

World Association for Sedimentation & Erosion Research – WASER

NEWSLETTER

Reporting WASER news to you regularly

2024 No. 2

(July 4, 2024)

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NEWS

The International Sediment Initiative Advisory Board Meeting held at UNESCO Headquarters, Paris, during April 22-23, 2024

The International Sediment Initiative (ISI) Advisory Board Meeting on the ISI Strategy for IHP-IX (2022-2029) was held at UNESCO headquarters, Paris, France during April 22-23, 2024. The main objective of the meeting was to discuss and finalize the new ISI strategy and its workplan for the implementation of ISI during IHP-IX. Over 20 participants attended the meeting, both in person and online, including Mr. Abou Amani, Director of the Division of Water Sciences and Secretary of the IHP, UNESCO; Dr. Anil Mishra and Dr. Koen Verbist, Chief and Programme Specialist of the Hydrological Systems, Climate Change and Adaptation Section, UNESCO; Prof. Manfred Spreafico, Prof. Des. E. Walling, and Prof. Cheng Liu, retiring members of the ISI Advisory Group; Prof. Hongling Shi, Secretary of the ISI Global Secretariat; and members of the new ISI Advisory Board to be approved.



During the opening session chaired by Dr. Anil Mishra, Mr. Abou Amani highly praised the achievements of ISI and the outstanding contributions of the retiring members of the ISI Advisory Group and Experts Group during IHP-VIII. He thanked the International Research and Training Center on Erosion and Sedimentation (IRTCES) for its contributions to scientific research, international technical exchange and training activities in its role as the ISI Technical Secretariat, as well as its support for other ISI activities. ISI is expected to make an important contribution to the strategy of IHP-IX. Dr. Koen Verbist gave a brief introduction to IHP-IX, highlighting that this phase puts science into action for a Water Secure World in a Changing Environment.

Dr. Koen Verbist chaired the following sessions, including: (1) A Review of the achievements of ISI work in IHP-VIII and an Introduction to Erosion and Sediment Transport and Management in river systems (ISI Thematic Priority 1); (2) Presentations from different Regional Groups (Group I Western European and North American States; Group III Latin American and Caribbean States; Group IV Asian and Pacific States; and Group Va Africa and Vb Arab States): Current Activities, Needs and Challenges of Sediments and Erosion; (3) An Introduction to Sediment-related Disaster Risk Reduction (Current Activities, Needs and Challenges); (4) An Introduction to Glacier-related sediment and erosion hazard management (Current Activities, Needs and Challenges); (5) Presentation of the draft new ISI Strategy (2022 to 2028), and brainstorming of overall objectives and the new ISI Strategy; (6) Brainstorming of the draft workplan for the ISI thematic priorities (1 - Erosion and Sediment Transport and Management in river systems; 2 - Sediment-related Disaster Risk Reduction; and 3: Glacier-related sediment and erosion hazard management); and (7) Brainstorming of the ISI governance structure.

During the meeting, Prof. Hongling Shi and Prof. Cheng Liu briefly introduced IRTCES and its activities, reviewed the history of ISI and its achievements and the contributions of IRTCES acting as the ISI Technical Secretariat, presented the relevant activities of IRTCES planned for the coming two years, and proposed potential future new case studies and training workshops for discussion. Prof. Manfred Spreafico and Prof. Des Walling presented and commented on the success, experiences and lessons learned from previous ISI activities and their implications for the future.

At the meeting, the Regional Coordinators and Thematic Coordinators were nominated, and the responsible focal points for the activities of the workplan for the implementation of the new ISI strategy during IHP-IX were decided.

Established in 2002, the ISI is a global initiative to assess erosion and sediment transport to marine, lake or reservoir environments, aimed at the creation of a comprehensive approach for the remediation and conservation of surface waters, intricately linking science with policy and management needs. ISI is one of the fifteen Flagship Initiatives approved by the Intergovernmental Council of the IHP, and an evaluation process finalized in 2022 concerning all Flagship Initiatives, highlighted ISI as one of the

initiatives with the best governance and management during IHP-VIII. This meeting marks the launching of the new ISI strategy and its workplan for the IHP-IX and the creation of a new ISI Advisory Board with the ISI Global Secretariat located in IRTCES.



