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INTERNATIONAL SEDIMENT INITIATIVE

NEWSLETTER

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IN THIS ISSUE

News

- ✧ Continuation of UNESCO Water Science activities through e-learning, open science and distance learning 1
- ✧ UNESCO-Water Future Public Discussion on “Water Security in the age of COVID-19” 1
- ✧ Water and climate change: towards a strategic framework for megacities 1
- ✧ UNESCO FRIEND Programme held a meeting 2
- ✧ President Xi Focus: China reaffirms commitment to green development 3
- ✧ Recent Research: Plant root hairs are key to reducing soil erosion 4
- ✧ Slow transit of sediment in Australia's Murray-Darling river system distorts environmental signal 5
- ✧ Erosion of the Himalayas governed by tectonic movements, limiting climate change impacts on landscape formation 6
- ✧ Contribution of the International Knowledge Centre of Engineering, Science and Technology (IKCEST) in gathering information on COVID-19 7

Publications

- ✧ Papers Published in IJSR, Volume 35, No. 3, 2020 8
- ✧ Papers Published in IJSR, Volume 35, No. 4, 2020 8
- ✧ Contents of ISWCR (Vol. 8, No.2, 2020) 9

Coming Events

- ✧ Climate-Resilient Water Management Approaches: Adaptation in an Age of Uncertainty (Monthly webinar series) 10
- ✧ ISI – Training Workshop on ‘River Basin Sediment Monitoring and Management’ (Koblenz, German, September 7-11, 2020) 10
- ✧ RIVER BASINS 2020 (Hungary, December 3-4, 2020) 10
- ✧ 3rd International Youth Forum on Soil and Water Conservation (Iran, May 16-21, 2021) 11
- ✧ World's Large Rivers Conference 2021 (Russia, August 2-6, 2021) 11
- ✧ The 7th International Conference on Estuaries and Coasts (Shanghai, China, October 18-21, 2021) 11
- ✧ 15th International Symposium on River Sedimentation (Florence, Italy, September, 2022) 11

UNESCO “国际泥沙计划” 简报

本期内容

新闻

- ✧ 通过网络课程、公开科学课程和远程学习继续开展联合国教科文组织水科学活动 1
- ✧ 联合国教科文组织与水未来召开“新冠时代的水安全”公开研讨会 1
- ✧ 水和气候变化：建立超大城市的战略框架 1
- ✧ 联合国教科文组织 FRIEND 计划召开会议 2
- ✧ 习近平总书记在山西考察时的重要讲话指引绿色发展新方向 3
- ✧ 研究：植物根须对降低土壤侵蚀的关键作用 4
- ✧ 澳大利亚墨累-达令河水系中泥沙的缓慢传输扭曲了环境信号 5
- ✧ 受到构造运动控制的喜马拉雅山侵蚀限制了气候变化对景观形成的影响 6
- ✧ 国际工程科技知识中心在汇集新冠病毒信息上的贡献 7

出版物

- ✧ 《国际泥沙研究》期刊 2020 年第 35 卷第 3 期论文目录 8
- ✧ 《国际泥沙研究》期刊 2020 年第 35 卷第 4 期论文目录 8
- ✧ 《国际水土保持研究》期刊 2020 年第 8 卷第 2 期论文目录 9

会议信息

- ✧ 适应气候变化的水管理方法：适应不确定性时代（月网络研讨会系列） 10
- ✧ ISI“流域泥沙监测与管理”培训班(德国, 2020 年 9 月 7-11 日) 10
- ✧ 流域 2020 (匈牙利, 2020 年 12 月 3-4 日) 10
- ✧ 第三届水土保持青年论坛(伊朗, 2021 年 5 月 16-21 日) 11
- ✧ 世界大河学术讨论会(俄罗斯, 2021 年 8 月 2-6 日) 11
- ✧ 第七届河口海岸国际研讨会(上海, 2021 年 10 月 18-21 日) 11
- ✧ 第十五次河流泥沙国际学术讨论会(意大利佛罗伦萨, 2022 年 9 月) 11

NEWS

Continuation of UNESCO Water Science activities through e-learning, open science and distance learning

UNESCO's Division of Water Sciences' webinar on "Transformation of UNESCO activities through: e-learning, open science and distance learning" on 14 May 2020, discussed these means of knowledge dissemination for water security in times of COVID-19. The discussion served as a foundation for the ongoing development of a strategic position paper within UNESCO's Sector for Natural Sciences, on e-learning, open science and distance learning. Thirty-nine participants (26 men and 12 women, one guest of unknown gender) attended and contributed to the event, including representatives from the Intergovernmental Hydrological Programme (IHP), UNESCO Category 2 Centres, National Committees, professional organizations, as well as academics, scientists, young hydrologists, and UNESCO staff from Field offices and Headquarters.

In opening remarks, Mr Anil Mishra, Programme Specialist, Division of Water Sciences, UNESCO, highlighted the key objectives of the meeting. He emphasised the need to learn from experiences and innovations in three key areas developing in an increasingly virtual environment: How to support scientific research in Member States? How to foster open science, including access to scientific data, research and educational resources? Moreover, how can the societal interface of science be maintained and promoted while physical borders are closed?

In his keynote address, Mr Wouter Buytaert, Imperial College London, United Kingdom, gave examples of how COVID-19 has affected "the entire realm of science and education" and created both opportunities and challenges therein. He cited an accelerated increase in online educational content and learning opportunities, and increased availability of resources to create new content and tools, giving innovative examples of virtual field trips, citizen science, and the Water Information Network System (WINS) platform developed by IHP. He also underlined the overall challenges in leveraging this momentum to create long-term change that supports sustainable development.

