UNIVERSITATEA
DE ŞTIINŢE AGRONOMICE
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IF IM CAD

University of Agronomic Sciences and Veterinary Medicine of Bucharest

Faculty of Land Reclamation and Environmental Engineering

INTERNATIONAL STUDENT SYMPOSIUM "IF IM CAD"

SYMPOSIUM PROGRAM & BOOK OF ABSTRACTS

LAND RECLAMATION, EARTH OBSERVATION & SURVEYING, ENVIRONMENTAL ENGINEERING

May 9 - 10, 2025

BUCHAREST

UNIVERSITY OF AGRONOMIC SCIENCES
AND VETERINARY MEDICINE OF BUCHAREST

FACULTY OF LAND RECLAMATION
AND ENVIRONMENTAL ENGINEERING

SYMPOSIUM PROGRAM
&
BOOK OF ABSTRACTS

LAND RECLAMATION, EARTH OBSERVATION &
SURVEYING, ENVIRONMENTAL ENGINEERING

May 9 – 10, 2025

BUCHAREST

The International Student Symposium, IF IM CAD

Organized by:

University of Agronomic Sciences and Veterinary Medicine of Bucharest
Faculty of Land Reclamation and Environmental Engineering

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SYMPOSIUM PROGRAM

Friday, 9th May	
Time	**Activity**
08:30 – 9:00	Arrival and registration of participants
9:00 – 9:30	Opening ceremony
9:30 – 10:00	„What's the deal with professional organizations?" – Alexandru Păun, Member of the Board of Directors of the Romanian Surveyors College, Member of the Romanian Surveyors Union
10:00 – 11:00	Paper presentations
11:00 – 11:20	Coffee break
11:20 – 13:00	Paper presentations
13:00 – 14:00	Lunch
14:00 – 15:50	Paper presentations
16:30	Participants Award Ceremony & Closing ceremony

Saturday, 10th May	
Time	**Activity**
09:00 – 17:30	Social and cultural activities.

DETALIED PROGRAM
LAND RECLAMATION, EARTH OBSERVATION & SURVEYING, ENVIRONMENTAL ENGINEERING

FIFIM BUILDING, CESAR NICOLAU AMPHITHEATER, AII1

Session chairpersons:
Prof. PhD Raluca MANEA
Lect. PhD Patricia MOCANU

Time: 10:00 – 11:00, May 9th

ORAL PRESENTATIONS

Paper ID	Authors	Institution	Paper Title
1.	Dan TOMA	University of Agronomic Sciences and Veterinary Medicine of Bucharest	SHORT HISTORY OF HYDROTECHNICAL WORKS IN TORRENT CONTROL OF ROMANIA
2.	Meriç BEKTAŞ, Mert ALPAT	Zonguldak Bülent Ecevit University, Turkey	COMPARISON OF THE DIGITAL ELEVATION MODEL DERIVED FROM SENTINEL-1 DATA WITH SRTM AND ALOS DATASETS: A CASE STUDY OF KONYA, KARAPINAR BASIN
3.	Ioana ROBU (MACOVEI)	University of Agronomic Sciences and Veterinary Medicine of Bucharest	BETWEEN SATELLITE AND GROUND: EXPLORING THE DYNAMICS OF SUBSIDENCE THROUGH SYNTHETIC APERTURE RADAR INTERFEROMETRY
4.	Ana-Maria PREDA[1], Anna CHITOGLOU[2]	[1]University of Agronomic Sciences and Veterinary Medicine of Bucharest [2]International Hellenic University, Greece	METHODOLOGY FOR ASSESSING THE IMPACT ON SOIL AND GEOLOGY

5.	Elena STICLEA (POTCOVEANU), Laura-Mihaela CERNAT, Iulian Gabriel RADU	University of Agronomic Sciences and Veterinary Medicine of Bucharest	GENERAL ASPECTS OF SEISMIC INSTRUMENTATION OF BUILDINGS
6.	Iudith Maria SARA, Lucian Alexandru PANAIT	University of Agronomic Sciences and Veterinary Medicine of Bucharest	BIOBLITZ - BIODIVERSITY IN URBAN ECOSYSTEMS

FIFIM BUILDING, CESAR NICOLAU AMPHITHEATER, AII1

Session chairpersons:
Assoc. Prof. PhD Iulia DANA-NEGULA
Lect. PhD Adriana PIENARU

Time: 11:20 – 13:00, May 9th

ORAL PRESENTATIONS

Paper ID	Authors	Institution	Paper Title
7.	Ikram OUAKKAS[1], Asmae TAFTAFE[2]	[1]ESGT (L'École Supérieure d'Ingénieurs Géomètres et Topographes), France [2]Sultan Moulay Slimane University, Morocco	MULTI-CRITERIA DECISION ANALYSIS FOR FLOOD RISK ASSESSMENT IN INFORMAL SETTLEMENTS: A CASE STUDY FROM NORTHERN MOROCCO
8.	Mariya HAMDAN	Bursa Uludag University, Turkey	RAINWATER HARVESTING IN JORDAN

