



**The 3rd INTERNATIONAL CONFERENCE:
GEOGRAPHICAL SCIENCE AND FUTURE OF
THE EARTH
November 7-8, 2025**

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A geohistorical approach of the city–river spatial relationships: case studies on the Danube and Loire rivers

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Abstract

The city–river relationship is complex, characterized by constant interaction between urban development and fluvial dynamics. In this context, the aim of this work is to analyse the spatial relationships between the city and its river, emphasizing the urban spatial evolution following historical floods. The diachronic analysis focused on the floodplain and the riverbank, based on maps/satellite imagery and photographs. The analysis concerns four cities with different trajectories – two cities on the Danube River in Romania and two cities on the Loire River in France – that can be compared in pairs: Orșova and Jargeau correspond to small towns (less than 10,000 inhabitants), while Brăila (186,000 inhabitants) and Orléans (250,000 inhabitants) correspond to medium-sized cities. Despite demographic, historical, hydraulic, and political differences among the four studied cities, similar geohistorical pattern can be noticed in the evolution of the spatial relationship between the city and its river: (i) historical floods occurred in the second part of the 19th century on both rivers; (ii) the spatial expansion of cities near the river was driven by the confidence in structural protection measures against floods and erosion; (iii) past floods are nowadays integrated into the spatial evolution of cities through flood hazard and risk maps, as well as through specific national regulations; (iv) riverfronts suffered from abandonment; (v) yet, specific and asynchronous transformations of riverfronts were recorded in the last decades in all four case studies. However, each city has its own relationship with the river due local specificities—morphological configuration, administrative, functional, and socio-cultural drivers—that continue to shape city–river relations. For all four cities, the river is a central axe of development. For the cities on the Danube, the river represents a barrier, but also an opportunity, while for the cities on the Loire, the river is an element of risk, yet considered a natural and cultural heritage. To conclude, the four analysed cities are valuable case studies with insights for urban planning under flood risk.

A pan-European evaluation of land sensitivity to degradation and desertification

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Abstract

Land degradation and desertification are major ongoing environmental challenges, affecting vast regions globally, including Europe. A comprehensive understanding of these complex environmental degradation processes requires the application of multicriteria and interdisciplinary methods, such as the MEDALUS (Mediterranean Desertification and Land Use) model, which can be highly effective in identifying land sensitive to degradation and desertification across multiple spatial scales. This study explores land susceptibility to degradation and desertification at a large spatial scale across the continent, through geospatial modelling and analysis of multiple datasets covering 40 European countries. Using 24 environmental parameters and 7 environmental quality indices, which were assessed and processed as direct and indirect driving forces of environmental degradation, following the MEDALUS methodological framework, we detected a complex spatial pattern of land sensitivity to degradation and desertification across the 40 countries studied. Our results provide the most comprehensive picture to date of continental lands exposed to various conditions of degradation and desertification, and can be useful for enhancing the efficiency of sustainable land management policies at European, national and subnational levels.



Accelerating Digitalization in the Education System in the Context of the Covid-19 Pandemic

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Abstract

The Covid-19 pandemic played an important role in accelerating the digitization process in the Romanian education system due to the need to continue the educational process without physical presence. Thus, most of the activities that were previously carried out in a traditional format were moved to the digital environment: from teaching lessons and assessing knowledge to managing educational materials and communication between teachers and students. This change led to a rapid adaptation to the new conditions imposed by the health context. The sudden transition to online education also brought a number of challenges. In the absence of adequate digital infrastructure in many educational institutions, teachers and students relied largely on their own technological resources. This situation led to a significant increase in IT equipment, which resulted in numerous purchases of digital devices and solutions by schools, universities, and public authorities. At the same time, the differences between urban and rural areas in terms of internet access, technological equipment, and digital skills became more pronounced. This study sought to understand how the pandemic has influenced the digitization process in the education system. The study is based on an analysis of data published on the official platform data.gov.ro, which reflects the evolution of the digitization process in Romanian education during the Covid-19 pandemic. The pandemic has been a major driver of digital transformation in education, prompting educational institutions to adopt modern solutions, improve teaching methods, and be better prepared to respond to the needs of students in a rapidly changing education system.

Achieving proximity without density – a vision of the PROWD project

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Abstract

Modern society is undoubtedly and intrinsically linked with the urban environment. These environments are systems (and subsystems) of social relations, where cultures co-exist, linking different activities and groups. They are often described as being polyrhythmic and polychronic (Mocák et al., 2022; Shoina et al., 2024), and this ties in with subsequent attempts to shape them successfully. The surge in demand for proximity to amenities, where one can reach essential goods, services, and green spaces within a short walk or bike ride, underscored how pandemic conditions made local livability a public health priority. The most recent model in urban planning/design is termed the 15-minute city, although many solutions have been implemented at the neighbourhood level. It is based on eco-urbanism solutions and advocates that essential services and key amenities classified under living, working, commerce, healthcare, education, and entertainment should be within 15 minutes by non-polluting forms of transport, such as walking or cycling (Moreno et al., 2021; Mouratidis, 2024). Gaglione et al. (2022) refer to them as soft ways of moving. It reflects the recommendations contained in the 2030 Agenda for Sustainable Development, responds to the New Urban Agenda's call for the Right to the city, and aligns with the vision of a green, equitable, and productive city outlined in the New Leipzig Charter for Cities, the European Green Deal, the European policy for climate-neutral smart cities, the New Urban Agenda, and the Sendai Framework for Disaster Risk Reduction. Worldwide, there is an inequality in proximity, typically following a core-periphery gradient, as cities are highly heterogeneous. Despite an excellent average local accessibility, there is a notable disparity in local availability. Consequently, strategic reallocation of services or an increase in their capillary penetration can significantly improve accessibility (Bruno et al., 2024). Di Marino et al. (2023) find that merging multiple activities in a neighbourhood would improve urban vitality and reduce daily commuting in a study about new working places. They propose, for example, that libraries, coffee shops, restaurants, community centres, or innovation labs can serve as both formal and informal workspaces, thereby supporting the diversity dimension of the 15-minute city concept. The PROWD project seeks to implement the 15-minute concept in two pilot areas of Bucharest, Romania, as well as in Vilnius, Rome, and Lisbon.

Administrative digital accessibility as an opportunity for rural development. Case study: the periurban area of Bucharest

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Abstract

Administrative digital accessibility drives rural development, particularly in periurban areas where traditional governance meets the growing demands for digital services. The study examines the role of digital tools in local administrations in supporting citizen engagement and responsiveness in communes near Bucharest. A composite digital maturity index was created, utilizing indicators such as website usability, social media presence, integration with national platforms, and administrative transparency. Building on this framework, results reveal pronounced disparities. Dobroești (79 points) and Jilava (69 points) emerge as digital leaders, demonstrating advanced online services and structured communication. In contrast, communes such as Chiajna, Clinceni, and Tunari show limited digital adoption, with four out of eleven communes scoring below 50. This highlights significant inconsistencies in digital implementation. These disparities are further reflected in the findings, which indicate the absence of a coherent regional digital strategy. Each commune operates independently, without a standardized approach to digitalization, resulting in fragmented infrastructures and uneven citizen engagement. High performance in one area does not guarantee broader digital inclusion. These insights underscore the need for targeted policies that respect local priorities while promoting harmonized digital capacities across periurban communes, ensuring equitable access to digital public services and fostering inclusive administrative modernization.



Air ionization, during summer in anticyclonic atmospheric regime, in several balneoclimatic resorts on the Black Sea coast

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Abstract

The paper presents a study on air ionization in some balneoclimatic resorts on the Black Sea coast of Romania. Special attention is paid to the concentration of ions depending on their polarity type (+/-). In all locations where measurements were made, the aim was to identify ion concentrations in the same type of weather regime, namely warm anticyclonic, during summer. The measurements were made, in each location, during one day at three times: morning, noon and evening. The value of the ion concentration in seaside resorts is influenced by the proximity of the sea and sea aerosol. The ion concentration presents a moderate regime in these locations. In all these locations, the unipolarity coefficient k is a superunitary one. It is known from the specialized literature that negative air ionization has a beneficial effect on organisms and plants.

Analysis of landslide dynamics in Vulcana-Băi commune (Dâmbovița County) using GIS and remote sensing techniques

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Abstract

Landslides represent one of the most frequent current geomorphological processes encountered in the Subcarpathian area. This dynamic process has a significant impact on territorial organization and planning. The aim of our study is to identify and map the susceptibility of slopes to landslides, as well as the vulnerability of exposed elements under current conditions and in the case of probabilistic scenarios of land cover evolution, in the Subcarpathian commune of Vulcana-Băi (Dâmbovița County). The workflow, based on GIS and remote sensing techniques, includes three main stages: 1) analysis of potential and triggering factors, 2) identification of susceptibility through multicriteria analysis under different current and potential conditions, 3) identification of exposed elements and their vulnerability. The methodological approach consisted of scientific documentation, field research, creation of a database for the study, followed by a series of GIS practices, including data processing, multicriteria and dynamic analysis, as well as forecasting probabilistic scenarios. According to the analyses carried out, 20% of the studied territory includes areas with high and very high susceptibility to landslides under current conditions, with potential to increase up to 54% in a probabilistic scenario of reduced forest vegetation cover. At present, 42% of the buildings in Vulcana-Băi commune have high and very high vulnerability, and regarding the road network, 28% of it has high and very high vulnerability. In conclusion, the study demonstrated the practical utility of landslide modeling through geomatic techniques in Vulcana-Băi commune for spatial planning and organization, while also providing a series of prevention and management measures for the pronounced geomorphodynamic character. In this way, it also has methodological and practical utility for local authorities in territorial management.

Analysis of thermal and hydric resources and their influence on sunflower yields in Dobrogea Region (Romania)

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Abstract

The analysis and identification of the observed changes in the agroclimatic conditions of a region is the premise for the efficiency of the agricultural production activity in that region. The entire growing cycle of an agricultural crop is determined by thermal and hydric factors. The main aim of this study is to analyse and identify the observed changes in the air temperature and precipitation regime according to the bioclimatic requirements of sunflower crop. Sunflower is one of the world's main annual herbaceous oilseed crops and the most important at national level in Romania. The analysis of thermal and hydric resources will be carried out for the period 1991-2020, for the Dobrogea Region which is characterized by a temperate continental climate with long periods of dryness and drought. The database used in the analysis consists of climate data (monthly average air temperature and precipitation) from five meteorological stations belonging to the National Meteorological Administration and agricultural data (sunflower yields) from the National Institute of Statistics. The variability of agroclimatic conditions is reflected in fluctuations in average crop yields which range from 320 kg/ha in the year 2007 to 3,715 kg/ha in the year 2018. In order to adapt to climate change through better culture management, it is necessary to have knowledge and analyze the main climatic factors at both year and extended timeframe levels.



Anthropic Changes in the Călărași Administrative-Territorial Unit - A Case Study for 11th Grade

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Abstract

A fundamental problem of the contemporary world, which I care about or live in, is the one related to the modification of the geographical environment. The proposed case study has as a subject the anthropogenic intervention in the embankment area of the Borcea Arm which led to the emergence of a tourist port, a project supported by the local authorities.

Application of machine learning algorithms for estimating soil erosion susceptibility in the Buzău River Basin

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Abstract

At the level of the European Union, it is estimated that approximately 12 million hectares of agricultural land are affected annually, while the natural regeneration of just 1 cm of soil may take several decades or even centuries. The main objective of this study is to identify the areas susceptible to soil erosion based on Machine Learning (ML) algorithms and the RUSLE model. Four machine learning algorithms were selected: Boosting, Support Vector Machine (SVM), Random Forest (RF), and K-Nearest Neighbors (KNN). The soil erosion susceptibility modeling was performed by integrating 13 morphometric and environmental parameters: slope, aspect, profile curvature, plan curvature, LS factor, lithology, soil texture, drainage density, Topographic Wetness Index, rainfall, R factor, forest areas and road density. The modern methods were applied to a large dataset consisting of 5667 grid cells, each representing a spatial unit of 1 km², for which the values of the 13 parameters were extracted. Of these, 3627 values were used for training, 907 for validation and 1133 for testing. The results were mapped and classified into six susceptibility classes (from low to extreme), based on the classification proposed by Panagos et al. (2015) within the RUSLE model. According to the model performance evaluation, expressed by the Coefficient of Determination ($R^2 = 0.61$), Mean Squared Error (MSE= 58.02), and Root Mean Squared Error (RMSE= 7.62), the Random Forest algorithm demonstrated the highest prediction accuracy for soil erosion. In modeling erosion susceptibility, it was shown that rainfall and forest surface provides the greatest influence. Furthermore, the Random Forest results were validated using the RUSLE model, which integrates the factors: soil erodibility, slope length and steepness, rainfall erosivity, cover-management and support practice. At the overall basin level, the Random Forest model tends to underestimate extreme classes (Low= 11% compared to 28% in RUSLE, and Extreme= 0% compared to 1%). A differentiation can also be observed among the three basin sectors, where the Subcarpathian sector shows the highest rate of extreme erosion (100%), although this value is likely overestimated compared to the 61% estimated by the RUSLE model. Nevertheless, the results are supported by field observations, as the Subcarpathian area exhibit extensive land degradation processes, characterized by landslides, rockfalls, rill erosion, and muddy torrents. These models allow quick identification of erosion-prone areas at multiple scales, facilitating targeted land management and conservation measures.

Assessing the Impact of Permafrost Thaw on Vegetation and Surface Water Dynamics in a Warming Arctic

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Abstract

The Arctic, one of the most climate-sensitive regions on the planet, is warming nearly four times faster than the global average (Natali et al., 2019; Rantanen et al., 2022; Schuur et al., 2022; Calvin et al., 2023). This accelerated warming is driving extensive environmental transformations, including vegetation shifts, altered hydrological regimes, and widespread permafrost thaw. Among these, permafrost degradation stands out as one of the most severe consequences of climate change (Biskaborn et al., 2019; Bykova, 2020; US EPA, 2021), triggering rapid and far-reaching ecological changes that influence both local ecosystems and the global climate system. In this study, we investigate Arctic ecosystem dynamics over the past four decades in relation to climate warming and permafrost thaw. Our analysis focuses on long-term trends and anomalies in vegetation and surface water dynamics to assess patterns of ecosystem resilience and vulnerability under ongoing climate change.

We employed a multidimensional approach based on time-series Landsat imagery, deriving key vegetation and water indices. These datasets were processed through a dedicated workflow integrating Microsoft Planetary Computer STAC and automated Python scripts designed for data preprocessing and analysis. This workflow ensures efficient extraction and consistent computation of spectral indices and anomalies across temporal and spatial scales. Results indicate a general increase of approximately 0.04 units in vegetation indices, reflecting enhanced chlorophyll content and denser vegetation cover, particularly after 2013. Conversely, water indices show a decrease of about 0.04 units, suggesting an expansion of inland water bodies. These complementary trends demonstrate the interconnected nature of Arctic ecosystem processes under accelerating climate change. Our findings offer valuable insights into the ongoing transformations of Arctic landscapes, underscoring the importance of continuous monitoring to better anticipate, understand, and manage the impacts of climate change in these highly sensitive environments.

Assessing the quality of the railway landscape and heritage value in Romania: an AHP and GIS approach for the Timișu de Jos–Comarnic railway corridor

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Abstract

Landscape is an interdisciplinary field of study, resulting from the interaction between natural and anthropogenic factors and reflecting collective and individual perceptions of the environment. In the context of transport, the railway landscape becomes a distinct component of the geographical landscape, integrating natural, cultural, aesthetic, and technical elements into a dynamic visual system perceived by passengers. The evolution of railway infrastructure, from steam locomotives to electric and high-speed trains, has led to significant changes in the environment and contributed to the formation of a technological and cultural heritage with identity value. In Romania, research on the railway landscape and its role in the development of tourism and the local economy is limited, although the railway is an essential element of the national infrastructure and a factor of territorial cohesion. The aim of this research is to evaluate and map the landscape and heritage value of the Timișu de Jos–Comarnic railway corridor, part of the CF 300 main line, a strategic axis connecting Muntenia with Transylvania and constituting the most modern intra-Carpathian railway crossing in Romania, using a multi-criteria method based on the Analytic Hierarchy Process (AHP) integrated into the GIS environment. The analysis aims to identify areas characterized by high landscape diversity, correlating aesthetic, cultural, ecological, and tourist criteria. The results provide a scientific basis for strategic planning for sustainable development, for the protection of railway heritage, and for the exploitation of the region's tourist potential. The study highlights the importance of the railway landscape as an integrating resource between man, nature, and technology, emphasizing the need for coherent management policies in line with current trends in heritage conservation and the promotion of sustainable tourism.

Assessment of Landscape Multifunctionality for Maximising Both Ecological and Human Benefits

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Abstract

Territorial changes induced by anthropogenic factors over recent decades have led to habitat fragmentation and, consequently, to threats to biodiversity and natural elements. Some landscapes within the Romanian Carpathian ecoregion benefit from conservation measures; however, in order to maximise ecosystem service provision, more detailed analyses are required to capture the specific potential of each area. Such structures, beyond their primary ecological significance, also possess a multifunctional character, as the landscapes themselves are inherently multifunctional. This multifunctionality lies in the provision of a broader range of ecosystem services, namely: provisioning ecosystem services (reflecting the economic dimension of landscapes), cultural ecosystem services (primarily through their touristic value), and, of course, regulating ecosystem services (through their natural functions). Our objective is to restore and highlight the multifunctional character of these landscapes using spatial GIS methods, by quantifying and zoning the diverse range of ecosystem services they provide. It is also of great importance to identify multifunctionality hotspots and to analyse the specific features that make these areas stand out as "hot zones". A key component of this study concerns the evaluation of existing ecological structures within the Carpathian ecoregion. We therefore aim to assess the state of multifunctionality within a previously modelled network—one designed to facilitate the conservation of large carnivores. Naturally, the spatial analysis phase requires field validation of the data, an essential step for verifying the accuracy of GIS-based assessments. In addition to validation, we aim to capture local stakeholders' perceptions of the specific characteristics of multifunctionality hotspots. For coherent spatial planning, consultation with both stakeholders and domain specialists is crucial in determining which ecosystem services should be prioritised and in contributing to their optimisation.

Automated Multi-Metric Change Detection for Landslide Monitoring Using Satellite Time Series and Landscape Metrics

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Abstract

Accurate and timely detection of surface changes associated with landslide activity remains one of the major challenges in Earth Observation-based hazard monitoring. Traditional visual or threshold-based methods often fail to capture the subtle pre-failure dynamics or post-event recovery processes that occur over heterogeneous terrains. To address these limitations, this study presents an automated, data-driven framework for identifying significant geomorphic changes in landslide-affected areas using multi-temporal imagery and derived landscape metrics. A fully Python-based processing chain was developed to compute and integrate multiple categories of variables sensitive to surface changes. These include vegetation indices (NDVI, MSAVI, SAVI, NDWI), texture features based on the Grey Level Co-occurrence Matrix (GLCM) such as contrast, dissimilarity, and homogeneity, as well as landscape structure metrics including the number of patches, patch density, edge density, and Shannon diversity. Masks were systematically employed to remove clouds, shadows, and snow contamination, ensuring reliable pixel-level filtering and temporal consistency across the entire observation period. The change detection procedure systematically evaluates all potential temporal splits in each time series to automatically identify statistically significant shifts in surface characteristics. For each split, pre- and post-event values are compared using a set of sensitivity metrics including Hedges' *g*, Cohen's *d*, Mann–Whitney U test, and Cliff's delta, which are subsequently aggregated into a composite sensitivity score. This ranking-based approach allows for the objective identification of transition dates corresponding to geomorphic disturbances, vegetation loss, or recovery. The proposed framework was tested on several representative landslides across Romania and the Republic of Moldova, which are known for recurrent reactivation episodes. Results demonstrate that the number of vegetation-indices-derived patches, derived from NDVI segmentation, serves as a highly sensitive indicator of slope instability, often exhibiting abrupt changes immediately before or after field-documented landslide events. Texture metrics derived from red and SWIR bands were found to complement vegetation-based indicators, improving the ability to detect both disturbed and stabilized areas. Overall, the approach demonstrates high transferability and computational efficiency, relying entirely on open-access Sentinel-2 and Landsat data. It provides a scalable, sensor-agnostic solution for near-real-time monitoring of landslides and other surface disturbances, supporting the development of operational early warning systems and quantitative risk assessment tools for infrastructure and natural hazard management.

Automatic methods for extracting and processing data series for modeling urban traffic flows

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Abstract

The present context of accelerated urban population growth and increasingly intricate infrastructures has given rise to an imperative for the development of advanced real-time data collection and analysis solutions that are based on artificial intelligence and that are capable of effectively addressing the challenges associated with urban mobility. Traffic monitoring is an integral component of the governance framework of smart cities. It possesses the potential to facilitate real-time mobility management, thereby reducing congestion and enhancing public safety. As urban populations and vehicle density increase at an accelerated rate, cities are becoming increasingly reliant on artificial intelligence (AI) and computer vision to derive actionable insights from large volumes of video data. Whilst real-time monitoring facilitates immediate interventions, including congestion detection, incident response and adaptive traffic signal control, offering large-scale, resource-efficient analysis of historical footage. From a governance perspective, the advantages of AI-driven traffic monitoring are manifold. Firstly, real-time analyses provide evidence there by supporting infrastructure investments, secondly, they facilitate policy evaluation and long-term planning. The present study investigates the utilization of deep learning-based computer vision techniques in the domain of smart city traffic governance. The primary focus of this investigation is the detection and monitoring of both vehicles and pedestrians within video sequences. A lightweight version of the YOLO (You Only Look Once) neural network was employed to balance detection accuracy with computational efficiency. The methodology employed emphasizes the potential of AI-assisted monitoring in urban mobility management. It provides an insight into how lightweight computer vision models can enable equitable, data-driven decision-making in smart city governance. The main results show that the improved, YOLOv8-based model for synchronous vehicle and pedestrian detection achieved a vehicle recall of 97.19%, a pedestrian accuracy of 96.02% and a mean average precision (mAP) of 95.23%.

In conclusion, the major importance of the utilization of artificial intelligence in the collection and monitoring of urban traffic is evidenced in the modification of real-time interventions through the generation of decisions that facilitate the resolution of mobility problems and reduce the time of implementation.

Barriers and solutions in the professional inclusion of people with physical disabilities: A qualitative study

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Abstract

The purpose of this study is to examine in detail the real and complex obstacles that people with physical disabilities encounter when seeking employment, but also throughout their professional careers after being hired, as well as in their daily activities in an organized environment. In order to understand these difficulties from the perspective of those affected, the barriers that need to be overcome must be identified and a realistic picture of the situation presented. This approach is important for generating practical knowledge, and the results should serve as a basis for developing concrete recommendations to employers, public institutions, and decision-makers with the aim of promoting inclusive policies, removing stereotypes, and creating professional environments that are fair and accessible to all. To this end, the study set four operational objectives. The first aims to classify the specific barriers to the recruitment and employment process, both as subjective factors (employers' attitudes and fear of discrimination) and objective factors (lack of physical accessibility of locations and application procedures). The study also aims to identify obstacles in the daily lives of people with physical disabilities in the workplace (infrastructural accessibility, technological accessibility, social dynamics such as the attitude of colleagues or the lack of an organizational culture in the workplace). The third objective is to correlate and systematize the solutions and recommendations proposed by persons with disabilities themselves. The final objective concerns the effective distribution of findings in an accessible and applicable manner, facilitating the implementation of change. To achieve these objectives, a qualitative, analytical methodology was adopted, focused on conducting a complex and well-structured interview. This approach combines the advantages of qualitative interviewing with the efficiency and accessibility of the telephone call, due to the reduced mobility of the person with a disability. The interview will be designed as a guide with open-ended questions that encourage participants to share their personal experiences, concrete examples, and even detailed suggestions. The data obtained will be analyzed using analysis and synthesis techniques, identifying patterns, common barriers, and key areas for intervention, quickly obtaining authentic information that ensures great potential for practical application.

