

#### WORLD ASSOCIATION FOR SEDIMENTATION AND EROSION RESEARCH

## **World Association for Sedimentation & Erosion Research – WASER**

# NEWSLETTER

# Reporting WASER news to you regularly 2024 No. 3

(October 8, 2024)

#### **IN THIS ISSUE**

#### News

- Academic activities for the 40th Anniversary of IRTCES held on September 23<sup>rd</sup> in Beijing, China
- The 8th International Conference on Estuaries and Coasts held from August 26-30 in Qu dbec City, Canada
   1
- Wildland fire effects on sediment, salinity, and selenium yields in a basin underlain by Cretaceous marine shales near Rangely, Colorado, USA
   3
- Submarine sediment helps Chinese researchers delve into secrets of the Antarctic Ocean
   3
- Sediment load assessments under climate change scenarios and a lack of collaboration between climatologists and environmental modelers
- Multi-decadal vegetation transformations of a New Mexico ponderosa pine landscape after severe fires and aerial seeding

#### **Publications**

♦ Contents of IJSR (Vol. 39, No. 3, 2024)	6	
♦ Contents of IJSR (Vol. 39, No. 4, 2024)	7	
♦ Contents of ISWCR (Vol. 12, No.3, 2024)	8	

#### **Coming Events**

- ♦ 28th ICOLD Congress & 93rd Annual Meeting (China, May 16-23, 2025)
   10
- 41st IAHR World Congress "Innovative Water Engineering for Sustainable Development" (Singapore, 22-27 June 2025.) 10
- ♦ 16th International Symposium on the Interactions between Sediments and Water (France, 30 June to 4 July, 2025) 10
- ♦ 16th International Symposium on River Sedimentation (USA, August, 2025)
   10
- ♦ River Flow 2026 (Greece. June 29–July 3, 2026)
  11
- ♦ 9th International Conference on Estuaries and Coasts (China, December, 2026)
   11
- ♦ 11th International Symposium on Environmental Hydraulics (ISEH 2027) (USA, June 1-4, 2027)

WASER membership application/renewal form

#### 世界泥沙研究学会简报

#### 本期内容

#### 新闻

- ◆ 国际泥沙研究培训中心成立四十周年泥沙与土壤侵蚀国
   际研讨会9月23日在中国北京召开
   1
- ◆ 第八届河口海岸国际研讨会 8 月 26-30 日在加拿大魁北克
   召开
   1
- ◆ 野外火灾对科罗拉多兰吉利附近白垩纪海洋页岩下盆地 泥沙、盐度和硒产量的影响
   3
- ◆ 海底泥沙帮助中国研究人员深入研究南极海洋的秘密 3
- ◆ 气候变化场景下的输沙量评估以及气象学家和环境建模 者之间缺乏整合
- ◆ 严重火灾和飞播后新墨西哥州黄松景观的多年代植被变化

#### 出版物

4

13

∻	《国际泥沙研究》2024年第39卷第3期目录	6
∻	《国际泥沙研究》2024年第39卷第4期目录	7
∻	《国际水土保持研究》2024年第12卷第3期目录	8
议	《信息	
♦	国际大坝委员会第28届大会暨第93届年会(中国,	2025
	年5月16-23日)	10
∻	第 41 届 IAHR 世界大会"创新水工程促进可持续发	展"
	(新加坡, 2025年6月22-27日)	10
∻	第 16 届泥沙与水相互作用国际研讨会(法国, 2025	年6
	月 30 日-7 月 4 日)	10
♦	第16次河流泥沙国际学术讨论会(美国, 2025年8月	])
	10	
∻	第 13 届国际河流水力学会议(River Flow 2026)20	26年
	6月29日至7月3日)	11
♦	第9届河口海岸国际研讨会(中国, 2026年12月)	11
∻	第11届国际环境水力学研讨会(ISEH2027)(美国, 20	27年
	6月1-4日)	11

WASER 会员申请/续新表 13

### <sup>1</sup> NEWS

## Academic activities for the 40th Anniversary of IRTCES held on September 23<sup>rd</sup> in Beijing, China

On the morning of September 23rd, Academic activities for the 40th Anniversary of International Research and Training Center on Erosion and Sedimentation (hereinafter referred to as IRTCES) were held in Beijing. IRTCES was the first Category II Center established by UNESCO in the world. The theme of the meeting was "Work together to build a clean and beautiful world". Mr. Li Liangsheng, Vice Minister of Water Resources of P.R. China, and Mr. Siddharth Chatterjee, United Nations Resident Coordinator in China, attended the opening ceremony and delivered speeches. Ms. Lidia Brito, Assistant Director-General for Natural Sciences of UNESCO, delivered a speech through video. Ms. Peng Jing, Director General of IRTCES and President of the China Institute of Water Resources and Hydropower Research (IWHR), presided over the meeting and summarized.