9.	Umut KILIÇ	Bursa Uludag University, Turkey	RAINWATER HARVESTING: EXAMPLE OF BURSA ULUDAG UNIVERSITY LIBRARY BUILDINGS
10.	Sezer Bulut KOCAGIL	Bursa Uludag University, Turkey	NOISE POLLUTION IN URBAN ENVIRONMENTS: A CROSS-SECTORAL EVALUATION AND ENVIRONMENTAL ENGINEERING PERSPECTIVES
11.	Koray OZTURK	Bursa Uludag University, Turkey	FEASIBILITY OF RAINWATER HARVESTING FOR SUSTAINABLE WATER USE IN THE AUTOMOTIVE SUB-INDUSTRY
12.	Umut KILIÇ	Bursa Uludag University, Turkey	OCCUPATIONAL HEALTH AND SAFETY FOR WORKERS IN SHEEP BARNS
13.	Andra VIŞAN	University of Agronomic Sciences and Veterinary Medicine of Bucharest	REALITY CAPTURE IN CONSTRUCTION: LASER SCANNING FOR AS-BUILTS
14.	Alexandru-Valentin ANDREI, Adrian Liviu OLTEANU	University of Agronomic Sciences and Veterinary Medicine of Bucharest	LESSONS LEARNED FROM THE 2024 FLOODS OCCURED IN VALENCIA (SPAIN) AND GALATI (ROMANIA)

15.	Maria Geanina STĂNESCU, Valentina Nicoleta ENCIU	University of Agronomic Sciences and Veterinary Medicine of Bucharest	DRINKING WATER QUALITY MONITORING IN THE CONSTANTINEŞTI AREA, OLT COUNTY
16.	Cristian BACIU	University of Agronomic Sciences and Veterinary Medicine of Bucharest	WHAT ARE THE BIG CHALLENGES FOR THE WATER SECTOR IN THE NEXT DECADE?

FIFIM BUILDING, CESAR NICOLAU AMPHITHEATER, AII1

Session chairpersons:
Lect. PhD Roxana SĂLCIANU
Lect. PhD Alexandru ILIESCU

Time: 14:00 – 15:50, May 9th

ORAL PRESENTATIONS

Paper ID	Authors	Institution	Paper Title
17.	Iudith Maria SARA	University of Agronomic Sciences and Veterinary Medicine of Bucharest	THE HIDDEN HARMFUL INGREDIENTS OF EVERYDAY LIFE
18.	Dan-Adrian DIDIȚEL	University of Agronomic Sciences and Veterinary Medicine of Bucharest	RISK MANAGEMENT OF ACTIVITIES INVOLVING AMMONIUM NITRATE IN ROMANIA
19.	Gina BUJOR	University of Agronomic Sciences and Veterinary Medicine of Bucharest	COST-BENEFIT ANALYSIS

20.	Mihai-Valentin GANGU	University of Agronomic Sciences and Veterinary Medicine of Bucharest	APPLICATION OF ARTIFICIAL INTRLLIGENCE ALGORITHMS IN VOLUME ESTIMATION OF GRAVEL DEPOSITS THROUGH POINT CLOUD PROCESSING
21.	Andrei FILIPESCU	University of Agronomic Sciences and Veterinary Medicine of Bucharest	CEMENTITIOUS COMPOSITE MATERIALS WITH ANTIFUNGAL PROPERTIES: A MINIREVIEW
22.	Bianca-Elena BURLACU[1], Andra-Silvia DUMBRAVĂ[1], Matei-Ioan SOMEȘAN[2]	[1]University of Agronomic Sciences and Veterinary Medicine of Bucharest [2]National College "Mihai Viteazul",	PRACTICAL PROBLEMS WITH FUNCTION EXTREMES
23.	Andrei-Nicolae NIȚU	University of Agronomic Sciences and Veterinary Medicine of Bucharest	LEGAL REGIME OF RECYCLABLE WASTE
24.	Adrian Liviu OLTEANU	University of Agronomic Sciences and Veterinary Medicine of Bucharest	HEAT RECOVERY IN A PASSIVE HOUSE – A TECHNICAL STUDY
25.	Gabriel ARMĂȘELU	University of Agronomic Sciences and Veterinary Medicine of Bucharest	SUNFLOWER SEED HULL VALORISATION

26.	Alexandru David PLEŞA [1], Andrei BÎCĂ [2,3]	[1] "Nicolae Grigorescu" National College, Câmpina [2]University of Agronomic Sciences and Veterinary Medicine of Bucharest, [3] USAMV Bucharest Non-University Tertiary College	APPLICATION OF SHANNON AND SIMPSON DIVERSITY INDEX
27.	Marian STANCIU	University of Agronomic Sciences and Veterinary Medicine of Bucharest	PARTICULARITIES OF LAND USE FACILITY MANAGEMENT

