to respond to new challenges, the recognition of the inspiring achievements of IAHR awardees, and the growing community of outstanding young professionals affiliates and Institute members marked the year.



*Numerous records have been broken across the world lately - warmest, wettest, windiest, driest, and highest. Our work has never been more important - whether understanding the fundamental science, developing technologies to address or mitigate these challenges, structuring the body of scientific and engineering knowledge that informs policy and management decisions, or preparing the future workforce capable of addressing these societal challenges. IAHR plays an important role in networking senior researchers, early career researchers and students in agencies, academia and the private sector to accelerate knowledge discovery.*

**Peter Goodwin**  
IAHR President 2015-2019

# IAHR A WORLD COMMUNITY



IAHR members, their views, knowledge, commitment, and experiences all over the world are what make IAHR a global leading association in the field of hydro-environment science and engineering.

IAHR is organised around four regional divisions which guarantee that regional hydro-environment concerns and priorities are taken into consideration and ensure the relevance and impact of the association's activities.

In an effort to enhance and promote communication and the exchange of knowledge at a national and local level, IAHR also supports the creation of national chapters.

The IAHR Hong Kong SAR\*, China, and Spain chapters were particularly active in 2019. The Hong Kong chapter organised its annual general meeting together with a half-day professional course on 'Rivers and Water under Climate Change' as well as several technical seminars. The IAHR Spain chapter organised and held the 6th Spanish National Conference on Water Engineering.

\*SAR: Special Administrative Region

**4 REGIONAL DIVISIONS**

Africa | Asia and Pacific  
Europe | Latin America

**4811 MEMBERS**

95 countries represented

# IAHR

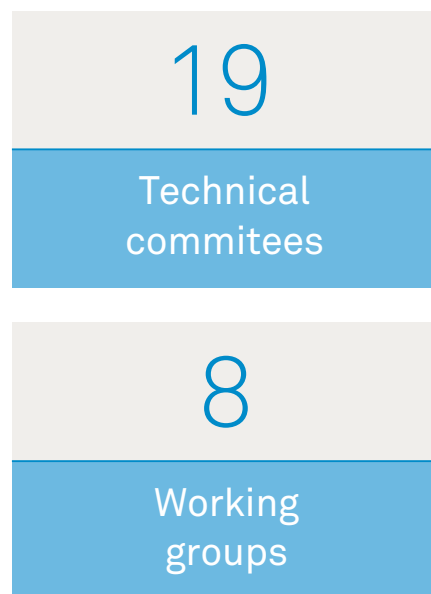
## A COMMUNITY OF EXPERTISE

### IAHR TECHNICAL COMMITTEES AND WORKING GROUPS

The technical expertise of IAHR is concentrated in its technical committees (TCs) and working groups (WGs) in areas of current hydro-environment focus.

The emergence of novel approaches and as yet unaddressed challenges to the environment and the world's water resources has been a catalyst for the creation of 5 additional technical committees and working groups in 2019, which makes a total of 27 TCs and WGs.

IAHR's main achievements in 2019 included the organisation of major technical symposiums and at international level, the convening of special sessions in key international events, training and capacity-building activities, contributions to major international reports such as the UN World Water Development Report, and cooperation and involvement in international initiatives and programmes.



### New technical committees

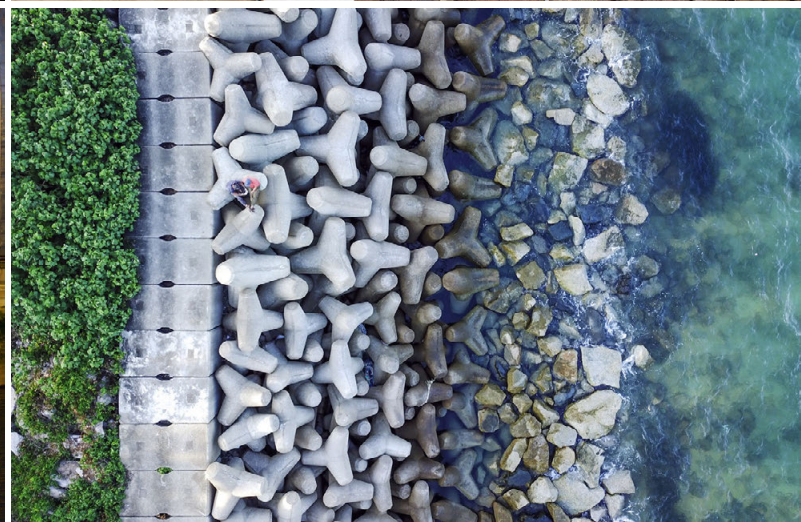
Technical committee on Climate Change Adaptation  
IAHR/Hohai University technical co-committee on Higher Education and e-learning