Mr. Li Liangsheng pointed out in his speech that after 40 years of development, the IRTCES has become a communication and cooperation platform with strong professional strength and great influence in the international sediment research field, and has achieved a leading position, making important contributions to the development and progress of world sediment science. As a world leader in the field of erosion and sedimentation. IRTCES is expected to further fulfill its leading role in this field and as a UNESCO category II center in accordance with the requirements of UNESCO and the Chinese Government, and to continue to support the realization of the objectives of the strategic plan of the ninth phase of the IHP of UNESCO. It will make new and greater contributions to solving global water security problems and building a global community for a shared future!

Mr. Siddharth Chatterjee expressed his congratulations to IRTCES on its 40th anniversary, emphasizing that this milestone event represents decades of global cooperation to address the most serious environmental challenges. As a leader in the field of erosion and sedimentation, IRTCES has been at the forefront of sediment management and has become a model for global international cooperation, providing experts and contributions to research and capacity building in the field of erosion and sedimentation management worldwide. It looks forward to continuing to capitalize on existing knowledge and partnerships to contribute to a more secure and sustainable future. Ms. Lidia Brito pointed out that IRTCES was the first UNESCO Category II Center to be established in 1984 and has provided a role model for the 29 water-related Category II Centers that have been established subsequently in other parts of the world. It plays an important role in promoting the sustainable management of soil and sediment resources locally, regionally and globally, among other aspects. She thanked the Chinese Government for its long-term and fruitful cooperation with UNESCO and looked forward to further deepening cooperation with Chinese scientists.

Representatives from the UNESCO Regional Office for East Asia, the Chinese National Commission for UNESCO, the International Association for Hydro-Environment Engineering and Research (IAHR), the International Sediment Initiative, other UNESCO Category II water-related Centers, and UNESCO Chairs made exchanges. More than 150 participants from more than 20 countries and regions attended the meeting.



#### The 8th International Conference on Estuaries and Coasts held from August 26-30 in Québec City, Canada

The 8th International Conference on Estuaries and Coasts (ICEC2024) was held in Québec City, Canada from August 26-30, 2024. About 150 participants attended. The ICEC2024 was organized by the Hydraulic and Environmental Research Groups of INRS (Institut National de la Recherche Scientifique, Canada) and Clarkson University (USA), sponsored by the International Research and Training Center on Erosion and Sedimentation (IRTCES), the World Association for Sedimentation and Erosion Research (WASER), and cosponsored by Lasalle NHC, Ocean Group, UBERTONE, AdapT, Ecole de Technologie Supérieure, BGC Engineering, CM Québec, the International Association for Hydro-Environment Engineering and Research (IAHR) and the government of Québec City.

The opening ceremony was held on the morning of August 27 and was chaired by Prof. Damien Pham Van Bang, Conference Chair of the ICEC2024. Welcome speeches were made by Prof. Pham, Prof. Hongwei Fang, representing IRTCES, and Ms. Vallières-Roland, Deputy Mayor of Québec City.



**Opening Ceremony** 

The ICEC2024 main theme was "Resilient Estuaries and Coastal Zones under Global Challenges" with the following topics:

1. Saline intrusion and sea level rise: measurements, modelling and forecasting;

2. Waves, storm surges and tsunami: 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 development in the context of global change;

8. Impacts of watershed development on estuaries and coastal zones;

9. Shoreline protection and beach nourishment;

Interactions between estuarine and coastal systems;
 Resilient engineering solutions in estuaries and coastal zones.