Presenters shared tools, websites, associations and platforms to facilitate online learning and access to scientific and educational resources including for early career scientists, and to engage in data collection and standardization remotely. Presentations also

considered the needs of educators, or content generators and disseminators, and discussed how to better understand user needs and how to ensure that content is delivered in an accessible and engaging manner. Discussions also centred around how students or content consumer access online materials, and considered examples of helpful tools and resources to access training and educational materials, and networking opportunities.

The meeting discussed challenges to online learning and open data sharing. Limited internet access was highlighted as a major concern which could undermine efforts to implement distance learning and open science. Other issues raised in the discussion included the need to adapt pedagogy and didactics to the online classroom, and to establish sufficient resources to create online content.

Mr Youssef Filali-Meknassi, Director of the Division of Water Sciences and Secretary of the IHP concluded the meeting, reiterating the importance of open science in minimizing the discrepancies between countries and societies.

UNESCO-Water Future Public Discussion on "Water Security in the age of COVID-19"

On 28 May 2020, UNESCO Division of Water Sciences and the International Secretariat of Water Future co-organized a 90-minute online webinar on the subject of "Water security in the age of COVID-19". The webinar gathered experts to discuss and debate water-related challenges and opportunities paused by the current global crisis, and to reflect the future of water security in a post-COVID-19 era.

The discussion focused around understanding the current water crisis, and the health and economic risks associated with COVID-19. The speakers also deliberated on how to predict and imagine the future of global water security and the needs for adaptation mechanisms in the post-COVID era, and discussed the role of digitization, global science initiatives, communication and international organizations in dealing with water security during COVID-19 and beyond.

The wide-ranging discussion focused on finding equitable and innovative solutions through the holistic and proactive rethinking of the Sustainable Development Goals (SDG). More than 500 people across the globe participated in the UNESCO-Water Future Public Discussion

webinar sharing views on the global water crisis in the midst of the COVID-19 pandemic.

Water and climate change: towards a strategic framework for megacities



By 2030 urban settlements are projected to house 60% of the global population, whereas by the same time Megacities, urban zones with over 10 million inhabitants, will host 14.6% of the total inhabitants worldwide. It is estimated that, in the same period, the number of megacities will grow from 33 in 2018 to 43[1].

In line with the urban sprawl, climate change and growing demand for quality of life, megacities face specific challenges and vulnerabilities not only in terms of managing service capacity, such as drinking water or wastewater treatment, but also prevention and mitigation to the growing risks, ranging from extreme weather, water scarcity and floods to sea-level rise. They are therefore on the frontline for climate action and are regional pivots that call for water stakeholders' collaboration at different levels to respond with sustainable solutions.

The Megacities Alliance for Water and Climate (MAWAC) was proposed in 2015 as an international collaboration forum to enable megacities to learn from each other's experience and share best practices to address these specific challenges. Today, the Alliance is working towards a Strategic Global Framework to propose a model of cooperation and sustainability and outline the future modalities of action, while taking into account the great diversity in governance and financial capacity of megacities around the world.

To formulate the Strategic Global Framework of the Megacities Alliance for Water and Climate, the Intergovernmental Hydrological Programme (IHP) recently activated a Working Group with official nominations from 10 countries and 11 Megacities around the world: Bangkok, Bogota, Ho Chi Minh City, Istanbul, Jakarta, Karachi, Lagos, Lahore, Lima, Mexico City, and Paris.

Current progress and next steps: The modality and milestones of MAWAC were discussed during initial Information Webinars on 16 and 24 April 2020, as well as a proposed work plan towards the First Draft of MAWAC's Strategic Global Framework. The Working Group members

shared the most up to date information on water management in their cities. The MAWAC cooperation platform facilitates pooling and sharing collective knowledge and creativity for climate solutions.

The Working Group members, main conductors of the intergovernmental working process, are now working with UNESCO to develop the first proposal of the Strategic Global Framework for the MAWAC. It integrates their expertise, practical experiences, and city perspectives into a tools package by UNESCO.

Their inputs were synthesized and discussed in a virtual meeting (the first drafting meeting) in June. Two more rounds of consultation, collection and synthesis will be organized over the next two months, in order to finalize the first draft of the Strategic Global Framework by September 2020. The consultation and review of the final draft will take place from October to November 2020. This process aims to involve validation by diverse Megacities.

The final Alliance's Strategic Global Framework will be launched at the Second International Conference "Water, Megacities and Global Change" (EauMega 2020), which will be held from 1 to 4 December 2020 at UNESCO Headquarters in Paris.

Background: The idea for establishing MAWAC was brought forward during the COP 21[2] climate conference through a Declaration resulting from the 1st International Conference on Water, Megacities, and Global Change held at UNESCO in 2015 (EauMega 2015). This Declaration requested UNESCO to create the platform for MAWAC. In the effort to complete this task UNESCO aims to build the future platform of the alliance with the cooperation and active participation of the megacities and their inclusion in the drafting process of the Strategic Global Framework.

More information: <https://en.unesco.org/mawac>

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[1] Source: 2018 Revision of World Urbanization Prospects

[2] 21st Conference of the Parties of the United Nations Framework Convention on Climate Change

(Source: UNESCO)

UNESCO FRIEND Programme held a meeting

Within the framework of the UNESCO Flow

Regimes from International Experimental and Network Data (FRIEND) programme, the FRIEND Intergroup Coordination Committee (FIGCC) held a meeting on 12 May 2020. The main objective of the meeting was to look into the past developments and the current activities of the programme, with a view to improve visibility as well as its scientific developments, but also to come up with a Strategy paper for future activities, especially in the face of COVID-19 and the changes it would provoke in international exchanges.

