

HOT NEWS





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We are Ready to Meet You in Shenyang Soon



The 4th International Youth Forum on Soil and Water Conservation will soon be held in about 10 days.

Please make sure you will be arriving Shenyang no later than September 20, 2024 for registration.

The opening ceremony will be starting in the morning of September 21, 2024. Detailed arrangement will be released a week before its opening.

Please make hotel reservation before your arrival : https://4th-iyfswc-2024syau.scievent.com/hotel/booking/

During your preparation, please let us know any difficulties you faced through emails us by IYFSWC_4th@syau.edu.cn Or waswac@foxmail.com.

ISWCR Annual Editorial Meeting was Held Online



On July 15, 2024, the WASWAC official Journal -- ISWCR Annual Editorial Meeting was successfully held online, gathering our editorial board, editors, and representatives from KeAi to review the journal's progress and discuss future goals.

The meeting included insightful presentations by Editor-in-Chief Prof. Dennis Flanagan and KeAi's George Liu, covering expectations for board members, journal development, and new

initiatives such as data papers and special issues. We appreciate everyone's valuable contributions and look forward to continued collaboration in advancing the journal.



World Association of Soil and Water Conservation

Congratulations Dr. Flanagan on His Award



Dr. Dennis C. Flanagan, the WASWAC official journal's Editor-in-Chief, received the American Society of Agricultural and Biological Engineers (ASABE) 2024 John Deere Gold Medal! The John Deere Gold Medal honors the achievement through engineering for improved manipulation, use and conservation of soil-water resource, and that has resulted in applications of a new concept, product, art, or science that advanced the development of agriculture. Congratulations Dr. Flanagan on this prestigious honor.

In a Desertscape in Brazil, Science Brings Farms to Bountiful Life

By Rafael Martins



Key Ideas

- Located in the south of Brazil's Piauí state, the municipality of Gilbués is one of four zones in the country currently experiencing desertification.
- The affected area covers 805 km2 (311 mi2) of degraded Caatinga dry forest that's home to some 149,000 people.
- In 2006, a pioneering federal program experimented with various ways to control soil degradation and recuperate degraded areas of desertified land in Gilbués, making farming possible, even profitable, here.
- The program ended in 2016 for uncertain reasons, but the legacy of transforming the earth continues among the farmers in Gilbués, which today is one of Piauí's top corn-producing municipalities.

When José Rodrigues do Santos first saw the enormous canyons in Gilbués, in Brazil's Piauí state, he didn't imagine that he would spend the rest of his life there. He had walked some 20 kilometers (12 miles) across a red sea of desertified land from the place where he was born to arrive in the heart of Gilbués with his family.

The red landscape here is like something out of a science-fiction film. That's what makes the occasional pocket of green peeping through the raw earth such a surprise.

"The land needs to be cared for, just like we do. It's a living thing too," says Santos, better known as Zé Capemba in these parts. He tells of the difficulties involved in working the dry

soil, including having to carry water every day. But things are much better today than they were a few years ago, he says. "Our well and the technology improved our life a lot." Gilbués is located in one of the four main geographical zones currently undergoing desertification according to the Brazilian government. All which are located in the semiarid northeast of the country, an 805-square-kilometer expanse (311-square-mile) expanse of degraded Caatinga dry forest straddling 14 municipalities in Piauí and home to some 149,000 people.



The Gameleiro, a creek, runs through Zé Capemba's land. Its course has been altered by the large gullies resulting from the intense erosion process underway here.

Rain is one of the main factors driving this process. Because the landscape is already vulnerable, intense bursts of rainfall and the resulting flash floods carry away nutrients from the soil, doing even more damage to the earth and worsening the erosion. "Here, the force of the water has an erosive effect on the soil, which we call hydric erosion," says Dalton Macambira, a professor at the Federal University of Piauí.

The climate, the contour of the land and the soil in Gilbués all naturally tend to degrade, but

it's the human activity in the region — especially deforestation for cattle pasture and for timber — that has accelerated the desertification process. And yet, the people here manage to produce life.



