

HOT NEWS

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Editor: Pengfei DU

ISWCR Received the Third IF of 7.481

Clarivate officially release the 2021 Journal Citation Reports (JCR) on June 28, 2022. JCR publishes each SCIE indexed journal a richarray of citation metrics, including the Journal Impact Factor (JIF), alongside descriptive data about a journal's open access content and contributing authors.

According to the newest JCR, the 2021 Impact Factor for WASWAC official journal - the International Soil and Water Conservation Research (ISWCR) is 7.481.

ISWCR was officially indexed by Science Citation Index Expanded (SCIE) in July, 2019. The Journal is classified into three subject areas of Water Resources, Soil Science, and Environmental Sciences. ISWCR received its first official Impact Factor (IF for 2019) of 3.770 in June 2020, the IF for 2020 is 6.027, the impact factor of 7.481 is the third official IF for ISWCR.

Amongst the total of 100 journals in the categories of Water Resources, ISWCR is ranked as 6. In the categories of Soil Science, it is ranked as 3 out of 39 (Q1), which rises 1 place compared to that in last year. In the categories of Environmental Science, it is ranked as 46 out of 279 (Q1). ISWCR is still a Q1 journal in all three categories of Water Resources, Soil Science, and Environmental Sciences.



IF Changes of ISWCR in three categories during 2019 and 2021

Soil Erosion Keeps Declining in China

by Li Hongyang



A combo photo displays the changes to the slopes around Ningchang ancient town in Chongqing's Wuxi county since 2017 before and after the national afforestation campaign. [Photo/CHINA DAILY]

About 2.67 million square kilometers of land experienced soil erosion in China last year, a decrease of 0.69 percent on 2020, according to the latest data released by the Ministry of Water Resources on Monday.

With nearly 28 percent of the mainland currently affected by soil erosion, the ministry said it will focus on reducing the impact of human activity on soil and will also prioritize the management of the Yellow River's coarse sand areas and enhance treatment of erosion in black soil areas in northeastern China.

The main causes of erosion are water and wind, the ministry said.

It added that 80 percent of water erosion takes place in river basins, most of which occurs in the upper and middle reaches of rivers, especially along the Yangtze and Yellow rivers.

The upper reaches of the Yangtze River and the middle reaches of the Yellow River suffered the most. Covering 14 percent of the country's land area, they account for 40 percent of areas of moderate and severe water erosion.

About 80 percent of wind erosion mainly occurs in sandy areas including the Qinghai-Tibet Plateau and the black soil areas of the northeastern China, it said.

Source: https://www.chinadaily.com.cn/a/202206/28/WS62ba8d6ea310fd2b29e690bd.html

IUSS New Publication

Within the framework of the International Decade of Soils (IDS) 2015-2024 and continuing with the objective of publishing and distributing material relevant to the interests of the IUSS and its members an IUSS Open Access Book Series was launched under a Creative Commons license. This is the first book of the Open Access IUSS Book Series celebrating the 98th anniversary of IUSS as it was published on May 19, 2022.

Soil Biodiversity was proposed as a current topic of great scientific, social, economic, and political importance for the present IUSS book. The book was written from an interdisciplinary perspective covering the current state of the art in this area. Perspectives of various points of view and interactions are reflected according to the different areas of knowledge of soil sciences offered by the authors. That is why the book contains both experimental data and conceptual information, didactic experiences, and reviews organized in four different sections.



Download here:

https://www.iuss.org/international-decade-of-soils/iuss-book-series/

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Global Soil Partnership: Ten years of promoting

the foundation of global agrifood systems



Global Black Soil Distribution Map [FAO]

Representatives of more than 500 partners, including the Members of the Food and Agriculture Organization of the United Nations (FAO), are gathering this week for the 10th Plenary Assembly of the Global Soil Partnership (GSP), which since inception a decade ago has worked to raise global and local awareness of the importance of sustainable soil management and guide policies to tackle issues ranging from erosion, salinization, and pollution to biodiversity conservation, carbon sequestration and nutrient imbalances.

