

**18th INTERNATIONAL MULTIDISCIPLINARY
SCIENTIFIC GEOCONFERENCE
S G E M 2 0 1 8**

CONFERENCE PROCEEDINGS

VOLUME 18



INFORMATICS, GEOINFORMATICS AND REMOTE SENSING

ISSUE 2.2

GEOINFORMATICS

GEODESY AND MINE SURVEYING

2 July - 8 July, 2018

Albena, Bulgaria

DISCLAIMER

This book contains abstracts and complete papers approved by the Conference Review Committee. Authors are responsible for the content and accuracy.

Opinions expressed may not necessarily reflect the position of the International Scientific Council of SGEM.

Information in the SGEM 2018 Conference Proceedings is subject to change without notice. No part of this book may be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose, without the express written permission of the International Scientific Council of SGEM.

Copyright © SGEM2018

All Rights Reserved by the International Multidisciplinary Scientific GeoConferences SGEM

Published by STEF92 Technology Ltd., 51 “Alexander Malinov” Blvd., 1712 Sofia, Bulgaria

Total print: 5000

ISBN 978-619-7408-40-9

ISSN 1314-2704

DOI: 10.5593/sgem2018/2.2

**INTERNATIONAL MULTIDISCIPLINARY SCIENTIFIC GEOCONFERENCE SGEM
Secretariat Bureau**

E-mail: sgem@sgem.org | URL: www.sgem.org

ORGANIZERS AND SCIENTIFIC PARTNERS

- THE CZECH ACADEMY OF SCIENCES
- LATVIAN ACADEMY OF SCIENCES
- POLISH ACADEMY OF SCIENCES
- RUSSIAN ACADEMY OF SCIENCES
- SERBIAN ACADEMY OF SCIENCES AND ARTS
- SLOVAK ACADEMY OF SCIENCES
- NATIONAL ACADEMY OF SCIENCES OF UKRAINE
- INSTITUTE OF WATER PROBLEM AND HYDROPOWER OF NAS KR
- NATIONAL ACADEMY OF SCIENCES OF ARMENIA
- SCIENCE COUNCIL OF JAPAN
- EUROPEAN ACADEMY OF SCIENCES, ARTS AND LETTERS
- ACADEMY OF SCIENCES OF MOLDOVA
- MONTENEGRIN ACADEMY OF SCIENCES AND ARTS
- CROATIAN ACADEMY OF SCIENCES AND ARTS, CROATIA
- GEORGIAN NATIONAL ACADEMY OF SCIENCES
- ACADEMY OF FINE ARTS AND DESIGN IN BRATISLAVA
- TURKISH ACADEMY OF SCIENCES
- NIZHNY NOVGOROD STATE UNIVERSITY OF ARCHITECTURE AND CIVIL ENGINEERING, RUSSIAN FEDERATION
- BULGARIAN ACADEMY OF SCIENCES
- BULGARIAN INDUSTRIAL ASSOCIATION
- BULGARIAN MINISTRY OF ENVIRONMENT AND WATER

INTERNATIONAL SCIENTIFIC COMMITTEE

Informatics, Geoinformatics and Remote Sensing

- PROF. ING. ALEŠ ČEPEK, CSC., CZECH REPUBLIC
- PROF. G. BARTHA, HUNGARY
- PROF. DR. DAMIR MEDAK, CROATIA
- PROF. PETER REINARTZ, GERMANY
- PROF. JAN KAZMIERCZAK, POLAND
- PROF. DR. JÓZSEF ÁDAM, HUNGARY
- PROF. RUI MIGUEL MARQUES MOURA, PORTUGAL
- PROF. DR. ING. KAREL PAVELKA, CZECH REPUBLIC

- PROF. DR. MARCEL MOJZES, SLOVAKIA
- PROF. VADIM ZHMUD, RUSSIA
- ASSOC. PROF. DR MILAN HOREMUZ, SWEDEN
- ASSOC. PROF. KRYSZYNA JANUSZKIEWICZ, POLAND
- DR. TIBERIU RUS, ROMANIA
- DR. MARKO KREVS, SLOVENIA

CONFERENCE PROCEEDINGS CONTENTS**GEOINFORMATICS**

- 1. A COMPARATIVE ANALYSIS OF MANHATTAN, EUCLIDEAN AND NETWORK DISTANCES. WHY ARE NETWORK DISTANCES MORE USEFUL TO URBAN PROFESSIONALS?**, R.T. Mora-Garcia, P. Marti-Ciriquian, R. Perez-Sanchez, M.F. Cespedes-Lopez, University of Alicante, Spain.....3
- 2. A STUDY ON GENERATION METHODOLOGY OF INDOOR NETWORK USING BUILDING EVACUATION MAP**, Seula Park, Seongyong Kim, prof. Kiyun Yu, Seoul National University, Korea South 11
- 3. AN APPROACH OF PERFORMING ANALYSIS OF THE ORIENTATION OF SURFACES BY USING CGAL LIBRARY**, Michal Michalak, University of Silesia - Faculty of Earth Sciences, Poland 19
- 4. AN EXAMPLE OF A DATA PROCESSING PROCEDURE FOR DETECTION AND VISUALIZATION OF A SUDDEN D-LAYER IONOSPHERE DISTURBANCE**, Jovan Bajcetic, Mladen Trikos and Ivan Tot, University of Defence in Belgrade, Serbia27
- 5. ANALYSIS AND PROCESSING OF THE HYDROLITOSPHERIC PLAST INFORMATION REMOTE SENSING THROUGH THE THEORY OF SYSTEMS WITH DISTRIBUTED PARAMETERS**, Afanaseva O.V., Ilyushin Yu.V., Saint Petersburg Mining University, Russia.....35
- 6. ANALYSIS AND SYNTHESIS OF DISTRIBUTED ICEDRILL HEATING CONTROL SYSTEM OF MOUNTAIN RECONNAISSANCE DRILLING RIG**, Afanaseva O.V., Ilyushin Yu.V., Saint Petersburg Mining University, Russia41
- 7. ANALYSIS GPS AND DORIS GEOCENTER OSCILLATION MEASUREMENTS USING SOFTWARE PACKAGE ASDRM**, Yury Nefedyev, Alexey Andreev, Regina Mubarakshina, Natalya Demina, Sergey Demin, Kazan (Volga Region) Federal University, Russia.....49
- 8. ANALYSIS OF APPROACHES TO RIVER BASIN MANAGEMENT IN MONITORING SURFACE WATER QUALITY USING GIS**, Vitalii Zatserkovnyi, Liudmyla Plichko, Vasyl Martsenyuk, University of Bielsko-Biala, Poland.....57
- 9. ANALYSIS OF BIG DATA FOR ESTIMATING THE INFORMATIVENESS OF THE COEFFICIENTS OF THE MULTI-TEMPORAL SOIL LINE N-DIMENSIONAL SPACE**, Alexey D. Rukhovich, Mariya S. Simakova, Ekaterina V. Vilchevskaya, Prof. Dmitry A. Shapovalov, Prof. Andrey L. Kulyanitsa, Soil Science Institute, Russia65

