## Building bridges between climate science and society through a transdisciplinary network

September 10-14, 2024, Kopaonik Mt, Serbia

## BOOK OF ABSTRACTS AND CONTRIBUTED PAPERS

Edited by Vladimir A. Srećković, Aleksandra Kolarski, Filip Arnaut and Milica Langović

#### **Scientific Organizing Committe**

Vladimir A. Srećković, **Co-chair**, Institute of Physics Belgrade, Serbia, President of the Scientific Society Isaac Newton Aleksandra Kolarski, **Co-chair**, Institute of Physics Belgrade, Serbia, Secretary of the Scientific Society Isaac Newton

Luka Č. Popović, Astronomical Observatory, Belgrade, Serbia Danica Šantić, Faculty of Geography, Belgrade, Serbia Slavoljub Dragićević, Faculty of Geography, Belgrade, Serbia Milan S. Dimitrijević, Astronomical Observatory, Belgrade, Serbia Nikolay Bezuglov, Saint Petersburg State University, Saint Petersburg, Russia

Nebil Ben Nessib, Department of Physics and Astronomy, Riyadh, Saudi Arabia

Predrag Jovanović, Astronomical Observatory, Belgrade, Serbia Duško Borka, Vinca Institute of Nuclear Science, Belgrade, Serbia Magdalena Hristova, Department of Applied Physics, Technical University of Sofia, Bulgaria

Ognyan Kounchev, Institute of Mathematics and Informatics, Bulgarian Academy of Sciences, Bulgaria

Zoran Mijić, Institute of Physics Belgrade, Belgrade, Serbia Nicolina Pop, Politehnica University of Timisoara, Romania Branko Predojević, University of Banja Luka, Republic of Srpska, BiH Aleksandar R. Milosavljevic, Synchrotron SOLEIL, Paris, France Ljubinko Ignjatović, Institute of Physics Belgrade, Belgrade, Serbia Felix Iacob, West University of Timisoara, Romania

### **Local Organizing Committe**

Filip Arnaut, Institute of Physics Belgrade,
President of the local organizing committee
Milica Langović, Institute of Physics Belgrade,
Secretary of the local organizing committee
Sreten Jevremović, Scientific Society Isaac Newton Belgrade
Veljko Vujčić, Astronomical Observatory Belgrade
Ivan Samardžić, Faculty of Geography, Belgrade, Serbia
Mihailo Savić, Institute of Physics Belgrade, Serbia

### **Organizers**

Scientific Society Isaac Newton Belgrade, Institute of Physics Belgrade, Faculty of Geography, University of Belgrade, Astronomical Observatory Belgrade

ISBN 978-86-906850-0-4

Published and copyright by: Scientific Society Isaac Newton Belgrade

Printed by: Skripta Internacional, Mike Alasa 54, 11102, Beograd

Number of copies: 50

## SCIENTIFIC RATIONALE

Establishing connections between climate and society necessitates a cooperative strategy that utilizes a transdisciplinary network of experts. The primary objective of this conference is to bring together researchers and professionals from various disciplines to tackle the intricate issues that arise at the crossroads of climate and society. The event will consist of three main sessions: "Transdisciplinary Approaches to Climate and Social Challenges," "Geophysics and Astrophysics: Understanding Climate Interactions," and "Climate and Transport: Shaping a Sustainable Environment." Participants will examine innovative methods and exchange ideas on the successful integration of knowledge across various fields. By engaging in plenary sessions and targeted mini-projects, participants will collaborate to create extensive resolutions that tackle urgent environmental concerns. This will lead to the production of joint publications in important scientific journals.

#### Venue

Kopaonik Mt. (Educational and Scientific base Blaževo), Serbia

## **CONTENTS**

## Plenary Lectures

Milan S. Dimitrijević Nobel prizes for physics obtained for astronomical discoveries in XXI century	10
Milan S. Dimitrijević Milutin Milanković and climate changes – Ice ages secret	17
Invited Lectures	
Filip Arnaut  Analysis of possible relationship between earthquakes  and Solar flare events during Solar cycle 24	25
Milica Langović Environmental migration in the Balkans: Contemporary trends	33
Sreten Jevremović Weather conditions influence on traffic crashes in the Republic of Serbia	39
Aleksandar Medarević Active Transport: A Pathway to Greener Planet, Healthier and Happier Lives	46
Mihailo Savić, Nikola Veselinović, Aleksandar Dragić, Dimitrije Maletić, Dejan Joković, Radomir Banjanac, Vladimir Udovičić, David Knežević and Miloš Travar Cosmic Rays and Their Connection to Space Weather	
and Earth's Climate	63

Nikola Veselinović	
Cosmic rays as a clock (or Using cosmic rays for imaging and to study past)	65
Lectures	
Filip Arnaut Solar Wind and Seismic Activity in the Balkan Peninsula: a 2019- 2023 Progress Report	68
Milica Langović Linkages between internal displacement and climate: Evidence from Serbia	74
Vladimir Nestorović Traffic accidents in winter conditions for the Republic of Serbia	80
Aleksandra Kolarski VLF radio signal propagation under severe stormy weather conditions	85
Danica Šantić Is demography a real problem for sustainability?	87
Zoran Mijić and Bratislav Marinković The European Cooperation in Science and Technology - opportunity for young researchers to strengthen their careers	89
Posters	
Vladimir A. Srećković, Nicolina Pop, Veljko Vujčić, Felix Iacob, Milan S. Dimitrijević, Nikolai Bezuglov, Zlatko Majlinger and Magdalena D. Christova Confined molecular systems and astrochemical modelling	93