BOOK OF ABSTRACTS

LESSONS LEARNED FROM THE 2024 FLOODS OCCURED IN VALENCIA (SPAIN) AND GALATI (ROMANIA)

Alexandru-Valentin ANDREI, Adrian Liviu OLTEANU

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Abstract

The present paper analyzes the major flood events that occurred in 2024 in Galați County (Romania) and in the Valencia Region (Spain). The study is based on data provided by national hydrological institutes, meteorological services, and local authorities.
Key indicators include precipitation levels, flooded surface area, infrastructural damage, human impact, and emergency response measures. In Galați County, intense and prolonged rainfall led to river overflows and significant urban and rural flooding, causing notable socio-economic disruption. In the Valencia Region, extreme weather events generated flash floods that affected both coastal and inland areas, resulting in severe property damage and the temporary displacement of local populations. Both regions faced substantial challenges in flood management, highlighting the need for improved preventive infrastructure and adaptive resilience strategies.
As a conclusion, the 2024 floods reaffirm the increasing vulnerability of European regions to climate-related hazards and the urgency of integrated risk management approaches.

Key words: *floods, 2024, Galați, Valencia, resilience strategies, climate-related hazards and risks.*

SUNFLOWER SEED HULL VALORISATION

Gabriel ARMĂȘELU

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Abstract

This paper presents the technological and sustainable potential of using sunflower achene hull, an often neglected plant by-product, but with multiple valences in the context of the transition to a circular economy. Resulting from the processing of oilseeds, this hull represents a renewable resource with added value, which can be integrated into various industrial and ecological chains. In terms of its biochemical composition, sunflower husk is mainly composed of plant fibers – especially cellulose, lignin and hemicellulose – along with a series of mineral macro- and microelements (potassium, calcium, phosphorus), which give it special functional and energetic properties. From a physico-chemical point of view, the material is distinguished by: - low humidity (below 10%), favorable for direct combustion, - high calorific value (18–20 MJ/kg), - low apparent density (100–150 kg/m³), characteristic of light biomass, - low ash content, which ensures efficient and clean combustion. The paper highlights the importance of using this by-product in industrial steam production as a viable alternative to fossil fuels, thus contributing to reducing the carbon footprint and operational costs in industry. It also outlines promising prospects for its use in areas such as organic agriculture, biotechnology, the production of composite materials and even in the development of innovative bioproducts.

Keywords: *vegetable by-product, biomass, sustainability, physical and chemical properties, energy efficiency, industrial valorization.*

WHAT ARE THE BIG CHALLENGES FOR THE WATER SECTOR IN THE NEXT DECADE?

Cristian BACIU

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Abstract

Throughout human history, water has been the quintessential natural resource. However, since the 18th century, successive industrial revolutions have made drinking water supply and wastewater treatment essential in reshaping human geography, therefore the "water sector" gradually had to absorb technological advances in hydraulics and chemistry, along with biological knowledge related to health.

The World Bank says that by 2030, 2 billion people will still lack safely managed drinking water, and water stress will remain a growing concern.

In the coming years, the water sector will have to identify efficient solutions in order to face challenges in connection to supplying drinking water that is safe, wholesome and clean and returning treated wastewater to the environment that protects public health against diseases and preserves nature, and connecting all households to adequate water and sanitation services to the extent that this is economically justifiable. The water sector must continue to engage effectively with its customers and other stakeholders to ensure there is a greater understanding of the many ways 'water matters'. We should consider that the water sector forms a part of the circular economy and is committed to strengthening its involvement, keeping in mind that incentives to channel recovered resources into the market, in a sustainable manner, need to be put in place, and our needs should work together with those of the agricultural sector.

And as extreme weather events are becoming more frequen, severe floods and droughts are regular occurrences in Europe, climate change remains a serious challenge for the water sector. Efforts must be made in order to minimise its impacts and enact mitigation and adaptation measures while controlling costs and complying with legislation, to develop long-term plans in which the water sector's initiatives are coordinated, wherever possible, with other sectors' mitigation and adaptation measures with the support of EU, national and local policies.

