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PROGRAMME

Speakers	Title	Schedule
Popa, M. E., Lazăr, I., Csiki-Sava, Z.	Opening remarks	09.00 – 09.10
Nicoleta Aldea	Hydrogeological conditions for the restoration of lake "Sărături" affected by climate change	09.10-09.25
Al Oyed Odai Fahad Talab	Integrated hydrological – hydrogeological modeling reveals climate change impacts on groundwater recharge in the Zarqa Main Basin, Jordan	09.25-09.40
Alexandru Gabriel Călin	A new fossil wood from the Bozovici Basin, Romania	09.40-09.55
Mihai Caminschi	Preliminary taxonomic and taphonomic results from Stoieni Cave (Mehedinți Mountains)	09.55-10.10
Milton Rubén Catota Villitanga	Tectono-sedimentary evolution of the Haţeg Basin during the Late Cretaceous	10.10-10.25
Alexandru-Cosmin Codreanu	Observator Slănic: a citizen-science mobile application for monitoring ground instability and guiding geophysical investigations in Slănic (Prahova County)	10.25-10.40
Vladimir-Lucian Crăciun	Paleoecology and palebiogeography of Eocene Rhodophyta, NW Transylvanian Basin	10.40-10.55
Cristina Mariana Drăghici	Geoelectrical methods used for the investigation of karst areas. Case study: Mangalia, South Dobrogea (Romania)	10.55-11.10
Break		11.10-11.25
Gabriela Mariana Dragomir	Experimental investigation of marly clay degradation under repeated wetting–drying cycles	11.25-11.40
Teodora Gavrilescu	Integrated assessment of post-mining subsidence and its implications for long-term mine closure management in the Petroșani coal Basin	11.40-11.55
Isabela Istrate	Integrated use of geophysical and geodetic/topographic data in the investigation of archaeological sites. Case study: the Reșca–Romula Roman site (Olt County, Romania)	11.55-12.10
Alexandra D. Lăcătuș (Ene)	Latest data on the Aegean ammonoids from the Deșli Caira section, GSSP candidate for the base of Anisian stage (Middle Triassic)	12.10-12.25
Simona Lălîu	Preliminary geological characterization of the Histria Formation (Central Dobrogea, Romania): towards a conceptual model for radioactive waste disposal studies	12.25-12.35
Oliver Livanov	Archaeological insights deduced from geological, geophysical and geomorphological research at Noviodunum (Isaccea, Tulcea County)	12.35-12.50
Cristian Mihalcea	Architecture of folds and thrust belt of the Eastern Carpathians: case study Moinești-Târgu Ocna	12.50-13.00
Maria Pârlea	Zircon geochemistry as a proxy for crustal thickness	13.00-13.15

Sofía Peltzer	Magma chambers under plateaus: a petrochronologic study of the acidic volcanism of the Altiplano-Puna, central Andes of South America	13.15-13.30
Bogdan-Alexandru Torcărescu	Cetaceans from the western Dacian Basin: new results from the study of institutional collections	13.30-13.45
Lia Stelea	Seismic threats in the Sorj region: a geological and seismological perspective	13.45-14.00
Ana-Maria Hreniuc-Moroșan	Integration of satellite and topographic data in the analysis of geological characteristics of the Șomcuta Mare area, Northwestern Romania	14.00-14.15
Popa, M. E., Lazăr, I., Csiki-Sava, Z.	Concluding remarks	14.15-14.25

ABSTRACTS

HYDROGEOLOGICAL CONDITIONS FOR THE RESTORATION OF LAKE "SĂRĂTURI" AFFECTED BY CLIMATE CHANGE

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Keywords: Climate change**,** Global warming**,** Adaptation to climate change**,** Natural wetlands**,** Wetland renaturalization.

The area covered by this study is Lake Sărături—designated as the "*Sărăturile Murighiol Scientific Reserve*" - located within the administrative territory of the Murighiol commune, Tulcea County, and spanning an area of 87.00 hectares.

The surroundings of Lake Sărături are as follows: to the east, the locality of Murighiol; to the south, the Plopu–Murighiol road; and to the west and north, the Murighiol hills. The site is defined by the following geographic coordinates: 45°02' N to 45°01' N and 29°08' E to 29°09' E.

Lake Sărături in Murighiol is a strictly protected area for avifauna, specifically established to safeguard a mixed bird colony located on the islands in the middle of the lake. Regarding its conservation value, the lake serves as a nesting ground for numerous species of aquatic birds. In terms of ecosystem type, it is a lake with limited water exchange, partially covered by floating vegetation. A buffer zone—consisting of a 10-meter-wide strip surrounding the lake—has been established to provide strict protection for the site.

Due to climate change in this region, Lake Sărături has been hydrologically impacted; it has dried up, and this lack of water has jeopardized the species and habitats specific to the lake. Consequently, the bird species characteristic of this habitat have migrated away from the area. Therefore, through this proposed thesis, I will conduct an analysis of the hydrogeological conditions of Lake Sărături, taking into account current climatic conditions—characterized by increasingly frequent periods of high temperatures, reduced precipitation, and prolonged droughts—as well as the projected intensification of these conditions in the future. Such climatic factors are expected to negatively impact the hydrogeological status of the area that feeds Lake Sărături.