Bellu Cemetery as an Element of Bucharest's Urban Space: Role and Current Challenges

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Abstract

This study analyzes the role of Bellu Cemetery as part of Bucharest's urban space, focusing on its functions, symbolic meanings, and current challenges. Although satellite images from the last three decades show little physical change, the site presents important social and perceptual dynamics that reflect broader urban processes. Bellu is not only a funerary space, but also a cultural landmark and a place used by residents and visitors for various purposes, from commemoration and remembrance to leisure and cultural exploration. Over time, it has become an integral component of the city's social life and an indispensable space for the population, connecting memory, identity, and everyday practices in a unique way. For many people, it also represents a refuge of peace, offering an escape from the noise and stress of daily urban life. The research combines field observations with desk-based analysis, including the study of historical documents, media representations, and secondary data, in order to capture both the material stability and the symbolic transformations of the site. This mixed approach allows for a better understanding of how the cemetery functions as a social space where rituals, tourism, and daily activities intersect. The analysis also highlights cultural landscape dynamics and urban perception shifts, showing how Bellu has moved from being perceived mainly as a solemn funerary ground to being reinterpreted as part of Bucharest's cultural and recreational fabric. These transformations illustrate that urban dynamics are not only visible in physical structures, but can also be traced in the ways people perceive, use, and attribute meaning to specific places. At the same time, the study identifies challenges related to management, accessibility, and the delicate balance between respect for memory and new urban uses, underlining the importance of sustainable strategies that preserve the cemetery's heritage value while maintaining its role as a living part of the city's cultural and social landscape.

Bibliometric analysis-based review of indices for drought assessment and monitoring

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Abstract

Drought is one of the natural hazards with complex and multifaceted impacts, affecting both society and the environment. Mitigating the negative consequences of this phenomenon requires a thorough scientific understanding of it, based on rigorous monitoring and assessment. In recent years, numerous single-variable and multi-variable indices were developed worldwide for monitoring and assessment of drought. The development of geomatics techniques has enabled the creation of complex, composite drought indices and their mapping which allow the identification of areas susceptible to drought. This study provides a bibliometric analysis of publications on the composite indices for drought monitoring and assessment developed in GIS environment, based on querying the Web of Science (WoS) and Scopus databases. Using the search key-terms integrated drought index GIS, composite drought index GIS, and multivariate drought index GIS, a total of 345 papers were initially identified, 205 from WoS and 140 from Scopus. After removing duplicates with the aid of ScientoPy software, 262 papers published between 1994 and 2024 were retained for analysis.

The results showed that most authors of the identified papers are affiliated in Asian countries, especially in India (64) and China (58), followed by the United States (42). The journals with the highest number of papers on the searched topics are: Natural Hazards (13), Remote Sensing (10), Journal of the Indian Society of Remote Sensing and Water (7 publications each). With regard to the major fields to which the journal belongs, most fall within the natural sciences and earth sciences (e.g. Environmental Sciences & Ecology, Water Resources, Geology), the geomatics and engineering fields (e.g., Remote Sensing, Engineering, Imaging Science & Photographic Technology), as well as the atmospheric sciences and agriculture. Out of a total of 1086 authors of the analyzed publications, the highest number of common connections was 35, in general, between Asian researchers. Overall, this bibliometric analysis shows that the use in drought research of composite indices developed in GIS environment is still quite limited although in the last 5 years an increase in the number of papers on this topic was noted.

Bridging the Gap in Cardiovascular Care in Romania: Improving Access for Underserved Populations

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Abstract

Cardiovascular deserts are regions with limited access to medical facilities, specialists, and equipment required for the effective diagnosis, treatment, and management of cardiovascular diseases (CVDs). Romania records the highest incidence and mortality from CVDs in Europe. Population ageing further amplifies the burden, as it increases both disease risk and the need for specialised care. While nearly half of Romanians still live in rural areas, healthcare resources remain heavily concentrated in a few major cities, leaving extensive parts of the country underserved. Methods: The study employed the Google Maps API Matrix service alongside open data sources to identify cardiovascular (CV) deserts. Results: Findings reveal that more than 64% of Romania's population lives in areas without adequate CV care, often traveling over 60 km and more than 30 minutes to reach specialised facilities. Additionally, 14% of the population resides in areas with severe cardiovascular desertification. These regions—primarily in the northeast, south, and west—are characterised by higher CVD mortality, an ageing population, a shortage of general practitioners, and a critical lack of cardiologists. Conclusions: The cardiovascular deserts identified largely coincide with mountainous areas, the Danube Delta, and remote rural regions with weak transport infrastructure. Expanding access could be achieved through telemedicine, mobile healthcare units, the involvement of community health workers, and targeted policy support.

Carbon Accumulation in the Lower Danube Floodplain: Stratigraphic Evidence, Environmental Drivers, and Anthropogenic Impact over the Last 7000 Years

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Abstract

Floodplains are dynamic carbon sinks whose long-term sequestration capacity depends on interactions between geomorphology, hydrology, sediment supply, internal productivity and human influence. This study reconstructs 7000 years of carbon accumulation in the Lower Danube Floodplain (LDF) using stratigraphic, total organic carbon (TOC), and chronological data from eight sediment cores covering an approximately 900 km² area. By integrating loss-on-ignition and TOC analyses with Bayesian age–depth modeling, we quantify temporal variability in carbon accumulation rates (CAR) and identify key environmental drivers across three Holocene phases. The mean CAR across the entire record is 26.5 g C m⁻² yr⁻¹, but this average mask three distinct phases driven by different environmental controls. Rapid post-glacial sea-level rise drove the highest accumulation rates (40.5 g C m⁻² yr⁻¹) between 7000 and 5000 cal BP. Following base-level stabilization, rates declined to a natural background level of 16.7 g C m⁻² yr⁻¹ between 5000 and 2000 cal BP. In the last 2000 years, rates increased again to 27.2 g C m⁻² yr⁻¹, driven by enhanced sediment flux from anthropogenic land-use change in the Danube basin. Facies-specific analysis reveals that peat and organic-rich deposits are the primary carbon reservoirs, with Total Organic Carbon (TOC) content frequently exceeding 10%. In contrast, overbank sediments show moderate storage, while lacustrine and sandy paleochannel deposits store significantly less carbon, with TOC values typically below 4% and 1%, respectively. These results underscore the importance of depositional setting and hydrological connectivity in shaping carbon storage potential. Moreover, the stratigraphic archive highlights how anthropogenic forcing has increasingly altered natural accumulation regimes, a trend with critical implications for the future management and restoration of floodplain carbon sinks under changing climate and land-use conditions.

Cartography of Ialomița Cave using terrestrial laser scanning and drone-based LiDAR SLAM

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Abstract

Traditional cave mapping methods are time-consuming and often constrained by accessibility, especially in vertical shafts, elevated chambers, or hazardous passages that require technical speleological climbing. LiDAR-based technologies overcome many of these limitations, enabling rapid and precise 3D documentation of underground spaces. This study presents a morphometric survey of Ialomița Cave, located in the Bucegi Mountains, Romania, at 1623 m altitude, with a mapped length of 1128 m and a vertical range of 62 m. The cave, developed in limestone and historically used as both a monastic refuge and a touristic site, was surveyed using two complementary systems: a Leica RTC360 terrestrial laser scanner (TLS) and a Flyability Elios 3 drone equipped with an Ouster SLAM LiDAR sensor. The resulting 3D model provides a detailed representation of the cave's morphometry, supporting volumetric and geomorphological analyses as well as investigations of geological structures, paleoclimate archives, and vulnerability to environmental change. Beyond scientific applications, the dataset offers valuable resources for cultural heritage documentation and for the promotion of speleological tourism, through both virtual exploration and improved visitor management.

This work demonstrates the potential of combining TLS and drone-based SLAM LiDAR for high-resolution morphometric cave analysis, offering a powerful methodology for research, conservation, and hazard assessment in fragile subterranean environments.

Citizen Science for Inclusive Urban Governance from Expert and Institutional Perspectives

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Abstract

Citizen science has emerged as a valuable approach for enhancing transparency, inclusivity, and data-driven decision-making in urban governance. This study investigates the domains of urban planning where citizen science offers the greatest potential impact, based on a comparative analysis of survey responses from two stakeholder groups: academic and professional experts, and representatives of local public administrations. The dual-survey methodology was designed to capture both the theoretical understanding of citizen science applications and the practical constraints of urban policy implementation.

Results indicate that while both groups acknowledge the relevance of citizen-generated data for environmental monitoring, green space management, and urban mobility planning, their perceptions diverge regarding institutional readiness and data integration. Experts tend to emphasize innovation, participatory mapping, and social equity aspects, whereas administrative respondents focus on regulatory feasibility, data validation, and long-term maintenance.

The comparative findings highlight a persistent gap between conceptual support and institutional adoption of citizen science. Strengthening intersectoral collaboration, improving digital literacy, and embedding co-production mechanisms into planning processes are identified as key enablers for inclusive urban governance. The study thus underscores the importance of aligning expert-driven innovation with administrative capacity to achieve sustainable, citizen-centered urban development.

Climatology research and teaching - An embedded component of the geographical higher education at the University of Bucharest

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Abstract

While celebrating the 125th Anniversary of Geographical Higher Education & Training at the University of Bucharest, a brief overview on climatology, as an important academic topic of research and higher education teaching, highlights not only the main contributing personalities and their major works and fields of interest and action, but also the main shifting perspectives on how climatology was approached from traditional means to modern tools, in order to provide society with well-trained specialists. Climatology as an autonomous topic in the University of Bucharest's curricula dates back to 1949, when Prof. univ. dr. Ștefan Stoenescu was first appointed assistant, after he had fought on the Eastern front during the WWII, when he had been wounded (1942), then had been hired as meteorologist at Romania's Central Meteorological Institute (in 1943) and had publicly defended his Ph.D. Thesis on the Climate of the Bucegi Mts. (in 1948). Later on, Climatology developed into a full-body academic line of specialized B.A., M.A. and Ph.D. programs, with a distinct administrative division (Department of Meteorology and Hydrology) and autonomous curricular representation (Hydrology and Meteorology), due to the consistent and dedicated work of Prof. univ. dr. Ciulache Sterie, who was not Prof. St. Stoenescu's direct "successor", but was the one who received the legacy and further developed Climatology Research and Teaching at the University of Bucharest into the main provider of nowadays specialists in the field. Now, in 2025, as their legacy has been passed on to newer generations, a short reminder of their scientific, professional and institutional contributions is part of our celebration and commitment to keep up the(ir) good work.

Complex Vulnerability Analysis of Bucharest

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Abstract

Spatial patterns of vulnerability are important drivers of how hazards will strike, and how effectively response and recovery efforts can be de-ployed, guiding targeted prevention, preparedness, and response measures. To capture complex vulnerability patterns at city level, we applied an exploratory index-based spatial data analytical approach, addressing vulnerability as a context-dependent issue as developed by Cutter et al. (2003). Selected indicators were aggregated from various indices, based on an inductive approach after documenting empirical data patterns. They were structured on eight dimensions of spatial vulnerability based on existing theoretical frameworks and scientific literature. To keep the highest level of accuracy, each dimension was estimated in a separate criteria tree, with the complex vulnerability based on the weight and aggregation of the resulting maps from the different analysed dimensions. The current analysis represents an innovative contribution to spatial vulnerability research; however, it is constrained by data scarcity and, in some cases, by the use of outdated datasets. The analysis highlights the interconnected nature of vulnerabilities in Bucharest, where social, infrastructural, and systemic factors converge to shape disaster risk. The results underscore the need for integrated, multi-hazard risk reduction strategies, with a particular focus on protecting elderly populations, strengthening the resilience of critical infrastructure, and improving accessibility to emergency services and evacuation routes.

Current morphodynamics on the Putna valley between Lepşa - Tulnici

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Abstract

Due to the complexity of physico-geographical nature, but also of the anthropogenic factor, present here since long historical times, the Putna valley of Vrancea represents the main hydrographic and drainage artery that is found on the territory of Vrancea County. The analyzed sector is located in the north-western part of the Putna basin, and represents the lower mountainous sector of the valley, starting downstream from the village of Lepşa and up to the entrance to the Vrancea Subcarpathians, near Tulnici, at the confluence with the Coza stream. The long evolution of the hydrographic network is expressed by the development of valley shoulders, along the valley. The general geotectonic framework of the Putna Valley is represented by the contact between the Carpathian Orogen unit and the Wallachian Platform unit, in Vorland, and the orogen unit being formed by flis with Cretaceous, Paleogene and Miocene deposits. Depending on the general tectonics, but also on other details elements, the Putna valley has suffered various changes of direction. From the point of view of the runoff regime of the Putna River, it is hydrologically within the rivers with a great variability of runoff parameters (liquid and solid). All these elements (tectonics, runoff, etc.) have determined a certain current dynamics of the river, with changes in the general landscape of the valley.

Decarbonizing transport: the role of hydrogen fuel cell electric vehicles in reducing emissions

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Abstract

Climate change, air pollution and noise, among other environmental problems, are increasingly affecting human society and the natural environment. Among the main sources of greenhouse gases and pollutant emissions in the atmosphere is the transport sector. To decrease the use of fossil fuels in the transportation sector, hydrogen fuel cell electric vehicles (HFCEVs) have been proposed as a potential alternative, among others. Although not completely green, from a life-cycle perspective, HFCEVs can have a lower climate impact than conventional vehicles, depending on how the hydrogen is produced. Widespread use of renewable energy sources can significantly reduce this impact. The research results show an increase in HFCEV sales in recent years (but far below the level of battery electric vehicles), concerns for the introduction of hydrogen in all transport sectors (road, rail, sea or air), a still limited distribution of the infrastructure refueling, and high production costs. HFCEVs could contribute to the decarbonisation of transport and all efforts, including research and development, should be stepped up to support them and identify the best solutions to current challenges.



Decoding narratives and values of the Romanian industrial heritage through the lens of visual imagery

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Abstract

The analysis of historical postcards and photographs is a useful methodological tool in the interpretation of the narrative of industrial heritage.

Delta-Hub: A New Vision on River Delta Science, Education and Modelling

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Abstract

River deltas, vital ecosystems supporting hundreds of millions of people, are facing an unprecedented crisis from climate change and human pressures. Sediment loss, subsidence, sea-level rise, and mismanagement threaten their resilience, undermining biodiversity, livelihoods, and essential ecosystem services. To address these challenges, the University of Bucharest has launched DELTA-HUB (River Delta Science, Education, and Modeling Hub), a Horizon Europe ERA Chairs project that establishes a world-class center for research, training, and policy support within the Danube Delta. DELTA-HUB is built on an integrated research–education–engagement model. Informed by cutting-edge research, a core objective is to cultivate the next generation of delta specialists through a dedicated training framework for students and postdoctoral researchers. This program provides advanced skills in field technologies, remote sensing, and process-based modeling, ensuring long-term capacity for delta science and management. Equally important, DELTA-HUB aims to translate scientific findings into actionable policy and management strategies. Stakeholder engagement is central, with policy-oriented workshops and co-creation processes ensuring that science directly informs governance. A flagship output will be the Web Platform for Sustainable Delta Management, an open-access portal offering data, model results, and management scenarios tailored for decision-makers and communities. By aligning with the European Green Deal and supporting initiatives such as the proposed UN Convention on Conserving River Deltas (UNCCRD), DELTA-HUB provides a replicable model of science-informed governance. While rooted in the Danube Delta, its framework is designed to inspire collaboration across global megadeltas.

Demographic and Socio-Economic Features of the Rural Romanian Areas as Sources of Vulnerability to Extreme Weather Events Associated with Climate Change

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Abstract

This study aims to analyse the demographic and socio-economic characteristics of the Romanian rural areas as sources of their vulnerability to extreme weather events associated with climate change (i.e., duration of cold waves based on the cold excess factor, frequency of cold waves, duration of heat waves based on the heat excess factor, and maximum 24-hour precipitation). From an administrative standpoint, the Romanian rural area consists of 2,862 communes encompassing 12,958 villages, with a total population of 9,114,713 inhabitants representing 47.8% of Romania's total population. Considering the international conceptual framework of vulnerability assessments of the global environmental change community, this study is structured so that the vulnerability components to be reflected by the demographic and socio-economic features of rural space. Thus, the set of indicators was developed for a logic links between territorial features of rural areas and the sources of each vulnerability components (i.e., exposure, sensitivity, and adaptive capacity). A total of 27 statistical indicators were selected to reflect population and built environment exposure, demographic and occupational sensitivity, the sensitivity of agricultural lands and the built environment in rural areas, as well as the adaptive capacity of rural communities as indicated by the quantitative and qualitative characteristics of drinking water infrastructure, health-care and educational infrastructure, natural environment features (e.g., forest, blue and protected areas), and emergency warning and response services. The study is completed by cartographic representation showing that the southeastern part of the country record demographic and socio-economic characteristics constituting sources for their high and very high levels of vulnerability, along with certain settlements in the extreme south-western part, while an average level of vulnerability is characteristic of most localities in southern and eastern Romania, as a consequence of their socio-economic and demographic features, of course closely linked with the climatic exposure.

Depopulation and the development of periurban green areas of large cities. Lessons learned from Romania

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Abstract

The migration of the population from large urban centers to green areas in periurban areas is a characteristic phenomenon for large metropolises in Central and Eastern Europe, in the context of the accentuation of globalizing flows. Romania is a good example in this regard. The paper analyzes the impact of urban–peri-urban migration in the general context of the demographic decline in this country and the regional differentiations of the dynamics of the depopulation phenomenon. Five regional metropolises with macroterritorial polarization functions were selected as case studies: Bucharest, Cluj-Napoca, Timisoara, Iasi and Constanta. The study aims to carry out a spatio-temporal correlative analysis on the development of the peri-urban areas bordering large cities, in order to fill a gap in the scientific literature on these aspects. It attempts to explain the causes of the atypical trajectories of these localities in the general context of the demographic decline affecting the countries of Central and Eastern Europe, through a complex analysis of the interdependencies between factors, drawing attention to the fragility of these areas in terms of green infrastructure and elaborating a series of forecasts regarding integrated urban–rural development. This paper contributes to the literature on spatial planning and in particular on the post-industrial reconversion of the areas bordering large urban centers, as a result of the phenomena of depopulation and exurbanization. It can serve as a reference for the stage of development of the peri-urban areas of the capital and the main regional metropolises in Romania, cities representative of the urban development trajectories in Central and Eastern Europe.

Diatoms as a Proxy for Reconstructing Environmental Changes after the Last Glacial Maximum in High Mountain Environments: Preliminary Results

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Abstract

Alpine lake ecosystems serve as sentinels of both current and past environmental changes. Based on lake sediment samples, a combination of different types of proxies — including microbial proxies such as diatoms — is used to reconstruct past environmental conditions. Lake Bezbog, located in the Pirin Mountains, is one of the study sites within an extensive and interdisciplinary investigation of global warming following the Last Glacial Maximum in high mountain environments. A top-to-bottom sediment core was obtained from the central depression of Lake Bezbog, and high-resolution sampling was performed at 3 cm intervals. The first 30 permanent slides, prepared according to the established Battarbee method, were examined using a light microscope at 1000× magnification under oil immersion and phase contrast. The preliminary results show a progressive increase in biodiversity at both the genus and species levels. In terms of ecological groups classified by habitat type, benthic forms are dominant. Based on differences in the distribution of particular ecological groups, the first diatom assemblage zone in the sediment core was identified between 625 and 596 cm, indicating environmental changes during the deposition of this sediment interval.

Enhancement of the tourist heritage through non-formal education activities

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Abstract

This study explores the significant benefits that non-formal education (NFE) activities can bring to local tourism when involving both national and international participants. The core premise is that NFE projects—such as workshops, experiential learning trips, and cultural exchange programs—serve as powerful tools for the valorization and preservation of tourist heritage. The active involvement of participants, particularly those from diverse backgrounds, fosters a deeper appreciation for the local culture, history, and natural environment. For local tourism, this translates into several key advantages. International participants act as cultural ambassadors, promoting the destination and its unique heritage to their home networks, thus attracting a broader tourist base. Projects often equip local community members and tourism stakeholders with new skills (sustainable practices, digital storytelling, language proficiency), leading to improved service quality and innovative tourism products. NFE inherently focuses on responsible engagement, educating participants on the importance of sustainability, ethical interaction with heritage sites, and minimal environmental impact, thereby steering local tourism towards a more durable and respectful model. By attracting a niche market of educational and cultural tourists, the projects contribute to local economic growth outside of peak seasons, supporting local businesses, artisans, and providers.

This is a comparative study, as the purpose is to find out if other countries' practices and realities could work the same way in the context of Romanian tourism. The three examples of countries that organize a lot of NFE activities and international projects are Italy, Spain and Greece, world-wide known countries that have faced overtourism problems for the past few years and have been trying to implement good management strategies for solving these issues.

Evaluation of the Ecosystem Services of the Dâmbovița River in Bucharest Municipality for Sustainable Planning

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Abstract

The Dâmbovița River is a crucial natural element in the structure of Bucharest, yet it is often perceived merely as urban infrastructure rather than as a functioning ecosystem with vital ecological, economic, and social roles. The necessity of integrating natural capital and ecological principles into urban policy has become paramount, especially as Bucharest faces increasing environmental pressures from accelerated urbanization, the heat island effect, and extreme weather events exacerbated by global climate change. This study aims to evaluate the ecosystem services (ES) provided by the Dâmbovița River in its urban sector within Bucharest to generate evidence-based recommendations for sustainable urban planning and re-ecologization. The research addresses the contemporary scientific relevance of integrating the ES concept into the city's development framework, emphasizing the critical transition from purely gray infrastructure management to multifunctional green and blue infrastructure solutions. The methodology involved a rigorous approach combining empirical field observation and spatial analysis with a critical assessment of regulatory documents. Field observations utilized systematic methods, including active search, linear, visual, and auditory transects, and fixed-point observations, for the detailed identification and quantitative/qualitative analysis of local biodiversity (flora and fauna). These indicators of ecological health were crucial for directly assessing the integrity and current state of ecosystem service provision. This was supplemented by secondary documentation, specifically a critical analysis of key official urban planning documents (e.g., SIDU, PLAM, PUG) to quantify the degree of conceptual and operational integration of ecosystem services into current municipal policies.