The role of soils and their fertility are more important than ever to ensure food security for all, and enable the transformation of agrifood systems to be more efficient, more inclusive, more resilient and more sustainable, FAO Director-General QU Dongyu said in remarks opening the assembly. Hailing the GSP's achievements so far in advocacy, capacity development, data and mapping, and mobilizing investments, he urged participants to work to catalyze and scale up sustainable soil management solutions on the ground.

"Our goal going forward is to improve and maintain the health of at least 50 percent of the world's soils by 2030, which is only possible with your strong support and solidarity," the Director-General added.

That goal - outlined in the new GSP Action Framework 2022-2030 to be adopted at the Plenary - is urgent given that one-third of the world's soils today are in poor or very poor condition and suffer from degradation process caused by unsustainable management practices.

Soil health cannot be measured by agricultural fertility alone. According to the Intergovernmental Technical Panel on Soils (ITPS), set up at the first GSP Plenary and comprising 27 top experts from around the world providing scientific advice, healthy soils are those "with the ability to sustain the productivity, diversity and environmental services of terrestrial ecosystems."

Those services include enabling landscapes to act as the largest planetary store of carbon after oceans, water storage that enables life to exist even during dry periods, acting as a buffer against flooding, and regulating large-scale water cycles. They also foster biodiversity that helps regulate the occurrence of pests and diseases, and even providing a source for pharmaceutical products.

"Healthy soils provide safe and nutritious food and support healthy populations and ecosystems," said Ronald Vargas, Secretary of the GSP. Unhealthy soils not only have lost their natural levels of biodiversity and productivity, but are less resilient, so prone to further degradation, he added.

While public interest in soil health has increased since FAO coordinated the 2015 International Year of Soil and World Soil Day since 2014 as well as due to numerous GSP initiatives, it is not adequately anchored in various international commitments. Through the new Action Framework, which includes measurable performance targets and proposes developing a global Soil Health Index, the GSP can act as an even stronger global voice to assure those agreements translate into concrete actions on the ground. The Action Framework also aims to better coordinate with the three Rio Conventions, ensuring the role of soils in maintaining a healthy environment is appropriately acknowledged.

New Global Black Soil Distribution Map

A highlight of the first day of the Plenary is the launch of the Global Black Soil Distribution Map, fruit of a multi-year effort using a country-driven approach led by the Global Soil Partnership.

Black soils not only sustain the people settled on them, but they also feed the rest of the world through their large share of food exports, despite representing a small proportion of the world's soils. In fact, they generate around two-thirds of the world's sunflower seeds, 30 percent of its wheat and 26 percent of its potatoes. Characterized by high content of decomposed plant material, full of carbon as well as key essential nutrients such as nitrogen, phosphorus and potassium, black soils cover an estimated 725 million hectares, almost half located in the Russian Federation, where they account for 19 percent of the land area. Other countries with expansive blacksoil areas include Argentina, China, Colombia, Indonesia, Kazakhstan, Poland, Hungary, Ukraine, and the United States of America. While associated with native prairie ecosystems, they can also be found in tropical regions. Crops, grassland and forests each cover around a third of the black soils worldwide. "Considering black soil's fundamental role for food security and climate action and their increasing vulnerability to soil degradation, it is of the utmost importance to study the properties and status of black soils at the local and global scale" said Yuxin Tong, Coordinator of the International Network of Black Soils (INBS). Better monitoring of the dynamics of black soils resulting from management practices would allow for informed decisionmaking.

Black soils are literally alive and, thanks to the herculean work of the wide variety of soil organisms they host, turn plant and animal matter into humic acids that catalyze new life cycles above ground. Such complex ecosystems also make black soils sensitive to anthropogenic interventions that disrupt them - with outsized consequences for global food security and climate change.