The analysis of the hydrogeological conditions of Lake Sărături will help identify solutions to raise surface water levels—specifically within the lake itself—which is essential for future climate change adaptation and for the ecological restoration of the lake, a habitat for numerous bird species.

In an initial phase of the analysis, hydrogeological investigation boreholes were drilled in the area. These revealed that the lake's water resource is minimal, while surface runoff is generally low due to the gentle terrain slopes and low precipitation levels. Subsurface flow is also very slow—constrained by the low hydraulic conductivity of the loess-like and fine sandy deposits—with flow directions dictated by the heterogeneity of the aquifer's mineral matrix (specifically the unconfined groundwater body, RODL09 – North Dobrogea) and by seasonal recharge from a very limited rainfall regime.

Furthermore, this study will examine the local climatic conditions of the area where Lake Sărături is located—namely, North Dobrogea—covering both current and future climate scenarios, as well as how these local conditions affect the lake. Investigating the area's climatic conditions is essential for identifying the causes behind the degradation of this natural wetland.

This study will be necessary to identify and establish solutions for the ecological restoration and renaturation of Lake Sărături, and to preserve its natural ecosystem.

INTEGRATED HYDROLOGICAL – HYDROGEOLOGICAL MODELING REVEALS CLIMATE CHANGE IMPACTS ON GROUNDWATER RECHARGE IN THE ZARQA MAIN BASIN, JORDAN

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Keywords: Groundwater recharge; Groundwater flow; Climate variability; Semi-arid basin; Zarqa Ma'in Basin.

Quantifying groundwater responses to climate variability remains particularly challenging in semi-arid basins where hydrological processes are strongly influenced by geological structure. This study develops an integrated sequential SWAT–MODFLOW modeling framework to investigate the effects of climatic variability on groundwater recharge and regional groundwater flow within the Zarqa Ma'in Basin (Jordan), a tectonically controlled watershed located along the Dead Sea Rift. Historical hydro-meteorological observations collected during the 2000–2020 period were used to characterize climatic variability and calibrate the hydrological model. The calibrated SWAT model was applied to estimate the spatial distribution of groundwater recharge, which was subsequently transferred to the MODFLOW Recharge (RCH) Package as distributed boundary conditions for three-dimensional groundwater-flow simulations. The results indicate that the combined effects of precipitation variability, high evaporative demand, and geological structure substantially restrict effective groundwater recharge while promoting strong spatial heterogeneity in groundwater replenishment. Simulations performed under an estimated high-emission climate scenario project an average reduction of approximately 18.5% in groundwater recharge, accompanied by simulated groundwater-level declines of approximately 4.5–7.2 m within the Kurnub Sandstone aquifer, particularly in structurally controlled zones adjacent to the Dead Sea Rift and geothermal discharge areas. The integrated simulations further demonstrate that regional groundwater vulnerability is governed not only by climatic forcing but also by the structural framework controlling groundwater circulation between recharge and discharge zones. The proposed sequential SWAT–MODFLOW framework provides a physically consistent approach for evaluating groundwater sensitivity to climatic stress in tectonically controlled semi-arid basins and offers a transferable methodology for groundwater-resource assessment in water-limited regions.

A NEW FOSSIL WOOD FROM THE BOZOVICI BASIN, ROMANIA

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Keywords: Miocene, Bozovici Basin, fossil wood.

The Bozovici Basin is a small intramontane basin located in the South Carpathians, where well mineralised fossil woods occur within the Lower Miocene Lăpușnicul Mare Formation. Although the number of fossil wood species identified so far is relatively low, the discovery of a specimen showing ginkgoalean affinities is particularly significant, as it represents the first record of such fossil wood from the Cenozoic of Romania. Anatomical characters observed in the specimen, including inflated axial parenchyma cells and cupressoid pits in the cross-fields, support its assignment to the morphogenus *Ginkgoxylon*. This occurrence therefore adds a previously unrecorded element to the Cenozoic fossil wood assemblage of Romania and increases the known diversity of the Bozovici Basin fossil flora.

PRELIMINARY TAXONOMIC AND TAPHONOMIC RESULTS FROM STOIENI CAVE (MEHEDINȚI MOUNTAINS)

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Keywords: Late Pleistocene, taphonomy, Quaternary canids, carnivore den.

In the context of Quaternary climatic shifts, the Late Pleistocene land mammal faunal changes represent one of the most debated and intense studied topics. Deposited in relatively stable microenvironmental conditions, karst sedimentary deposits preserve significant information related to the above-mentioned issue. This study aims to enhance the current knowledge available from the Carpathian region, by analyzing the macromammal fossil remains collected from Stoieni Cave, a less-known vertebrate site located in Mehedinți Mountains. Based on a comprehensive morphological analysis, the identified faunal assemblage is clearly dominated by carnivores, summing ~ 65% of the total number of identified specimens. Although a few specimens were assigned to felids (*Felis silvestris*) and mustelids (*Meles meles*, *Martes* sp., *Mustela* sp.), most of the carnivore material belong to ursids (*Ursus spelaeus*, *Ursus arctos*) and canids (*Canis lupus*, *Vulpes vulpes*, *Cuon alpinus*). Among herbivores, the best represented taxon is *Capra ibex*, whereas a few isolated teeth have revealed the presence of *Rupicapra rupicapra*, *Bos primigenius*, and *Sus scrofa*. Furthermore, a detailed macroscopic taphonomic analysis was carried out in order to provide a preliminary context for the bone accumulation at this site. From the total number of taphonomic modifications, mechanical surface modifications are the most abundant (45.1%), followed by carnivore-made puncture and gnawing marks (30.5%). These results are particularly interesting, given that some of the identified mechanical modifications, such as trampling traces, could

also be attributed to the same cause. Therefore, taking into account the absence of some large highly specialized bone accumulators (e.g., felids and hyenids), our preliminary data suggest that the fossil assemblage from Stoieni Cave could represent a result of an intense canid (*Canis lupus* and/or *Cuon alpinus*) predation activity in the region.

