



# HOT NEWS

04, 2024

# HOT NEWS

ISSUE 04 2024



## CONTENTS

<b>Prof. Velibor Spalevic Visited WASWAC Secretariat</b>	<b>01-02</b>
<b>International Union of Soil Sciences (IUSS) Celebrated its 100th Birthday</b>	<b>03</b>
<b>The 15th International Conference on Hydroinformatics (HIC2024) Held</b>	<b>04</b>
<b>UN Sustainable Development Goal 15.3.1: Assessment of the land degradation indicator at EU scale</b>	<b>05-06</b>
<b>European Soil Database v2 Raster Library 1kmx1km</b>	<b>07-08</b>
<b>Make registration to attend the 2024 12th International Confer- ence on Environment Pollution and Prevention</b>	<b>09</b>
<b>Africa's Soil Health Crisis Demands Immediate Attention</b>	<b>10-11</b>
<b>Desert Restored Via Grassland Protection: Horqin Left Banner Turns Desolation to Green by Embracing Natural Methods</b>	<b>12-13</b>
<b>Sustained Increase in Suspended Sediments Near Global River Deltas Over the Past Two Decades</b>	<b>14-15</b>

**Editor: Pengfei DU**

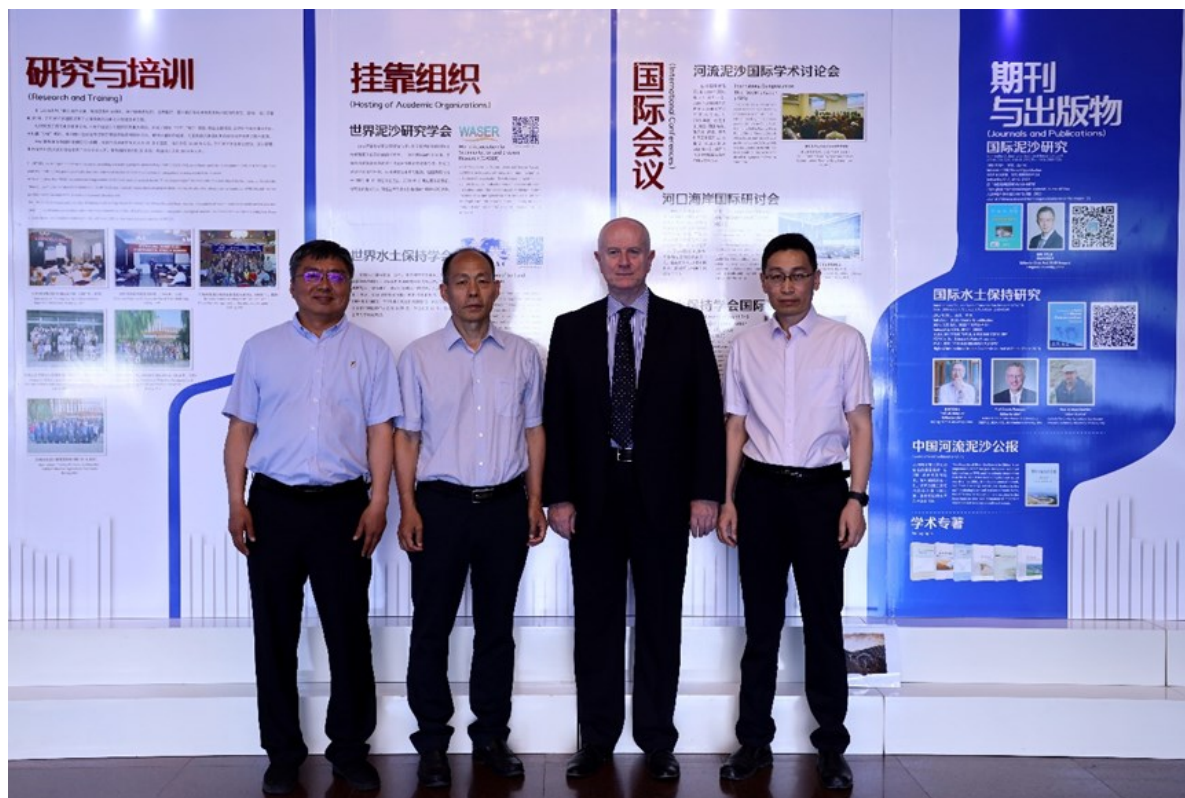
**Assistant Editors: Yuqi ZHANG**



## Prof. Velibor Spalevic Visited WASWAC Secretariat

On May 31, Prof. Velibor Spalevic from the University of Montenegro, visited the Secretariat of the World Association of Soil and Water Conservation (WASWAC). Prof. Pan Qingbin, the Secretary General of WASWAC,

presided over the meeting, while Prof. Ning Duihu, President of WASWAC, and Prof. Du Pengfei, the Executive Deputy Secretary General of WASWAC, participated in the discussion.