10. ANALYSIS OF THE TERRESTRIAL POLE COORDINATES USING REGRESSION DYNAMIC MODELING , Alexey Andreev, Yury Nefedyev, Regina Mubarakshina, Natalya Demina, Sergey Demin, Kazan (Volga Region) Federal University, Russia.....	73
11. APPLICATION OF MORRIS METHOD OF SENSITIVITY ANALYSIS TO FLOOD EMBANKMENT STABILITY MODELLING , Anna Franczyk, Monika Slipek, Maciej Dwornik, AGH University of Science and Technology, Poland	81
12. AUTOMATIC POSITIONING OF MOBILE 3D LASER SCANNERS EQUIPPED WITH WIRELESS INTERFACES FOR AUTOMATIC MAP MERGING , Lect. Dogan Savran, Assoc. Prof. Dr. Gurkan Tuna, Trakya University, Turkey.....	89
13. AUTOSTEROSCOPY IN THEMATIC CARTOGRAPHY , Mgr. Tomas Kralik, prof. RNDr. Vit Vozenilek, CSc., doc. Mgr. Pavel Tucek, Ph.D., Palacky University in Olomouc, Czech Republic	95
14. BACKBONE MAPPING RESOURCES, SERVICES AND APPLICATIONS FOR INFORMATION SUPPORT OF REGIONAL MANAGEMENT , Oleg E. Yakubailik, Institute of Computational Modelling SB RAS, Russia	103
15. BIG DATABASES OF LOW IONOSPHERIC OBSERVATIONS: APPLICATION TO STUDY THE IONOSPHERIC DISTURBANCES DURING DISASTERS , Aleksandra Nina, Vladimir M. Cadez, Luka C. Popovic and Milan Radovanovic, University of Belgrade - Institute of Physics, Serbia	111
16. CALCULATION OF MAGNETOTELLURIC FUNCTIONS AND THEIR VARIATIONS DUE TO CHANGES IN THE GROUNDWATER LEVEL , Riabova Svetlana, Institute of Geosphere Dynamics of Russian Academy of Science, Russia	119
17. COMPARISON OF SELECTED METHODS OF OBJECT DETECTION IN SAR IMAGES , Justyna Bala, AGH University of Science and Technology, Poland.....	127
18. DETERMINATION OF THE AIRCRAFT POSITION IN PPP METHOD IN AN IN-FLIGHT TEST – CASE STUDY , Jaroslaw Kozuba, Kamil Krasuski, Henryk Jafernik, Janusz Cwiklak, Air Force Academy Poland, Poland	133
19. DEVELOPING A SINGLE SYSTEM FOR COMPREHENSIVE MONITORING OF CATASTROPHIC PHENOMENA BASED ON SATELLITE AND GROUND DATA , Academician of the RAS, Dr., Prof. Bondur V.G., Tsidilina M.N., Feoktistova N.V., Voronova O.S., Timoshina G.A., State scientific Institution Institute for Scientific Research of Aerospace Monitoring AEROCOSMOS, Russia	141

20. EFFECTS OF SPEED AND MEASUREMENT VARIANCE ON THE ACCURACY OF MOBILE ROBOT LOCALISATION , Assoc. Prof. Dr. Gurkan Tuna - Lect. Dogan Savran, Trakya University, Turkey	157
21. ENGINEERING GEOLOGY SOFTWARE DATABASE FOR URBAN AREAS , V.V. Khronusov, M.G. Barskiy, P.A. Krasilnikov, Perm State National Research University, Russia	163
22. FINITE ELEMENT AND KALMAN FILTER USED IN DEFORMATION ANALYSIS , Assist. Eng. Alexandra-Nadia Cirdei, Prof. Dr. Eng. Dumitru Onose, Technical University of Civil Engineering - Faculty of Geodesy, Romania.....	171
23. FREE AND OPEN SOURCE SOFTWARE FOR GEOPORTALS CREATION , Izabela Basista, AGH University of Science and Technology, Poland	179
24. GEOHASH-EAS - A MODIFIED GEOHASH GEOCODING SYSTEM WITH EQUAL-AREA SPACES , Assoc. Prof. Dr. Pavel Petrov, MSc. Petar Dimitrov, Dr. Stefka Petrova, University of Economics - Varna, Bulgaria.....	187
25. GEOINFORMATION SUPPORT FOR EXPLOITATION OF COAL DEPOSITS IN NORTH YAKUTIA , Fedorov V. I., Khoyutanov E. A., Gavrilov V. L., Batugina N. S., Chersky Institute of Mining of the North Siberian Branch Russian Academy of Science, Russia	195
26. GEOLOGICAL SAMPLING WIHT GSKSOFT 1.0 , Berat Sinani, Epir Qeriqi, Fidaim Sahiti, Ismet Shala, Ibrahim Musa, Kosovo Geological Survey of Kosovo, Kosovo.....	203
27. GEOLOGICAL STRUCTURES CONTROL GROUNDWATER FLOW AND GROUNDWATER QUALITY IN AL JAAW PLAIN, UNITED ARAB EMIRATES; AN INTEGRATED APPROACH USING REMOTE SENSING AND GIS , Samy Ismail Elmahdy and Mohamed Mostafa Mohamed, United Arab Emirates University, United Arab Emirates	211
28. GIS SUPPORT FOR PUBLIC TRANSPORT DATA ANALYSIS , Kodym, O., Flokova, L., Letavkova, D., College of Logistics, Czech Republic	219
29. HETERODYNE SIGNAL FILTERING FOR LASER MEASURING SYSTEMS , Vadim Zhmud, Vladimir Semibalamut, Lubomir Dimitrov, Aleksey Taichenachev, Novosibirsk State Technical University, Russia	227
30. HISTORY AND FUTURE OF CULTURAL LANDSCAPE IN OLOMOUC ARCHDIOCESE REGION BASED ON GIS ANALYSES , RNDr. Jan Brus, Assoc. Prof. Karel Kirchner, Palacky University in Olomouc, Czech Republic	235

