4th International Scientific Conference

2019

30 May - 1 June, 2019
Vrnjačka Banja, Serbia

TOURISM IN FUNCTION OF DEVELOPMENT OF THE REPUBLIC OF SERBIA

Tourism as a Generator of Employment

THEMATIC PROCEEDINGS II

UNIVERSITY OF KRAGUJEVAC
FACULTY OF HOTEL MANAGEMENT AND TOURISM IN VRNJAČKA BANJA

THEMATIC PROCEEDINGS

The Fourth International Scientific Conference
TOURISM IN FUNCTION OF DEVELOPMENT OF THE REPUBLIC OF SERBIA
Tourism as a Generator of Employment

Publisher
University of Kragujevac
Faculty of Hotel Management and Tourism in Vrnjačka Banja

For the Publisher
Drago Cvijanović, Ph.D. - Dean

Computer Support – **Vladimir Kraguljac, M.Sc., dipl.ing.**

Number of copies – **100**

Printed by – **SaTCIP d.o.o. Vrnjačka Banja**

ISBN 978-86-89949-37-7, ISBN 978-86-89949-39-1

Publication of Thematic Proceedings was financed by the Ministry of Education, Science and Technological Development of the Republic of Serbia.

SCIENTIFIC BOARD

- Prof. Drago Cvijanović, Ph.D., Serbia – President
- Prof. Dragana Gnjatović, Ph.D., Serbia – Vice President
- Prof. Snežana Milićević, Ph.D., Serbia – Vice President
- Prof. Marija Mandarić, Ph.D., Serbia – Vice President
- Prof. Marija Kostić, Ph.D., Serbia – Vice President
- Asst. Prof. Aleksandra Mitrović, Ph.D., Serbia – Vice President
- Asst. Prof. Dejan Sekulić, Ph.D., Serbia – Vice President
- Prof. Adil Kurtić, Ph.D., Bosnia and Herzegovina
- Prof. Adrian Stancu, Ph.D., Romania
- Prof. Adrian Turek Rahoveanu, Ph.D., Romania
- Prof. Agatha Popescu, Ph.D., Romania
- Prof. Agibalov Aleksandr Vladimirovich, Ph.D., Russia
- Prof. Alan Randall, Ph.D., Australia
- Prof. Aleksandar Ivanovski, Ph.D., Serbia
- Prof. Aleksandar Ostojić, Ph.D., Republic of Srpska, Bosnia and Herzegovina
- Prof. Aleksandar Petrović, Ph.D., Serbia
- Prof. Aleksandra Despotović, Ph.D., Montenegro
- Prof. Aleksandra Tešić, Ph.D., Serbia
- Prof. Alexander Trukhachev, Ph.D., Russia
- Prof. Alexandr Esaulko Nikolaevich, Ph.D., Russia
- Prof. Alexandru Stratan, Ph.D., Moldova
- Prof. Ana Langović Milićević, Ph.D., Serbia
- Prof. Anatoli Saiganov Semenovich, Ph.D., Republic of Belarus
- Prof. Andras Nabradi, Ph.D., Hungary
- Prof. Andrei Jean Vasile, Ph.D., Romania
- Prof. Andrej Baydakov Nikolaevich, Ph.D., Russia
- Prof. Andreja Borec, Ph.D., Slovenia
- Prof. Andriela Vitić-Četković, Ph.D., Montenegro
- Prof. Anna Ivolga, Ph.D, Russia
- Prof. Anna Michálková, Ph.D., Slovak Republic
- Prof. Aurelia Felicia Stancioiu, Ph.D., Romania
- Prof. Azra Bajramović, Ph.D., Bosnia and Herzegovina
- Prof. Bahrija Umihanić, Ph.D., Bosnia and Herzegovina
- Prof. Biljana Chroneos Krasavac, Ph.D., Serbia
- Prof. Biljana Veljković, Ph.D., Serbia
- Prof. Blagica Sekovska, Ph.D., North Macedonia
- Prof. Boban Melović, Ph.D., Montenegro