Prof. Pan Qingbin warmly welcomed Prof. Velibor Spalevic, and expressed gratitude to Prof. Velibor Spalevic for his active role as a member of the WASWAC and for his contribution to the development of the official journal - International Soil and Water Conservation Research (ISWCR). Prof. Ning Duihu introduced to Prof. Velibor Spalevic the relevant work carried out by the association in recent years, focusing on the preparations for the 4th

International Youth Forum on Soil and Water Conservation. Prof. Du Pengfei introduced the establishment, development and organization of the International Research and Training Center on Erosion and Sedimentation (IRTCES), which is an affiliated agency of WASWAC, and the related research and training in the field of soil erosion and sedimentation.

Prof. Velibor Spalevic introduced his research projects at the University of Montenegro and the European Union and his cooperation with related organizations. He highly appreciated the achievements of the secretariat of WASWAC, and expressed his support for the development of the Association as in the past. At the same time, he warmly congratulated

the upcoming 40th anniversary of the IRTCES and sincerely wished IRTCES to have more brilliant achievements in the future development.

Both sides also had an in-depth exchange on IntErO, a model developed by Prof. Velibor Spalevic for calculating soil erosion intensity and runoff.





## International Union of Soil Sciences (IUSS) Celebrated its 100th Birthday

On May 19, 2024, the International Union of Soil Sciences (IUSS) celebrated its 100th birthday in Florence, Italy. The theme of this conference is "100 years of soil science. past achievements and future challenges". The congress was organized with 9 keynote presentations, 100 parallel seminar forums and 5 study tours, covering topics such as equality and diversity and inclusion, soil and humanity, soil

governance, soil health and SDGs, soil and circular economy, soil in the digital age, and impacts of soil science on fundamental knowledge, etc., and gathered more than 1,500 delegates from all over the world to be participated. Five technical/scientific excursions that ranged from short local to long trips, spanning from Alps to Sicily, were followed by the congress.



## The 15th International Conference on Hydroinformatics (HIC2024) Held

On May 27, the 15th International Conference on Hydroinformatics (HIC2024) opened in Beijing. Nearly 500 representatives of government departments, universities, scientific research institutions, international organizations, and water-related enterprises from 34 countries and regions attended the meeting.

Themed on "From Nature to Digital Water: Challenges and Opportunities", the conference features sub-topics such as "Integrated Sky-Ground Monitoring," "Hydrological and Hydraulic Modeling and Solutions," "Big Data Acquisition and Data Management," "Multi-scenario Application of Digital Twins," "Climate Change and Adaptation," and "Digital-empowered Water Management and Education," aiming to promote the development and practical application of water information technology.

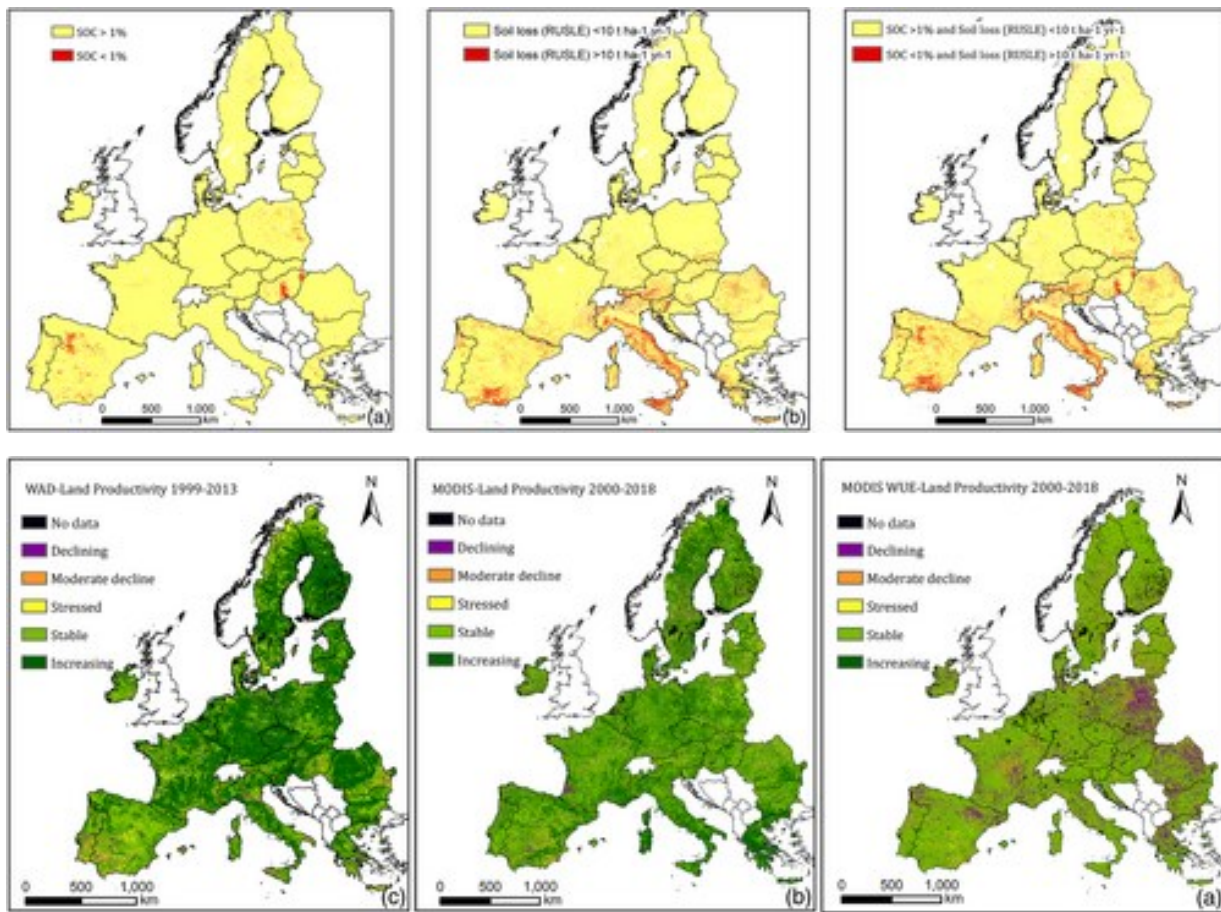
The conference released the Beijing Initiative for Digital Twin Hydrology, calling on global participants in digital twin hydrology to strengthen cooperation and jointly promote the construction, application, and promotion of digital twin hydrology to address significant challenges in global water security under the backdrop of climate change.