26th session of the Intergovernmental Council of the Intergovernmental Hydrological Programme held in Paris, France, during June 3-7, 2024

The 26th session of the International Hydrological Programme (IHP) Intergovernmental Council of UNESCO convened from 3-7 June 2024. IHP's ninth phase (2022-2029) focuses on putting "science to action for a water secure world, in a changing environment".



Lidia Brito, Assistant Director-General of UNESCO, and Helmut Habersack, Chair of the UNESCO IHP Intergovernmental Council and President of the World Association for Sediment and Erosion Research, attended the meeting and gave the opening remarks. The meeting was chaired by Abou Amani, Director of UNESCO's Division of Water Sciences and Secretary of IHP.

A scientific colloquium titled "50 years of Evolution of Science of Hydrology: From science to Application and Way Forward" was held on June 3. The colloquium was dedicated to the upcoming 50th anniversary of the IHP and 60 years of the Water Programme at UNESCO and since the International Hydrological decade (1965-1975). The celebration will take place in 2025.

The UNESCO Water Family meeting was held on 4 June. The meeting focused on three topics including: the contribution of water families to science, the contribution of water families to capacity development, and the contribution of water families to raising awareness. Prof. Jianli Zhang from IRTCES gave a presentation on the background of IRTCES and shared its contributions in five priority areas of IHP-IX.



The 26th Intergovernmental Council meeting was held on 5-7 June. The meeting reported and approved the resolutions and decisions adopted by the 25th session of the IHP Council, the implementation of IHP Phase IX, the IHP Regional Perspective, the report on the main achievements of IHP Phase VIII, flagship initiatives and their coordination with the new Framework, etc.

The Council is composed of 36 UNESCO Member States elected by the UNESCO General Conference at its ordinary sessions, held every two years. Each of UNESCO's six electoral regions elects Member States for Council membership to ensure equitable geographical distribution. Council members serve for four-year terms and are eligible for re-election.

The WASER president, Prof. Helmut Habersack, was officially appointed as the Chairperson of the 26th IHP Intergovernmental Council. Prof. Jianli Zhang, the Deputy Director of IRTCES and Prof. Hongling Shi, the Division Chief of ITRCES, also attended this meeting.

China touts water conservation model at World Water Forum

Around 700 kilometers of the Yellow River flows through Shaanxi Province, and the vast Loess Plateau in northwest China. China's government has made it a priority to address severe soil and water loss in the region, and protect the river environment. One of the most common measures to control land degradation in cities across Shaanxi Province is planting trees.



China's water resources management strategy, which emphasizes water conservation, offers a potent solution to global water-related challenges, said Li Guoying, China's Minister of Water Resources, at the 10th World Water Forum in Bali, Indonesia, on Monday.

Addressing the Opening and Leaders' Meeting at the forum themed "Water for Shared Prosperity," Li outlined the four major water challenges facing the world: disasters, shortages and stresses, ecosystem degradation, and environmental damage.

In response to these pressing needs, President Xi Jinping proposed an innovative philosophy on water governance in 2014, Li said. This philosophy focuses on "prioritizing water conservation, balancing spatial distribution, adopting systematic approaches, and leveraging the roles of both government and market."

Under this guidance, China has made significant strides in water management. Despite doubling its GDP over the past decade, China maintained stable total water consumption through stringent water conservation policies, Li noted. Additionally, the country developed an efficient water network that has bolstered water supply capabilities and enhanced water security.

China's holistic approach to conservation and systematic governance — encompassing mountains, rivers, forests, farmlands, lakes, grasslands, and deserts — has rejuvenated many rivers, safeguarded lives and property, and minimized flood and drought losses.

Li emphasized that addressing water security and promoting shared prosperity are critical global tasks. He proposed that countries adopt President Xi's water governance philosophy to tackle water-related challenges and achieve harmonious coexistence with water.

Li highlighted the importance of prioritizing people's livelihoods by addressing the water challenges that impact them most, thereby enhancing their prosperity, contentment, and security. He also called for international

cooperation in flood control, water and food security, and ecological safety to improve global water governance.