The meeting brought together a total of 21 participants, namely, the regional coordinators of the programme: AMIGO FRIEND (LAC Region), FRIEND AOC (Western and Central Africa), FRIEND ASIA PACIFIC, EURO FRIEND, MEDFRIEND, NILE FRIEND, FRIEND SADC and CONGO FRIEND as well as invited guests from the French Institut de Recherche et de Développement (IRD), the World Large Rivers Initiative (WLRI), the International Centre for Integrated Water Resources Management under the auspices of UNESCO (ICIWarm), the International Centre for Water Resources and Global Change under the auspices of UNESCO (ICWRGC), and UNESCO Staff. The meeting called for the need to better position the FRIEND programme within the framework of the Ninth Phase of the Intergovernmental Hydrological Programme (IHP-IX), and to increase collaboration with the UNESCO Water family. Also, the regional coordinators will work hand in hand to come up with a Strategy Paper for future FRIEND activities in spite of the postponement of several activities in 2020 are rescheduled to be held in 2021.

President Xi Focus: China reaffirms commitment to green development



BEIJING, May 13, 2020 (Xinhua) -- While checking the ecological protection work undertaken on the Fenhe River in Taiyuan, Shanxi Province, during his recent inspection tour, President Xi Jinping expressed his satisfaction

with the tremendous changes made to the ecological environment along the river and stressed the importance of green development.

As the second-largest tributary of the Yellow River, the Fenhe River, which has a length of 716 km, passes through six cities and dozens of counties before joining the Yellow River. The Fenhe River has nine tributaries in the city of Taiyuan, the provincial capital. However, for historical reasons, the river, also known as the "mother river" of Shanxi, used to be highly polluted.

This is not the first time that Xi, also General Secretary of the Communist Party of China Central Committee and Chairman of the Central Military Commission, voiced his concern over the environment along the Fenhe River. Back in June 2017, during an inspection tour in Shanxi, he emphasized the need to increase the amount of water in the Fenhe River, improve its water quality and beautify the landscape.

As a result, Taiyuan launched a comprehensive treatment project for the nine rivers and completed it in 2018. With over 20 kinds of plants being used to support ecological improvements, greenbelts emerged on the banks of the nine rivers.

Underscoring the integration of environmental protection, the energy revolution, green development, and economic transformation, Xi noted that the restoration of the Fenhe River is not only essential for environmental protection and the economic development of Shanxi, but also important to the historical and cultural inheritance of the province.

FOLLOWING A GREEN PATH

With the domestic COVID-19 epidemic waning and China powering ahead in returning to work and resuming business and production, Xi's remarks reaffirmed the country's determination to follow a green development path and implement the national strategy for high-quality development.

It has been a tough but firm choice for China, especially at a time when the world's second-largest economy is struggling to cope with the unprecedented economic challenge brought by the epidemic. But the country stands steadfast in resisting the old way of developing the economy at the cost of the environment.

Xi has always attached great importance to the protection and improvement of the country's water system as well as the balance between economic development and ecological protection.

Visiting the wetland of Dianchi Lake in Kunming, capital of southwest China's Yunnan Province, in January, for instance, Xi placed

similar emphasis on ecological civilization and green development. Once among the most polluted lakes in China, the Dianchi Lake has seen its ecology greatly improve after many years of conservation efforts.

China has stepped up rolling out measures to enhance environmental protection and pursue high-quality development.

In April 2020, the Ministry of Water Resources and the Ministry of Finance announced the first batch of 55 pilot counties for work to improve water system connectivity and comprehensive improvement of rural water systems, with the central government allocating 2.5 billion yuan (about 353 million U.S. dollars) to these counties to fight rural water pollution.

Meanwhile, the Ministry of Ecology and Environment released a plan urging local governments to actively resume 114 major ecological projects, which covered water treatment, ecological restoration, and industrial park construction and were selected to boost investment, promote economic growth, and meet the people's demands.

GREEN OUTCOMES

The path of green development is vital to the country's economy and people's wellbeing. Provinces such as Shanxi have been rewarded by the improved environment as the ecological protection work is taking effect.

Vigorously promoting a greener economy, Shanxi, the coal-rich province cut 27.45 million tonnes of coal production capacity and saw a GDP growth higher than the country's average level in 2019.

Last year, the province planted about 347,333 hectares of trees, and the groundwater level continued to rise in the Fenhe River valley.

Apart from supporting major environmental projects, China also introduced an environmental economic policy to steer businesses toward sustainable growth, unveiling a plan in December 2019 to establish a national green development fund in 2020.

The country's green finance, an emerging environmental economic policy tool, has seen rapid expansion in recent years. In 2019, its green bond issuance topped 30 billion U.S. dollars, ranking second in the world, data from Bloomberg showed.

Behind the firm commitment to green development is the top leadership's pursuit of achieving a moderately prosperous society in all respects and the foresight of maintaining a strategic focus on improving the ecological environment in the long run.

More should be done to accelerate institutional innovation and strengthen the implementation of the institutional system to guide the formation of a green mode in production and living, Xi has stressed. (Source: Xinhua News)

Recent Research: Plant root hairs are key to reducing soil erosion

The tiny hairs found on plant roots play a pivotal role in helping reduce soil erosion, a new study has found. The research, led by the University of Bristol and published in *Communications Biology*, provides compelling evidence that when root hairs interact with the surrounding soil they reduce soil erosion and increase soil cohesion by binding soil particles.

Soil erosion can have a devastating impact across the globe and a serious threat for modern agriculture. The increased demand for agriculture has led to forests and natural grasslands being converted to farm fields and pastures.

However, many of the plants grown, such as coffee, cotton, and palm oil, can significantly increase soil erosion beyond the soil's ability to maintain and renovate. It can also lead to increased pollution and sedimentation in streams and rivers or, because these areas are often less able to hold onto water, can worsen flooding. This problem is particularly urgent considering the ever-expanding human population and climate change.

Researchers from the Universities of Bristol and Exeter have revealed the crucial function the microscopic roots hairs play in binding and reinforcing soil.