The program included 5 keynote lectures, 71 oral presentations and 11 poster presentations in parallel sessions. The keynote speakers were:

- Prof. Hongwei Fang, Professor of Tsinghua University and Provost of Southern University of Science and Technology, China
- Prof. Ioan Nistor, University of Ottawa, Canada
- Prof. Jack A. Puleo, University of Delaware, USA
- Prof. Nina Stark, University of Florida, USA

Prof. Qing He, East China Normal University, China



Presentations at the conference

The closing ceremony was organized on the morning of August 29. Prof. Damien Pham Van Bang, chaired the closing ceremony and gave a brief overview of the Conference. Prof. Weiming Wu, the representative of the ICEC Permanent Secretariat, announced that the 9th ICEC will be held in Qinzhou, China in 2026, and that the conference will be co-organized by the Department of Water Resources and the Department of Transportation of Guangxi Zhuang Autonomous Region. Dr. Xiongchang Wang, Mayor of the Qinzhou Municipal People's Government, made a presentation on the 9th ICEC and welcomed all participants to meet again in Qinzhou, China in 2026. A promotion video was also shown to introduce the 9th ICEC and Qinzhou City.



**Closing Ceremony** 

The ICEC is a triennial event initiated by the International Research and Training Center on Erosion and Sedimentation (IRTCES). Seven conferences have been held in Hangzhou (China), Guangzhou (China), Sendai (Japan), Hanoi (Vietnam), Muscat (Oman), Caen (France), and Shanghai (China), from 2003 to 2021. Thanks to the support from related International Associations and the active participation of experts and scholars worldwide, ICEC has attracted wide attention

2

and become a renowned event of academic importance and global popularity.

#### Wildland fire effects on sediment, salinity, and selenium yields in a basin underlain by Cretaceous marine shales near Rangely, Colorado, USA

Understanding and quantifying soil erosion from rangelands is a high priority for land managers, especially in areas underlain by Cretaceous Mancos Shale, which is a natural source of sediment, salinity, and selenium to surface waters in many areas of western Colorado and eastern Utah. The purpose of this report is to present the results of a U.S. Geological Survey study that assessed sediment, salinity, and selenium yields after the Dead Dog Wildfire (the fire began June 11, 2017) in northwestern Colorado. Two methodologies were used to quantify erosion, with different data requirements and analytical complexity. The first approach was the use of a process-based erosion model, the Watershed Erosion Prediction Project model, which uses inputs of climate, topography, vegetation, and soils data from existing datasets to predict erosion, making this approach easily extensible to other areas. The second approach required more complex data collection and was used to measure erosion and deposition by differencing digital elevation models created from uncrewed aerial vehicle imagery collected in 2016 (pre-fire) and 2021 (post-fire). Sediment, salinity, and selenium yields were calculated using the volumetric estimates of erosion provided by both methods. A discussion of factors that may have influenced the overall findings, including vegetation, fire effects, and soil characteristics, is included.



The two approaches generated different outputs. Results from the Watershed Erosion Prediction Project model indicated that almost no erosion occurred after the Dead Dog Wildfire. However, morphological changes in the study basin after the fire were visible in the pre- and post-fire imagery and measured by the digital elevation model differencing technique, with net erosion occurring in channel and landscape extents, although calculated erosion rates and salinity and selenium yields were relatively small. Visible and measured morphological changes consisted primarily of incision and deposition within stream channels and rill incision and expansion on steeper slopes. Widespread sheet erosion was not evident. Much of the new erosion originated within, and immediately below, previously vegetated areas that were then burned by the wildfire. Greater erosion rates and salinity and selenium yields were measured in the channel extent relative to the landscape extent, Calculated erosion rates ranged from 0.24 to 0.45 megagrams per hectare per year. These results indicate that the Dead Dog Fire resulted in increased erosion in the study basin, yet these effects were relatively small based on the overall magnitude of modeled and measured erosion provided by the Watershed Erosion Prediction Project model and the digital elevation model differencing technique. Minimal erosion in the basin is likely due to local site characteristics typical of soils derived from Mancos Shale, including the presence of robust physical crusts and biological soil crusts, and limitations of the methods based on data availability. Focusing uncrewed aerial vehicle flights on key areas (individual steep slopes, high-intensity burn areas, specific stream reaches) could likely increase understanding of erosional process with less effort and error than doing landscape-level flights. (Source: https://www.usgs.gov/publications/wild

land-fire-effects-sediment-salinity-andselenium-yields-a-basin-underlain)

Submarine sediment helps Chinese researchers delve into secrets of the Antarctic Ocean



Submarine sediment samples collected in the Antarctic Ocean by Chinese researchers are helping to unveil the geological and oceanographic secrets of the region.

The warehouse store at the First Institute of Oceanography under the Ministry of Natural Resources in east China's Shandong Province is home to an impressive collection of sediment cores gathered from Antarctica and other marine regions.