In conclusion, despite the profoundly diminished quality of its current ecosystem services, the Dâmbovița River retains a high intrinsic and potential value for ecological and social valorization. This thesis argues for a necessary paradigm shift in urban river management. We propose concrete, high-impact measures, including ambitious re-ecologization programs, the formal designation of a metropolitan green corridor, and the mandatory implementation of nature-based solutions (NBS) in all future urban planning revisions (e.g., PUG). These interventions are essential not only to conserve remaining biodiversity and enhance ecological niches but also to secure the sustained provision of high-quality ecosystem services, which are fundamental to increasing urban resilience, public health, and the overall quality of life for the citizens of Bucharest.

Exploring Human–Environment–Climate Interactions in the Mostiștea Valley from the Neolithic to the Medieval Times

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Abstract

This study provides a paleoenvironmental framework for understanding human-environment interactions in a key region within the Lower Danube Plain, central to the flourishing Neolithic Kodjadermen-Gumelnița-Karanovo culture. Based on pollen, non-pollen palynomorphs, sedimentary charcoal, sedimentology, and archaeobotanical macro-remains data, a human paleoecological scenario covering the last 7340 years is proposed in the proximity of the Sultana tell settlement.

The first farming communities settled in the lower Mostiștea Valley region in a thermophilous wooded steppe area and a moist floodplain. Following their immediate establishment around 5350 cal BC on the lakeshore, our data show limited exploitation and change of the local environment. After 5180 cal BC, significant landscape transformation is reflected by the massive deforestation and expanding farming, caused by the Boian communities. Towards the end of the Neolithic (4300 – 3900 cal BC) an overall decrease in human pressure is evidenced, followed by a transition towards itinerant pastoralism in the subsequent period, associated with the Cernavoda North Pontic Steppe group. During the late Bronze Age (1420-1150 cal BC) and the Iron Age (1150-300 cal BC) enhanced cultivation and periodic grazing pressure are documented, while woodland remains resilient. However, progressive forest clearances resumed around 300 cal BC and intensified significantly during the Medieval period, particularly between 950 and 1575 cal AD, accompanied by extensive crop cultivation and high local and regional grazing pressure. As a result, the landscape transformed into a mosaic of cultivated fields and pastures, a pattern that has been maintained to the present day.

Exploring Possible Climate-Driven Coastal Transformations within Sensitive Arctic Deltas

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Abstract

Arctic deltaic coasts are dynamic and highly sensitive environments responding to multiple climate-related drivers. This study explores possible climate-driven coastal transformations in two representative Arctic deltaic systems - the Mackenzie (Canada) and Lena (Russia), emphasizing the interplay between shoreline retreat, sea-ice decline and fluvial discharge variability. Using multi-decadal Landsat-derived shoreline data (1984–2024), combined with sea-ice extent from the National Snow and Ice Data Center and river discharge records from the Arctic Great Rivers Observatory, we performed preliminary correlation to identify key environmental controls on coastal change. Results indicate a general intensification of coastal erosion in both regions, concurrent with declining summer sea-ice extent. Statistically significant correlations were observed between sea-ice reduction and coastal retreat in the Mackenzie Delta and adjacent wetlands ($r = 0.77-0.82$, $p < 0.05$), suggesting that sea-ice loss exposes the coastline to longer open-water seasons and enhanced wave activity. On the other hand, the Lena Delta shows weaker relationships with sea-ice, but moderate negative correlations with river discharge ($r = -0.63$), implying that sediment flux variability and hydrological control may dominate over cryospheric forcing. The implementation of the Modified Normalized Difference Water Index (MNDWI) over mobile temporal windows improves shallow-water detection and increases the robustness of multi-point correlations. Future work will integrate climate indices (NAO, AO, EA/WR), wave power and active layer thickness to further assess permafrost thaw impacts on Arctic coastal morphodynamics.

Exploring the Cinematic Influence: A Social Media Analysis of Film-Induced Tourism in Romania

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Abstract

Film-induced tourism represents a dynamic intersection between media consumption and destination development, increasingly shaping travelers' motivations, perceptions, and spatial behaviors. This study explores the influence of cinematic productions on tourism in Romania through an in-depth social media analysis. Through a quantitative content analysis conducted on Instagram and TikTok, this study examines posts tagged with location-specific hashtags to identify how filming sites in Romania are represented, perceived, and promoted within social media environments. The methodology was further complemented by an extensive review of specialized literature on the evolution of cinematic tourism, aimed at providing a theoretical framework and contextual understanding of the phenomenon. The collected data were analyzed to assess engagement levels, destination visibility, and audience reactions. The results reveal that the cinematographic industry has significantly influenced tourist motivations and generated new opportunities for local economic development. Furthermore, the findings highlight the extent to which international film productions have impacted local tourist flows. Cinematic tourism represents, for Romania's tourism industry, an emerging niche that can generate notable economic benefits while simultaneously enhancing the country's visibility and reinforcing elements of national identity at both European and international levels.

Exploring the EM-DAT database for meteorological, climatological, and hydrological disaster patterns in Europe

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Abstract

The aim of this work was to contribute at better understanding the recent patterns of meteorological, climatological and hydrological disasters in Europe by exploring the EM-DAT database for the time interval 2000-2024. We selected meteorological, climatological, and hydrological disasters at country level. We quantified: (i) the total number of disasters per type; (ii) the total number of disasters per type by country; (iii) the most important disaster per country in terms of highest number of deaths, highest number of total affected inhabitants, highest total damage. The Pettitt and Mann-Kendall non parametric tests were used to detect respectively a changing point and a linear trend in the occurrence and record of the investigated disasters. We found that heat waves were the most harmful disasters for human health in Europe, while floods were the most numerous events and affected a large number of people or were expensive in terms of costs. Yet, differences were noticed from one country to another depending on their geographical position and climate: while most of the countries in southern and eastern parts of Europe were affected especially by floods, those in the north-western part suffered damages mostly due to storms. We also found that drought and wildfires were not synchronous; another trigger should be searched for the occurrence of wildfires in Europe. Romania, as case study, recorded a decrease of these meteorological, climatological and hydrological disasters since 2000 that may be due to a better governance in this domain, to the lack of major floods as hazards in the last 15 years or to the difficulty to quantify the effects of certain hazards such as drought. Results depend on the limitations of the database especially with regards to the missing data or to the methodology of collecting data. In order to better understand multi-disasters and compound events, other case studies of hazards should be considering in spite of their less disastrous features.

Financial encouragement in tourism museums services in Brăila

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Abstract

The article analyses the role of material inducements in increasing the attractiveness, quality and competitiveness of museum tourism services in the municipality of Brăila. The paper addresses the concept of material motivation as a tool for tourist attractiveness and fulfillment, used in museum institutions to increase staff involvement, visitor satisfaction, and the overall attractiveness of cultural tourism offerings. Using a mixed methodology based on documentary analysis, direct observation, and interviews with museum staff and visitors, the study highlights the positive correlation between symbolic material incentives (magnets, diplomas awarded to visitors) and increased performance in service delivery. The results show that material stimulus for visitors, complemented by professional involvement and the valorization of employers' skills, contributes significantly to improving the tourist experience and strengthening the requirements for visiting museums in Brăila. Museums can be important institutions for regional cultural tourism and for their economies. The conclusions propose practical motivational management measures and local public policies to support the museum sector.

Flood Fatalities in Romania: A Systematic Database for Behavioral and Flood Risk Analysis (2005–2024)

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Abstract

Floods are the most frequent natural disasters causing significant human losses, injuries, as well as severe socio-economic and environmental damage. In Romania, floods account for over half of the total number of disasters recorded since 1900. They occupy 17 positions of the top 20 disasters in terms of affected people and 16 positions in terms of total damage (according to the EM-DAT database). Most damageable floods in this country are of fluvial origin (riverine), being most frequently generated by heavy rainfall, of longer or shorter duration. In last decades, amid the climate change (i.e. more intense and concentrated rainfall) and the growing human pressure on natural systems, floods seem to be more frequent and severe. They became a real challenge for flood risk management and the need for societal adaptation and resilience has become urgent. Following the methodology of the Flood Fatalities in the Euro-Mediterranean Database (FFEM-DB) project, this study developed a national database of flood fatalities in Romania for the period 2005–2024. The database documents fatal flood events, victim profiles, and behavioral patterns to better understand how individuals respond to risk situations. It also highlights instances where inadequate or delayed reactions, limited mobility, or lack of awareness contributed to loss of life. Data were collected systematically from various sources: General Inspectorate for Emergency Situations flood database, technical reports, and online newspaper archives. A spatial and temporal analysis was performed, resulting in maps and statistics on victims' demographics, locations, and death's circumstances. The standardized classification enables cross-regional comparisons and supports future prevention, education, and awareness efforts, helping both authorities and residents reduce vulnerability to flood hazards.

Flood risk assessment at urban scale. A case study from MultiCare Horizon Europe Project

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Abstract

Flood hazard and risk were assessed using hydraulic simulations and spatial analysis. Hazard maps were first produced with HEC-RAS 2D, modeling water depth and inundation extent under seven discharge return periods: 20%, 10%, 2%, 1%, 0.5%, 0.2% and 0.1%. The quantitative results showed a steady increase in flooded areas, from 208 hectares at 20% to over 700 hectares at 0.1% probability. Depth distribution varied: frequent events generated widespread shallow floods (<0.15 m), while rare scenarios significantly increased areas with depths over 0.3 m, including critical zones exceeding 0.6 m. Thus, hazard grows both in spatial coverage and severity with decreasing probability. For flood risk assessment, the city was divided into a 100 m grid, totaling 2010 cells. Each grid cell was evaluated for exposure using building and infrastructure characteristics: construction material (concrete, brick, wood), average construction year, number of floors, building footprint area, and road density. These variables were scored (1–5) based on their vulnerability to flooding and aggregated into a Flood Exposure Index. Concrete structures, newer buildings, and multi-story dwellings scored lower, while wooden, older, and single-floor buildings contributed to higher exposure. Hazard was quantified per grid cell by average flood depth and inundated area. Shallow depths (<0.15 m) and limited areas (<2000 m²) scored lowest, while deep waters (>0.6 m) and wide flooded areas (>8000 m²) scored highest. The Flood Hazard Index was then combined with exposure to calculate the Flood Risk Index for each cell. Risk maps revealed dynamic patterns across return periods. Frequent floods were dominated by very low risk zones, but as return periods increased, medium and high-risk classes expanded significantly. By the 0.1% scenario, over 700 ha were at risk, with a notable rise in medium and high categories, and critical “very high risk” hotspots emerging. These results underline the escalating threat of rare, extreme floods, emphasizing the need for differentiated urban management and evacuation planning.

Flood susceptibility estimation using randomization-based machine learning models. A case study at the Putna river basin, Romania

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Abstract

Floods represent the natural hazards that generate the most damage at the international level. A very important stage in the flood risk management activity is the mapping of areas susceptible to these hazards. In this context, in the present study, the following 3 hybrid models were applied to determine flood susceptibility in Putna river basin, Romania: Random Committee-Weights of Evidence (RC-WOE), Random SubSpace-Weights of Evidence (RSS-WOE) and Randomizable Filtered Classifier – Weights of Evidence (RFC – WOE). 14 flood predictors and 192 flood locations (divided into 70% training sample and 30% validating sample) were used as input data in the 3 models. The applied models confirmed the fact that the most important flood predictors are: slope angle, distance from rivers and elevation. At the same time, around 24% of the study area shows a high and very high susceptibility to floods. The ROC Curve method along with other statistical metrics, used to validate the applied models, showed that the accuracy of the models generally exceeded 80%, which represents a very good performance. The obtained results provide useful information for the authorities responsible for reducing the flood risk. Also, the future planning of the territory can obviously take into account the zoning of flood susceptibility.

Forest Regeneration and Carbon Dynamics in the Eastern Carpathians

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Abstract

In the context of accelerating climate change and increasing global pollution, forests represent one of the most effective natural mechanisms for maintaining the planet's carbon balance. By absorbing carbon dioxide and releasing oxygen, forest ecosystems regulate atmospheric composition and mitigate the greenhouse effect. Over the Quaternary period, forest cover in Europe evolved in close relation to climatic variations, reaching a maximum expansion between approximately 8,500 and 6,000 BP, followed by progressive reduction mainly caused by human activities. In Romania, forest distribution reflects climatic and geomorphological contrasts, with mountainous regions such as the Eastern Carpathians acting as essential carbon reservoirs and biodiversity hotspots. This study examines the impact of afforestation on carbon balance in the Eastern Carpathians, with a detailed analysis focused on the Broșteni Forest District, Suceava County. The main objectives were to evaluate the evolution of forested areas over the last decade, to quantify the contribution of afforestation to carbon sequestration and storage, and to assess forest ecosystem health under the influence of climatic and anthropogenic factors. The research employed a multidisciplinary approach combining remote sensing and GIS techniques with fractal analysis, which provided enhanced precision in characterizing forest structure and spatial dynamics. Field measurements, allometric equations, and soil analyses were used to estimate above-ground biomass and soil organic carbon stocks. The results reveal a significant expansion of forested areas in the Broșteni District, with approximately 600 hectares afforested between 2019 and 2020. Coniferous species dominate the district, covering about 91% of the total forest area (25,068.50 ha), while mixed and deciduous stands occupy 7% and 0.1%, respectively. The new afforested plots demonstrated a notable carbon sequestration potential, with an estimated annual accumulation rate of 469 tons of carbon per hectare. Additionally, soil organic carbon levels showed measurable improvement in afforested plots compared to non-forested control sites, confirming the long-term benefits of reforestation for soil health and ecosystem stability. These findings indicate that afforestation activities have transformed the area from a neutral or carbon-emitting state into an active carbon sink, contributing positively to the regional carbon balance. In conclusion, afforestation represents a vital climate change mitigation tool for mountain ecosystems of the Eastern Carpathians. Beyond enhancing carbon sequestration capacity, it improves landscape resilience, biodiversity, and ecological connectivity. The results from the Broșteni Forest District support the integration of afforestation strategies into sustainable land-use planning and forest management policies, providing a replicable model for similar mountainous environments across Romania and Central-Eastern Europe.

FOSS4G Observatory: Mapping the Open Source Geospatial Ecosystem and its Educational Potential

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Abstract

The FOSS4G Observatory aims to map the complex, dynamic and ever-expanding ecosystem of the free and open source software used in any geospatial related process, activity or field, from storage to processing to visualisation, from operational to scientific endeavours. As part of this effort, the platform is designed as a repository that functions as an extended metadata catalogue, curated by the community and a tool for metrics we think that computation, visualisation, ecosystem statistical analysis and reporting. Mapping relations between software projects, contributors and thematic areas, the platform not only provides information about the dynamics and structure of open source geospatial ecosystems, but also creates an educational space that encourages learning through discovery and autonomy. In this context, the educators and students can explore the ecosystem to: (i) identify suitable tools for a specific type of geospatial analysis, (ii) understand and trace the interdependencies between different projects, (iii) reflect on the collaborative community and (iv) learn of all facets of the open source paradigm, expanding from licensing to governance to coding practices. Thus, the FOSS4G Observatory supports modern approaches to teaching and learning (digital exploration, discovery learning, critical thinking about tools, collaboration and openness).

Because we believe that education is the key to the sustainability and further improvement of any initiative, the educational and outreach activities are an essential component within the FOSS4G Observatory. In this regard, we have prepared materials dedicated to supporting the adoption and understanding of open source in the geospatial fields, which are focused on the three main types of potential beneficiaries: developers, users (including students, educators, professors, researchers) and decision-makers. Also, through its vision and mission, the FOSS4G Observatory contributes to the Sustainable Development Goals (SDGs) by achieving: (i) SDG 4 (Quality Education) by promoting open and inclusive learning, (ii) SDG 9 (Industry, Innovation and Infrastructure) by providing a transparent and digital infrastructure and SDG17 (Partnerships for the Goals) by facilitation collaboration between academia, governmental agency, private sector and open source community.

In conclusion, through its dual role - geospatial digital infrastructure and self-direct learning environment, the FOSS4G Observatory project creates a bridge between traditional geographic education and modern geospatial technologies.

From geographical identity and wine production to tourism: exploring the potential of winescapes in Romania

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Abstract

The wine-growing landscape of a country is the expression of a complex mosaic of natural factors and anthropogenic influences. The first category is particularly related to geological and geomorphological specificities, as well as to climate, which has undergone significant changes in recent decades. The second category includes economic, technical, social, and cultural aspects. Romania possesses one of the largest vineyard areas, ranking 4th in Europe and 8th in the world, according to the International Organisation of Vine and Wine/OIV (2024). Besides its extensive wine-growing areas, and its millenary winemaking tradition, the country stands out for the diversity of its winescapes, which highlight the specificity of the terroir and represent an important resource for traditional and niche economic sectors, such as wine production and marketing, but also, more recently, wine tourism. This research aims to synthetically present the diversity, structure and main characteristics of the Romanian wine regions because the country's winescapes represent complex and unique combinations, originating in agricultural landscapes shaped by the presence of vineyards, winemaking activities, and wineries that seek to successfully combine local identity and global expertise in vineyard landscape design and wine production.

Subsequently, the elements and relationships that led to the emergence of typical winescapes for three distinct geomorphological units are discussed in selected case studies on areas where grapevine is largely recognized as one of the most important crops and winescapes play a key environmental and socio-economic role. The study reveals the fact that following the example of renowned international wine regions, Romanian winegrowers and winemakers start to understand the intricate relationship between successful viticulture and local winescape transformation into a combination of agriculture, industry and, lately, wine tourism. This suggests the importance of leveraging wine tourism in the marketing strategy of wineries and the opportunities triggered by winescape use to promote wine regions and their products on the market. Ultimately, this could be highly beneficial for rural communities, providing new significant opportunities for local development, as well as for the private winegrowers and winemakers, supplying an advantage in the framework of increasing competition and changing public tastes.

From midwife to maternity ward: cultural and medical transformations in the childbirth experience of Roma women in Romania

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Abstract

This article aims to analyze the cultural and medical evolution and transformations regarding childbirth in Roma communities in Romania from an intergenerational perspective. Through a case study conducted on four generations—great-grandmother, grandmother, mother, and author—it presents how social, economic, and institutional changes have influenced the practices, perceptions, and meanings associated with childbirth. The chosen research method is the semi-structured qualitative interview, in order to highlight subjective experiences and cultural memory. This analysis presents the transition from traditional childbirth, assisted by midwives and anchored in rituals of protection, female solidarity, and symbols of purity, to medicalized childbirth, controlled by state institutions and medical personnel. In addition to this transition, the discrepancy between medical authority and Roma women's autonomy, between empirically transmitted oral knowledge and the scientific knowledge imposed by the system, is also presented. The results show that the modernization process has brought essential benefits—safety, hygiene, lower maternal and infant mortality—but has also led to the loss of the community and spiritual dimensions of childbirth. Today, Roma women negotiate between tradition and modernity, changing motherhood as a space of cultural identity and female resilience. The article contributes to the enrichment of the literature on medicalization and ethnicity, offering a different perspective on how the experience of childbirth reflects the dynamics of the relationship between culture, gender, and modern health institutions.

Geoarchaeological approach of the prehistoric inhabitation reconstruction in the lower Danube Valley: a case study from Jijila Lake (Romania)

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Abstract

The stratigraphy of the lower reaches and floodplains store mineral sediments, organic matter, pollen, and charcoal which are important proxies for understanding the environmental evolution that directly interacts with human activity. The present study is based on a sediment core (19 m long) from the Lower Danube floodplain in NW Dobrugea. The core was carefully described and sampled for grain size, loss on ignition, magnetic susceptibility, charcoal, pollen and radiocarbon dating to reconstruct the paleoenvironmental changes in a key region for Neolithic cultures dispersal across SE Europe. The results of these combined analyses from Jijila core (placed in a lake derived from a former embayment) bring new data about the mid and late Holocene floodplain environmental changes and a new perspective regarding the first settlements emplacement in the study area. Lower Danube floodplain inhabitation is still a hotly debated subject. The archaeological findings suggest the first settlements date from the Bronze Age (La Grădini – Jijila; Brăila), whereas recent human bones dating point to an earlier inhabitation during the Mesolithic-Neolithic period (Brăilița). The newly obtained charcoal and pollen profiles on Jijila core show two intervals of higher intensity human activity, the first during the Neolithic period and the second during the mid and late Bronze Age. Both periods are highlighted with peaks in charcoal particles and pollen indicators reflecting indicative of human activity in the area.

Geography – Quo Vadis? Critical Considerations on the New High School Curriculum Framework in Romania

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Abstract

The new high school curriculum framework, approved by the Romanian Ministry of Education at the beginning of this year, significantly reduces the role of Geography within the core curriculum, provoking intense criticism. The Romanian Geographical Society (SGR), together with the leadership of geography faculties and departments from major universities across the country, as well as the Institute of Geography of the Romanian Academy, addressed an open letter to the Minister of Education, condemning as “inexplicable and regrettable” the decision of a group of “so-called experts” (among whom there was not a single geographer) to remove Geography from grades XI and XII. According to the SGR, Geography is the discipline that has lost the greatest number of hours since 1990 – paradoxically, precisely during the age of globalization, climate change, and major territorial imbalances. The statement emphasized that reducing Geography hours undermines students’ education on multiple levels: general culture and identity awareness (without geography, students lack essential reference points about their own country and the world), spatial orientation and critical thinking (experts warn that young people “risk becoming spatially illiterate, with enormous consequences for both society and the environment”), and understanding of environmental and globalization issues (a sound geographical education is indispensable for grasping the complex relationships between human activities and the planet, and for identifying sustainable development solutions). Teachers and education specialists have likewise reacted critically to this marginalization. The President of the Romanian Academy, Ioan-Aurel Pop, described the removal of Geography (together with History) from the core curriculum as “a serious injustice,” part of “a new offensive against fundamental disciplines.” In February 2025, the International Geographical Union (IGU) also warned that without Geography in schools, “future generations risk becoming spatially illiterate” — a strong indictment of the ongoing reform. On 19 February 2025, a meeting took place between the Minister of Education, Daniel David, representatives of geography faculties, the president of SGR, and delegates of the Romanian Academy. On that occasion, the Ministry’s perception of Geography began to shift. Persistent criticism from teachers and professional organizations compelled the Ministry to reconsider the reform plans. As a result, in the final version of the curriculum framework (June 2025), Geography was reinstated as part of the common core throughout all four years of high school — a partial victory that the geographical community hailed as “a success” demonstrating the effectiveness of collective advocacy. Nevertheless, the overall tone remains critical: the reduction (or attempted elimination) of Geography classes is viewed as a warning signal regarding the direction of Romanian education policy, potentially undermining the preparation of future generations in an increasingly complex global context.