While the larger-scale root properties such as diameter, length and surface area have been extensively studied to understand their role in preventing soil erosion, the effect that micro-scale properties, such as root hairs, has been less well documented.

The research team found that, when planted in sufficient density, plants with root hairs reduced soil loss almost completely – while otherwise identical plants without hairs did not reduce erosion.

Three methods were used to explore the soil retention benefits of root hairs. First, the samples were placed in a sterile gel, in a petri dish, and then subjected to increasing centrifugal force. The study found that the hairless seedlings were easier to remove from the gel compared to seedlings abundant with root hairs.

Second, the study found that root hairs were also shown to stabilise the plant in the soil, as

they increased the force needed to uproot the plant.

Third, in the experimental landscapes laboratory at Exeter, root hairs reduced water erosion to almost zero.

Professor Claire Grierson, one of the study's lead authors from Bristol's School of Biological Sciences explained: "These findings could be the key in helping to tackle soil erosion. There are three possible ways root hairs could enhance soil, either the soil might bind directly to root hair surfaces, root hairs might release material that reinforces soil, or root hairs might release material that is processed by microbes into something that can reinforce soil.

"We hope our knowledge about the properties of plants that minimise soil erosion will allow the creation and selection of best-suited agricultural plants."

The team are now working to distinguish between these hypotheses and identify the molecules involved. (Source: AGDAILY, <https://www.agdaily.com/>)

Slow transit of sediment in Australia's Murray-Darling river system distorts environmental signal

Sediment can take a million years or more to travel from the mountains of the Great Dividing Range to the mouth of the Murray River, new research has found.



The Paroo River at Eulo, Queensland, in Australia's Murray-Darling River system (Reka Fulop)

The study, led by University of Wollongong (UOW) scientists, found that sediments in Australia's Murray-Darling Basin typically experience multiple episodes of storage on their journey, with cumulative residence times exceeding one million years in the downstream reaches of the Murray and Darling rivers.

The amount of time it takes sediment to travel from source to sink, and the frequent stops along the way, limits its ability to reveal information about the climate and geology of its source area.

Rivers act as sediment conveyor belts, keeping soils fertile, and delivering over 40 billion tonnes of particulate and dissolved material to the global ocean every year.

The primary source of the sediment is mountains, where the continuous interplay between tectonic forces, climate, and surface processes—such as chemical and physical weathering—breaks down rock, converting it to soil and sediment.

Changes in climate or tectonic forcing result in changes in the sediment flux, and the response of the landscape to these environmental forcings is recorded permanently by mineralogical, textural, or geochemical proxies.

Thus, each parcel of sediment carries information about the geology, geomorphology, and the climate of the contributing upland areas, information that builds the narrative of Earth's history.

However, large river systems are complex and their internal dynamics may buffer and distort environmental signals carried by sediments.

In the new study, published in *Science Advances*, researchers calculated sediment transit times in Australia's largest river system, the Murray-Darling Basin by measuring downstream changes in the ratios of cosmogenic radionuclides—rare isotopes produced by cosmic ray bombardment of surface rocks—in modern river sediment.

Lead author Dr. Reka Fulop, from UOW's School of Earth, Atmospheric and Life Sciences, said the results showed that environmental signals from the sediments will not only be distorted, but may even be completely erased.

"The message of our study is twofold: on the one hand sediment takes a very long time in transit, and on the other hand travel happens in many shorter episodes," Dr. Fulop said.

"At every stop on this very long journey, there is an opportunity for the 'message' (environmental signal) that each parcel of sediment carries to be altered or erased."

The Murray-Darling basin has a subtropical climate with a marked latitudinal gradient of contrasting climatic settings. In the northern part, the Darling sub-basin has weak dominance of summer monsoon rainfall, whereas in the southern part, the Murray sub-basin is influenced more strongly by winter precipitation associated with Southern Hemisphere westerly winds.

As a consequence, studies have sought to use Murray-Darling Basin sedimentary archives as proxies of past hydroclimate variability by applying geochemical fingerprinting techniques to

discriminate between Darling versus Murray sediment sources.

The inherent assumption behind these studies is that sediment will move quickly from source to sink and any variability in sediment provenance is directly linked to changes in discharge and/or sediment production rates.

"Our study suggests that the transmission of environmental signals from Murray and Darling source-areas will potentially be out of sync—due to both the long cumulative residence times and the multiple episodes of burial and re-exposure—precluding any interpretations of source-area paleoclimate from these sediment," Dr. Fulop said.

The million year transit times and the reworking of old sediment observed in the Murray Darling Basin are likely to be a characteristic feature of similar river systems globally. This may limit the amount of interpretation possible from the sediment deposits of tectonically inactive continents such as Africa and Australia.

More information: R.-H. Fulop et al. Million-year lag times in a post-orogenic sediment conveyor, *Science Advances* (2020). DOI: 10.1126/sciadv.aaz8845

(Source: <https://phys.org/>)

Erosion of the Himalayas is governed by tectonic movements, limiting climate change impacts on landscape formation



Highly sediment loaded Himalayan river after an intense monsoon rainfall event (Khudi river in central Nepal, by Maarten Lupker)

Researchers from the Centre de Recherches Pétrographiques et Géochimiques (CNRS / University of Lorraine), in collaboration with CEREGE have shown that erosion in the Himalayas is primarily governed by tectonic movements, which would limit the impact of climate change on the formation of Himalayan landscapes. Their study was published in *Nature Geosciences* on June 1, 2020.

