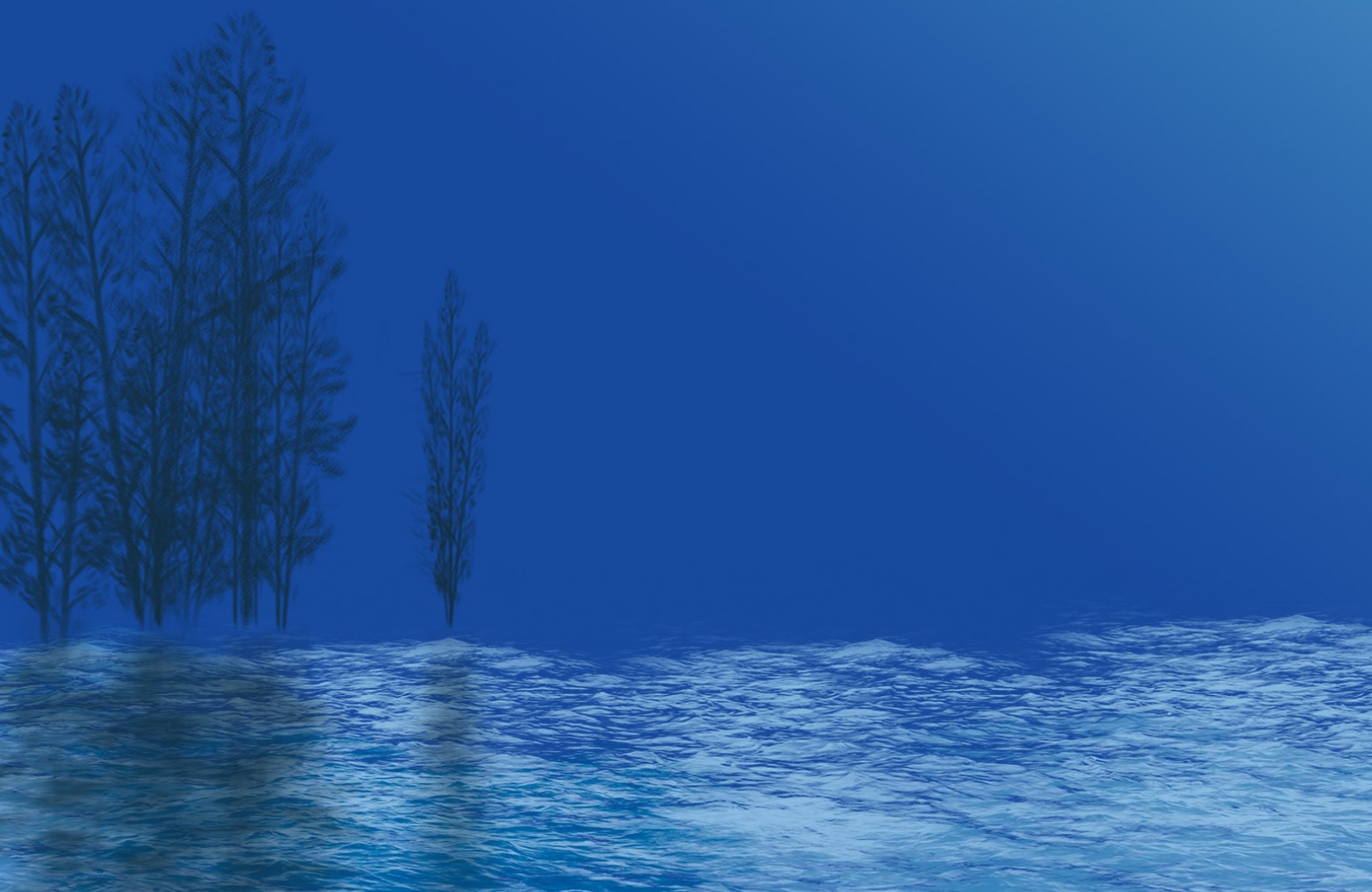
WASWAC

HOT NEWS

ISSUE 08, 2022



HOT NEWS

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Editor: Pengfei DU

Action plan looks to safeguard Yellow River's environment

Yellow River Grand Canyon (Source: Xinhua)

The latest national action plan for protecting the Yellow River has laid out a host of measures on pollution control and prevention, ecological restoration, the protection of biological diversity and afforestation.