### New working groups

Working group on Drones in Hydraulics  
Working group on Sustainable Development Goals  
Working group on Reservoir Sedimentation







# IAHR

## A COMMUNITY OF EXCELLENCE

### IAHR AWARDS IN 2019

The IAHR awards are designed to recognise the careers, papers, and projects of outstanding members who have had a remarkable impact on hydro-environment engineering and research. The biennial IAHR World Congresses are the peak moment for the IAHR awards and where the awardees are announced.

#### 8 awards | 15 awardees

<p><b>Honorary Membership Award</b> to three:</p> <ul style="list-style-type: none"> <li>distinguished IAHR members for their life-time contributions to hydro-environment engineering and research, and outstanding service to the association.</li> </ul>	<p>Young C. Kim Angelos Findikakis Arthur Mynett</p>
<p><b>M. Selim Yalin Lifetime Achievement Award</b> to an IAHR member:</p> <ul style="list-style-type: none"> <li>whose experimental, theoretical, or numerical research has resulted in significant and enduring contributions to the understanding of the physics of phenomena and/or processes in hydraulic science or engineering,</li> <li>with demonstrated outstanding skills in graduate teaching and supervision.</li> </ul>	<p>Vladimir Nikora</p>
<p><b>Arthur Thomas Ippen Award</b> to an IAHR member who:</p> <ul style="list-style-type: none"> <li>has demonstrated conspicuously outstanding ability, originality, and accomplishment in basic hydraulic research and/or applied hydraulic engineering,</li> <li>holds great promise for continuation of a high level of productivity in this profession.</li> </ul>	<p>Claudia Aduce</p>
<p><b>Harold Jan Schoemaker Award</b> to the:</p> <ul style="list-style-type: none"> <li>author(s) of the paper judged the most outstanding paper published in the <i>IAHR Journal of Hydraulic Research</i> in the two years preceding the IAHR World Congress.</li> </ul>	<p>Andrew Nichols Simon J. Tait Kirill V. Horoshenkov Simon J. Shepherd</p>
<p><b>Kennedy YPN Award</b> to YPNs members:</p> <ul style="list-style-type: none"> <li>with a proven commitment to the association and engagement on water issues.</li> </ul>	<p>Siddharth Seshan Rosa Camila Timana Mendoza</p>
<p><b>Willi H. Hager JHR Best Reviewer Award</b> to reviewers:</p> <ul style="list-style-type: none"> <li>judged to provide the most outstanding reviews of the papers submitted to the <i>IAHR Journal of Hydraulic Research</i> during the preceding two-year period.</li> </ul>	<p>Michael Pfister Ling Zhou</p>
<p><b>Hydro-Environment World Heritage Award</b> to:</p> <ul style="list-style-type: none"> <li>a local infrastructure of lasting and international importance.</li> </ul>	<p>Panama Canal Authority</p>
<p><b>Hydro-Environment Industry Innovation Award</b> to:</p> <ul style="list-style-type: none"> <li>a recent local innovation in design of lasting and international importance.</li> </ul>	<p>City of Knowledge, Panama</p>







# IAHR A COMMUNITY OF THE FUTURE

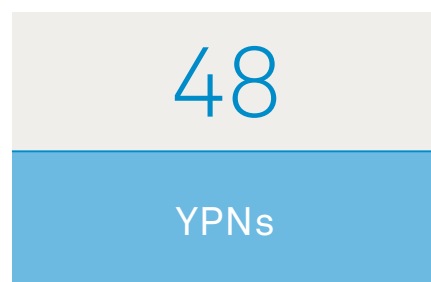
## IAHR YOUNG PROFESSIONALS NETWORKS (YPNs)

IAHR Young Professionals Networks (YPNs) ensure that new generations of future hydro-environment professionals and researchers have the opportunity to engage in IAHR activities, network and connect with peers and senior IAHR members, receive mentoring and support, and get access to the latest knowledge, information and know-how in the early stage of their careers.