Researchers call these cylinders "secret scrolls without visible texts," eagerly awaiting interpretation and decoding.

"Why are they called the 'secret scroll without visible texts?" Because they contains much information covering remains of organisms, vestiges of life, and chemical composition and physical properties of some substances. The information is likely to record the evolution of life and environmental changes in Antarctica at a specific time," said Xiong Zhifang, a researcher at the institute.

These sediment cores, varying in length and thickness, were gathered from the seabed in the Antarctic Ocean from depths as great as 4,000 meters.

Researchers can identify when and how the sediments were formed, based on their color and structure and through a range of analyses and tests.



In order to advance their research, scientists need to apply a series of procedures to the sediment cores, including washing, drying and other necessary steps. The last step is the microscopic examination of each individual component.

"We call it ice rafted debris. We can measure its composition and shape. These features can reflect whether the ice sheet was expanding or contracting," said Xiong.

(Source:<u>https://news.cgtn.com/news/2024-02-</u> 21/Submarine-sediment-helps-Chinese-expertsstudy-Antarctic-Ocean-1rn4hrJUO5i/p.html)

Sediment load assessments under climate change scenarios and a lack of collaboration between climatologists and environmental modelers Abstract: Increasing precipitation accelerates soil erosion and boosts sediment loads, especially in mountain catchments. Therefore, there is significant pressure to deliver plausible assessments of these phenomena on a local scale under future climate change scenarios. Such assessments are primarily drawn from a combination of climate change projections and environmental model simulations. usually performed by climatologists and environmental modelers independently. Our example shows that without communication between both groups the final results are ambiguous. Here, we estimate sediment loads delivered from a Carpathian catchment to a reservoir to illustrate how the choice of meteorological data, reference period, and model ensemble can affect the final results. Differences in future loads could reach up to 6000 tons of sediment per year. We suggest there must be a better integration between climatologists and environmental modelers, focusing on introducing multi-model ensembles targeting on specific impacts to facilitate an informed choice of climate information.

(Source: Ewa Szalińska, Paulina Orlińska-Woźniak, Paweł Wilk, Ewa Jakusik, Petr Skalák, Agnieszka Wypych & Jeff Arnold *Scientific Reports*, 14, 21727 (2024) https://doi.org/10.1038/s41598-024-72699-z)

Multi-decadal vegetation transformations of a New Mexico ponderosa pine landscape after severe fires and aerial seeding

Wildfires and climate change are having transformative effects on vegetation composition and structure, and post-fire management may have long-lasting impacts on ecosystem reorganization. Post-fire aerial seeding treatments are commonly used to reduce runoff and soil erosion, but little is known about how seeding treatments affect native vegetation recovery over long periods of time, particularly in type-converted forests which have been dramatically transformed by the effects of repeated, high-severity fire. In this study, we analyze and report on a rare long-term (23-year) dataset that documents vegetation dynamics following a 1996 post-fire aerial seed treatment and subsequent 2011 high-severity reburn in a dry conifer forest of northern New Mexico in the southwestern United States. Repeated surveys between 1997 - 2019 of 49 permanent transects were used to test for differences in vegetation cover, richness, and diversity between seeded and unseeded areas, and to characterize the development of seeded and unseeded vegetation communities through time and across gradients of burn severity, elevation, and soil-available water capacity. Postfire seeding led to a clear and sustained

divergence in herbaceous community composition. Seeded plots had a much higher cover of nonnative graminoids, primarily Bromus inermis, a likely contaminant in the seed mix. High-severity reburning in all plots in 2011 reduced native graminoid cover by half at seeded plots, compared to both pre-fire levels and to plots that were unseeded following the initial 1996 fire. In addition, increased fire severity was associated with increased non-native graminoid cover and reduced native graminoid cover, native species richness, and species diversity. This study documents a firedriven ecosystem transformation from a former conifer forest into a shrub-grass system, reinforced by aerial seeding of grasses and high-severity reburning. This unique long-term dataset illustrates that post-fire seeding carries significant risk of unwanted non-native species invasions that persist through subsequent fires - indicating that alternative post-fire management actions merit consideration to better support native ecosystem resilience in the face of emergent climate change and increasing disturbance. Lastly, this study highlights the importance of long-term monitoring of post-fire vegetation dynamics, as short-term assessments will miss key elements of the full complexity of ecosystem responses to fire and post-fire management actions.