Analysts said the policy document, jointly released by 12 central government departments this month, will help tackle some of the most pressing issues facing the Yellow River Basin area, including pollution from industries, urban areas, the agricultural sector and water shortages.

The Yellow River, often called "the cradle of Chinese civilization", is the second-longest river in the country after the Yangtze River and runs through nine provincial regions, rising on the Tibetan Plateau and flowing into the Bohai Sea.

Lu Jun, deputy head of the Chinese Academy of Environmental Planning, said the latest action plan has given greater priority to ensuring environmental and ecological security in the river basin area.

A major highlight of the action plan was its call for steps to cap the development of steel, coal chemical, petrochemical and nonferrous metals industries in river basin areas to prevent the discharge of pollutants, he said.

The development of urban environmental infrastructure is another policy priority, as the

action plan called for cities and townships located on the river and its major tributaries to ensure full coverage from sewage networks in urban areas.

The action plan set the goal of increasing forest coverage in the river basin area to 21.58 percent, restoring 700,000 hectares of natural forests and eliminating bodies of black, odorous water in the region.

The action plan also rolls out a host of measures for environmental protection in the river basin area. A number of national parks will be created to enhance the protection of natural forests and wetlands and improve water conservation around the river.

The treatment of soil erosion will be prioritized in the middle reaches of the river, including steps to stop the inflow of sand into the river to alleviate the problem of sedimentation affecting lower reaches.

To strengthen the protection of biodiversity in the region, the plan included measures for creating better habitats for wildlife and for building up monitoring networks for endangered species. The restoration of migration channels and habitats for fish stocks in the upper reaches of the river was also highlighted.

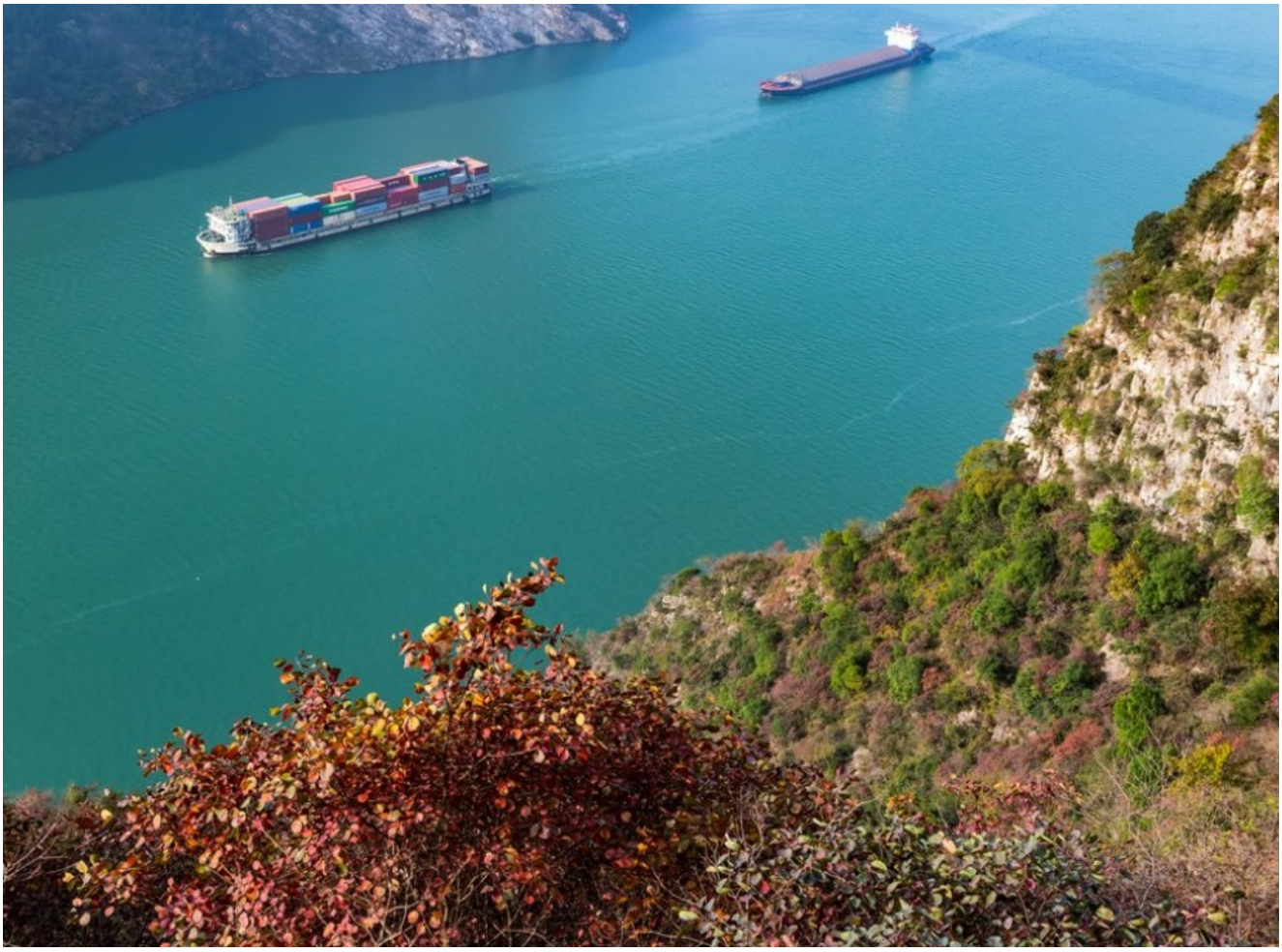
Lu said that protecting the Yellow River ecology would require coordinated efforts between regions to tackle shared problems, including joint efforts to improve water quality, restore the river ecosystem and respond to climate change.