An oasis in a red earth landscape

Zé Capemba, a cowboy, and his wife raised 10 children while herding cattle. Their daughter, Maria Lúcia, is married to Francisco Washington Junior, who transformed a barren 15-hectare plot in Malhadas into a productive farm. Initially doubted, Washington now harvests a variety of crops daily, exceeding family needs and selling excess. He improved the land through tree planting, land leveling, and silaging corn for cattle feed, demonstrating effective land management despite soil nutrient challenges.

Feasible farming

In Gilbués, farming quality was limited until a Ministry of Environment project aimed at combating desertification introduced modern technology and tools to farmers like Washington. Through the Research Center Nuperade's 2006-2016 initiative, farmers collaborated with specialists and researchers to develop techniques for soil management and farming productivity. The

program significantly improved yields, but ceased in 2016 amidst political changes. There are hopes for Nuperade's reactivation with potential projects like biofertilizer production and educational visits. However, the current status of the headquarters is abandoned.



Fruits of the project

Francisco Washington encouraged his friend Absalão Teles da Silva Neto to invest in land in the desertified Malhadas region of Gilbués, where they leveraged their skills from Nuperade to make farming easier. Despite the harsh environment, Absalão found success in growing corn and raising animals. Enias de Carvalho Neto, another beneficiary of Nuperade's experiments, successfully raised fish in natural gullies, catering to the demand from his butcher shop customers. However, the success of farming relies on natural factors like rainfall, and Edvar Tavares Rodrigues faced challenges due to insufficient rain and financial constraints. Despite these difficulties, the legacy of Nuperade continues to inspire farmers in Gilbués, transforming the land-scape and creating opportunities for development.

Details:

https://news.mongabay.com/2024/07/in-a-desertscape-in-brazil-science-brings-farms-to-bountiful-life/

Yangtze River's Warming Headwaters to Present Challenges



Researchers conduct a survey on vegetation ecology and soil erosion in the headwaters area of the Yangtze River in Qinghai province on July 22.

XINING – The headwaters of the Yangtze, China's longest river, are expected to become warmer and more humid, which will pose multiple challenges, Chinese researchers have warned.

They recently conducted a scientific expedition in the headwater regions of the Yangtze and Lancang rivers in Northwest China's Qinghai province.

Under moderate emission scenarios, average temperatures in the Yangtze's source area could rise by 2 C to 4 C by the end of this century, with precipitation potentially increasing by 10 percent to 30 percent, said Qin Pengcheng, a senior engineer from the Yangtze River Basin's meteorological center.

The headwaters of the Yangtze are located on the Qinghai-Tibet Plateau, with an average elevation of over 4,500 meters. The plateau, known as "the roof of the world", is also the birthplace of the Yellow River, the second-longest river in China, and the Lancang, which is known as the Me-

kong after it flows out of China.

The warming and increased humidity at the source area of the Yangtze have raised risks, including glacier shrinkage and increased water and sediment flow.

"Accelerated glacier retreat in the region is evident, with iconic glaciers showing gradual shrinkage," said Fan Yue, a member of the scientific expedition.

Additionally, extreme precipitation events in the upper reaches of the Yangtze have been increasing in frequency and intensity. In August last year, the Zhimenda hydrological station recorded the biggest flood since its establishment in 1956. It caused severe damage to local roads.

From July 1 to 22 this year, precipitation in the Yangtze source area was 53.5 percent above average for the same period in previous years.

While China's conservation efforts have improved biodiversity in the region, experts called for a global response and joint measures to tackle global warming, along with increased attention and research on the Yangtze's headwaters.

Vital components of the Qinghai-Tibet Plateau ecosystem, the headwater regions of the Yangtze and Lancang rivers play a crucial role in safeguarding water resources, protecting biodiversity and ensuring ecological stability.

Annual scientific expeditions to the source of the Yangtze River have been conducted since 2012.

Details: https://www.chinadaily.com.cn/a/202408/14/WS66bc0ef8a3104e74fddb9e44.html

River EPA Selects Educational Organizations to Receive Over \$3.6 million to Support Environmental Projects Nationwide

• WASHINGTON – Today, July 8, the U.S. Environmental Protection Agency announced the selection of 38 organizations to receive over \$3.6 million in funding for projects under the Environmental Education Grants Program.

