



HOT NEWS

12, 2024

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Editor: Pengfei DU

Assistant Editor: Songdi YANG



Merry CHRISTMAS
Happy NEW YEAR

WASWAC President's New Year's Message of 2025

Dear WASWAC Councilors, Advisors, and All Members,

Time flies.

2025 is around the corner, while the meaningful 2024 will be the past. We summarize the obtained achievement to provide reference for future progresses. Just like Albert Einstein said, "Learn from yesterday, live for today, hope for tomorrow. "

In 2024, we have continued to forge ahead with resolve and tenacity.

In September, the 4th International Youth Forum on Soil and Water Conservation was held in Shenyang successfully, which further provided a platform for the youth to promote international exchange and cooperation, and accelerated the sustainable communications of global soil and water conservation.

In June, Professor Li Rui and Dr. Jose Luis Rubio, the honorary presidents of the WASWAC, attended the GSP Plenary Assembly, and presented a proposal to establish International Network on Soil and Water Conservation (INSWC) within GSP.

This will further deepen the connection between our association and FAO, play a greater role in protecting soil resources, maintaining ecological safety and food security, and jointly promoting the scientific progress in the field of soil and water conservation and ecological environment in the world.

Also in June, the 2023 Impact Factor for the International Soil and Water Conservation Research (ISWCR), the official journal of WASWAC, released with values of 7.3, which shows ISWCR is a Q1 journal in all three categories of Water Resources, Soil Science, and Environmental Sciences, indicating that our official journal continues to be one of the best journals in the world, to provide strong support for the disciplines development of soil and water conservation, and ecological protection, etc.

In addition, the council meeting and editorial board meeting were also held successfully, several councilors visited the secretariat of our association, the associate councilors members increased, WASWAC is stepping for a better and brighter future.

In 2025, the WASWAC World Conference VI will be held in beautiful Rabat, with the strong support from the Institut National de la Recherche Agronomique (INRA), we hope to have all of you involved in this important event.

Today, from Beijing, I extend my best New Year wishes to each and every one of you!

May the New Year bring many good things and rich blessings to you and all those you love!

Best regards

NING Duihu

The president of WASWAC

Submission of Abstracts for the 6th WASWAC World Conference will be Started Soon



IMPORTANT DATES

- ◆ **Abstract submission begin: January 1, 2025**
- ◆ Last date of abstract submission: **May 30, 2025**
- ◆ Intimation of acceptance of abstracts: **June 30, 2025**
- ◆ Registration fee payment begin: **January 1, 2025**
- ◆ Training Program: **September 18-19, 2025**

CONTACTS

The WASWAC Secretariat:

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DU Pengfei: **waswac@foxmail.com**

The Conference Secretariat:

BENABDELOUAHAB Tarik: **tarik.benabdelouahab@inra.ma**

VENUE

Institut National de la Recherche Agronomique (INRA), Avenue de la Victoire BP 415, 10090 Rabat, Morocco

UPDATES

www.waswac.org.cn

www.inra.org.ma

Afforestation Efforts Bear Fruit in Taklimakan Desert



The Taklimakan Desert, known as the "Sea of Death", has been completely encircled by a sand-blocking green belt that stretched 3,046 kilometers as of Thursday morning, in Hotan prefecture in the Xinjiang Uygur autonomous region.

The final 10-meter stretch of sand, which is 100 meters wide, was planted with saplings of desert poplar, rose willow, sassaoul and other drought-enduring plants in Yutian, a county located on the southern edge of the desert. This marked the completion of the green belt's last segment of 285 km.

With an area of 337,600 square km and a circumference of 3,046 km, Taklimakan is the largest desert in China and the world's second-largest drifting desert.

In 1978, the central government launched the Three-North Shelterbelt Forest Program, a national-level forestation project, according to a report by People's Daily.

Over the past four decades, Xinjiang has achieved a gradual increase in reforestation, forming a 2,761-km sand blocking belt around the desert by the end of 2023.