TECTONO-SEDIMENTARY EVOLUTION OF THE HAŢEG BASIN DURING THE LATE CRETACEOUS

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Keywords: Haţeg Basin, tectonics, marine, volcaniclastic, Late Cretaceous.

The Late Cretaceous Haţeg Basin occurs in the central-southern part of Hunedoara County, western Romania, and its geological evolution is closely related to the tectonic development of the South Carpathians. The basin basement is due to large-scale nappe emplacement and subsequent extensional tectonics involving the Getic, Supragetic, Severin, and Danubian tectonic units. Those tectonic collisions triggered the evolution of the Haţeg Basin from a piggyback basin to a collapse-type basin. Many scientific works on dwarf dinosaurs highlight its international significance as one of the most important Upper Cretaceous vertebrate fossil localities worldwide, designated by UNESCO as a Global Geopark. The basin evolution records several successive stages, beginning with marine sedimentation in a syn-orogenic setting, characterized by shallow to deep marine siliciclastic deposits, including turbidite successions. During the Campanian stage, progressive tectonic activity led to a transition from marine to continental sedimentation, which continued along the Maastrichtian, with the accumulation of alluvial, fluvial, and floodplain successions, represented mainly by the Sânpetru and Densuș-Ciula formations, locally incorporating volcaniclastic deposits mainly in the NW of the basin. The tectono-sedimentary analysis will update and review the basin evolution during the Late Cretaceous by integrating stratigraphic, sedimentological, lithological, and structural evidence, as well as geochronological data, to understand the associations among regional tectonic processes, basin geometry, and depositional environments, providing insights into the Haţeg Basin evolution from a marine syn-orogenic depocenter to a continental sediment basin throughout the geodynamic evolution of the South Carpathians during the Late Cretaceous.

OBSERVATOR SLĂNIC: A CITIZEN-SCIENCE MOBILE APPLICATION FOR MONITORING GROUND INSTABILITY AND GUIDING GEOPHYSICAL INVESTIGATIONS IN SLĂNIC (PRAHOVA COUNTY)

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Keywords: citizen science; mobile application; ground instability; InSAR; near-surface geophysics.

Ground instability in Slănic (Prahova County), including subsidence, collapse features and slope movements, is often first noticed by local residents, yet such observations rarely reach researchers in a structured, georeferenced and verifiable form. We present Observator Slănic, a mobile application developed within a doctoral research project to collect citizen reports of ground instability as structured, georeferenced records subject to expert assessment. The application uses a controlled taxonomy that separates site categories from their observed manifestations (e.g. cracks in buildings or pavements, ground deformation, scarps, collapse features). Each report records the location, photographic evidence, the observation time and its reported temporal precision, the perceived evolution of the phenomenon and its perceived importance to the observer, the latter kept explicitly distinct from any hazard assessment. Reports are linked to sites and phenomena, so that repeated observations of the same feature build a history rather than isolated records. The offline-first design allows reporting in areas with poor mobile coverage, and observations are stored with native spatial geometry (PostGIS), enabling overlay with other spatial datasets. Participation follows an informed-consent workflow restricted to adults, within a data management and ethics framework prepared ahead of field deployment. Within the designed workflow, reports are reviewed by specialists, who assess their geological plausibility before their inclusion in the validated dataset used for integrated interpretation. Together with InSAR-derived ground displacement data, validated reports will be used to identify and prioritise target areas for detailed investigations, guiding the placement of HVSR measurements and ERT profiles. In turn, the geophysical results will help test and refine the interpretation of the reported phenomena, closing the loop between community observation, remote sensing and near-surface geophysics. A functional prototype (Android client and spatial backend) has been implemented, and a pilot campaign is in preparation.

PALEOECOLOGY AND PALEOBIOGEOGRAPHY OF EOCENE RHODOPHYTA, NW TRANSYLVANIAN BASIN

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Keywords: Eocene, red algae, paleoecology, paleobiogeography, Transylvanian Basin