Key words: *drinking water, public health, circular economy, climate change, mitigation and adaptation measures*

COMPARISON OF THE DIGITAL ELEVATION MODEL DERIVED FROM SENTINEL-1 DATA WITH SRTM AND ALOS DATASETS: A CASE STUDY OF KONYA, KARAPINAR BASIN

Meriç BEKTAŞ, Mert ALPAT

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Abstract

In this study, Sentinel-1 SAR data from the Karapınar district of Konya, Turkey, were processed using ESA's SNAP software to generate a regional Digital Elevation Model (DEM). The resulting DEM was compared with SRTM and ALOS elevation datasets using 300 randomly distributed control points across the study area. Error metrics derived from the comparison with ALOS data yielded a Mean Error (ME) of -25.48 m, RMSE of 83.71 m, Standard Deviation of 79.87 m, MAD of 39.01 m, and NMAD of 57.83 m. The comparison with SRTM data produced similar results: ME of -25.54 m, RMSE of 83.49 m, STD of 79.62 m, MAD of 38.63 m, and NMAD of 57.28 m. These findings indicate a consistent negative bias in the Sentinel-1-derived DEM relative to the reference datasets. Considering the geomorphological characteristics of Karapınar—an erosion-prone, topographically variable, and sparsely vegetated area—such deviations are within acceptable limits. Overall, the study confirms that Sentinel-1-based DEMs can be reliably utilized for regional-scale terrain and morphological analyses in similar semi-arid environments.

Keywords: *Sentinel-1, DEM, SRTM, ALOS, NMAD, SNAP, Elevation Error.*

COST-BENEFIT ANALYSIS

Gina BUJOR

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Abstract

The paper aimed to present the Cost-Benefit Analysis (CBA). CBA is an essential tool for assessing the welfare impacts of an investment, including both gains and losses. It is increasingly recognized that environmental effects must be included to fully understand a project's welfare implications. For projects with long-term environmental consequences, such as those related to air pollution, climate change, and ecosystem damage, it is advised to use evaluation periods of 100 years or more. Ignoring these long-term welfare impacts can lead to skewed results, favoring projects that are more carbon-intensive or environmentally harmful. This bias could compromise not just the accuracy of the evaluation, but also broader goals of welfare and sustainable development.

Key words*: cost, benefit, analysis, environmental, investment.*

PRACTICAL PROBLEMS WITH FUNCTION EXTREMES

Bianca-Elena BURLACU[1], Andra-Silvia DUMBRAVĂ[1], Matei-Ioan SOMEȘAN[2]

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Abstract

Let $f: D \subset \mathbb{R}^n \to \mathbb{R}$ be a function and $a \in D$ a point. We say that a is a maximum (or a minimum) point for the function f if $f(x) \geq f(a)$ (or $f(x) \leq f(a)$), $\forall\, x \in D$. A maximum or a minimum point of a function is called an extreme point. In this paper we use the algorithms for determining the local extremes (conditional or unconditional) of a function to solve a variety of problems, mostly practical. These powerful methods are very useful and should be mastered by all students.

Key words*: function extreme point, maximum point, minimum point, practical problems.*

RISK MANAGEMENT OF ACTIVITIES INVOLVING AMMONIUM NITRATE IN ROMANIA

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Abstract

Ammonium nitrate (AN) is a commonly used fertilizer in agriculture and as a raw material in other specific manufacturing activities that presents significant risks, especially when handled or stored improperly. It is known for its potential to blast under certain circumstances, making it a high risk substance in industrial environments. This paper explores the risk management practices associated with ammonium nitrate in Romania, with a focus on safety regulations, the Seveso III Directive, and best practices for storage, handling, and transportation. It also discusses past accidents involving ammonium nitrate, such as the Măhăileşti explosion (Romania, 2004) and underlines the recommendations for improving the safety standards. An inventory of ammonium nitrate storage sites registered under the Seveso III Directive in Romania is provided as well, highlighting the importance of strict safety procedures for preventing major accidents.

Key words*: ammonium nitrate, explosion, risk management, Seveso III Directive.*

CEMENTITIOUS COMPOSITE MATERIALS WITH ANTIFUNGAL PROPERTIES: A MINIREVIEW

Andrei FILIPESCU

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Abstract

Cementitious materials with antifungal properties represent a key innovation in the field of sustainable construction and indoor environmental health. They significantly contribute to preventing the development of fungal colonies on surfaces exposed to moisture, reducing risks associated with mold, such as structural degradation and respiratory issues. The integration of antifungal compounds into the cement matrix ensures long-term protection without compromising the mechanical properties of the material. Thus, these materials play a crucial role in increasing the durability of constructions and ensuring a safer and healthier indoor environment.

Keywords: *Cementitious materials, antifungal properties, sustainable construction, indoor environmental health, moisture resistance, mold prevention, structural durability, respiratory health, long-term protection, mechanical properties.*

APPLICATION OF ARTIFICIAL INTRLLIGENCE ALGORITHMS IN VOLUME ESTIMATION OF GRAVEL DEPOSITS THROUGH POINT CLOUD PROCESSING

Mihai-Valentin GANGU

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Abstract

Traditional methods for the volumetric analysis of a ballast stockpile present limitations in terms of accuracy and data processing efficiency. This case study investigates the usefulness of artificial intelligence in point cloud analysis for volumetric determination, using a set of software applications such as Autodesk Civil 3D, TopoLT, and CloudCompare.
The presented study highlights the advantages of utilizing artificial intelligence algorithms to improve the efficiency of topographic analysis, providing faster results compared to conventional methods.
The conclusions emphasize the importance of integrating artificial intelligence into this field for a significant improvement of the volumetric analysis process, contributing to the expansion of perspectives in the field of land surveying.