- Prof. Bojan Krstić, Ph.D., Serbia
- Prof. Boris Frumkin, Ph.D., Russia
- Prof. Boris Kuzman, Ph.D., Serbia
- Prof. Boško Vojnović, Ph.D., Serbia
- Prof. Božidar Milošević, Ph.D., Serbia
- Prof. Božidar Veljković, Ph.D., Slovenia
- Prof. Branko Mihailović, Ph.D., Serbia
- Prof. Camelia Gavrilescu, Ph.D., Romania
- Prof. Cane Koteski, Ph.D., North Macedonia
- Prof. Christina Yancheva, Ph.D., Bulgaria
- Prof. Claudiu Cicea, Ph.D., Romania
- Prof. Constantinos Alexiou, Ph.D., Greece
- Prof. Cvijan Mekić, Ph.D., Serbia
- Prof. Dan Boboc, Ph.D., Romania
- Prof. Dan-Marius Voicilas, Ph.D., Romania
- Prof. Danko Milašinović, Ph.D., Serbia
- Prof. Darina Zaimova, Ph.D., Bulgaria
- Prof. Darko Dimitrovski, Ph.D., Serbia
- Prof. David Jovović, Ph.D., Serbia
- Prof. Dejan Mihailović, Ph.D., Mexico
- Prof. Dejan Riznić, Ph.D., Serbia
- Prof. Denis Mušić, Ph.D., Bosnia and Herzegovina
- Prof. Desimir Knežević, Ph.D., Serbia
- Prof. Dimitre Nikolov, Ph.D., Bulgaria
- Prof. Dobrivoje Mihailović, Ph.D., Serbia
- Prof. Donatella Privitera, Ph.D., Italy
- Prof. Dorel Dusmanescu, Ph.D., Romania
- Prof. Dragan Bošković, Ph.D., Serbia
- Prof. Dragan Rajković, Ph.D., Serbia
- Prof. Dragan Stojanović, Ph.D., Serbia
- Prof. Dragan Vojinović, Ph.D., Republic of Srpska, Bosnia and Herzegovina
- Prof. Dragić Živković, Ph.D., Serbia
- Prof. Dušan Kovačević, Ph.D., Serbia
- Prof. Duško Jovanović, Ph.D., Serbia
- Prof. Đorđe Čomić, Ph.D., Serbia
- Prof. Đorđe Đuričić, Ph.D., Serbia
- Prof. Đurđica Perović, Ph.D., Montenegro
- Prof. Eirik Romstad, Ph.D., Norwey
- Prof. Elena Kostyukova, Ph.D., Russia

- Prof. Elena Stoian, Ph.D., Romania
- Prof. Emira Kozarević, Ph.D., Bosnia and Herzegovina
- Prof. Enisa Omanović-Mikličanin, Ph.D., Bosnia and Herzegovina
- Prof. Ferhat Ćejvanović, Ph.D., Bosnia and Herzegovina
- Prof. Gabriel Popesku, Ph.D., Romania
- Prof. Galjina Ognjanov, Ph.D., Serbia
- Prof. Georgi Genov, Ph.D., Serbia
- Prof. Goran Dašić, Ph.D., Serbia
- Prof. Goran Maksimović, Ph.D., Serbia
- Prof. Goran Petković, Ph.D., Serbia
- Prof. Goran Popović, Ph.D., Croatia
- Prof. Goran Puzić, Ph.D., Serbia
- Prof. Goran Škatarić, Ph.D., Montenegro
- Prof. Goranka Knežević, Ph.D., Serbia
- Prof. Gordana Dozet, Ph.D., Serbia
- Prof. Gorica Cvijanović, Ph.D., Serbia
- Prof. Grigorije Trifunović, Ph.D., Republic of Srpska
- Prof. Hasan Hanić, Ph.D., Serbia
- Prof. sc. Helga Maškarin Ribarić, Ph.D., Croatia
- Prof. Igor Sklyarov Ujrjevich, Ph.D., Russia
- Prof. Irina Petrovska, Ph.D., North Macedonia
- Prof. Ivan Mihailović, Ph.D., Serbia
- Prof. Ivan Milojević, Ph.D., Serbia
- Prof. Ivana Blešić, Ph.D., Serbia
- Prof. Ivana Plazibat, Ph.D., Croatia
- Prof. Ivanka Nestoroska, Ph.D., North Macedonia
- Prof. sc. Ivo Grgić, Ph.D., Croatia
- Prof. Ivo Županović, Ph.D., Montenegro
- Prof. Jasmina Bogićević, Ph.D., Serbia
- Prof. Jasmina Mijajlović, Ph.D., Serbia
- Prof. Jasmina Starc, Ph.D., Slovenia
- Prof. Jelena Petrović, Ph.D., Serbia
- Prof. Jovanka Popov Raljić, Ph.D., Serbia
- Prof. sc. Kadrija Hodžić, Ph.D., Bosnia and Herzegovina
- Prof. Katerina Angelevska-Najdevska, Ph.D., North Macedonia
- Prof. Krasimira Kaneva, Ph.D., Bulgaria
- Prof. Krunoslav Zmaić, Ph.D., Croatia
- Prof. Laszlo Karpati, Ph.D., Hungary
- Prof. Lazer Petro Narcisovič, Ph.D., Ukraine
- Prof. Leka Mandić, Ph.D., Serbia