31. INFORMATION MODELLING OF BUILDINGS AS AN INSTRUMENT OF SUSTAINABLE DEVELOPMENT OF THE LOCALITY , Ing. Michal Faltejsek, Ing. Natalie Szeligova, Assoc. prof. Ing. Ph.D. Barbara Vojvodikova, VSB-Technical University of Ostrava, Czech Republic	243
32. INFORMATION SYSTEM OF DECISION MAKING USING FOR OPTIMISATION OF HEAT SUPPLY SYSTEMS DEVELOPMENT , Prof. Dr. Vladimir Nemtinov, Graduate student Sergey Terekhov, Assoc. Prof. Dr. Yulia Nemtinova, Assoc. Prof. Dr. Andrey Borisenko, Prof. Dr. Sergey Egorov, Tambov State Technical University, Russia.....	253
33. INNOVATIVE GEOINFORMATION TECHNOLOGIES WITHIN MANAGEMENT OF NATURAL RISKS IN VENEZUELA , Assoc.Prof. Dr. Valery M. Abramov, Prof. Dr. Eugene P. Istomin, PhD Student Jose A. Garcia, Russian State Hydrometeorological University Arctic and Subarctic Institute, Russia	261
34. INTELLIGENT GEOINFORMATIC EXPERT SYSTEM FOR PROVIDING EMERGENCY HELP DURING EXTREME SITUATIONS , Dr. Prof. Oleksandr Kuzomin, Asp. Michail Stukin, Stud. Dmytro Bozhkov, Kharkiv National University of Radio Electronics, Ukraine.....	269
35. MAKING THE MULTICOMPONENT MODEL OF EARTH LATITUDE ALTERNATION USING SOFTWARE PACKAGE ASRM-2017 , Zoya Andreeva, Regina Mubarakshina, Alexey Andreev, Natalya Demina, Sergey Demin, Kazan (Volga Region) Federal University, Russia.....	277
36. MAPPING OF ROOF TYPES IN ORTHOPHOTOS USING FEATURE DESCRIPTORS , Dr. Julia Ahlen, Prof. Dr. Stefan Seipel, University of Gävle Department of Industrial Development IT and Land Management, Sweden.....	285
37. MATHEMATICAL AND COMPUTER MODELING OF CONTAMINANT MIGRATION TO FILTER TRAP IN TWO-DIMENSIONAL NONLINEAR CASE , Anatoliy Vlasyuk, Roman Kochan, Viktor Zhukovskyy, Nataliia Zhukovska, University of Bielsko-Biala, Poland.....	293
38. METHODOLOGY OF THE DEVELOPMENT OF THE DATA MODEL FOR SPATIAL LINKED DATA WITH POINT GEOMETRY , Otakar Cerba, University of West Bohemia, Czech Republic.....	301
39. MODIFICATION OF THE ALGORITHM OF ASSESSING AN EXTERNAL PATCHWORK OF THE LAND FOR THE PURPOSE OF IMPROVING THE EFFICIENCY OF LAND CONSOLIDATION WORKS , Oleniacz Grzegorz, Len Przemyslaw, University of Life Sciences in Lublin, Poland.....	309
40. MONITORING VIBRATIONS ALONG BRIDGES IN RAIL TRANSPORT THROUGH THE TRAINSOFT SYSTEM , MSc. Enis Berisha, MSc. Berat Sinani, University of Prishtina, Kosovo	315

41. ON AN APPROACH OF DEVELOPMENT OF THE WEB PLATFORM WITH POSSIBILITIES OF INTEGRATION OF DIFFERENT GEOSPATIAL AND WEATHER SERVICES , Vasyl Martsenyuk, Igor Andrushchak, Tomasz Gancarczyk, Gulmira Shangytbayeva, Kornel Warwas, University of Bielsko-Biala, Poland.....	323
42. ON MAP AND STATISTICAL DATA DRIVEN DECISION MAKING IN HEALTHCARE ORGANIZATION , Vasyl Martsenyuk, Oksana Martsenyuk, Oleksandra Kuchvara, Tomasz Gancarczyk, Kornel Warwas, University of Bielsko-Biala, Poland.....	331
43. ONLINE MONITORING OF URBAN ENVIRONMENT , Assoc. Prof. Dr. Alexander V. Ivanov, Prof. Dr. Alexander Yu. Platov, Master Student Dmitry V. Stepanov, Bachelor Student Irina M. Ostanina, Nizhny Novgorod State University of Architecture and Civil Engineering, Russia	339
44. OPTIMIZATION OF CROP YIELD ESTIMATION BASED ON REMOTE SENSING AND NEW MATHEMATICAL MODEL , Mohamad M. Awad, Bassem Al-Aawar, CNRS, Lebanon.....	347
45. PERFORMANCE COMPARISON OF THE ITERATIVE LEAST SQUARES AND THE EXTENDED KALMAN FILTERING FOR GPS-BASED POSITIONING SYSTEMS , Mehmet Kabakan, Dogan Savran, Serkan Donmez, Gurkan Tuna, Kabakan Muhendislik, Turkey	355
46. RECOVERING GAPS IN THE GAMMA-RAY LOGGING METHOD , Nikita Churikov, Natalia Grafeeva, Saint Petersburg State University, Russia.....	361
47. RESEARCH ON REALISING THEMATIC DIGITAL MAPS USING DRONE ASSISTED SCANNING TECHNOLOGY , Assoc. prof. Jenica Calina, Prof. Aurel Calina, Assoc. prof. Gabriel Badescu, Lect. Alin Constantin Croitoru, Ph.D. Student Gheorghe Marian Vangu, University Of Craiova, Romania	369
48. RISK MANAGEMENT METHOD IN PARAMETRIC GEOSYSTEMS , Prof. Dr. Eugene P. Istomin, Assoc.Prof. Dr. Valery M. Abramov, Assoc.Prof. Dr. A.A. Fokicheva, Assoc.Prof. Dr. A.G. Sokolov, Prof. Dr.V.G. Burlov, Russian State Hydrometeorological University Arctic and Subarctic Institute, Russia	377
49. SATELLITE MONITORING OF SEISMIC ZONES BASED ON EARTHQUAKES PRECURSORS ANALYSIS: CENTRAL ITALY EARTHQUAKE AUGUST 2016 CASE STUDY , Academician of the RAS, Dr., Prof. Bondur V.G., Cherepanova E.V., Tsidilina M.N., Gaponova E.V., Voronova O.S., State scientific Institution Institute for Scientific Research of Aerospace Monitoring AEROCOSMOS, Russia	385