The International Conference on Hydroinformatics is a series of international academic conferences. This session was jointly organized by the Ministry of Water Resources of China, the International Association of Hydraulic and Environmental Engineering (IAHR) and the International Water Association (IWA), with the China Institute of Water Resources and Hydropower Research taking the lead in hosting the conference.





## UN Sustainable Development Goal 15.3.1: Assessment of the Land Degradation Indicator at EU Scale



## Abstract:

Land degradation is the persistent reduction in the capacity of the land to support human and other life on Earth (IPBES, 2018). This process jeopardizes the provision of ecosystem services. The Sustainable Development Goal (SDG) 15, 'Life on Land', includes efforts to sustainably manage and recover natural ecosystems and restore degraded land and soil.

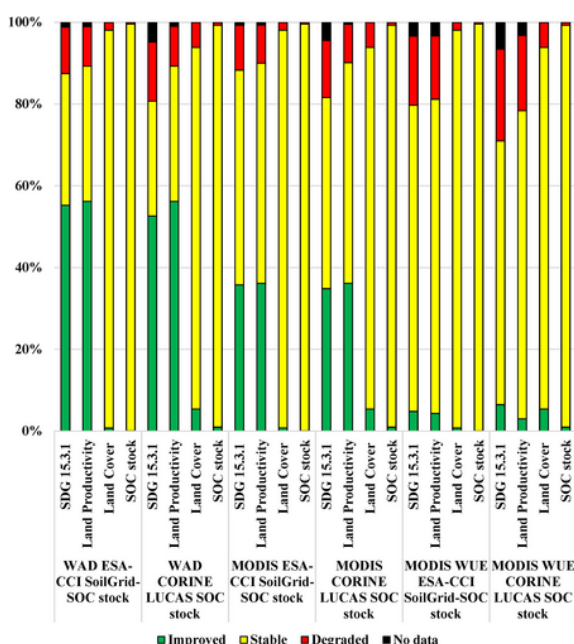
Under the umbrella of SDG 15, the United Nations Convention to Combat Desertifica-

tion (UNCCD) has defined an indicator framework to monitor progress toward ‘land degradation neutrality’. We evaluated the performance of SDG 15.3.1, focusing on “the proportion of land that is degraded over the total land area” for the European Union (EU) using the TRENDS.EARTH software. We assessed the impact of alternative datasets at different spatial resolutions and policy-relevant data sources for land cover (CORINE) and soil organic carbon (SOC) stock (LUCAS).

Our hypothesis was that higher spatial resolution sub-indicators would better identify the total share of degraded land and provide a clearer picture of the extent of degraded land for the target period. Land productivity trajectories were adjusted using the Water Use Efficiency index that revealed the high share of improving land reported by the NDVI trends. Therefore, it is advisable to use always a climate correction to assess land productivity trends. Replacing default datasets with alternative sub-indicators allowed the detection of 25–40% more degraded areas. Additionally, the integration with a combined proxy of land degradation (soil erosion >10 Mg ha<sup>-1</sup> yr<sup>-1</sup>, and SOC concentration <1%) identified an additional 50% land degradation and revealed that a large extent of the EU needs restoration measures.

