PROCEEDINGS OF THE ABSTRACTS

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IMPLEMENTATION OF OPTICAL SYSTEM IN MONITORING TUNNEL CONVERGENCE DURING EXCAVATION PHASE

COMPARISON AND CORRELATION OF THE METHOD APPLIED IN TWO DIFFERENT ROCKS MASS

CASE STUDY: "KRRABË" (*ALBANIA*) AND "DEMIRKAPIJA"(*FYROM*) TUNNELS

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ABSTRACT

Tunnel Convergence monitoring is a basic tool for understanding and documentation of rock mass behaviour, during excavation phase. This paper gives a brief description of convergence monitoring process of two similar road tunnel projects located in two different types of rock. Detection of anomalies in a short period, moreover the displacement of preliminary support lining is partially a matter of safety condition and provides clear overview of the rock mass behaviour giving the opportunity of taking immediate actions toward stabilization. In order to use the obtained data into mathematical models for tunnel design during excavation phases, a plot of absolute displacement with an accuracy of -/+1mm is provided. An optical system used for monitoring displacement in tunnelling is based on the use of survey equipment as Total Station and installation of convergence stations, composed by reflective targets on the preliminary support.

Assuming that methods used for tunnelling is practically the same, it has been focused on comparing data's between most problematic zones and designing additional rock support based on convergence stations results. Specific cases are being presented, where the optical method needs to be revised on regard of surrounding environment conditions. Working with the same revised method in both cases presented, after performing an error source analysis, it is not observed big deviation from the accuracy expected. In exchange for achievement of a certain accuracy, a secure path for detecting the real tunnel displacement between two different rock mass fault zones is provided.

Key Words: Tunnels, Convergence, Displacement, Monitoring, NATM

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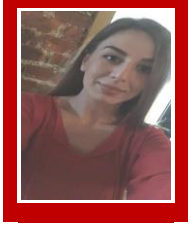
DOCUMENTATION AND ANALYSIS OF THE PROCESS OF PRESERVATION OF CULTURAL HERITAGE THROUGH GIS TECHNOLOGY



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ABSTRACT

The purpose of this paper is to present a framework for introducing an appropriate method for documenting and analyzing the cultural heritage conservation process in Prizren, known as one of the Cultural Heritage Sites in Kosovo, and discussing the challenges in using the systems of geographic information GIS for the evaluation of data collected and analyzed during the various stages of research, regarding our cultural heritage.

A systematic approach is used to understand the relationship between theoretical and practical heritage conservation processes in Prizren, further development and advancement for its preservation and promotion. GIS performs various management and analysis tasks, including data entry and scoring. This system works on simple personal computers to the most developed ones with different programming languages. Functions to be implemented by a GIS include the introduction and storage of data (documentation) as well as the analysis of these data. GIS functions and the need for standards in documenting cultural heritage will focus on this paper.

***Keywords*:** GIS, Heritage, Prizren

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LAND USE CHALLENGES AND ENVIRONMENTAL IMPACTS OF UNPLANNED URBANIZATION IN THE BATHORE ADMINISTRATIVE UNIT, ALBANIA

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ABSTRACT

The paper presents the use of GIS (Geographical Information System) method on assessing the challenges of land use and the environmental impacts at the Bathore Administrative Unit, Tirana, because of the informality during the period 1994s and onwards, as a result of migratory movements, involving the entire territory of Albania immediately after the collapse of the communist regime and the radical changes that occurred in the policy and economy.

Unplanned urbanization and urban expansion is a process that is estimated to have significant environmental, social and economic impacts that are related to energy consumption, water use, land use, environmental pollution, social exclusion problems, as well as economic problems. These movements targeted the main cities and opportunities that could be created by approaching them and precisely the migrants were located in the suburbs of large cities in agricultural lands or state farms in an unplanned manner, thus paving the way for various environmental and socio-economic problems, such as inadequate housing and low quality of life and economic problems such as high-level of unemployment.

For Bathore Administrative Unit doesn't exist any planning process and there is lack of data, cadastre registration problems, shrinking population and property conflicts. There were set out some recommendations and measures needed to improve the current situation by achieving a planned urban retraining, maintaining the existing plant cover, as well as enhancing green areas in order to ensure sustainable development, preserving and protecting the environment, as well as enhancing the quality of life.

Keywords: environmental impact, GIS, informality, land use, quality of life, sustainable development, unplanned urbanization.

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Dr. Enkelejda KUCAJ was graduated as Master of Science for Agro Environment & Ecology in 2011 and has completed her PhD for Environmental Science at the Agricultural University of Tirana in 2016. Her work experience includes: coordinator of INSTAT, ''Bank of Ideas'' Foundation, professor in some private universities, etc. She has participated in several national and international conferences, author and co-author of several articles in journals with Impact Factor. Currently, she is professor of "Environmental Law", "Environmental Economy", "Research Scientific Methods", "Academic Writing" at POLIS University.

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MSc. (PhD candidate) Besjana QAJA was graduated as an urban planner at POLIS University, Tirana, Albania. The research period end with a thesis degree project, titled: Role of "Cluster" in Agricultural Development Sector in Local Economy". After graduation, in 2017 she wins a scholarship for attending a Post-graduation master in Paris with an Erasmus Program at IPAG Business School. Since 2016, she is working as an assistant lecturer of Urban Geography, Territorial and Settlement Analysis, EU and Territory Policy, and Agricultural Development at Polis University. In 2017 she started the International Ph.D. course at the University of Ferrara, related with transport, in regional scale.

