



HAL
open science

Human perception and environmental risk index modelling with GIS in Yakutsk urban region (North-Eastern Siberia)

Sébastien Gadai, Moisei Zakharov, Jurate Kamicaityte

► **To cite this version:**

Sébastien Gadai, Moisei Zakharov, Jurate Kamicaityte. Human perception and environmental risk index modelling with GIS in Yakutsk urban region (North-Eastern Siberia). EUGEO 2021, 8th Congress on the Geography of Europe, Charles University, Jun 2021, Prague, Czech Republic. pp.295. hal-03275119

HAL Id: hal-03275119

<https://amu.hal.science/hal-03275119>

Submitted on 30 Jun 2021

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution - NonCommercial 4.0 International License

EUGEO 2021

8TH EUGEO CONGRESS ON THE GEOGRAPHY OF EUROPE
June 28 – July 1, 2021 | Prague, Czechia

Book of Abstracts



FACULTY OF SCIENCE
Charles University





EUGEO 2021

8TH EUGEO CONGRESS
ON THE GEOGRAPHY OF EUROPE
June 28 – July 1, 2021, Prague, Czechia



Introduction

Dear colleagues,

The Faculty of Science of Charles University and the Czech Geographical Society in cooperation with the Association of Geographical Societies in Europe (EUGEO) organized the 8th EUGEO Congress on the Geography of Europe, which was held in Prague from June 28 to July 1, 2021.

The congress continued the tradition of the EUGEO biannual congresses, bringing together geographers from all over the world. The main topic of the congress, Sustainable geographies in the heart of Europe, referred to the passion geographers have for the exploration of the world that surrounds us. Understanding complexity and fragility of geographical environment as well as of the own discipline has been an essential part of many geographical efforts. The congress welcomed all geographers, physical and human alike, and also a number of interested scholars from related disciplines.

Zdeněk Kučera

Chair of the organizing committee

Tadeusz Siwek

Chair of the scientific committee

Pavel Chromý

President of the Czech Geographical Society



EUGEO 2021

8TH EUGEO CONGRESS
ON THE GEOGRAPHY OF EUROPE
June 28 – July 1, 2021, Prague, Czechia



Organizing Committee

Zdeněk Kučera (Chair of the organizing committee, Director of the Historical Geography and Environmental History Section, Czech Geographical Society; Charles University, Faculty of Science, Prague)

Dana Fialová (Vice-chair of the organizing committee, Vice-president of the Czech Geographical Society; Charles University, Faculty of Science, Prague)

Zdeněk Boudný (Secretary of the organizing committee, Charles University, Faculty of Science, Prague)

Jan D. Bláha (Chair of the North Bohemian Section of the Czech Geographical Society; Jan Evangelista Purkyně University in Ústí nad Labem, Faculty of Science)

Veronika Kapustová (Chair of the Moravian-Silesian Section of the Czech Geographical Society; University of Ostrava, Faculty of Science)

Martin Kebza (representative of the West Bohemian Section of the Czech Geographical Society; University of West Bohemia, Faculty of Economics, Pilsen)

Jaromír Kolečka (Chair of South Moravian Section of the Czech Geographical Society; Masaryk University, Faculty of Education, Brno)

Stanislav Kraft (Scientific secretary of the Czech Geographical Society; University of South Bohemia in České Budějovice, Faculty of Education)

Martin Ouředníček (Vice-dean of the Geographical section; Charles University, Faculty of Science, Prague)

Radim Perlín (Chair of the Prague-Central Bohemian Section of the Czech Geographical Society; Charles University, Faculty of Science, Prague)

Irena Smolová (Chair of Central Moravian Section of the Czech Geographical Society; Palacký University Olomouc, Faculty of Science)

Michal Vančura (Chair of the South Bohemian Section of the Czech Geographical Society; University of South Bohemia in České Budějovice, Faculty of Education)

Kamil Zágoršek (Chair of the Liberec Section of the Czech Geographical Society; Technical University of Liberec, Faculty of Science, Humanities and Education)