## Results:

Under the umbrella of SDG 15, the United



Nations Convention to Combat Desertification (UNCCD) has defined an The determination of the SDG 15.3.1 indicator using the UNCCD JRC WAD LP resulted in 14.5% of the EU being classified as “degraded,” 32.6% as “stable,” and 55.9% as “improved.” The results also highlighted that the usage of MODIS NDVI trends and WUE LP as an alternative for JRC WAD LP data. Moreover, the usage of MODIS WUE LP also resulted in a reduction of areas classified as “improved,” shifting toward the “stable” class , 25% of “degraded,” 69% of “stable” land, and 6% of “improved.” Concerning the sensitivity of individual sub-indicators, for all the alternatives assessments tested, LP presented highest sensitivity for areas with “improved” conditions, followed by “stable” when using JRC WAD LP data, whereas when using MODIS NDVI trend data, both classes resulted in an equal distribution for this sub-indicator, and MODIS WUE being the class “stable” the more represented. For LC and SOC stock sub-indicators, the classification of “stable” dominated the distribution of classes regardless of the data source used for its calculation , revealing also a low impact in the final SDG 15.3.1 LD indicator result .

Details: <https://esdac.jrc.ec.europa.eu/content/un-sustainable-development-goal-1531-assessment-land-degradation-indicator-eu-scale>



## European Soil Database v2 Raster Library 1kmx1km

For the convenience of the user, a number of 1km x 1km raster data sets (in GeoTIFF) format have been derived from the European Soil Database (ESDB) v2.0, in particular the shapefile that is offered on the data pages for the ESDB. This shapefile, and thus also the derived rasters, are an interpretation of the data contained in the full ESDB.

### Access to the data:

In order to obtain access to the GeoTIFF raster data, you will need to fill in the request form; after which you will receive further instructions on how to access the data.

### The ESDB v2 - 1kmx1km Raster Library (Documentation) :

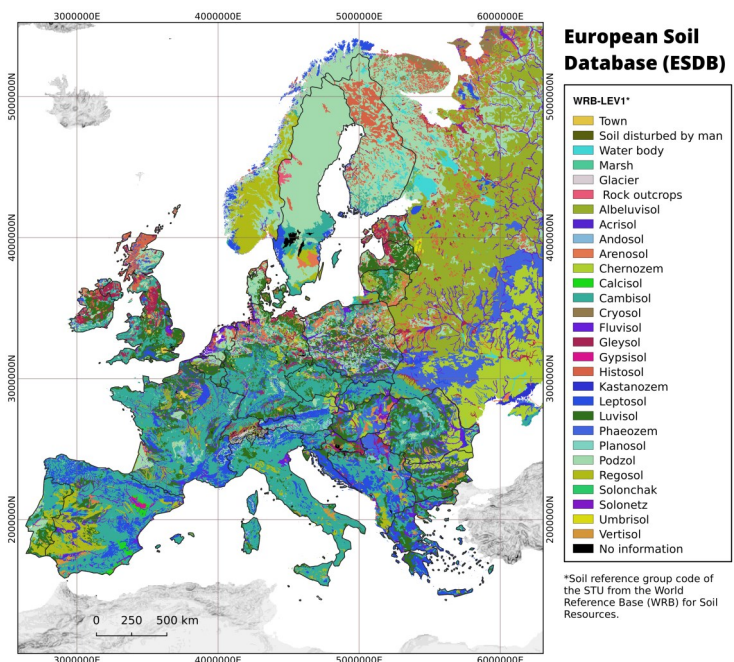
This library contains GeoTIFF data files for most attributes of the SGDBE and PTRDB databases, which are components of the ESDB v2.0; cell sizes are 1km x 1km. There are 71 GeoTIFFs.

Each GeoTIFF is found in a directory with name of the parameter that contains:

- (1) The GeoTIFF file itself <parameter>.tif; this file contains numbers.
- (2) A <parameter>.vat.dbf file that associates the GeoTIFF file numbers to <parameter> values.
- (3) A text .txt file that explains the <parameter> values. (Legend file).

Additionally :

- (1) The file Description of raster layers explains the names of all the rasters; note that only ZMIN and ZMAX have not been included;
- (2) The file SGDBE rasters attributes classes : contains possible attribute values for SGDBE derived rasters ;
- (3) The file PTRDB rasters attributes classes : contains possible attribute values for PTRDB derived rasters.