MSc. (PhD candidate) Ilda RUSI was graduated as Master of Science for Structural Engineering at Polytechnic University of Tirana (2011) and is currently attending the international PhD in Architecture and Urban Planning at Polis University in collaboration with University of Ferrara, Italy. Has been involved in several projects as part of a design team. Her interest field of study is in the areas that bridge Architecture and Civil Engineering. She has participated in different conferences, trainings and workshops home and abroad. Currently, is in POLIS University as the Assistant Lecturer of Advanced Structural Theories (Energetic Methods), Advanced Structural Theories (Sustainability) and Numerical Methods in Engineering.

URBAN DEVELOPMENT AND DIGITALIZATION OF THE ADMINISTRATIVE UNIT SUKTH, DURRËS, ALBANIA, USING GIS

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ABSTRACT

Suburban areas around the metropolis in Albania have been gradually developed under rapid urbanization, especially after the 90s, meanwhile, the socio-economic morphology and the spatial model have undergone dramatic restructuring. The Administrative Unit of Sukth extends to Middle Albania, between the capital of Albania, Tirana, and the city of Durres. Since the early 2000s, Sukth AU has undergone numerous transformations, moving from a traditional industrial and agricultural area to an urban area, coupled with a demographic change from a global point of view.

The evolution and restructuring of socio-economic morphology has been accompanied by significant changes in the lifestyle, production and ecological environment. Mutual relations between economic, spatial and social restructuring have fostered the systematic development of the social economy.

Based on the analysis of the rural restructuring process in terms of economic, spatial and social restructuring through the GIS technique, a number of recommendations on land use policy and institutional innovations have been submitted with the aim of allocating land resources and optimizing the restructuring of suburban areas, through the acceleration of the rural transfer rural institutionalization scheme, exploration of the tourism land management system, adapting to the new model of rural economy and pushing forward the land reuse mechanism.

Keywords: Land use, GIS, rural development, Sukth Administrative Unit, sustainable development.

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MORPHOLOGICAL AND HYDROGRAPHICAL CHANGES IN THE AREA OF THE OPEN PIT "TURIJA" AND THEIR GEOVISUALIZATIONS

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ABSTRACT

In this paper morphological-hydrographical changes in the area of the coal open pit "Turija" in Banovići basin (northeastern Bosnia and Herzegovina) are researched. The study was based on the field data and comparative analysis of topographic maps, satellite images, Digital Elevation Model and situational plans of the open pit area. With conducted GIS analysis of physical and anthropogenic relief of open pit "Turija" the changes in the structure of hypsometric level, slope and aspect, and the changes in the surface hydrographical network etc. are determined. The general trend of ground leveling, decrease in altitude differences, gradual disappearance of physical micro relief, disappearance of geomorphologic boundaries on the surface, disorganization of hydrographical network, the development of positive and negative forms of relief, and greater presence of physical-anthropogenic processes and forms in relation to physical ones are determined. Reduction of territories with southerly, easterly and westerly aspects, and a significant increase in territories with northerly aspect is also determined. Geospatial data obtained by GIS after their analytical and synthetic processing are geovisualized. Ten thematic maps were made and they provide insight into the essence of resulted changes in the researched geographical area. The explored indicators can serve as a significant factor in the future planning and selection of the type of re-cultivation of degraded areas in the area of research.

Keywords: Morphological-hydrological changes, relief, GIS analysis, geovisualizations, open pit "Turija".

AUTHORS BIO

Prof. as. dr. Sabahudin SMAJIC graduated at Department of Geography at the University of Tuzla in Bosnia and Herzegovina in 2004. At the same University he obtained master's degree in 2008, and PhD degree in 2012. He is currently employed at Department of Geography at the University of Tuzla as an Assistant Professor. His current research interests are mainly in the field of Physical geography, especially climate and geoecological changes. He is an author and co-author of many scientific papers which deal with the issues of Physical Geography

Prof. as. dr. Edin HADZIMUSTAFIC graduated in Department of Geography at the University of Tuzla-Bosnia and Herzegovina in year 2006. In year 2015, he defended his doctorate and got the scientific degree of Doctor of natural sciences (PhD) in Department of geography University of Tuzla. From year 2008 until now he is employee at the Geography Department University of Tuzla. As an author or co-author he published and presented many papers in national and international scientific conferences related to Physical geography.

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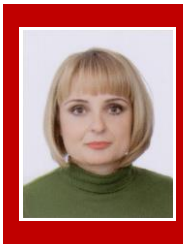
LITHO AND BIOSTRATIGRAPHIC STUDIES OF CRETACEOUS DEPOSITS IN THE RAHOVECI AREA (KOSOVO)



