

**9TH INTERNATIONAL SCIENTIFIC CONFERENCE
G E O B A L C A N I C A 2 0 2 3**

PROCEEDINGS



08-09 May, 2023
Skopje, North Macedonia

DISCLAIMER

This Proceedings contains full articles approved by International Scientific Committee. Authors are responsible for the content and accuracy.

Opinions expressed may not necessarily reflect the position of the International Scientific Conference GEOBALCANICA 2023.

Information in the PROCEEDINGS from International Scientific Conference GEOBALCANICA 2023 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 GEOBALCANICA Society.

Copyright © Geobalcanica Society

All rights Reserved by Geobalcanica Society – Skopje, North Macedonia

Published by: Geobalcanica Society – Skopje, North Macedonia

GEOBALCANICA SOCIETY - Skopje, North Macedonia

e-mail: info@geobalcanica.org

url: www.geobalcanica.org

INTERNATIONAL SCIENTIFIC COMMITTEE

- **Tomasz Komornicki, PhD**, Associate Professor, Head of Department of Spatial Organization, Institute of Geography and Spatial Organization, Polish Academy of Sciences, REPUBLIC OF POLAND
- **Jinfeng Wang, PhD**, Associate Professor, Institute of Geographic Science and Natural Resources Research, Chinese Academy of Sciences, PEOPLES REPUBLIC OF CHINA
- **Ante Šiljeg, PhD**, Associate professor, Faculty of Geography, University of Zadar REPUBLIC OF CROATIA,
- **Milan Radovanović, PhD**, Principal Research Fellow, Director of Geographical Institute “Jovan Cvijic” Geographical Institute “Jovan Cvijic” Serbian Academy of Sciences and Arts REPUBLIC OF SERBIA
- **Predrag Djurovic, PhD**, Full Professor, Faculty of Geography, University of Belgrade, REPUBLIC OF SERBIA
- **Peter Bagoli Simo, PhD**, Prof. Dr. rer. nat. habil., Director of Department of Geography, Department of Geography, Faculty of Mathematics and Natural Sciences, Humboldt University of Berlin, FEDERAL REPUBLIC OF GERMANY
- **Theodore Karacostas, PhD**, Full Professor, Head of Department of Meteorology and Climatology, School of Geology, Aristotle University of Thessaloniki, REPUBLIC OF GREECE
- **Matija Zorn, PhD**, Senior Research Fellow, Assistant Director, Anton Melik Geographical Institute, Research Centre of the Slovenian Academy of Sciences and Arts, REPUBLIC OF SLOVENIA
- **Evgeny Panidi, PhD**, Docent, Department of Cartography & Geoinformatics, Institute of Earth Sciences, St. Petersburg State University, RUSSIAN FEDERATION
- **Stefan Bouzarovski, PhD**, Professor of Geography, Director of the Centre for Urban Resilience and Energy, University of Manchester, UNITED KINGDOM
- **Alin Miha-Pintilie, PhD**, Scientific Researcher, „Alexandru Ioan Cuza” University of Iasi – UAIC, Interdisciplinary Research Department – Field Science REPUBLIC OF ROMANIA
- **Riccardo Privitera, PhD**, Assistant Researcher, Department of Civil Engineering and Architecture, University of Catania, REPUBLIC OF ITALY
- **Alexandru Lucian Onaca, PhD**, Lect. univ. dr., Department of Geography, West University of Timisoara, REPUBLIC OF ROMANIA
- **Karl Donert, PhD**, Adjunct Professor, Department of Geoinformatics, University of Salzburg, President of European Association of Geographers, REPUBLIC OF AUSTRIA
- **Gordana Kaplan, PhD**, Assistant Professor, Institute of Earth and Space Sciences, Eskisehir Technical University, REPUBLIC OF TURKEY
- **Sanja Klempic Bogadi, PhD**, Senior Research Associate, Institute for Migration and Ethnic Studies, REPUBLIC OF CROATIA
- **Blagoja Markoski, PhD**, Full Professor, Institute of Geography, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University, REPUBLIC OF NORTH MACEDONIA
- **Arild Holt-Jensen, PhD**, Professor Emeritus, Department of Geography, University of Bergen, KINGDOM OF NORWAY
- **Rok Ciglic, PhD**, Research Fellow, Head of Department of Geographic Information System, Anton Melik Geographical Institute, Research Centre of the Slovenian Academy of Sciences and Arts, REPUBLIC OF SLOVENIA