- Prof. Lidija Barjaktarović, Ph.D., Serbia
- Prof. Lidija Simonceska, Ph.D., North Macedonia
- Prof. Lukrecija Đeri, Ph.D., Serbia
- Prof. Ljiljana Jović, Ph.D., Republic of Srpska, Bosnia and Herzegovina
- Prof. Ljiljana Kosar, Ph.D., Serbia
- Prof. Ljubiša Vladušić, Ph.D., Serbia
- Prof. Maja Ćosić, Ph.D., Serbia
- Prof. Marco Platania, Ph.D., Italy
- Prof. Margaret Loseby, Ph.D., Italy
- Prof. Marina Leshyeva Genrikhovna, Ph.D., Russia
- Prof. Marina Milovanović, Ph.D., Serbia
- Prof. Marko Ivanković, Ph.D., Bosnia and Herzegovina
- Prof. Masahiko Gemma, Ph.D., Japan
- Prof. Matteo Vittuari, Ph.D., Italy
- Prof. Mića Mladenović, Ph.D., Serbia
- Prof. Mihael Toman, Ph.D., Slovenia
- Prof. Mihai Mieila, Ph.D., Romania
- Prof. Miladin Kostić, Ph.D., Serbia
- Prof. Miladin Stefanović, Ph.D., Serbia
- Prof. Milan Antonijević, Ph.D., England
- Prof. Milan Počuča, Ph.D., Serbia
- Prof. Mile Peševski, Ph.D., North Macedonia
- Prof. Milena Jakšić, Ph.D., Serbia
- Prof. Milutin Đuričić, Ph.D., Serbia
- Prof. Miodrag Brzaković, Ph.D., Serbia
- Prof. Miomir Jovanović, Ph.D., Montenegro
- Prof. sc. Miro Barbarić, Ph.D., Bosnia and Herzegovina
- Prof. Miroslav Čavlin, Ph.D., Serbia
- Prof. Mohammed Altaf Khan, Ph.D., India
- Prof. Mohinder C. Dhiman, Ph.D., India
- Prof. Montserrat Crespi Vallbona, Ph.D., Spain
- Prof. Muhamed Brka, Ph.D., Bosnia and Herzegovina
- Prof. Nada Lakić, Ph.D., Serbia
- Prof. Nadezhda Tarasenko Vasilevna, Ph.D., Russia
- Prof. Nancy Duxbury, Ph.D., Portugal
- Prof. Natalia Nikolaevna Balashova, Ph.D., Russia
- Prof. Natalia Sergeevna Morozyuk, Ph.D., Ukraine
- Prof. Natalija Džinić, Ph.D., Serbia
- Prof. Natalya Bannikova Vladimirovna, Ph.D., Russia
- Prof. Natalya Kulish Valentinovna, Ph.D., Russia

- Prof. Nataša Ćirović, Ph.D., Serbia
- Prof. Nataša Simić, Ph.D., Serbia
- Prof. Naume Marinoski, Ph.D., North Macedonia
- Prof. Nebojša Pavlović, Ph.D., Serbia
- Prof. Nenad Georgiev, Ph.D., North Macedonia
- Prof. Nicholas Apergis, Ph.D., Greece
- Prof. Nicolae Istudor, Ph.D., Romania
- Prof. Nimit Chowdhary, Ph.D., India
- Prof. Olga Kusakina Nikolaevna, Ph.D., Russia
- Prof. Otilija Sedlak, Ph.D., Serbia
- Prof. Pavle Radanov, Ph.D., Serbia
- Prof. Pavlo Ružić, Ph.D., Croatia
- Prof. Pero Petrović, Ph.D., Serbia
- Prof. Plamena Yovchevska, Ph.D., Bulgaria
- Prof. Rade Ratković, Ph.D., Montenegro
- Prof. Radenko Stepić, Ph.D., Serbia
- Prof. Radmila Novaković-Kostić, Ph.D., Serbia
- Prof. Radojko Lukić, Ph.D. Serbia
- Prof. Rajko Tepavac, Ph.D., Serbia
- Prof. Raluca Ion, Ph.D., Romania
- Prof. Ramona Suharoschi, Ph.D., Romania
- Prof. Ranko Prenkić, Ph.D., Montenegro
- Prof. Renata Pindžo, Ph.D., Serbia
- Prof. Reuf Kapić, Ph.D., Bosnia and Herzegovina
- Prof. Rob Davidson, Ph.D., England
- Prof. Romina Alkier Radnić, Ph.D., Croatia
- Prof. Sabahudin Bajramović, Ph.D., Bosnia and Herzegovina
- Prof. Sait Engindeniz, Ph.D., Turkey
- Prof. sc. Sanda Renko, Ph.D., Croatia
- Prof. Sandra Živanović, Ph.D., Serbia
- Prof. Sanjin Ivanović, Ph.D., Serbia
- Prof. Saša Mašić, Ph.D., Serbia
- Prof. Saša Trandafilović, Ph.D., Serbia
- Prof. Sašo Kožuharov, Ph.D., North Macedonia
- Prof. Savo Vučković, Ph.D., Serbia
- Prof. Sevastita Muste, Ph.D., Romania
- Prof. Silvana Đurašević, Ph.D., Montenegro
- Prof. Simion Certan, Ph.D., Moldova
- Prof. Smiljka Isaković, Ph.D., Serbia
- Prof. Snežana Knežević, Ph.D., Serbia