50. SENSITIVITY ANALYSIS OF THE NETWORK CONFIGURATION TO SEISMIC SOURCES LOCATION USING TIME REVERSAL IMAGING WITH PEAK AVERAGE POWER RATIO (PAPR) PARAMETER., Anna Franczyk, Damian Gwizdz, AGH University of Science and Technology, Poland.....	395
51. SOCIAL ASPECTS OF PROCESSING GEOLOGICAL AND TECHNOLOGICAL INFORMATION DURING THE EIA PROCEDURE, PhD. Orest Ivaschuk, Prof. Oleg Kuzichkin, PhD. Igor Aparin, PhD. Anastasia Grecheneva, PhD. Nikolay Dorofeev, Belgorod National Research University, Russia	403
52. SPARSE MULTIDIMENSIONAL DATA PROCESSING IN GEOINFORMATICS, A.N. Kokoulin, D.A.Kiryanov, M.R.Kamaltdinov, A.A.Yuzhakov, Perm national scientific research university, Russia.....	411
53. SYSTEMS OF SPATIAL CONNECTIONS OF NATURAL ELEMENTS ON RURAL AREAS IN ASPECTS OF CLIMATE CHANGE, KATARZYNA KOCURBERA, University of Warmia and Mazury, Poland	419
54. TELEMATICS AND INTELLIGENT TRANSPORT, A. Saracin, C. Cosarca, A. Savu, A. F. C. Negri, C. Didulescu, Tehnical University of Civil Engineering Bucharest-Faculty of Geodesy, Romania	427
55. TERMS FOR THE DETERMINATION OF SPATIAL OBJECTS BY THE UNMANNED AERIAL SYSTEMS USED FOR LAND CONSOLIDATION, Ing. Jana Zaoralova, Ph.D., Ing. Milan Kocab, Ing. David Vilim, Ing. Lubomir Soukup, CSc., Ing. Karel Radej, CSc., VUGTK, v.v.i., Czech Republic.....	435
56. TERRESTRIAL LASER SCANNING AS A TOOL FOR PLANNING CAVE RESCUE OPERATIONS. CASE STUDY ON DIABLA DZIURA IN BUKOWIEC CAVE, POLAND., Pawel Kroh, Pedagogical University of Cracow, Poland.....	443
57. THE ACCESS DATABASE FOR THE ZLETOVO MINE, REPUBLIC OF MACED, Assoc. Prof. Dr. Goran Tasev, Doc. Dr. Dalibor Serafimovski, Full. Prof. Kosta Mitreski, University Goce Delcev, FYR of Macedonia.....	451
58. THE ASSESSMENT OF AIRCRAFT POSITIONING ACCURACY USING GPS DATA IN RTK-OTF TECHNIQUE, Jaroslaw Kozuba, Kamil Krasuski, Henryk Jafernik, Janusz Cwiklak, Air Force Academy Poland, Poland	459
59. THE INDICATORS OF QUALITY OF LIFE OF REGIONAL DEVELOPMENT OF ASTANA CITY, Gulnara Nyussupova, Aigul Tokbergenova, Damira Tazhiyeva, Gaukhar Aubakirova, Al-Farabi Kazakh National University, Kazakhstan.....	467
60. THE INTRODUCTION OF SYSTEMATIC CADASTRE IN ROMANIA. CASE STUDY: THE TERRITORIAL ADMINISTRATIVE UNIT BATA, ARAD COUNTY, Begov Ungur Andreea, 1 Decembrie 1918 University of Alba Iulia, Romania.....	475