Source:

https://www.fao.org/newsroom/detail/global-soil-partnership-ten-years-of-promoting-the-foundation-ofglobal-agrifood-systems/en



Food and Agriculture Organization of the United Nations

Extreme Record-Breaking Heat:

Heatwaves and Fires Scorch Europe, Africa, and Asia

by SARA E. PRATT, NASA EARTH OBSERVATORY



July 13, 2022

Heatwaves struck Europe, North Africa, the Middle East, and Asia, in June and July 2022 as temperatures climbed above 104 degrees Fahrenheit (40 degrees Celsius) in places and broke many long-standing records.

The map above depicts surface air temperatures throughout the majority of the Eastern Hemisphere on July 13, 2022. It was created by merging data with a version of the Goddard Earth Observing System (GEOS) global model, which represents physical processes in the atmosphere using mathematical equations.

"While there is a clear pattern of an 'atmospheric wave' with alternating warm (redder) and cool (bluer) values in different locations, this large area of extreme (and record-breaking) heat is another clear indicator that emissions of greenhouse gases by human activity are causing weather extremes that impact our living conditions," said Steven Pawson, chief of the Global Modeling and Assimilation Office at NASA Goddard Space Flight Center.

In Western Europe, which was already suffering from severe drought, the heatwave fueled fires that raged across Spain, Portugal, and parts of France. In Portugal, temperatures soared to 113 degrees Fahrenheit (45 degrees Celsius) on July 13 in the town of Leiria, where more than 3,000 hectares (7,400 acres) had burned. As firefighters battled 14 active fires, more than half of the country was on red alert.



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The above image shows the locations of fire detections in Spain and Portugal as observed by the Visible Infrared Imaging Radiometer Suite (VIIRS) on the Suomi NPP satellite on July 12, 2022. The prominent fire detections west of Madrid include the town of Las Hurdes where more than 1,500 hectares (3,700 acres) have been consumed by fire.

The record heat in Italy contributed to the collapse of a portion of the Marmolada Glacier in the Dolomites on July 3. 11 hikers were killed by the snow, ice, and rock avalanche.

In the U.K., the Met Office issued extreme heat or amber warnings as temperatures were expected to continue to climb, possibly breaking all-time record highs.

In North Africa, Tunisia has endured a heatwave and fires that have damaged the country's grain crop. On July 13 in the capital city of Tunis, the temperature reached 118 degrees Fahrenheit (48 degrees Celsius), breaking a 40-year record.

In Iran, temperatures remained high in July after reaching a scorching 52 degrees Celsius (126 degrees Fahrenheit) in late June.

In China, the summer has brought three heatwaves that have melted tar, buckled roads, and popped off roof tiles. The Shanghai Xujiahui Observatory, where records have been kept since 1873, recorded its highest temperature ever: 105 degrees Fahrenheit (40.9 degrees Celsius) on July 13, 2022. High humidity and dewpoints, along with warm overnight temperatures, created potentially deadly conditions.

"Such extreme heat has direct impacts on human health, as well as having other consequences, including these fires that are occurring now in Europe and Africa, and which have been rampant over the past few years in North America," Pawson said.

Source:

https://scitechdaily.com/extreme-record-breakingheat-heatwaves-and-fires-scorch-europe-africaand-asia/

Ploughing and Tilling Soil on Slopes is Jeopardizing Future Farm Yields

by Lancaster University



Soil tillage equipment moves large amount of material down slope as it is pulled through the soil' Credit: Professor John Quinton

Plowing and tilling on hilly slopes is causing farm soils to thin and threatens future crop yields, a new study published in Nature Food finds. geologist at the University of Massachusetts.

Scientists behind the study, from Lancaster (UK) and Augsburg (Germany) Universities, argue that unless farmers stop tilling hill slopes, over the long-term the soils on hillsides could thin to the point where growth of food crops is severely threatened.

For centuries, farmers have tilled the soil in their fields to provide seed beds in order to produce crops. Once undertaken using traditional animal-drawn plows, as farming has mechanized within the last century the tilling process has shifted to heavier and faster tractors.

Tilling soils, which includes plowing, is known to move significant amounts of soil down slopes and adds to erosion caused by weather. On sloping land, tillage causes soils to move down off the concave parts of hills, and is deposited in valley bottoms.