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ABSTRACT

Cretaceous deposits are well spread in the Rahoveci area. In recent years, we carried out systematic investigations and comprehensive studies in this area, focusing on its sedimentary- tectonic evolution and associated paleogeography. Some micro paleontological analyses and a new stratigraphic interpretation of Cretaceous deposits are here reported. These deposits are characterized by sedimentary faces varying from shallow to deep water due to the accidental relief on which they are deposited. Based on lithofacial changes recorded, the presence of unconformities, the presence of carbonate bauxites and other surveys carried out by stratigraphic investigations, the Cretaceous deposits of Rahoveci area can be divided into three belt (units) with different geodynamic and paleo geographic evolution: the eastern belt (Dresniku Unit), the central belt (Panorci Unit) and the western belt (Gremniku Unit). The Gremniku Unit includes, from bottom to top, the Tithonian - Berriasian detritic faces; the Aptian-Albian-Cenomanian limestone faces; the Cenomanian - Turonian limestone facies; the carbonate bauxites; the Lower Maastrichtian rudists-bearing limestone facies; the Globotruncana-bearing marly limestones and the Late Maastrichtian marly schist facies. The Panorci Unit includes: The Barremian - Aptian carbonate facies; the Albian-Cenomanian limestone facies; the Turonian limestone facies; the Coniacian-Santonian calcarenits and the Santonian – Maastrichtian marly limestones. The Dresniku unit includes: The Coniacian-Santonian calcarenits; the Santonian – Maastrichtian marly limestones and the Maastrichtian flyschoid deposits.

Keywords: *Facies, stratigraphy, Cretaceous, carbonate*

AUTHORS BIO

Prof. Dr. Mensi PRELA: Graduated in 1990 in University of Tirana, Faculty of Geology and Mining, Geological Branch. She completed PhD studies on 1996 thesis in near Earth Sciences Department Department of Florence University-Italy and *post doc* studies on 2003-2004. She received the scientific title *Professor* on 2012. The scientific experience consists in the publication of many scientific articles and a monography, regarding to stratigraphic studies of ophiolitic sequence, micro paleontological age determination of volcano-sedimentary complex and bio stratigraphic studies of carbonate continental margins of ophiolite. She has also coordinate various research projects.

Dr. Qamil SUKA: Born in Suhareka, Kosovo, 1965. Finished study in the discipline of engineering geology at the University of Pristina, Department of Geology in 1998. He completed PhD thesis at the Faculty of Geology and Mining in Tirana, Albania in 2015. His work experience includes: Engineer of Geology in Open pit coal Organization; Director in the Head of industry and trade department in Suhareka Municipality; Work supervisor in the organization Enterprise work "Hidroterm"; Senior geologist resources in ICMM- Independent Commission for Mines and Minerals.

Prof.as.Dr. Ariana BEJLERI: Is a lecturer at the Fundamentals of Computer Science Department, Faculty of Information Technology, in Polytechnic University of Tirana, teaching programming in C, C++, Pascal. She received Ph.D. degree in 1994, in Polytechnic University of Tirana. She received Associate Professor in 2004, Mathematic and Informatics Department, Polytechnic University of Tirana. Ariana has taken part in various projects and has completed qualifications in Universita degli studi di Trieste, Dipartimento di Elettrotecnica, Elettronica e Informatica (DEEI). She has published several articles, as author or co-author, in several international scientific magazines.Her research focuses on:Algorithms, Programming language, Data Mining.

DRONES AND STRUCTURE FROM MOTION A REVOLUTION IN GEO-SPATIAL PRODUCTION


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ABSTRACT

This paper addresses the impact that the emergence of drone and structure from motion (SfM) mapping technique is promising to have on conventional geo-spatial production approaches. Whereas conventional mapping services are highly centralized, the low capital and reduced skill barriers needed for geo-spatial production by means of drones and SfM mapping technique will result in decentralized and flexible geo-spatial production enterprises that are much more responsive to real demand at the local level.

By presenting real life examples related to applications in spatial planning, engineering design, mining, asset inspections, land rights formalization and environmental monitoring, we will argue that factors such as independence from scale of economy (no job is too small), quick production turn-around and the high degrees of resolution and accuracy of drone/SfM geo-spatial products will result not only in improved accuracy and production efficiencies, but also in better community participation and transparency.

Keywords: GNSS, drones, Structure from Motion, Virtual Surveying

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Walter Volkmann: Walter has a B.Sc. Engineering degree in surveying from the University of Kwazulu Natal, South Africa. He is a qualified professional land surveyor in South Africa and in Namibia where he owned a land survey practice for 18 years. In 2002 he migrated to Florida in the USA where he initially worked as geodetic specialist for a survey and mapping company. To explore the potential of emerging drone technology and subsequently the Structure from Motion (SfM) mapping technique, he founded Micro Aerial Projects LLC in 2008. Together with his son Oliver he is developing GNSS supported drone/SfM solutions.

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GIS BASED MONITORING OF HEAVY METAL POLLUTION INDEX IN GROUNDWATER

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ABSTRACT

Groundwater is the most important natural resource required for drinking to many people around the world. The study presents a case study of heavy metal pollution in groundwater at the Mitrovica region, Kosovo. A numerous heavy metals and their parameters were considered in the analysis. The main aim of the study is monitoring of the presence of heavy metals in gorundwater. Geographic Information System (GIS) is used to represent the spatial distribution of the heavy metals. In order to resprest the spatial distribution are used two interpolation methods such as Inverse Distance Weighted (IDW) and Spline method.

The inteprolation methods help to assesment and monitor values for unknown point and create a continuous surface dataset of the spatial distribution. As well as the paper involves the comparison analysis between IDW and Spline methods. The populated data in GIS such as spatial and non-spatial data are based in the field investigation and field surveing as well as in the office data processing and calculating. In order to monitor groundwater pollution is used a known indices in worldwide, known as Hevay Metal Pollution Index (HPI) and it is calculated. The final dataset of the study will include a numerous raster maps of monitoring of heavy metal pollution in groundwater in Mitrovica, Kosovo. The monitoring values of Hevay Metal Pollution Index (HPI) will be visualized as a raster maps.