EUGEO 2021

8TH EUGEO CONGRESS
ON THE GEOGRAPHY OF EUROPE
June 28 – July 1, 2021, Prague, Czechia



Scientific Committee

Tadeusz Siwek (Chair of the scientific committee, Vice-president of the Czech Geographical Society; Member of the National Geographical Committee / University of Ostrava, Faculty of Science)

Pavel Chromý (President of the Czech Geographical Society / Charles University, Faculty of Science, Prague)

Vít Vilímek (Chair of the National Geographical Committee / Charles University, Faculty of Science, Prague)

Jaromír Kolečka (Member of the National Geographical Committee / Masaryk University, Faculty of Education, Brno)

Asya Bogoeva (Association of Professional Geographers and Regionalists, Bulgaria)

Thomas Borén (The Swedish Society for Anthropology and Geography)

Konrad Czapiewski (Polish Geographical Society)

Elena Dell'Agnese (Italian Geographical Society)

Rubén C. Lois González (Association of Spanish Geographers)

Marina Frolova (Association of Spanish Geographers)

Francisco Klauser (Swiss Association of Geography)

Eva Konečnik Kotnik (Association of Slovenian Geographers)

Zoltán Kovács (President of the Association of Geographical Societies in Europe – EUGEO; Hungarian Geographical Society)

Bernhard Köppen (German Society of Geography)

Dovilė Krupickaitė (Lithuanian Geographical Society)

Antoine le Blanc (Comité National Français de Géographie)

Henk Ottens (Royal Dutch Geographical Society)

Leo J. Paul (Royal Dutch Geographical Society)

Ana Pejdo (Croatian Geographical Society)

Maria Pigaki (Hellenic Geographical Society)

Jean-Robert Pitte (Société de Géographie Français)

Kathy Reilly (Geographical Society of Ireland)

Marin Rusev (Association of Professional Geographers and Regionalists, Bulgaria)

Joe Smith (Royal Geographical Society)

Massimiliano Tabusi (Italian Association of Geographers)



EUGEO 2021

**8TH EUGEO CONGRESS
ON THE GEOGRAPHY OF EUROPE**
June 28 – July 1, 2021, Prague, Czechia



Ladislav Tolmáči (Slovak Geographical Society)

Manuel Valenzuela (Real Sociedad Geográfica)

Christian Vandermotten (Royal Belgian Society of Geography)



EUGEO 2021

8TH EUGEO CONGRESS ON THE GEOGRAPHY OF EUROPE

June 28 – July 1, 2021, Prague, Czechia



Towards a Human Security System in the Arctic Zone of the Russian Federation

Organizers:

Alexander Sergunin (*International Relations, St. Petersburg State University, St. Petersburg, Russia*)

The **main research objective** of this session is to discuss the ways and means of creating a human security system in the Arctic Zone of the Russian Federation (AZRF). This is especially important in the view of several recent Russia's strategic documents on the AZRF development adopted by the President and Parliament in 2020.

Along with the above general goal, there are a number of specific research objectives:

- To explore an emerging Russian discourse on human security and its relationships with other security-related concepts – national security, soft security, societal security, personal security, sustainable development, etc. Major Russian social science paradigms' interpretations of the human security concept will be analyzed. The panelists will discuss whether and how the human security concept is applicable to the Russian Arctic, and why it can be helpful for developing a sustainable development strategy for this macro-region. These issues will be examined in a joint paper by professors Maria Lagutina and Valery Konyshov, Faculty of International Relations, St. Petersburg State University, Russia.
- To examine whether the human security concept is embedded in the AZRF federal, regional and municipal documents, such as programs and plans of socioeconomic and environmental development, or not? It is also important to discuss what should be done to improve the strategic planning process in the AZRF? This problematique will be covered by Prof. Alexander Sergunin, Faculty of International Relations, St. Petersburg State University.
- To develop an AZRF environmental security index in order to rate Russian Arctic regions on its basis. In their joint paper, Dr. Nikolai Bobylev (Institute of Earth Sciences, St. Petersburg State University) and Prof. Sebastien Gadal (Aix Marseille Université, Aix en Provence, France) suggest their own methodology for constructing this rating. The ecological block of indicators includes three groups of parameters: impact on atmospheric air and water environment and waste management. The ecological-economic block of indicators includes characteristics, such as the expenditures on environmental protection and investments in this area per capita. The socio-ecological block includes two main parameters: the comfort of living in Arctic cities (index of the quality of the urban environment; share of the population with high and very high levels of pollution; provision of the population with clean drinking water) and the state of urban infrastructure (degradation of the infrastructure in areas, such as water supply, sewerage, waste collection and disposal, pollution control activities, and the degree of housing improvement).