Key words*: artificial intelligence, ballast stockpile, land surveying, point cloud, volumetric analys.*

RAINWATER HARVESTING IN JORDAN

Mariya HAMDAN

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Abstract

The rainwater harvesting (RWH) system is simply a technology that collects, stores and reuses rainwater for human use. Rainwater accumulating in different areas is used in different ways for the needs of people. Thus, rainwater harvesting is defined as a method that has an important function in protecting the environment and our natural resources. In this study, the appropriate tank size was calculated during the rainwater harvesting system (RWH) design process for the rainwater harvesting that can be obtained from the roof of the Individual house in Tla' El-Ali, Amman, the capital city of Jordan. Rainwater collection method from advanced rainwater collection systems was used. rainwater yield, storage volume and the amount of water required for irrigation of green areas were calculated. It has been determined that the rainwater yield is sufficient for irrigation of green areas and can be used for another purpose (washing cars and cleaning).

Keywords: *Rainwater harvesting system, rainwater yield, rainwater collection method, storage volume.*

OCCUPATIONAL HEALTH AND SAFETY FOR WORKERS IN SHEEP BARNS

Umut KILIÇ

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Abstract

Agriculture is a vital sector, representing the second-largest employment area globally. However, the working conditions in this sector, influenced by diverse production methods and a broad scope of activities, pose significant occupational health and safety risks to employees. Therefore, significant efforts and regulations are being made worldwide to identify and reduce occupational risk factors in agriculture. In the agricultural sector, work is being done on occupational health and safety in Turkey as well. In this context, A protocol signed in 2013 between the Ministry of Labor and Social Security and the Ministry of Food, Agriculture, and Livestock extended occupational health and safety coverage to businesses with fewer than 10 agricultural workers, bringing approximately 6 million people under its scope. As a subsector of agricultural production, livestock farming exposes workers, animals, and the environment to numerous biological, chemical, and physical risks throughout the production and distribution process. Especially sheep breeding, which is an important branch of the livestock sector, has been classified as hazardous according to the Workplace Hazard Classification Regulation related to Occupational Health and Safety. Firstly, in sheep breeding, pollutant gases in the environment accumulate indoors, and short or long-term exposure can lead to respiratory diseases. Secondly, zoonotic diseases that can be transmitted from sheep to humans pose a significant threat. Therefore, implementing occupational health and safety measures has become a necessity for people's health.

Key words*: agriculture, agricultural labor, occupational health and safety, sheep breeding.*

RAINWATER HARVESTING: EXAMPLE OF BURSA ULUDAG UNIVERSITY LIBRARY BUILDINGS

Umut KILIÇ

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Abstract

Due to various reasons such as the continuously increasing population, developments in industry, environmental pollution, and climate changes, water scarcity has become an increasingly problematic issue every day. It is necessary to take various measures and develop some savings methods for this problem. The rainwater harvesting method is also an important technique that provides water savings by reusing rainfall. In this study, it is aimed to determine the potential of the amount of water to be obtained from the library buildings on the Görükle campus of Bursa Uludağ University through rainwater harvesting to meet the water needs for irrigating green areas and to conduct an economic analysis. As part of the study, 2011.31 m3 of water is harvested annually from the buildings. When the green area on campus is watered once a week, 15.16% of its water needs are met, while watering it twice a week meets 7.58% of its water needs. The system has an initial investment cost of $18029.31. With the rainwater harvesting method, an annual savings of $1589.81 is achieved from the water bill. Therefore, the initial investment costs of the system can be amortized over a period of 11.3 years.

Key words*: rainwater, rainwater harvesting, water, water management, sustainability, water scarcity.*

NOISE POLLUTION IN URBAN ENVIRONMENTS: A CROSS-SECTORAL EVALUATION AND ENVIRONMENTAL ENGINEERING PERSPECTIVES

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Abstract

Noise pollution is a significant environmental issue that threatens the physical and psychological health of society and causes harm to the environment. This study aims to compile the sources and effects of noise pollution and propose related solutions. Major noise sources such as traffic, industry, construction, hospitals, schools, airports, and stadiums adversely affect quality of life. Studies in the marketplace of Bursa and urban parks of Trabzon include local noise measurements and solution proposals. Research in Bursa revealed that noise levels reached 70.6 dBA during evening hours, exceeding regulatory limits, while traffic regulations in Trabzon reduced noise levels. It was found that hospital noise levels surpass World Health Organization (WHO) limits, environmental noise in Malaysian primary schools impacts students and teachers, airport noise in Tanzania disturbs workers and residents, and noise from Istanbul's Ali Sami Yen Stadium exceeds limits on match days. Solutions such as awareness campaigns, sound barriers, and noise mapping demonstrate that the issue is manageable. For sustainable solutions, technological innovations and societal awareness must be addressed together.