The Geographic Information System (GIS) based on monitoring Heay Metal Pollution Index (HPI) of groundwater derived from this study, is an attempt for the first time in Kosovo in order to determine groundwater pollution and to identify places with high pollution within the study area. The authors hope that study will use as a reference study for further groundwater monitoring as well as environmental monitoring and assesment in Kosovo.

***Keywords*:** GIS, HPI, Interpolation, Spatial analysis, Groundwater Monitoring.

AUTHORS BIO

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Prof.Dr. Petar PENEV, Professor, Dr-eng. at University of Architecture, Civil Engineering and Geodesy – Sofia (UACEG). Head of seven university research projects and two international projects Leonardo da Vinci. Participant in other international projects. Lecturer in Cartography, Thematic Mapping, Web Cartography, Map design and production in UACEG. Research interests in the field of cartography and geographic information systems and mapping the cosmic environment, thematic and Internet – mapping.

WHEN A RIVER FLOWS! STRATEGIES FOR ENVIRONMENTAL, TOURISTIC AND INFRASTRUCTURE DEVELOPMENT OF ALBANIAN RIVERS


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ABSTRACT

This is a publication materializing the work of a one-year project, and it is part of a series of scientific publications prepared by, OMB Observatory of the Mediterranean Basin, a unit of RDI Research and Development Institute at Polis University, Tirana Albania. It summarizes the project undertaken by PhD students and the respective staff of the joint international PhD program organized successfully since several years, in cooperation with Ferrara University Italy. More specifically the publication contains work done during the academic year 2015-2016. As a methodology, Polis University initially developed a first research publication, namely: Albania 2030 Manifesto. A national spatial development vision – which could develop a starting methodology and technique on how to address and draft national scale policy documents and plans. The objective has been to link research with local needs and to promote positive and sustainable developments in emerging economies such as Albania. In the later years, the research units of both schools, respectively OMB (Observatory of the Mediterranean Basin) at Polis and SEALINE at Unife, together with the joint team of PhD Program, tried to detail each year focused geographic regions, by concrete thematic projects that address practically different regions of Albania. In this way the research work becomes useful, practical and tangible to the local development needs. After visioning of 'Durana' Metropolitan area (2015); and Southern 'Albanian Riviera' region (2016); we presented in this publication the outcomes of visioning for the third region of Albania. This time the research and visioning are based on "watershed" planning principles of Semani River, at central Albania. As one can see, 'water' has been over years the main theme of our research interest, aiming to develop and consolidate the methodology and framework of planning and design for future cities and large territories. We strongly believe that it might give useful hints Albanian authorities, and serves in the same time as an international scientific and professional reference for replicability in other situations and countries.

Keywords: Spatial development, River, environmental

AUTHORS BIO

Besnik Aliaj; is one of the founders and the Rector of POLIS University. He completed his postgraduate studies in Architecture in Tirana University, in 1990; post graduate studies in planning and urban management field at Erasmus University, Rotterdam, Holland (1995). He holds a PhD, a "Docent" and the "Professor" academic titles. Professor Aliaj has a rich academic experience and a very good knowledge of the educational system in Albania and beyond, starting from 1992 till today. He is one of the co-founders and former head of CO-PLAN, a pioneering professional institution in the planning field; the founder of the architecture studio "Metro-POLIS", and the "Forum A+P" magazine. At present, Prof. Aliaj is a prominent intellectual giving valuable contributions and making a stand in many issues of public interest like: the reform of local government, the planning and territory, formal economy, the high education and science reform, as well as in many other civil society causes in the country

Loris Rossi; Graduated in architecture in 2004 at "La Sapienza" University of Rome, Master degree in Architecture "Ludovico Quaroni". He was awarded a PhD scholarship in Architectural Composition and Theory at "La Sapienza" and he developed part of his PhD, in Los Angeles. He was an adjunct professor at the Five Year Master course in Architecture EU of "La Sapienza". From 2005 – 2011 he was co-founder of the ungroup Architecture office based in Rome; during this period, he took part in numerous national and international competitions some of which were awarded prizes and shown in international exhibitions. Since October 2011 he is a Full Time Professor at the POLIS University in Tirana (AL), from 2012 till 2013 he was Dean of faculty in Planning and Urban Design. In January 2015 he was Visiting Faculty Member at UCLA Department of Architecture & Urban Design, Los Angeles California. Currently he is Head of the Applied Research Department unit focused in the Observatory of Mediterranean Basin (OMB). His most recent research field is centered on observation, analysis and investigation in the context of Urban expressions, where the character of spontaneous processes is a manifestation of interrupted city images.

MODELLING TROPOSPHERE IN EXTREME WEATHER CONDITIONS IN BOSNIA AND HERZEGOVINA



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ABSTRACT

In the last decade, several extreme meteorological phenomena were noted in Bosnia and Herzegovina. February 2012 is remembered for record-breaking snowfall in Bosnia. Two years later, in May 2014 Bosnia and Herzegovina was struck by catastrophic floods. Temperature changes, heavy rainfall etc., as a result of conditions in lower part of the atmosphere, first of all troposphere, have an impact on determination of points coordinates using GNSS observations.