Keywords: Russia, Arctic, human security, sustainable development, strategic planning

ID: 8

Planning for human security strategy in the Russian Arctic urban centers: challenges and opportunities

Alexander Sergunin



EUGEO 2021

**8TH EUGEO CONGRESS
ON THE GEOGRAPHY OF EUROPE**

June 28 – July 1, 2021, Prague, Czechia



ID: 16

Environmental security via sustainable development goals: Localization in the Arctic Region

Nikolai Bobylev, Sebastien Gadal

ID: 336

Human perception and environmental risk index modelling with GIS in Yakutsk urban region (North-Eastern Siberia)

Sébastien Gadal, Moisei Zakharov, Jurate Kamicaityte

ID: 396

Adapting to new realities: Renewable energies and a low carbon future for the Russian Arctic in the aftermath of COVID-19

Valentina Ignatyeva, Sebastien Gadal



EUGEO 2021

8TH EUGEO CONGRESS ON THE GEOGRAPHY OF EUROPE

June 28 – July 1, 2021, Prague, Czechia



ID: 336

Session: Towards a Human Security System in the Arctic Zone of the Russian Federation

Human perception and environmental risk index modelling with GIS in Yakutsk urban region (North-Eastern Siberia)

Sébastien Gadal (Aix-Marseille Université, CNRS ESPACE UMR 7300 & North-Eastern Federal University, Aix-en-Provence, France), **Moisei Zakharov** (Aix-Marseille Université, CNRS ESPACE UMR 7300 & North-Eastern Federal University, Aix-en-Provence, France), **Jurate Kamicaityte** (Faculty of Civil Engineering and Architecture, Kaunas University of Technology, Kaunas, Lithuania)

One of the challenges of human security in the Arctic regions, and more specifically in the Eastern Siberian Arctic regions, concerns the assessment of inhabitants' exposure to recurrent environmental risks for the urban population in a geophysical environment characterized by notable change dynamics. The latter is known as permafrost degradation, water flooding (river, geomorphologic canals, and plateau's erosion flooding) and ice breakup, erosion, and forest fires. Urban centers and villages are confronted with a multiplicity of natural hazards. However, the evaluation of their exposure is partial or non-existent; hence there is the need to create indices of potential exposure to environmental risks. They are built by spatial analysis of survey data on the perception and knowledge of the local population and remote sensing that are integrated into Geographic Information Systems. Knowledge and understanding of how local people perceive the natural and anthropogenic environment in the context of climate change and its consequences are some of the key factors in creating effective urban planning strategies for the cities in the high-risk zones of environmental hazards. The urban region of Yakutsk is the test study area for the construction of these indicators of human security in the Siberian Russian Arctic. The large urban area with more than 350,000 people in one of the coldest regions in the world is confronted by the acceleration of global warming and urbanization on a recurrent and seasonal basis. This hazardous occurrence is combined with the risks of forest fires, erosion, floods, and permafrost degradation affecting infrastructures, settlements, industrial and agricultural areas.

Keywords: human security environmental risk index, Arctic urban centers, perceptive knowledge, GIS, spatial analysis