• "Advancing environmental education advances EPA's mission because it better equips our communities with the information they need to protect public health today and in the future," said EPA Administrator Michael S. Regan. "This year's environmental education grant recipients will work in underserved communities across the country to foster a deeper understanding of environmental challenges and inspire action towards sustainable solutions."

• The funding will range from \$50,000 to \$100,000, to organizations that provide environmental education activities and programs. This year's grantees will conduct project activities in 28 states and the Republic of Palau, America Samoa, the Commonwealth of the Northern Mariana Islands, and Guam.

- This year's environmental education projects include:
- Helping young people in New England grow into a new, inclusive generation of environmental justice problem-solvers through a series of linked experiences.
- Using urban greening initiatives (e.g., tree planting, nature-based solutions, and urban gardening) to help address the impacts of climate change and air pollution in Camden, New Jersey, an environmental justice and overburdened community.
- Transforming a state-of-the-art electric bus into a roving electric classroom that will bring immersive environmental education experiences to 21 Title I elementary schools in Henrico County, Virginia.
- Recruiting educators in Tennessee, particularly from underserved communities, to participate in a year-long cohort focused on environmental education through the lens of addressing climate change resulting in cohort members including climate change education across the curriculum.
- Educating 400 underserved youth in Milwaukee and Southeast Wisconsin on the impacts of climate change in environmental justice communities, empowering them with indigenous

knowledge to combat climate change, take action, and create local solutions.

- Employing "meaningful watershed experiences" to empower students, teachers, and community members in Houston, Texas, fostering watershed stewardship to design and implement nature-based solutions to flooding that aim to reduce storm water run-off and the associated pollutants from entering the water supply.
- Engaging students from diverse backgrounds in Kansas and Missouri to come together, dialogue, and take action to address existing barriers to their involvement and interest in green careers.
- Enhancing interest, opportunities, and involvement in green careers for 100 students in rural Colorado, Wyoming, and Utah through the creation of online career resources, statewide virtual youth green careers summits, school-based action projects, mentorship programs and more.
- Braiding indigenous and western science through youth-led community action in the Republic of Palau to address contamination left behind from World War II.
- Establishing a K-12 classroom and outdoor learning space on a peatland conservation parcel in Homer, Alaska, where school visits and field trips will enable students to directly engage with local peatlands, construct native plant gardens, and more.

The following organizations have been selected to receive this year's Environmental Education Grants:

- CASA, Inc. (CASA de Maryland)
- Colorado Alliance for Environmental Education
- Desert Research Institute
- Ecology Project International
- Explora Science Center & Childrens Museum of Albuquerque
- Galveston Bay Foundation
- Henrico County Public Schools
- Hitchcock Center for the Environment
- Hood Canal Salmon Enhancement Group
- Hubbard County Soil and Water Conservation District1
- Industry Initiatives for Science and Math Education (Ignited)

- Ipswich River Watershed Association
- Ivy Academy
- Kansas Association for Conservation and Environmental Education
- Learning Endeavors
- Louisiana Environmental Action Network
- Massachusetts Audubon Society
- Minnesota State University Mankato
- Mississippi State University
- Missouri River Bird Observatory
- National Wildlife Federation (Atlanta)
- National Wildlife Federation (Houston)
- Neighborhood House of Milwaukee
- New Haven Ecological Project
- New York Sun Works
- Nooksack Salmon Enhancement Association
- Openlands
- Protect Our Water Jackson Hole
- Rowan University
- Sierra Streams Institute
- Takshanuk Watershed Council
- The Living Classrooms Foundation
- Trail Blazers
- University of Alaska Anchorage
- University of Maine
- Upper Iowa University
- Women for a Healthy Environment
- Youth Environmental Alliance

EPA anticipates providing funding for these projects once all legal and administrative requirements are satisfied. Since 1992, EPA has distributed between \$2 million and \$3.7 million in EE grant funding each year, for a total of over \$95.1 million supporting more than 3,960 projects. The program traditionally provides financial support for projects that design, demonstrate, or disseminate environmental education practices, methods, or techniques. For more information, visit EPA's Environmental Education webpage.