"Together with the international community, we are ready to sustain efforts to advance water governance and build a community of shared future for mankind," Li said.

The forum ran from May 18 to May 25, 2024.

(Source: <https://www.chinadaily.com.cn/a/202405/20/WS664b4f5aa31082fc043c8219.html>)

Shift away from Nile incision at Luxor ~4,000 years ago impacted ancient Egyptian landscapes

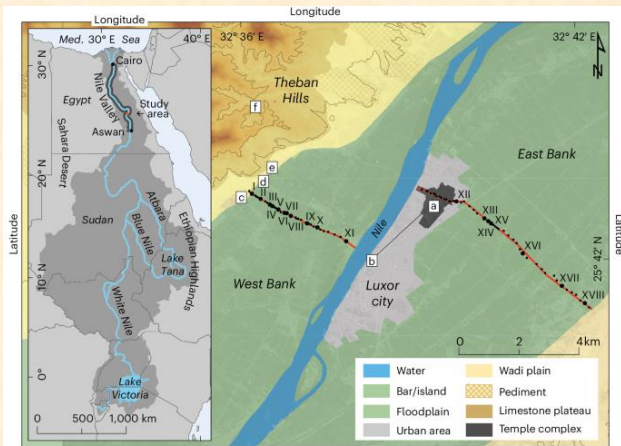
Abstract

Although the Nile is one of the largest rivers in the world and played a central role in ancient Egyptian life, little is known about its response to climatic change during the Holocene. Here we present a framework for the evolution of the Egyptian Nile, demonstrating how climatic and environmental changes have shaped the landscape of the Egyptian Nile Valley over the past 11,500 years, including the civilization of ancient Egypt (~5,000 to 2,000 years ago). Using data from over 80 sediment cores drilled in a transect spanning the Nile Valley near Luxor, pinned in time by 48 optically stimulated luminescence ages, we reconstruct the dynamics of the Nile River during the Holocene in the vicinity of UNESCO World Heritage sites such as Karnak and Luxor temples. According to our reconstruction, valley incision occurred from the start of the record until approximately 4,000 years ago and then rapidly shifted to massive floodplain aggradation. We argue that this relatively abrupt change in the riverine landscape near Luxor from the Middle to Late Holocene was linked to a shift towards a drier regional hydroclimate around this time. Such a dramatic change in river sediment dynamics could have had local agro-economic consequences.

Main

The River Nile forms the fertile corridor that links its headwaters in equatorial Africa to its delta in the Mediterranean. An understanding of its evolution through the Holocene is pivotal to discussions of fluvial system dynamics and ancient cultural development, which both occurred against a backdrop of major hydroclimatic change: that is, the shift from the 'Green Sahara' of the African Humid Period (~14.5–5.0 thousand years ago (ka)) to the present hyper-arid Sahara Desert. The present understanding of the Egyptian Nile's response to climate change relies heavily on data gathered from its delta, its offshore Mediterranean deep-sea fan and the Fayum depression. Few

studies have focused on the fluvial domain itself, and very little is known about the Holocene development of the Egyptian Nile Valley despite its central role in ancient Egyptian history. Furthermore, previous research on the Egyptian Nile is often lacking detailed chronostratigraphic and sedimentological data that make existing reconstructions highly uncertain and inconsistent.



Geomorphic map of the Nile Valley near Luxor, Egypt

To address this knowledge gap, a transect of 81 boreholes spanning the Nile Valley (~10 km wide) was drilled near Luxor (ancient Thebes) in Upper Egypt. Sedimentary information from these cores (average depth ~8 m) was used to study key changes in the riverine landscape, which are pinned in time by 48 optically stimulated luminescence (OSL) ages. This approach provides a unique and vital understanding of the Holocene Egyptian Nile system and its responses to climate change at a focal region of ancient Egyptian culture. Our area of investigation includes UNESCO World Heritage sites such as the Karnak and Luxor temples located east of the present Nile and the royal cult temples and necropoleis on the western desert margin—places that were both physically and mythologically connected to the fluvial landscape. In addition, it is possible that the changing environment also impacted the regional agro-economy, which was of critical importance to the success of the ancient Egyptian state.