The Himalayas offer spectacular landscapes and present both the highest peaks and the deepest valleys in the world. This mountain range has formed since the Indian and Eurasian plates

began to collide. There, the Indian Monsoon produces intense seasonal precipitations, and glaciers cover the landscapes at elevations higher than 5,000 m. As these climatic conditions combine with active tectonic uplift, dynamic rivers and glaciers produce extreme erosion in the Himalayas. During the Quaternary (0—2.6 Ma), climatic and glacial cycles developed, glaciers advanced and retreated regularly, and river discharge fluctuated similarly. Thus, the capacity of rivers and glaciers to erode may have varied, which, in turn, may have affected the rate of erosion of the landscapes. Glaciers were on average much more extended during the Quaternary than in previous periods. Glacial increased extent is supposed to have led to a sharp increase in erosion in mountain ranges. But in the Himalayas, earthquakes, landslides and river incision quickly erase the markers of glacial advances and retreats, and few clues remain to validate these hypotheses.

Researchers began the study of this erosion by carrying out underwater drilling in 2015 initiated by C. France-Lanord (CRPG), in collaboration with the University of Bremen (Germany). The samples were then analyzed by CRPG and CEREGE researchers as part of the thesis of Sébastien Lénard, doctoral student at the CRPG. To determine past erosion rates, these researchers measured the concentration of beryllium 10 (^{10}Be) accumulated in the quartz crystals that make up these sediments. As a cosmogenic nuclide, ^{10}Be is a nuclide produced during the nuclear interaction between high-energy particles from cosmic radiation and the atoms of the minerals of rocks close to the earth's surface. Because cosmic ray particles are very effectively attenuated by matter, the production of these nuclides in minerals directly depends on the depth of rocks below the earth's surface.

For example, at 40 cm below the surface, the production of ^{10}Be is half the production for a mineral at the surface. When a mountain slope or soil is eroded, a rock initially located a few meters underground approaches the surface and accumulates cosmogenic nuclides in its minerals. This accumulation depends directly on the rate of erosion of the surface: for a rapidly eroding surface, the rock is rapidly approaching the surface, and its minerals do not have time to accumulate a high concentration of ^{10}Be . Using this property, earth scientists get a relatively direct tool for estimating erosion rates.

Unexpectedly, during the past six million years, the erosion rates are on average very close to the modern erosion rates in the Himalayas, around 1 mm/year. They neither show an increasing trend nor a decreasing trend at the Quaternary transition, despite the marked

increase in glacier extension and glacial erosion in the Himalayas since this transition. These results suggest that tectonic movements exert a major control on erosion in the Himalayas, and that climatic changes would have only a limited impact on the formation of the Himalayan landscapes.

More information: Sebastien J. P. Lenard et al. Steady erosion rates in the Himalayas through late Cenozoic climatic changes, *Nature Geoscience* (2020). DOI: 10.1038/s41561-020-0585-2

(Source: PHYS.ORG)

- analyses public opinion by integrating the social media analytics and GIS methods.

Enjoy exploring the site!

<http://www.ikcest.org/index.htm>

Related link:

<https://en.unesco.org/themes/building-capacity-science-and-engineering>

(Source: UNESCO Beijing)

Contribution of the International Knowledge Centre of Engineering, Science and Technology (IKCEST) in gathering information on COVID-19



The International Knowledge Centre of Engineering, Science and Technology (IKCEST), under the auspices of UNESCO, is a UNESCO Category II Centre created in 2013, that concentrates on computing and big data. To gather and correlate the different information about the coronavirus, IKCEST created a dedicated platform that was officially launched on February 14, 2020. This video explains the platform and its use.

The column COVID-19 Prevention and Control:

- focuses on information in terms of six aspects, namely Policy and Regulations, News and Measures, Experts Viewpoints, Science Express, Science Popularization, and Citizen Stories, sharing with the world in real time the epidemic information, research progress, as well as prevention and control measures and experience;
- displays global cumulative curves of confirmed cases, deaths, recoveries and the growth rate of these numbers over time, and provides real-time data of cure rate and mortality;
- provides recorded courses presented by leading medical professionals and scholars in China, as well as resources from Evidence-based Medicine (EBM) databases; and

PUBLICATIONS

Papers Published in the International Journal of Sediment Research Volume 35, No. 3, 2020 Pages 227–314 (June 2020)



Spatial analysis of bacteria in brackish lake sediment
Jean-Sebastien Beaulne, Samir R. Mishra, Mrutyunjay Suar, Ananta Narayan Panda, ... Timothy M. Vogel
Pages 227-236

Numerical modeling of local scour due to submerged wall jets using a strict vertex-based, terrain conformal, moving-mesh technique in OpenFOAM
Xiaohui Yan, Abdolmajid Mohammadian, Colin D. Rennie
Pages 237-248

Analysis of the conductive behavior of a simplified sediment system and its computational simulation
Zhengjin Weng, Zhiwei Zhao, Yong Fang, Helong Jiang, Wei Lei
Pages 249-255

Experimental study on the effects of artificial bed roughness on turbidity currents over abrupt bed slope change
Sara Baghalian, Masoud Ghodsian
Pages 256-268

Metals content in sediments of ephemeral streams with small reservoirs (the Negev Desert)
Małgorzata Kijowska-Strugała, Łukasz Wiejaczka, Rafał Kozłowski, Judith Lekach
Pages 269-277

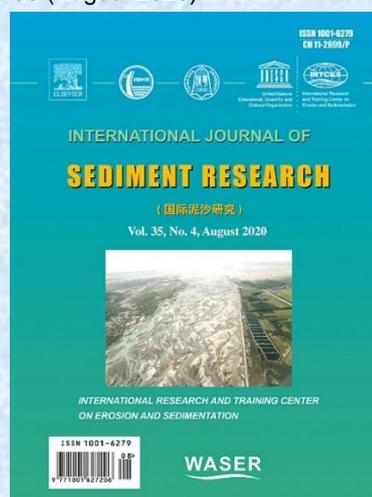
Numerical modeling of scour and deposition around permeable cylindrical structures
Jiajia Pan, Zhiguo He, Wurong Shih, Niansheng Cheng
Pages 278-286