In this article we use approach to determine tropospheric parameters using GNSS technology. Having in mind the effect of troposphere on GNSS observations in form of tropospheric delay, we use GNSS observation for analysis and modelling of tropospheric parameters. Zenith tropospheric delay (ZTD) is analyzed, as an indicator of state of the troposphere in the period of mentioned extreme weather conditions. For this analysis stations of BIHPOS (Bosnia and Herzegovina Positioning Service) network were used. Coordinates of the stations were calculated using relative and absolute method of positioning in Bernese and gLAB software. Values of ZTD were interpolated using Kriging method of interpolation, in order to establish tropospheric model for the area of interest.

Keywords: troposphere, GNSS, ZTD

AUTHORS BIO

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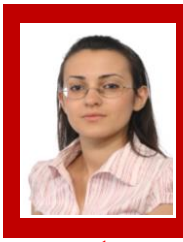
MSc.Eng. Dzana HOROZOVIC; Geodezy PhD student and University Assistant at the Vienna University of Technology. She earned her Master degree in Geodesy at the University in Sarajevo, Faculty of Civil Engineering in 2014. Her work focuses on the estimation of earth rotation parameters based on a network adjustment of globally distributed GNSS stations using multi-GNSS solutions and the investigation of ionospheric and space weather effects on ground-based GNSS station observations utilizing precise point positioning (PPP) and regional network solutions.

MSc.Eng. Randa NATRAS; MSc in Geodesy Randa is research scholar at Department of Geodesy and Geoinformation, Vienna University of Technology, Austria from 11/2017 to 07/2018. Randa earned BSc (2013) and MSc (2016) degrees in Geodesy, at Faculty of Civil Engineering, University of Sarajevo, Bosnia and Herzegovina. Randa does research in the field of GNSS based ionosphere modelling, investigation of space weather and atmospheric effects on GNSS signals.

MONITORING THE POST-EXPLOITATION PHENOMENA OF CLOSED Cu MINES IN THE REPUBLIC OF ALBANIA



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ABSTRACT

The mining industry in Albania started before the Second World War, but the largest and most intense development it recognized during the 60-90s of the 20th Century. In the late 1990, it was counted a considerable number of underground mines, mainly for use of chromium ore (in Bulqizë-Batër, Kukës-Has, Tropoja and Librazhd-Pogradec), copper (in the Puka-Fushe-Arrëz, Mirdita, Has-Kukes, Shkodra and Korça), coal (in the region of Tirana, Durrës, Pogradec-Korça and Memaliajt) ece. which with the social, economic and political changes in our country and the transition to the market economy, almost all the mining enterprises in the country were unprofitable or lost the sales market. Consequently, the overwhelming majority of the mines ceased production (or decreased), and gradually, with special Council of Ministers' decisions, passed into the closure and liquidation or conservation process. Scattered all over the country, there are currently dozens of mines (formerly owned by state-owned enterprises), which despite being closed with a project, in pursuance of Albanian mining legislation, should be constantly monitored for the problematic they carry.

In addition to the state structures, from which these mines have legal subordination (ALKROM sh.a, ALBBAKER sh.a and ALBMINIERA sh.a), the implementation of the post-mining closure plan and monitoring should be checked by the responsible structure (National Agency of Natural Resources - AKBN) on the basis of the annual project funded by the line ministry, today the Ministry of Infrastructure and Energy - MIE, which is sent to it annually along with the identified problems and proposals for measures to be taken to improve the situation created. Through this study I intend to arrive at the creation of a GIS map of the Republic of Albania where the closed Cu mining is presented in three closed mining categories: final; average, still dangerous.

Keywords: *Closed Cu mines, monitoring, GIS map.*

AUTHORS BIO

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USING ONLINE WEB-GIS FOR FACILITATING ORIENTATION IN THE MUNICIPALITY OF FERIZAJ, KOSOVO


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ABSTRACT

Navigation has become a vital and indivisible part of our everyday life, in this paper we have elaborated a concrete topic regarding finding the most suitable route in relation to a certain location. Concretely, the paper is focused on the Municipality of Ferizaj, Kosovo.

The program used is QGIS (Quantum GIS). The method used is: inserting all roads of this commune and primary and secondary schools. The main purpose is to connect roads with schools, enabling facilitation of orientation and finding the shortest and most convenient route to the desired destination. The work ends with a WEBGIS online page, which can be used by the municipal residents for their needs.

Keyword: QGIS, Location, schools, roads.

AUTHORS BIO

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SUSTAINABLE MANAGEMENT OF AQUIFERS AND GIS MODELLING

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ABSTRACT

The non-sustainable use of groundwater resources may affect them in an irreversible way and have as a long term consequence the decrease of ground water quantity and quality that could impact the water supply for drinking, industry, or other purposes. That's why it is important to manage them in a sustainable way, for which it is necessary to take into account some steps, including the following: Evaluation of the spatial extension of the aquifer and of its characteristics; Evaluation of the existing and future needs for groundwater quantity and quality; Evaluation of the vulnerable parts of the aquifers in function of the existing natural and manmade environment; and Existing and future development plans (urban, industrial, etc.)

The evaluation of the above issues and the weighting of the need for ground water require a careful management of the manmade environment in function of the sustainable use of groundwater resources that should be based on the aquifer's characteristics. The high and various number of data/information to be taken into consideration can be processed through GIS, which can analyze and present them in the form of different thematic maps that should be taken into consideration as a mean of sustainable use or ground water closely linked to the territorial development.