As soils thin on slopes, material from the subsoil mixes with topsoil, reducing its growing

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quality because of inferior nutrients, biological activity and reduced water storage.

Professor John Quinton, of Lancaster University and one of two Principal Investigators of the study, says that "the role of tillage in reducing soil depth remains an underrecognized threat to plant production. While we have known that tillage moves significant amounts of soil down slopes, often exceeding the amount moved by water and wind erosion, we have known little about how the resulting thinning of the soils affects crop yields, until now."

Professor Peter Fiener of University of Augsburg and second Principal Investigator says that "as machines continue to grow and climate change increases the frequency of droughts the impact of erosion of soils by tillage on crop production in rolling topography is likely to become more severe across many parts of the world."

The researchers looked at wheat and maize crops grown in the northern German region of Uckermark, which is a highly mechanized and very productive agricultural region in Europe. Although agricultural production has been possible in Uckermark for at least 1,000 years, the researchers' modeling predicts that over the next fifty years wheat and maize yields are likely to decline as modern mechanized agriculture accelerates erosion caused by tillage on slopes.

The researchers used published information of crop thinning on crop yields and applied soil redistribution and crop growth models to examine the effects of tillage at a regional landscape scale.



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This enabled them to determine whether the yield gains in the parts of the landscape that gained soil from erosion, the concave parts, outweighed the losses caused by thinning soils on slopes.

Their calculations show that by continuing along a business as usual approach to tilling on slopes, farmers across the Uckermark region will see combined declines of winter wheat yields of up to 7.1 percent within 50 years and up to 10 percent over a century (in normal to dry years).

For maize, the researchers predict yields to reduce by up to 4 percent over fifty years, and 5.9 percent over 100 years (in normal to dry years).

The effects of thinning soils will be most pronounced in times of drought as thinning soils are less able to hold on to moisture and nutrients. Wetter years, although not as pronounced as normal and dry years, will also see yields fall over 50 to 100 years.

These reductions equate to thousands of tons of lost food production from the Uckermark region alone. The researchers believe reductions in crop yields due to soil erosion are likely to apply across the world where tilling takes place on slopes.

They argue that this projected increase highlights the need for urgent action to reduce soil thinning caused by tilling.

Professor Quinton says that their "modeling shows that if we keep tilling our soils then we will see declines of crop yields at a regional scale - this will be worse during periods of droughts as thinner soils are less able to retain water for plants."

Professor Fiener says that they "show that the business as usual approach will depress crop yields in the long term. Farmers could look at mitigations such adapting tillage speeds depending on slope position and overall reducing tillage depths to slow the erosion process, but really farmers need to be looking at moving away from tilling on slopes to protect their soils and future yields."

Although the researchers did not model the effects of climate change, they believe that the pressure of tillage erosion will likely be amplified as climate change increases the frequencies of dry spells during crop growing seasons.

Sources:

<u>https://phys.org/news/2022-07-ploughing-tilling-</u> <u>soil-slopes-jeopardizing.html</u>

Forests are Becoming Less Resilient Because of Climate Change





A pine forest near Auckland, New Zealand / Tahreer Photography/Getty Images

Climate change has been linked with a widespread decline in the ability of many of the world's forests to bounce back after events such as drought and logging.

Forests around the world differ in their resilience to disturbances, but relatively little is known about how that resilience is changing over time.

To tease out any shifts, Giovanni Forzieri at the University of Florence, Italy, and his colleagues ran a machine learning algorithm on satellite data of global vegetation from 2000 to 2020 to calculate a metric of resilience. Resilience was defined by a forest's ability to avoid shifting state, such as becoming savannah, and withstand perturbations, such as an influx of insect pests.

The researchers found that more than half of forests in arid, tropical and temperate regions – where the majority of the world's trees are found – showed a significant decrease in resilience over the two decades. By contrast, the boreal forests ringing the globe's northern latitudes saw an increase in resilience.