YPN members represent the backbone of the future IAHR and play an important role within the association through their activities and initiatives.

In 2019, the IAHR Young Professionals General Assembly held in Panama during the 38th IAHR World Congress brought together more than a hundred young professional members and non-members from different regions to discuss various strategic issues and provided participants with the opportunity to interact with senior IAHR members.

The IAHR Panama YPN, which was created in 2019, was particularly active at the 38th IAHR World Congress, where it was responsible for the organisation of a series of YPN talks and workshops, technical visits, a YPN night which allowed young members from all over the world to meet, and a YPN corner at the main exhibition hall.



+3

### New YPNs

- University of Central Punjab (UCP) Lahore YPN
- Venezuela YPN
- Panama YPN









# IAHR A COMMUNITY OF LEADING COMPANIES AND ORGANISATIONS

## IAHR INSTITUTE MEMBERS

133

Institute  
members

IAHR's Institute members include laboratories and organisations involved in research and development. The community also includes educational institutions, organisations, and companies involved in hydro-environment engineering, policy analysis, water resources management, industrial applications, and environment management.

Institute members are very diverse in size and range from small to some of the largest companies and organisations in the world. They participate in IAHR technical committees, provide research and professional opportunities for YPN members, and share their knowledge and practical experiences throughout IAHR's publications, congresses and symposiums.

47

Countries

A major achievement of the community in 2019 was the organisation of the Global Forum at the 38th IAHR World Congress in Panama on 2 September 2019, where leaders and experts from government agencies and research institutes engaged in a debate on large regulated ecosystems and exchanged experiences and best practices in implementing landscape-scale ecosystem management and accountability metrics in these complex and dynamic systems.

+11

New  
Institute  
members

Hong Kong Drainage Service Department  
Hong Kong SAR China

WaterBalance Technology Co., Ltd. China

Arcadis. China

Beijing Daheng Software Technology Co.,  
Ltd. China

Wadi Studio Beijing. China

Xi'an University of Technology. China

Queensland University. Haiti

Canal de Isabel II. Spain

University of Maryland Center for  
Environmental Science. USA

Civil Engineering and Development  
Department. Hong Kong SAR China

Water Supplies Department. Hong Kong  
SAR China



# IAHR EVENTS

## CONVENING EXPERTISE AND LEADERSHIP

IAHR organises and co-sponsors a wide variety of events worldwide which provide opportunities to network and facilitate the exchange of knowledge, experiences, views and expertise in hydro-environmental engineering and research. These events range from national thematic workshops and conferences to large international symposiums and IAHR's biennial World's Congresses.

### Highlights of major events in 2019

#### February

[International Symposium and Exhibition on Hydro-Environment Sensors and Software 2019. \(Hydrosensoft\)](#) | Spain

#### May

10th International Symposium on Managed Aquifer Recharge (ISMAR 10) | Spain

[XXXVIII International School of Hydraulics](#) | Poland

#### June

International Workshop on Modelling Hydrodynamics for Water Resources (MODWATER 2019) | Spain

International Summer School on Hydraulics Measurement Techniques 2019 (W.A.T.E.R. 2019) | Italy

[7th International Junior Researcher and Engineer Workshop on Hydraulic Structures \(IJREWHS 2019\)](#) | USA

#### July

10th International Conference on Urban Water (Novatech 2019) | France

International Symposium on Water Modelling (iSymWater 2019) | China

#### August

9th International Conference on Sewer Processes and Networks (SPN 9) | Denmark

#### September

[38th IAHR World Congress. 'Water - Connecting the World'](#) | Panamá

14th International Symposium on River Sedimentation | China

[2nd IAHR Symposium on Hydraulic Machinery and Systems](#) | Republic of Korea

Advanced Short Course on Liquefaction Around Marine Structures | Turkey

#### October

2019 IMEKO TC-19 International Workshop on Metrology for the Sea (MetroSea2019) | Italy

19th IAHR International Conference on Cooling Towers and Heat Exchangers (ICCTHE 2019) | USA

International Symposium on Sustainable Urban Drainage | China

[6th Spanish National Conference on Water Engineering \(JIA 2019\)](#) | Spain

#### November

11th River, Coastal and Estuarine Morphodynamics Symposium (RCM2019) | New Zealand

In blue, IAHR events | In black, IAHR co-sponsored events







# 38th IAHR WORLD CONGRESS AND EXHIBITION

*WATER-CONNECTING THE WORLD*  
1–6 SEPTEMBER, 2019 PANAMA

Celebrated every two years, IAHR World Congresses are one of the most important activities of the association and attract participants from all over the world. The Congresses provide scientists, engineers, organisations, central and local authorities, companies, and young professionals early in their careers with a stimulating opportunity to share and discuss recent advances and experiences, and identify innovative and emerging trends in hydro-environmental science and engineering.