***Keywords*:** Aquifer, Water Use, Sustainable Management, GIS, Environment

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SOME SURVEING PROBLEMS IN ORIENTATION OF UNDERGROUNG MINING IN CROMIUM MINE KATJEL, ALBANIA


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ABSTRACT

The chrome mine in Katjel is a small underground mine opened with a vertical shaft sinking from a horizontal mining work. The orientation survey of the different levels of this mine is carried out with shaft plumbing method, a process of transferring bearing (projection of two points) from surface to the mining levels opened from the shaft.

The main factors that affect the assurance in bearing transmission in the mechanical plumbing correlation method in this mine are non-large diameter of the vertical shaft, the deflection of wires by air current of the ventilation system, the presence of water dropping down along the shafts trunk and the geometry of shaft inset.

The factors mentioned above present in this mine, have led to an orientation error correlation of surface and underground survey, greater than allowed error. In this article we are briefly introducing the methodology of the mining measurements for the orientation of mining works in this mine, the errors found in the position in the plan and height of the mining works, the factors that caused these errors and the control possibilities to avoid such mistakes.

Keywords: Mine surveying, Mining orientation, Gyro azimuth, Zenith plummet, Weisbach triangulation, Compass orientation.

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St. Ermal LAÇKA: Born in Rajcë, Librazhd 25-03-1996. Finished the bachelor degree in Georesources Engineering, Faculty of Geology and Mining, Polytechnic University of Tirana. 30-10-2017-Current Master of science in Geomatics. Mother tongue(s): Albanian, other language English B2. **Work experience:** Survey in Currila-Durrës, Survey-Measurement in Rehovë-Korçë, Albania.

TECHNOLOGY OF DUMPING IN FUNCTION DYNAMIC OF EXCAVATION OVERBURDEN AND COAL AT THE OPENCAST MINE SIBOFC SOUTHWEST- KOSOVO


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ABSTRACT

The main reason of the excavation overburden and exploitation of coal mine Southwest Sibofc is for the needs of TC "Kosovo A and B" to assure sufficient quantities of coal, with the necessary quality and minimum operating costs along. The dynamics of the overburden and coal excavation in Southwest Sibofc mine is based on the exploitation of the project with a maximum annual production of 12.5 [million m^3] overburden and in extrusion coal of 8.4 [million t].

Based on the production of electricity in Kosovo, as well as a gradual increase in electricity consumption, it is necessary to work more intensively on providing the conditions for the establishment of new production capacities of coal. So it is important to make preparations to create conditions that eventually shut down the existing mines and continue with new mines.

One of the problems in providing an area for dumping a significant amount of overburden excavated now considers that it is defined. It is known that existing mines in Mirash and Bardh have an area where you can dump large amounts of overburden.

For allocating area to dumping analysed coverage amounts which digger within the annual period and that can be dumping over the same period and is calculated as the total area and number of measures that can be dumping.

***Keywords**:* Dumping overburden, coal mining, working dynamics

AUTHORS BIO

PhD. Nexhmi Krasniqi has studied for Mining Engineer at the Faculty of Mining and Metallurgy, Mitrovica, graduated in 1993. Until 1999 worked at KEK- Coal Production Division in the Engineering Department as Design Engineer. From 2017 he is a regular lecturer at UBT College, Pristina in the framework of the Faculty of Civil Engineering and Infrastructure and the Faculty of Energy Engineering

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THE CREATION OF NSDI IN ALBANIA AND HARMONIZATION OF GEOSPATIAL DATA

CASE STUDY: GEOGRAPHICAL NAMES

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ABSTRACT

ASIG (State Authority for Geospatial Information) is the institution that administrates, implements, and maintains the National Spatial Data Infrastructure (NSDI). It collects and updates geospatial data from responsible public authorities. For this reason, it is very important for ASIG to implement a methodology for creating, updating and processing this information under the INSPIRE directive. Geographical Names are used extensively when searching or navigating for information on web services (including geoportals), referring thematic information to a location (geocoding), by displaying geographic information. They are considered as reference data or data that provides the geospatial framework for recognizing geographic location in general, by linking and / or showing relevant information in specific thematic fields, such as: geology, environment, addresses, and many others defined in law no. 72/2012. The correct use of geographical Names is a primary aspect of daily communication because they are interlinked with other topics in INSPIRE. The most important process is data reconciliation that involves the shredding of the existing geospatial database according to the database format specified in the standard with the respective topic Geographical Names.

Keywords: Geospatial Data, Geographical Names, GIS, ASIG, INSPIRE, NSDI

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MSc. Mikel MILLJA. Has finished Geodesy at Faculty of Construction Engineering (FIN), Tirana, in 2013. Head of the Geospatial Standardization Department in ASIG. Assistant professor on subjects "Theory of errors" in Geodesy Department. Land surveyor and GIS expert in private company GeoNord Sh.p.k (part time). Advanced skills in Surveying (field and office processing with the latest surveying technology (Total Station, GNSS, Digital Levels, UAV Drones) and software (AutoCAD Civil 3D), Mapping (by utilizing ArcGIS, QGIS, AutoCAD Map 3D & Global Mapper). Good skills in Geospatial Information related to Modelling and Harmonizing datasets INSPIRE Compliance (Using software as Hale Humbolt, Enterprise Architect, ArchGIS). Advanced educational and training skills (currently involved university).