- **Julia Hall, PhD**, Research Scientist,
Institute of Hydraulic Engineering and Water Resource Management, Vienna University of Technology,
REPUBLIC OF AUSTRIA
- **Ivan Ratkaj, PhD**, Full Professor, President of Serbian Geographical Society,
Faculty of Geography, University of Belgrade,
REPUBLIC OF SERBIA
- **Nenad Živković, PhD**, Full Professor,
Faculty of Geography, University of Belgrade,
REPUBLIC OF SERBIA
- **Valbona Duri, PhD**, Associate Professor,
Department of Geography, Education and Social Sciences Faculty, University of Gjirokastrë “Eqrem Çabej”
REPUBLIC OF ALBANIA
- **Istvan Egresi, PhD**, Assistant Professor,
Department of Human Geography and Tourism, Faculty of Geography, Babeş-Bolyai University,
REPUBLIC OF ROMANIA
- **Mirek Dymitrow, PhD**, Research Fellow,
Department of Economy and Society, University of Gothenburg
KINGDOM OF SWEDEN
- **Goran Mutabadžija, PhD**, Associate Professor,
Department of Geography, Faculty of Philosophy, University of East Sarajevo
BOSNIA & HERZEGOVINA
- **Andreea-Loreta Cercleux, PhD**, Associate Professor,
Faculty of Geography, University of Bucharest,
REPUBLIC OF ROMANIA
- **Vasile Efros, PhD**, Full Professor,
Dean of Faculty of History and Geography, Stefan cel Mare University – Suceava
REPUBLIC OF ROMANIA
- **Ana M. Petrović, PhD**, Research Associate,
Geographical Institute „Jovan Cvijić“, Serbian Academy of Sciences and Arts,
REPUBLIC OF SERBIA
- **Ana Milanović Pešić**, Research Associate, Deputy Director of Geographical Institute “Jovan Cvijić” Geographical
Institute „Jovan Cvijić“, Serbian Academy of Sciences and Arts,
REPUBLIC OF SERBIA

ORGANIZING COMMITTEE

- **Svemir Gorin, PhD**, Associate Professor, Vice Dean, President of Geobalcanica Society,
Institute of Geography, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University,
REPUBLIC OF NORTH MACEDONIA
- **Ivan Radevski, PhD**, Associate Professor, Vice President of Geobalcanica Society,
Institute of Geography, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University,
REPUBLIC OF NORTH MACEDONIA
- **Olgica Dimitrovska, PhD**, Full Professor,
Institute of Geography, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University,
REPUBLIC OF NORTH MACEDONIA
- **Ana M. Petrović, PhD**, Associate Professor,
Institute of Geography, „Jovan Cvijić“, Serbian Academy of Sciences and Arts
REPUBLIC OF SERBIA
- **Vladimir Zlatanoski, MSc**, Teaching Assistant, Secretary of Geobalcanica Society,
Institute of Geography, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University,
REPUBLIC OF NORTH MACEDONIA
- **Goran Kitevski, PhD**, Assistant Professor,
Institute of Geography, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University,
REPUBLIC OF NORTH MACEDONIA

EDITORIAL BOARD

- ***Svemir Gorin, PhD***, Associate Professor, Vice Dean, President of Geobalcanica Society,
Institute of Geography, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University,
REPUBLIC OF NORTH MACEDONIA
- ***Ivan Radevski, PhD***, Associate Professor, Vice President of Geobalcanica Society,
Institute of Geography, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University,
REPUBLIC OF NORTH MACEDONIA