Geography Curricula in the Paradigm of Global Sustainability. Teachers' Perceptions on Sustainable Development Education in Romania

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Abstract

This study explores geography teachers' perceptions of Education for Sustainable Development (ESD) within the Romanian secondary education system, framed by the broader paradigm of global sustainability. Geography, as an integrative discipline, is uniquely positioned to connect environmental, social, and economic dimensions of sustainability. The research investigates how teachers conceptualize and implement ESD principles through geography teaching, focusing on five main pedagogical dimensions: teacher training and preparedness, curricular integration, learning activities, and the development of sustainability competences. A quantitative research design was applied using a structured online survey distributed between December 2023 and February 2024 to geography teachers across Romania (N=103). The instrument included demographic questions, Likert-scale items, and open-ended prompts. Data were analyzed using IBM SPSS Statistics (v.29), through descriptive statistics, independent-samples t-tests, one-way ANOVA, Chi-square tests, and Multidimensional Scaling (MDS) to visualize clusters of teachers' perceptions. The measurement scale demonstrated good internal consistency (Cronbach's $\alpha = 0.831$). Findings indicate that teachers generally perceive geography as highly relevant for advancing ESD (M=4.81), though the actual integration of sustainability themes in curricular content remains uneven. Professional degree, participation in training programs, and teaching experience significantly influence teachers' confidence and perceived preparedness to promote sustainability competences ($p < 0.05$). Most respondents rely primarily on traditional resources and experiential approaches, emphasizing activities such as field excursions, ecological and community projects, debates, and participation in the national "Green Week" initiative. These activities are considered effective contexts for developing values, attitudes, and critical awareness related to sustainable development. Teachers' self-assessed preparedness to integrate ESD is moderate to high (M=3.85), increasing with professional advancement and participation in continuous training programs. Multivariate analyses show that professional degree, training attendance, and leadership roles are the strongest predictors of teachers' confidence and engagement in sustainability education. MDS visualization highlights that teachers mainly associate ESD with critical thinking, systemic understanding, and collective action competences, reflecting partial alignment with UNESCO's and the European GreenComp frameworks. The study concludes that, although Romanian geography teachers display a favorable attitude toward ESD, gaps persist in institutional support, teacher training, and curriculum coherence. Strengthening professional development and integrating systematic assessment mechanisms are essential steps toward transforming geography education into a catalyst for sustainable development.

Geography Education in High School: A Comparative Analysis

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Abstract

This study investigates how geography is taught to high school students in five European countries—Romania, Germany, Finland, France, and Spain. The research originated from the need to compare countries located in different parts of the continent, with varying pedagogical experiences and educational performance, as reflected in their students' results in international assessments, within the context of the current curricular reform for high school programs. Our analysis compared curricular structures (type, geographic content areas, level of integration), pedagogical recommendations, and thematic priorities, with particular attention to environmental topics, digital integration, and awareness of global issues. The findings reveal a shared emphasis on core geographic content (physical and human geography), as well as on climate change and spatial analysis using technological resources. However, significant differences emerge regarding curricular governance (centralized vs. decentralized), teaching methodologies (traditional vs. inquiry-based), the degree of interdisciplinary integration, decolonization, and teacher autonomy in relation to the curriculum. Following this analysis, Finland stands out with a student-centered geography education model focused on projects, while Romania and Spain maintain more traditional frameworks. Germany and France offer thematic and competency-based approaches, with a moderate level of innovation in teaching but a strong emphasis on local educational resources. This study could be extended by integrating other European countries, although even at this stage, several relevant conclusions can be drawn regarding: the ongoing high school curricular reform in our country, teacher training, and the need for transnational collaboration to modernize geography education in line with global challenges.

Geomorphological processes specific to the Southern Bărăgan Plain

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Abstract

Due to the weak development of the hydrographic network, the water resulting from precipitation over the surface of the plain is drained through a system of poorly developed valleys, which complement the existing basin network. When this amount of water accumulates in larger volumes, it begins to act upon the relief through geomorphological processes of varying magnitude. The morphological action of water occurs within small pre-existing valleys formed by pluvial denudation and torrential processes, leading to their continued erosion and development. Precipitation water acts upon these slopes through geomorphological processes such as pluvial denudation, diffuse and concentrated rill erosion, gully erosion and torrentiality. Under the lithological, morphographic, and morphometric conditions of this relief unit, and through their interaction with climatic factors, a pluvial relief has developed, represented by landforms with a frequency and intensity corresponding to local morphogenetic conditions. The morphogenesis of the pluvial relief is driven by precipitation water as the main modeling agent. The action of this agent depends on several factors influencing pluvial modeling processes specific to this lowland region. The landforms generated by areolar erosion within the Southern Bărăgan Plain result from surface runoff produced by precipitation, either in concentrated streams or as sheet flow. Where the topography prevents water concentration and promotes sheet flow, the surface modeling is achieved primarily through the geomorphological process of areolar erosion. The current morphodynamic evolution of the relief can only be understood in close connection with the behavior of the main climatic elements. The morphogenetic role of climate is influenced, on one hand, by the flat configuration of the plain relief, and on the other hand, by the homogeneous manifestation of climatic parameters. Field observations conducted throughout the Southern Bărăgan Plain revealed that, although a “model form” of this relief type can be typified and analyzed, there are morphological deviations caused by local factors and specific particularities.

Geomorphosites. The impact of tourist development on the mountain region

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Abstract

The diversity of relief forms derived from the mountain region is identified in most situations with the forms that represent a great interest for tourists. The presence of these geosites largely justifies the influx of tourists in certain mountain regions, especially in the alpine space, beyond the upper limit of the forest. Witnesses of erosion, glacial cirques, towers, needles, sphinxes and babes constitute a large part of the tourist heritage in the mountain space. In addition to the tourist attraction, they constitute a scientific material base of great value through the data they provide on the evolution of the territory. In recent decades, the attention of geomorphologists, geologists and tourism specialists has focused on geomorphosites. The scientific, aesthetic, cultural or tourist value contributes to the knowledge and valorization of the natural heritage of a region. The valorization of geomorphosites is achieved mainly through tourism, ecotourism activities, scientific research and cultural promotion. Local economic development, through the revitalization of economic activities and the creation of jobs are advantages that derive from the tourist promotion of geomorphosites. The pressure exerted on mountain regions through the tourist promotion of geomorphosites, at the same time brings a series of disadvantages. Anthropogenic pressure on the environment through water pollution, soil degradation and failure to respect tourist routes lead to the disruption of ecosystems. Excessive exploitation of natural heritage can lead to the loss of the authentic value of geomorphosites. Creating a sustainable ecotourism infrastructure, with properly marked routes, information points, legislation, developing integrated management plans for areas with geomorphosites and carrying out ecotourism education activities in schools and universities are some of the recommended measures for a sustainable valorization of geomorphosites. In conclusion, the application of measures for the sustainable valorization of geomorphosites can protect the fragile balance between man and nature, anthropic and natural.

Gleyic Preluvosols of the Cotmeana Plateau: Spatial Delimitation, Profile Morphology, and Land-Use Management

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Abstract

This contribution addresses the gleyic Preluvosol in the Cotmeana Plateau (Getic Plateau, Romania), focusing on its spatial occurrence, diagnostic morphology, and practical implications for agriculture and forestry. The study proposes: (i) the delimitation and mapping of gleyic Preluvosols in Cotmeana; (ii) the morphological description and physico-chemical analysis of a representative profile along a hillslope–floodplain catena; and (iii) an evaluation of agro-silvicultural risks with targeted management recommendations. The methodology combines profile pits (typical sequence Ao–AB–Bt–Go–C; Munsell colors; bluish–greenish Fe–Mn mottles interspersed with rusty–yellow oxidation spots reflecting oxido-reduction dynamics), particle-size analysis, texture and structure assessment, and pH. As reference, published agro-productive and textural characteristics are used to frame site interpretations. Expected results indicate a preferential distribution on concave positions and low slopes, where water accumulates above relatively denser/less permeable subsurface horizons; a slightly acidic reaction and medium-to-fine textures that reduce permeability during the wet season; and short operational windows due to temporary ponding and a high risk of traffic-induced compaction. The principal pedogenetic processes are gleying and pseudogleying (stagnogley), driven by shallow phreatic water, local spring influence, and episodic stagnation of meteoric water at or near the surface. In forest stands, seasonal hydromorphy constrains growth and quality, emphasizing the role of microrelief and site management. Actionable measures include shallow surface drainage aligned with flow lines, minimum tillage and organic matter inputs to stabilize structure, controlled traffic to limit compaction, grassed strips or targeted afforestation in microdepressions, and the selection of crop rotations and species tolerant to temporary water excess. Together, these findings provide an operational basis for mapping and managing gleyic Preluvosols in Cotmeana and for mitigating hydro-climatic variability impacts on productivity and stand stability.



Global Education at “Nicolae Kretzulescu” Economic College

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Abstract

Global education was and it is still a challenge nowadays. In this way the Nicolae Kretzulescu high school has been involved in Global Education and sustainable development since 2002 and has implemented many partnerships with institutions of research, education, NGOs where teachers and students have been formed within the principle of global education. As a teacher of geography, the protection of the environment was a target in all the projects and in the last years the emphasis was dedicated to the climate change (ODD 13), and also other objectives of sustainable development of the UN. Within the non-formal approach, the students gained key competence sustained by the global education which will help to be more resilient and adapted in a rapidly changing world.

Guide of Good Practices – International Day of Urban Areas

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Abstract

Education carries enormous weight, shaping every individual's life. When does it begin and end? Who should provide it, and how can we best shape the character of a young person? These are essential questions for any educator. Education starts at birth — first unconsciously within the family, then consciously at school. It is our duty as teachers to find innovative, creative methods to engage children. Every child is unique and should not be compared with others, as what works for one may not suit another. Extracurricular and co-curricular activities strengthen the bond between school and society, allowing students to apply and expand what they learn in class. This project focuses on environmental education activities that complement formal lessons, aiming to build ecological awareness and responsibility for the environment. Urbanization has profoundly transformed human life and mentality. It can be either beneficial or destructive, depending on how it is managed. We must remain optimistic and hope that humanity will find the key to reconciling with nature, through more cautious and sustainable urbanization. To raise awareness of the importance of cleaning and greening urban areas and to cultivate responsible environmental behavior among students. Teachers have the duty to guide students toward creative, practical solutions for eliminating negative environmental impacts and building eco-friendly cities that preserve modern comfort.

"I can do things you cannot, you can do things I cannot; together we can do great things." (Mother Teresa)

Heritage-Based Premium Tourism in Transylvania: Local Revitalization within the European Sustainable Tourism Framework

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Abstract

Heritage-based premium tourism represents a growing dimension of sustainable tourism development across Europe, aligning with the objectives of the European Green Deal, the EU Strategy for Sustainable Tourism, and the European Heritage Label framework. It embodies a shift from mass consumption toward meaningful, place-based experiences that integrate heritage preservation, community participation, and environmental responsibility. In Romania, and particularly in Transylvania, this approach has evolved from a niche trend into a regional model of sustainable local development. The present study investigates how premium tourism grounded in cultural and natural heritage contributes to the revitalization of rural Transylvanian communities and the consolidation of their identity within the wider European heritage landscape. The analysis focuses on traditionally restored Saxon homestays, guesthouses and heritage accommodations offering high-quality lodging, local gastronomy, and nature-based cultural activities in villages such as Viscri and Cobor.

Methodologically, the research employs a mixed-methods design combining ten semi-structured interviews with local entrepreneurs and a survey of one hundred visitors. This approach captures both the supply-side strategies promoting authenticity and sustainability and the demand-side perceptions regarding the quality and value of heritage-based experiences. Findings highlight that heritage-oriented premium tourism acts as a catalyst for local economic diversification, cultural continuity, and community empowerment, while enhancing Transylvania's visibility as an emblematic European destination rooted in authenticity. However, persistent challenges remain, including ensuring quality consistency, limiting environmental pressures, and harmonizing tourism growth with heritage protection. Overall, the study underscores that the sustainable evolution of heritage tourism in Transylvania depends on coordinated investment, innovation in experiential design, and multi-level governance involving public authorities, private actors, and local communities. Such alignment with European policy frameworks can position Transylvania as a model region for integrating cultural heritage valorization with responsible tourism development.

Historical Evolution and Future Trends of the Ialomița Riverbed Dynamics under Anthropogenic Impact and Climatic Change: Case Study of the Sector between the Confluences with the Ialomicioara and Pâscov Rivers

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Abstract

Riverbed dynamics are natural processes that are strongly driven by human and climatic factors. In the last two centuries, the anthropogenic influence and impact of climate change on European rivers has resulted in significant degradation of riverbeds. This research paper aims to determine the historical evolution (1856–2021) and future trends of the Ialomița riverbed (Romania) under the influence of anthropogenic impact and climate change. The case study is a reach of 66 km between the confluences with the Ialomicioara and Pâscov rivers. The localisation in a contact zone between the Curvature Subcarpathians and the Târgoviște Plain, the active recent tectonic uplift of the area, and the intense anthropogenic intervention gives to this river reach favourable conditions for pronounced riverbed dynamics over time. To achieve the aim of the study, we developed a complex methodology which involves the use of Geographical Information System (GIS) techniques, hierarchical cluster analysis (HCA), the Mann–Kendall test (MK), and R programming. The results indicate that the evolution of the Ialomița River aligns with the general trends observed across Europe and within Romania, characterised by a reduction in riverbed geomorphological complexity and a general transition from a braided, multi-thread into a sinuous, single-thread fluvial style. The main processes consist of channel narrowing and incision alternating with intense meandering. However, specific temporal and spatial evolution patterns were identified, mainly influenced by the increasingly anthropogenic local influences and confirmed climate changes in the study area since the second half of the 20th century. Future evolutionary trends suggest that, in the absence of river restoration interventions, the Ialomița riverbed is expected to continue degrading on a short-term horizon, following both climatic and anthropogenic signals. The findings of this study may contribute to a better understanding of recent river behaviours and serve as a valuable tool for the management of the Ialomița River.

Homelessness and Access to Health Care: A Case Study in Bucharest, Romania

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Abstract

Homelessness is a serious issue for disadvantaged groups globally, including in Romania. People without homes often suffer from poor health and higher risks of premature death due to financial struggles and limited access to healthcare. This paper explores the experiences and perceived barriers that homeless individuals encounter when accessing medical services in Bucharest, the capital city of Romania. It is a qualitative study that utilises face-to-face semi-structured interviews with both homeless individuals and representatives from various NGOs that provide social support to this population. The study aims to investigate the personal experiences and perspectives of homeless people regarding the challenges they face when seeking healthcare. The study uses an inductive-deductive approach and thematic analysis to identify barriers that homeless individuals face in accessing healthcare. The findings show that discrimination and stigmatisation from healthcare providers and negative attitudes from staff and other patients prevent this vulnerable population from receiving medical care. Negative past experiences have led to a significant distrust of the healthcare system among individuals experiencing homelessness. Fear of judgment and mistreatment can further discourage them from seeking necessary care. To address these challenges, it is crucial to develop a comprehensive strategy that raises awareness, enhances financial support, expands healthcare infrastructure, combats discrimination, and improves health literacy.

Horinca and Horile in The Life and Folklore of the People from Maramureş Region, Romania and Ukraine

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Abstract

Maramureş is a region with strong Romanian traditions, although only a third of the territory of this old "Romanian country", to be understood in the medieval sense of the term "country", is part of Romania. "Horinca" is the traditional homemade alcoholic beverage. "Horile" are very old folk songs. The people of Maramures founded Moldova, voivodeships, villages and they built churches in Galicia, in the Muncaci-Ujgorod Region, north of the Apuseni Mountains (Voivozi Region), etc. Two-thirds of the territory, belongs today to Ukraine. The traditions of Maramures, including its folklore, are common to all Romanians living on both sides of the Tisa River which is also the border. In Maramureş, you drink strong spirits, "horinca" at 55% alcohol. It is boiled (distilled) twice. It is homemade, either in the household and or in the traditional installations, "horincii". Here they drink and then beautifully sing. "Horinca" makes you sing! One can notice that the root of the words is the same (a hori/to sing, horind/singing, horinca). They drink both in joy and in sorrow. Drink, most of the time, is a reason for happiness, it loosens people's tongues (In vino veritas), makes them friendlier, removes reluctance and inhibitions, it's a pretext for a more daring behavior, for getting people closer. They drink at christenings, at the Sewing of the Wedding Flag (traditionally decorated flag used at weddings) and at the Sewing of the Wedding Tiara, at weddings, at funerals, at the tavern/bar, at the mill, in the forest, on the fields, in the sheepfold, at the fellowships, at voluntary work exchanges, "clacă", at the slaughter of the pig, when drinking with friends, drink when leaving for the army or the war, at the yearly celebrations, at social gatherings where young girls learn various skills, at dates with girls, etc. When in distress, one drinks to forget about it. There are many "hori" about the "horinca". The parties in Maramures are full of "hori" and cannot be done without "horinca".

Hydrological Analysis of the Vâlsan River at Brădetu Station

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Abstract

The paper entitled “Hydrological Assessment of the Vâlsan River at the Brădetu Monitoring Station” presents an applied scientific analysis carried out over a 12-month period (June 2024 – May 2025) in the upper course of the Vâlsan River, located in Brădetu village, Brăduleț Commune, Argeș County, Romania. The study was motivated both by the author’s local connection to the area and by the need to contribute updated hydrological and environmental data to national monitoring programs concerning mountain river systems with high ecological sensitivity. Field measurements and laboratory analyses were conducted under the guidance of Assoc. Prof. Dr. Daniel Diaconu, following a detailed research plan aimed at evaluating the physical-geographical, hydrological, and physico-chemical characteristics of the river and identifying pollution sources affecting water quality. Four monitoring sections were established along the river: at the Brădetu hydrometric station, near the SRI Hotel and Sanatorium, near the dairy factory (downstream of the protected Asprete area), and at the bridge in Brăduleț, where a sulfur spring emerges. The research applied both theoretical and practical hydrological methods, using field instruments such as graduated pipes, electric thermometers, measuring tapes, and water sampling equipment. The chemical analyses included parameters such as pH (mean value 7.5), electrical conductivity (200–300 $\mu\text{S}/\text{cm}$), and concentrations of major ions (Li^+ , Na^+ , K^+ , Ca^{2+} , Mg^{2+} , NH_4^+ , F^- , Cl^- , SO_4^{2-} , NO_3^- , NO_2^-). The results indicate that most parameters remained within acceptable environmental limits (NTPA-013), with minor fluctuations influenced by seasonal climatic variation. Minimum water depths were recorded at 0.03 m and maximum at 0.7 m, while temperatures ranged between -1.6°C in winter and 16.4°C in summer. The study also documented sources of pollution affecting the Vâlsan River, including plastic waste, oil residues, untreated wastewater discharges, and iron-based debris. These materials alter pH, oxygen concentration, and chemical balance, posing risks to the local aquatic fauna — notably to *Romanichthys valsanicola* (the “Asprete”), an endemic and critically endangered fish species unique to this river. From a physical-geographical standpoint, the Brădetu area is characterized by a combination of mixed forests, fruit orchards, and sub-Carpathian relief, with soils ranging from protosols and luvisols to eroded brown soils. The region is part of the Natura 2000 network (ROSCI0268 – Valea Vâlsanului) and classified as a Category IV protected area under IUCN criteria.

The conclusions emphasize that the hydrological stability and ecological integrity of the Vâlsan River depend on effective waste management, continuous monitoring, and increased public awareness. The findings confirm the importance of community engagement and institutional cooperation in preserving mountain river ecosystems under growing anthropogenic pressure.

IMGB – former industrial site (4th District of Bucharest). Economic analysis and urban projects suitable for reconversion

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Abstract

This analysis presents two potential urban reconversion projects for the former industrial platform IMGB, located in southern part of 4th District of Bucharest. The projects proposed highlight the opportunity for creating either a residential area composed from 3.150 apartments alongside a commercial center either an office park. The main goals of this analysis contain in identifying the socio-economic impact of these two urban projects proposed for developing the former industrial area, but also the impact on rebalancing the urban system either. This analysis has been created using cartographical method, 3D model processing (both methods used in order to visualize as good as possible how these two urban scenarios would look like on site), statistical method and case study (these last two methods have helped by providing relevant and accurate economic data in order to estimate the potential financial impact of both urban projects). After analyzing separately both urban development scenarios have been found major economic differences in terms of total amount of money collected as taxes per year and number of jobs directly generated by the potential activities. Creating another residential area alongside a new commercial center would generate approximately 83.000 euro out of collecting taxes and would create around 400 jobs. In the second scenario, building an office park similar to those which already exists in northern part of the city would generate annual taxes in amount of 4,3 million euro and at least 10.000 new directly jobs. The second urban development scenario would have an important contribution in order to reduce economic differences between southern and northern part of the city and would help to attract a large number of people to the opposite side of the capital, which would help to reach a better urban balance by reducing traffic values in northern area.

Incident meteorologist – a new concept and occupation

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Abstract

Recent emergencies, from the sudden blowup of the 2018 Camp Fire in California to the record-breaking heat-driven wildfires in Greece and Australia, have shown how quickly a blaze can escalate under extreme weather. Climate change is reshaping wildfire behavior across the globe, driving longer fire seasons, drier landscapes and erratic wind events that can transform a manageable fire into a fast-moving disaster. Traditional tools and experience are no longer enough to predict how a fire will react in a rapidly changing atmosphere. That is why on-site real-time weather intelligence has become critical to operational safety. An incident meteorologist provides localized and highly specific forecasts on air-temperature, humidity, wind shifts and atmospheric instability that can signal impending danger. Their guidance can determine whether fire crews hold their ground, change tactics or evacuate, turning raw data into life-saving decisions. This concept stands out as one of the most powerful, yet underutilized tools in wildfire management. In the United States, incident meteorologists are fully embedded within wildfire response teams. Deployed directly to the fire-line by the National Weather Service and equipped with mobile weather stations, they work side by side with operation chiefs to provide forecasts tailored to each fire's terrain and behavior. In Europe, while meteorological agencies provide valuable remote support, on-scene weather expertise is not yet embedded as a standard operational role, although deployable fire-weather specialists positioned directly within incident command, could dramatically enhance safety and decision-making. In Romania, the General Inspectorate for Emergency Situations (IGSU) uses mobile weather stations but mostly for CBRN incidents. However, in 2019, during one of the national exercises relating to wildfire disasters, IGSU tested how mobile weather stations might help predict how wildfires might spread. By using the provided on-site weather data, as well as the fuel model from the National Forestry Research and Development Institute „Marin Drăcea”, the Incident Commander received solid recommendations applied for guiding evacuation timing, resource placement, and aerial operations. By translating complex atmospheric dynamics into actionable guidance directly at the decision point, it transforms weather from a threat into an advantage. As fires grow faster and fiercer, integrating this capability is not just an innovation — it's a necessity for protecting both responders and communities.