APPLICATION OF GIS IN INTEGRATED RIVER BASIN MANAGEMENT
CASE STADY OF THE BLINAJA RIVER BASIN, KOSOVO

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ABSTRACT

Water is one of the most underlying resources in our life, for human life and for a sustainable development. Integrated managing of water resources asks for a wide base of date concerned with water. The neccesary information to evaluate the water resources is comprised of all variables that close the balance of water that is collected in the reservoir. The managing of a river basin (WFD 2000/60 EC) is admitted as a mechanism that responds to the requirements of the community as far as the river pond is concerned. In many cases the existing crises of water resources comprises in itself a crises which is concerned with managing process of water resources as well as lack of proper information which is related to exploitation of water. The management of water resources in real time as well as the implementation of GIS technology the most demanding challenges that the respective authorities which are obliged to cope with.

This paper aims to reveal and demonstrate how GIS facilitates the process of planning and managing the water resources in the river basin of Blinaja. GIS serves as a tool which provides opportunities for carrying out the systemization, analysis and managing of collected data which are related to planning the water resources in the respective basin. The results of this paper witnessed how the implementation of GIS technology has succeed to provide rapid assessments, visualizing oppotunities aiming to assist the planning, exploitation and well-administering until the decision-making process in the river basin of Blinaja.

Keywords: water, river basin,management, GIS, data, information.

AUTHORS BIO

Dr. Hazir Çadraku, studied at the University of Prishtina-Faculty of Mining and Metallurgy in Mitrovica in the geology branch. He has completed the undergraduate studies in geology and postgraduate studies in geology-engineering and hydrogeology in Mitrovica, while doctoral studies have been completed at the Polytechnic University of Tirana at the Faculty of Geology and Mining in the field of hydrogeology. He is currently employed at the College for Business and Technology-Faculty of Civil Engineering. He has worked more than eleven years in the Ministry of Environment and Spatial Planning of Kosovo in the position of Head of Development Policy and Strategic Water Planning. He has been a drafter and a professional participant in many legal acts, strategies and action plans related to the field of management and administering of water resources, as well as a drafter and participant in many projects in the field of: geology, geology-engineering and hydrogeology.

THE EXPLOITATION AND VALORIZATION OF MINERAL ENERGY RESOURCES IN KOSOVO

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ABSTRACT

Due to the drastic fall in stock of fossil fuels, global warming, but partially due to the dynamic growth of the economy in China and India, the scientific community and the world's energy institutions, insist that "the period of coal utilization to mark a turning point". Kosovo, despite sufficient coal reserves, is undergoing a deep crisis of reform and reconstruction of the mining and energy sectors. Now, when experts from developed countries through new mineral processing approaches promise to breed "coal into gold," and on this technological progress, Kosovo should accelerate trends towards a new energy regime. Despite the international compromise achieved since the Kyoto Protocol, and recently the one in Paris, where industrialized nations agreed on a binding agreement that by 2012 to reduce greenhouse gases emissions at the level that was in the year of 1990.

It is still dominating a significant imbalance between rational exploitation of resources, economic growth and environmental sustainability. The European Union is the largest importer of energy in the world, and thus the second largest consumer because it imports 50% of energy, so members and aspirant countries of EU need to advance access to exploitation and valorization of energy resources, and to reach a compromise on a more rational exploitation of resources and the development of integrated energy policies.

The chart of the exploitation and valorization of mineral resources, especially those of energy in Europe, is changing rapidly. The demand for these resources and energy is expected to increase by 60% by 2030. According to all the predictions, based on the exploitation trends, coal and other fossil fuels, which enabled the industrial revolution and global warming, will return to decommissioning, because, the U.S.A., according to Bernstein Research, in 2017, from fuels of fossil origin, have burnt 943 million tons of coal only. While, in the same year, only China has burned 4 billion tons, as much as the rest of the world burns. Therefore, the European Commission for Energy through Mining and Energy Sector Reforms, funded financially by many donors in the Western Balkan countries, is promoting new approaches to exploitation and valorization of energy mineral resources.

Keywords: *energy resources, exploitation, valorization, technological progress, Kosovo*

AUTHORS BIO

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GIS AND THE STRUCTURING OF SPATIAL DATA IN THE FUNCTION OF DECISION-MAKING

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ABSTRACT

Political and socio-economic developments in the region of Balkans at the end of the XX century and the first quarter of the XXI century have induced a rapid and uncontrolled transformation of the land. This dynamic of spatial development is also noted in the Republic of Kosovo, and will have long-term consequences in the use of land in function of sustainable socio-economic and spatial development.

Lack of spatial plans as well as unplanned, uncontrolled constructions, and inconsistent with urban standards, have seriously degraded fertile lands and other areas destined for economic and social activities. To establish a clear picture of these developments, inevitably, it is necessary to use different sources of spatial data, including topographic and thematic maps, as well as satellite images and orthophotos.

Data collection, systematization, comparison, tracking of spatial phenomena development and the opportunities to plan them for certain time periods based on the presentation of spatial facts, affect the making of important decisions regarding the development of socio-economic and spatial policies. The Geographers' professional activities in compilation of important spatial documents are necessarily linked to the application of GIS, initially in identifying phenomena, then collecting data from different sources such as maps, orthophotos, satellite imagery, fieldwork through GPS, spatial analysis, up to the publication of data through thematic maps, ortho-maps, etc.