(4):More documentation on the Pedo-transfer rules/attributes of the European Soil Database can be found in A Geographical Knowledge Database on Soil Properties for Environmental Studies.

The “no information” category in the vat.dbf files stems from the attribute table of the original shapefile, where there is no value indicated (NULL, empty), while the “#” category is explicitly explained in the .txt legend files as “no data” or “not applicable” or “no information” and was deliberately assigned by the ESDB database developers.

If a GeoTIFF file (and thus also the corresponding .vat.dbf file) contains a value that is not explained in the corresponding .txt legend files, this should be considered as "Non-defined".

### **Coordinate System and GeoTIFF cells :**

Note that the raster cells are aligned with the reference grid recommended during the 1st Workshop on European Reference Grids in the context of the INSPIRE (Infrastructure for Spatial Information in Europe) initiative.

The grids are in the ETRS89 Lambert Azimuthal Equal Area (ETRS\_LAEA) co-ordinate system, also documented in the workshop proceedings.

The grid origin is defined 4.321.000,0 m west of the projection centre point (52N, 10 E), and 3.210.000,0 m south of projection centre point (52N 10 E). The grid extent is such that it covers all EU25 countries. Width : 7.500.000,0 m ; Height : 5.500.000,0 m ; 7500 columns, 5500 rows.

Details: <https://esdac.jrc.ec.europa.eu/content/european-soil-database-v2-raster-library-1kmx1km>

## Make Registration to Attend the 2024 12th International Conference on Environment Pollution and Prevention



### Time & Venue :

November 8-10, 2024, Brisbane, Australia

### Theme :

Allow presenters to reflect past accomplishments, extend our networks, and jointly explore current and future research directions.

### Topics :

- Gain a cross-cultural view of the latest Environment Pollution and Prevention trends
- Enjoy regional diversity through structured networking with international colleagues
- Have your work viewed in a broader view with varying perspectives from distinguished experts
- Benefit from exposure to the fullest spectrum of ICEPP and analytics research and topics
- Learn from top industry vendors who are attracted to this international forum

- Fully immerse yourself in this charming city and all it has to offer

### Publication :

Submitted papers will be peer-reviewed and evaluated based on originality, technical depth, research novelty, correctness, relevance to the conference, and readability. After the peer reviewing process, the accepted papers will be included into ICEPP 2024 conference proceedings of E3S Web of Conferences (Open Access proceedings in Environment, Energy and Earth Sciences), which will be submitted to Scopus, CAS, Thomson Reuters, DOAJ, EBSCO, ProQuest for indexing.

### Important Dates :

Submission Deadline: June 15, 2024

Notification: before July 10, 2024

Registration Deadline: July 25, 2024

Conference Dates: November 8-10, 2024

Details: [ICEPP 2024](#)



## Africa's Soil Health Crisis Demands Immediate Attention



The cost of land degradation due to poor soil health is estimated to be between USD 850 and 1,400 per year for every individual, with a global cost of US\$6.3 to 10.6 trillion annually. Soil fertility decline not only reduces crop yield, but also exacerbates the impacts of climate change by reducing the land's resilience and capacity to adapt. Since the 1960s, land degradation in Africa has led to a significant expansion of agricultural land by about 300%, compared to 25% elsewhere. This has happened at the expense of forests, wetlands and other fragile systems. This expansion is driven

by the need to compensate for the loss of productivity caused by soil fertility decline. It is imperative to minimize or eradicate significant soil degradation in Africa to preserve the services rendered by all soils, which is significantly more cost-effective than rehabilitating soils post-degradation. During May 7-9, the African Union and Government of Kenya hosted AFSH Summit in Nairobi Kenya to delve into the importance of soil health and fertilizer use in African food systems. Five pivotal policy imperatives emerged, the second of which focuses on enhancing soil

conservation to prevent soil erosion. The second policy is: the imperative of land tenure policies cannot be overstated. Empowering farmers to safeguard their land will foster a culture of stewardship, vital for the sustainable use of this finite resource. Improved soil health contributes to the growth and recovery of vegetation. The root system of vegetation anchors the soil and reduces soil movement and erosion. Vegetation cover also reduces the direct impact of raindrops on the ground, reducing the risk of splash and sheet erosion. Healthy soils have a good structure, including proper porosity and permeability. This structure enables the soil to better retain water and nutrients and also facilitates the activity and reproduction of soil microorganisms. These microorganisms are able to break down organic matter and produce more organic matter and nutrients, further improving the structure and fertility of the soil. There is a lot of evidence that shows that farmers protect land from erosion and other physical damage when the incentives are right- there is no question that land titling to farmers would be such an incentive and would reduce the high rate of ecosystem degradation and erosion. By adopting reasonable land use, scientific farming systems, effective soil and water conserva-

Details:

<https://www.ippmedia.com/the-guardian/business/read/africas-soil-health-crisis-demands-immediate-attention-2024-05-08-171351>

tion measures and strengthening the research and application of soil pollution remediation technologies, we can improve the health of the soil, thereby enhancing its resistance to erosion and reducing the incidence and hazards of soil erosion.

