

GeoTerrace-2021

Lviv, Ukraine
4-6 October 2021

ISBN: 978-1-7138-4264-4

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2021) by the European Association of Geoscientists & Engineers (EAGE)
All rights reserved.

Printed with permission by Curran Associates, Inc. (2022)

For permission requests, please contact by the European Association of Geoscientists & Engineers (EAGE)
at the address below.

European Association of Geoscientists & Engineers (EAGE)
PO Box 59
3990 DB Houten
The Netherlands

Phone: +31 88 995 5055
Fax: +31 30 634 3524

eage@eage.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

EARTH SURFACE PROCESSES & GEODYNAMICS

Applying the Statistical Method of GNSS Time Series Analysis for the Detection of Vertical Displacements of Dnister HPP-1 Dam	1
<i>K. Tretyak, T. Korliatovych, I. Brusak</i>	
On the Impact of Non-Tidal Atmospheric Loading on the GNSS Stations of Regional Networks and Engineering Facilities	6
<i>I. Brusak, K. Tretyak</i>	
Rapid Daily Processing of Observation Data at the Ukrainian Permanent GNSS Stations for Monitoring of Their Stability	11
<i>O. Khoda, M. Ishchenko</i>	
Erosion Processes of Mountain Tourist Trails in the Chornohora Massif (Ukrainian Carpathians)	16
<i>V. Brusak, V. Shtuhlynets</i>	
Processing and Analysis of Measurement Results of the Ukrainian GNSS Station ASAV (Argentina Islands, West Antarctica)	21
<i>I. Savchyn, K. Tretyak, K. Marusazh, T. Korliatovych</i>	
Green Construction in the Conditions of the Restraint Urban Development.....	26
<i>I. Kaliukh, Y Ischenko, Y. Melashenko</i>	
Spatial Heterogeneity of Organic Carbon and Moisture Accumulation in the Soil Arable Layer.....	31
<i>S. Kovalenko</i>	
3D Visualization of Geological Layer - A Case Study of New South Wales, Australia and the Wadi Feiran Basin, Sinai	36
<i>N. Schuckert</i>	
Impact of Low Frequency Dynamic Loading on Structural Health of Existing Reinforced Concrete Railway Retaining Walls in the Foothills of the Carpathians.....	41
<i>I. Kaliukh, O. Lebid, O. Chala, A. Kryvoruchko, N. Zuiavska</i>	

ENGINEERING SURVEYING & DEFORMATION MONITORING

Analysis and Comparison of Static and RTK Measurements: Case Study for GNSS Network of the Dnister PSPP	46
<i>A. Vivat, K. Tretyak, I. Savchyn, O. Lano, M. Navodych</i>	
Evaluation of Changes in Rock Characteristics Based on Analysis and Interpretation of Seismicacoustic Observations in the Area of the Natural and Technical System of Dnister PSPP.....	51
<i>A. Zyhar, I. Savchyn, Yu. Yushchenko, O. Zakrevskiyi</i>	
About Research of Building Subsidence Using Sedimentary Marks	56
<i>O. Serant, F. Zablotskiy, B. Dzhuman, A. Balian, N. Yarema, B. Kladochnyi</i>	
One Method for Solving Ill-Conditioned and Degenerate Systems of Linear Equations and Its Application for Equalization a Leveling Network.....	61
<i>M. Fys, A. Balian, A. Brydun, M. Yurkiv, V. Lozynskiyi</i>	

Considering the Correlation of Errors of the Rectangular Coordinates of Polygon Vertices While Measuring an Object Area.....	66
<i>Y. Hubar, Y. Khavar, O. Hulko, A. Marchenko</i>	
The Foundation Subsidence of the Tower-Type Structures	71
<i>I. Trevoho, E. Ilkiv, M. Halyarnyk, O. Hrushko</i>	
The Theoretical Calculation of Activity Coefficients in the Use of Baromembrane Methods for Water Treatment.....	76
<i>M. Kravchenko, Y. Bereznytska, O. Hunchenko, L. Vasylenko, K. Haba</i>	
Simplified Method of Obtaining Data for Calculating the Volume of Earthworks Based on Aerial Survey Materials from UAVs.....	81
<i>A. Ostrovskiy, I. Kolb, A. Vivat, V. Lozynskiy, V. Zhyvchuk</i>	
Methods to Determine the Area of the Land Plot Physical Surface	86
<i>Y. Hubar, L. Vynarchyk, V. Sai, S. Bochkov</i>	

LAND COVER MAPPING & UAV

Use of UAVs for Land Inventory	91
<i>S. Khropot, V. Volkanova</i>	
Approaches to Web Mapping of Post-Military Facilities in Lviv Region.....	96
<i>S. Repekhovych, R. Sossa</i>	
Web-Mapping of the Development of the Department of Photogrammetry and Geoinformatics of the Lviv Polytechnic National University	101
<i>N. Yarema, O. Kubrak, K. Smoliy, R. Vanchura, V. Rachok, O. Popiuk</i>	
Web-Mapping of Graduates of the Institute of Geodesy of the Lviv Polytechnic National University (2019)	106
<i>N. Yarema, M. Prokhorenko, A. Sohor, O. Serant, D. Ivantsiv, O. Popiuk</i>	
Web Mapping of Soil Pollution in Lviv Region.....	111
<i>A. Sohor, A. Brydun, M. Fys, M. Yurkiv, A. Buha</i>	
Echo-Sounding of Lakes of the Nobel National Nature Park for the Purposes of Landscape Mapping and Geoecological Monitoring.....	116
<i>I. Zubkovich, I. Kovalchuk, V. Martyniuk, V. Korbutiak, S. Andriychuk</i>	
Web Mapping of Surface Water Quality in Lviv	121
<i>A. Sohor, A. Brydun, M. Fys, N. Yarema, A. Trefler</i>	
Geology Interactive Map of the Crystalline Basement of the Western Part of the Ukrainian Shield.....	126
<i>E. Moroz, L. Skakyn</i>	
Web Mapping of Air Pollution in Lviv	131
<i>A. Sohor, A. Brydun, M. Fys, P. Zazuliak, M. Sohor</i>	
Methods of Creation an Atlas of National Parks and Protected Areas of Ukraine	136
<i>A. Kostyanchuk, B. Chetverikov, I. Trevoho</i>	