Establishing a spatial and socio-economic database, structured in a right, professional manner and easy-to-use for desired analysis, helps in designing long-term policies in the function of a sustainable spatial and economic development, ensuring harmonization of spatial developments in accordance with the dynamics of economic development that is promising for future generations.

Key words: *GIS, development, sustainable, activity, economic, spatial, function.*

AUTHORS BIO

Dr.Hazer Dana, born on 09.02.1978 in the village of Brrut of the municipality of Dragash – Kosovo. Graduated in bachelor's studies in the University of Pristina, Faculty of Mathematics and Natural Sciences – Department of Geography. He gained his Master's Degree on the subject: Opoja in the External migrations in the University of Pristina. Graduated his PhD studies in the University of Tirana.

Dr.Tomor Çela, born on 27.03.1974 in the village of Kishnarekë of the municipality of Gllogoc – Kosovo. Graduated in bachelor's studies in the University of Pristina, Faculty of Mathematics and Natural Sciences – Department of Geography. Also graduated his Master's Degree on the subject: Socio-Economic Models in Land Surface Areas in the University of Pristina. For PhD studies, he graduated in the University of Tirana. He is passionate about GIS (Geographic Information System), spatial planning and deep statistical analysis.

GEOVISUALISATION QUALITY IN GEOPORTALS OF THE AGENCY FOR REAL ESTATE CADASTRE OF MACEDONIA

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ABSTRACTS

In the home page of the Agency for Real Estate Cadaster of Macedonia (AREC) www.katastar.gov.mk are available direct links to two active geoportals, which are developed and under maintenance of AREC. Beside them, link to the old geoportal of AREC is available also, developed and maintained by the AREC team in a past period. First geoportal is focused on promoting and purchasing of AREC products, entitled as OSSP and accessible via https://ossp.katastar.gov.mk. The second one is national geoportal as output of NSDI project, developed based on INSPIRE directive platform http://nipp.katastar.gov.mk.

The old geoportal is available via direct link http://gis.katastar.gov.mk in home page of AREC, which was developed on year 2016 and have been in official use till last year 2017. Three AREC geoportals doesn't fulfill the standards for qualitative geovisualisation. Symbols, labels and scale ranges are not harmonized, which don't provide clarity and readability web map. Geovisualisation problems have been recognized in all (three) geoportals of AREC.

In this paper, results from performed research analyses of qualitative map view of AREC geoportals will be presented in details, which in the future can be used by AREC as guidelines for further improvements up to full implementing of geovisualisation standards in their geoportals!

***Keywords*:** geoportal, geovisualisation, web mapping, AREC.

AUTHORS BIO

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MONITORING OF INERT THROUGH GIS BY NON-LEGAL MINERAL ACTIVITIES ALONG THE FLOW OF DRINI BARDHË RIVER URA E GJONAJVE

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ABSTRACT

Drini i Bardhë river basin is located in the western part of Kosova, it is the biggest river basin with surface of 4.289 km2. Drini i Bardhë discharges its water to Albania and finally to the Adriatic Sea. The River Drini i Bardhë, has a distance of 122 km long, and flows in the north-south direction. Our study will be concentrated in the part of segment, in a distance of 90 km. This basin beside the huge amount of water flow it brings with itself alluvions enriched with the flow of sand and gravel, on the shores of this basin, but also the river bed itself, as a results it enriches the deposit with high quality inert. These inerts, according to the law for mines and minerals, can be exploited away from the river in distance of 150 m, by having an environmental permit the distance can be even less than 150m. Illegal mining activities have been occurred and therefore they have damaged the shores of this river throughout the river basin.Basin is situated in Peja and Prizren Region, since 2001 until today are evidenced about 500 illegal mining activities on using inerts.The paper work besides that clarifies the way on how this evidence is kept, data and GIS location even the Inspectorate of mines keep the geodatabase for this operators and it will explain from two to three locations with a special focus high degradation scale of the river bed and river shore as well as to the damage of the river cadastre as a result of this activity.

Keywords: *Basin, illegal activity, inerts, river bed and cadastre of Drini i Bardhë*

AUTHORS BIO

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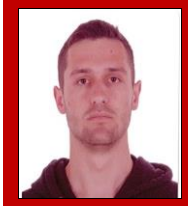
GIS TECHNOLOGY USE TO EVALUATE THE AMOUNT OF CHROMIUM IN STERILE STOCKS IN MINING REGION OF BATËR

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ABSTRACT

In Batra territory, in addition of other objects, attribute of abandoned exploits are also sterile stocks. Favoured by terrain, these stocks are created by throwing the sterile straight to the mining gate. So the whole region is crowded with a large number of stocks that occupy a considerable area of the natural land.

In this context they form a considerable environmental burden. In addition they prevent the growth of flora and fauna. It is also deprived from land-use planning based on standardized plans. The deposing in a mutual deposit is a task, the solution of which asks for the indication of the junk amount. Besides, these stocks contain a reasonable amount of mineral which is used as e market product. To calculate it, except of the volume of the sterile material, is required also the amount that this mineral holds in the total sterile material. In this article we are going to show the solution of these problems using the GIS technology.

Key words: Mining, abandoned mining quarries, sterile stocks, natural area, enviromental burden, GIS.

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