- 61. THE METHODOLOGICAL BASIS FOR THE STRATEGIC MANAGEMENT OF TERRITORY DEVELOPMENT**, Prof. Dr.V.G. Burlov, Assoc.Prof. Dr. Valery M. Abramov, Prof. Dr. Eugene P. Istomin, Assoc.Prof. Dr. A.A. Fokicheva, Assoc.Prof. Dr. A.G. Sokolov, Russian State Hydrometeorological University Arctic and Subarctic Institute, Russia.....483
- 62. THE PHASE LOCKING SYSTEM FOR THE FREQUENCY LOCKING OF LASERS FOR GEOINFORMATICS**, Vadim Zhmud, Vladimir Semibalamut, Lubomir Dimitrov, Aleksey Taichenachev, Novosibirsk State Technical University, Russia491
- 63. THREE-DIMENSIONAL MATHEMATICAL MODEL FOR NUMERICAL INVESTIGATION OF COASTAL WAVE PROCESSES**, V.A. Gushchin, A.I. Sukhinov, A.E. Chistyakov, S.V. Protsenko, Institute for Computer Aided Design Russian Academy of Science, Russia.....499
- 64. TIME SERIES DATA FOR 3D FLOOD MAPPING**, Beata Wieczorek, Anna Sobieraj-Zlobinska, University of Warmia and Mazury, Poland507
- 65. TYPIFICATION OF SEA ICE CONDITIONS IN THE ARCTIC, BASED ON VOYAGE TIMES OF SHIPS ON OPTIMIZED ROUTES**, Dr. Ruslan May, PhD Andrey Rubchenya, Dr. Oleg Tarovik, Dr. Alexander Topaj, Saint Petersburg State University - Institute of Earth Sciences, Russia515
- 66. VS-OSCILLOSCOPE ONLINE: WEB-APPLICATION OF PROCESS-BASED VAGANOV-SHASHKIN MODEL FOR TREE-RING GROWTH**, Pavel Peresunko, Margarita Popkova, Artem Sazanov, Victor Ilin, Ivan Tychkov, Siberian Federal University, Russia.....529
- 67. WEBGIS 2.0 PLATFORM FOR EARTHQUAKES VISUALIZATION**, Rostislav Netek, Tomas Burian1 Palacky, University in Olomouc, Czech Republic.....537
- 68. WORD EMBEDDING PLACE THEME ANALYSIS IN USER-GENERATED DATA**, Youngmin Lee, Kiyun Yu, Jiyoung Kim, Seoul National University, Korea South.....543
- 69. LITHOLOGICAL MAPPING USING DIFFERENT CLASSIFICATION ALGORITHMS IN WESTERN ANTALYA, TYRKEY**, Hatice Seval Manap, Assoc. Prof. Dr. Bekir Taner San, Akdeniz University of Geological Engineering, Turkey ...551
- 70. NEW COMPUTER TECHNOLOGY TO SOLVE GEOLOGICAL PROBLEMS**, Eugenia Cheremisina, Mikjail Finkelstein, Lubimova, Kirpicheva, All-Russian Research Geological Oil Institute, “VNIIGeosystem” Department, Russia.....557

GEODESY AND MINE SURVEYING

- 71. ACCURACY ANALYSIS ON THE BASIS OF SPIRENT 6300M SIGNAL GENERATOR AND NOVATEL FLEXPAK6 GNSS RECEIVER**, Bartłomiej Oszczak, Weronika WIsnioch, Air Force Academy Poland, Poland567
- 72. ACCURACY OF GNSS PRECISION POSITIONING IN REAL TIME USING SIGNALS FROM GALILEO AND BEIDOU SATELLITES – CASE STUDY IN POLAND**, Zbigniew Siejka, University of Agriculture in Krakow - Faculty of Environmental Engineering and Land Surveying, Poland575
- 73. ANALYSIS OF CONVERGENCE AND DEFORMATION MEASUREMENTS BASED ON CLASSICAL GEODETIC SURVEYS AND TERRESTRIAL LASER SCANNING IN “WIELICZKA” SALT MINE**, MSc Agnieszka Ochalek, Professor Wojciech Jaskowski, Post-doctoral degree Tomasz Lipecki, AGH University of Science and Technology, Poland.....583
- 74. ANALYSIS OF INDOOR POSITIONING SCENARIO USING MATLAB ENVIRONMENT**, Simon Carrillo, Bartłomiej Oszczak, Air Force Academy Poland, Poland.....591
- 75. ANALYSIS OF ORTHOPHOTO MAPS AND CADASTRE DATA FOR DETERMINATION OF SPATIAL CHANGES IN LATVIA**, Vita Cintina, Vivita Pukite, Latvia University of Life Sciences and Technologies, Latvia.....599
- 76. ANALYSIS OF THE PLANE ROUTE ON THE BASIS OF THE AIRCRAFTS MONITORING SYSTEM**, Ewelina Kobialka, Bartłomiej Oszczak, Air Force Academy Poland, Poland.....607
- 77. ASPECTS REGARDING THE INTRODUCTION OF THE REAL ESTATE CADASTRE AND THE REALIZATION OF CADASTRAL EVIDENCE ON A CADASTRAL SECTOR OF THE INTRAVILAN OF TAGA LOCALITY IN CLUJ COUNTY**, Mircea Vasile BONDREA, Arsene Cornel, Technical University of Cluj-Napoca, Romania.....615
- 78. CADASTRAL DATABASE AND COMMUNICATION CHANNELS OF THE REAL ESTATE CADASTRE IN SLOVAKIA**, Ing. Lubica Hudecova, PhD., Slovak University of Technology in Bratislava - Faculty of Civil Engineering, Slovakia.....623
- 79. COMPARATIVE STUDY FOR OBSERVATION PROCESSING IN (MICRO)TRILATERATION NETWORKS**, Assist. Prof. Drd. Cornel ARSENE, Dr. Mircea Vasile BONDREA, Technical University of Cluj-Napoca, Romania.....631