Source: *https://www.chinadaily.com.cn/a/202209/28/WS63339984a310fd2b29e7a1e4.html*

The Source of Yellow River

The Hukou Waterfall

Joint action plan launched to remediate Yangtze River



Ships sail through a section of the Xiling Gorge, one of the Three Gorges along the Yangtze River, in Zigui county of Yichang, Central China's Hubei province, [Photo/Xinhua]

In a move to strengthen conservation of the Yangtze River Basin, 17 central government bodies released a joint action plan on Monday, vowing a series of measures to reduce the discharge of pollutants into the river.

The plan projects that by 2025, direct discharges will have been addressed and a complete garbage classification system will have been established in the basin of the Asia's longest watercourse.

Controlling drainage is also a key concern emphasized in the action plan, which states that "through work on intercepting pollution and enhanced treatment, the plan endeavors to address the illegal discharge of sewage into the Yangtze River".

In 2019, the Ministry of Ecology and Environment located over 60,000 sewer exits emptying into the Yangtze, its nine major tributaries and Taihu Lake after authorities combed some 24,000 kilometers of shoreline.

Local authorities are now being asked to devi-

se tailored rectification plans for each of the exits to ensure they operate in a properly regulated manner.

The plan mandates that this rectification work is to be completed by the end of 2025, with a long-term management mechanism also to be established.

The document also highlighted endeavors to curb desertification and the spread of rocky desert.

Some 75,000 hectares of land in the basin that currently suffers from desertification is to be remediated by 2025, in addition to 1 million hectares of stony desert.

The document also noted that safety levels for drinking water will be improved, while the water use of important rivers and lakes will be regulated to significantly improve the quality of water and of the environment.

The plan mandates the treatment of 97 percent of domestic waste in counties in the Yangtze River Economic Belt, and the elimination of what it terms "black and odorous water bodies" in built-up areas of county-level cities.

The use of chemical fertilizers and pesticides will rise to 43 percent, the widespread use of livestock and poultry manure will be increased to 80 percent, and the recovery rate of agricultural film to 85 percent.