Our study shows how the floodplain environment changed dramatically during the Dynastic Period (~5.1–2.4 ka) and how the environmental canvas on which ancient culture developed, thrived and declined was reshaped. We introduce a framework for the Egyptian Nile near Luxor, while also filling in the looming gap in hydroclimatic information that exists between upstream and downstream locations within the Nile Basin.

(Source: Peeters, J., Graham, A., Toonen, W.H.J. et al. Shift away from Nile incision at Luxor ~4,000 years ago impacted ancient Egyptian

landscapes. *Nat. Geosci.* (2024).
<https://doi.org/10.1038/s41561-024-01451-z>)

China reports reductions in runoff and sediment in major rivers

China saw significant reductions in the volumes of runoff and sediment in its major rivers last year, according to a recent report from the Ministry of Water Resources.

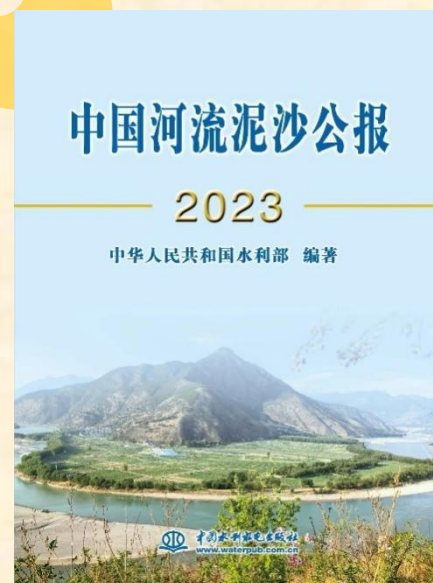
In 2023, the general runoff volume recorded by representative hydrological stations on the country's major watercourses stood at 1,066 billion cubic meters, down by 25 percent from the multi-year average of 1,428 billion cubic meters, a media release from the ministry said on Wednesday.

If compared with the volume in 2022, the reduction in 2023 was 20 percent.

These representative stations reported a total of 204 million metric tons of sediment in 2023, compared with the multi-year average of 1.45 billion tons and 390 million tons in 2022.

The runoff of the Yangtze River, Asia's longest river, represented 63 percent of the total runoff volume registered in all representative hydrological stations last year.

The representative stations on the Yellow River, the country's second-longest river, reported the highest density of sediment of 3.53 kilograms in every cubic meter of water.



2023 Gazette of River Sediment in China

(Source: <https://www.chinadaily.com.cn/a/202405/23/WS664f3520a31082fc043c8c76.html>)

A study predicts that beach erosion will make Southern California coastal living five times more expensive by 2050

Rising sea levels and urban development are accelerating coastal erosion at an alarming rate in Southern California, with significant ripple effects on the region's economy, a USC study reveals.



Multi-date shoreline evolution analysis using the DSAS model. A Shoreline evolution analysis from 1992 to 2018

The study, published in *Communications Earth & Environment*, predicts that Southern California's coastal living costs will surge fivefold by 2050, as a direct result of beach erosion. This erosion will require more frequent and costly beach nourishment projects to maintain the state's treasured shorelines, consequently driving up the cost of living along the coast.

The challenges facing Southern California mirror a growing threat shared by coastal communities worldwide. The environmental and economic implications of coastal erosion reach far beyond California's shores and demand interdisciplinary, global solutions.

Coastal erosion: Cost of living sure to surge as sandy beaches disappear

To predict future changes along California's sandy coastlines, the researchers focused on the Gulf of Santa Catalina, which stretches over 150 miles from the Palos Verdes Peninsula in Los Angeles County to the northern tip of Baja California in Mexico.

They used a combination of historical and recent satellite images, as well as advanced algorithms, to analyze coastline movement and predict future erosion based on different trends and environmental factors.

The study predicts a tripling of erosion rates by 2050, increasing from an average of 1.45 meters per year to 3.18 meters by 2100. Consequently, the annual sand requirement for beach nourishment could triple by 2050, with costs rising fivefold due to the global increase in sand prices. This will exacerbate economic and logistical pressures on coastal communities.

Beach nourishment involves adding sand to an eroded beach to rebuild it and create a wider barrier against waves and storms.