Calcareous red algae (rhodophytes) are important components of various marine ecosystems, contributing significantly to carbonate production and reef construction throughout geological time. Their role as key calcium carbonate producers is well-known from the Mesozoic, but they are also relevant throughout the Cenozoic. Complex paleoecological and paleoenvironmental interpretations can be made by analyzing and describing the morphology of fossil rhodophytes. Features such as thallus structure, growth forms and rhodolith morphology can be used to interpret ancient environmental parameters of marine habitats such as water depth, light availability and hydrodynamic conditions. Their evolution, distribution through time and their response to environmental factors such as climate changes or extinction events can also be researched by the study of their paleobiogeography. From such a perspective, Eocene calcareous red algae were widely distributed throughout the northern Tethyan shelf region, their diversity and abundance having been influenced by major events of the times like the Early Eocene Climatic Optimum (EECO). The beginning of the Cenozoic in particular was a moment of great importance to the overall distribution of red algae, with some families like Sporolithaceae entering a continuous decline and others like Corallinaceae started to thrive. The Transylvanian Basin was also part of the northern peri-Tethyan system during the Eocene-Oligocene interval, more precisely part of its

central region, and contains numerous fossil red algae, often found in association with corals and foraminifera. In the NW part of the Transylvanian Basin, Upper Eocene - Lower Oligocene deposits are represented by the Cozla Limestone, accessible in multiple quarries. Preliminary research data based on thin sections in the area showcase the presence of at least 5 genera: *Messophyllum(?), Lithotamnion(?), Sporolithon, Lithoporella* and *Polystrata.* All of them can live in relatively warm, shallow waters with normal salinity levels, but the presence of *Messophylum*, *Lithotamnion* and *Sporolithon* may indicate a slightly deeper-water environment. Lower light levels are also possible locally, since *Sporolithon* and *Lithotamnion* can thrive in conditions of lower light intensity compared to the rest.

GEOELECTRICAL METHODS USED FOR THE INVESTIGATION OF KARST AREAS. CASE STUDY: MANGALIA, SOUTH DOBROGEA (ROMANIA)

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Keywords: ERT; karst cavities; coastal karst aquifer; seawater intrusion; hydrogeology

Karst aquifers represent a vital groundwater resource. They offer a unique opportunity to investigate the effects of climate change on groundwater within a timeframe relevant to human interests, as these aquifers exhibit significant variability in their hydrological responses—such as spring discharge (i.e., the flow of groundwater over short paths) and the water table level (i.e., the depth below which the subsurface is completely saturated with water). Current approaches to aquifer investigation and monitoring—such as siting boreholes based on empirical criteria—can no longer be accepted as a sound basis for decisions regarding the exploitation or protection of a karst aquifer. There is a need for a quantitative, verifiable framework that clearly distinguishes what can be substantiated by data from what remains uncertain. The integration of data into three-dimensional models has become feasible through the use of geophysical prospecting techniques and modern numerical tools for analyzing observational data. In addition to their groundwater importance karst areas are also significant from the viewpoint of geohazard (dissolution and collapse) and geotechnical engineering. This study tests the ability of Electrical Resistivity Tomography (ERT) to detect water-filled karst cavities and to estimate the quality of the water filling, in the northern and north-western areas of Mangalia, near the Mangalia Marsh protected area. Apparent resistivity data were acquired with an AGI SuperSting R8/IP system with 64 electrodes, in dipole–dipole configuration with 5–6 m electrode spacing, along three survey lines located at different distances from the shoreline: ERT-W (1.4–1.5 km), ERT-N (~1 km) and ERT-E (250–300 m). The data were processed using RES2DINV software and L1-norm robust inversion. On all lines, isolated, relatively isometric low-resistivity anomalies were detected at depths of 12–30 m and interpreted as probable water-filled cavities. Inland (ERT-W, ERT-N), cavity-infill resistivities of 2.2–4.3 Ω·m correspond to about 1.3–2.6 g/l NaCl equivalent, indicating slightly mineralized groundwater, consistent with borehole data. Along the Saturn–Venus coastal sector (ERT-E), much lower resistivity values of 0.6–1.2 Ω·m (about 5–10 g/l) indicate brackish water, suggesting seawater intrusion through karst conduits and fractures. These preliminary results, from the first systematic ERT study in this area, can support the placement of thermomineral groundwater extraction boreholes and the assessment of geotechnical hazards in karstified carbonate terrains.

EXPERIMENTAL INVESTIGATION OF MARLY CLAY DEGRADATION UNDER REPEATED WETTING–DRYING CYCLES

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Keywords: marly clays; wetting–drying cycles; material degradation; carbonate content.

Variations in moisture conditions can significantly affect the physical and mechanical behaviour of marly clays, particularly when these materials are subjected to repeated wetting and drying. Such processes may progressively alter their structure, causing cracking, particle detachment and disintegration, with potential consequences for their performance in geotechnical works.

The present study examines the response of 48 marly clay samples collected from the Sibiu area, Romania, to successive wetting–drying cycles. The materials were characterized through laboratory determinations of particle-size distribution, natural water content, Atterberg limits and carbonate content, together with free-swelling tests on selected samples. An experimental programme comprising four wetting–drying cycles was conducted using an adapted procedure based on ASTM D559/D559M-15. Material degradation was quantified through cumulative dry mass loss and supplemented by visual observations of structural deterioration.

The experimental results revealed substantial differences in the resistance of the investigated materials, with cumulative mass losses ranging between 21.4% and 57.2% after four cycles. Samples with higher plasticity and finer particle-size distributions generally showed increased susceptibility to degradation, while higher carbonate contents were associated with improved resistance. Two susceptibility categories were distinguished according to the observed degradation response. Spearman rank correlation analysis was applied to explore relationships between the measured geotechnical parameters and the degree of material deterioration.