Residents plant oleaster trees in Minfeng county, Xinjiang Uygur autonomous region, on Thursday. The county is located in the southern edge of the Taklimakan Desert.

However, the final 285-km gap between the southern edge of the desert and the southeast edge became the most challenging part of the anti-desertification efforts.

According to local conditions, the region implemented scientifically sound sand control strategies and integrated resources from various areas while overcoming administrative boundaries between different counties and cities.

"To suit different conditions, three main methods are employed during the process — engineering sand control, photovoltaic sand control, and biological sand control," said Deng Xiaobo, deputy director of Hotan's forestry and grassland bureau. "In areas with

relatively good water and soil resources, biological sand control is prioritized. By planting drought-enduring plants, we built a biological sand control barrier belt.

"In regions with relatively scarce water resources and far from oases, photovoltaic sand control is mainly used," he said. "In areas lacking water resources and where conditions for photovoltaic installation are inadequate, engineering sand control is the primary method."

The large solar panels built in the desert areas not only generate electricity but also reduce surface wind speed, decrease wind erosion and stabilize the soil.



The land beneath the solar panels can be used to plant drought-resistant plants or crops,

which help to fix the sand in place with their root systems, achieving the triple benefit of electricity generation, increased agricultural income and sand control.

"After the completion of the project, sand will no longer spread outward along the desert's edge, preventing the sand source from expanding," Lei Jiaqiang, a researcher at the Chinese Academy of Sciences' Xinjiang Institute of Ecology and Geography, told China Central Television. "It can ensure the safety of the oasis and infrastructure such as railways and roads.

Tohti Rahman, director of the Xinjiang regional forestry and grassland bureau, said the comprehensive measures that are being taken will consolidate the ecological security barrier in northern China.

News source:

<https://cn.chinadaily.com.cn/a/202411/28/WS6747de73a310b59111da5f19.html>

2025 Application Brochure for International Students of China Institute of Water Resources and Hydropower Research

GRADUATE EDUCATION

IWHR started its graduate education in the 1950s and has excellent research facilities and equipment, a large number of cutting-edge research projects, adequate research funding, numerous literature resources, a

top-notch team of graduate supervisors (257 master's supervisors and 127 doctoral ones). After more than 6 decades of exploration and development, IWHR has established a complete and unique system of graduate education.



DEGREE PROGRAMS IN ENGLISH

8 Programs for master's degree and doctoral degree:

- * Geotechnical Engineering
- * Hydrology and Water Resources
- * Hydraulics and River Dynamics
- * Hydraulic Structure Engineering
- * Hydraulic and Hydropower Engineering
- * Hydro-Environment
- * Hydro-informatics
- * Water Disaster and Security

DURATION OF STUDY

Standard duration 3 years for master's degree and 4 years for doctoral degree.



NATIONAL FIELD STATIONS AND LARGE INSTRUMENTS



Da Xing Experimental Base, Beijing



Yanqing Experimental Base, Beijing



Tianjin Institute of Hydroelectric and Power Research, Tianjin



Base of Water Resources for Pastoral Areas, Inner Mongolia



Vacuum Tank (Vacuum Percentage 98.7%, Flow Discharge 1.0 m³/s)



1500-ton-large-scale Tri-axial Dynamic Material Testing System



Tri-axial Earthquake Simulating Shaking Table with 6 Degree of Freedom



Universal Test Stand of Advanced Hydraulic Machinery Model



LXJ-4 450g-t Geotechnical Centrifuge



Multi-functional GC-MS Maschine

FEES

- * Application Fee: Free in 2025
- * Annual Tuition: CNY 26,000-CNY 39,000
- * Annual Accommodation: CNY 24,000
- * Annual Insurance: CNY 800

SCHOLARSHIPS

IWHR Scholarships for International Students, in 2025, scholarships of up to CNY 113,600 per year are available for outstanding applicants.

HOW TO APPLY

Application Methods:

Applicants for academic degree programs shall submit application documents to graduateoffice@iwhr.com.