Source: *http://ex.chinadaily.com.cn/exchange/partners/45/rss/channel/www/columns/2n8e04/stories/WS63293dbca310fd2b29e78ab3.html*

Qutang Gorge of the Yangtze River[Photo/Xinhua]

Tenglongdong Waterfall of the Yangtze River

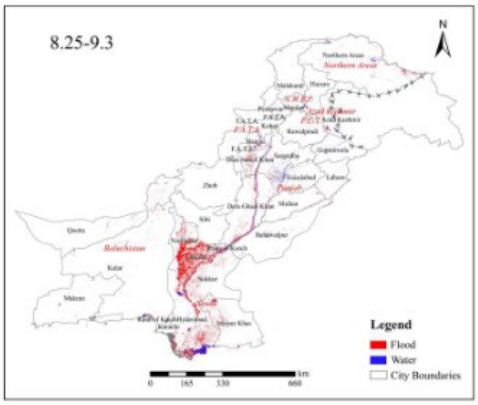
Datasets released by the IKCEST

Under the auspices of UNESCO, IKCEST is a comprehensive and international knowledge centre devoted to the engineering sciences, technology and applied technology. IKCEST is established as a globally connected engineering institution, serving to assemble various digital resources relating to engineering sciences and technology, build a public data service platform and corresponding service environment, and coordinate the building of professional knowledge systems.

A series of datasets have been released by the IKCEST recently, such as:

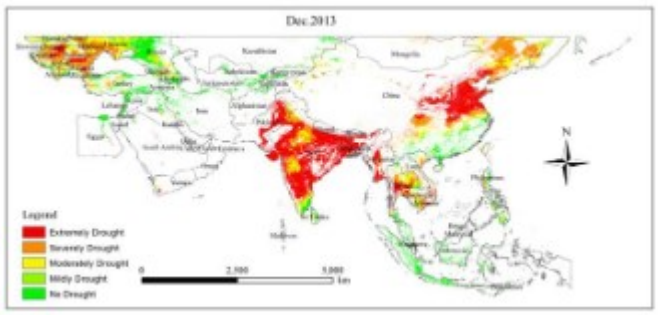
Dataset of flood distribution in Pakistan (2022)

This dataset is the spatial distribution map of floods in Pakistan in 2022. Google Earth engine is used to process sentinel1 data and threshold method is used to extract water body. The data format is tiff, and the spatial resolution is 30m.



The drought level database of cropland in Belt and Road Area from 2001 to 2013

Based on the Tropical Rainfall Measurement Satellite (TRMM) 3B43 precipitation data, we used the Precipitation Abnormity Percentage drought model to study the monthly spatio-temporal distribution of drought in south region of N50° of OBOR area from 2001 to 2013. Yearly spatio-temporal distribution from 2001 to 2013 of cropland in OBOR area was extracted based on the MODIS MCD12Q1 dataset and there were 156 monthly drought levels in the cropland region according to the overlaying of drought and agricultural land layers. The data are in TIFF format with a spatial resolution of 500 m.



More datasets can be found here:

https://origination-v7.ikcest.org/datasets

Novel assessment shows vulnerability of arable land to soil erosion across Europe

Soil erosion is a serious threat to soil functions leading to land productivity decline and multiple off-site effects.
© EU, 2022

A first-ever assessment at European scale combines the threat of water, wind, tillage and harvesting to reveal the cumulative impact on arable land. It is a basis for developing a comprehensive monitoring system for soil health .

New analysis using a multi model approach assesses impact of soil erosion not only by water but by other drivers: wind, tillage conditions and crop harvesting. The study indicates that 43 million hectares (M ha) out of approximately 110 M ha of arable land in the EU and the UK are estimated to be vulnerable to a single driver of erosion, 15.6 M ha to two drivers and 0.81 M ha to three or more drivers.

About 3.2 M ha of arable land are vulnerable to the possible interaction of increased flood, drought, water, and wind erosion. The analysis, carried out by JRC scientists and EU Soil Observatory Working Group on Soil Erosion, is published in Nature Sustainability.