Chemical and spectroscopic characterization of humic substances from sediment and riparian soil of a highly polluted urban river (Suquía River, Córdoba, Argentina)
Carolina Merlo, Carolina Vázquez, Ana Graciela Iriarte, Carlos Matías Romero
Pages 287-294

Three-dimensional simulation of horseshoe vortex and local scour around a vertical cylinder using an unstructured finite-volume technique
Wei Zhang, Miguel Uh Zapata, Xin Bai, Damien Pham-Van-Bang, Kim Dan Nguyen
Pages 295-306

Comparison of the sediment composition in relation to basic chemical, physical, and geological factors
Witold Reczyński, Katarzyna Szarłowicz, Małgorzata Jakubowska, Peter Bitusik, Barbara Kubica
Pages 307-314

Papers Published in the International Journal of Sediment Research Volume 35, No. 4, 2020 Pages 315-430 (August 2020)



Modeling the effect of sediment concentration on the flow-like behavior of natural debris flow
Leonardo Schippa
Pages 315-327

Stochastic evolution of hydraulic geometry relations in the lower Yellow River of China under environmental uncertainties
Xiaolong Song, Deyu Zhong, Guangqian Wang, Xiaonan Li
Pages 328-346

Numerical simulation of sediment deposition and trapping efficiency estimation in settling basins, considering secondary flows
Esmail Lakzian, Hassan Saghi, Omid Kooshki
Pages 347-354

Computational fluid dynamics modeling of abutment scour under steady current using the level set method
Mohammad Saud Afzal, Hans Bihs, Lalit Kumar
Pages 355-364

Sediment dynamics and temporal variation of runoff in the Yom River, Thailand
Matharit Namsai, Butsawan Bidorn, Seree Chanyotha, Ruetaip Mama, Nathamon Phanomphongphaisarn

Pages 365-376

Performance of riffle structures on the stabilization of two successive knickpoints over a sandy bed

Afshin Fouladi Semnan, Mohammad Reza Jaefarzadeh
Pages 377-385

A GPU-based numerical model coupling hydrodynamical and morphological processes

Jingming Hou, Yongde Kang, Chunhong Hu, Yu Tong, ... Junqiang Xia
Pages 386-394

A time-splitting pressure-correction projection method for complete two-fluid modeling of a local scour hole

Kambiz Farahi Moghadam, Mohammad Ali Banihashemi, Peyman Badiei, Ali Shirkavand
Pages 395-407

Soil erosion and sediment interception by check dams in a watershed for an extreme rainstorm on the Loess Plateau, China

Leichao Bai, Nan Wang, Juying Jiao, Yixian Chen, ... Zhijie Wang
Pages 408-416

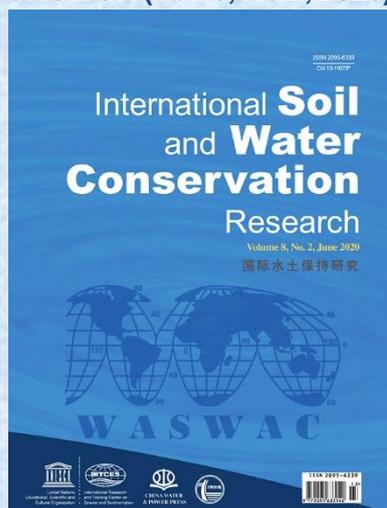
Hydrodynamics and suspended particulate matter retention in macrotidal estuaries located in Amazonia-semiarid interface (Northeastern-Brazil)

Vinicius Henrique Maciel dos Santos, Francisco José da Silva Dias, Audálio Rebelo Torres, Rômulo Araújo Soares, ... Marco Valério Jansen Cutrim
Pages 417-429

Full papers are available at ScienceDirect:

<https://www.sciencedirect.com/journal/international-journal-of-sediment-research> with free access to the paper abstracts.

Contents of ISWCR (Vol. 8, No.2, 2020)



International Soil and Water Conservation Research
Volume 8, Issue 2
Pages 103-212 (June 2020)

A systematic review of soil erosion control practices on the agricultural land in Asia

Nur Syabeera Begum Nasir Ahmad, Firuza Begham Mustafa, Safiah @ Yusmah Muhammad Yusoff, Gideon Didams
Pages 103-115

Experimental study on the effects of multiple factors on spring meltwater erosion on an alpine meadow slope

Xiaonan Shi, Fan Zhang, Li Wang, Muhammad Dodo Jagirani, ... Guanxing Wang
Pages 116-123

Surface runoff and soil erosion in a natural regeneration area of the Brazilian Cerrado

Karina dos Santos Falcão, Elói Panachuki, Felipe das Neves Monteiro, Roniedison da Silva Menezes, ... Paulo Tarso S. Oliveira
Pages 124-130

Effect of joint structure and slope direction on the development of collapsing gully in tuffaceous sandstone area in South China

Yusong Deng, Xiaoqian Duan, Shuwen Ding, Chongfa Cai
Pages 131-140

Distinct and combined impacts of climate and land use scenarios on water availability and sediment loads for a water supply reservoir in northern Morocco

Fatiha Choukri, Damien Raclot, Mustapha Naimi, Mohamed Chikhaoui, ... Yannick Pépin
Pages 141-153

Combating wind erosion through soil stabilization under simulated wind flow condition – Case of Kuwait

Hana'a Burezq
Pages 154-163

Institutional performance and participatory paradigms: Comparing two groups of watersheds in semi-arid region of India

Biswajit Mondal, Nagarajan Loganandhan, Sekhargowda L. Patil, Anurag Raizada, ... Gopal L. Bagdi
Pages 164-172

Using high-resolution aerial images to study gully development at the regional scale in southern China

Honghu Liu, Georg Hörmann, Bingyu Qi, Qiuxing Yue
Pages 173-184

Tillage and no-tillage effects on physical and chemical properties of an Argiaquoll soil under long-term crop rotation in Buenos Aires, Argentina