Important Dates:

- ◆ Application Deadline – Applicants for academic degree programs shall submit their acceptable application materials be-

fore 30th April 2025.

- ◆ Admission Notice Time – **Between 10th June and 15th July 2025.**
- ◆ Beginning of the Semester – **In early September 2025**(See the specific date on the admission notice).

Required Application Documents:

<http://gs.iwhr.com/Howtoapply.htm>



See more:

<http://www.iwhr.com/zgskywwnew/ggl/webinfo/2024/11/1723120439006305.htm>

CONTACTS

Office of International Student Affairs, Graduate School

China Institute of Water Resources and Hydropower Research

20 Chegongzhuang West Road, Haidian District, Beijing, P.R.China

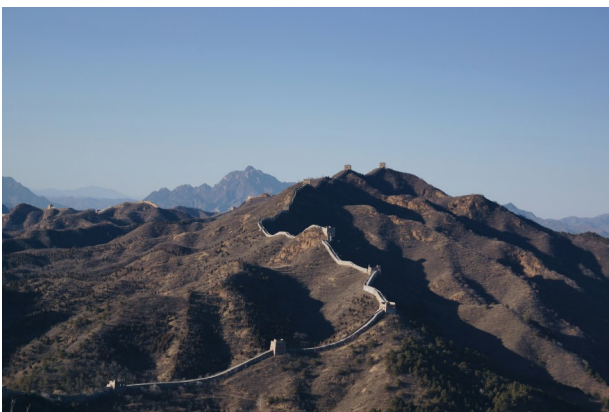
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Summer Palace, Beijing



The Great Wall, Beijing



Bird's Nest (National Stadium), Beijing

Call for Paper | Urban Soil and Green Quality for Human Health

In 2024, the world population has reached 8.2 billion people, 57% of whom living in urban areas (Worldometer 2024; Trading Economics, 2024). By 2030, with a population of about 8.5 billion, the urban population is expected to be 70% (World Bank Group, 2024). Given these numbers, planning our cities has become essential, as people seek not only services but also well-being and recreational spaces.

A better urban organization implies integrating nature into cities. There are several solutions to introduce nature into urban environment: parks, tree-lined avenues, gardens, flowerbeds, single trees, and other green spaces all help to (re)create patches able to purify air and water, and provide habitats for animals (small mammals, birds, insects). In many cases it is even necessary to requalify degraded and abandoned urban areas, eliminating sources of contamination and reconstructing soil able to support vegetation suitable for urban spaces. Today, the network of naturalized patches within the city is recognized to have beneficial effects

on physical and psychophysical human health.

However, healthy greenery relies on soils or reconstructed substrates able to support the life of the plants. This aspect has been often neglected, with the assumption that plants can either find or create soil conditions adequate for their survival and growth. Although this can sometimes occur, combining soil with appropriate plants provides more effective and sustainable solutions and can reduce maintenance costs and plant failures. Further, well-matched soil-plant systems deliver more ecosystem services, including the mitigation of temperature extremes. Proper plant care and soil management are also key strategies for maintaining a vibrant and healthy urban greenery.

With this special issue, EQA seeks to publish scientific papers that expand knowledge on urban soils and plants, from planting to ongoing management. Additionally, we are interested in studies on ecosystem services provided by the soil-plant system in urban

areas, including air purification, water circle, nature-based approaches to alleviate human physical and mental health conditions, wild-life colonization of urban spaces, the creation of new parks, the renaturalization of brown-fields.

The deadline for submitting manuscripts is February 28, 2025.