(Source: <u>https://www.usgs.gov/publications/multi-</u> <u>decadal-vegetation-transformations-a-new-</u> <u>mexico-ponderosa-pine-landscape-after</u>)

## PUBLICATIONS

#### Contents of IJSR (Vol. 39, No. 3, 2024)



Volume 39, Issue 3 Pages 305-494 (June 2024)

<u>Hybrid neuro fuzzy inference systems for</u> <u>simulating catchment sediment yield</u> Mahdi Sedighkia, Manizheh Jahanshahloo, Bithin Datta Pages 305-316

Estimates of longshore sediment transport rates along Macumba and Recreio-Barra da Tijuca sandy beaches (Rio de Janeiro, southeastern Brazil) Breylla Campos Carvalho, Josefa Varela Guerra Pages 317-326

Experimental study of reservoir flushing through a bottom tunnel initially covered by cohesive sediment Huan Xu, Zhixian Cao Pages 327-339

Improved estimation of critical bed shear stress downstream of low-head weirs in streams with coarse bed material Anbin Li, Bruce W. Melville, Yifan Yang, Liyao Gao, ... Genguang Zhang Pages 340-354

Sand sheets—the major dust source in the western Lake Urmia playa—A comprehensive study of the soil-dust properties and stabilization Nikou Hamzehpour, Gholam Reza Mahdavinia, Mehdi Rahmati Pages 355-374 Evaluating nutrient distribution and eutrophication pattern in a shallow impounded lake: Exploring the influence of floods

Fuxin Zhang, Hongwu Tang, Guangqiu Jin, Yantao Zhu, ... Saiyu Yuan Pages 375-385

<u>Changes in runoff and sediment discharge along</u> with their driving factors in the Pearl River basin from 1961 to 2018 Jie Tang, Wenting Wang, Hanquan Cheng, Hua Jin, ... Yun Xie Pages 386-400

Towards an understanding of southern peri-Pannonian lacustrine depositional cycles: Interplay of sediment delivery and shifting intrabasinal height, a case study of drilled Neogene sediments from northwest Toplica Basin (Central Serbía) Marija Radisavljević, Nikola Burazer, Aleksandra Šajnović, Darko Spahić, ... Branimir Jovančićević Pages 401-420

Unraveling the sources of organic matter in suspended particulates and sediment in a closed inland lake using stable isotope fingerprinting Xiaohui Ren, Ruihong Yu, Jianfang Kang, Rui Wang, ... Pengxuan Zhang Pages 421-434

Near-wall flow characteristics in pipe bend dense slurries: Optimizing the maximum sliding frictional power Pankaj Kumar Gupta, Niranjan Kumar, Ram Krishna Pages 435-463

Post-fire erosion and sediment yield in a <u>Mediterranean forest catchment in Italy</u> Giovanni Mastrolonardo, Giulio Castelli, Giacomo Certini, Melanie Maxwald, ... Federico Preti Pages 464-477

Physical and chemical techniques for a comprehensive characterization of river sediment: A case of study, the Moquegua River, Peru Luis De Los Santos Valladares, Arquimedes Vargas-Luque, Luis Borja-Castro, Renato Valencia-Bedregal, ... Crispin Henry William Barnes Pages 478-494

#### Contents of IJSR (Vol. 39, No. 4, 2024)



Volume 39, Issue 4 Pages 495-682 (August 2024)

Advances in ecohydraulics, sediment transport and morphodynamics: Introduction to the special issue Hongbo Ma Pages 495-496

Vegetation-induced sedimentary structures: Porosity of riparian shrubs as control parameter of sedimentary processes during floods Oliver Schlömer, Seraphine Luneau, Stéphane Rodrigues, Jürgen Herget Pages 497-513

<u>Hydro-morphological alteration and related effects</u> on fish habitat induced by sediment management in a regulated Alpine river Livia Servanzi, Silvia Quadroni, Paolo Espa Pages 514-530

Grain size characteristics of a degraded Tugai riparian forest landscape between Taklamakan and Kuruktagh deserts in the eastern Tarim Basin, northwest China Tayierjiang Aishan, Florian Betz, Ümüt Halik, Bernd Cyffka, ... Asadilla Yusup Pages 531-539

Flow field and sediment passing capacity of type-a piano key weirs Binit Kumar, Manish Pandey, Zulfeguar Ahmad

Pages 540-551

Implications of bioturbation induced by Procambarus clarkii on seepage processes in channel levees