The study demonstrates the importance of considering both geotechnical characteristics and compositional variability when evaluating the response of marly clays to cyclic moisture changes. The findings contribute to the assessment of material durability and the identification of potentially vulnerable clayey deposits in engineering applications.

INTEGRATED ASSESSMENT OF POST-MINING SUBSIDENCE AND ITS IMPLICATIONS FOR LONG-TERM MINE CLOSURE MANAGEMENT IN THE PETROȘANI COAL BASIN

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Keywords: post-mining subsidence; mine closure; GNSS; GIS; Petroșani Basin.

Post-mining ground deformation may persist after underground extraction has ceased, while relevant geological, mining, geodetic and cadastral data often remain fragmented. This study assesses vertical ground changes in the Maleia–Livezeni sector of the Petroșani Coal Basin and discusses their implications for long-term mine closure management. Geological and structural information, a digitized historical mining dataset, GNSS observations from 2007 and 2026, and cadastral data were integrated in a GIS framework. Seventeen geodetic benchmarks common to both epochs were compared. All showed negative vertical differences, ranging from −0.082 to −3.853 m, with a mean of −1.918 m. Spatial analysis identified a positive association between the magnitude of vertical differences and cumulative gallery length within a 50 m radius (Spearman's $\rho = 0.734$; $p = 0.0008$). These exploratory results indicate spatially variable deformation and an association with the distribution of historical underground workings, without establishing causality or the timing of displacement. Geological and tectonic information supported the contextual interpretation, while cadastral overlays illustrated how spatial screening results can be communicated at parcel level without being treated as direct hazard determinations. The integrated approach can inform priorities for post-closure monitoring and verification; closure costs were not assessed.

INTEGRATION OF SATELLITE AND TOPOGRAPHIC DATA IN THE ANALYSIS OF GEOLOGICAL CHARACTERISTICS OF THE ȘOMCUTA MARE AREA, NORTHWESTERN ROMANIA

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Keywords: multispectral remote sensing, terrain analysis, geological units, potentially exposed surfaces, geospatial integration.

The Șomcuta Mare area, located in Maramureș County, is characterized by the presence of Pannonian and Sarmatian sedimentary formations, along with Quaternary deposits. This study focuses on an integrated analysis of the distribution of geological units, terrain characteristics, and the spectral response of the land surface, with the aim of identifying areas of interest for further geological and hydrogeological investigations. The methodology involved the integration of the following datasets in QGIS: Sentinel-2 Level-2A imagery (acquired on October 4, 2026), the Geological Map of Romania (at a scale of 1:200,000), and a digital elevation model with a spatial resolution of approximately 30 m. Shortwave infrared spectral composites were generated, the Normalized Difference Vegetation Index and Bare Soil Index were calculated and terrain slopes were analyzed, together with elevation variations along three topographic profiles. Terrain analysis revealed a mean slope of 8.50° and a maximum slope

of 48.88°, while the topographic profiles indicated elevation ranges of approximately 155–277 m. The preliminary integration of the NDVI and BSI indices allowed for the identification of approximately 199 hectares, representing 1.68% of the valid pixels analyzed, exhibiting spectral characteristics consistent with sparsely vegetated or potentially exposed surfaces. The results highlight variations in terrain characteristics and land cover, providing a preliminary framework for investigating their relationship with mapped geological units and guiding future geophysical and hydrogeological research.

INTEGRATED USE OF GEOPHYSICAL AND GEODETIC/TOPOGRAPHIC DATA IN THE INVESTIGATION OF ARCHAEOLOGICAL SITES. CASE STUDY: THE REȘCA–ROMULA ROMAN SITE (OLT COUNTY, ROMANIA)

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Keywords: archaeological geophysics; GNSS; UAV photogrammetry; GIS; Romula.

The Reșca–Romula archaeological site (Dobrosloveni commune, Olt County) preserves the remains of Romula, one of the most important Roman urban centres north of the Danube River. The site lies in the western part of the Moesian Platform, on Quaternary (Pleistocene) fluvial terrace deposits east of the Olt River.

Since 1965, the site has been investigated mainly through classical archaeological excavations, while geophysical surveys (magnetometry, ground-penetrating radar, gravimetry and electrical resistivity tomography) were carried out only occasionally and over limited areas, generally acquired and interpreted separately.

This research proposes an integrated, non-invasive approach to the study of archaeological sites, in which geophysical data are combined with high-precision geodetic and topographic data within a single geospatial framework. The planned methodology includes GNSS positioning and UAV photogrammetry for producing orthophotos and digital elevation models, together with magnetometric, gravimetric and electrical resistivity surveys. All datasets will be georeferenced in a common coordinate system and integrated into a GIS environment, allowing a direct correlation between subsurface anomalies, surface topography and the results of previous excavations.

At the present stage, the existing archaeological information has been reviewed and a field reconnaissance of the site was carried out in July 2026. It revealed dense vegetation, open trenches from previous excavations and modern infrastructure in the immediate vicinity (houses, fences, power lines), all of which will influence data acquisition. Consequently, the field campaigns will be planned for spring or autumn, when vegetation is low and soil moisture ensures good electrode contact. The UAV-derived elevation model will also be used for topographic corrections of the geophysical data. The expected outcomes are a geospatial database of the site, maps and 3D models of buried structures, and a reproducible workflow that supports targeted excavation planning and the preservation of archaeological heritage.