Worldwide, very few national survey programmes of soil erosion exist, examples being the US National Cooperative survey and the Chinese National General Survey Program on Soil and Water Conservation.

In EU, Land Use/Cover Area frame Survey (LUCAS) is the de facto soil monitoring system that collects data on gully erosion. The set of predictions used in this analysis serves as a basis for developing an efficient stratified monitoring network and informing targeted mitigation strategies under the Common Agricultural Policy 2023–2027.

The multi model approach provides estimates of gross soil displacement (soil moved annually from their original location without considering soil deposition).

As for individual processes, soil displacement by water erosion is dominant both quantitatively (51% of the total displacement) and spatially (57% of the total area). Soil displacement due to water erosion in the EU is estimated to be equal to a 1 cm displacement of soil annually from an area twice the size of Belgium.

Tillage erosion is the second-largest driver of soil displacement with an estimated share of 36%, followed by wind erosion and crop harvesting accounting for 10% and 2.7%, respectively of the total displacement.

The study highlights actions for reducing erosion, such as increasing vegetation cover on arable land throughout the year and reducing tillage intensity. These actions are beneficial to the functional agrobiodiversity of the farming system.

For this concern, soil-conservation standards, related to the Common Agricultural Policy (CAP), integrated in the cross-compliance mechanism are considered as relevant. Good Agricultural and Environmental Conditions (GAEC), defined at national or regional level, include a set of standards especially on minimum soil cover and soil minimum land management to limit erosion.

The modelling approach by JRC scientists and the co-authors of the analysis shows that – compared to a pre-CAP baseline scenario and assuming no implementation of soil-conservation measures – GAEC soil-conservation standards reported in a 2016 EU Farm Structure Survey could reduce soil displacement by a computed 20% for water erosion, 27% for tillage erosion and 9% for wind erosion.

Climate change projections indicating that Europe is moving toward a more vigorous hydrological cycle which will exacerbate the erosion impact.

For more information: *https://joint-research-centre.ec.europa.eu/jrc-news/novel-assessment-shows-vulnerability-arable-land-soil-erosion-across-europe-2022-10-27_en*

Massive Carbon Storage: Protecting Very Old Trees Can Help Mitigate Climate Change

Bristlecone pine in the White Mountains can live up to 5,000 years and act as massive carbon storage.

A vital role in biodiversity and ecosystem preservation is played by ancient trees—those that are many hundreds, or even thousands, of years old—by providing stability, strength, and protection to at-risk environments.

"Ancient trees are unique habitats for the conservation of threatened species because they can resist and buffer climate warming," write the authors, including Gianluca Piovesan and Charles H. Cannon. Some of these trees, such as bristlecone pines in the White Mountains of California and Nevada can live up to 5,000 years and act as massive carbon storage.

Ancient trees are hotspots for mycorrhizal connectivity, the symbiotic relationship with underground fungi that supplies plants with many of the nutrients they need to survive. This symbiosis with fungi also helps reduce

drought in dry environments. Ancient trees play a disproportionately large role in conservation planning and yet are being lost globally at an alarming rate.

The scientists suggest a two-pronged strategy to protect ancient trees: first, the conservation of these trees through the propagation and preservation of the germplasm and meristematic tissue from these ancient trees, and second, a planned integration of complete protection and forest rewilding.

"Mapping and monitoring old-growth forests and ancient trees can directly assess the effectiveness and sustainability of protected areas and their ecological integrity," they write. "To carry out this ambitious project, a global monitoring platform, based on advanced technologies, is required along with public contributions through community science projects."

Currently, protecting ancient trees in forests, woodlands, historic gardens, and urban and agricultural areas remains limited by national policy levels. According to the authors, the "current review of the Convention of Biological Diversity and Sustainable Development Goal 15 'Life on Land' of Agenda 2030 should include old-growth and ancient tree mapping and monitoring as key indicators of the effectiveness of protected areas in maintaining and restoring forest integrity for a sustainable future."