## The 38th IAHR World Congress in numbers

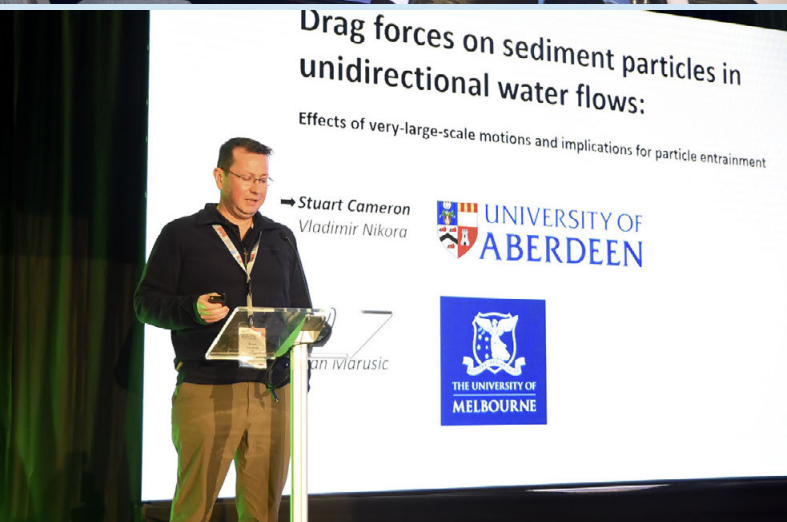
925	751	21
Participants from 54 countries	Full papers presented	Special sessions
8	242	17
Keynotes by leading experts and professionals	YPNs delegates	Companies At the comercial and professional exhibition

The 38th IAHR World Congress offered a full program of activities to bring together IAHR expertise and facilitate interaction between the participants. This included pre-Congress workshops, technical conferences, special thematic sessions, regional division and technical committee meetings, debates with the participation of honorary members, talks by journal editors and monograph authors, speeches by award winners, social events, and on-site technical visits.

The Congress also provided a unique platform for the launch of new initiatives such as the Global Forum and the new IAHR White Paper Series, and showcased the latest developments in equipment, software and instrumentation through an industry exhibition space.









# IAHR KNOWLEDGE PRODUCTS LEADING THOUGHT

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 peer-reviewed journals and magazines, scientific and technical proceedings, book and paper series.

## IAHR journals

### 7 peer-reviewed journals

- Journal of Hydraulic Research
- Journal of Hydro-environment Research
- International Journal of River Basin Management
- Journal of Ecohydraulics
- Journal of Applied Water Engineering and Research
- Ibero-American Water Journal (RIBAGUA)
- Latin American Water Journal of Young Researchers and Professionals

### 2 open-access journals

- RIBAGUA
- Latin American Water Journal of Young Researchers and Professionals

### 181,812 paper downloads

- + 154% paper downloads from *IAHR Journal of Ecohydraulics*
- + Impact factor of *IAHR Journal of Hydraulic Research* from 2,076 to 2,974

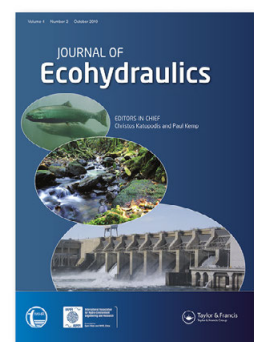
### Top downloaded article in 2019

“Discharge equation of a circular sharp-crested orifice”  
by Prabhata K. Swamee and Nimisha Swamee  
Published in *IAHR Journal of Hydraulic Research*  
(4,986 downloads)

### 4 associated journals

- Journal of Hydroinformatics
- Urban Water Journal
- International Journal of Sediment Research
- Water Science and Engineering

### 993 papers submitted



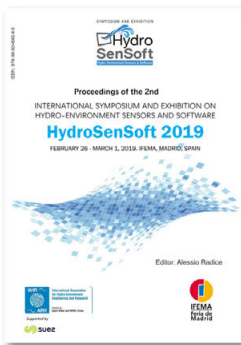


## IAHR magazine: Hydrolink

Published four times a year since 1964, *Hydrolink* is the IAHR members magazine. It publishes articles on projects, research, and new methods and tools of interest to the hydro-environment engineering community.