LATEST DATA ON THE AEGEAN AMMONOIDS FROM THE DEŞLI CAIRA SECTION, GSSP CANDIDATE FOR THE BASE OF ANISIAN STAGE (MIDDLE TRIASSIC)

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Keywords: Aegean, Deșli Caira section, Ammonoids

The Deșli Caira section located in North Dobrogea Orogen, Romania is well known in the classic geological literature since the early 20th century. Eugen Grădinaru, former professor at the University of Bucharest, studied this section more than 27 years and in 2007, together with other several specialists, submitted the preliminary proposal of the Desli Caira section as GSSP candidate for the base of the Anisian stage. All the work done since the 1990s and 2000s didn't lead to a formal GSSP proposal particularly due to the lack of published taxonomic descriptions of the ammonoid faunas. We started our investigations in 2023 and published in 2024, from the Deşli Caira section several important ammonoid taxa of Aegean age: *Aegeiceras ugra* Diener, 1895; *Acrochordiceras* sp. ind.; *Paracrochordiceras denseplicatum* Fantini Sestini, 1981; *Stenopopanoceras transiens* Tozer, 1972; *Leiophyllites pseudo-pradyumna* Welter, 1915 and *L. pradyumna* Diener, 1895 toghether with two new taxa: *Robinsonites simionescui* Balini and Lăcătuş, 2024 and *Gradinaruites aegeicus* Balini and Lăcătuş, 2024.

During the last year we studied and published additional lowermost Aegean ammonoid data. We managed to improve the ammonoid fauna collection by publishing new specimens of subfamilies Noetlingitinae and Longobarditinae together with new additions to *Stenopopanoceras transiens* Tozer, 1972 collection from 11 to 18 specimens. The Noetlingitinae subfamily ammonoids represent a new genus and three new species: *Simionescuites dobrogeanus* n. gen. n. sp. (type species) Lăcătuș and Balini, 2026, *Simionescuites nodiumbilicatus* n. gen. n. sp. Lăcătuș and Balini, 2026 and *Simionescuites laevicostatus* n. gen. n. sp. Lăcătuș and Balini, 2026 located stratigraphically at the base of the Aegean. The Longobarditinae is represented by *Longobarditoides* cf. *caucasius* Shevyrev, 1995 with stratigraphical position in the lowermost Aegean beds.

The Aegean age ammonoid fauna identified at the Deşli Caira section contributes to a better understanding of the Olenekian-Anisian Ammonoid Faunal Turnover and enhances the potential of the section to correlate at global scale.

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PRELIMINARY GEOLOGICAL CHARACTERIZATION OF THE HISTRIA FORMATION (CENTRAL DOBROGEA, ROMANIA): TOWARDS A CONCEPTUAL MODEL FOR RADIOACTIVE WASTE DISPOSAL STUDIES

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Keywords: Histria Formation; green schists; geological characterization; conceptual geological model; radioactive waste disposal.

The geological characterization of crystalline rock formations is essential for understanding the geological conditions relevant to the long-term isolation of radioactive waste. In fractured crystalline rocks, lithological heterogeneity, structural discontinuities, and groundwater circulation are key factors influencing the development of conceptual geological models.
This study focuses on the Histria Formation, a low-grade metamorphic unit within the green schist assemblages of Central Dobrogea, Romania. It aims to investigate how existing geological and structural information can support the development of a preliminary conceptual geological model and to identify the main uncertainties associated with subsurface characterization.
The research is based on the critical review and synthesis of published geological data, including geological maps, lithological descriptions, and structural interpretations. Particular emphasis is placed on the spatial distribution of geological units, the structural framework of the formation, and the limitations of extrapolating surface observations to depth.
This preliminary investigation is intended to establish a geological framework for subsequent conceptual model development and to identify priorities for further geological and hydrogeological characterization. The study does not seek to establish the suitability of the Histria Formation for radioactive waste disposal, but rather to examine the geological information required for such an assessment.

ARCHAEOLOGICAL INSIGHTS DEDUCED FROM GEOLOGICAL, GEOPHYSICAL AND GEOMORPHOLOGICAL RESEARCH AT NOVIODUNUM (ISACCEA, TULCEA COUNTY)

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Keywords: Noviodunum, geology, geophysics, geomorphology.

Located on the right bank of the Danube, approximately 2 km east of Isaccea, in Tulcea County, the Noviodunum Fortress was an important strategic settlement in antiquity, from the Roman period (1st-2nd centuries AD) until the medieval period (14th century), when it was abandoned. Through this study, using geological, geophysical or geomorphological field measurements or observations, as well as historical information and available archaeological evidence, hypotheses were confirmed or proposed regarding the activities and organisation of the local communities.

A first aspect researched concerns the crossing of the Danube through Noviodunum Ford, documented in ancient sources since the 6th century BCE, long before the foundation of the fortress itself. The analysis of the topography, local geology and bathymetric measurements noted a configuration favourable for crossing the Danube, thus supporting the historical accounts.