The summit brought together relevant stakeholders to highlight the crucial role of fertilizer and soil health in stimulating sustainable pro-poor productivity growth in African agriculture.

The Summit goal was to achieve a negotiated Africa-focused Fertilizer and Soil Health Action Plan, offer policy directions and concrete recommendations for African governments in the coming decade, establish an implementation roadmap for the action plan, mobilize policymakers, development organizations, and other stakeholders to enhance soil health and fertilizer use, and strengthen the private sector while addressing challenges related to landscapes and systems for efficient nutrient and water resource utilization. By endorsing the action plan to improve soil health and fertilizer use in African agriculture, leaders and stakeholders will show their commitment towards the implementation. The action plan will guide policy decisions and interventions in the next decade.



## Desert Restored Via Grassland Protection: Horqin Left Banner Turns Desolation to Green by Embracing Natural Methods



The grasslands of Horqin Left Banner in Inner Mongolia Autonomous Region showcase clusters of white flowers blooming on hawthorn trees. This grazing-prohibited area boasts a coexistence of trees, shrubs, and grasses, painting a verdant spring landscape. Located in the southeastern part of Horqin Sandy Land, Horqin Left Banner once faced an ecological crisis, with 80% of its land desertified decades ago, making it one of the most severely desertified regions in China. Professor Wang Feng, director of the Institute of Desertification Control Policy and Strategic

Development at the Chinese Academy of Forestry Sciences, emphasized the crucial role of the native hawthorn trees in improving the local ecosystem. He stated that their research focuses on finding the optimal tree density for natural ecological restoration, aiming not at eliminating every grain of sand but stabilizing and balancing the sand through a symbiotic system of grass, trees, and shrubs. This grassland, a savanna-like landscape with uneven dunes, is suitable for natural restoration methods. Chen Hui, secretary and director



of the Forestry and Grassland Bureau of Horqin Left Banner, mentioned that the local government has implemented a complete grazing ban in some areas to promote desertification control. Farmers are compensated to purchase fodder for their livestock, ensuring income stability and fostering cooperation in protecting forests and grasslands. In addition, Horqin Left Banner has been actively planting trees, with the "deep planting and shallow burial" technique increasing the survival rate of *Pinus sylvestris* var. *mongolica* seedlings from around 50% to over 90% in the past dec-

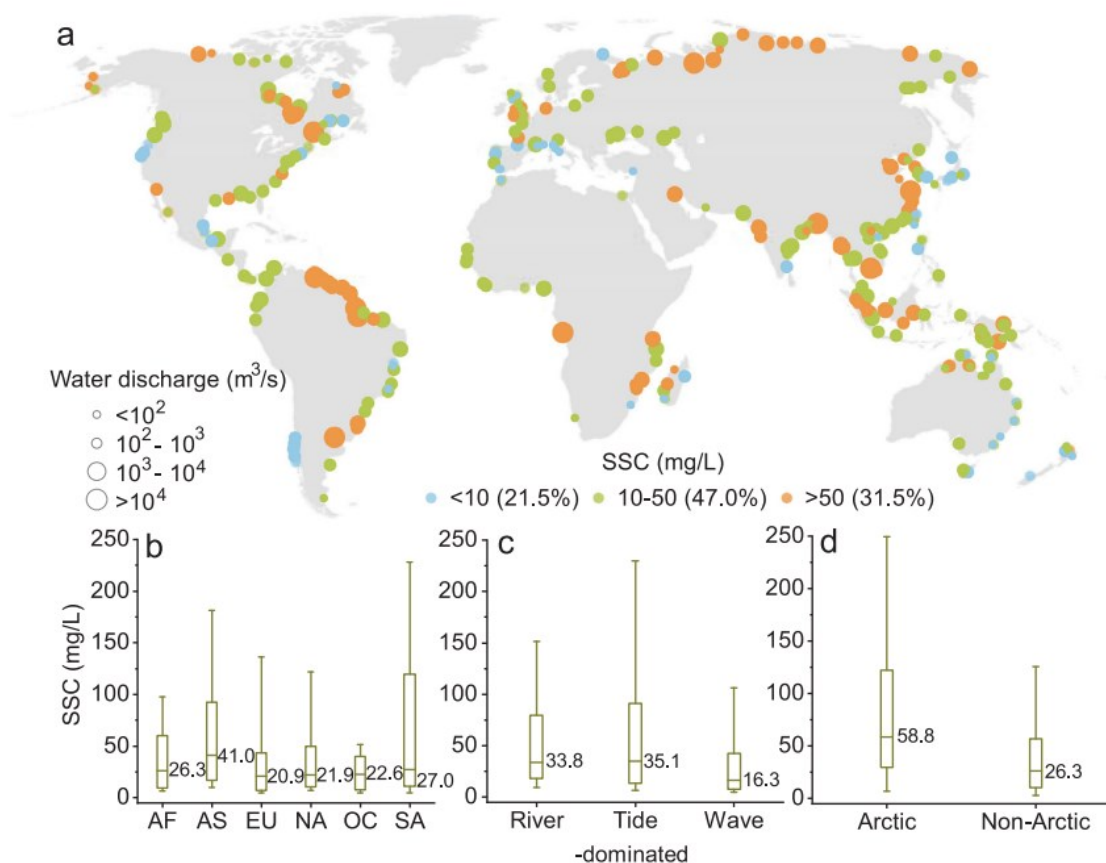
ade. This technique involves planting seedlings in deep holes and covering them with a shallow layer of soil, saving costs, water, and reducing watering frequency. As part of China's "Three Norths" Shelterbelt Program, Horqin Sandy Land, covering parts of Inner Mongolia, Liaoning, and Jilin provinces, aims to achieve a desertification control rate of over 85% by 2030. Measures such as sand fixation with grass, aerial seeding, road sand control, and photovoltaic sand control are being employed to achieve this goal.