"Our investigation suggests that coastal problems start inland due to the rapid growth of cities along the coast, which compromise inland sediment replenishment of sandy beaches," said Heggy, whose research focuses on understanding water evolution in Earth's arid environments.

"As our beaches shrink, the cost of maintaining them will rise. Finding innovative solutions is key to securing a sustainable future for our shores and local economies," he said.

Coastal erosion in California: A case study for a global problem

Coastal cities in Southern California and those in North Africa bordering the Mediterranean Sea face a common challenge: a semi-arid climate year-round coupled with the growing threats of rising sea levels and eroding shorelines.

A significant portion of Earth's landmass, roughly 41%, falls under arid or semi-arid classifications, and these areas support over a third of the global population.

To understand this global challenge, the researchers focused on two specific locations: Corona del Mar in Orange County, Calif.—an example of the typical Southern California coastline—and Hammamet North Beach in Tunisia. Both are densely populated and share similar climates, prone to increasing droughts, flash floods and unpredictable rainfall patterns. These characteristics mirror the challenges faced by countless coastal communities worldwide.

The findings showed that the average rate of shoreline retreat in these areas varies. In Southern California, beaches are receding between 0.75 and 1.24 meters per year. In Hammamet North Beach, the retreat rate ranges from 0.21 to about 4.49 meters annually.

"While beach nourishment can temporarily combat erosion, however, it presents significant challenges for developing countries," said Oula Amrouni, a sedimentologist at the National Institute of Marine Sciences and Technologies at the University of Carthage, Tunis, Tunisia, and one of the study's co-authors.

"The high cost of acquiring the right sand, with the specific grain size, quality and composition, and the technical complexity of extracting and laying it are major hurdles. Additionally, worsening erosion in previously stable areas compels more frequent

nourishment projects, straining already limited budgets and leading to unplanned expenditures for many communities."

More information: Oula Amrouni et al, Shoreline retreat and beach nourishment are projected to increase in Southern California, Communications Earth & Environment (2024).

(Source: <https://phys.org/news/2024-05-beach-erosion-southern-california-coastal.html>)

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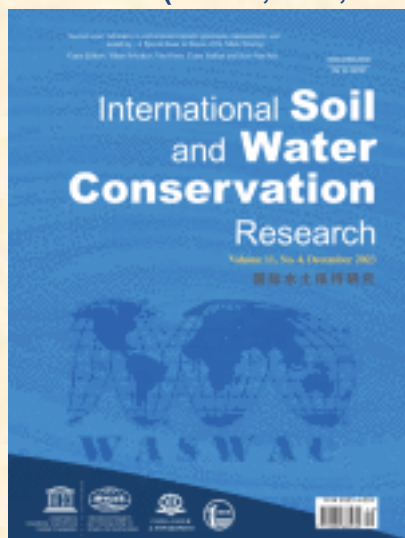
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COMING EVENTS

8th International Conference on Estuaries and Coasts (Canada, August 27-29, 2024)

Date: August 27-29, 2024

Venue: Quebec City, Canada

Organizers: Hydraulic and Environmental Research Groups of INRS (Canada); Clarkson University (USA)

Sponsors: International Research and Training Center on Erosion and Sedimentation (IRTCES); World Association for Erosion and Sediment Research (WASER)

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

Secretariat: Hydraulic and Environmental Research Groups of INRS (Canada)

Summary: The International Conference on Estuaries and Coasts (ICEC) is a triennial event initiated by the International Research and Training Center on Erosion and Sedimentation (IRTCES). Seven such conferences were held in Hangzhou and Guangzhou, China; Sendai, Japan; Hanoi, Vietnam; Muscat, Oman; Caen, France; and Shanghai, China in 2003, 2006, 2009, 2012, 2015, 2018 and 2021, respectively. With support from related international associations, and with the participation of experts and scholars worldwide, the ICEC has attracted wide attention and has become an important and popular event. The ICEC provides an opportunity for scientists, engineers, researchers and decision-makers to exchange ideas, research results and advanced techniques, and develop collaboration and friendships. The 8th International Conference on Estuaries and Coasts (ICEC 2024) will be held in Quebec City, Canada during August 27-29, 2024. The ICEC 2024 will provide a venue for intellectual and enlightening discussions of ideas. The conference program will be broad with topics. The local program and advisory committees are working to prepare an exciting and outstanding conference. Academics, government organizations, industrial partners and interested citizens are invited to attend this conference. We look forward to welcoming you in the beautiful city of Quebec! -The ICEC organizing committee