Inside vs. Outside: distinct patterns within and around Romania's Natural Parks

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Abstract

Recent emergencies, from the sudden blowup of the 2018 Camp Fire in California to the record-breaking heat-driven wildfires in Greece and Australia, have shown how quickly a blaze can escalate under extreme weather. Climate change is reshaping wildfire behavior across the globe, driving longer fire seasons, drier landscapes and erratic wind events that can transform a manageable fire into a fast-moving disaster. Traditional tools and experience are no longer enough to predict how a fire will react in a rapidly changing atmosphere. That is why on-site real-time weather intelligence has become critical to operational safety. An incident meteorologist provides localized and highly specific forecasts on air-temperature, humidity, wind shifts and atmospheric instability that can signal impending danger. Their guidance can determine whether fire crews hold their ground, change tactics or evacuate, turning raw data into life-saving decisions. This concept stands out as one of the most powerful, yet underutilized tools in wildfire management. In the United States, incident meteorologists are fully embedded within wildfire response teams. Deployed directly to the fire-line by the National Weather Service and equipped with mobile weather stations, they work side by side with operation chiefs to provide forecasts tailored to each fire's terrain and behavior. In Europe, while meteorological agencies provide valuable remote support, on-scene weather expertise is not yet embedded as a standard operational role, although deployable fire-weather specialists positioned directly within incident command, could dramatically enhance safety and decision-making. In Romania, the General Inspectorate for Emergency Situations (IGSU) uses mobile weather stations but mostly for CBRN incidents. However, in 2019, during one of the national exercises relating to wildfire disasters, IGSU tested how mobile weather stations might help predict how wildfires might spread. By using the provided on-site weather data, as well as the fuel model from the National Forestry Research and Development Institute „Marin Drăcea”, the Incident Commander received solid recommendations applied for guiding evacuation timing, resource placement, and aerial operations. By translating complex atmospheric dynamics into actionable guidance directly at the decision point, it transforms weather from a threat into an advantage. As fires grow faster and fiercer, integrating this capability is not just an innovation — it's a necessity for protecting both responders and communities.

Integrate real-world environmental challenges into education through project-based learning (PBL). Case studies and transdisciplinary approaches

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Abstract

While reading remains a key element of all learning, modern education systems require more than just basic literacy. Nowadays students have to be equipped with essential skills such as navigating and analysing vast amounts of information, applying knowledge in a practical sense, and maintaining focus amidst constant digital distraction. Therefore, among colleges and universities, the mission statement is to educate thoughtful citizens well equipped to deal with societal needs and challenges.

The innovative pedagogical approach of PBL (project-base learning) opens up new opportunities to expose students to diverse perspectives and learning experiences by confronting real problems across the world. PBL as experiential education emphasize the development of both cognitive skills and crucial soft skills, including critical thinking, problem-solving, collaboration and communication.

Environmental challenges facing Danube River is a BIP type educational program developed by the University of Bucharest together with other four European universities based on PBL method. This program was designed as a challenge-driven educational model to engage students and faculty from various disciplines in authentic research, fostering interdisciplinary and transdisciplinary collaboration to address complex environmental issues.

Utilizing an evidence-based pedagogical approach, the course emphasized collaborative inquiry, with teachers acting as facilitators rather than traditional educators. Data collected from student reflections, interviews, and assessments of project outcomes were analysed to evaluate learning processes and skill development. Findings indicate that the challenge-driven framework significantly enhanced student engagement with environmental issues and the development of essential workforce competencies, such as problem-solving, communication, and collaboration. Additionally, it facilitated social learning across disciplinary boundaries, strengthening students' scientific identities and commitment to environmental stewardship.

Integrating Environmental Governance and Public Policy in High-Speed Rail Development: A Comparative Analysis of Romania and Spain

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Abstract

This paper examines how public policy, environmental constraints, and public consultation mechanisms shape the development of high-speed rail (HSR) infrastructure through a comparative analysis of Romania and Spain. Although both countries operate under the same European Union (EU) legal framework, their institutional trajectories differ significantly. Spain's experience illustrates a gradual shift from technocratic, centralized decision-making in the early 1990s to a more participatory and environmentally integrative governance model by the 2010s. Romania, currently in the planning stage for its first HSR projects, faces challenges of institutional fragmentation, reactive environmental assessments, and limited public participation. Using qualitative comparative policy analysis, the article explores legal frameworks, environmental integration, consultation practices, and conflict resolution mechanisms in both contexts. Spanish case studies (Madrid–Seville and Madrid–Galicia) provide a temporal perspective on governance evolution, while Romanian projects illustrate prospective challenges. The findings highlight the importance of early environmental integration, deliberative consultation, and coherent legal frameworks. Romania has a unique opportunity to adopt best practices and avoid early-stage governance shortcomings observed in Spain.

Integrating Landscape Change Detection Analysis on Orthophotos and Landsat data with data collected through a Citizen Science project in the Hérens Valais, Swiss Alps

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Abstract

The Hérens Valley is a representative mountain territory for the Swiss Alps in the Valais region, where land cover and land use features turned in less than five decades from the traditional structure dominated by grazing and mountain agriculture adapted to slope and altitude to the current state, where former isolated compact built-up areas started to be extended under the pressure of building, tourism and infrastructure developments. The study is divided in two parts. One is the mapping of the mentioned transformations, at different scales, based on multitemporal image interpretation on selected sites – orthophotos from 1946 to 2020 (from Swiss Topographic Office Swisstopo, resolution: 0.5 m), and Landsat image based change detection analysis (1985 and 2021). The second is the collection of numerous photographs through a citizen science based approach. More than 3000 photographs were collected and could be confronted with the areal information data. From the remote sensing imagery-based mapping perspective, there is a visible trend of changes mainly after the opening of the valley after the hydropower developments in the 1960s. Another aspect is the gradual abandonment of traditional land use types on terraces on mountain slopes with pastures, shrubs and forest patches. Settlements encountered two challenges depending on tourism development and on the real estate interest for the existing built-up areas, after the modernization of the road networks and the all-season valley opening in altitude. Change detection of land cover of the entire region returned interesting and sometimes contradictory results after the accuracy check of Random forest classifications of images from 1985 and 2021 of the selected nine classes of land cover. For example, forested areas slightly increased while the glaciers melting can be noticed not-directly by comparing the areas of moraine deposits and debris occurrence on the upper valley drainage areas.

Integrating National Model of Transport into High-Speed Rail Planning and Development Processes

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Abstract

This paper examines the need for high-speed rail (HSR) in Romania by analyzing its economic, social, and environmental benefits. HSR has become an important part of modern transportation in Europe, and its introduction in Romania would not only improve domestic travel but also strengthen the country's connection to the wider European transport network. A well-developed HSR system would enhance cross-border mobility, support trade, attract investment, and contribute to a more efficient and sustainable transport system. To identify the best route alternatives, this study uses the National Model of Transport, applying different scenarios based on traffic flows and demographic factors. The analysis also considers the natural terrain to ensure that proposed routes follow the most suitable geographical conditions. Beyond the clear advantage of reducing travel times between major cities, HSR could play a key role in regional development by reducing economic differences and encouraging more balanced growth across Romania. By aligning with European transport policies, the development of high-speed rail in Romania would be a major step toward modernizing infrastructure and improving the country's role in Europe's transport network.



Interdisciplinary Education: Geography at the Intersection of Nature and Society

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Abstract

My presentation is based on learning approaches that enhance this interdisciplinary potential, including project-based learning, practice, and the use of digital technologies such as GIS and remote sensing. Through these strategies, pupils and students are encouraged to perceive the world as an interconnected system rather than a collection of isolated components. Ultimately, teaching geography from an interdisciplinary perspective encourages critical thinking and provides students with the knowledge and skills necessary to address contemporary global challenges.

Land-use regression modelling implementation for seasonal pollutants variability maps in Bucharest

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Abstract

Air pollution represents one of the most pressing societal challenges, especially in major urban areas. Exposure to PM fractions (PM₁₀, PM_{2.5}, PM₁, ultrafine particles—UFP) and NO₂ has been linked to public health (especially with respiratory and cardiovascular illness), urban biodiversity (e.g., regulatory ecosystem services), and economic competitiveness (e.g., labour efficiency, city attractiveness for investments), making their spatial and temporal characterisation essential for air-quality management. To address this challenge, we developed land use regression (LUR) models, based on a statistical analysis of correlations between measured pollutant concentrations and predictor variables describing land use, traffic intensity and environmental factors using stepwise regression and buffer-based predictors. The pollutant concentrations used in the models were collected from the mobile monitoring campaign carried out in Bucharest during the warm period of 2022 and the cold period of 2023. We sourced the land use variables from CORINE Land Cover 2008. Using residential land as a proxy for household activities allowed the models to capture seasonal variations (home heating has a strong influence on winter pollution). Since the predictor variable described spatial characteristics, a random effect was used to adjust for daily variability. These models used in recent studies on air pollution mapping or impact of power plants in urban areas. The LUR model described by Talianu et al. (2025) has been adapted to run on Sentinel-2 Land Cover 2024 data. Results indicate that the models reproduced observed concentrations with high accuracy (cross-validation between models and monitoring stations, R² values between 0.60 and 0.94 depending on pollutant and season), highlighting the seasonal spatial variability of NO₂, PMs, and UFP concentrations. For example, the average concentration of UFPs in the cold season reached $29,132 \pm 4,362$ particles/cm³, compared with $21,469 \pm 3,528$ particles/cm³ in the warm season. Concentration maps consistently highlighted traffic corridors, especially the Bucharest ring road, as the dominant sources of NO₂, while residential heating and reduced atmospheric dispersion from the cold season led to more homogeneous spatial distributions of PM₁ and UFP. Overall, this work provides high-resolution LUR-based maps for NO₂, PMs, and UFP in Bucharest. The findings underscore the combined impact of traffic and household activity emissions on urban air quality and human exposure and demonstrate the value of mixed-effects regression approaches in capturing both spatial patterns and temporal variability. The findings have high relevance for supporting the efforts of Bucharest municipality to develop a vision for improving air quality.

Long-Term Trends of Sea Breeze Occurrences Along the Romanian Black Sea Coast

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Abstract

This study extends previous research on the identification of sea breeze (SB) occurrences along the Romanian Black Sea coast by applying the Sea Breeze Index (SBI) methodology developed by Simpson and Walsh. Building on earlier work conducted near Mangalia using the CERRA reanalysis, this investigation focuses on a more northern coastal point, employing the high-resolution ERA5-EMD reanalysis, which offers a 3 km horizontal grid and enhanced vertical profiling compared to the standard ERA5 (25 km). The offshore analysis point is located approximately 6 km from the coastline, minimizing land influence, while the onshore point lies about 3 km inland, ensuring optimal SB detection. The critical SBI value ($SBI_{cr} = 3.4 \text{ m}^2 \text{ s}^{-2} \text{ K}^{-1}$), previously derived for the Romanian coastline, is maintained for consistency.

The analysis covers the 1999–2025 climatological period, highlighting both the temporal and structural characteristics of the sea breeze system. The results indicate a slight decreasing trend in both the frequency and intensity of sea breeze events. Over the past 15 years, pure and embedded sea breezes have exhibited complementary behavior and when pure breezes decrease in frequency, embedded ones tend to increase. Embedded sea breezes, which are reinforced by the synoptic onshore flow, generally last longer and occur more often than those inhibited by offshore synoptic winds. This pattern may be associated with a reduced land–sea thermal contrast and a stronger synoptic influence along the coast.

Seasonally, pure SB events begin increasing in February, peak in May, and decline sharply from August onward. Embedded SBs show a secondary maximum in July and a gradual decline toward October, with the most active phase between March and September. Future work will include assessing the inland propagation of the SB cell across multiple ERA5-EMD points, its vertical evolution, and potential implications for wind energy production in the Pecineaga wind farm area, situated roughly 10 km inland.

Machine Learning-Based Mapping of Periglacial Vegetation in the Greater Caucasus

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Abstract

The retreat of glaciers in the Greater Caucasus under the influence of climate change leads to the expansion of proglacial areas and, consequently, to an increase in vegetated surfaces. Studying the distribution and dynamics of plant communities provides valuable insights into the evolution of periglacial environments. In this context, the integration of photogrammetry based on unmanned aerial systems (UAS) with machine learning classification represents a significant methodological advancement. This study focuses on the proglacial area of the Chalaati Glacier, where multispectral imagery was acquired using a DJI Mavic 3 Multispectral UAS through longitudinal grid flight missions at low altitude (20 m AGL), with 80% forward and 70% side overlap. The resulting orthomosaic, with a ground sampling resolution of approximately 3 cm, was georeferenced using ground control points (GCPs) collected via mobile GPS and refined using the Precise Point Positioning (PPP) technique. The orthomosaic, composed of four spectral bands (Green, Red, RedEdge, and NIR), was used to compute five vegetation indices (NDVI, SAVI, MSAVI, GNDVI, and NDRE). These indices were used in a supervised classification workflow, supported by training data derived from GPS-located points manually labelled through field observations and visual interpretation of the orthomosaic. Preliminary classification results indicate spatial variability in surface cover, with some types appearing more spatially clustered, and others more diffusely distributed across the landscape. These patterns may reflect different stages of ecological succession and variations in substrate stability. The proposed methodology highlights the potential of UAS-based multispectral mapping combined with machine learning approaches for detailed vegetation analysis and environmental monitoring in periglacial settings of the Greater Caucasus.

Major Floods in Romania: What Is Known About Them?

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Abstract

This study address two major issues: 1) What are the significant floods that have affected Romania since the 20th century, and 2) What information currently exists about these major floods?

In the first part, statistical and spatial analyses of major floods were conducted, highlighting their characteristics (magnitude, frequency, spatial extent, impacts/damages). These analyses are primarily based on the processing of information derived from the EM-DAT database, as well as other documentary sources. The second part focuses on the memory of floods, based both on bibliographic research and field investigations. In terms of fatalities, the most catastrophic floods appear to be those of 1926, which affected the Danube Valley (about 1000 deaths). Following these, the most severe floods in terms of fatalities are those of May 1970, July 1991, July 1975, August 2005, June 1998, and June 2006. Considering the total number of people affected, the most damaging floods were those of July 1975, May 1970, July 1997, April 2000, and September 2005. In terms of damage costs, the most devastating floods occurred in June 2010, July 2005, May 1970, August 2005, and April 2005. Some of these damageable floods impacted large areas of the country (such as those in 1970, 1975, and 2010), whereas others were more localized (e.g., in July 1991 and June 2006). Information on major floods in Romania can be found in databases (such as EM-DAT and HANZE), the scientific literature, the media, as well as through field research. In addition to data obtained from databases and the literature, this study presents certain traces and information recalling major floods that occurred in Romania, including flood marks (e.g., in Sighișoara, Cozia), monuments/ commemorative plaques (e.g. in Bisericani, Satu Mare, Tg. Mureș), documentary films, photographs identified through fieldwork and in the media. Despite the fact that Romania has been severely affected by floods over the past six decades, their memory is, however, relatively poorly preserved by material traces. Given the crucial role of flood memory in flood risk adaptation, it is necessary that, at the national level, greater attention be paid to measures aimed at developing this memory.

Mapping High School Commutes: Living in Education Deserts

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Abstract

The present paper maps “education deserts” in Romania - places where students lack reasonable access to education - and asks how spatial barriers intersect with local vulnerability. Education matters for human capital, health, and civic outcomes; where schools are distant, attainment and prospects suffer. We delineate education deserts using a 20-minute travel-time threshold to the nearest accredited high school, computed on street-network travel via GIS with open routing data. To capture more than mere proximity, we build two normalized indices: a Composite Demand Index and an Access Hardship Index. These combine into an Educational Desert Index that prioritizes places with both high need and weak access. Nationally, deserts cluster in rural and peripheral LAU2s; roughly a third of settlements fall beyond the threshold and about one in six high-school-age youth live in such areas, with especially large pockets in North-East, South, Centre, and North-West regions, and minimal exposure in Bucharest-Ilfov. Findings indicate that living in education deserts reflects not only distance but sparse school options and structural educational deprivation. We conclude that targeted transport and school-network policies such as bus service, catchment redesign, selective new dorms are essential to reduce spatial injustice and improve pathways to graduation.

Mehedinți County – Economic Transformations and Challenges

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Abstract

Mehedinți County experienced significant economic transformations between 2019 and 2023, reflected in the evolution of its main economic sectors and demographic context. A significant contribution to the county's economy came from industry and trade, which together accounted for 53% of the county's total turnover in 2019, 55% in 2021, and 48% in 2023, followed by the construction sector. Industry saw growth in the number of registered companies (from 409 in 2019 to 465 in 2023), with turnover reaching 1,153.9 million lei in 2023. Despite a temporary decline in profits and employment in 2021, the sector recovered. Key industrial firms include Combinatul de Celuloză și Hârtie SA and Șantierul Naval Orșova. The construction sector also evolved positively, with an increase in the number of firms (from 309 to 384) and turnover (from 558.5 million lei to 865.9 million lei). SC Alpha Construct Sistem SA became the leading company in the sector. Agriculture recorded modest growth, but remains underexploited due to a lack of irrigation infrastructure and an aging rural population. The value of agricultural output increased, though the crop production sector declined slightly in 2023 compared to 2021. Tourism expanded significantly in terms of accommodation capacity, particularly in agritourism guesthouses and rental apartments. Overnight stays dropped during the pandemic but recovered by 2023. Foreign trade also showed a positive trend, with growth in both exports and imports. Demographically, the county faces challenges such as declining population and increasing aging. The active and employed population decreased, although the number of employees saw a slight increase. The unemployment rate rose to 7.8% in 2023, while the average gross salary remained below the South-West Oltenia regional average. Overall, Mehedinți is undergoing a complex process of economic adaptation and development. However, persistent demographic issues—such as aging, emigration, and declining workforce—pose significant long-term challenges, requiring strategic planning and targeted investment, especially in rural infrastructure and services.

Meteorological and Seismic Drivers of Rockfall Activity Reconstructed Through Dendrogeomorphology

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Abstract

Rockfalls are frequent geomorphological hazards in mountainous regions and, due to their high mobility and low predictability, can cause significant material and human losses. Dendrogeomorphological methods provide reliable spatio-temporal reconstructions of these processes over timescales of centuries, which are highly valuable for the planning and management of mountainous areas. The present study aims to reconstruct rockfall activity using growth anomalies recorded in tree rings and to compare the dendrochronological results with available meteorological records and seismic events documented in the Făgăraș–Câmpulung seismic zone. Over the past two centuries, 1137 growth anomalies – including impact scars, traumatic resin ducts, callus tissue, compression wood, and sudden suppression of growth rings – were dated in 170 samples collected from *Picea abies* (L.), of which 928 correspond to distinct rockfall events. The results reveal the main trajectories of block falls, significant temporal variations in process activity, and diverse correlations with fluctuations in meteorological parameters, as well as the number and magnitude of seismic events.

Modelling habitat suitability and assessing landscape permeability: an integrated approach for the conservation of red list plant species

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Abstract

Context: Habitat fragmentation contributes to population isolation and threatens the survival of plant species listed on the Red List. In this context, it is essential to implement conservation measures that consider not only suitable habitats but also ecological connectivity. Although Species Distribution Models (SDMs) are valuable tools for identifying suitable habitats, integrating landscape permeability into these models can significantly enhance their utility for conservation planning.

Objectives: This study aims (1) to model the potential suitable habitat distribution for five threatened plant species in Romania and (2) to assess landscape permeability to identify priority areas for conservation and restoration.

Methodology: We applied an integrated approach combining SDM modelling (MaxEnt) and GIS analysis, using the Continuum Suitability Index (CSI) to quantify landscape permeability. The spatial overlap of the two dimensions (Habitat Suitability and Permeability) allowed the classification of areas into four functional categories for ecological interventions.

Results: A significant proportion of suitable habitat exhibits low permeability, limiting species dispersal and persistence. Areas with both high suitability and high permeability are relatively restricted and mostly located outside protected areas (PAs), highlighting the need for urgent conservation measures such as optimal grazing management, reduced fragmentation, and the maintenance of traditional agro-pastoral mosaics.

Conclusion: Integrating landscape permeability into habitat analyses provides a more realistic understanding of the ecological requirements of threatened species and supports explicit decision-making in conservation management. The study proposes a replicable methodology for other fragmented regions, with direct applications in land-use policy and biodiversity conservation.

Monitoring and managing forest fires through modern technologies in the context of climate change

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Abstract

The study aims to understand the increasing frequency and severity of forest fires, particularly in the context of climate change and human encroachment into forested areas. It emphasizes the need for effective fire management strategies and the integration of advanced technologies, such as geospatial analysis and machine learning, to identify high-risk areas. The experimental component of the study was conducted at the firefighter training center of the Bihor County Fire Inspectorate, utilizing various sensors, including the SEN5x module, to monitor critical air quality parameters that indicate fire risk. The findings highlight the importance of real-time data collection and analysis in enhancing fire detection and intervention strategies. By leveraging these innovative approaches, policymakers and fire management authorities can develop targeted measures to mitigate the impact of wildfires, ultimately contributing to more resilient ecosystems and communities.

Morphometric analysis of arete landforms in Retezat Mountains and their significance for past glaciation

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Abstract

Glacial arêtes are sharp, narrow and jagged ridges created by the erosion of valley or cirque glaciers. Their widespread presence indicates the manifestation of a glaciation of great intensity and duration that led to the intersection of opposite cirques. Starting from the existing Romanian geomorphological maps in which mountain ridges are implicitly considered glacial ridges, we propose a morphometric analysis of ridges in order to precisely identify and delimit aretes from the rest of the mountain ridges. We start from the hypothesis that glacial trimlines should not exist on the opposite slopes of an arête and where ridges have trimlines, the pre-existing planation surface has not been completely consumed by glacial exaration. In other words, the opposite cirques have not become tangent.

We used the slope criterion because slopes affected by glacial erosion present evident steep rockwalls and the ridge width criterion, because arêtes are narrow ridges. We analyze the average values obtained in test areas where the ridges are clearly arêtes and then we determined how widespread these slope and width conditions are. For the creation of the slope map, the SRTM DEM with a resolution of 30 m was used as well as the LiDar DEM with a resolution of 1 m. The study area is represented by the Retezat Mountains, the massif with the most intense and long-lasting glacial landscape in Romania. For comparison, the same parameters were extracted for several other areas of the Mont Blanc Massif. The results indicate that the extension of glacial arêtes is less than previously estimated, highlighting the lower intensity of Pleistocene glaciation even in the most glaciated massifs in Romania such as the Retezat Mountains.

Mountain running and the reconfiguration of contemporary mountain tourism in Romania

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Abstract

Mountain running has rapidly evolved in Romania, transforming from a niche athletic pursuit into a dynamic form of outdoor tourism that connects people, landscapes, and local identities. This paper explores how mountain running redefines contemporary mountain tourism by reshaping spatial practices, perceptions of place, and interactions between visitors and host communities.

Drawing on geographical and tourism perspectives, the study approaches mountain running not only as a sport but also as a form of tourism that produces new ways of experiencing and understanding mountain space. The case study exemplifies this transformation: they attract participants motivated by nature, challenge, and community, while simultaneously stimulating rural economies and promoting local heritage. Through these temporary yet recurrent gatherings, rural settlements become active tourism destinations, fostering both economic vitality and symbolic visibility.

The analysis highlights three key dimensions of this phenomenon. First, spatial — mountain running creates new itineraries of discovery, connecting lesser-known landscapes beyond traditional tourist routes. Second, social — it enhances interaction, volunteerism, and local pride, strengthening community cohesion. Third, environmental — it raises awareness of sustainability and the need to balance recreational use with conservation.

By situating the Romanian experience within broader European dynamics, the paper argues that mountain running represents a transition toward participatory and sustainable tourism practices, where sport and landscape interaction are central to visitor experience. In this sense, mountain running highlights how sport can drive destination development and strengthen the connection between tourism, community, and environment.