"We call for international efforts to preserve these hubs of diversity and resilience. A global coalition utilizing advanced technologies and community scientists to discover, protect, and propagate ancient trees is needed before they disappear."

Reference: "Ancient trees: irreplaceable conservation resource for ecosystem" by Gianluca Piovesan, Charles H. Cannon, Jiajia Liu and Sergi Munné-Bosch, 19 October 2022, Trends in Ecology & Evolution.

DOI: 10.1016/j.tree.2022.09.003

Source:

https://scitechdaily.com/massive-carbon-storage-protecting-very-old-trees-can-help-mitigate-climate-change/

Coastal erosion is unstoppable. So how do we live with it?

By Sophie A. Day and Robert James Nicholls

Uprooted, credit: Sophie Day, Author provided.

A record storm surge in 1953 devastated much of eastern England's coast, prompting prolific investment in concrete sea walls, wooden groins and other engineered structures designed to protect the coastline from erosion. These measures brought a reassuring sense of permanence for people in previously risky locations. Houses atop sandy cliffs and tucked behind or among sand dunes went from being holiday homes to permanent residences, and new homes were built nearby.

But decades later, the east coast and other parts of England are still eroding—rapidly in some places—despite efforts to hold the coastline in place.

England has some of the fastest eroding coastline in Europe, particularly along the Norfolk and Yorkshire coasts. Historical records show that England's soft and sandy east coast has always been subject to retreat. The numerous lost villages beneath the North Sea are testament to this.

Back in 2018 the Committee on Climate Change, which advises the U.K. government, calculated that around 9,000 properties in England are located in areas likely to be lost to

coastal erosion by 2025. This number is projected to increase 15-fold by the end of the century, disrupting whole communities as more buildings, roads and farmland inevitably slip into the danger zone.

Unstoppable—and necessary?

A growing body of research warns that the speed of coastal erosion will be compounded by sea-level rise and other effects of climate change, such as more extreme storms and prolonged wet weather, as waterlogged soils increase the likelihood of sandy cliffs collapsing. Rates of erosion can be roughly but not precisely estimated, due to the complexity of coastal systems and uncertainty regarding how the effects of climate change will manifest.

Sea walls and other structures can not bold the coastline together forever. Credit: Sophie Day, Author provided.

Since the early 1990s, scientists have collected huge amounts of data in order to understand how the wind, waves, tides and storms shape coastlines. The evidence indicates that it is not possible or prudent to stop or delay coastal erosion forever and that in some places, it may even be necessary.

This is because when soft cliffs such as those along the east of England retreat, they release a lot of sand which is deposited on nearby beaches, making them higher and wider. High and wide beaches absorb the energy of waves,

giving some protection to cliffs, dunes and sea walls from coastal erosion and flooding.

The chief executive of the U.K. Environment Agency recently said it is inevitable that at some point communities will have to move back from the coast. So what does this mean for people who live in places where coastal erosion is accelerating, or where it can no longer be stopped?

At Happisburgh in north Norfolk for example, a section of old and damaged sea defenses had to be removed in the 1990s to avert dangerous collapse. Rapid erosion of the beach and cliffs since the early 2000s has meant homes in this village being steadily demolished as the coastline retreats. As yet there are no arrangements to compensate people here, or other government policies to help them adapt.

Living with coastal erosion

It is important to be realistic: homes, roads and other things which knit some coastal communities together will need to be relocated inland away from danger—and soon. But doing this is far from simple, and will certainly be costly.

Ideally, the kind of investment which erected coastal defenses in the aftermath of the 1953 storm surge would be mobilized today to help these places move. This is a pressing issue—letting crisis and despair characterize life for coastal communities on the edge is unsustainable and unfair.

Slowly, things are changing. A network of coastal communities, local authority officers and politicians, academics and others have worked since the early 2000s to argue for what is needed to cope with and prepare for coastal erosion around England and Wales. Now, a new pulse of government funding could test these ideas so that in future, no community feels abandoned to the sea.