- Prof. Snežana Štetić, Ph.D., Serbia
- Prof. Snežana Urošević, Ph.D., Serbia
- Prof. Sonja Jovanović, Ph.D., Serbia
- Prof. Sreten Ćuzović, Ph.D., Serbia
- Prof. Sreten Jelić, Ph.D., Serbia
- Prof. Sreten Miladinoski, Ph.D., North Macedonia
- Prof. Stane Kavčič, Ph.D., Slovenia
- Prof. Stevan Milisavljević, Ph.D., Serbia
- Prof. Stratan Alexandru, Ph.D., Moldova
- Prof. Svetimir Dragović, Ph.D., Serbia
- Prof. Svetlana Vukotić, Ph.D., Serbia
- Prof. Tamara Gajić, Ph.D, Serbia
- Prof. Tanja Angelkova Petkova, Ph.D., North Macedonia
- Prof. Tanja Mihalič, Ph.D., Slovenia
- Prof. Tatjana Cvetkovski, Ph.D., Serbia
- Prof. Tatjana Đekić, Ph.D., Serbia
- Prof. Tatjana Stanovčić, Ph.D., Montenegro
- Prof. Tetyana Mostenska, Ph.D., Ukraine
- Prof. Thomas Glauben, Ph.D., Germany
- Prof. Tibor Sabo, Ph.D., Serbia
- Prof. Toma Dinu, Ph.D., Romania
- Prof. Vaibhav Birwatkar, Ph.D., England
- Prof. Vasily Erokhin, Ph.D., China
- Prof. Velibor Spalević, Ph.D., Montenegro
- Prof. Veljko Marinković, Ph.D., Serbia
- Prof. Veronika Joukes, Ph.D., Portugal
- Prof. Vesela Radović, Ph.D., Serbia
- Prof. Victor Manole, Ph.D., Romania
- Prof. Vidoje Stefanović, Ph.D., Serbia
- Prof. Vidoje Vujić, Ph.D., Croatia
- Prof. Viera Kubičková, Ph.D., Slovak Republic
- Prof. Vihren Bouzov, Ph.D., Bulgaria
- Prof. Viktor Nedović, Ph.D., Serbia
- Prof. Viktoriia Hranovska, Ph.D., Ukraine
- Prof. Vincent Dolle, Ph.D., France
- Prof. Vladan Ugrenović, Ph.D., Serbia
- Prof. Vladimir Senić, Ph.D., Serbia
- Prof. Vladimir Zakić, Ph.D., Serbia
- Prof. William H. Meyers, Ph.D., USA
- Prof. Wim Heiman, Ph.D., Netherlands

- Prof. Zdravko Petrović, Ph.D., Austria
- Prof. Zlatko Jakovlev, Ph.D., North Macedonia
- Prof. Zlatko Langović, Ph.D., Serbia
- Prof. Zoran Grgić, Ph.D., Croatia
- Prof. Zoran Njegovan, Ph.D., Serbia
- Prof. Zoran Rajić, Ph.D., Serbia
- Prof. Zorica Sredojević, Ph.D., Serbia
- Prof. Zorica Vasiljević, Ph.D., Serbia
- Prof. Ing. Zuzana Palkova, Ph.D., Slovak Republic
- Prof. Žarko Lazarević, Ph.D., Slovenia
- Prof. Željko Dolijanović, Ph.D., Serbia
- Prof. Željko Vaško, Ph.D., Republic of Srpska, Bosnia and Herzegovina
- Asst. Prof. Aleksandar Đurić, Ph.D., Republic of Srpska, Bosnia and Herzegovina
- Asst. Prof. Aleksandra Figurek, Ph.D., Bosnia and Herzegovina
- Asst. Prof. Andrej Mićović, Ph.D., Serbia
- Asst. Prof. Blaženka Piuković Babičković, Ph.D., Serbia
- Asst. Prof. Branislav Dudić, Ph.D., Slovak Republic
- Asst. Prof. Branislav Živković, Ph.D., Serbia
- Asst. Prof. Danijel Mlinarić, Ph.D., Croatia
- Asst. Prof. Dhananjay Mani Tripathi, India
- Asst. Prof. Dragan Janjušić, Ph.D., Serbia
- Asst. Prof. Dragana Pešić, Ph.D., Serbia
- Asst. Prof. Dražen Marić, Ph.D, Serbia
- Asst. Prof. Gordana Radović, Ph.D., Serbia
- Asst. Prof. Grujica Vico, Ph.D., Republic of Srpska, Bosnia and Herzegovina
- Asst. Prof. Iva Bulatović, Ph.D., Montenegro
- Asst. Prof. Ivana Domazet, Ph.D., Serbia
- Asst. Prof. sc. Ivana Štulec, Ph.D., Croatia
- Asst. Prof. Jovan Rudež, Ph.D., Serbia
- Asst. Prof. Lazar Stošić, Ph.D., Serbia
- Asst. Prof. Luis Tiberio, Ph.D., Portugal
- Asst. Prof. Ljiljana Tomić, Ph.D., Republic of Srpska
- Asst. Prof. Marija Lakićević, Ph.D., Serbia
- Asst. Prof. Marija Stojanova, Ph.D., Bulgaria
- Asst. Prof. Miljan Leković, Ph.D., Serbia
- Asst. Prof. Miško Rađenović, Ph.D., Montenegro
- Asst. Prof. Nenad Bingulac, Ph.D., Serbia
- Asst. Prof. Nenad Đurić, Ph.D., Serbia