Ana Clara Sokolowski, Barbara Prack McCormick, Javier De Grazia, José E. Wolski, ... Mónica B. Barrios
Pages 185-194

The application of proximal visible and near-infrared spectroscopy to estimate soil organic matter on the Triffa Plain of Morocco

Ayoub Lazaar, Abdul Mounem Mouazen, Kamal EL Hammouti, Michael Fullen, ... Abdelilah Monir
Pages 195-204

Atrazine removal from water by activated charcoal cloths

Javier M. Gonzalez, Lynnette R. Murphy, Chad J. Penn, Veera M. Boddu, Laura L. Sanders
Pages 205-212

Free full papers and open access are available at ScienceDirect :

<https://www.sciencedirect.com/journal/international-soil-and-water-conservation-research>

COMING EVENTS

Climate-Resilient Water Management Approaches: Adaptation in an Age of Uncertainty (Monthly webinar series)

Date: July – October 2020 (On a monthly basis)

Venue: Online webinars

Organizer: UNESCO's Division of Water Sciences, the Alliance for Global Water Adaptation (AGWA) and the International Center for Integrated Water Resources Management (ICIWaRM)

Summary: Over the past ten-plus years, various organizations have developed a set of complementary resilient water management tools and approaches that work to address climate risks and other uncertainties in a manner that can be integrated within existing planning, design, and operational decision processes. These "bottom-up approaches" differ from the dominant paradigm guiding water management for the past half-century — namely the assumption that we can use past hydrological and climatic data to confidently predict (and plan for) the future. The webinars, intended for technical water management professionals as well as individuals working in climate / water policy and planning, will introduce the technical and practical components of bottom-up approaches, spanning a range of topics and underscored by examples of real-world applications.

URL: (to be provided)

Contacts: a.mishra@unesco.org

ISI – Training Workshop on 'River Basin Sediment Monitoring and Management' (Koblenz, German, September 7-11, 2020)

Date: September 7 – 11, 2020

Venue: Federal Institute of Hydrology, Koblenz, Germany

Organizer: International Centre for Water Resources and Global Change under the auspices of UNESCO, German Federal Institute of Hydrology

Co-sponsors: International Sediment Initiative (ISI) of UNESCO IHP, International Research and Training Center on Erosion and Sediment Research (IRTCES).

Summary: The workshop on River Basin Sediment Monitoring and Management focuses on training and capacity building with a particular attention to:

- i) monitoring sediment dynamics in relation to (planned) river management or reservoir measures,
- ii) evaluation of monitoring results in terms of impact analysis and management and
- iii) communication and outreach of expert knowledge on sediment dynamics to support sustainable sediment management solutions, which highlight the need for integrated river basin management plans.

Major questions of the WS will be: What are main technical issues in sediment monitoring programs and how to cope with them? How simple/complex do we need to measure (e.g. simple flux measure to complex sediment budget) to provide empirical evidences for the specific management solution?

The workshop aims to provide knowledge on sediment measurement and monitoring, how to transfer measurement and monitoring results to management solution, how to improve current sediment management strategies to find sustainable solution and how to evolve from local river management to integrated landscape management. Although we will focus on inland waters, we also want to

highlight possible impacts on downstream areas, including estuaries and coastal zones.

After a general introduction to the topic (1st day), the participants will conduct hands-on workshops on monitoring techniques and data analysis (2nd and 3rd day). During a field trip at the River Rhine, the participants will be introduced to various sensors and techniques for measuring suspended sediment characteristics and loads. On subsequent days the field data will be analyzed by the workshop participants. Their results will be presented in a best-practice guide on suspended sediment monitoring (4th day). Additionally, we offer an excursion about data management and data sharing principles in collaboration with the ISI database as well as with the GEMS/Water Data Centre for Water Quality (gemstat.org) (5th day).

Organization & Contact:

Thomas Hoffmann (Thomas.Hoffmann@bafg.de) and Stephan Dietrich (Dietrich@bafg.de)

(The ISI Training Workshop might be postponed to other date due to the COVID-19, the updated information will be shown in the ISI website.)

RIVER BASINS 2020 (Hungary, December 3-4, 2020)

"River Basins"- International Conference on Monitoring, Modelling and Management of River Basins

Date: 03 – 04 December 2020

Venue: Budapest University of Technology and Economics, Budapest, Hungary

Summary: RIVER BASINS is a conference which provides a platform for the exchange of recent progresses and research in the field of river basin management. This includes the quantification of water and mass fluxes, the investigation of processes in river systems and ecological research as well as the implementation of promising management strategies. Originally promoted and hosted by KIT Karlsruhe, for this time the edition RIVER BASINS 2020 (<http://www.riverbasins.kit.edu>) will be hosted by Budapest University of Technology and Economics (BUTE) in a beautiful venue with view on the Danube. All participants of the RIVER BASINS 2020 with accepted contributions will have the opportunity to submit a paper to be published in the journal Water, in a special issue named after RIVER BASINS 2020 conference theme (https://www.mdpi.com/journal/water/special_issues/Solids_River_Basins). Water (Impact Factor 2018: 2.524) is a peer-reviewed open access journal on water science and technology, including the ecology and management of water resources, and is published monthly online by MDPI.