Old Maps as Stimuli for Tourism Interpretation and Visiting Cultural Heritage Sites

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Abstract

In the age of heritage tourism and postmodern reinterpretations of the past, old maps are more than geographical documents: they are symbolic narratives. Their content is shaped by the political, ideological, and cultural paradigms of the era in which they were created. As such, their use in tourist interpretation—especially in regions with complex and controversial histories—poses significant challenges in today’s sensitive geopolitical contexts.

How can tour guides deliver a neutral, leisure-oriented narrative while remaining faithful to historical facts about geographical territories and at the same time coping with the emotional sensitivities of their audience? This article explores this question by focusing on Southern Bukovina, a region historically marked by multi-ethnic coexistence, shifting borders, and discordant geopolitical narratives. Tourist guiding, when based on historical maps, remains a complex interpretive tool that must objectively address the content of these maps while also making complex past realities accessible and engaging for leisure audiences.

This study employed a systematic desk research method, which enabled an objective descriptive comparison of the analyzed content through extensive documentation, alongside qualitative interviews with expert tour guides affiliated with relevant institutions (e.g., history and art museums). The goal was to extract discourse elements from reference professionals by examining three old maps that served as an experimental sample, each illustrating different representations of the historical region of Bukovina.

The main results show that the way territories are represented, as well as the primary focus of each map (e.g., economic, topographic, etc.), strongly influences the information tour guides choose to convey to their audiences. The political context in which a map was produced, its cartographic style, and its toponyms—reflecting linguistic patterns—are also key elements that may affect, to varying degrees, the accuracy and objectivity of the guide’s narrative and interpretation.

Optional School Programs – A Catalyst for National Curriculum Innovation: Experiences from Ilfov County

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Abstract

In the context of educational reform and the need to adapt the national curriculum to local realities and students' interests, optional school programs are becoming essential tools for curricular innovation. This paper explores two educational initiatives developed in Ilfov County — “The Hour of Knowing” and “The Hour With and For Animals” — as examples of good practice in the design and implementation of optional curricular programs. “The Hour of Knowing” promotes critical thinking, scientific curiosity, and information literacy, offering students the opportunity to explore interdisciplinary concepts in an interactive format. “The Hour With and For Animals” builds on children's natural interest in the living world, fostering participatory learning, enhancing socio-emotional skills, and promoting empathy, responsibility, biodiversity knowledge, and respect for living beings. The analysis of these programs highlights how local initiatives can contribute to diversifying the educational offer, increasing the relevance of learning, and strengthening the connection between school and community. The paper proposes a framework for reflection on the potential of optional programs to act as vectors of innovation in the national curriculum, with an emphasis on flexibility, contextualization, and the involvement of local educational stakeholders.

Oral health and economic disparities. Study case - Oltenia South-West Development Region

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Abstract

This study explores how local labour-market conditions co-vary with the availability of dental care across municipalities in Romania's South-West Oltenia region. Using recent baseline statistics at the municipality level—covering unemployment, employment, dental workforce, and dental units—and harmonised through consistent locality codes, population-based indicators were produced to enable fair comparison between places. A first glance through the data (descriptive summaries and exploratory mapping) suggests a marked urban–rural gradient: county seats and nearby corridors tend to concentrate both jobs and dental capacity, while peripheral communes show thinner provision and, frequently, higher labour-market vulnerability. Variation within counties often exceeds differences between counties, indicating highly localised patterns. Pockets of potential mismatch—employment hubs were noted, with comparatively lean dental capacity, and lower-employment areas with limited service availability—pointing to different policy levers (workforce incentives, facility planning, or outreach/mobile services).

Planation surfaces in the Romanian Carpathians - an attempt at synthesis

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Abstract

The planation surfaces in the Carpathians are fragments, remnants of erosion plains (peneplains), formed over several million years. Later, they were caught in uplift movements and partially destroyed by erosion. The oldest surface is the so-called "Carpathian Peneplain" ("Carpathian Pediplena", after Posea et al., 1974), formed in the Paleogene. It is found in all three Carpathian branches, but at different altitudes and bearing different names, given by geographers who have mainly studied the respective regions. As a rule, this "Carpathian Pediplena" occupies a dominant position within the mountains where it exists (exceptions are the highest massifs of the Southern Carpathians and even the Rodnei Mountains, where it is dominated by the highest ridges and peaks: Retezat, Parâng, Făgăraș, Rodnei); Usually, the glacial cirques and valleys in these mountains are carved below the level of the Carpathian Pediplena (a situation especially visible in Țarcu, Godeanu, Iezer, Cindrel, Șureanu, the eastern half of Parâng). The second leveling surface in the Carpathians (in terms of altitude and age) is called, for the Meridionali, "Râu – Șes"; the collective Posea, Popescu, Ielenicz (1974) proposes, generically, the name "Middle Carpathian Surfaces" (on the grounds that, in general, they occupy a middle, intermediate position, between the Carpathian Pediplena and the Border Surface) and dates it as being of Miocene age. However, there are numerous massifs, especially in the Eastern Carpathians, where this step represents the highest relief, since in those mountains the Carpathian Pediplena does not exist, because they are younger than this one. The third leveling surface in the Carpathians bears the generic name "Carpathian Edge Surface" (Posea, Popescu, Ielenicz, 1974), since it is usually (especially in the Southern and Western Carpathians) located at the edge of the mountain edifice, being shaped in some cases by lacustrine abrasion processes; the age of this surface is estimated to be Pliocene. Apart from these three major modeling complexes, general for all the Carpathians, we can also find in some mountain massifs the so-called "valley shoulder levels" or "erosion levels" (Posea, 1997, Ielenicz, 2004); they were formed at the beginning of the Quaternary, at the transition between the period of leveling the Border Surface and the period of river terrace formation and can only be found in the massifs that rose more rapidly and intensely.

Post-Socialist Rural Technical and Industrial Heritage: Spatial Dynamics and Prospects for Sustainable Redevelopment

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Abstract

This paper investigates the transformation of socialist-era technical and industrial infrastructures in rural Romania, exploring their reinterpretation as elements of post-socialist rural heritage. It examines how former mechanisation stations, collective and state farms, storage complexes, and workshops—initially designed to modernise agriculture and rural industry—have evolved after 1989. The main objective is to understand how these remnants of a centrally planned economy can be repositioned as sustainable resources for rural resilience and territorial development within the context of post-socialist transition. The study integrates documentary research, statistical review, and spatial analysis. Archival records were combined with GIS-based mapping in ArcGIS Pro 3.5.4 to identify, localise, and classify these sites by type, functional status, and reuse potential. The integration of spatial layers on land use, accessibility, and demographic change provided a multiscale view of their distribution and economic transformation. Field visits complemented spatial data, offering a ground-level interpretation of rural industrial legacies. Findings reveal that these infrastructures form a distinct component of the rural landscape, reflecting the material memory of socialist planning and collective production. Their current trajectories diverge sharply—some have been adapted for local enterprises or storage, while others remain abandoned. Spatial analysis highlights strong regional contrasts, particularly in areas of high collectivisation intensity. The results suggest that post-socialist rural technical and industrial sites can function as strategic resources for territorial cohesion through adaptive reuse, heritage valorisation, and circular economy practices.



Practical Application and Photography in Geography Classes

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Abstract

Geography promotes the learning of useful techniques, such as: creating and interpreting graphs, diagrams, using a computer program, taking photographs that capture phenomena, processes. The practical application - geographical, represents an activity that leads to the development of skills and abilities in students, which capitalizes on theoretical knowledge, ensures active participation of students, increasing their interest in knowledge.



Practical approaches to training key European experts in the discipline of geography

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Abstract

Starting from the premise of the student-centered teaching-learning approach, we conducted an experimental research that consisted of using learning activities in middle school classes, with the aim of developing European key competences in the subject of geography, using as research methods: psychopedagogical experiment, observation, comparative method and statistical methods of data interpretation. At the same time, we identified the opinion of some teachers regarding the use of European key competences in school learning, through the questionnaire Google Forms, aiming to identify the problems encountered in carrying out learning activities according to them. As the results showed that appropriately chosen learning activities can contribute to the formation of European key competences, they indicate that they have a positive impact on learning, confirming the advantages of teaching through them. Finally, the implications derived from these findings have major implications for ensuring the quality of the instructional-educational process, in alignment with modern training, based on the formation of key competences recommended by the European Union, for sustainable learning.

Preliminary Observations on the Changing Upper Forest Limit in a Case Study Area of the Făgăraș Mountains under Climate Change

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Abstract

Treeline represents the altitude above which the forest no longer develops normally. It is influenced by both natural and human factors. As altitude increases, temperature decreases, precipitation rises and wind speed intensifies, creating less favorable conditions for forest development. However, in the context of climate change, the treeline is shifting. Our study focuses on identifying changes in the upper forest limit in the Făgăraș Mountains between 1985 and 2025 in the context of climate change. We used Landsat 5 TM and Sentinel 2 MSI satellite imagery to identify the upper forest limit for the years 1985 and 2025. Changes in vegetation elevation were correlated with climate temperature data. According to the literature, in mountainous regions, the upper forest limit is typically defined by the 10 °C isotherm of the warmest month, which represents the minimum temperature required for tree growth. In the context of climate warming, this isotherm has shifted to higher altitudes in recent years, leading to an expansion of favorable conditions for forest development. Thus, using satellite imagery and climate data, changes in the upper forest limit were identified in the context of rising temperatures.

Prioritizing urban environmental challenges according to cities' planning documents

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Abstract

Urban areas worldwide are under increasing pressure to address complex environmental challenges, some of which are common to all cities, while others are linked to specific geographical settings. International bodies have established frameworks within which cities are expected to develop policies to tackle these environmental pressures. Consequently, planning documents and strategies are intended to provide local policymakers and authorities with a roadmap designed to support stakeholders in achieving sustainable development targets. Nevertheless, the content of local plans and strategies can sometimes be more ambitious than the institutional capacity of local authorities to implement them effectively. Furthermore, environmental challenges are not always assessed in a way that is tailored to the specific urban context, making these plans and strategies volatile rather than robust instruments. Starting from this premise, we aim to investigate the Integrated Strategies for Urban Development (ISUD) for 239 Romanian urban settlements. Our objective is to extract relevant information on how the current state of the local environment is assessed, what the main development directions are, the extent to which these are linked to environmental pressures, what projects are currently being implemented in relation to environmental issues, and what objectives are set out in these documents. For this study, we calibrated the data extraction protocol and data processing using ISUDs from cities in the SV–Oltenia Development Region. Preliminary results confirm that, in several cases, the environmental challenges mentioned in these documents are generic, and the strategies fail to provide focused objectives. As these documents form part of the policy framework of Romanian cities, this lack of specificity makes achieving urban resilience and sustainability more difficult. Results such as those presented in our study should prompt experts to adopt a more targeted approach to addressing specific environmental challenges. This, in turn, would enable more efficient prioritisation of actions and budgets, thereby supporting progress towards sustainability and resilience.

Promoting the archaeological heritage of Dobrogea in education through the development of an interactive map

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Abstract

Our paper aims to highlight the ways in which the archaeological heritage of Dobrogea can be promoted and integrated into the educational field through interactive digital tools. To this end, an interactive map of the archaeological sites in the region was developed using GIS tools and the Leaflet JavaScript library, enabling the integration of geographical data and historical information in an accessible and engaging format for students. The project was incorporated into interdisciplinary educational activities designed to stimulate interest in geography, history and local heritage. To assess the educational impact of the created tool, student feedback questionnaires were administered, revealing a significant increase in engagement and motivation during the learning process. The interactive map is publicly available on the author's personal website, providing a valuable resource for teachers as well as for the general public interested in discovering Dobrogea's archaeological heritage through modern digital means.

Quality of life in the peri-urban area of a post-socialist city. Spatial dimension and local residents' perceptions

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Abstract

Recent studies on urban expansion and peri-urbanization in Central and Eastern Europe have demonstrated that, in the post-socialist era, extreme demographic and spatial growth has resulted in significant changes in the living spaces surrounding large metropolitan areas. The present paper examines the spatial dimension of quality of life in the peri-urban area of Timișoara, focusing on two of the most representative and populated areas bordering the city. The primary objective of this paper is to analyse the perceptions of residents and local actors on the quality of life in these peri-urban areas. This analysis is based on 34 semi-structured interviews conducted in the two localities in the analysed peri-urban area. The results of the study indicate that stakeholders' perceptions primarily reveal disappointment with the lack of social, economic, and cultural facilities, but also highlight the benefits of urban-periurban migration. Conversely, our spatial analysis at the case study level reveals territorial disparities between localities of a socio-economic nature between citizens and authorities, as well as socio-cultural between the two types of local communities. Peri-urban areas, which are undergoing continuous chaotic expansion and largely lack genuine spatial planning, may encounter dysfunctions and needs in terms of facilities and services. The present paper aims to contribute to a more profound theoretical understanding of contemporary geographical phenomena in the post-socialist peri-urban environment. In addition, it seeks to provide a practical starting point for future initiatives for sustainable territorial planning and integration of these areas into the metropolitan area of Timișoara. The conclusion of our study is that the peri-urban area of Timișoara is not merely a transitional space, but is increasingly becoming a centre of attraction and development that requires specific strategies, different from those of the classic urban or rural environment.

Representativeness of Meteorological Platforms – From Theory to Practice

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Abstract

The paper debates on the representativeness of meteorological platforms, an essential element in ensuring the quality of meteorological data and the comparability of measurements performed at the meteorological stations within national networks. According to the World Meteorological Organization (WMO) recommendations, the evaluation of a platform's representativeness is based on the classification of sites according to the influence of the surrounding environment on the measured meteorological parameters. The representativeness classes, numbered from 1 (best) to 5 (lowest), accurately describe the extent to which a station can be considered representative of a wider surrounding area. The paper details the methodology used to determine the classes of representativeness, which involves the analysis of in-site conditions and the vectorization of obstacles located within a 100-meter radius around the meteorological platform. The evaluation process uses modern mapping tools, particularly the QGIS 3.32 Lima software, to produce representativeness sheets and synthesis tables dedicated to the main meteorological parameters. By applying this methodology, essential information is obtained for the proper classification of meteorological platforms and for identifying natural or anthropogenic factors that may negatively influence the measurements. A high level of representativeness ensures better data quality and a more accurate interpretation of meteorological phenomena at both local and regional scales. The paper emphasizes the importance of periodic re-evaluation of meteorological platforms, recommended every five years or whenever significant environmental changes occur, in order to maintain observational accuracy and compliance with WMO standards.

Resilience to the Energy Crisis by Estimating of Hydrocarbon Prospections in the Southern Region of the Republic of Moldova

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Abstract

This paper provides a brief characterization of the hydrocarbon prospects in the southern part of the Republic of Moldova. As a result of geological mapping at a scale of 1:200,000 and special mapping at a scale of 1:500,000, carried out in the early 1950s of the 20th century, insignificant manifestations of oil and natural gas were recorded in the Silurian, Devonian-Carboniferous, Permian-Triassic, Jurassic and Neogene sedimentary formations. Taking as a premise the numerous manifestations and deposits of hydrocarbons discovered in the Sarmatian formations spread in Romania (Adjud, Matca, Frumușița, etc.), on the territory of the Republic of Moldova, in the immediate vicinity of the gas-oil zone of Northern Dobrogea, in the lower course of the Prut River, in the varieties of organogenic-detrital limestones, an oil deposit was discovered near the locality of Văleni, Cahul County (a. 1957) and two non-industrial natural gas deposits in Victorovca and Enichioi, Cantemir County (a. 1959). Hydrocarbon accumulations in the south of the Republic of Moldova are currently being exploited, with insignificant production. Hydrocarbon deposits have a local distribution and present dome-shaped layers. Methane predominates in the composition of natural gas (the concentration of heavy hydrocarbons does not exceed 1.5%, and nitrogen constitutes approximately 4%; oil is represented by the high-density fraction (0.942 g/cm³) and is distinguished by a relatively high viscosity. The discovery of these deposits and the results of hydrocarbon prospecting allowed the development of hydrocarbon prospecting works in the southern part of the Republic of Moldova using geophysical methods (seismometry, gravimetry) and the drilling of an impressive number of structural-parametric wells, with emphasis on the structures and formations within the Dobrogean foreland. Numerous manifestations of natural gas and oil have been discovered in the strata Permian-Triassic spread within the boundaries of the Aluat, Manta, Andrușica and Baimaclia sectors. In the Devonian strata, they were discovered within the Baur5ci and Aluatu sectors. Thus, in the fissured dolomites, limestones and anhydrites at depths of 2200-3000 m, several oil-saturated levels were discovered. In the Silurian formations crossed by the reference drilling "Vișnevca" bituminous limestones were discovered, and in some cores extracted from the well - capillary oil.

Revised universal soil loss equation (RUSLE) model in the Bâsca Chiojdului river basin (Subcarpathians, Romania)

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Abstract

Soil erosion is one of the most significant issues around the world. In addition to the direct harmful effect on the soil itself, which reduces agricultural productivity, soil erosion impacts socioeconomic factors and the flow of sediments in riverbeds. It is exacerbated by human activities, particularly on land use, in correlation with the current global climate change. The goal of this research is to determine the amount of eroded soil in the Bâsca Chiojdului hydrographic basin that is further transported downstream and settles in riverbeds contributing to solid flow. To achieve the goal, the RUSLE soil erosion model, widely used in the literature was implemented. The RUSLE model is widely used in studies of soil erosion around the world. It was based on the previous USLE model and takes into account five factors that influence erosion: rainfall erosivity (R), soil erodibility (K), slope length and steepness (LS), land cover and management (C), and supporting practice (P). In the current paper, the K Factor is calculated using a global database provided by the World Soil Information System and it takes into account the percentage fraction of sand, silt, clay, and organic matter in the soil. The LS Factor considers the configuration of the slopes on which the torrential runoff regime depends, and it is computed using the USPED method and a DEM with a resolution of 10 meters to improve accuracy. The R Factor represents the regime of liquid precipitation that has the capacity to displace particles of soil, and it was calculated using multi-year precipitation data for the period 1961-2000. The C Factor is estimated using NDVI calculated seasonally rather than relying on a single image date. This seasonal approach provides a more accurate representation of vegetation cover dynamics throughout the year, allowing for a detailed analysis of seasonal variations in soil loss and their direct influence on sediment transport processes. Overall, the maximum soil erosion rates reach the amount of 45 tonnes per year. The areas with the highest erosion rates in the basin have also high LS and CP factors, and overlap with deforested areas. Significant levels of erosion occur in areas with clays, marls and sandstones in the substrate.

Rip Currents along the Romanian Black Sea Coast: Analysis of Lifeguard Interventions, Public Awareness and Risk Perception

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Abstract

This study aims to analyse the level of public awareness and perception regarding rip currents, a hydrodynamic phenomenon that affects Romanian beaches and has a significant impact on human safety. The research area covers the southern Romanian coastline, between Năvodari and Vama Veche, which hosts most of the Romanian seaside resorts visited by tourists during the summer season. The aim of this research is to identify the population's level of knowledge about rip currents and the risks associated with them, by analysing behavioral patterns and search trends in social media, mass media, and data extracted from Google Trends. Data from Google Trends were analysed to assess the general public's interest in rip currents, based on several keywords covering the period 2004–2024, in order to identify long-term trends and compare them with other coastal hazards. The results indicate that public awareness has increased in the past five years, as a result of the increasing number of news reports and the involvement of researchers in the field. Using social media platforms such as Facebook, Instagram, and YouTube, posts with informational and educational purposes created by various organizations or content creators were analysed, along with their impact on users — quantified by the number of likes, shares, and comments. Informations available in mass media were used to analyse the frequency and volume of news reports related to rip currents, as well as data extraction regarding lifeguard rescues and fatalities recorded along the Romanian coast during the summer season. These reports highlight a growing level of public awareness, intended to educate and inform the population about the risks caused by these currents along the Black Sea shore. This study represents a first nationwide analysis of the public's perception about rip currents, emphasizing the critical role of authorities and researchers in public education, with the goal of reducing the number of interventions and fatalities along the Romanian seaside.

Risk phenomena induced by the synergism of fluvial dynamics and the morphometry of the river channel Buzau in upper section. Multicriterial applications

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Abstract

The complex morpho-hydrographic analysis of riverbeds relies on both sectoral studies of geomorphology and hydrology, and on synergistic, interdisciplinary approaches that highlight the interdependent relationships between water (with or without sediment load) and channel landforms. It examines erosion and sedimentation processes, as well as the resulting forms, which may enhance or mitigate flood risk. It is a multi-criteria and interdisciplinary analysis of riverbed dynamics, focusing on: the morphology of the riverbed (geomorphology); river flow (hydrology) and its driving factors; as well as the natural (geological, geomorphological, hydroclimatic, biopedogeographical) and anthropogenic (hydrotechnical works, land use, gravel extraction from the riverbed, etc.) factors that influence riverbed evolution. The case study focuses on the upper Carpathian sector of the Buzău River, within the Întorsura Buzăului Depression, and includes the following key components:

1. Diachronic analysis of the riverbed evolution in plan view (1980–2017), with emphasis on meander formation and lateral erosion;
2. Longitudinal profile analysis, evaluating river slope, local base levels, and vertical erosion;
3. Morphographic assessment of cross-sections, identifying accumulation zones and the formation of river islands;
4. Morphometric analysis of gravel deposits in the minor bed.

The geographical position of this intramontane depression, characterized by a wide lowland morphology, increases the flood risk, despite existing riverbank engineering works. The research was conducted within the framework of the Research Center for Land Degradation and Geomorphological Dynamics, using computerized tools, cartographic materials, bibliographic sources, and extensive fieldwork carried out over more than ten years.

Risks, rule-breaking, and good practices: Insights into Urban Cyclist Behaviors across Romania

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Abstract

Given the fast pace of change in the urban pattern of development and a culture that could lead to increased car usage, cycling could serve as an appropriate and sustainable mode of transportation in the city. The diffusion of participation in cycling activities may be constrained by varying urban contexts, such as the quality and availability of cycling infrastructure, the land-use mix, and the distance to main destinations. The urban environment is constantly changing; however, understanding the behavior and decision-making processes of cyclists remains essential, as this knowledge can help design context-specific cycling infrastructures and develop targeted educational interventions. This study, using the Cycling Behavior Questionnaire (CBQ) as a self-reporting tool, has two main objectives: (i) analyze the patterns of key behaviors (violations, errors, and positive behaviors) and (ii) understand how these vary according to cyclists' characteristics (age, gender). Following the recommendations of previous studies, the results of the questionnaire were evaluated using a confirmatory procedure. Using our final sample of 294 validated questionnaires completed by Romanian cyclist, an Exploratory Factor Analysis (EFA) was used to identify a clear three-factor structure. The refined model was then validated through Confirmatory Factor Analysis (CFA), and its reliability and validity were examined using consistency checks, correlations, and group comparisons. Our results show significant correlation between traffic violations and errors, indicating that cyclists who frequently report deliberate rule-breaking also tend to report more unintentional errors. At the same time, our findings suggest that younger participants may exhibit a greater tendency to make unintentional mistakes. Against this backdrop, this investigation represents a new way of approaching this issue, offers reasonable psychometric properties, validity and reliability insights, and the potential of being applied in developing and implementing new approaches to cyclist behavior across the Romanian context.