Michele Bendoni, Giuseppe Mazza, Nicola Savoia, Luca Solari, Elena Tricarico Pages 552-559 Unravelling the mesoscale saltmarsh accretion on the tropical barrier estuarine regime: A case study from the Chandipur Saltmarsh, India

Koushik Saha, Antareep Nandy, Subhajit Sinha Pages 560-575

<u>Migration and release potential of nitrogen at the</u> <u>sediment-water interface in lakes in cold and arid</u> <u>regions</u>

Mengze Li, Shuhang Wang, Wei Li, Wenwen Wang, ... Jing Gao Pages 576-585

Efficient detection of ephemeral gully trajectories using topographic index-based approach: Calibration-free for large-scale applications Hamid Mohebzadeh, Asim Biswas, Ben DeVries, Ramesh Rudra, ... Prasad Daggupati Pages 586-600

Gravel automatic sieving method fusing macroscopic and microscopic characteristics Shizhao Gao, Conglin Zhang, Yan Li, Qinglai Fan, ... Yuan Ge Pages 601-614

Changes of river regime and waterway downstream of a cascade of reservoirs on the upper Yangtze River Yongming Lu, Liqin Zuo, Chengyang Zhou, Tingjie Huang, Yahui Zhao Pages 615-628

Sustainable systems engineering by CFD modeling of lateral intake flow with flexible gate operations to improve efficient water supply

Javad Ahadiyan, Saman Abbasi Chenari, Hossein Azizi Nadian, Christos Katopodis, ... Mona Omidvarinia

Pages 629-642

Temporal and spatial evolution characteristics of the current tail channel of the Yellow River: Processes and mechanisms

Xiaokang Du, Naishuang Bi, Shentang Dou, Feihe Kong, ... Rongqi Zhu Pages 643-653

An energy conservation model for the temporal evolution of local scour depth at bridge piers during floods

Qigang Chen, Ran Huang, Huilan Zhang, Qiang Zhong Pages 654-669

<u>A high-resolution water quality model coupled</u> sediment and suspended sediment module

Guangxue Luan, Tian Wang, Jingming Hou, Donglai Li, ... Zhantao Han

Pages 670-682 Contents of ISWCR (Vol. 12, No.3, 2024)



Volume 12, Issue 3 Pages 241-486 (September 2024)

<u>A validation of WEPP water quality routines in</u> <u>uniform and nonuniform agricultural hillslopes</u> Ryan P. McGehee, Dennis C. Flanagan, Bernard A. Engel, John E. Gilley Pages 487-505

Assessing the risk of check dam failure due to heavy rainfall using machine learning on the Loess Plateau, China Yulan Chen, Jianjun Li, Juying Jiao, Leichao Bai, ... Jianqiao Han Pages 506-520

Intensified cropping reduces soil erosion and improves rainfall partitioning and soil properties in the marginal land of the Indian Himalayas Devideen Yadav, Deepak Singh, Subhash Babu, Madhu Madegowda, ... Surender Kumar Pages 521-533

Soil loss and sedimentation rates in a subcatchment of the Yellow river Basin in China Simon Scheper, Chunyue Liu, Zhongbao Xin, Lishan Ran, Christine Alewell Pages 534-547

Large-scale extraction of check dams and silted fields on the Chinese loess plateau using ensemble learning models Yunfei Li, Jianlin Zhao, Ke Yuan, Gebeyehu Taye, Long Li Pages 548-564

Divergent shift of normal alpine meadow exacerbated soil loss of hillslope alpine meadows based on field experiments Yulei Ma, Yifan Liu, Yunyun Ban, Jingxue Zhao, ... Gaolin Wu Pages 565-577

Improving maize residue cover estimation with the combined use of optical and SAR remote sensing images Yiwei Zhang, Jia Du Pages 578-588

Benggang segmentation via deep exchanging of digital orthophoto map and digital surface model features Shengyu Shen, Jiasheng Chen, Dongbing Cheng, Honghu Liu, Tong Zhang Pages 589-599

Mapping sediment mobilization risks: Prioritizing results obtained at watershed and sub-watershed scales Ataollah Kavian, Seyedeh Nastaran Mirzaei, Bahram Choubin, Mahin Kalehhouei, Jesús Rodrigo-Comino Pages 600-614

Appraising trapping efficiency of vegetative barriers in agricultural landscapes: Strategy based on a probabilistic approach based on a review of available information José-Antonio Muñoz, Gema Guzmán, María-Auxiliadora Soriano, José A. Gómez Pages 615-634