-
- 80. CONSIDERATIONS ON THE EVOLUTION OF VERTICALITY OF THE HIGHEST CONSTRUCTION IN ROMANIA, THE 351.5 M SMOKE CHIMNEY IN BAIJA MARE**, Adrian Traian G.M. Radulescu, Gheorghe M.T. Radulescu, Mircea Bondrea, Virgil Mihai G.M. Radulescu, Corina Radulescu, Technical University of Cluj-Napoca, Romania639
- 81. CONSIDERATIONS REGARDING THE REALIZATION OF THE CADASTRAL PLAN BY UPDATING THE OLD LAND BOOK PLANS**, Dr. Mircea Vasile BONDREA, Sanda NAS, Raluca FARCAS, Paul SESTRAS, Loredana SPOIALA, Technical University of Cluj-Napoca, Romania647
- 82. CONSTRUCTION OF THE TRACK SPACE POSITION SECURING AND MEASURING THE TRACK 3D AXIS**, Kral,Kotrbanec, Bezdicek, Siroky, VSB-Technical University of Ostrava, Czech Republic655
- 83. CONSTRUCTION OF THE SPATIAL-TEMPORAL MODEL OF THE IONOSPHERIC PARAMETER USING THE SPHERICAL FUNCTIONS**, Stepan Savchuk, Bohdan Dzhuman, Liubov Yankiv-Vitkovska, Air Force Academy Poland, Poland661
- 84. CORRELATION BETWEEN THE AVERAGE AND FORECASTED CURVATURES CAUSED BY HARD COAL EXPLOITATION CONDUCTED AT THE GREAT DEPTH IN SEVERAL COAL BEDS**, Ryszard Mielimaka, Justyna Orwat, Silesian University of Technology, Poland669
- 85. DETAILED HORIZONTAL GEODETIC CONTROL NETWORKS TAKING INTO ACCOUNT THE ACCURACY OF THE REFERENCE POINTS**, Edward Preweda, AGH University of Science and Technology, Poland677
- 86. DETERMINATION OF EQUATION DESCRIBING THE MEASURED AND AVERAGE CURVATURES GRAPHS OBSERVED AS A RESULT OF MULTIDEPOSIT EXPLOITATION AT THE GREAT DEPTH**, Justyna Orwat, Silesian University of Technology, Poland685
- 87. DETERMINATION OF HORIZONTAL DISPLACEMENT OF THE HYDROPOWER PLANT MOSTAR IN BOSNIA AND HERZEGOVINA**, Assoc. Prof. Dr. Sc. Mladen Zrinjski, Prof. Dr. Sc. Duro Barkovic, Sergej Baricevic, Ivana Culjak, University of Zagreb, Faculty of Geodesy, Croatia693
- 88. DETERMINATION OF INLAND AREAS COASTLINES**, Artur Makar, Polish Naval Academy, Poland 701
- 89. DETERMINATION OF REGRESSIVE RELATION BINDING THE THEORETICAL AND MEASURED CURVATURES OF MINING AREA CAUSED BY MULTIDEPOSIT EXPLOITATION CONDUCTED AT THE LARGE DEPTH**, Justyna Orwat, Silesian University of Technology, Poland709

90. DETERMINING THE INFLUENCE OF POSITION ACCURACY AND MEASUREMENTS ON THE ACCURACY OF THE POINT DETERMINED BY TACHEOMETRIC MEASUREMENT, Elzbieta Jasinska, AGH University of Science and Technology, Poland.....	717
91. DEVELOPMENT OF A SYSTEM OF HIGH-PRECISION SATELLITE POSITIONING IN THE OPEN-PIT OF NORTHERN KAZAKHSTAN, A. A. Baltiyeva, L.S. Shamganova, D. S. Akhmedov, E. S. Kalyuzhny, Institute of Mining named after D.A. Kunaev, Kazakhstan	723
92. DEVELOPMENT OF CIRCULAR MOTION SIMULATOR FOR DYNAMIC TESTS OF SENSORS, Ing. Pavol Kajaneek, PhD., prof. Ing. Alojz Kopacik, PhD., Ing. Jan Erdelyi, PhD., Ing. Peter Kyrinovic, PhD., Slovak University of Technology in Bratislava - Faculty of Civil Engineering, Slovakia.....	729
93. DIGITIZATION OF MEASURED DATA IN THE LANDSLIDE AREA, Kral, Siroky, Janega, Lazorisak, Molinek, VSB-Technical University of Ostrava, Czech Republic.....	737
94. DYNAMIC TESTS OF ASG-EUPOS RECEIVER IN HYDROGRAPHIC APPLICATION, Artur Makar, Polish Naval Academy, Poland	743
95. EFFECT OF HORIZONTAL THERMAL GRADIENT ON GEODETIC MEASUREMENTS – MEASUREMENT AROUND THE BLAST FURNACE, Ing. Tomas Suk, CTU in Prague-Faculty of Civil Engineering, Czech Republic	751
96. EVALUATION OF DIFERENT DIGITAL ELEVATION MODELS, Nikola Kranjcic, Denis Tezak, Milan Rezo, University of Zagreb - Faculty of Geotechnical Engineering, Croatia.....	757
97. EVALUATION OF SURFACE SURVEYINGS REALIZED IN REGION UNDER THE INFLUENCE OF MINING METHOD ROOM AND PILLAR, Eva Jirankova, Jitka Muckova, VSB-Technical University of Ostrava, Czech Republic	765
98. EVALUATION SPIRENT 6300M AND NOVATEL FLEXPAK6 DATA AND NAVIGATIONAL FORMATS COMPATIBILITY, Bartlomiej Oszczak, Weronika Wisnioch, Air Force Academy Poland, Poland.....	773
99. EVALUATION WITH EXPERIMENTAL DATA OF AN ANFIS BASED INS/GPS INTEGRATED NAVIGATOR, Teodor Lucian Grigorie, Costinel Laurentiu Corcau, University Of Craiova, Romania	781
100. GEODETIC ASPECTS CONCERNING ENVIRONMENTAL IMPACTS, Maricel Palamariu, Alexandra Dregnici, Ildiko Tulbure, University of Agricultural Sciences and Veterinary Medicine Cluj Napoca, Romania.....	789