Details:

https://www.epa.gov/newsreleases/epa-selects-educational-organizations-receive-over-36-million-supportenvironmental



Solar Farms With Stormwater Controls Mitigate Runoff, Erosion, Study Finds

As the number of major utility-scale ground solar panel installations grows, concerns about their impacts on natural hydrologic processes also have grown.

As the number of major utility-scale ground solar panel installations grows, concerns about their impacts on natural hydrologic processes also have grown. However, a new study by Penn State researchers suggests that excess runoff or increased erosion can be easily mitigated — if these "solar farms" are properly built.

Solar panels are impervious to water, and vast arrays of them, it was feared, could increase the volume and velocity of stormwater runoff similar to concrete and asphalt. But after conducting a year-long field investigation of soil moisture patterns, solar radiation and vegetation at two solar farms in central Pennsylvania — built on slopes representative of the Northeast U.S. — the researchers concluded that such installations should not present negative implications for stormwater management.

In findings recently published in Journal of Hydrology, the team reported that healthy vegetation and well-draining soils can help manage runoff on solar farms, and where necessary on more challenging landscapes, engineered stormwater controls can manage any unmitigated runoff.

Details: *https://www.enn.com/articles/74934-solar-farms-with-stormwater-controls-mitigate-runoff-erosion-study-finds*

Why We Keep Pumping Sand onto Eroding Beaches

BY DANIEL CUSICK & E&E NEWS

The U.S. has been pumping sand onto eroding beaches for nearly a century. As climate change worsens, there's no end in sight.



CLIMATEWIRE | How many times can a public beach vanish?

As many times as Congress pays to rebuild it – over a very long time.

A century after the federal government began bringing beaches back to life after they disappeared during storms, the U.S. finds itself at a crossroads with climate change.

Rising seas, storm surges and king tides are eroding popular tourist beaches and local economies on America's coasts at a faster pace than ever. That's costing taxpayers billions of dollars to pump sand onto beaches – only to see it disappear again.

But so-called beach nourishing is so ingrained in U.S. coastal policies, and so sprawling in scope, that no one knows how much the government has spent to rebuild beaches over the last century, including Congress and the Army Corps of Engineers.

News

Yet the Army Corps shows no sign of ending what has become one of its most controversial coastal protection practices – and Congress keeps funding the projects through ever-growing emergency spending measures.

"There's no way the corps stops pumping sand onto beaches until there's no money or no sand left to put out there," said Andrew Coburn, associate director of the Program for the Study of Developed Shorelines at Western Carolina University, which tracks government spending on beach projects.

The alternative to piling mountains of sand on America's beaches can conjure grim visions of shoreline blight where condemned homes and apartment towers are left to be torn down or collapse into the ocean. Some beach communities are already seeing the sea devour buildings — from North Carolina to Malibu, California. By the end of the century, more than 1,400 homes could be severely damaged from erosion due to storms and rising seas, according to a recent city vulnerability assessment.

Army Corps officials acknowledged in a recent interview that there are major data gaps in the agency's records on federal spending on beach rebuilding, leaving the public's impressions about its costs obscured.

Details:

https://www.scientificamerican.com/article/beach-sand-replenishment-projects-are-expensive-ineffective-and-never-ending/

Sand and Dust Storms are More Intense and Frequent, Threatening Agriculture and Communities



Sand and Dust Storms are a growing problem around the world. These storms happen when wind picks up loose dirt and sand from the ground, creating massive clouds of dust that can travel long distances.

Rome - Sand and dust storms (SDS) have increased dramatically in intensity and frequency in recent years, especially in some regions, highlighting how the phenomenon damages crops and livestock, worsens desertification, and causes health problems, with an estimated 2 billion tonnes of sand and dust entering the atmosphere every year.

In acknowledging this, the United Nations General Assembly (UNGA) has declared 2025-2034 as the United Nations Decade on Combating Sand and Dust Storms. Championed by Uganda on behalf of the Group of 77 developing countries and China, the initiative underscores international concern over sand and dust storms and promotes proactive measures through awareness and action. In so doing, it adds global momentum to the launch of the Guideline on the integration of sand and dust storm management into key policy areas by the Food and Agriculture Organization of the United Nations (FAO) and the UN Convention to Combat Desertification (UNCCD) to support countries in developing and implementing initiatives to combat SDS and launched on the International Day of Combating Sand and Dust Storms 2024.