ScienceUs and the Power of Participation: Citizen Science for Adaptation to Climate Change

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Abstract

ScienceUs is a three-year European project funded under Horizon Europe, designed to foster a transnational network of citizen science initiatives focused on climate change adaptation. The project's core mission is to upscale and interconnect promising local and national citizen science projects across the EU, enabling them to contribute meaningfully to the European Green Deal and related EU missions. Citizen science—where citizens actively participate in scientific research—plays a vital role in addressing climate challenges by generating localized data, enhancing public engagement, and informing policy. The presentation points out how is considered adaptation to climate change efforts, addressing topics such as biodiversity monitoring, urban resilience, green infrastructure, public health, and environmental education. A distinctive feature of the ScienceUs project is the design of its Upscale Academy, a structured support program that guides citizen science initiatives through three progressive phases: Seed, Flourish, and Harvest. What sets this approach apart is its emphasis on strategic scaling, transnational collaboration, and policy impact. The Academy begins by identifying promising grassroots projects focused on climate change adaptation and supports them with funding, mentoring, and capacity-building. Through a competitive selection process, initiatives are evaluated not only for their scientific merit but also for their scalability, inclusivity, and alignment with EU missions. Selected projects participate in a Bootcamp that offers training in campaign design, stakeholder engagement, and open data management. In the Flourish phase, they receive tailored support to expand their networks, share best practices, and co-create solutions with actors from the quadruple helix—academia, government, industry, and civil society. This holistic and participatory model ensures that citizen-generated knowledge is not only validated but also translated into actionable strategies for climate resilience across Europe. The details about this processes will be presented during the conference.

Shoreline Dynamics Analysis Using Spectral Indices in Google Earth Engine and Reproducible Python : Case Study of Naxos Island, Greece (1990–2025)

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Abstract

The study presents a geospatial approach to the morphological analysis of the shoreline with the monitoring of spectral indices derived from multitemporal satellite images of the island of Naxos (Greece) during the period 1990-2025. The methodology is based on data processing in Google Earth Engine and on reproducible flows in Python through MiniConda. The analysis of the shoreline dynamics was analyzed based on the annual poems of the coastlines extracted from satellite images, resulting in an evolution expressed in meters per year; the spatial distribution was visualized in the form of a histogram and profile along the shoreline. The results obtained provide a quantitative analysis of existing coastal geomorphological processes. The spectral index analysis included NDVI (Normalized Difference Vegetation Index), MNDWI (Modified NDWI) and NDWI (Normalized Difference Water Index), calculated from Released Images 5, 7 and 8. The evolution of NDVI was used to assess the stability of coastal vegetation and the correlations between the indices were used to identify the interdependencies between water dynamics and vegetation cover. The two morphological and spectral components provide a complementary perspective on vulnerability in the context of climate change.

Socially vulnerable groups in Romania. Preliminary research on their vulnerabilities induced by extreme weather events associated with climate change

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Abstract

Approaching the vulnerability of socially vulnerable groups (SVG) in relation to climate change, this study aims (1) to develop a methodology for evaluate the vulnerability of SVG to extreme weather events associated with climate change; 2) to analyze the degrees of this vulnerability, by mapping the spatial characteristics of its main components, i.e., the potential exposure, sensitivity and adaptive capacity. SVGs are represented by persons who are at risk of losing their ability to meet their daily living needs, because of various circumstances/situations precisely defined by the specific national legislative framework. Vulnerability evaluation is based on an indicator-driven analysis (multi-dimensional vulnerability), aligned with the international conceptual and methodological framework of vulnerability approaches. The indicators reveal the sources of the SVG vulnerabilities (i.e., dysfunctions, insufficiency and/or disabilities in terms of financial, housing, physical and/or mental, socio-medical and occupational aspects) and the analysis focuses on the general characterization of SVG, their climatic and social exposure of SVG, sensitivity to climate change (detailed by the sources of vulnerability mentioned) and their adaptation to climate change (detailed by social and employment infrastructures and social policies). The study emphasizes (i) the necessity for case studies differentiated according to types and composition of SVG which are influenced by the interaction of historical, social, economic, political and environmental contexts, as well as by the individual and community characteristics; (ii) the overlapping and multiplication of vulnerability sources requires integrated measures to reduce the SVG vulnerability and sensitivity while enhancing their adaptive capacity; (iii) the diversity and complexity of changes at the territorial level require recovery and development pathways based on local solutions; (iv) SVG could pose an additional challenge for authorities especially as they are only a concern in the National Strategy for Social Inclusion and Poverty Reduction (2021 -2027) and the National Strategy for Employment (2021 -2027) and but not in those strategies directly or indirectly related to climate change.



Southern Carpathians rock glaciers: multiannual thermal regime and climate variations

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Abstract

Several alpine rock glaciers from Southern Carpathians were thermally investigated using digital data loggers installed in situ for continuous ground surface temperature (GST) monitoring. GST offers important indices about potential permafrost occurrence, surface offset and energy balance between ground and atmosphere throughout the year. This work analyzes the annual thermal regimes of multiple rock glaciers from Retezat and Făgăraș Mountains by focusing on i) temperature patterns in relation to snow temporal distribution especially in autumn, early winter and early summer ii) mean annual ground surface temperature (MAGST); iii) snow free period length and associated mean temperatures; iv) ground freezing index and v) climate variability and its impact on rock glaciers GST.

Spatial-temporal trends of air pollution in Romania

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Abstract

This study analyzes the spatio-temporal dynamics of nine major air pollutants in Romania — NO_x, SO_x, CO, NMVOC, NH₃, BC, PM_{2.5}, PM_c, and PM₁₀ — over the period 1990–2022, using a multi-scale geospatial framework based on high-resolution EMEP data (0.1°×0.1°). Annual emission trends were identified through the non-parametric Mann–Kendall test and the Sen’s slope estimator, applied at a 95% confidence level. The analysis was performed across several administrative levels (NUTS 1–3), providing an integrated overview of regional and national air pollution dynamics. The results reveal a consistent and statistically significant decrease in classical pollutants, especially SO_x (–10.24 Mg yr^{–1}) and NO_x (–4.76 Mg yr^{–1}), probably due to industrial restructuring, improved energy efficiency, and the transition toward cleaner energy sources. CO and NMVOC exhibit moderate decreasing trends, possibly as a result of modernized combustion technologies and reduced solid fuel use, while NH₃ remains nearly stable, likely influenced by agricultural intensity and fertilizer management practices. Conversely, carbonaceous and particulate pollutants (BC, PM_{2.5}, and PM₁₀) show persistent increases, probably driven by residential heating and vehicular traffic, particularly in southern and eastern Romania. Overall, the findings suggest Romania’s ongoing transition from an industrially concentrated emission model to a mixed urban–residential pattern, providing a robust scientific basis for the development of integrated national strategies to reduce air pollution and protect public health.



Spatio-Temporal Distribution of Hail Events in Romania (2005–2024)

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Abstract

Hailstorms represent one of the most damaging convective phenomena in Romania, with significant socio-economic and environmental impacts. This study investigates the spatio-temporal distribution of hail events recorded between 2005 and 2024, using a dataset compiled from media reports, eyewitness accounts, and local documentation. The analysis integrates both temporal frequency patterns and spatial clustering. Results indicate a marked concentration of hail events in the central, western and northern counties, particularly along the Carpathian foothills, where orographic and convective factors enhance storm development. Seasonal analysis reveals a clear dominance of occurrences during late spring and summer, with interannual variability linked to broader atmospheric circulation patterns. The findings contribute to a better understanding of hail hazard dynamics in Romania and support the development of more efficient risk mitigation and early warning strategies in the context of increasing climatic variability.

Summer air-temperature anomalies at the Bucharest Băneasa meteorological station over 1990-2020: value variations and trends

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Abstract

This study explores on the variations and trends of daily maximum air-temperatures during the summer seasons from 1990 to 2020 at the Bucharest Baneasa meteorological station. It also shows their probable evolution over the next 30 and 60 years. Bucharest Baneasa station, established in 1929, is part of the National Meteorological Administration's network, being located in the Romanian Plain (specifically in the Bucharest Plain), at an altitude of 90 m. The station is lying in the northern part of the capital city, at 44° 30' North latitude and 26° 08' East longitude. During the reference period, the highest summer air-temperature value was 42.2°C (5 July 2000), and the lowest reached 16.1°C (2 June 2020). The daily maximum air- temperatures are increasing, showing a positive warming trend. This trend is statistically significant for June while July and August show marginal but constant warming. By 2050, summer air-temperatures at Bucharest Băneasa station are projected to be 1-2 °C warmer than now and by 2080, the average summer temperatures may be 3-5°C higher than at present, with persistent positive anomalies, especially in June. In summary, over the next 30 - 60 years, the trend remains distinctly upward and statistically significant, indicating an ongoing summer warming process. June will experience the fastest air-temperature increases. This trend will drive hotter, longer summers and frequent heatwaves, marking a stable progression toward visible climate changes.

Sustainable tourism: the balance between nature and the need for escape. Case study: Vâlcea spa resorts

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Abstract

In an epoch where global mobility is more accessible than ever, sustainable tourism is becoming a necessity, not just a choice. Between the desire for escape and responsibility towards nature, travelers are invited to rediscover the world with respect and care.

The Spa tourism in Romania has a rich history, being built on natural resources such as mineral waters, therapeutic muds and favorable climate. In the current context, marked by climate change, economic pressures and the need to preserve natural heritage, sustainable tourism is becoming an essential direction for spa resorts.

The article explores the current state of sustainable tourism in these resorts, the challenges and opportunities, as well as examples of good practices. It also analyzes how the principles of sustainable tourism are applied in the spa resorts in Vâlcea County, with an emphasis on the conservation of natural resources, the involvement of local communities and the adaptation of tourism infrastructure to ecological requirements. The study highlights the therapeutic potential of the mineral waters and the specific climate of the area, but also the challenges encountered in the transition process towards responsible tourism: outdated infrastructure, lack of a coherent strategy and economic pressures.

The article analyzes the applicability of sustainable tourism principles in spa resorts in Vâlcea County, with a focus on the interaction between the exploitation of natural resources and tourists' need for escape. The case study includes resorts such as Băile Olănești, Călimănești-Căciulata and Băile Govora, highlighting the therapeutic potential of mineral waters, but also the challenges related to outdated infrastructure, economic pressures and the lack of a coherent sustainable development strategy. Through an interdisciplinary approach, the research emphasizes the importance of ecological investments, the involvement of local communities and the promotion of responsible tourism. The conclusions highlight the fact that the Vâlcea spa resorts can become models of sustainable tourism, if integrated public policies are adopted and natural and cultural resources are intelligently exploited.

SWOT analysis of early warning message distribution channels for flash floods

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Abstract

Climate change is producing more and more dangerous hydrological events. Early warning systems for flash floods are very good for informing the potentially affected population. This paper addresses the use of 3 channels for distributing flash flood warnings (SMS, websites, social media networks). These dissemination methods are applied to SWOT analysis (Strengths, Weaknesses, Opportunities, Threats). The SWOT analysis highlighted the fact that social media networks, in some cases, could be more complete in terms of transmitting hydrological warnings for immediate phenomena. Therefore, a collaboration between social media networks (Facebook, TikTok, Instagram) and institutions issuing hydrological warnings could be considered. An efficient dissemination of hydrological warnings can save property and human lives. That is why institutions issuing hydrological warnings collaborate with other institutions to make this action possible.

Synoptic contexts determining extreme minimum air-temperatures in Romania. Case study: 18-22 february 1985

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Abstract

In Romania, the minimum air-temperatures go often to extreme values (Ilea & Ionac, 2022) and they have great variability in time and space. When and how the lowest daily minimum air-temperatures have usually occurred at 43 selected weather stations in Romania, during the 1980-2015 period, greatly depend on synoptic conditions and local topography.

A good example in this respect is the 18 - 22 February 1985 episode, when 18 minimum record-breaking values occurred (41.9%) out of all the 43 extreme minimum air-temperature values recorded throughout the country. Most of the respective temperatures occurred in lowland areas: Maramureş, Dobrogea, Eastern Muntenia and Southern Moldova. Over the entire country, the influence of an anticyclone brought strong atmospheric stability and air-temperature inversions. In the middle troposphere (500 hPa), a very cold air mass was lying over Romania. Thus, the high-pressure ridge on the ground level combined with the high-altitude cold advection, thus producing some of the lowest minimum air-temperatures recorded in Romania (-35.5°C, at Vf. Omu W.S.; -33°C, at Bistriţa W.S.; or -30.4°C, at Ceahlău-Toaca W.S.).

The synoptic context on February 1985 was best reflected by maps of temperature and atmospheric pressure distribution at ground level (2 m), as well as by maps of temperature and geopotential at different heights in the troposphere (850 hPa and 500 hPa), extracted from the GFS global area model archive, alongside with the distribution map of snow depth on Romania's territory, from the ECMWF global model archives.

Moreover, comparative analyses were carried out between two-paired neighboring weather stations (one being located in the high mountain area and the other one, on the bottom of a depression area) in order to confirm the existence of a powerful air-temperature inversion. This proves that, on certain synoptic contexts combined with the local conditions, very low daily minimum air-temperatures usually occur on the bottom of depression areas and not on mountain tops.

Technology Stacking as Economic and Spatial Development

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Abstract

We elaborate on the concept of “technology stacking”, which refers to layering new technologies on top of existing ones. Two cases illustrate how technological stacking functions depending on the type of urban infrastructure available during technological development. The first case discusses how cryptocurrency mining facilities have sprouted in multiple decommissioned production plants and mines in the US. The second case explores the implementation of Internet cables in post-communist Romania where, despite a lack of traditional infrastructural support, Internet connection developed rapidly across urban centers. The findings suggest that two mechanisms are at play: unforeseen stacking which happens when new technologies replace old, embedded technologies producing consequences that are not factored in the development of these technologies, and virtual stacking – the reliance on non-technological infrastructure to create the conditions for distributions of new technologies. By developing the concept of technology stacking, we offer a renewed view of spatio-temporal development of new technologies and how they are affected by the built environment and by the ecology of actors governing these spaces.

The assessment of post fire land recovery using GEE in Romania

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Abstract

Fires have become an increasingly frequent and destructive phenomenon across Europe, including Romania, affecting ecosystems, soil structure, and land productivity. Understanding the post-fire recovery dynamics is crucial for developing effective land management and restoration strategies. This study aims to assess land recovery after uncontrolled fires events in Romania by integrating satellite-based land cover classification with official fire occurrence data, using the Google Earth Engine (GEE) cloud platform.

The methodology combines Sentinel-2 multispectral imagery for high-resolution land cover mapping with Copernicus Emergency Management Service (EFFIS) datasets, which provide spatially explicit information about burned areas and fire perimeters. Sentinel-2 images will be classified before and after major fire events to extract detailed land cover categories (e.g., forest, shrubland, grassland, cropland, bare soil) and quantify the degree of change. Temporal analyses will be conducted to estimate vegetation recovery rates using spectral indices such as NDVI and NBR, allowing the identification of areas with slow or incomplete regeneration.

In addition to satellite data, efforts will be made to collaborate with the Romanian General Inspectorate for Emergency Situations (IGSU) to obtain ground-based fire reports and damage assessments, which can serve as reference data for validation and calibration. The integration of field data will help evaluate the accuracy of satellite-derived burned area and recovery maps and provide insights into the spatial heterogeneity of fire impacts.

The expected outcome is a national-scale assessment of post-fire recovery patterns, highlighting regions with recurrent fires and delayed ecological regeneration.



The city of Constantine moves towards an ambitious project for the future combining environment and economy

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Abstract

Constantine is a city that is over 2,500 years old and has seen many civilisations come and go, each leaving their mark on its urban planning and architecture. It is a city that is functionally and administratively an important regional centre and has undergone urban transformations and expansion in several stages. The last decade has also been important for the city in terms of the creation and management of satellite towns, which have alleviated its demographic burden and pressure on services.

Today, an ambitious project to modernise and update this city with its rich historical past will change its architectural, urban and functional face through the implementation of gigantic and modern architectural designs, as well as a project to develop urban transport and pedestrian safety in the city centre, which will reinforce its tourist and historical status.



The climate of Transylvania in the 17th century

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Abstract

The study aims to reconstruct the climatic variability and its social impact in 17th-century Transylvania, a period marked by the Little Ice Age and the Maunder Minimum. Using over 900 historical testimonies from chronicles, registers, and books, correlated with natural proxy data, the research identifies a dominance of extremely cold winters, excessive precipitation, and frequent natural risk phenomena. The results confirm the significant influence of reduced solar activity and atmospheric circulation patterns on the region's colder and wetter climate, emphasizing the close link between environmental stress and societal vulnerability during this period.

The community's perception of cultural heritage and assets of cultural identity in the Municipality of Buzău

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Abstract

Awareness of the values of cultural heritage among the local population has become increasingly important since the second half of the 20th century. From the perspective of territorial planning, actions to valorize cultural heritage are based on the principles of sustainable development, also ensuring the consultation of residents. Thus, the planning process has highlighted the strategic role of participatory planning in the preservation and appropriate valorization of cultural heritage assets. The aim of the study is to analyze the local population's perception of historical buildings in terms of their level of knowledge and appreciation, as well as from the perspective of identifying optimal ways of reuse.

Various methods were used to develop the study: analysis of specialized literature, the application of a questionnaire to the resident population to identify their perception of the local cultural heritage, and the cartographic method. The questionnaire was applied to a sample of 162 residents of the city of Buzău. The structure of the questionnaire includes both closed and open-ended questions (assessing the state of conservation and proposals for the use of the cultural heritage) to identify ways to valorize it according to the perspective of the local population.

The municipality of Buzău was selected as the case study because it encompasses various types of cultural heritage buildings characterized by historical and architectural value. In the central area, the city of Buzău presents a historic urban fabric in which cultural heritage buildings serve as witnesses to historical and economic evolution, representative of its cultural and tourist image. The results of the study reflect the community's identification with local cultural heritage and concern for the restoration of cultural assets. The heritage buildings selected by the community are representative of local culture and play a significant role in creating the tourist image of the city of Buzău. The findings are particularly important in the territorial planning process for the development of measures focused on the conservation and sustainable valorization of cultural heritage.

The consequences of natural hazards on urban vulnerability; case study: Orșova municipality

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Abstract

The analysis of extreme phenomena in urban territorial systems considers the interaction between social and natural subsystems within limited but clearly defined geographic spaces. The extreme manifestations of the natural phenomena such as: powerful earthquakes, slides, crashes, floods, draught and others, can have a direct influence upon the life of every person and upon the entire community. Due to the global warming climate, felt, especially in the last decade, it has been noticed a growth in the frequency of the extreme climate phenomena and in their intensity. Among these, the most frequent are the draught and the high amount of rainfall that cause great floods. The two examples that are been treated in this research, the draught and the high amount of rainfall are particularly eloquent because if they occur simultaneously, they can have an impact on the entire environment, triggering great damages. What makes the urban area particular is the active presence of the anthropic factor which, through its activities, building density, etc., increases the vulnerability of certain components, including the population.

The European Christmas Markets, a sustainable brand for a city? **Case study: The City of Craiova (2020-2024)**

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Abstract

The study “The European Christmas Markets, a sustainable brand for a city? Case study: The City of Craiova (2020-2024)” explores the historical evolution of Christmas markets across Europe and examines how these seasonal events have transformed in recent years into a genuine entertainment industry, with a specific focus on the Craiova Christmas Market. Originating in the early Middle Ages for economic purposes, Christmas markets emerged as food merchants—facing reduced sales during winter—began offering their products near churches where locals gathered for Christmas services. Over time, butchers were joined by pastry chefs, confectioners, toy makers, and ornament producers. Local authorities supported and regulated these markets, designating venues, dates, and the types of goods that could be sold. Visitors from neighboring areas soon joined the locals, boosting revenues and transforming these markets into significant community events. By the late 19th century, in the Germanic regions—considered the birthplace of Christmas markets and the Christmas tree tradition—the number of markets grew substantially, along with the duration of their operation. During the following century, the introduction of illuminated decorations, festive music, and the characteristic scents of mulled wine and gingerbread helped establish the distinctive “Christmas atmosphere,” now widely commercialized. A Christmas market can serve as a tool for urban branding, combining cultural heritage, tourism, and economic activity to shape a city’s identity. Through distinctive visuals, festive atmospheres, and engaging experiences, such markets contribute to the city’s image and recognition. Examples like Strasbourg, Vienna, and Nuremberg illustrate how thematic consistency, quality organization, and media promotion can transform a seasonal event into a long-lasting urban brand, reflecting local culture while attracting visitors and enhancing the city’s visibility at a national and international level. In Craiova, the Christmas Market has become a defining feature of the city’s winter season.

The fluctuations of winter wheat yields determined by thermal conditions. Case study: Continental Dobrogea (Romania), 1991–2023

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Abstract

Climate change is described as alterations in the Earth's climatic patterns, including changes in average temperatures, sea and ocean levels, recorded precipitation amounts, as well as in the frequency and intensity of extreme weather events. In the case of winter wheat crops, climatic variability may have a negative impact due to air temperature fluctuations. Moreover, oscillations in air temperature over time can influence the sowing date of winter wheat, which may lead to reduced yields and the occurrence of diseases (such as *Puccinia graminis*) and pests affecting the crop. Thermal resources play a significant role in determining the duration of the growing period, the sowing period, the plant's physiological processes, and, ultimately, the final yield obtained at the end of the growing season. The analysis aims to evaluate winter wheat yields in correlation with the available thermal resources in Continental Dobrogea, for the period 1991–2023. Located in the south-eastern part of Romania, Continental Dobrogea is a region recognized for its economic importance in agriculture, with a large proportion of its area consisting of arable land. In this study, data on average yield per hectare, processed by the National Institute of Statistics, were used, along with monthly meteorological data on air temperature and agrometeorological data (spring index) from six meteorological stations considered representative for the study area. These stations, belonging to the National Meteorological Administration, are: Adamclisi (158 m), Constanța (13 m), Corugea (219 m), Mangalia (6 m), Medgidia (70 m), and Tulcea (4 m), covering the period 1991–2023. The results demonstrated a significant influence of the thermal regime on the evolution of the phenological phases of winter wheat in the analyzed area, with agricultural yields ranging from 296 kg/ha (2003) to 5,133 kg/ha (2018) during the study period. From a meteorological perspective, 2003 was considered one of the driest years recorded in the 2001–2010 decade, while 2018 was characterized as a normal year in terms of both precipitation and temperature conditions. Understanding the thermal requirements of winter wheat crops provides farmers with the opportunity to optimize agricultural practices and maximize crop productivity.