- Asst. Prof. Nenad Ivanišević, Ph.D., Serbia
- Asst. Prof. Nikola Njegovan, Ph.D., Serbia
- Asst. Prof. Nina Maksimović Sekulić, Ph.D, Serbia
- Asst. Prof. Radomir Jovanović, Ph.D., Serbia
- Asst. Prof. Ratko Ljubojević, Ph.D., Serbia
- Asst. Prof. Srđan Lalić, Ph.D., Bosnia and Herzegovina
- Asst. Prof. Srđan Milošević, Ph.D., Serbia
- Asst. Prof. Sretenka Dugalić, Ph.D., Serbia
- Asst. Prof. Ing. Stefan Buday, Ph.D., Slovak Republic
- Asst. Prof. Sunčica Milutinović, Ph.D., Serbia
- Asst. Prof. Tanja Stanišić, Ph.D., Serbia
- Asst. Prof. Vesna Milovanović, Ph.D., Serbia
- Asst. Prof. Vesna Mrdalj, Ph.D., Bosnia and Herzegovina
- Asst. Prof. Viktorija Petrov, Ph.D., Serbia
- Asst. Prof. Vladimir Shibaykin, Ph.D., Russia
- Asst. Prof. Zoran Srzentić, Ph.D., Serbia
- Asst. Prof. Željko Vojinović, Ph.D., Serbia
- Aleksandra Radovanović, Ph.D., Serbia
- Aleksandra Vujko, Ph.D, Serbia
- Corina Ene, Ph.D., Romania
- Crina Turtoi, Ph.D., Romania
- Danica Mićanović, Ph.D., Serbia
- Dimitrije Vujadinović, Ph.D., Serbia
- Gianluca Rossoni, Ph.D., Italy
- Hadži Dušan Petrović, Ph.D., Serbia
- István Kapronczai, Ph.D., Hungary
- Ivana Markov Čikić, Ph.D., Serbia
- Jacqueline Tanti-Dougall, Ph.D, Malta
- Jelena Marinković, Ph.D., Serbia
- Jovanka Kalaba, Ph.D., Serbia
- Klaus Wagner, Ph.D., Austria
- Sc. Kristina Brščić, Ph.D., Croatia
- Lucian Luca, Ph.D., Romania
- Marek Wigier, Ph.D., Poland
- Sc. Marinela Dropulić Ružić, Ph.D., Croatia
- Matteo Vittuari, Ph.D., Italy
- Milorad Mišo Zekić, Ph.D., Serbia
- Milutin Mrkša, Ph.D., Serbia
- Nada Kosanović, Ph.D., Serbia
- Rade Jovanović, Ph.D., Serbia

- Slavka Križova, Ph.D., Slovak Republic
- Stefan Imre, Ph.D., Romania
- Svetlana Balešević-Tubić, Ph.D., Serbia
- Tomaš Doucha, Ph.D., Czech Republic
- Vladimir Radivojević, Ph.D., Serbia
- Vladimir Varađanin, Ph.D., Serbia
- Vojin Đukić, Ph.D., Serbia
- Zbigniew Floriańczyk, Ph.D., Poland
- Sc. Zdravko Šergo, Ph.D., Croatia
- Aleksandar M. Gajić, M.Sc., Serbia
- Biljana Đuričić, M.Sc., Serbia
- Carlos Saborio Viquez, M.Sc., Costa Rica
- Cvetanka Ristova, M.Sc., North Macedonia
- Dejana Pavlović, M.Sc., Serbia
- Srđan Cvijanović, M.Sc., Serbia
- Zdravko Lešić, M.Sc., Croatia
- Oskana V. Fotina, Russia

ORGANIZATIONAL BOARD

- Asst. Prof. Miljan Leković, Ph.D., President
- Asst. Prof. Marija Lakićević, Ph.D., Vice President
- Asst. Prof. Aleksandra Mitrović, Ph.D., Vice President
- Asst. Prof. Andrej Mićović, Ph.D., Vice President
- Asst. Prof. Dejan Sekulić, Ph.D.,Vice President
- Asst. Prof. Vesna Milovanović, Ph.D., Vice President
- Jelena Petrović, BA, ec., Vice President
- Saša Đurović, BA, ing.el., Vice President
- Prof. Darko Dimitrovski, Ph.D.
- Asst. Prof. Dragana Pešić, Ph.D.
- Asst. Prof. Tanja Stanišić, Ph.D.
- Aleksandra Radovanović, Ph.D.
- Jovanka Kalaba, Ph.D.
- Jovan Nićiforović, Ph.D.
- Aleksandar Mitrović, M.Sc.
- Danijela Durkalić, M.Sc.
- Irena Čelić, M.Sc.
- Jasmina Ognjanović, M.Sc.
- Marijana Seočanac, M.Sc.
- Milena Podovac, M.Sc.

