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GEODESY & MINE SURVEYING
CARTOGRAPHY & GIS



CONFERENCE PROCEEDINGS CONTENTS**GEODESY AND MINE SURVEYING**

- 1. 3D LASER SCANNING - MODERN TECHNOLOGY FOR GEOSPATIAL DATA ACQUISITION IN CONTEXT OF URBAN DEVELOPMENT**, Adrian Alionescu, PhD Alina Corina Bala, PhD Floarea Maria Brebu, PhD Maria Roberta Gridan, Politehnica University of Timisoara, Romania.....3
- 2. A NEW APPROACH RELATED TO THE BIG STRUCTURES REAL TIME MONITORING**, Gresita Constantin Irinel, Grigorie Teodor Lucian, University Of Craiova, Romania.....11
- 3. A STUDY ABOUT NEW CADASTRAL LEGISLATIVE PROVISIONS IN ROMANIA CORRELATED WITH CADASTRE 2034**, Assoc. Prof. PhD. Eng. Ana-Cornelia Badea, Prof. PhD. Eng. Gheorghe Badea, Lect. Phd. Viorica David, Technical University of Civil Engineering Bucharest, Romania.....21
- 4. ACCURACY ANALYSIS OF FITTING EXTERNAL PICTURES FROM DIFFERENT SOURCES TO POINT CLOUDS TEXTURE MAPPING**, Karolina Hejbudzka, Andrzej Dumalski, University of Warmia and Mazury, Poland.....27
- 5. ACCURACY ANALYSIS OF TUNNELING MEASUREMENTS IN UEF JOSEF**, Ing. Rudolf Urban, Ph.D Ing. Tomas Jirikovsky, Ph.D., CTU in Prague-Faculty of Civil Engineering, Czech Republic.....35
- 6. ACCURACY OF COORDINATE TRANSFORMATION**, Martin Stroner, Rudolf Urban, CTU in Prague-Faculty of Civil Engineering, Czech Republic.....43
- 7. AN ANALYSIS OF ZONE SUBSIDENCE OF TERRAIN IN THE INNER CITY AREA OF THE TUZLA IN TERMS OF CONSTRUCTION DEVELOPMENT (BOSNIA AND HERZEGOVINA)**, Mr. Edis Imamovic, PhD Mirko Borisov, PhD Milan Trifkovic, PhD Ruza Celikovic, University of Tuzla, Faculty of Mining, Geology and Civil Engineering, Bosnia and Herzegovina.....51
- 8. ANALYSIS OF THE RELIABILITY OF VELOCITIES ESTIMATED ON THE BASIS OF GNSS AND SLR OBSERVATIONS**, Szafranek K., Araszkiewicz A., Schillak S., Figurski M., Zonik P., Military University of Technology Faculty of Civil Engineering and Geodesy, Poland.....63
- 9. APPLICATION OF SELECTED ROBUST ESTIMATION METHODS FOR RECTIFICATION OF THE CRANE TRACK**, PhD Zbigniew Muszynski, Wroclaw University of Technology - Faculty of Civil Engineering, Poland.....71
- 10. ARCHIVAL CADASTRAL DATA MODELLED IN AN ELECTRONIC ENVIRONMENT**, Baldo Stancic, Miodrag Roic, Goran Jurakic, University of Zagreb, Faculty of Geodesy, Croatia79