Details: <http://www.chinadaily.com.cn/a/202405/21/WS664bd9bda31082fc043c8272.html>

## Sustained Increase in Suspended Sediments Near Global River Deltas Over the Past Two Decades

River sediments play a critical role in sustaining deltaic wetlands. Therefore, concerns are raised about wetlands' fate due to the decline of river sediment supply to many deltas. However, the dynamics and drivers of suspended sediment near deltaic coasts are not comprehensively assessed, and its response to river sediment supply changes remains un-

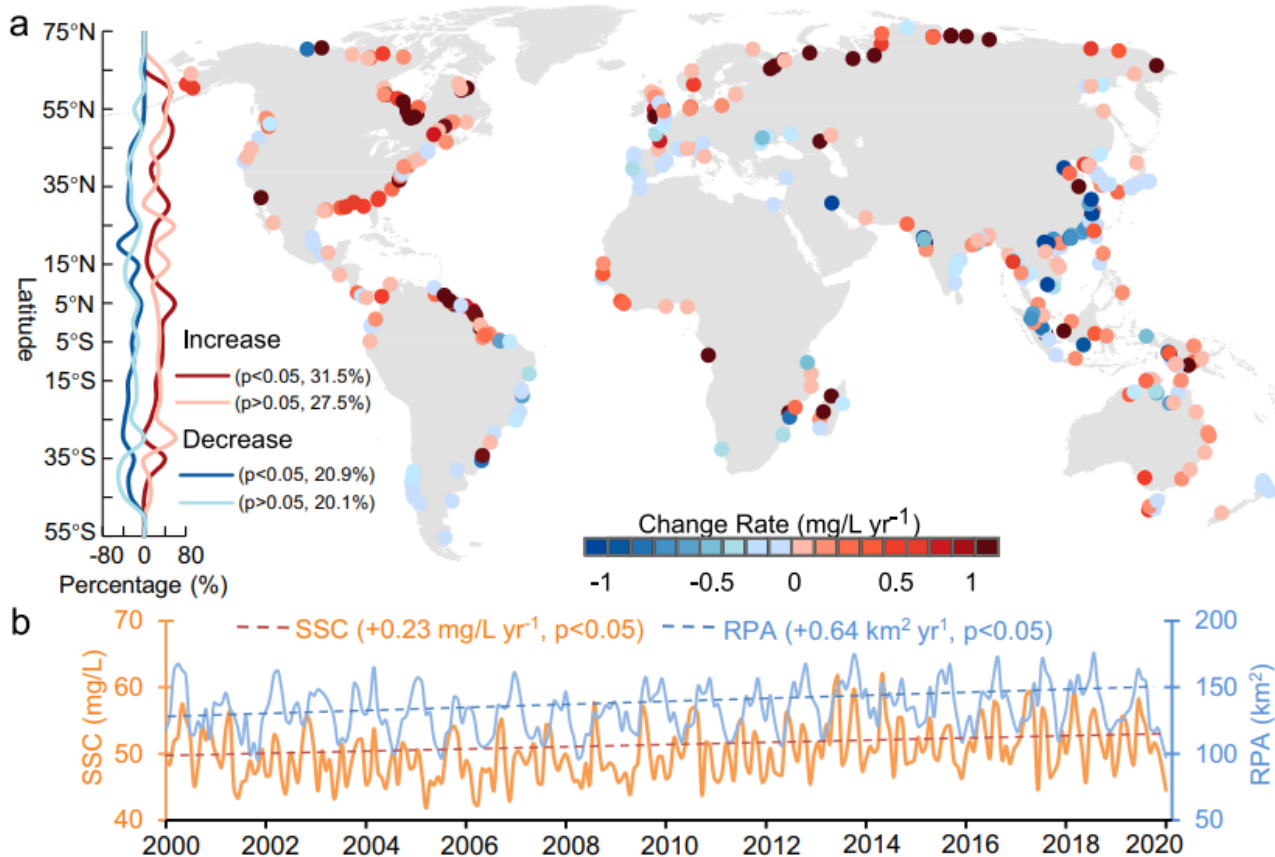
clear. Here we examine patterns of coastal suspended sediment concentration (SSC) and river sediment plume area (RPA) for 349 deltas worldwide using satellite images from 2000 to 2020. We find a global increase in SSC and RPA, averaging +0.46% and +0.48% yr<sup>-1</sup>, respectively, with over 59.0% of deltas exhibiting an increase in both SSC and RPA.