REMOTE SENSING & GIS FOR ENVIRONMENTAL MONITORING & EXPLORATION

Use of GIS Technologies to Determine the Light of Garden Plants.....	141
<i>R. Rudyi, Iu. Kyselov, O. Kravets, P. Borovyk, M. Melnyk</i>	
Classification of Urban Land Coverage Using Satellite Data and Random Forest Classifier	146
<i>A. Palamar, M. Malanchuk, M. Hanchuk, L. Datsenko</i>	
Investigation of the Influence of Elements of Internal Orientation of Digital Cameras on the Accuracy of Determination of Coordinates of Locations	151
<i>M. Fys, V. Hlotov, I. Petryshyn</i>	
Mapping of the Forest Pathological Processes in Landscape Complexes (on the Example of the Rybnyk Maidanskyi River Basin in Skole Beskids).....	156
<i>O. Burianyk, M. Karabiniuk, Z. Gostiuk, Ya. Terletska</i>	
Modeling of Flooding of the Nearshore Area of Part of the Dnister River Using the HEC-RAS Module	161
<i>M. Halochkin, Kh. Burshtynska</i>	
Study of Forest Fires According to Remote Sensing Data (on the Example of the Chornobyl Exclusion Zone)	166
<i>A. Sevruk, L. Babiy, A. Babushka, B. Chetverikov</i>	
Study of Changes of the City of Khyriv Using Archival Cartographic Data.....	171
<i>K. Zhuk, L. Babiy</i>	
Retrospective Monitoring of Municipal Solid Waste Landfill of Lutsk Using Remote Sensing Data	176
<i>A. Kovalchuk, M. Fedoniuk, I. Kovalchuk, B. Zhdanyuk, V. Fedoniuk</i>	
Method for Creating a Basic Model of the Flooded Zones of the Uzh River.....	181
<i>V. Rusyn, M. Yurkiv, Yu. Andreichuk</i>	
Content of Heavy Metals in Sewage Sludge at Silt Fields of Lviv Wastewater Treatment Plants.....	186
<i>O. Shkvirko, I. Tymchuk, M. Malovanyy, O. Bota</i>	
The Challenges of the Provision of Land Consolidation with Geospatial Data	191
<i>M. Malashevskiy, A. Tarnopolskyi, O. Malashevska, Y. Tarnopolskyi</i>	
Assessment of the Filling Regime and Variability of Morphometric Characteristics of Ponds and Reservoirs of Small Rivers of the Steppe Zone of Ukraine Using Data from Remote Sensing of the Earth (on the Example of the Velykyi Kuyalnyk River)	196
<i>O. Hryb, N. Loboda, Y. Yarov, T. Hrashchenkova, O. Hryb</i>	
An Accuracy Assessment of Als-Derived DTM and Photogrammetric-Derived DSM: Case Study of Łysica Massif	201
<i>M. Hajdukiewicz, I. Romanyszyn</i>	
Scientific Fundamentals of Agricultural Landscapes Optimization and Planning with the Use of GIS Technologies	206
<i>I. Trevoho, M. Prykhodko, E. Ilkiv, M. Halyarnyk, M. Yershov</i>	
Morphodynamics of the Confluence of the Svicha and Sukil Rivers	211
<i>N. Rybak, L. Dubis, A. Bubniak, I. Bubniak</i>	

Spatial and Temporal Trend Analysis of Meteorological, Hydrological and Hydrogeological Data (by the Example of the San River Basin)	216
<i>L. Davybida, M. Worsa-Kozak, J. Gorniak-Zimroz, A. Michalak</i>	
The Role of Land Management and Cartographic Works in the Implementation of Ecological Certification of Agricultural Landscapes.....	221
<i>L. Datsenko, M. Hanchuk, Yu. Chebanova, S. Kolomiets, I. Lezhenkin</i>	
Application of GIS Technologies for Assessment of Anthropogenic Changes in the Basins of the Main Rivers of Ivano-Frankivsk Region and Ways to Optimize the Nature Use.....	226
<i>I. Trevoho, M. Prykhodko, E. Ilkiv, M. Halyarnyk, M. Yershov</i>	
Cultural Routes in the Historic City of Lisbon with Uneven Terrain Using ArcGIS	231
<i>I. Poloz</i>	
The Use of GIS Tools for Data Collection and Processing in the Context of Fire Risk Assessment in Urban Cultural Heritage	236
<i>O. Tikhonova, X. Romao, G. Salazar</i>	
Using Remote Sensing for Detecting Bark Beetle Infestation on Volyn Polissya	241
<i>A. Khyzhniak, O. Tomchenko</i>	

Author Index