### THEMATIC FOCUS IN 2019

- Drones
- Reservoir sedimentation
- Groundwater
- Green coastal infrastructure



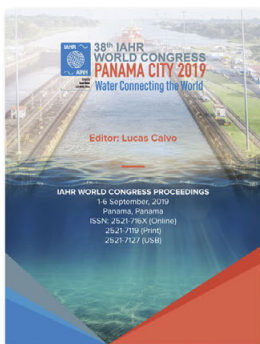
## IAHR proceedings

IAHR contributes to the dissemination of research findings through the publication of proceedings from renowned scientific and technical conferences, symposiums and congresses.

9 conference proceedings published

### Published papers

- [HydroSenSoft\\*](#) | 35
- [10th International Symposium on Managed Aquifer Recharge](#) | 73
- [38th International School of Hydraulics. Poland](#) | 27
- [7th International Junior Researcher and Engineer Workshop on Hydraulic Structures](#) | 10
- [9th International Conference on Sewer Processes and Networks](#) | 64
- [10th International Conference on Urban Water](#) | 216
- [38th IAHR World Congress\\*](#) | 751



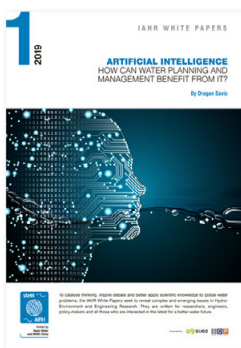
### Published abstracts

- [6th Spanish National Conference on Water Engineering](#) | 159
- [11th River, Coastal and Estuarine Morphodynamics Symposium](#) | 215

In blue, IAHR events

In black, IAHR co-sponsored events

\*Published by IAHR



## IAHR White Paper Series

To catalyse thinking, inspire debate, and better apply scientific knowledge to global water problems, a series of IAHR White Papers was launched in 2019. The series, introduced during the 38th IAHR World Congress, seeks to reveal complex and emerging issues in hydro-environment and engineering research.

### IAHR WHITE PAPER IN 2019

Artificial Intelligence  
*How can water planning and management benefit from it?*  
 by Dragan Savic



# IAHR GOVERNANCE 2019 HIGHLIGHTS

The collective synergy of the association is achieved through different governance processes which ensure IAHR members' voices and concerns guide the association on its continuing path towards a better future for water and the environment.

## Council elections and 2019 meeting

The IAHR Council, the principal governing body of the association, renews its mandate every two years. After the 2019 elections, which showed an increasing participation of women members, a new Council was elected to serve until July 2021.

## New Council composition

<p><b>President</b></p> <p><b>Joseph Hun-wei Lee</b> The Hong Kong University of Science and Technology   Hong Kong SAR China</p>	<p><b>Vice-Presidents</b></p> <p><b>Robert Ettema</b> Colorado State University   USA</p> <p><b>Silke Wieprecht</b> University of Stuttgart   Germany</p> <p><b>Hyoseop Woo</b> Gwangju Institute of Science and Technology   Republic of Korea</p>	<p><b>Secretaries-General</b></p> <p><b>Ramón Gutiérrez Serret</b> CEDEX   Spain</p> <p><b>Jing Peng</b> China Institute of Water Resources and Hydropower Research   China</p>
<p><b>Division Chairs</b></p> <p><b>Gregory De Costa</b> Open Polytechnic of New Zealand New Zealand</p> <p><b>Pablo Daniel Spalleti</b> Instituto Nacional Del Agua   Argentina</p> <p><b>David Stephenson</b> University of Bostwana   South Africa</p>	<p><b>Members</b></p> <p><b>Vladan Babovic</b> National University Singapore   Singapore</p> <p><b>Pengzhi Lin</b> Sichuan University   China</p> <p><b>Amparo López Jiménez</b> Universidad Politécnica de Valencia   Spain</p> <p><b>Dalila Loudyi</b> Hassan II University of Casablanca   Morocco</p> <p><b>Verónica Minaya</b> Escuela Politécnica Nacional   Ecuador</p> <p><b>Vladimir Nikora</b> University of Aberdeen   UK</p> <p><b>Ioan Nistor</b> University of Ottawa   Canada</p> <p><b>Ioana Popescu</b> IHE Delft Institute for Water Education The Netherlands</p>	<p><b>Executive Director ex-officio</b></p> <p><b>Tom Soo</b> IAHR Secretariat</p> <p><b>Co-opted</b></p> <p><b>Takashi Asaeda</b> Saitama University   Japan</p> <p><b>Damien Violeau</b> Electricité de France   France</p>