Key words*: environmental pollution, noise, health effects, societal awareness.*

LEGAL REGIME OF RECYCLABLE WASTE

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Abstract

This paper examines the legal framework surrounding environmental protection for recycling waste in Romania, focusing on the state's role as the primary guardian of environmental rights. It discusses the dynamic nature of the concept of environment and the constitutional guarantees provided to citizens for a healthy and balanced ecosystem. The paper specifically addresses the issue of waste management, outlining the collaborative efforts of central and local authorities to establish the importance of a national strategy and plan for waste management in ensuring adequate environmental protection and public health.

Key words: *Recyclable waste, Legislation, Legal regime.*

MULTI-CRITERIA DECISION ANALYSIS FOR FLOOD RISK ASSESSMENT IN INFORMAL SETTLEMENTS: A CASE STUDY FROM NORTHERN MOROCCO

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Abstract

Floods are among the most devastating natural hazards, particularly in informal urban settlements where infrastructure and planning are often inadequate. This study focuses on the Chraka area, an informal settlement located in the Tangier-Tétouan-Al Hoceïma region of northern Morocco, with the aim of assessing flood risk impact using a geospatial-based approach that integrates satellite imagery, hydrological data, and Geographic Information Systems (GIS). The methodology involves preparing flood-determining criteria within a GIS framework, applying the Analytic Hierarchy Process (AHP) used to assign weights to each factor. The resulting risk map delineates flood-prone zones, which were overlaid with building footprint data to classify structures into three risk levels: critical, moderate, and low. Although field validation was not conducted, the study provides essential insights for local authorities and stakeholders to support risk prevention and urban planning strategies. The approach demonstrates the potential of geospatial tools to serve as decision-support systems in contexts where field validation is limited. Future research could enhance predictive capabilities by integrating deep learning models for flood forecasting in similar contexts.

Key words*: Flood risk, Informal Settlements, Remote sensing, GIS, AHP, Chraka, Watershed.*

HEAT RECOVERY IN A PASSIVE HOUSE – A TECHNICAL STUDY

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Abstract

This presentation highlights the energy efficiency of buildings known as "Passive Houses," comparing the energy performance of a conventionally built house with that of a house constructed according to the standards set by the Passive House Institute.
This study details the energy and functional analysis of a heat recovery ventilation (HRV) system in a passive house located in Găeşti, Dâmbovița County. The performance of the HRV system was evaluated under real usage conditions, focusing on heat loss, energy consumption, and indoor air quality.
In the final part of the article, using graphs and technical diagrams, we demonstrate how the implementation of a high-performance HRV system in a passive house significantly reduces energy losses and contributes to a healthy indoor climate. This study confirms the benefits of using HRV systems in the temperate climate of the Găeşti region, supporting the broader adoption of these solutions in energy-efficient homes.

Key words*: passive house, energy efficiency, carbon footprint, case study, HRV system, heat recovery*

FEASIBILITY OF RAINWATER HARVESTING FOR SUSTAINABLE WATER USE IN THE AUTOMOTIVE SUB-INDUSTRY

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Abstract

Today, the decrease in precipitation due to global warming and the increase in evaporation rate in parallel create a great pressure on the existing water resources. Harvesting rainwater is an important solution to reduce this pressure and create an alternative water source. In this study, the feasibility of roof rainwater harvesting in order to meet the domestic and industrial water needs of a factory in Bursa Osmangazi Region was investigated and the cost analysis of the harvesting system was performed. It was calculated that 2466.2 m3 year^{-1} worth of water could be harvested from the roof surfaces of the factory, and that with this amount, the rate of meeting the domestic and industrial water needs of the factory would be 43%. It was determined that the system to be established could provide annual savings of 5619 $ from the factory's water consumption expense, and that with this savings, the system could amortize itself in 11.17 years. In order to reduce the amortization period and increase the amount of rainwater collected, it is recommended that rainwater harvesting be expanded to include the factory's roads and pavements.

Key words*: Precipitation, evaporation rate, water resources, rainwater harvesting, alternative water source.*

APPLICATION OF SHANNON AND SIMPSON DIVERSITY INDEX

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Abstract

Measures of biological diversity are important for monitoring the state of ecosystems and habitats. Several indices and methods are used to describe biodiversity from field observations. Several indices are usually applied when assessing biodiversity, as restricting the analysis to a single biodiversity index can be uninformative and lead to biased conclusions. In this paper, we aim to present the results obtained from the use of Shannon and Simpson diversity indices, Evenness index and Richness to compare two urban habitats, namely the Botanical Garden of the Herastrau Agronomy Campus and the green space of the Academy of Agricultural and Forestry Sciences from Bucharest. This study also aims to characterize the plant communities and to identify and compare the plant species diversity. Thus, in situ determinations were carried out in March and April, respectively, to identify fungi (mushrooms), lichens, mosses, and plants from the wild spontaneous flora. Therefore we created and used a dataset consisting of 39 species belonging to 18 families to estimate biodiversity indices. The maximum number of species was (n = 39). The maximum number of species recorded in March was (n=12) and (n=27) in April, respectively. We identified the species based on the Google Lens application, which can be used on a smartphone.