SCHUMANN RESONANCE: NEW ASPECTS FOR TOURISM DEVELOPMENT

Biljana Petrevska[1]; Risto Popovski[2];

Abstract

The Schumann resonance is a global level important discovery that Earth produces natural electromagnetic waves in the extremely low frequency of 7.83[Hz]. It spreads a signal that positively or negatively affects all living beings, including humans in their natural environment. The research discusses some impacts that this resonance may have over tourists and visitors that visit or prospectively intend to visit different tourist destinations in Macedonia. Moreover, the paper puts a focus on some locations with tourism motives (like churches, monasteries, spas, mines, geo-tourist locations, etc.) that already have tourist activity, or those with potential to have one. From a scientific point of view, the paper offers the possibility to perceive some effects of the Schumann resonance on tourists and visitors from different approaches: psychological, neurological, physiological, etc. From a practical point of view, the findings may assist in identifying new strategic dimensions for promoting new aspects of tourist product in Macedonia.

Key Words: *natural frequency, tourism, positive effects*
JEL classification: *L83, I12*

Introduction

Being influenced by a large number of social, economic, political and environmental factors, tourism occurs to have an extremely diversified character. Particular attention is paid to tourist perception since it enables tourism policy-makers to create new insights and tailor new strategic approaches that may increase the number of visits and nights spent in a

[1] Biljana Petrevska, Ph.D., Associate Professor, Faculty of Tourism and Business Logistics, Goce Delcev University - Štip, Macedonia, Campus IV, 2000 Štip, biljana.petrevska@ugd.edu.mk
[2] Risto Popovski, PhD, Associate Professor, Faculty of Natural Sciences, Goce Delcev University - Štip, Macedonia, Campus II, 2000 Štip, risto.popovski@ugd.edu.mk

destination. When creating an image and perception while experiencing tourism services, tourists and visitors are drawn by various individual motives depending on their preferences. Yet, one may argue that the health issue seems to be of great importance to everyone, regardless of the individuality in specific needs when addressing tourism and leisure services. Hence, spa and wellness tourism emerged among top aspects for tourism development, urging the need to explore developing new aspects of added-value tourism products. Some potential is found in the possibility to create a state of synchronization between positive emotions, cardiovascular, respiratory, immune and nervous systems, which are influenced by the Schumann resonance (SR) (Schumann, 1952).

Namely, according to Schumann's research, the Earth produces natural electromagnetic waves at an extremely low-frequency level of 7.83[Hz], which spread a signal that affects everyone and everything on Earth in the natural environment. Such wave distribution of information is a global level important discovery, always pointing to new aspects of positive or negative influence on all living beings.

Though Schumann resonance literature is continuously growing, the issue of how it affects tourists and visitors that visit tourism recreational areas is barely discussed. This paper attempts to fill this gap by demonstrating the manner in which some tourist and recreational areas have the potential to reflect the therapeutic benefit of the Earth's magnetic field on tourists. Besides assessing the possibilities of the positive effects on visitors, the research emphasizes the importance to perceive new approaches in developing tourism product. In order to do so, the research is carried in a spa center as a sample location in Macedonia. Although this paper makes a contribution to the current research on electromagnetic field radiation, no academic study in Macedonia has yet, to our best knowledge, dealt with this topic in this manner. So, the study proposes an identification of new frontiers and strategic dimensions for developing a model for promoting new tourism product based on positive and harmonious energy vibrations in tourism locations in Macedonia.

The paper is divided into several sections. The first addresses the literature review on integral views on the Schumann resonance, along with a brief overview of the produced signal effects over the environment. This is followed by the research methodology. The next section discusses the results, being followed by the main conclusions of the study. The last

section presents the limitations and offers suggestions concerning future research.

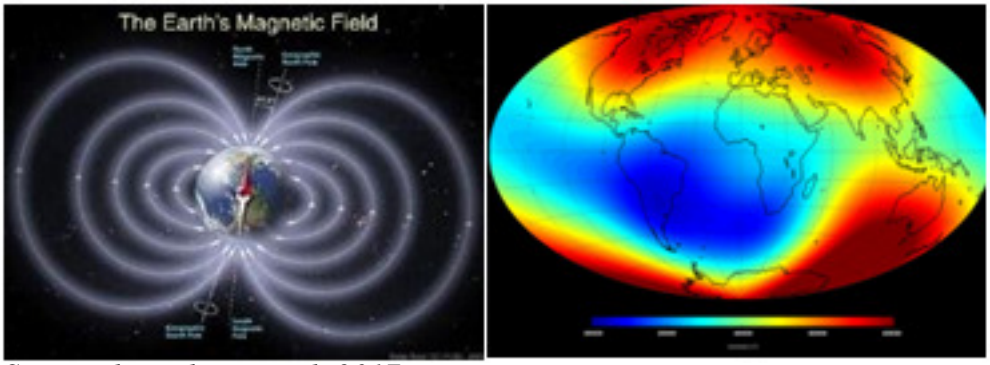
Literature review

This section is devoted mainly to studies investigating the Schumann resonance. However, the electromagnetic frequency has effects on global coherence of living things, so the literature review commences with a discussion of the concept of positive paradigm and potential dynamics over tourism and leisure activities.