## Highlights from the IAHR Council meeting in Panama

President Peter Goodwin launched the new White Paper Series; new technical committees and working groups were started; reports were given regarding the numerous technical symposiums and regional congresses that were successfully organised in the previous two years and that welcomed around 6,000 delegates in total; the number of Young Professionals Networks increased; the portfolio of IAHR Journals was discussed; and, a renewed IAHR Media Library was announced.



## Executive Committee

The IAHR Executive Committee is delegated functions to enable efficient decision making on behalf of the association. It consists of the President, the three Vice-Presidents, the two Secretaries-General and the Executive Director (ex-officio).

## Appointment of new Executive Director

Christopher George first IAHR Executive Director retired after 20 years of dedication. Tom Soo joined IAHR as its new Executive Director in April 2019.



## General Members Assembly

The IAHR General Members Assembly (GMA) reports to the members about the activities of the association and ensures that the association remains responsive to the members' interests and emerging global challenges. The 2019 GMA took place at the 38th IAHR World Congress in Panama and saw a 25% increase in participation.



## Developing a new vision and strategy

During 2019, a special strategy preparation group was convened with the task of evaluating the existing position of IAHR and setting the future orientations for the upcoming four years (2020-2023). The group – comprising experienced and new members of IAHR, Peter Goodwin, James Ball, Silke Wieprecht, Angelos Findikakis, Joseph Lee, and Tom Soo – held several online workshops to draft a strategic framework for presentation to the IAHR Council; who were engaged via presentations and breakout sessions during the Panama IAHR World Congress. In order to maximise member involvement and input, a public members consultation on IAHR's future strategic plan was also held during the 2019 General Members Assembly.

The strategic plan for 2020-2023 was readied for ratification by the EC and Council with a public launch in 2020. The plan rests on four pillars:

- provide a world class international networking platform and great member experience;
- inspire, disseminate, and catalyse state-of-the-art knowledge and thinking;
- convene events that set agendas, and both harness and amplify the collective knowledge of the global Hydro-Environment community;
- act as a global voice on behalf of the Hydro-Environment engineering industry and research community.

## Changes in the Constitution and by-laws

Proposed changes to the Constitution and by-laws were unanimously adopted and will take effect in July 2021. The changes will make IAHR more responsive to its members' needs, boost the members' initiatives through a better linkage with leadership decision-making, and enhance the attractiveness of IAHR to early-career researchers and engineers.



# IAHR FINANCIAL OVERVIEW



TOTAL INCOME	
Membership	29.00 %
Congress and events	13.00 %
Publications	29.30 %
Grants	22.30 %
Financial income	2.00 %
Other	4.40 %

TOTAL EXPENDITURE	
Publications	18.40 %
Congress and events	11.77 %
Human resources	48.11 %
Operations	21.72 %

The 2019 financial balance of the association was positive: **76,546 EUR**

Thanks to our hosts:



Dirección General del Agua  
Dirección General de la Costa y el Mar

Thanks to our sponsors for their support in 2019



## About IAHR

The International Association for Hydro-Environment Engineering and Research (IAHR), founded in 1935 as the “International Association for Hydraulic Structures Research”, is a non-profit, global, independent members-based organisation of engineers and water specialists working in fields related to the hydro-environmental sciences and their practical application. Activities range from river and maritime hydraulics to water resources development and ecohydraulics, through to ice engineering, hydro-informatics, flood risk management and continuing education and training.

IAHR stimulates and promotes both research and its application, and by so doing contributes to sustainable development, the optimisation of world water resources management, the protection of the environment and a better water future for all.

[www.iahr.org](http://www.iahr.org)

### IAHR Global Secretariat

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