Theme:

Resilient Estuaries and Coastal Zones under Global Challenges

Topics of the Conference:

1. Saline intrusion and sea level rise: measurements, modelling and forecasting;
2. Waves, storm surges and tsunamis: measurements, modelling, forecasting and warning systems;
3. Estuarine and coastal flows and their evolution by climate change;
4. Sediment transport and morphological change in estuaries and coastal zones;
5. Megacity developments under the threat of sea level rise and climate change;
6. Environment and ecosystem changes in estuaries and coastal zones;
7. Integrated coastal zone management for sustainable developments in the context of global change;
8. Impacts of watershed developments on estuaries and coastal zones;
9. Shoreline protection and beach nourishment;
10. Interactions between estuarine and coastal systems;
11. Resilient engineering solutions in estuaries and coastal zones.

URL: <https://icec2024.org/en>

Contacts:

Quebec Conference Secretariat

Conferium2828 Laurier Blvd.

Quebec City, Quebec

G1V 0B9

Canada

Phone: +1 418 522 8182

Toll free (Canada and U.S.): +1 800 618 8182

Monday to Friday - 09:00 to 16:00 U.S. / Canadian Eastern Time

Email: icec2024@conferium.com

River Flow 2024 (UK, Sep. 2-6, 2024)

Date: September 2-6 2024

Venue: Liverpool, UK

Summary: The 12th Conference on Fluvial Hydraulics under the auspices of IAHR, River Flow 2020, will be held in September 2-6 2024 at Liverpool, UK. Organized since 2002 under the auspices of the Fluvial Hydraulics Committee of the International Association for Hydro-Environment Engineering and Research (IAHR), the River Flow Conference Series has become one of the main international forum for dissemination of research and industrial practice on fluvial hydraulics and river engineering. Following on the tradition and success of previous editions of River Flow conferences, River Flow 2024 will feature a day devoted to Master Classes for young researchers, daily keynote lectures, ample time for the presentation and discussion of accepted contributions (full papers and extended abstracts), and the presentation of the Stephen E. Coleman Award distinguishing the best paper first authored by a young researcher.

Topics:

The conference will as well cover issues related, but not limited to:

1. River morphodynamics and management
2. Hydraulic structures and impacts on local and catchment sediment transport, flow regime and ecology
3. Sediment, pollutant and microplastic dynamics in rivers
4. Fluid Mechanics, numerical modelling and two-phase flow
5. Climate change and adaptation
6. Monitoring techniques and AI?

URL: <https://www.ljmu.ac.uk/conferences/river-flow>

Contacts:

If you have questions, please do not hesitate to e-mail or call: RF2024@ljmu.ac.uk.

Dr Iacopo Carnacina

Email: i.carnacina@ljmu.ac.uk

28th ICOLD Congress & 93rd Annual Meeting (China, May 16-23, 2025)

Date: May 16-23, 2025

Venue: Chengdu, China

Theme: Common Challenges, Shared Future, Better Dams

Topics:

- T1: Precautionary management of dams and river basin under climate change
- T2: Multifunctional development of dams and reservoirs
- T3: Technologies for dam construction under complex (extreme) conditions
- T4: Digital technology applied in dams and digital river basins

T5: The role of dams in achieving the goal of reducing carbon dioxide emissions

URL: <https://www.icold-cigb2025.com/>

Contact:

Email: icoldcigb2025@outlook.com; icoldcigb2025@iwhr.com

41st IAHR World Congress "Innovative Water Engineering for Sustainable Development" (22-27 June 2025. Singapore)

Date: June 22 to 27, 2025

Venue: Singapore

Organizers: IAHR, Singapore's National Water Agency, National University of Singapore, Nanyang Technological University

Summary: The International Association for Hydro-Environment Engineering and Research (IAHR) World Congress is a biennial event that brings together the latest technical and scientific knowledge, practice, trends, and innovations of the global hydro-environment community. Themed "Innovative Water Engineering for Sustainable Development", the 41st IAHR World Congress in Singapore will focus on the importance of innovative water engineering towards meeting the Sustainable Development Goals (SDGs) and targets related to water resources. Held amid the International Decade for Action on "Water for Sustainable Development" 2018–2028, by the UN, the Congress will showcase the role of expert knowledge by the water engineering community to the implementation of innovation solutions to meet the SDGs, and share insights on research, technology and innovations that will create significant impact to tackle global challenges such as climate change and sea level rise.