Keywords: *Diversity index application, Shannon index, Simpson index, Richness, Evenness, Environmental wellness.*

METHODOLOGY FOR ASSESSING THE IMPACT ON SOIL AND GEOLOGY

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Abstract

This paper presents a methodology for assessing the potential impact of development projects on soil and geological conditions, with a special focus on soil sensitivity and health. The approach is based on the analysis of key soil quality indicators derived from available spatial data, taking into account both the accuracy and the limitations of these datasets. The study aims to clarify the concepts of healthy soil and sensitive soil, offering a framework for their identification and evaluation in the context of environmental impact assessments.
Additionally, the paper explores the challenges of integrating spatial information into soil analysis and highlights the need for a balanced interpretation of heterogeneous environmental factors.

Keywords: *soil, GIS, quality, impact.*

BETWEEN SATELLITE AND GROUND: EXPLORING THE DYNAMICS OF SUBSIDENCE THROUGH SYNTHETIC APERTURE RADAR INTERFEROMETRY

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Abstract

Land subsidence constitutes a process with significant implications for infrastructure, frequently manifesting in expanding urban areas, regions with intensive mining activities, and areas affected by underground exploitation or hydrological modifications. This research examines the phenomenon of subsidence in the case of three cities: Bucharest, Slanic in Prahova County, and Petrosani in Harghita County. The analysis was performed using modern remote sensing techniques, particularly synthetic aperture radar interferometry (InSAR), with an emphasis on Small Baseline Subset (SBAS) and Persistent Scatterer Interferometry (PSI) methods, applied to datasets provided by the Sentinel-1 satellite within the Copernicus Programme. These methods enable the accurate, millimetric monitoring of ground surface displacements over extended periods, allowing for a detailed characterization of areas vulnerable to subsidence and estimation of its magnitude.

Key words*: land subsidence, modern remote sensing techniques, InSAR, SBAS, PSI, Sentinel-1.*

DRINKING WATER QUALITY MONITORING IN THE CONSTANTINEȘTI AREA, OLT COUNTY

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Abstract

Ensuring the quality of drinking water is essential for protecting public health and maintaining environmental sustainability. This study examines drinking water quality by monitoring key physicochemical indicators such as pH, electrical conductivity, hardness, ammonium, nitrites, and nitrates in the rural area of Constantineşti, Olt county. These parameters were selected due to their significant impact on both human health and water system performance. The analysis was conducted on water samples collected from two main sources commonly used in rural communities: private wells and distribution systems, results was compared against national drinking water standards. Findings highlight the importance of continuous monitoring to detect potential contamination and ensure compliance with safety regulations. The study emphasizes the role of integrated water quality management and provides recommendations for improving water monitoring practices to safeguard public health.

Key words*: quality, drinking water, monitoring, rural.*

THE HIDDEN HARMFUL INGREDIENTS OF EVERYDAY LIFE

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Abstract

This paper presents the major sources and categories of chemical contaminants in the aquatic environments, highlighting their pathways into freshwater system and their ecological and health consequences. The increasing presence of chemical pollutants - originating from personal care products, pharmaceuticals, pesticides, fertilizers, and persistent synthetic compounds like polyfluoroalkyl substances (PFAS) and microplastics - in global water system represents a major environmental and public health concern due to their harmful impact on freshwater ecosystems. These substances are often characterized by chemical stability and resistance to natural degradation processes, which allows them to persist in the environment for extended periods. Their persistence increases the risk of human exposure through drinking water and the food chain. This review explores water treatment technologies and remission of chemical pollution and promote sustainable water resource management.

Key words*: water pollution, chemical contamination, microplastics, PFAS, pharmaceuticals in water, pesticides and agriculture, aquatic ecosystem health.*