Theme:

Solids in River Basins – Soil and particle bound pollutants, with focus on Modelling, Monitoring and Management

URL: <https://www.riverbasins.kit.edu/>

Contacts:

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Germany

phone: +49 721 608-42457

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3rd International Youth Forum on Soil and Water Conservation (Iran, May 16-21, 2021)

Date: May 16-21, 2021

Venue: Tarbiat Modares University, Noor, Iran

Organizers:

World Association of Soil and Water Conservation (WASWAC)

Faculty of Natural Resources and Marine Sciences, Tarbiat Modares University, Iran

Sponsors:

World Association of Soil and Water Conservation (WASWAC)

Co-sponsors:

Watershed Management Society of Iran

Gorgan University of Agricultural Sciences & Natural Resources

Chinese Society of Soil and Water Conservation

Institute of Soil and Water Conservation, CAS & MWR

Datum Technology

Secretariat:

Faculty of Natural Resources and Marine Sciences, Tarbiat Modares University

Summary: The International Youth Forum on Soil and Water Conservation (IYFSWC) is a triennial event initiated by the World Association of Soil and Water Conservation (WASWAC). Two such conferences have now been held in Nanchang, China and Moscow, Russia in 2015 and 2018. With support from related international associations, and with the participation of experts and scholars worldwide, the IYFSWC has attracted wide attention and has become an important and popular event. The IYFSWC provides an opportunity for young scientists and early-career researchers to exchange ideas, research results and advanced techniques in soil and water conservation, and develop collaboration and friendships. The 3rd International Youth Forum on Soil and Water Conservation will be held in Tarbiat Modares University, Noor, Iran during May 16-21, 2021.

Overall Theme:

Soil and Water Conservation (SWC) under Changing Environments

Topics of the Conference (tentative):

1. Smart SWC
2. Adaptive SWC
3. Youth Roles in SWC
4. Climate Change and SWC
5. SWC in Developing Countries
6. Performance Evaluation of SWC Projects
7. Impacts and Possible Solutions of COVID-19 Pandemic on SWC Practices

URL: www.IYFSWC.modares.ac.ir

Contacts: IYFSWC@modares.ac.ir

World's Large Rivers Conference 2021 (Russia, August 2-6, 2021)

Date: August 2-6, 2021

Venue: Moscow, Russia

Summary: This WASER- / ISI-co-sponsored conference aims to provide a global forum for a wide-ranging discussion of key issues related to research on large rivers and to their effective and sustainable management, involving both scientists and decision makers. The conference will be organised by MSU - Lomonosov Moscow State University, Russia, and BOKU - University of Natural Resources and Life Sciences, Vienna, Austria. We kindly ask all interested authors to submit their work within the topics of

- Hydrology, Hydraulics & Hydroclimatic Impacts

- Sediment Transport & River Morphology

- River Pollution, Ecology & Restoration

- Integrated River Management

Special focus will be given this time to **Climate Change** and its impact - not only in general, but also specifically related to **Russian and Arctic Rivers**.

Supported by: WASER World Association for Sedimentation and Erosion Research; UNESCO United Nations Educational, Scientific and Cultural Organization; IAHR International Association of Hydro-Environment Engineering and Research; IAHS International Association of Hydrological Sciences; IAG International Association of Geomorphologists. All WASER- and ISI-members can benefit from a reduction of conference fees of 10%.

URL: <http://worldslargerivers.boku.ac.at/wlr/>

(LOC: Due to the Corona Virus the World's Large Rivers Conference in Moscow has been postponed by one year and take place in Moscow from 2-6 August 2021.)

The 7th International Conference on Estuaries and Coasts (Shanghai, China, October 18-21, 2021)

Date: October 18-21, 2021 (Tentative)

Venue: East China Normal University, Shanghai, China

Organizers:

East China Normal University

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

Co-sponsors: International Association for Hydro-Environment Engineering and Research (IAHR).....(to be invited)

Secretariat: East China Normal University

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). Six such conferences have now been held in Hangzhou and Guangzhou, China; Sendai, Japan; Hanoi, Vietnam; Muscat, Oman, and Caen, France in 2003, 2006, 2009, 2012, 2015 and 2018. 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 7th International Conference on Estuaries and Coasts (ICEC-2021) will be held in the East China Normal University, Shanghai, China during October 18-21, 2021.

Overall Theme:

Anthropocene Coasts

Topics of the Conference (tentative):

1. Hydrodynamics in estuaries and coasts: tides, waves, circulations, and their interactions;
2. Sediment transport dynamics: sand, mud and their mixture;
3. Multi-scale morphodynamics: tidal flats, estuaries, deltas, beaches, dunes, eco-morphodynamics...;
4. Coastal management: flood defense, ecosystem conservation, human-nature interactions...

URL: (to be provided)

Contacts: (to be provided)

15th International Symposium on River Sedimentation (Florence, Italy, September, 2022)

Date: September, 2022 (Three consecutive days at the end of August / beginning of September, 2022)

Venue: Florence, Italy

Organizer: University of Florence and University of Padua

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

Co-sponsors: International Association for Hydro-Environment Engineering and Research (IAHR).....(to be invited)

Secretariat: University of Florence, Italy

Permanent Secretariat: IRTCES

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.

Symposium Theme and Topics:

The theme of the symposium is

Sustainable Sediment Management in a changing Environment (tentative)

The symposium topics include (tentative):

1. Sediment transport
2. Reservoir sedimentation
3. River morphodynamics
4. Coastal morphodynamics
5. Ecomorphodynamics
6. Sediment related disaster
7. Plastic in river and coastal systems
8. Interaction between sediment dynamics and hydraulic structures
9. Integrated Sediment Management at the River Basin Scale
10. Social, economic & political problems related to sediment and water management

URL: (to be provided)

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INTERNATIONAL SEDIMENT INITIATIVE (ISI)
**Intergovernmental Hydrological
 Programme (IHP)**
UNESCO

ORGANISATION: UNESCO

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Philippe Pypaert	UNESCO, Beijing
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ISI URL: <http://www.irtces.org/isi/>

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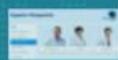
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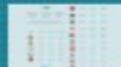
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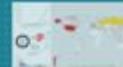
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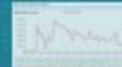
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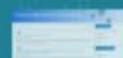
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