101. GEODETIC MONITORING AS AN ELEMENT OF THE OBLIGATORY LANDSLIDE REGISTRY IN POLAND ON THE EXAMPLE OF CHOSEN ACTIVE LANDSLIDE., Anna Szafarczyk, AGH - University of Science and Technology, Poland	797
102. GEODETIC WORK WHEN GUIDANCE AN AUTOMATIC TAMPING MACHINE, Kral, Kotrbaneč, Bezdicek, Siroky, VSB-Technical University of Ostrava, Czech Republic.....	805
103. HIERARCHIZATION OF THE NEEDS OF LAND CONSOLIDATION WORKS USING STATISTICAL METHODS, MSc. Eng. Zanna Strek, PhD. Pawel Postek, PhD. Justyna Wojcik-Len, University of Life Sciences in Lublin, Poland	813
104. HIGHLIGHTING THE DEEP TECTONIC ELEMENTS OF THE EASTERN CARPATHIANS BY ANALYZING THE MORPHOLOGY OF GEOID, NATALIA-SILVIA ASIMOPOLOS, LAURENTIU ASIMOPOLOS, Geological Institute of Romania, Romania	821
105. HYDROGRAPHIC SURVEY PLANNING FOR THE DETERMINATION OF TERRITORIAL SEA BASELINE ON THE EXAMPLE OF SELECTED POLISH SEA AREAS, Mariusz Specht, Cezary Specht, Gdynia Maritime University, Poland	829
106. INTERPRETATION AND EVALUATION OF PROCEDURES FOR CALCULATING THE GROUP REFRACTIVE INDEX OF AIR BY CIDDOR AND HILL, Ing. Filip Dvoracek, Ph.D., CTU in Prague-Faculty of Civil Engineering, Czech Republic.....	837
107. INVESTIGATION OF COMPETITION ON PROPERTY MARKET IN FORCED SALE TRANSACTIONS, Dr. Eng. Marek Walacik, University of Warmia and Mazury in Olsztyn, Poland	845
108. INVESTIGATION OF PROPERTY FLIPPING SCENARIOS AS AN INVESTMENT METHOD ON PROPERTY MARKETS, Dr. Eng. Marek Walacik, University of Warmia and Mazury in Olsztyn, Poland	851
109. LINEAR AND NONLINEAR CORRELATION IN CALCULATION OF WEIGHTS OF REAL ESTATE FEATURES, Anna Baranska, AGH - University of Science and Technology, Poland.....	859
110. METHODS OF CONDUCTING MEASUREMENTS FOR SALT MINES SO AS TO DESIGN THE THREE-DIMENSIONAL REPRESENTATION OF THE SPACE UNDER EXPLOITATION, Assist. Prof. Drd. Cornel ARSENE, Dr. Mircea Vasile BONDREA, Technical University of Cluj-Napoca, Romania	867

- 111. MODELING BRIDGES USING TERRESTRIAL LASER SCANNING**, Assoc. Prof. Dr. Aurel Florentin Catalin Negrila, Assoc. Prof. Dr. Adrian Savu, Prof. Dr. Constantin Cosarca, Assoc. Prof. Dr. Caius Didulescu, Assoc. Prof. Dr. Aurel Saracin, Tehnical University of Civil Engineering Bucharest-Faculty of Geodesy, Romania.....875
- 112. MONITORING OF LOCAL VERTICAL MOVEMENTS AT GEODETIC STATION BY REPEATED LEVELLING**, Jakub Kostelecky, Michaela Kostelecka, Czech Technical University in Prague - Klokner Institute, Czech Republic883
- 113. MONITORING OF THE TRANSFORMATION PROCESSES OF AGRICULTURAL LAND AS A FACTOR IN THE FORMATION OF LAND POLICY**, Savelyev P.S., Assoc. prof. Zasyad-Volk V.V., Saveleva P.B., Saint Petersburg State University, Russia891
- 114. NEW CONCLUSIONS REGARDING THE EVOLUTION OF VERY TALL REINFORCED CONCRETE STRUCTURES HAVING A CIRCULAR CROSS-SECTION, UNDER THE ACTION OF PATCHY SUNSHINE, CASE STUDY THE 351.5 M SMOKE CHIMNEY IN BAIA MARE**, Adrian Traian G.M. Radulescu, Gheorghe M.T. Radulescu, Mircea Bondrea, Virgil Mihai G.M. Radulescu, Corina Radulescu, Technical University of Cluj-Napoca, Romania.....899
- 115. OCCUPATIONAL RISK ASSESSMENT USING THE RISK SCORE METHOD DURING GEODETIC MEASUREMENTS**, Pawel Wysocki, Gdansk University of Technology, Poland.....907
- 116. OUR METRE IS TOO SHORT: BLAME GRAVITY FOR IT**, Petr Vanicek, University of New Brunswick Geodesy and Geomatics, Canada915
- 117. POSSIBILITIES OF BIM DATA EXCHANGE**, Ing. Richard Honti, Ing. Jan Erdelyi, PhD., Slovak University of Technology in Bratislava, Slovakia.....923
- 118. PROBLEMS OF HEIGHT MEASUREMENTS IMPLEMENTED AT SPORTS FACILITIES**, Ph.D. Pawel Kotlarz, University of Agriculture in Krakow - Faculty of Environmental Engineering and Land Surveying, Poland.....931
- 119. PROPERTY INVESTMENT AND PROPERTY TAXES – INVESTIGATION OF INFLUENCE ON THE INFLUENCE ON THE RETURN RATE**, Dr. Eng. Marek Walacik, University of Warmia and Mazury in Olsztyn, Poland939
- 120. REQUIREMENTS IN THE FIELD OF THERMAL ENERGY SET FOR NEWLY DESIGNED PRODUCTION AND WAREHOUSE BUILDINGS, AS AN ELEMENT OF PRESERVATION OF THE PRINCIPLES OF SUSTAINABLE DEVELOPMENT IN REAL ESTATE MANAGEMENT**, MARIUSZ GORAK, MONIKA SIEJKA, University of Agriculture in Krakow - Faculty of Environmental Engineering and Land Surveying, Poland947