BIOBLITZ - BIODIVERSITY IN URBAN ECOSYSTEMS

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Abstract

This paper presents the activities that we have made in Herastrău Agronomy Campus to highlight the biodiversity of fungi, lichens, plants, insects, birds - spontaneous, wild, which are not cultivated or grown by people. The greater the biodiversity, the more an ecosystem, in this case an urban ecosystem, is more resilient and can handle better with disruptive factors that can modify its functions and reduce ecosystem service that people benefit from. We did the identification of taxons using the ObsIdentify and Observation applications, which are recommanded by Wageningen University and Research (WUR), The Nederlands - the organizers of the BioBlitz Challenge Biodiversity 2025 competition. Our university joined this international competition again this year, as a member of the ICA association - Association for European Life Science Universities, together with universities from the The Nederlands, Czech Republic, France, Poland, England, Germany, Lithuania, Ukraine, Belgium, Austria, Sweden and Portugal. U.S.A.M.V Bucharest participates in the BioBlitz Challenge Biodiversity 2025 with the land area of the Herăstrău Agronomy Campus, which is approximately 39 hectares. To disseminate the BioBlitz activity among pre-university teachers, students and their parents in the local community, invitations were launched on social networks and a video was released on the One Health YouTube channel (https://youtu.be/q64sAbBCa7A?si=Vuyto6mOKHsAIWWR). Thus, within the Green Week activities, which are made in the pre-university education, over 100 students from three schools and high schools in Bucharest participated, who came into the Herastrau Agronomy Campus and learned how great is the diversity of plants and animals and why each of them is important and what role it has within the food webs in an urban ecosystem and how each participate in maintaining the balance of the ecosystem.

Key words*: BioBlitz, Biodiversity, Urban Ecosystems, Herastrau Agronomy Campus.*

PARTICULARITIES OF LAND USE FACILITY MANAGEMENT

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Abstract

The management of land use facilities has special features determined by the complexity of the activities that are planned, organized and managed. Firstly, the special complexity of the activities results from the specificity of the elements that form the land use facility: the agricultural land use and the facilities built on it. Secondly, the complexity of the activities is determined by the need for these two elements to set up a consistent functional structure in order to fulfil the intended purpose, i.e. the sustainable increase of land productivity, by the effective exploitation not only of the natural resources, water and soil, but also of the genetic resources.

Key words: *management, land reclamation, agricultural holding, agricultural management, water regulation management.*

GENERAL ASPECTS OF SEISMIC INSTRUMENTATION OF BUILDINGS

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Abstract

This paper considers a holistic approach to the investigation of building performance in seismic context. It highlights the importance of seismic instrumentation as a means to obtain relevant data on the actual behavior of buildings. Taking as an example many buildings in Romania that have been designed according to less demanding seismic codes than the current ones, it is necessary to dynamically assess the structures, especially after major earthquakes.
Seismic instrumentation of buildings is becoming essential, providing data on the seismic characteristics of the site as well as the structural response of the building. The use of modern equipment (such as the GMS-18, AC-63 accelerometers and the GEODAS 12-USB system), together with software dedicated to dynamic analysis (GeoDAS, SEISLOG, SEISAN, SEISNET, ARTeMIS Extractor), allows the measurement and interpretation of modal parameters (e.g. eigenperiods, modal shapes, damping, etc.).
The method is convincingly elaborated through a case study carried out at INCERC, demonstrating the applicability and accuracy of this type of investigation. Testing of an experimental model of a dual structure, realized at full scale in the seismic hall of INCERC Bucharest. The structure was dimensioned for seismic intensity 8, and was subjected to static and dynamic tests at different stages, including gravity loads, lateral forces and stresses in the post-stress field. Through these tests, the behavior of precast elements and joints under severe seismic conditions was investigated.
The paper presents data obtained from seismic instrumentation with those from numerical modeling, where future structural behavior of buildings can be predicted with clarity. Effective strategies for strengthening and reducing seismic risk in the built environment are created. This research helps to develop modern methods for post-seismic results and provides a solid basis for interventions on vulnerable buildings.

Key words*: Seismic, structure, construction, accelerogram, monitoring.*

SHORT HISTORY OF HYDROTECHNICAL WORKS IN TORRENT CONTROL OF ROMANIA

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Abstract

This paper is a literature review whose purpose is to present a short history of hydrotechnical works in torrent control from Romania. The first part presents a short definition of torrents, the appearance of the concept of torrent control and the actions taken in this domain at international level. The second part presents the appearance of torrent control concept in Romania and, briefly, the evolution of hydrotechnical works in this domain in Romania, being divided in four periods: before 1947, 1947-1989, 1989-2020 and after 2020, respectively. Before 1947 the number of hydrotechnical works was very small. The 1947-1989 period was the "apogee one" for these works because of the international context and specialists from the country. Between 1989 and 2020 the number of hydrotechnical works was more reduced than the previous period because of diverse factors. After 2020, through the Recovery and Resilience Plan of Romania new investments in this domain have started.

Key words*: FAO, Romania, torrent control, watersheds.*

REALITY CAPTURE IN CONSTRUCTION: LASER SCANNING FOR AS-BUILTS

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Abstract

This paper explores the importance of AS BUILT surveys in modern construction. These official documents, which accurately reflect the actual execution of a project, are essential for verifying work quality and ensuring efficient asset management. By employing digital technologies, a precise and up-to-date representation of the constructed environment is obtained, facilitating future interventions and optimizing long-term maintenance.

Key words*: AS BUILT, Digital Documentation, Modern Construction, 3D Laser Scanning*

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