Theme: Innovative Water Engineering for Sustainable Development

Topics:

1. Coastal Flooding and Protection
2. River and Sediment Engineering
3. Eco- and Environmental Hydraulics
4. Hydraulic Structures
5. Integrated Water Resources Management
6. Urban Water Management
7. Flood and Drought Management
8. Groundwater Management
9. Remote Sensing and Field Measurements
10. Computational and Experimental methods
11. Data-Driven Methods and Machine Learning (Hydroinformatics)
12. Digital water
13. Nature-based solutions

Climate mitigation and adaptation

UCL: <https://2025.iahr.org/>

Email: fulvia_wong@pub.gov.sg

16th International Symposium on the Interactions between Sediments and Water (France, 30 June–4 July, 2025)

Date: June 30th to July 4th, 2025

Venue: Le Touquet, France

Website: <https://iasws2025.univ-lille.fr/>

Main conference topics:

1. Assessing and restoring disturbed catchments
2. Biogeochemistry in the hyporheic zone
3. Biogenic influences on sediment–water interactions from micro to macro scale
4. Carbon budgets and blue carbon ecosystems
5. Coastline, coastal erosion and solutions

6. Emerging contaminants in sediments
7. Extreme events and environments (droughts, floods, wildfires etc.)
8. Modelling suspended particles and aquatic sediments
9. Rewilding and restoration of coastal areas
10. Sediment management
11. Sediment-associated nutrients and contaminant processes
12. Water quality and organic matter along the watershed–river–sea continuum

Other topics related to sediment–water interactions

River Flow 2026 The 13th International Conference on Fluvial Hydraulics Thessaloniki, Greece.

Date: June 29 to July 3, 2026

Venue: Fluvial Hydraulics Thessaloniki, Greece

Organizers: IAHR and chaired by Assoc. Prof. Manousos Valyrakis and Emeritus Prof. Panayotis Prinos

UCL: <https://riverflow2026.web.auth.gr/>

World Association for Sedimentation & Erosion Research

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International Research and Training Center on
Erosion and Sedimentation (IRTCES)
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P.O. Box 366, 20 Chegongzhuang West Rd.
Beijing, 100048, China
Fax: +86-10-68411174
<http://www.irtces.org/>

CONTACTS

Prof. LIU Guangquan
Secretary-General
P.O. Box 366, 20 Chegongzhuang West Rd.
Beijing, 100048, China
Tel: +86-10-68786410(O) Fax: +86-10-68411174
E-mail: gqliu@iwhr.com

Prof. LIU Cheng
Executive Secretary-General
P.O. Box 366, 20 Chegongzhuang West Rd.
Beijing, 100048, China
Tel: +86-10-68786410(O) Fax: +86-10-68411174
E-mail: chliu@iwhr.com; cliu.beijing@gmail.com

Prof. SHI Hongling
Treasurer
P.O. Box 366, 20 Chegongzhuang West Rd.
Beijing, 100048, China
Tel: +86-10-68786408(O) Fax: +86-10-68411174
E-mail: shihl@iwhr.com;

Dr. ZHAO Ying
Secretary
P.O. Box 366, 20 Chegongzhuang West Rd.
Beijing, 100048, China
Tel: +86-10-68786412(O) Fax: +86-10-68411174
E-mail: zhaoying@iwhr.com;

WASER URL: <http://www.waser.cn>

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Newsletter Editor: Zhao Ying
P.O. Box 366, 20 Chegongzhuang West Rd.
Beijing, 100048, China
Fax: +86-10-68411174
E-mail: zhaoying@iwhr.com

Advisor: Prof. Des. E. Walling

Newsletter Layout and Production:

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