International Conference on Recent Trends in Geoscience Research and Applications 2023

October 23–27, 2023, Belgrade, Serbia & virtual

BOOK OF ABSTRACTS AND CONTRIBUTED PAPERS

GeosciRA23

Edited by Aleksandra Nina, Snežana Dragović, and Dejan Doljak

Belgrade
2023

Scientific Rationale

Geoscience research and applications are of crucial interest in science and many areas of modern life. For this reason, exchanging knowledge in various relevant areas is essential for development in scientific, engineering and programming activities. The conference aims to highlight the importance of joint research of experts in these fields and provide a platform for knowledge exchange.

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International Conference on Recent Trends in Geoscience Research and Applications 2023
Belgrade, Serbia & Virtual, October 23–27, 2023
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Abstract

UTILIZATION OF REMOTE SENSING AND NUCLEAR TECHNIQUES FOR DETAILED MODELING AND QUANTITATIVE ASSESSMENT OF GULLY EROSION WITHIN THE FORESTED AREA OF THE MALČANSKA RIVER BASIN, EASTERN SERBIA

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The gully erosion is one of the most significant land degradation processes. Although gully erosion significantly threatens agricultural productivity and natural ecosystems, European land management strategies frequently need more reliable data on environmental conditions governing this process. This study presents a methodology that integrates remote sensing and nuclear techniques for examining gully erosion (Đokić et al., 2023). It introduces a novel approach to erosion research by employing 360-degree camera photogrammetry to characterize gullies morphometrically. The main objectives of this approach are to evaluate the applicability of unmanned aerial vehicles and terrestrial photogrammetry for modeling gullies, to study small-scale erosion processes within gullies, compare erosion intensity between adjacent gullies, and determine the most effective and cost-efficient method for monitoring gullies. A total of 39 soil samples were taken in three studied gullies. The results revealed an average soil redistribution rate of 16.2 $t\ ha^{-1}\ yr^{-1}$ and coefficients of variation of 32%, 59%, and 91% for the gullies. The estimated erosion rate varies from a minimum of 0.1 $t\ ha^{-1}\ yr^{-1}$ to a maximum of 34.3 $t\ ha^{-1}\ yr^{-1}$. Soil deposition was identified at only two sampling sites, 1.1 and 2 $t\ ha^{-1}\ yr^{-1}$. Highly detailed 3D models of the gullies were created using 360-degree photogrammetry. The micro-relief obtained through modeling proved to be an essential aspect of advanced erosion research.

Acknowledgements

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Nuclear Techniques in Food and Agriculture in providing equipment for gamma-ray spectrometry and UAV remote sensing within the project SRB5003.

References

Đokić, M., Manić, M., Đorđević, M., Gocić, M., Čupić, A., Jović, M., Dragović, R., Gajić, B., Smičiklas, I., & Dragović, S. (2023). Remote sensing and nuclear techniques for high-resolution mapping and quantification of gully erosion in the highly erodible area of the Malčanska River Basin, Eastern Serbia. *Environmental Research*, *235*, Article 116679. https://doi.org/10.1016/j.envres.2023.116679

PROGRAMME

Monday, 23 October

14:00 – 15:30 **Registration**

Chairs: Aleksandra Nina and Snežana Dragović

15:30 – 15:45 **Opening ceremony**

Chair: Bratislav Marinković

15:45 – 16:20 **Nigel John Mason** *Invited lecture*
COMPARATIVE PLANETOLOGY—WHAT DO WE LEARN ABOUT THE EARTH BY STUDYING OTHER PLANETS?

16:20 – 16:45 **Mirela Voiculescu, Cătălina Iticescu, Constantin Apetrei, Maxim Arseni, Mădălina Călmuc, Valentina Călmuc, Daniel Constantin, Michaela Dobre, Adrian Roșu, Mihaela Timofti, Cătălina Țopa, Lucian P. Georgescu**
REXDAN—A NEW RESEARCH INFRASTRUCTURE WHOSE VESSEL WILL SOON SAIL ON DANUBE

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Tuesday, 24 October

Chair: Snežana Dragović

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9:35 – 10:00 **Ivan Lizaga, Borja Latorre, Montfort Bagalwa, Bossissi Nkuba, Kristof Van Oost, Pascal Boeckx**
UNVEILING CONFLICT HERITAGE: EXAMINING THE INFLUENCE OF HUMAN CONFLICTS ON LAND DEGRADATION AND LANDSCAPE MODIFICATION

10:00 – 10:25 **Nina Nikolova, Jelena Svetozarevic, Simeon Matev, Dimitar Krenchev, Rositsa Kenderova, Georgi Rachev**
RAINFALL EROSIVITY IN BULGARIA—SERBIA TRANSBORDER REGION

10:25 – 11:00 Coffee break

Chair: M. Y. Boudjada

11:00 – 11:35 **Rapoport Yuriy, Grimalsky Volodymyr, Petrishevskii Sergei, Grytsai Asen, Liashchuk Oleksandr, Krankowski Andrzej** *Invited lecture*
MODELLING WAVE STRUCTURES IN THE EARTH-ATMOSPHERE-IONOSPHERE AND RADIODIAGNOSTICS OF IONOSPHERIC SPACE WEATHER (ISW)

11:35 – 12:00 **Heba Salah Mohamed, Christine Amory-Mazaudier, Sampad Kumar Panda, Osama Mahmoud Shalabiea, Ayman Mohamed Mahrous**
DELAYED RESPONSE OF LOW LATITUDES TEC DURING THIRTY-SIX GEOMAGNETIC STORMS FROM 2014 TO 2017

12:00 – 12:25 **Tamal Basak, Sayak Chakraborty** *Invited progress report*
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12:25 – 14:00 Lunch break

Chair: Maja Kuzmanoski

14:00 – 14:25 **Dharmendra Kumar Kamat, Som Kumar Sharma, Sourita Saha, Prashant Kumar, Kondapalli Niranjan Kumar**
INVESTIGATION OF THE ATMOSPHERIC CLOUDS AND BOUNDARY LAYER OVER THE WESTERN-INDIAN REGION

14:25 – 14:50 **Irina Mironova**
GEOMAGNETIC DISTURBANCE FORCING ON THE MIDDLE ATMOSPHERE

14:50 – 15:15 **Artem Padokhin, Elena Andreeva**
MULTI-GNSS GLOBAL AND LOCAL IONOSPHERIC MAPPING UTILIZING EXCLUSIVELY PHASE OBSERVATIONS

15:15 – 15:45 Coffee break

Chair: Irina Mironova

15:45 – 16:10 **Maja Kuzmanoski, Zorica Podraščanin, Ana Ćirišan, Zoran Mijić**
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11:25 – 11:50 **Klemen Medved, Božo Koler, Sofija Naod, Oleg Odalović**
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Arul Asir Jebakumar, India
Tamal Basak, India
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