A second aspect concerns the places where the ships of the Roman fleet "Classis Flavia Moesica" could have been stationed, whose presence at Noviodunum is supported by inscriptions and stamped bricks. By analysing LiDAR data, as well as sediments extracted through shallow drilling, it led to hypotheses regarding the location of two bays, located east and west of the fortress, which could have been used for anchoring and sheltering ships.

Archaeological investigations in the 20th and 21st centuries highlighted an intense extra-mural activity: walls, roads, kilns, funerary and habitation areas, etc. Recent geophysical measurements have also outlined additional buried archaeological structures, thus expanding the archaeological inventory of the site.

Although this part of the study was not based on an archaeological context, as in previous investigations, by examining the lithic material from certain portions of the walls and comparing it with the geological formations in the region, it was possible to identify the areas from which the stone was extracted, thus reconstructing the routes used for its transport.

In this paper, only part of the available archaeological information was covered. Still, these results can be the starting points for future archaeological investigations.

ARCHITECTURE OF THE FOLDS-AND-THRUST BELT OF THE EASTERN CARPATHIANS: CASE STUDY MOINEȘTI-TÂRGU OCNA

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Keywords: Outer Moldavides, tectonics, geophysical investigations.

From a structural perspective, several tectonic units with specific structural styles can be distinguished within the Eastern Carpathians, illustrating the structural evolution of this belt during Cretaceous-Pliocene tectonic transport in the current position. The tectonic units are aligned along the mountain range in nappes or systems of nappes, generally younger eastward, with a few notable exceptions. The Eastern Carpathian outer structures, containing a sedimentary cover, comprised the thick-skinned nappes of the Outer Dacides (Baraolt, Ceahlău, and Bobu) and thin-skinned nappes of the Moldavides. The later ones are divided (from W to E) into the Inner Moldavides (Teleajen, Macla, and Audia nappes) and the Outer Moldavides (Tarcău, Vrancea and Subcarpathian nappes).

The orogen can be roughly separated into these units: the metamorphic core zone and the fold and thrust belt (ftb); the later was classically separated into internal flysch, median flysch, and external flysch (Moldavides) including the Tarcău, Vrancea and Subcarpathian nappes, our study area.

The investigated Moinești-Târgu Ocna area is located within Bacău County and it belongs, from a geological point of view, to the Outer Moldavides, exposing the Tarcău and Subcarpathian nappes. The Vrancea Nappe was encountered only in boreholes and crops out south of the above-mentioned area, in the Slănic-Oituz Half-window. To note that in the investigated area it is known to occur the Târgu-Ocna Rabotage Slice, in front of the Tarcău Nappe, Subcarpathian Nappe, representing the most external

part of the Eastern Carpathian ftb, made of stacked Paleogene-Miocene sediments, which are locally covered by thrusted Cretaceous-Paleogene sediments of the inner (western) Tarcău Nappe, during out-of-sequence thrusting, due to middle Sarmatian locking of the Pericarpathian thrust front.

Using modern geological and geophysical investigation methods, we have revealed the internal architecture of the studied area and constrained a new structural model using 3D seismic data calibrated with stratigraphic and structural data from the boreholes.

Different from the classical interpretations where the fault zones are presented as a characteristic feature of the Tarcău Nappe, developed N Moinești and in Târgu Ocna areas, we present herein a novel one. Our interpretation of the Moinești structure shows typical characteristics of a complex duplex stack with refolded thrust faults and horses, which can explain the sharp changes from normal to high angle dipping strata withing this area of East Carpathians-ftb, which we consider to represent the Vrancea Nappe (=Marginal Fold Nappes). Such structures are well known in the fold and thrust belt of the world and also well know in areas where, due to the for limited seismic quality, the structural context might be only resolved based on well data.

ZIRCON GEOCHEMISTRY AS A PROXY FOR CRUSTAL THICKNESS

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Keywords: zircon; crustal thickness; chemical mohometry; trace elements; arc magmatism

Reconstructing past crustal thickness helps explain how mountain belts and continental magmas evolve. Zircon can preserve crystallisation ages and trace-element compositions, making it a potential archive where the original igneous record is incomplete. This study tests whether zircon chemistry retains a signal related to crustal thickness after accounting for magmatic differentiation and crystallisation conditions. The current dataset comprises 1,064 zircon analyses, summarised as 36 sample means paired with whole-rock compositions. The main comparison involves Methana and Poros in the Aegean arc (thin crust end-member) and Altiplano-Puna in the Central Andes (thick crust end-member), complemented by samples from Mexico and the Southern Andes (middle crust). LA-ICP-MS measurements support comparisons of rare earth element patterns, elemental ratios and europium anomalies with host-rock chemistry and geophysical crustal constraints. A published analytical protocol from the PetroChron laboratory provides the methodological foundation. Preliminary results show distinct zircon rare earth element patterns between groups of different crustal thickness. These distinctions can be better seen in LREE or MREE over HREE ratios. As an example, the Dy/Yb ratio (MREE/HREE) separates the Methana and Altiplano-Puna samples and the same differentiations can be seen on other ratios like Gd/Yb, La/Yb, Ce/Y and others. Also comparing zircon and whole-rock elemental compositions and ratios yields positive and negative corelations. Europium anomalies for example covary, indicating a shared chemical signal. These patterns support further testing but do not yet establish a unique control by crustal thickness. The next stage will evaluate the effects of magma composition and crystallisation conditions and test reproducibility across independent datasets, defining the potential and limits of zircon-based chemical mohometry.