The impacts of armed conflict on vegetation cover degradation in Tigray, northern Ethiopia Solomon Hishe, Eskinder Gidey, Amanuel Zenebe, Woldeamlak Bewket, ... Tsegay Gebretekle Pages 635-649

#### 9

<u>Cover crops, crop rotation, and gypsum, as</u> <u>conservation practices, impact Mehlich-3</u> <u>extractable plant nutrients and trace metals</u> Javier M. Gonzalez, Warren A. Dick, Khandakar R. Islam, Dexter B. Watts, ... Vinayak S. Shedekar Pages 650-662

Watershed management, groundwater recharge and drought resilience: An integrated approach to adapt to rainfall variability in northern Ethiopia Kifle Woldearegay, Berhane Grum, Rudi Hessel, Frank van Steenbergen, ... Mulu Haftu Pages 663-683

Responses of soil aggregate stability and soil erosion resistance to different bedrock strata dip and land use types in the karst trough valley of Southwest China Fengling Gan, Hailong Shi, Junfei Gou, Linxing Zhang, ... Youjin Yan Pages 684-696

Effect of the moisture content and dry density on the shear strength parameters of collapsing wall in hilly granite areas of South China Xiaoyang Wang, Xiaoxing Qin, Jiahao Tan, Linxi Yang, ... Yusong Deng Pages 697-713

Saltwater intrusion in the Po River Delta (Italy) during drought conditions: Analyzing its spatiotemporal evolution and potential impact on agriculture Jian Luo, Eugenio Straffelini, Matteo Bozzolan, Zicheng Zheng, Paolo Tarolli Pages 714-725

Timely monitoring of soil water-salt dynamics within cropland by hybrid spectral unmixing and machine learning models Ruiqi Du, Junying Chen, Youzhen Xiang, Ru Xiang, ... Yinwen Chen Pages 726-740

Response to comment by Daley et al., on "Assessing gully erosion and rehabilitation using multi temporal LiDAR DEMs: Case study from the Great Barrier Reef catchments, Australia" Sana Khan, Rebecca Bartley, Anne Kinsey-Henderson, Aaron Hawdon Pages 741-745

Free full papers and open access are available at ScienceDirect :

https://www.sciencedirect.com/journal/internation al-soil-and-water-conservation-research.

## **COMING EVENTS**

#### 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 watershedriver-sea continuum

Other topics related to sediment-water interactions

#### 16th International Symposium on River Sedimentation (USA, August, 2025)

Date: August, 2025 (exact dates will be released soon) Venue: Omaha, Nebraska, United States

**Summary:** The triennial International Symposium on River Sedimentation (ISRS) was initiated in 1980. Since its foundation, IRTCES has served as the permanent secretariat of ISRS. WASER was inaugurated at the 9th ISRS in 2004, and the ISRS has since become the official Symposium of WASER. The objective of the ISRS is to provide a forum for scientists, engineers, researchers and decision makers to exchange ideas, research results and technical advances, , and to share experience and information relating to the study of sediment and its management.

Organizer: University of Nebraska-Lincoln

**Sponsors:** World Association for Sedimentation and Erosion Research (WASER), International Research and Training Center on Erosion and Sedimentation (IRTCES) **Co-Sponsors:** International Association for Hydro-

Environment Engineering and Research (IAHR)......(to be invited)

Secretariat: University of Nebraska-Lincoln Permanent Secretariat: IRTCES

**Theme and Topics:** The theme of the symposium is Centennial of Modern Sediment Transport Mechanics The symposium topics include:

1. Fundamentals for sediment transport (Boundary layer flow, fluvial Hydraulics, and Hydrology)

2. Fundamentals of sediment transport (Bed forms, bed load, and suspended load)

3. Experimental and computational sediment transport and fluvial processes

- 4. Watershed hydrology and sedimentation
- 5. River Erosion and sedimentation (case studies)
- 6. Scours abound hydraulic structures (case studies)
- 7. Reservoir sedimentation
- 8. Estuarine and coastal sediment transport
- 9. Seabed sediment transport

10. Environmental and ecological sediment with climate changes URL: (to be releaed) Organization & Contacts: (to be releaed)

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/

#### 9th International Conference on Estuaries and Coasts (China, December, 2026)

Date: December, 2026

Venue: Qinzhou, China

**Organizers:** Qinzhou Municipal People's Government, Department of Water Resources of Guangxi Zhuang Autonomous Region, Department of Transport of Guangxi Zhuang Autonomous Region