Part of this work will be to begin the transition in eroding towns and villages on England's east coast from a state of crisis to one in which people can begin to live feeling safe and confident. It must be systematically worked out how communities can move away from risky areas while maintaining homes, utilities and services, as well as preserving local heritage, culture and each place's unique character.

As academics working alongside government agencies, our next challenge will be ensuring these time-limited projects translate into robust national policy and funding. Coastal erosion cannot be stopped, so we must help everyone relearn how to live with it.

Details: *https://phys.org/news/2022-10-coastal-erosion-unstoppable.html*

Outcome of 2022 IUSS Presidential Election

Victor Okechukwu Chude

Okechukwu Chude from Nigeria, former President of the Soil Society of Nigeria, received 47 votes in his favour, no votes against and no abstaining votes. All votes cast equal 61% of the Council members.

He will take up the position of President-Elect on 1st January, 2023. He will be the first African IUSS President (2025/26) in the history of IUSS and will celebrate with us the next WCSS in China in 2026.

Let us congratulate him on this success!

If you want to know more about Prof. Chude, please click here:

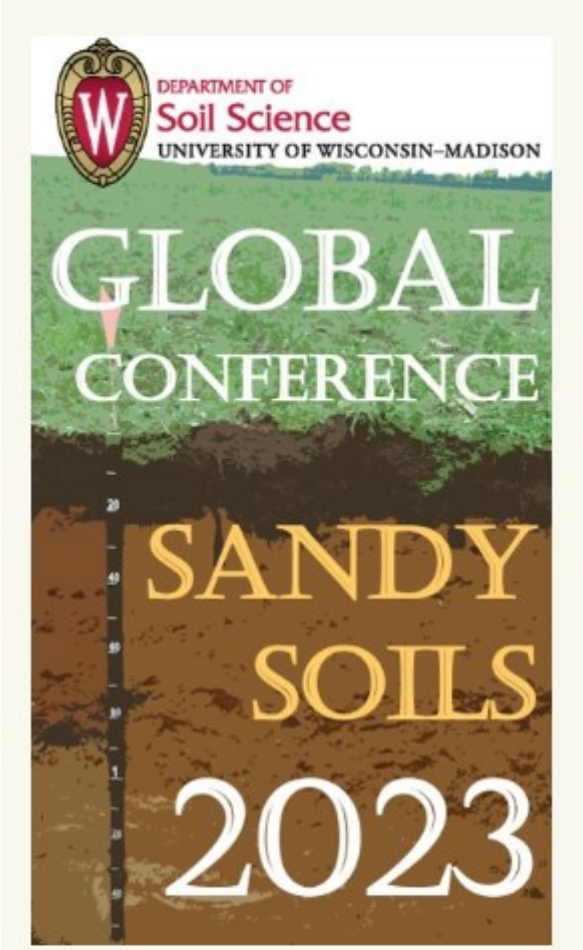
https://www.iuss.org/about-the-iuss/iuss-presidential-election/

Global Conference on Sandy Soils—Properties and Management

Sandy soils cover approximately 900 million ha worldwide, particularly in arid or semi-arid regions. There are extensive areas of sandy soils under cultivation, but the soil fertility is often low. Sandy soils – as a group of soils – have received limited research attention. With increasing global pressure on land resources, marginal soils such as sandy soils are taken into production or cultivated more intensely. There is a need to quantify and understand the properties of sandy soils. This conference will bring together experts on sandy soils from across the world.

The deadline for Abstract submission is March 15, 2023. The deadline for registration is April 15, 2023. The papers from the conference will be published in the Progress of Soil Science Series (Springer).

The conference will be held at the University of Wisconsin – Madison. Madison is the capital of the U.S. state of Wisconsin.



For more information: *https://sandysoils.org/*

Wageningen Soil Conference 2023

We aim to have the same successful set-up as last time, with keynote presentations and parallel sessions in the mornings, masterclasses in the afternoons, a fishbowl, rising-soil-stars and meet-the-experts events, a bicycle ride to the conference dinner, and much more.

More information will be coming at: *https://wageningensoilconference.eu*

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