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Forzieri says the difference appears to be down to climate change causing more extreme heat events and water shortages in the first three climatic regions. While some of those negative impacts are also felt in the boreal forests, they are outweighed by the fertilising effect of higher carbon dioxide levels there. Overall, the global picture is one of decreasing resilience, which the team says is a "worrying" trajectory.

The role of climate change emerged from using a machine learning model to estimate how much different environment factors – such as temperature and water availability – changed resilience. How much the climate varied from the average had the biggest negative effect on resilience.

The research chimes with a study last year that linked tree deaths in Europe to soils drying out, and recent warnings that the Amazon rainforest is approaching a tipping point.

Forzieri says the findings mean we will need new strategies for how to keep forests healthy. He suggests one approach to mitigate climate change's impact on forest resilience would be to promote diversity of tree species.

Tom Crowther at ETH Zurich in Switzerland, who wasn't involved in the research, says the study provides insights into the increasing vulnerability of biodiversity hotspots in warm, dry regions of Earth. "As we move into a warmer, drier world, these trajectories of forest resilience are likely to weaken the ecological integrity of these ecosystems, limiting their capacity to capture carbon," he says. Still, more data will be needed to firm up the findings. "A challenge with studies using satellite data is that the period of observation is limited," says Martin Sullivan at Manchester Metropolitan University in the UK. "While 20 years of data mean changes can start to be assessed, it is still quite a short timeframe for detecting shifts [in resilience]."

Sources:

https://www.newscientist.com/article/2328268forests-are-becoming-less-resilient-because-ofclimate-change/

Soil Classification & Education 2



Soil Classification & Education 2

Globalization and global environmental issues, as well as unification of scientific research and teaching on the European Union and global levels require harmonization of technical languages, such as the terminology used in soil science. An important part of our technical language is soil description and classification. The long-term development of the unified system-World Reference Base for Soil Resources (WRB), is an important challenge for teaching of soil science related subjects in Europe and the World. National/local focus in soil sciences teaching still dominates which complicates exchange of information, students and professionals. The aim of this conference is to present solutions for international education in soil science, elaborated within the Erasmus+ SYStem project, to discuss the new attempts at soil description and classification and to share ideas on how to educate Youth

Toruń, Poland 12-14th September 2022

and Adults for the benefit of society and environment. Another aim is to raise awareness of global pedosphere-related threats like soil depletion, erosion, salinization and desertification. Participants' experiences and thoughts related to soil science teaching would be a frame for both indoor and outdoor discussions.

The Soil Classification and Education 2 conference will be held September 12-14th,2022 in Toruń. Its organization is supported by Erasmus+ grant, therefore the conference fee (which includes accommodation and meals and fieldtrip) is very moderate (however number of such places is limited).

Details and the registration form can be found on the event website:

https://sites.google.com/view/soil-classification/ home





Co-funded by the Erasmus+ Programme of the European Union

XIV Congress "Soils for the Support of the Social Welfare and Environmental Protection"

November 22-25, 2022, Valdivia, Chile.

The Chilean Society of Soil Science presents the XIV Congress "Soils for the Support of the Social Welfare and Environmental Protection" which will be held on November 22-25, 2022, Valdivia, Chile. The event is supported by Chilean Society of Soil Science every four years and in this opportunity, the Congress is organized by Universidad Austral de Chile and Universidad de La Frontera. The program includes connoted invited speakers and oral and poster presentations. The conferences will be focused on the following research topics:

- Soil Functions and Sustainable Development Goals (SDGs) Services as support for the wellbeing of humanity
- ♦ Soil Degradation and Resilience
- ♦ Soil Salinity and Desertification
- ♦ Soils and Biodiversity
- ◇ Soil Chemistry and Fertility
- ♦ Soil Pedogenesis and Mineralogy
- ◇ Role of Mycorrhizae in the Efficiency of Resource Use
- ♦ Soils, Society, Land Use Planning and Food Security
- ♦ Education and Chilean Soil Science History

Abstract submission: September 2, 2022

Revised abstract submission: October 17, 2022

Conference website: www.congresoschcs.cl

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