- 73. TOPOGRAPHICAL SURVEY PERFORMED TO CHASE THE STABILITY OF THE TAILING DEPOSITES FROM ZLATNA, ALBA COUNTY, IN VIEW OF AREA REHABILITATION**, Flavius Balaneanu, PhD Andreea Begov Ungur, 1 Decembrie 1918 University of Alba Iulia, Romania585
- 74. TRANSFORMATION OF GRAVIMETRIC GEOID/QUASIGEOID SOLUTION IN THE SYSTEM OF ORTHOMETRIC/NORMAL HEIGHTS OF SERBIA LEVELING NETWORK**, Assoc. Prof. Oleg Odalovic, Asst. Prof. Sanja Grekulovic, Asst. Prof. Ivana Vasiljevic, Miljana Todorovic Drakul, Jovan Popovic, Faculty of Civil Engineering University of Belgrade, Serbia593
- 75. UNIFICATION OF POLISH LOCAL VERTICAL DATUM WITH GLOBAL VERTICAL DATUM**, Prof. Adam Lyszkowicz, Monika Birylo, Joanna Kuczynska-Siehien, University of Warmia and Mazury, Poland603
- 76. WHICH REFERENCE SURFACE? ROTATIONAL OR TRIAXIAL ELLIPSOID**, Prof. Dr. Sebahattin Bektas, Ondokuz Mayıs University, Turkey609

CARTOGRAPHY AND GIS

- 77. 3D CARTOGRAPHY AND GEOVISUALIZATION BASED ON GIS AND GEOVRML FOR AN OPEN ACCESS LANDFORM INVESTIGATION AND ANALYSIS WITHIN AN OPEN WEB PLATFORM (OWP)**, Dr. Tarek Slama, Prof. Mohamed Moncef Turki, University of Tunis el Manar Faculte des Sciences de Tunis, Tunisia619
- 78. A CONCEPT OF GEOGRAPHIC INFORMATION SYSTEM FOR MOVABLE HERITAGE**, Albina Moscicka, Agnieszka Zwirowicz-Rutkowska, Military University of Technology, Poland627
- 79. A DECISION SUPPORTING TOOL FOR THE CREATION OF 2D SIMULATED FLOOD MAPS IN A GIS**, MSc. Hanne Glas, Prof. dr. Ing. Greta Deruyter, MSc. Annelies Vandenbulcke, Ghent University, Belgium635
- 80. A GIS-BASED FLOOD RISK TOOL FOR JAMAICA: THE FIRST STEP TOWARDS A MULTI-HAZARD RISK ASSESSMENT IN THE CARIBBEAN**, MSc. Hanne Glas, Maxine Jonckheere, Prof. dr. Philippe De Maeyer, Prof. dr. Ing. Greta Deruyter, Ghent University, Belgium643
- 81. A MODERN APPROACH IN DATA UPDATING FOR A VINEYARD AGRO-SYSTEM MODERNIZATION**, Assoc. Prof. Dr. Doru Mihai; Assoc. Prof. Dr. Razvan Ionut Teodorescu; Assoc. Prof. Dr. Daniela Burghila; Dr. Radu Mudura, University Of Agronomic Science And Veterinary Medicine - Bucharest, Romania651

APPLICATION OF GIS TECHNOLOGY AT DESIGNING ADAPTIVE- LANDSCAPE SYSTEMS OF AGRICULTURE (FOR EXAMPLE, ALMATY REGION KARASAI DISTRICT)

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ABSTRACT

This paper presents a method based on geographic information system (GIS) at designing adaptive-landscape system of agriculture (ALSA) in a large-scale mapping of agricultural landscapes. Adaptive-landscape system of agriculture created using terrain model (which integrate human activities). The main results of maps that allow the analysis and understanding of the impact of human activity on the landscape. In the article we are considering principles of compiling Facies maps and maps of Stows in the adaptive landscape system of agriculture (ALSA) Almaty region Karasai using GIS technology. At present, the pressing question of a fundamental change in the process of agronomic solutions through the introduction of environmentally sustainable farming systems with extensive use of the capabilities of modern methods and technologies, including geographical information systems and computer technologies. The system is held in Kazakhstan as a territorial analysis of the classification categories of landscapes and large-scale charting of areas of elementary landscapes using GIS technology for design of adaptive-landscape system of agriculture. In this case study, practical application of GIS technology is considered relevant.

Keywords: GIS technology, adaptive-landscape system of agriculture, large-scale mapping, landscape.