121. SOCIAL COMMUNICATION PROGRAMMES IN THE INVESTMENT PROCESS CONCERNING INFRASTRUCTURE INVESTMENTS IN POLAND, Natalia Sajnog, Warsaw University of Technology - Faculty of Geodesy and Cartography, Poland	955
122. STATION POINTS STABILITY OPTIMIZATION FOR EFFICIENTLY MONITORING BEHAVIOR IN SERVICE STAGE OF CIVIL ENGINEERING STRUCTURES USING TOPO GEODESIC METHODS, Phd. Student Diana Ioana MORARIU, Senior Lecturer Loredana JUDELE, Senior Lecturer Daniel LEPADATU, Senior Lecturer Iulian CUCOS, Gheorghe Asachi Technical University of Iasi, Romania.....	963
123. STRUCTURAL CHANGES IN POLISH AGRICULTURE AND RURAL AREAS FOLLOWING THE ACCESSION TO THE EU, Dr. Jadwiga Konieczna, Dr. Dariusz Konieczny, University of Warmia and Mazury, Poland.....	971
124. STUDY OF THE IMPACT OF GPS VECTOR CORRELATION ON THE ACCURACY OF POSITION DETERMINATION, Ph.D. Tadeusz Gargula, Ph.D. Pawel Kotlarz, Ph.D. Agnieszka Wnek, University of Agriculture in Krakow - Faculty of Environmental Engineering and Land Surveying, Poland	979
125. TECHNICAL OPERATIONS REQUIRED TO INTRODUCE THE IMMOBILIAR CADASTRY IN THE SANTIOAN LOCALITY INTRAVILAN, SINMARTIN COMMUNIQUE, CLUJ COUNTY, Mircea Vasile BONDREA, Carmen NUTIU, Technical University of Cluj-Napoca, Romania	987
126. TESTING DEM ACCURACY FOR DIFFERENT TYPE OF SOURCE DATA, Dana Vaskova Ing., CTU in Prague, Czech Republic	995
127. THE APPLICATION OF LASER SCANNING TECHNOLOGY IN DOCUMENTING HISTORICAL UNDERGROUND OBJECTS IN SANDOMIERZ (POLAND), Dr. Rafal Gawalkiewicz, AGH - University of Science and Technology, Poland	1003
128. THE APPLICATION OF TERRESTRIAL LASER SCANNING FOR THE MANAGEMENT OF MINING IN REAL TIME, Roman Kapica, Dana Vrubleova, Beata Korandova, Martin Krupa, VSB-Technical University of Ostrava, Czech Republic.....	1011
129. THE CONCEPT OF INTEGRATED SYSTEM FOR COLLECTING GEOGRAPHIC AND HYDROGRAPHIC DATA FOR NAVIGATION PURPOSES IN RIS, Cezary Specht, Mariusz Specht, Gdynia Maritime University, Poland.....	1019
130. THE HEADFRAME MODELS COMPARTMENT ANALYSIS USING TLS DATA AND TECHNICAL DRAFTS, Assoc. Prof. Dr. Tomasz Lipecki, MSc. Eng. Damian Biel, AGH - University of Science and Technology, Poland	1027

- 131. THE INFLUENCE OF A GEOMETRIC FACTOR ON A SATELLITE POSITIONING ACCURACY, GORDEEV, RAEVA, BANNIKOV, Ural State Mining University, Russia.....1035**
- 132. THE INFLUENCE OF LAND CONSOLIDATION PROJECTS ON THE POSSIBILITY OF IMPLEMENTATION OF RURAL RENEWAL PROJECTS, Taszakowski Jaroslaw, Agnieszka Glowacka, University of Agriculture in Krakow - Faculty of Environmental Engineering and Land Surveying, Poland.....1043**
- 133. THE MEASUREMENTS OF ACTUAL STATE AND SUBSEQUENT CREATION OF BASIC MAP OF A QUARRY AT THE LOCALITY LIPOVEC, Kotrbaneč, Kral, Bezdicek, Siroky, VSB-Technical University of Ostrava, Czech Republic.....1051**
- 134. THE POSSIBILITIES OF THE APPLICATION OF GYROSCOPE INSTRUMENTS IN THE ASSESSMENT OF THE ROCK MASS STABILITY, Dr. Anna Szafarczyk, Dr. Rafal Gawalkiewicz, AGH - University of Science and Technology, Poland.....1059**
- 135. THE SYSTEM ASPECTS OF THE REAL ESTATE CADASTRE IN POLAND, Monika Mika, University of Agriculture in Krakow - Faculty of Environmental Engineering and Land Surveying, Poland1067**
- 136. THE USE OF GNSS GEODETIC NETWORKS ON THE APPROACH TO THE PORTS – GULF OF GDANSK STUDY, Mariusz Specht, Cezary Specht, Gdynia Maritime University, Poland.....1075**
- 137. THE USE OF LOCAL SPATIAL INFORMATION SYSTEMS FOR VERIFICATION INVESTMENT SITE SELECTION - CASE STUDY IN KRAKOW, Monika Siejka, University of Agriculture in Krakow, Poland.....1083**
- 138. TOPOGRAPHICAL SURVEY PERFORMED FOR THE ECOLOGIZATION OF ZLATNA MINE, ALBA COUNTY, Clement Negrut, Andreea Begov Ungur, 1 Decembrie 1918 University of Alba Iulia, Romania.....1091**
- 139. TUNING AND EVALUATION WITH EXPERIMENTAL DATA OF A SMART ALGORITHM FOR GPS DATA PREDICTION TO FUSE THEM WITH THE HIGH RATE INS DATA, Teodor Lucian Grigorie, University Of Craiova, Romania1099**
- 140. USE OF 3D SCANNING FOR RESTORING THE TOPOGRAPHIC SKELETON STRUCTURE OF MINING AND REPRESENTATION OF PRAID SPACE - THE VISITING AREA PRAID, ROMANIA, Prof. Aurel Calina, Assoc. prof. Jenica Calina, Assoc. prof. Nicolae Ion Babuca, Lect. Alin Constantin Croitoru, Lect. Marius Milut, University Of Craiova, Romania.....1107**

141. USE OF ERTMS (ETCS+GSM-R) IN ORDER TO REDUCE HUMAN FAILURE IN KOSOVO RAILWAY SYSTEM, ADVANTAGES AND DISADVANTAGES, Mr.sc. Afrim Mehmetaj, Mr.sc. Enis Berisha, University of Prishtina, Kosovo, 1Railway Regulatory Authority, Kosovo1115

142. USING GPS RTK METHOD IN DETERMINING HORIZONTAL MOVEMENT, STAGE 2016, OF FLOATING MARKS SET ON ASH AND SLAG DAMS DEPOSIT FROM SANTAUL MIC, ROMANIA, Babuca Nicolae Ion, Calina Jenica, Calina Aurel, Marius Milut, Badescu Gabriel, University Of Craiova, Romania.....1123