Vladimir A. Srećković, Aleksandra Kolarski, Milica Langović, Filip Arnaut, Zoran Mijić, Sreten Jevremović, Jelena Barović and Ognyan Kounchev Novel Research in Astrophysics and Geophysics	95
Vladimir A. Srećković, Aleksandra Kolarski, Milica Langović, Filip Arnaut and Sreten Jevremović Dataset for low ionosphere modeling	97
Veljko Vujčić, Vladimir A. Srećković and Radoslav Zamanov Monitoring and Analyzing Astronomical Transients in Real-Time	99
Aleksandra Kolarski, Filip Arnaut, Sreten Jevremović, Milica Langović and Snežana Komatina Modern society and climate change: oil and space industries perspectives	101
Nenad M. Sakan, Vladimir A. Srećković, Zoran Simić and Momchil Dechev <i>Modeling the atmosphere: various potentials</i>	103
Predrag Jovanović, Vesna Borka Jovanović, Salvatore Capozziello and Duško Borka Influence of Solar Activity on Earth's Climate	105
SECTIONS (MINI PROJECTS)	107
PROGRAMME	108
AUTHORS' INDEX	113

# The European Cooperation in Science and Technology - opportunity for young researchers to strengthen their careers

Zoran Mijić<sup>1\*</sup> and Bratislav Marinković<sup>1</sup>

<sup>1</sup>Institute of Physics Belgrade, University of Belgrade, Pregrevica 118, Belgrade, Serbia

\*Correspondence: Zoran Mijić, zoran.mijic@ipb.ac.rs

(European Cooperation in Science **Abstract:** COST intergovernmental Technology) the oldest organization in Europe with the aim to establish the research networks among scientists and innovators. It has become one of the greatest mechanisms for promoting international scientific cooperation in recent decades, with a considerable influence on the careers of young researchers. Proximity is highly critical for establishing scientific collaboration, but once established, scientists may maintain collaboration even across long distances. Participating in a COST Action, in this sense, fosters closeness by allowing scientists from various nations, research fields, and industries to meet and thereby overcome conventional boundaries (Seeber et al. 2022a). A particular focus of COST network is to assist early-career investigators and young scientists in developing new skills by providing opportunities to get involved in Action activities such as training schools, shortterm scientific missions, workshops, conferences, etc. (Mijić and Marinković, 2024). In this paper the impact of participating in a COST Action on the level of scientific production of researchers coming from less-research-intensive COST Member countries, known as Inclusive Target Countries (ITC), will be presented. Some recent studies demonstrate a notable average increase in scientific co-publications among active action members, as well as interdisciplinary collaborations, and an increased involvement of early career researchers (Seeber *et al.* 2022b). COST Actions continue to have a favorable impact on young researchers' careers even after they are terminated. Participation in COST activities has become progressively competitive, with researchers from Serbia accounting for more than 90% of running Actions (Mijić and Marinković, 2022). To ensure effective participation in COST Actions, information on both new national and COST procedures will be provided and discussed, as well as an overview of currently available positions in running COST Actions.

**Keywords:** COST, Networking, Collaborative publications, Inclusive target countries

## Acknowledgement

Thanks are due to The Ministry Science. Technological Development and Innovation of the Republic of Serbia and the Institute of Physics Belgrade for national COST office support.

#### References

- Mijić, Z., Marinković, B., (2022), Statistics of Management Committee Members from Serbia in COST Actions, IV Meeting on Astrophysical Spectroscopy - A&M DATA -Atmosphere, Book of Abstracts and Contributed Papers, Eds: V. A. Srećković, M. S. Dimitrijević, N. Veselinović and N. Cvetanović, pp.74-80.
- Mijić, Z., Marinković, B., (2024), Participation of Serbian Researchers in COST Activities and an Overview of COST

- Procedures and National Rules for Joining Recently Approved COST Actions, VI Conference on Active Galactic Nuclei and Gravitational Lensing, Book of Abstracts, Eds: J. Kovačević Dojčinović, V. A. Srećković, pp. 34-35.
- Seeber, M., Vlegels, J., Cattaneo, M., (2022a), Conditions that do or do not disadvantage interdisciplinary research proposals in project evaluation, The Journal of the Association for Information Science and Technology, 73, 1106.
- Seeber, M., Vlegels, J., Seeber, M., (2022b), Exploring the impact of COST Actions on scientific collaboration, 26th International Conference on Science and Technology Indicators, Proceedings, Eds: N. Robinson-Garcia, D. Torres-Salinas, W. Arroyo-Machado, sti2022.

CIP – Каталогизација у публикацији Народна библиотека Србије, Београд

551.583:6(048)

## BUILDING bridges between climate science and society through a transdisciplinary network (2024; Kopaonik)

Book of abstracts and contributed papers / Building bridges between climate science and society through a transdisciplinary network, September 10-14, 2024, Kopaonik Mt, Serbia; edited by Vladimir A. Srećković .. [et al.]. - Belgrade: Scientific Society Isaac Newton, 2024 (Belgrade: Skripta Internacional). - 114 str.: ilustr.; 24 cm

Tiraž 50. – Bibliografija uz većinu apstrakta

ISBN 978-86-906850-0-4

а) Климатске промене -- Мултидисциплинарни приступ -- Апстракти

COBISS.SR-ID 151804169