EQA - International Journal of Environmental Quality

ISSN 2281-4485 – Special issue announcement

Journal homepage: <https://eqa.unibo.it/>

Published by



The special issue is released under the auspices of



Assoverde and Kèpos



Italian Society of Soil Science

Novel Adaptive Control Approach to Fractal Fractional Order Deforestation Model and its Impact on Soil Erosion

ABSTRACT

Deforestation exerts profound ramifications on soil quality and biodiversity, thereby exerting substantial economic repercussions. The depletion of organic matter and structural integrity of soil following tree removal for agricultural purposes underscores the severity of this issue. In elucidating the soil pollution stemming from deforestation, this research employs a sophisticated five-compartment SDIFR model integrating fractal dimension and fractional order dynamics. The rigorous analysis, including the application of Picard Lindelof's fixed point theorem, establishes the existence and uniqueness of explicit solutions. Furthermore, the examination of local and global stability sheds light on the system's behavior, delineating between pollution-free equilibrium and pollution-extinct equilibrium states. To regulate system behavior, an adaptive control framework grounded in fractal fractional order is proposed, leveraging the Adams-Bashforth numerical approximation scheme for implementation. Through numerical simulations, the study underscores the pivotal role of parameters, thus substantiating the significance

of the proposed model in comprehensively addressing the complexities of soil pollution induced by deforestation.

NUMERICAL SIMULATION AND DISCUSSION

Schematics flow of the deforestation impact is given by Fig. 1. Below are the specifics elucidating the function of each parameter alongside a graphical representation for enhanced clarity.

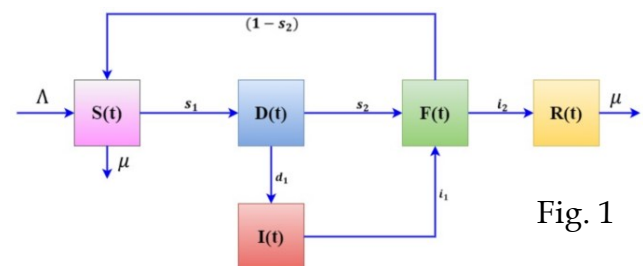


Fig. 1

The representation in Fig. 2 provides a comprehensive view of the variation in different compartments over time, utilizing a fractional order of 0.45 and a fractional dimension of 0.99. Fractional orders are particularly effective in capturing complex dynamics that cannot be fully described by classical integer-order models. By employing fractional calculus, which extends traditional calculus to non-integer orders, the model can better rep-

resent phenomena such as soil erosion, which often exhibit fractional behavior due to their complex and multifaceted nature. The observed decrease in soil erosion over time with increasing adequate remediation and control measures aligns with established principles of erosion control. This decline reflects the effectiveness of interventions

such as vegetation cover, terracing, and sediment traps in stabilizing soil and preventing erosion. The graphical representation serves as a visual confirmation of the positive impact of such measures and underscores the importance of their implementation in soil conservation efforts.

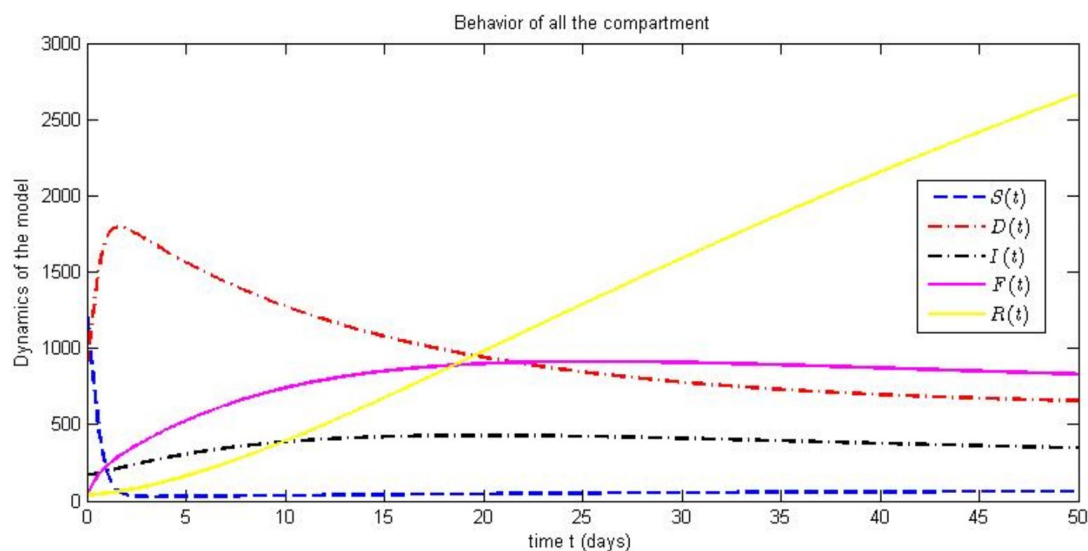


Fig. 2

Read more:

