IAHR On the road to 2023 And beyond



AIRH International Association for Hydro-Environment Engineering and Research Hosted by Spain Water and IWHR, China

International Association for Hydro-Environment Engineering and Research (IAHR)



Founded in 1935, the International Association for Hydro-Environment Engineering and Research (IAHR) is a notfor-profit, global, independent members-based organisation of hydro-environment engineers, public and private institutions, professionals and researchers.

Our vision is to accelerate solutions and knowledge discovery about the water environment to enable a water secure future for all nations.



ROADMAP TO THE UN 2023 WATER CONFERENCE ON THE MID-TERM REVIEW OF THE UN WATER ACTION DECADE





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Integrated and intelligent approach to the **management of the full water cycle** to address the global challenges faced by people and the environment.

Sound understanding of the water cycle plays in achieving the Sustainable Development Goals (SDGs), not the least of which is **the connection between the ocean goal (SDG 14) and the water goal (SDG 6)** in addressing land-based activities affecting the sea.

From Snow to Sea underscores the importance of taking a holistic approach in water management, an approach that emphasizes the value of knowledge and modelling in understanding and developing the processes that impact water use and management. will provide scientists, engineers, organisations, central and local authorities, companies, and young professionals early in their careers a stimulating opportunity to share and discuss recent advances and experiences, and identify innovative and emerging trends in hydroenvironmental science and engineering.





UNIVERSIDAD DE GRANADA







From

Snow to

Sea

- 1200 Participants
- 4 High Level Panels
- 15 Special Sessions
- 4 Side Events
- 98 Oral Regular Sessions + 143 posters
- 8 Technical Visits
- **3** Workshops and **2** Master Classes







Human-water relationships



Water resources management, valuing and resilience



Snow, river and sediment management



Computational and experimental methods



Environmental hydraulics and urban water cycle



Coasts, estuaries, shelves and seas



Hydraulic structures



Extreme events: from droughts to floods





Granada Outcome Statement



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Hydro-Environment Knowledge for Solutions -From Snow to Sea

The 39th IAHR World Congress, bringing together 1200 experts, engineers and scientists from more than 70 nations around the world, addressed the theme "From Snow to Sea". Convened by the International Association for Hydro-Environment Engineering and Research (IAHR) and the University of Granada, the Congress focused attention on the importance of considering the integral water cycle to address present and future challenges including:

Human-water relationships; Snow, river and sediment management; Environmental hydraulics and urban water cycle; Hydraulic structures; Water-resource management, valuing and resilience; Computational and experimental methods; Coasts, estuaries and marine shelves; Extreme events (notably, droughts and floods); Ecohydraulics; and the Digitalisation of water management.

To address these challenges the IARR Congress provided a platform for exchanges of the latest advances and experiences in water science and negineering, and innovation practices over 98 regular sessions, 143 poster presentations, 15 special sessions, 4 side events, 8 Technical Visits, 3 Workshops, 2 Master Classes, and Young Professional Network session. A series of ground-breaking "water monographs" was launched related to coastal protection, urban flood control, and water resources management. The activities reflect the vibrant meeting of the minds of world leading experts in the water and environment engineering field.

The global hydro-environment engineering and research community highlights the need to accelerate the discovery of knowledge and implementation of solutions to achieve the United Nation's Sustainable Development Goals (SDGs). On the road to the 2023 UN Conference on Water and recognising the 2022 UN Conference on Oceans, the Congress, including its four High-Level Panels, delivered key messages on:

Snow to Sea

- Research, engineering, management and legislative activities should operate in relevant, coordinated ways to develop operational snow-to-sea management approaches.
- Governance institutions responsible for regulating and managing inland water resources, coastal areas and marine environments should develop systematic ways to share data and information.
- Integrated freshwater and ocean monitoring systems can support coordinated implementation of SDGs 6 and 14.
- Coastal, fluvial and hydrological research communities must work closely together on modelling, field measurements and assessment to facilitate integrated actions and research on pathways across river basins.

Snow to Sea – holistic management of the full water cycle

Water Governance - strong enabling environment that considers the full water cycle and facilitates the best knowledge for desciion making.

Artificial Intelligence - will help to transform the water and environment industry, and help to mitigate risks to realising a water secure world

Nature Based Solutions - important line of methods augmenting traditional solutions

Capacity Development is essential for nation to accelerate water development



Capacity Development for a Water Secure Future



VICEPRESIDENCIA TERCERA DEL GOBIERNO MINISTERIO PARA LA TRANSICIÓN ECOLÓGICA Y EL RETO DEMOGRÁFICO

UNESCO

Hydrological Programme



for Hydro-Environment Engineering and Research Hosted by Spain Water and IWHR, China

ternational Association

"...recognises the critical role of **capacity development in nations to accelerate the realisation of the SDG 6**.

Global and regional platforms and mechanisms, at all levels across government, academic, private sector and community are required.

Sustained and ongoing investment in actions, resources and projects are required to accelerate the technical exchange, training and further education, knowledge transfer and the building of lasting networks. "



Snow to Sea

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• Governance institutions responsible for regulating and managing inland water resources, coastal areas and marine environments should develop systematic ways to share data and information.

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• Coastal, fluvial and hydrological research communities must work closely together on modelling, field measurements and assessment to facilitate integrated actions and research on path-ways across river basins.

Water Governance

- Sound water management cannot be achieved without robust governance that should be based on strong regulatory frameworks, improved institutional capacity, transparency and ac-tive public participation.
- Improving governance needs a holistic approach that considers the hydrological cycle as a whole and that covers all levels of management and planning jurisdictions (river basin, inter-national, national, regional, or multilateral territorial).
- Governance should pave the way to facilitate the best available technical and scientific knowledge for decision making.



Artificial Intelligence

• Artificial Intelligence (AI), and various forms of digitalisation, will help to transform the water and environment industry, and help to mitigate risks to realising a water secure world.

• The human dimension of technology transition will catalyse positive change for AI in the water sector - in particular create added value to traditional industries and economies

• The rapid growth in AI will help provide the backbone to achieve SDG goals, and create job opportunities across sectors, including the next generation of hydro-environmental engineers.

Nature Based Solutions

• Nature Based Solutions (NBS) form an important line of methods augmenting traditional solutions to tackle a range of water-management challenges.

• Integrated systems understanding is essential – selection of the most optimal measures in a local context after incorporating physical, socio-economic and ecological points of view.

• Successful implementation of NBS requires working across disciplines, exchanging ideas and co-operating between different sectors (academia, governments, NGOs, civil society, financial institutions and industry).





Figure 1. The Direct Results and Influence Achieved from Knowledge Exchange









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