Schumann resonance: Integral views

The Schumann resonance (Schumann, 1952) is vastly explored and the literature is continuously growing. It was detected by Balser and Wagner (1960) as a spectrum of resonant electromagnetic waves in the extremely low-frequency range in the Earth-ionosphere cavity (Figure 1).

Figure 1: *Earth magnetic field*



Source: *http:planet-earth-2017.com*

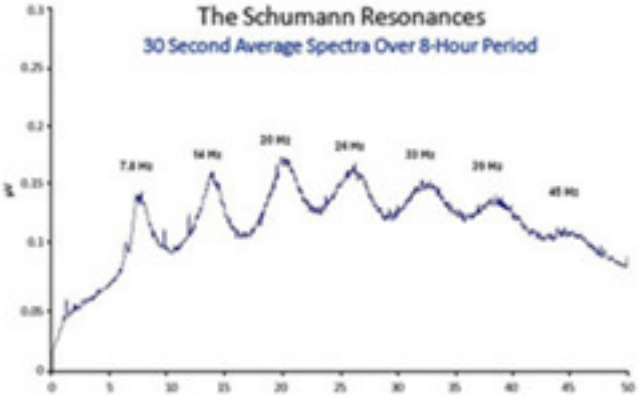
The interest in exploring the SR differs. Yet, from the very beginning the studies were focused on evaluating the characteristics of global lightning and thunderstorm activity (Nickolaenko et al., 2003; Nickolaenko, 1997; Nickolaenko & Hayakawa, 2002), monitoring the global upper-tropospheric water vapor changes (Price, 2000), and monitoring planetary temperature (Williams, 1992). Furthermore, Nickolaenko and Rabinowicz (1982) used the SR in the exploration of the electrical activity and lower ionosphere parameters on celestial bodies.

Schumann resonance effects

The literature contains a large body of work exploring the effects of the Earth magnetic field on all living beings, including humans in their natural environment. Figure 2 clearly shows the presence of the SR by forming distinct peaks starting around the fundamental frequency of 7.8[Hz] with higher harmonic components at 14, 20, 26, 33, 39 and 45[Hz].

As noted by McCraty et al., (2012), and McCraty and Deyhle (2015) this directly overlaps with the central nervous system alpha wave bandwidth which is associated with the psychophysiological coherence of 0.1[Hz], the approximate 10-second cycle of ocean waves and the hypothetical resonant frequency of the Earth.

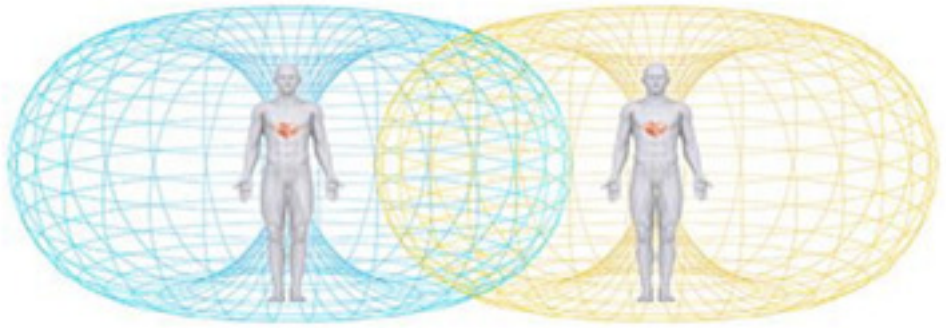
Figure 2: *Schumann resonance*



Source: *Edwards (2015)*

Furthermore, Brizhik et al., 2009 discuss the postulation of feedback loops between all living systems and the Earth's magnetic field, enabling encoded information to be communicated non-locally between people at a subconscious level. In the same line, Lynch (2014), McCraty (2003) and Rosch (2014) argue that the presence of electromagnetic interactions within and between people (Figure 3) have vast implications for interpersonal communication, psychotherapy, healing, and future related research and praxis, which have hardly been tapped.

Figure 3: *Intra-personal and interpersonal bio-electromagnetic interactions*



Source: *Edwards (2015)*

McCraty et al., (2012) also note that changes in the Earth's magnetic field affect human heart rhythms, brain, and nervous system activity; athletic performance, memory and other tasks; synthesis of nutrients in plants and algae; the number of reported traffic violations and accidents; mortality from heart attacks and strokes; and incidence of depression and suicide.

Research methodology
Case study - Kežovica Spa, Štip (Macedonia)

Štip is the largest urban city situated in the eastern part of Macedonia and generally serves as an industrial and educational center for the region. Despite tourist potential, it is not developed in tourism manner and incorporates only 0.68% of total tourist arrivals (7,645 tourists) and 0.64% of total overnights (20,452 overnights) registered in 2018.

As per the national context, although being noted as one of the national strategic priorities of the country (The Government of the Republic of Macedonia, 2016), tourism contribution is still modest. Some improvements are expected for the forthcoming period according to the latest National Tourism Strategy (2016-2021), where the focus is on urban, cultural and lake tourism. According to Petrevska and Collins-Kreiner (2017), Macedonia is in the "development" stage of its life cycle and has reached a state of tourism maturity.