**Sponsors:** International Research and Training Center on Erosion and Sediment Research (IRTCES);

**Co-sponsors:** World Association for Erosion and Sediment Research (WASER), China Institute of Water Resources and Hydropower Research (IWHR); International Association for Hydro-Environment Engineering and Research (IAHR); Guangxi University; Guangxi Normal University; Beibu Gulf University, Pinglu Canal Group Co., Ltd

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). Eight such conferences have now been held in Hangzhou and Guangzhou, China; Sendai, Japan; Hanoi, Vietnam; Muscat, Oman, Caen, France, Shanghai, China and Canada in 2003, 2006, 2009, 2012, 2015, 2018, 2021 and 2024. 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 9th International Conference on Estuaries and Coasts (ICEC 2026) will be held in Qinzhou, China during December, 2026. The ICEC 2026 will provide a venue for intellectual and enlightening discussions of ideas. The conference program will be broad with topics.

#### Theme:

Estuaries and Coasts under Modern Civilizations

#### **Topics of the Conference:**

1. Hydrodynamics and Sediment Transport in Estuaries and Coastal Zones: Fundamentals and Modeling

2. Monitoring, Early Warning and Forecasting of Estuarial and Coastal Hazards

3. Eco-environment Protection in Estuaries and Coastal Zones

4. Climate Change, Human Activities and Their Impacts on Estuaries and Coasts

5. Canal Constructions in Estuaries and Coastal Zones

6. Integrated and Intelligent Management of Estuaries and Coastal Zones

7. Morphological Evolutions of Estuaries, Coasts and Deltas 8. History, Culture, Socioeconomics and Policy on Estuaries and Coasts

9. Impacts of Watershed Developments on Estuaries and Coastal Zones

URL: https://ICEC2026.scimeeting.cn

#### 11th International Symposium on Environmental Hydraulics (ISEH 2027) (USA, June 1-4, 2027)

#### Date: June 1-4, 2027

Venue: The University of Iowa, Iowa City, IA USA Invitation: We are pleased to announce that the 11th International Symposium on Environmental Hydraulics (ISEH) will be held in Iowa City, IA, USA on the 1st - 4th June 2027. Sponsored by the International Association of Hydro-Environment Engineering and Research (IAHR), the 11th ISEH will build on the success of previous ISEH symposia in bringing together international experts to present and discuss new research and technical innovations in various areas of environmental fluid dynamics research. The symposium will be held within the University of Iowa campus, providing an ideal setting in which to share knowledge and to meet old and new friends. The symposium will focus on the latest advances in experimental and computational methods that can be used to deepen our understanding and capacity to predict flow and the associated fluid-driven ecological processes, anthropogenic influences (e.g., heat, dissolved and suspended organic/inorganic material), sediment transport and morphodynamic processes in rivers, coastal regions and We hope the ISEH symposium will provide a reservoirs. productive platform for fruitful scientific discussions, opportunities for younger scientists and practitioners to interact and exchange ideas with established researchers and spark new collaborations among participants. In particular, cross-fertilization among research groups, emergence of new concepts and approaches, and interdisciplinary interactions are expected to be highlights of the ISEH symposium.

We very much look forward to welcoming you in Iowa City. (Prof. George Constantinescu, Symposium Chair)

URL: https://iseh.conference.uiowa.edu/ Contact ISEH Conference College of Engineering Iowa City, Iowa 52242 Email: iseh-2027@uiowa.edu Phone: +01 319 594 2817

## World Association for Sedimentation & Erosion Research



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

#### **CONTACTS**

12

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: ggliu@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

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

Advisor: Prof. Des. E. Walling

#### **Newsletter Layout and Production:**

WASER Secretariat The WASER Newsletter is sent regularly to members of the WASER community and interested experts. Please send your contributions to the WASER Secretariat at <u>zhaoying@iwhr.com</u>.

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WASER WORLD ASSOCIATION FOR SEDIMENTATION AND EROSION RESEARCH

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	(Note: IJSR – International Journal of Sediment Research. The subscription fee for IJSR is USD 96 or RMB 900 per year.)		
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	<b>NOTE:</b> All members will receive newsletters, and enjoy discounted registration for the International Symposia on River Sedimentation and other International Conferences organized by WASER, and will receive IJSR and other publications at a preferential price.		
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