<https://www.nature.com/articles/s41598-024-74352-1>

Contents of International Soil and Water Conservation Research (Volume 12, Issue 4, 2024)



International Soil and Water Conservation Research (ISWCR), the official journal of the WASWAC, is a multidisciplinary journal for soil and water conservation research, practice, policy, and perspectives. This journal aims to disseminate new knowledge and promote the practice of soil and water conservation.

VOLUME 12, ISSUE 4

Pages 747-920 (December 2024) research articles:

Modeling gully initiation by two codeless nonlinear methods: A case study in a small watershed on the Tibetan Plateau

Jianjun Li, Yulan Chen, Juying Jiao, Xue Cao, Yixian Chen, Tongde Chen, Wenting Zhao,

Leichao Bai

Automated quantification of contouring as support practice for improved soil erosion estimation considering ridges

Dominik Scholand, Britta Schmalz

Generation of runoff in an alpine meadow hillslope underlain by permafrost

Shenqi Xie, Chen Zeng, Xiong Xiao, Guanxing Wang, Fan Zhang

Agroecology-based land use/land cover change detection, prediction and its implications for land degradation: A case study in the Upper Blue Nile Basin

Taye Minichil Meshesha, Atsushi Tsunekawa, Nigussie Haregeweyn, Mitsuru Tsubo, ... Samuel Berihun Kassa

Can hydraulic-energy-indices be effectively used to describe the saturated hydraulic conductivity?

Lucas Biasi Gastaldon, Sérgio Martins De Souza, Tatiana Cardoso e Bufalo, Robson André Armindo, Ole Wendroth

Utilizing geodetectors to identify conditioning factors for gully erosion risk in the black soil re-

gion of northeast China

Donghao Huang, Xinrui Zhao, Zhe Yin, Wei Qin

Challenges and constraints of conservation agriculture adoption in smallholder farms in sub-Saharan Africa: A review

Tesfay Araya, Tyson E. Ochsner, Pearson N.S. Mnkeni, K.O.L. Hounkpatin, Wulf Amelung

VIS-NIR spectroscopy and environmental factors coupled with PLSR models to predict soil organic carbon and nitrogen

Jingrong Zhu, Yihua Jin, Weihong Zhu, Dong Kun Lee

New empirical-point pedotransfer functions for water retention data for a wide range of soil texture and climates

Aline Mari Huf dos Reis, Luiz Fernando Pires, Robson André Armino

National variability in soil organic carbon stock predictions: Impact of bulk density pedotransfer functions

May-Thi Tuyet Do, Linh Nguyen Van, Xuan-Hien Le, Giang V. Nguyen, ... Giha Lee

Three-dimensional spatiotemporal variation of soil organic carbon and its influencing factors at the basin scale

Lingxia Wang, Zhongwu Li, Xiaodong Nie, Yaojun Liu, ... Jiaqi Li

Divergent behaviour of soil nutrients imprinted by different land management practices in the Three Gorges Reservoir Area, China

Minxin Song, Qiang Tang, Chen Han, Chuan Yuan, ... Adrian L. Collins

Geospatial evaluation of the agricultural suitability and land use compatibility in Europe's temperate continental climate region

Andrei Dornik, Marinela Adriana Chețan, Tania Elena Crișan, Raul Heciko, ... Panos Panagos

See more:

<https://www.sciencedirect.com/journal/international-soil-and-water-conservation-research/vol/12/issue/4>

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