Global pattern of coastal suspended sediment concentration (SSC) between 2000 and 2020. **a** The long-term mean SSC (unit: mg/L) for 349 deltas. The different circle sizes represent varying magnitudes of water discharge, while the different circle colors indicate different levels of SSC. **b–d** Box plots of long-term mean SSC in different continents (AF: Africa, AS: Asia, EU: Europe, NA: North America, OC: Oceania, SA: South America) (**b**), various delta morphologies (**c**), and the Arctic (with latitude >50°N) and non-Arctic deltas (**d**). The box plots in **b–d** show the distributions (10, 25, 50, 75, and 90% values) of SSC

SSC and RPA increases are prevalent across all continents, except for Asia. The relationship between river sediment supply and coastal SSCs varies between deltas, with as much as 45.2% of the deltas showing opposing trends between river sediments and coastal SSCs.

This is likely because of the impacts of tides, waves, salinity, and delta morphology. Our observed increase in SSCs near river delta paints a rare promising picture for wetland resilience against sea-level rise, yet whether this increase will persist remains uncertain.



*Trends of coastal suspended sediment concentration (SSC) and river plume area (RPA) between 2000 and 2020. **a** Spatial patterns of the SSC trends (Mann–Kendall test) in 349 deltas. The latitudinal profiles exhibit the percentages of deltas with significant ( $p < 0.05$ ) and insignificant SSC change trends (increase or decrease). **b** Variations in monthly mean SSC and RPA, along with their long-term change trends at global scales*

Details: <https://www.nature.com/articles/s41467-024-47598-6.pdf>



## WASWAC Advisors

Chi-hua Huang	Jean Poesen	Samran Sombatpanit
Des E. Walling	Machito Mihara	William Critchley
Dingqiang Li	Rattan Lal	Winfried Blum
Hans Hurni	Rosa M. Poch	
James Owino	Samir El-Swaify	

## WASWAC Councilors

Abdulvahed Khaledi Darvishan	Ian Hannam	Paulo Tarso S. Oliveira
Alfred Hartemink	Ivan Blinkov	Qin Chen
Annie Melinda Pas-Alberto	Ivan Minchev	Qingbin Pan
Arora Sanjay	Jorge A Delgado	Rachid Mrabet
Baoyuan Liu	José Alfonso Gomez	Sergey Chalov
Bořivoj Šarapatka	Laura Bertha Reyes Sanchez	Sevilay Hacıyakupoglu
Carmelo Dazzi	Lillian Øygarden	Seyed Hamidreza Sadeghi
Chinapatana Sukvibool	Mahmoud A. Abdelfattah	Shabbir Ahmad Shahid
Clemencia Licona Manzur	Mark Nearing	Shachi Pandey
Dennis C. Flanagan	Michael Maerker	Stefanos Stefanidis
Duihu Ning	Moshood Tijani	Thomas W. Goddard
Eli Pavlova-Traykova	Nigussie Haregeweyn Ayehu	Tijana Vulević
Fei Wang	Nikola Živanović	Tolga Görüm
Fenli Zheng	Panos Panagos	Valentin Golosov
Goran Skataric	Paola Andrea Campitelli	Velibor Spalevic

(Names are arranged in alphabetical order)



**The Secretariat of WASWAC**  
**No. 20 Chegongzhuang Road West**  
**Beijing 100048 P.R.China**  
**[www.waswac.org.cn](http://www.waswac.org.cn)**  
**Tel: +86 10 6878 6579**  
**Fax: +86 10 6841 1174**  
**Email: [waswac@foxmail.com](mailto:waswac@foxmail.com)**  
**[waswac@vip.163.com](mailto:waswac@vip.163.com)**