MAGMA CHAMBERS UNDER PLATEAUS: A PETROCHRONOLOGIC STUDY OF THE ACIDIC VOLCANISM OF THE ALTIPLANO-PUNA, CENTRAL ANDES OF SOUTH AMERICA

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Keywords: orogenic plateaus; crustal anatexis; Central Andes.

The aim of this doctoral thesis is to investigate the genesis, evolution and dynamics of the magmatic systems underneath orogenic plateaus, taking the Altiplano-Puna Plateau of the Central Andes of South America as a case of study (also known as Central Andean Plateau, CAP from now on). In contrast to frontal arcs in subduction settings, where magmatism results mainly from the melting of the asthenospheric wedge and posterior differentiation of the primitive melts, it has been recently suggested that, in plateaus, magma production could derive preponderantly from crustal anatexis, with or without some deeper, mafic input. Furthermore, whereas magmatic bodies in arcs are typically represented by stocks, which in turn arrange in large batholiths, CAP volcanic products seem to be fed by extensive, horizontal partially-molten mid-crustal bodies. Thus, the main working hypothesis is that magmatism in orogenic plateaus is predominantly controlled by crustal anatexis in large mid-crustal regions. Their persistence as partially molten bodies over vast geological periods could possibly be favoured by the enrichment in incompatible elements (e.g., Li, B, F) and radiogenic heat production.

In order to test this hypothesis, a comprehensive literature review on the topic, including a compilation of whole-rock geochemical data on a set of peraluminous rhyolites cropping out in the study area, and fieldwork have been conducted during 2026. The latter has been carried out at some key localities of the Puna segment of the CAP, where fifteen samples were collected from two main Cenozoic volcanic areas: Cerro Blanco-Campo de la Piedra Pómez and the Ramadas Volcanic Center, NW Argentina. The samples obtained vary from effusive to different pyroclastic products, with geochemical composition spanning from basalts to rhyolites and ages ranging from Late Miocene to Holocene. Petrography, whole-rock and mineral-scale geochemistry, as well as U-Pb ages in zircon will be obtained for each one of the samples at PetroChron Lab through X-Ray Fluorescence and Laser Ablation Inductively-Coupled Plasma Mass Spectrometry. Electron Microprobe analysis will be carried out at the Geological Survey of Argentina (SEGEMAR).

SEISMIC THREATS IN THE GORJ REGION: A GEOLOGICAL AND SEISMOLOGICAL PERSPECTIVE

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Keywords: seismic hazard, Gorj area, earthquakes, OpenQuake

The earthquake sequence that occurred in the Gorj County, Romania, starting with 13 february 2023, was for many people an unexpected event, although earthquake catalogues indicated previous events in the area, decades of years prior. The 2023 sequence consisted of two moderate-magnitude earthquakes (5.2 and 5.7 Ml), followed by thousand of aftershocks, at depths down to 22 km. The main earthquakes produced slight and moderate damage to some of the buildings in the area. The presentation examines the underlying geology of the seismogenic area in the northern part of Gorj County, which is located at the contact of Carpathian Mountains with the Getic Depression. We analyze the distribution of earthquakes in this area, in relation also with the fault systems. By combining geotectonic and slope mapping with seismic hazard modeling using OpenQuake software and various ground motion prediction equations, we provide a preliminary assessment of potential seismic threats in the Gorj region.

CETACEANS FROM THE WESTERN DACIAN BASIN: NEW RESULTS FROM THE STUDY OF INSTITUTIONAL COLLECTIONS

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Keywords: Cetaceans, Paratethys, Neogene, Romania.

The Paratethys Sea served as a critical evolutionary arena for Neogene marine mammals, supporting a highly diverse fauna of endemic cetaceans, particularly within the family Cetotheriidae. However, despite the significance of this region, the cetacean fossil record in certain sectors remains patchy and underrepresented in published literature. To address this scarcity, historical and unpublished material from regional basins was examined. Museum collections often harbor vital, yet undescribed, fossil material crucial for reconstructing ancient marine ecosystems, exemplified by the material investigated here, which is housed in the collections of the National Geological Museum and the „Grigore Antipa" National Museum of Natural History. The material is composed exclusively of postcranial elements and was taxonomically ascribed based on comparisons with similar specimens from published literature. The majority of the specimens were ascribed to Cetotheriidae indet., although one complete humerus and several vertebrae were identified as belonging to *Mithridatocetus* sp. Furthermore, one of the vertebrae was collected from a previously undocumented fossil site. Consequently, this study re-evaluates the regional fossil record to refine the taxonomic distribution and paleobiogeography of cetaceans within the Paratethys Sea, establishing a clearer framework for previously undocumented fossiliferous localities. Ultimately, these findings expand the known paleogeographic range of *Mithridatocetus* and enhance our understanding of cetacean taxonomic richness in southeastern Europe, suggesting a more interconnected Paratethys marine ecosystem during the Neogene. Furthermore, the identification of a new fossiliferous locality highlights the untapped paleontological potential of the region, emphasizing the critical value of legacy museum collections as baselines for future evolutionary and biostratigraphic studies.