"The Policy Guideline will support countries to develop and implement sand and dust stormsrelated initiatives, improve land use and management, enhance food security and build resilience to climate change," said Lifeng Li, Director of FAO's Land and Water Division.

Understanding the causes of sand and dust storms to prevent them

SDS are a growing problem around the world. These storms happen when wind picks up loose dirt and sand from the ground, creating massive clouds of dust that can travel long distances.

The FAO-UNCCD Guideline lays out how some areas are naturally prone to dust storms. These are usually arid and barren places, such as the deserts of North Africa, the Middle East and parts of Asia. The dry soil in these regions makes it easy for the wind to lift dust into the air.

Human activities can also create dust storm conditions. Practices such as overgrazing pastureland, cutting down too many trees, overexploitation of natural resources, draining wetlands, and ploughing large-scale cropland can disturb soil and degrade land. Poor land and water management, along with climate change, make these areas more prone to land degradation and desertification and produce dust storms.

The global impact of SDS on agriculture

SDS pose a significant threat to agriculture worldwide, affecting farmers and communities in profound ways. These storms damage crops and livestock, leading to reduced yields and poorer quality food, causing also water contamination and the spread of diseases among plants and animals.

As analyzed in the Guideline, sand and dust carried by strong winds strip nutrients from the soil, making it harder for crops to grow and lowering their quality. The physical damage to crops from abrasive particles results in smaller harvests and less nutritious produce. Livestock are also affected, facing health problems and increased mortality from inhaling dusty air and stress during storms.

Beyond farms, SDS create additional challenges: water sources can become polluted with sediment stirred up by dust storms, affecting both drinking water and irrigation for crops. Diseases carried by dust particles spread among plants and animals, further jeopardizing agricultural productivity. Additionally, the damage extends to farm equipment and infrastructure, escalating costs for farmers already coping with reduced yields.

Solutions and Preparedness

FAO and the UNCCD worked closely on the "Guideline on the Integration of Sand and Dust Storm Management into Key Policy Areas," offering solutions for governments to tackle this phenomenon effectively. The guideline recommends practices such as conservation agriculture and improved water management to protect soil health during SDS events, emphasizing the importance of strengthening infrastructure and coordinated health responses. Aligned with international agreements, it encourages integrating SDS management into national strategies for sustainable development, highlighting the need for increased awareness, technical support, and funding for early warning systems. These efforts aim to mitigate the impacts of SDS on communities and ecosystems globally.

Details: https://www.fao.org/newsroom/detail/sand-and-dust-storms-are-more-intense-and-frequent-threating-agriculture-and-communities/en

7th National Conference on Soil Conservation and Watershed Management Successfully Held

By Prof. Dr. Seyed Hamidreza Sadeghia and Drs. Mahin Kalehhoueib

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The 7th National Conference on Soil Conservation and Watershed Management, focusing on "the consequences of climate change on agriculture and natural resources," was hosted by the Soil Conservation and Watershed Management Research Institute (SCWMRI) of Agricultural Research, Education and Extension Organization (AREEO) in Tehran, Iran, on June 11 & 12, 2024. The conference aimed to achieve several specific objectives, including the dissemination of key findings and recommendations, fostering collaboration among stakeholders, and promoting innovative solutions in the field.

Some 250 attendees from the soil conservation and watershed management field, including policymakers, professors, researchers, experts, students, and other specialized activists, were present at the conference. In total, 51 oral papers and 147 posters were presented at the meeting from 198 accepted papers.

A number of associations, such as Watershed Management Society of Iran, Natural Resources and Watershed Management Organization of Iran, Drought Adaptation Scientific Society, Scientific Association of Rain Catchment Systems, sponsored the conference.

The participants in the conference listened to the lectures and visiting the poster papers, examined the evidence, possibilities and specialized future research in the field of soil conservation and water management, and confirmed the clear and significant trend of climate change and anomalies leading to increased evaporation and transpiration, the frequency of extreme events, numerous irregularities and the change of the climate regime based on statistics and long-term information of the relevant component, unanimously approved and emphasized a series of key recommendations.

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