The Heritage Paradox: When Tourism Turns the Idyllic into the Mercantile in Rural Transylvania

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Abstract

Heritage tourism is increasingly positioned as a strategy for revitalizing rural communities, particularly in post-socialist Europe, where structural transformations have eroded traditional livelihoods. Yet, its outcomes reveal a paradox: the same processes that preserve cultural landscapes often commodify them, converting living traditions into marketable symbols. This paper investigates this heritage paradox through an in-depth study of Viscri, a UNESCO-listed village in Transylvania, Romania. Combining demographic and occupational data (2002–2022) with 40 semi-structured interviews, field observations, and local records, the study examines how tourism-driven heritage valorization reshapes socio-economic structures, and identity narratives. The results indicate a profound restructuring of livelihoods, with a marked decline in subsistence agriculture and the emergence of micro-entrepreneurial activities related to accommodation, crafts, and gastronomy. These changes, while improving local incomes and infrastructures, have also increased external ownership, and redefined authenticity as a performative resource negotiated among residents, entrepreneurs, and visitors. Local voices oscillate between pride and fatigue, between preservation and loss. By conceptualizing the heritage paradox as a dynamic interplay between conservation and commodification, this study contributes to global debates on authenticity, sustainable rural transformation, and community resilience, offering an empirically grounded model of heritage tourism's ambivalent consequences in post-socialist contexts.

The impact of climate change on the urban transport sector in the Prahova Corridor

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Abstract

The study addresses one of the priority sector areas from the perspective of climate change with particular relevance for the investigated area, namely transports. This is because the Prahova's Corridor appears as an important circulation axis within the Romanian Carpathians, and the transport sector is a significant generator of greenhouse gas emissions. Among the major climate change risks in the transport sector are high temperatures and more frequent heat waves, which can cause problems for road and rail infrastructure. Since the four cities in the Prahova's Corridor - Predeal, Azuga, Bușteni and Sinaia - are quasi-united, the impact of these climate indicators on the urban transport sector can be significant in the context of the expansion of urbanization in the territory, correlated with the transport infrastructure (road, rail), which is expected to be intensely affected by extreme weather phenomena. In this context, in order to have a clearer picture of the frequency and duration of heat stress with negative effects on urban and transport systems, we analyzed the changes in the parameters of the two climate indicators mentioned above, for two distinct periods: 1961-1990 and 1991-2013 from 5 meteorological stations on the territory of the Prahova's Corridor and its surrounding region (Câmpina, Sinaia, Predeal, Vârfu Omu and Brașov), from which it emerged that their values increased significantly, especially in the last period of the analyzed interval, which requires a series of actions to adapt this sector to the climate change.

The impact of GIS applications in the management of municipal networks.

Case study: CET Progresu

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Abstract

Once with the development of cities, the problem of supplying localities with water, gas, heating or electricity as efficiently as possible, appeared. For this purpose, the best methods of designing and space representing municipal networks were sought, so that the design could be done as correctly as possible in the shortest possible time. GIS applications have become increasingly common and for as many purposes as possible, not only for the purpose of spatially rendering municipal networks, but also for the most beneficial and correct management of municipal networks on the ground. GIS can also be used in various simulations to observe and analyze the impact of introducing a new consumer into a municipal network. The main reason is that consumers can have an insignificant impact on the system, or they can have a major influence on the functioning of that system, no matter if the consumer is a domestic or industrial one.

Some examples in this regard are:

- introduction of a district heating system in a city - this system requires a high consumption of water and gas for its proper functioning;
- introduction of centralized water and gas supply within a locality.

There are situations in which if the water or gas requirement is very high, it is necessary to act even by oversizing a pipe. This can be simulated very easily and quickly with the help of GIS programs. Another application of GIS is the creation of simulations that can show how much or what areas can be affected in the event of damage or pipe replacements, so that the spatial or temporary impact is as low as possible. The situation at CET Progresu is the best example in this regard, this CET does not operate throughout the year. When CET Progresu is out of service, the heat supply to the consumers served by it is mostly taken over by CET Sud. GIS programs can have very diverse applications, this being very useful in the complex management of water, district heating, gas or electricity networks. Also, the use of GIS programs can lead to obtaining accurate and fast results at very low costs compared to classic methods.

The importance of instability indices in forecasting convective phenomena in the area of Henri Coandă International Airport, Bucharest

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Abstract

Atmospheric instability represents a key factor in the initiation and development of convective storms. Understanding the thermodynamic structure of the atmosphere is therefore essential in studying the phenomena associated with convective activity. Various atmospheric instability indices are used to characterize these conditions; they are derived either from radiosonde data or from vertical atmospheric profiles, generated by numerical weather prediction models. On atmosphere soundings, instability indices appear as numerical values calculated from several parameters such as air temperature, humidity, and wind speed (Ravi et al., 1999).

To identify the favourable conditions for the occurrence of convective phenomena in the area of Henri Coandă International Airport (Bucharest), this study analyses four main instability indices: CAPE (Convective Available Potential Energy), KI (K-index), TT (Total Totals Index), and CIN (Convective Inhibition), at 00:00, 06:00, 12:00, and 18:00 UTC. The analysis focuses on the time intervals of the day when convective events are most likely to occur. Provided that Henri Coandă International Airport is Romania's busiest air traffic hub, handling millions of passengers and thousands of flight operations annually, the proper understanding and accurate forecasting of convective activity is of critical operational importance. Thunderstorms, hail, wind shear, and turbulence can significantly impact flight safety, schedules and air traffic management.

Therefore, this type of analysis not only improves short-term weather forecasting in the airport area but also supports strategic decision-making for air traffic control, flight planning, and ground operations. By anticipating convective events more accurately, the aviation sector can minimize disruptions, enhance passenger safety, and optimize operational efficiency during severe weather conditions.



The Istro-Pontic Harbours: Places of Interference of Cultures and Civilizations over the Millennia

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Abstract

The "Port cities in the Danube-Pontic region" project was assumed by The Institute for Advanced Studies in Levant Culture and Civilization as a documentation and research project to capture and highlight the vocation of the ports in the Danube-Pontic area as places of interaction and cultural-civilizational synthesis throughout the millennia in the extended space of the Levant. Equally, this project also aims to develop a specific dimension of cultural diplomacy, trying to establish itself as a solid support for the initiation and development of other programs and projects aimed at increasing cultural cohesion and identity at a regional level through the involvement of the academic and research environment from the riparian states, but also from those that have played an important role in the historical evolution of the region, the development of common cultural and educational policies, increasing the level of responsibility of the social and cultural factors involved in the valorization of the regional heritage, all this in the spirit of reaching the parameters of sustainable socioeconomic development.

The Izvorul Dorului River Basin – A Study in Applied Geomorphology

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Abstract

The present study aims to analyze the geomorphological characteristics and dynamic processes shaping the Izvorul Dorului River Basin, located in the central-southern part of the Bucegi Mountains, within the Southern Carpathians. The research combines field observations with digital methods to provide an integrated understanding of relief evolution and human impact on the natural environment. The main objectives include the identification and classification of landforms, the assessment of morphometric parameters, and the examination of active geomorphological processes such as erosion, landslides, torrentiality, and slope instability. Modern spatial analysis was carried out using QGIS 3.40.0, based on a Digital Elevation Model (SRTM, 30 m resolution) and vector data representing hydrography, slope, and land use. Field surveys were used to validate digital interpretations and to map geomorphological features through GPS and remote sensing data. Results show that the Izvorul Dorului Basin is a structurally complex area, developed mainly on conglomerates and sandstones belonging to the Bucegi formation. The relief is characterized by steep slopes, structural cuestas, and narrow valleys of V-shaped profile, highlighting intense erosion and active morphodynamic processes. Climatic and lithological factors play a decisive role in the distribution of geomorphological units, while anthropogenic interventions—such as ski infrastructure, forest clearing, and tourist facilities—accelerate slope instability and modify the natural drainage system. The study emphasizes the importance of geomorphological mapping as a fundamental tool in applied geomorphology, supporting the sustainable management of mountain environments. Integrating GIS-based spatial analysis with field observations provides a solid methodological framework for assessing current dynamics and predicting future evolution trends of the basin. The Izvorul Dorului Basin stands as a representative case for applied geomorphological studies in the Carpathian region, where the interaction between natural and human-induced processes continuously reshapes the landscape.

The probability of sub-hourly precipitation extremes' occurrence in Romania by means of Gumbel distribution

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Abstract

Sub-hourly precipitation extremes represent a critical aspect of climate variability, particularly in regions prone to convective storms. This study analyzes the probability for extremely high precipitation amounts to occur in very short periods of time (e.g. 5, 10, 20, 30, 60 minutes), by using high resolution rainfall datasets to compute the Gumbel distribution over the selected period (1970-2020). Thus, in this research, sub-hourly precipitation data from 107 weather stations were used. These data were provided by the National Meteorological Administration of Romania and were recorded by using two automatic rain gauges: the (USSR type) pluviograph, mainly until 2007-2008, and the tipping-bucket rain gauge of the (Vaisala) automatic weather stations, after this period on. For this statistical analysis, only the months covering the convective period were used (April-October). The return probability of the maximum sub-hourly rainfall amounts was estimated by means of extRemes R-package. Then, these results, commonly used for plotting the IDF (intensity-duration-frequency) curves, were spatially represented in several charts, by using the R programming language. Our findings show that, for any time span and return period, the highest estimated precipitation amounts mainly correspond to the regions from the South and South-East of Romania, including the Romanian Plain, Getic and Dobrudja Plateaus and the Southern Subcarpathian Hills. For some durations and weather stations (e.g. 60 minutes at Bacău weather station), the Gumbel estimates are lower than the highest historical amounts actually recorded, which shows that some extreme rainfall events have a longer recurrence period compared to the analyzed return periods. However, in the Southern regions the sub-hourly estimated amounts are significant, mounting up to 22-25 mm in 5 minutes, once at 50-100 years, during a downpour (e.g. Giurgiu, Caracal and Corugea weather stations), and exceeding 55-65 mm in one hour, for the same return periods. These findings underscore the importance of high-resolution precipitation datasets for understanding extreme rainfall events, as sub-hourly indices exhibit distinct patterns compared to daily-scale analyses. Given Romania's vulnerability to flash floods caused by heavy rainfall, these estimates of short-duration precipitation could represent a valuable support for enhanced flood risk management and adaptation strategies.

The Role of Actors in the Transformation of Brownfields in Bucharest and Vienna

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Abstract

Vienna, the capital of Austria, and Bucharest, the capital of Romania, have been selected for a comparative analysis of brownfield transformation processes. This presentation examines how public and private actors participate in the redevelopment of brownfield sites, how they cooperate and coordinate to achieve specific objectives, and how institutional and administrative frameworks influence their capacity to act in alignment with these goals. Achieving an optimal transformation of former industrial areas requires effective coordination among diverse stakeholders—companies, local communities, NGOs, and public institutions. The outcomes of this analysis could contribute to the development of a general model for industrial site transformation. The overarching question addressed is how public institutions and local actors coordinate their efforts in the process of brownfield redevelopment. Furthermore, we aim to explore the relationships between zoning plans, industrial site owners, communities, and NGOs.

Tracing environmental history: a biomarker approach to paleoenvironmental reconstruction

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Abstract

This presentation explores the significance of biomarkers in reconstructing past environmental conditions from sedimentary records. Through the identification of organic matter sources biomarkers can provide insights into various depositional settings, as they reveal the contributions of terrestrial, aquatic, and sedimentary components. Techniques such as gas chromatography and high-performance liquid chromatography are utilized to isolate and analyse these biomarkers, which are crucial for determining mean annual air temperatures (MAAT) and sea surface temperatures (SST). Specific lipid biomarkers, including GDGTs and alkenones, are discussed for their effectiveness in paleotemperature reconstruction and their correlation with environmental conditions such as salinity and oxygen levels. Here, we present the preparatory phase in analysing diverse depositional environments including lacustrine and marine settings (e.g. Bezbog Lake – Pirin Mountains, Obanu Mare coastal karst – Black Sea coast). Examination of these organic matter at the molecular levels allows the separation of terrestrial, aquatic and sedimentary components and thus, environmental conditions, in both the water column and the surrounding watershed, that can be examined simultaneously. Biomarkers also allow for the examination of certain groups of algae and microorganisms that lack hard silica or carbonate shells and typically are absent from the fossil record. Therefore, it can often provide more specific information regarding past environmental conditions in comparison to bulk geochemical analyses, which reflect a mixture of allochthonous and autochthonous inputs. Finally, the results of the ongoing brGDGT analyses will be compared with the pollen-based paleotemperature reconstruction developed on the same sites in order to obtain a more robust and multi-proxy paleoclimatic reconstruction.

Tracking landscape evolution using watercourse profile analysis along the left side of the Danube valley in the area of the Iron Gates, Romania

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Abstract

The Iron Gates is a narrow and deep-incised valley section of the Danube River, cutting through the mountain range formed by the Southern Carpathians and North-Balkan Mountains, forming a transverse drainage between the Pannonian and Dacian Basins. In the present work longitudinal profiles of 97 tributaries of the left side of the Danube River are analyzed to provide information about the geomorphologic evolution of the area. The stream length-gradient (SL) index anomalies were used to investigate the relationship between Danube incision, local lithology and regional tectonic processes affecting the area. By analyzing the SL index anomalies of the Danube tributaries, 8 erosional levels have been identified. The uppermost two levels (L8 and L7) are located at an altitude ranging along the Iron Gates between 410 and 550 m a.s.l., and 330–490 m a.s.l., respectively. These could be correlated with pre-Danubian planation surfaces, described by previous authors. They show an upwarped elevation pattern along the river, indicative of differential uplift rates with the higher values at the central range of the study area (Almăj Mountains). For most tributaries, the largest SL index anomaly values were recorded for the subsequent level (L6), which developed at 230–360 m a.s.l. This zone separates the upstream relict profiles from the steeper, rejuvenated downstream valley segments. It corresponds to the “Ciucaru/Kazan” level, the lowest well developed planation surface above the incised gorge, equivalent of the highest strath terrace of the Danube. Its abandonment by the incising Danube River means the onset of the antecedent formation of the Iron Gates. The nickzones below the „Ciucaru/Kazan” level along tributaries reflect successive phases of incision of the streams, as adaptations to the local base level drop following the incising Danube. The upwarped pattern of the knickzone levels along the gorge (being the highest in the Almăj Mountains) is gradually faded towards the lower levels. The lithology only slightly influenced the occurrence of slope anomalies and the concavity of longitudinal profiles, but without an essential contribution regarding the spatial pattern of erosional levels.



Ukrainian refugees in Romania: Perspectives, inclusion and socio-economic cohesion

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Abstract

More than three years have passed since the start of the full-scale war of Russia against Ukraine in 2022, an armed conflict that has uprooted millions of Ukrainians from their homes and triggered the fastest-growing humanitarian and displacement crisis on record. The suffering and devastation of the war have not gone unnoticed. The extraordinary solidarity and generosity shown by host families, communities, cities, municipalities and countries in the region has been unprecedented. As the conflict enters its fourth year and the resources of refugees – and host communities – are increasingly stretched, greater solidarity is needed and must be sustained.

Urban parks use in Constanța- sustainable planning implications and challenges

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Abstract

Constanța faces a series of challenges characteristic of coastal cities, including increased development pressure, fragmentation of green spaces due to accelerated urbanization, and a pronounced seasonal variability in the demand for urban infrastructure.

Within this context, urban parks in Constanța play a strategic role — serving both as everyday recreational environments for the resident population and as complementary assets supporting tourism activities. Their importance is further accentuated by their uneven spatial distribution across neighborhoods, as well as by varying levels of accessibility and maintenance, particularly in high-density or peripheral areas. The study reveals that parks are used frequently and by multiple generations, with visitation patterns influenced by factors such as time of day, availability of facilities, travel distance, and visitors' socio-demographic characteristics. Interestingly, no significant correlation was found between park size and the distance traveled to reach it (Spearman's $r = 0.004$). This finding partially contradicts expectations and some previous studies, suggesting that factors such as amenities, design quality, and emotional attachment may play a more decisive role in influencing park visitation than size alone. Accordingly, investments focused on enhancing the quality of the park experience—rather than solely expanding physical space—could yield substantial benefits in terms of use and satisfaction. Overall, the findings indicate that Constanța's urban parks constitute a key resource for improving public health, social cohesion, and urban attractiveness. However, they remain underutilized relative to their multifunctional potential. The analysis outlines several clear directions for future intervention: diversifying park functions and activities, integrating parks into connected green networks, developing supportive infrastructure, and promoting citizen participation in urban co-creation processes. Aligning these directions with local policy frameworks and international best practices will be essential for advancing a greener, more equitable, and more resilient urban future for Constanța.

Using a computational fluid dynamics (CFD) method for modelling urban microclimate scenarios for NBS implementation

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Abstract

Climate change represents one of the greatest challenges faced by contemporary society. The impacts of these changes are already manifesting, and their magnitude varies depending on the geographical context. From natural to semi-natural and highly anthropized environments—such as urban areas—all are subject to the effects of climate change across multiple dimensions: social, economic, environmental, and administrative. Urban spaces exhibit a series of particularities that lead to the amplification of climate-related risks (according to the IPCC methodology), affecting communities in distinct ways depending on their socio-economic context. Cities are often characterized by intrinsic heterogeneity, particularly in contexts where urban planning has failed to adapt to contemporary challenges. Following the socialist era, urban development in many cities evolved chaotically, without a clear model of spatial expansion, often neglecting population needs such as public green spaces. These are frequently absent, underdeveloped, or fail to meet the requirements of local communities. In many cases, green infrastructures within highly anthropized environments are not regarded as essential components of sustainable community development, despite their numerous benefits: reducing air and noise pollution, providing opportunities for social interaction, and, most importantly in the current context, serving as key tools for climate adaptation. Over the past decade, a new paradigm for green infrastructure planning has emerged, particularly in Western countries and increasingly in places like China. Nature-Based Solutions (NbS) have become a flexible approach for adapting green spaces to local conditions—considering factors such as available surface area, community typology, and level of economic development—while generating a wide range of benefits. Among these benefits is the creation of microclimates that often mitigate thermal stress in densely built-up and impervious urban areas. To assess the extent to which NbS contribute to climate adaptation, a methodology is proposed that involves the development of microscale numerical climate models capable of accurately capturing the effects of implementing such innovations in urban environments. The results of these simulations provide a quantitative and measurable means of evaluating climate adaptation efforts, demonstrating thermal stress reductions of up to 10 °C during extreme events such as heatwaves—which are becoming increasingly frequent, intense, and prolonged, particularly in southern Romania.

Using Network Analyst to Identify Gaps in Metropolitan Healthcare Services Accessibility

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Abstract

Access to healthcare services in metropolitan areas is a discussed subject in many developed or developing countries, especially in a post-socialist state, with numerous problems of sanitary infrastructure. In many cases, access times of the population to medical infrastructure can reach alarming results in areas like Bucharest-Ilfov, where densely populated sections still remain without a good access to basic healthcare services. Geospatial analysis can allow the identification of accessibility barriers and gaps in territorial systems. In this study, geocoding tool was used for creating a metropolitan medical facilities data base, divided into three categories (primary, secondary and tertiary care), which were the basis for network analyst analysis, used for calculating timing areas and accessibility classes. Following five accessibility scenarios, depending by the traffic hour, the study quantifies different accessibility results, which are later reported to demographics. The results show that even when accessibility infrastructure can constantly improve and expand inside the metropolitan area, at peak times and even during off-peak hours, access can gracefully exceed critical times, especially in the case of tertiary care units, which are usually situated mostly only in the metropolitan core. However, the peripheral localities of metropolitan area, that contains mainly in rural population, facing aging and lower incomes are registering very low values for all scenarios. Gap areas in accessibility to different medical facilities are more than visible, proving that the need to plan medical infrastructure according to the real demand in the territory is critical.

Water resources in the Southern region of the Republic of Moldova – challenges and perspectives

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Abstract

Present research is dedicated to evaluation of water resources state of the Southern region of the Republic of Moldova (occupying about 1/3 of the country territory) in conditions of human impact as well as determination of those measures that are important to improve the water bodies' state. Main methods were taken from national normative documents and recently adopted governmental decision that allow to estimate the water bodies changes under the impact of pollution from diffuse sources (agriculture and livestock) and point sources (settlements), morphological alterations (under dykes, irrigation channels and reservoirs impact), hydrological changes (caused by urbanization, water abstraction and discharge, water accumulations, agricultural activities). Total number of surface water bodies identified in the region is 60 (8 in the Dniester river basin district and 52 in the Danube – Prut, Black sea basin district) from which only 3 water bodies are lakes (one in the Dniester river basin district and 2 in the Danube – Prut, Black sea basin district), and the rest are of river type. Over all the highest impact on the water bodies' quality is caused by agriculture land, all water bodies being under high pressure due to this factor, livestock is almost without any effect. Point sources of pollution have a significant impact only on 10 water bodies. Hydromorphological alterations are significant for 18 water bodies, main pressure being induced by dykes, less by reservoirs constructed of river courses and irrigation channels. For about a half of the water bodies, the quantitative state of water resources is severely influenced by the human impact, main tendency being the decrease due to agricultural activities, water use and reservoirs functioning. Improved water resources management with involvement of governmental institutions, local authorities as well as population needs to be developed and applied in order to improve water bodies' status.

Ways to carry out exchange heat between the human body and the surrounding environment

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Abstract

According to ISO 7730 (launched by British Standard BS EN), thermal comfort analysis tends to become a problem of modernity. The standard aims to identify the characteristics of the human thermal environment, but also to analyze and create new optimal conditions for the mental state in relation to the surrounding thermal environment. Thermal comfort is the one that has effects on the state of health, as well as the efficiency of professional activities. For the measures to be effective, it is necessary to expand applied research, such as biometeorological and bioclimatological research, analysis of the effects of various environmental, biological factors, etc. There is a complex relational system between the specific local weather conditions and the human body. This system is due to the fact that the body must constantly adapt to the environmental conditions. The present study aims to be a synthesis of the identification of the main environmental factors and factors specific to the human thermal balance, but also of the relational system developed by them. This analysis investigates the spatial variability of environmental factors specific to biometeorology (air temperature, radiant temperature, relative air humidity, air current speed, evapotranspiration, etc.), factors specific to human heat balance (body surface temperature, temperature perceived by the human body, metabolism, heat balance, convection, evaporation, respiration, solar radiation, biological factors (sex, age, weight) and personal factors (clothing insulation, metabolic heat).

West-East asymmetry of the main crest of Făgăraș and Rila Massifs documents the polycyclic glacial shaping

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Abstract

We present here the key morphometric parameters of the main ridge in two massifs located in south-eastern Europe, along with those of the adjacent rock walls and glacial cirques, in order to assess the west-east morphometric asymmetry within these massifs. The selected massifs are Rila and Făgăraș, which, in addition to being the highest in the Carpathians and North-Balkan Mountains, share the most extensive west–east development among all mountain ranges in southeastern Europe. We hypothesize that this morphometric asymmetry primarily stems from differences in the glaciation efficiency, with the western part benefiting from more humid conditions (i.e. higher snowfalls), which fostered the growth of larger glaciers and, in turn, led to more intensive erosion on the massif. The morphometric analysis was conducted in GIS environment using a 5-m resolution raster. It incorporated a set of parameters that collectively estimate the glaciation effectiveness: development of glacial cirques (e.g. relative depth, presence of lakes), width of the main crest, slope declivity of peaks, and both the width and mean slope of the rock walls adjacent to the main crest. By combining the west-east asymmetry in morphometric data with different proposed rates of glacial erosion, we aim to determine how many major glacial phases have shaped the current alpine level in these massifs, and whether the parameters exhibit similarities in both massifs.