INTRODUCTION

1980-2000-ies. in all regions of Kazakhstan have been substantiated zonal system of agriculture, more or less fully take into account local and regional natural and climatic specifics and level of development of the productive forces. However, attempts to develop systems of agriculture for separate farms on the basis zonal measurement standards were not nearly as fruitful [1], [2], [3]. Dramatically changed the socio-economic situation, to replace the zonal system of agriculture came the notion of adaptive landscape, referring not only to adapt to the natural, but also production factors [4], [5]. Strictly speaking, the adaptive-landscape system of agriculture - a system of use of land defined environmental group oriented on the production of economically and environmentally conditioned the quantity and quality in accordance with the public (market) needs, natural and productive resources, providing sustainability agrolandscape and reproduction of soil fertility [6], [7], [8]. Scientific novelty. For the first time in the territory of Kazakhstan conducted a territorial analysis of the classification categories of landscapes and issuance of soil-geomorphic

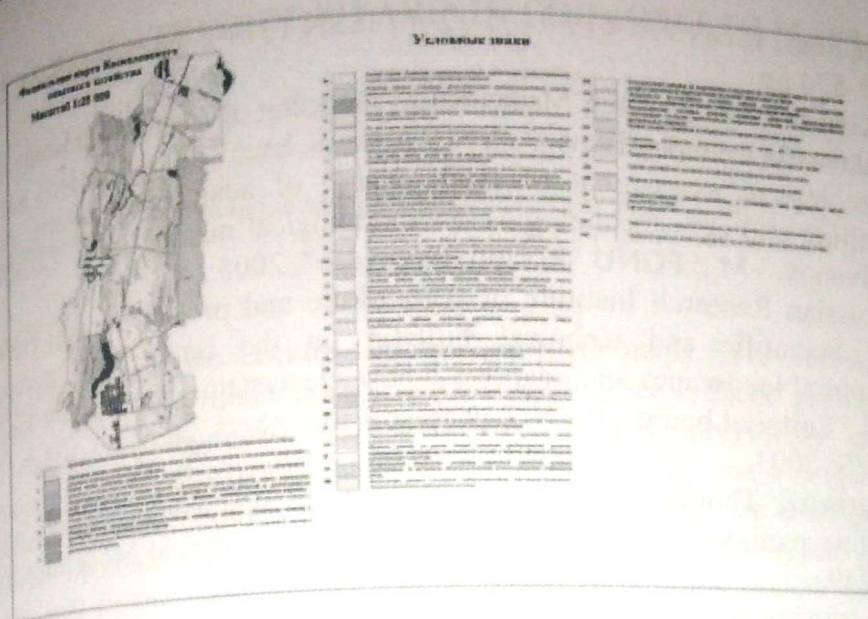


Figure 4. Facies Map Kaskelen experimental farm

The result of each of the expert modules of information-analytical system is the optimal distribution of crops for production sites. In this case, the user is offered a complex quantitative estimates of productivity, as well as a number of economic parameters. Except to reporting the analysis results of each expert module update information electronic map of the territory, which in turn displays the map layer with production sites for optimal sown.

CONCLUSION

Thus, a detailed mapping of the multi-component agricultural landscape that allowed the identification by the combination of different features over a thousand elementary soil habitats. The latter, in turn, were completed in the agro-ecological land types for evidence-based planning and distribution of crops chosen level of technology. Created block GIS system was the base for the further development of the technology packages crop cultivation zoned for three possible levels of intensification of production. This allowed the inclusion of "Agronomy block" in the economic- mathematical model of optimization of the agricultural enterprise as a subject of a market economy. As a result of the work of the expert modules of information- analytical system agronomist is actually ready to plan the distribution of the available crop production areas and yields a prediction separately for each area, and the sum over the entire northern slope of the Ili Alatau mountains'. All this information is displayed on a computer screen at any scale in the form of e-card with the color accordingly received better placement cultures. With the appropriate equipment (printer, plotter) can be a hard copy card with any combination of layers and at any scale.

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