Macedonia has seven main geothermal fields with 18 thermal water localities, including more than 50 occurrences as springs and wells, generally being identified in the eastern and northeastern parts of the country. Yet, probably due to the low temperature of Macedonia's

geothermal water, the geothermal energy is barely used as a renewable source of energy in the country. According to the Energy Balance for 2015-2019, the geothermal energy participated with 2.36% in the national energy balance of renewable energy sources (Popovska-Vasilevska & Armenski, 2016).

Kežovica Spa is located 2 km southeast from the center of Štip. With the water radioactivity of 43.7 Mach, it is known as one of the most radioactive thermal mineral waters not only in Macedonia but also in the Balkans (Figure 4). The thermal mineral water temperature is between 54-70°C with a flow rate of 5.4 l/sec (Gorgieva & Popovski, 2001). Due to high radioactivity, the water in Kežovica Spa has such complex favorable chemical content full with lots of minerals that positively affect people's health. It is recommended and used as curative of rheumatism, knuckles conditions, nervous system, diabetes, infertility, arteriosclerosis, skin diseases and inflammations, high blood pressure, etc. Local residents use the water from the springs for drinking, inhalation and treating some lung problems.

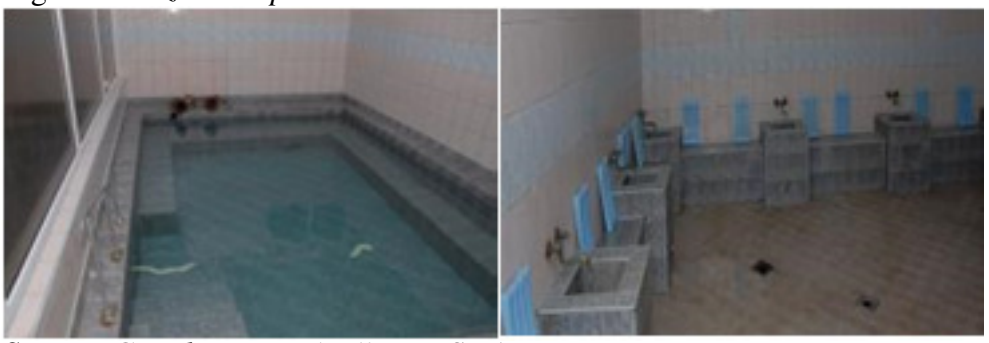
Figure 4: *Location of spas in Macedonia, with Kežovica Spa*

Source: *Gorgieva & Popovski (2001)*

Today, Kežovica spa (Figure 5) has renovated bath with pools and a center for rehabilitation. The complex has a unit for physic-therapy, which uses the most modern devices and treatment methods. This spa has

a capacity of 105 beds and encompasses almost 7% of all beds registered within Macedonia's spas (1,579 beds). Additionally, there is a possibility to be accommodated in modern private facilities in the center of Štip.

Figure 5: *Kežovica Spa*



Source: *Google images (Kežovica Spa)*

Although the water of Kežovica Spa is thermal and offers the possibility to be used as a geothermal resource, so far it has not been used. Besides balneology being the main applicative form, some further utilization may include greenhouse heating, plastic houses heating, drying of agricultural products, district heating, preparation of sanitary warm water, etc. Yet, power generation is not applicable since the temperature is far below the limit of technical feasibility. Despite the high awareness of Kežovica Spa potential for the local economic development, the local authorities have not still initiated any serious project for spa tourism development.

Research aims and questions

The study has a primary aim to investigate and evaluate the potential impact of the Schumann resonance over tourists and visitors that visitor may visit Kežovica Spa. Moreover, the research utilizes the data measurements and underlines the possibilities to use the spa as a relaxing ambient full with positive and harmonious energy vibrations.

In order to fulfill the aim, the main objective of the paper is to ascertain how the Earth's wave distributes information, the intensity, and possible affection. During the analysis, the focus was on the following particular questions:

- RQ_1: How to manage the signal of the Earth magnetic field for tourism purposes?

- RQ_2: How to perceive the effects on tourists and visitors from different approaches (psychological, physiological, neurological, etc.)?
- RQ_3: Which measures to recommend for promoting new tourist product that may result in the ultimate satisfaction of tourists?

Study method

The study is based on a mixed research method incorporating qualitative and quantitative information obtained by primary and secondary sources. In this manner, the authors have reviewed and made an in-depth analysis of relevant literature with a focus on the measurements of the Earth magnetic field and investigating its positive effects on the biosphere. To deepen the information collected through the desk research, the data were gathered from primary sources by using 16 Bit AD converter. Furthermore, a self-made induction Schumann antennas 16 [Hz] were designed at the laboratory of the Faculty of Natural Sciences.

The data were collected from two locations (Plačkovica and Kežovica Spa) and further processed with the software package T-Soft. Besides the presentation of the original signals on both locations, the low band pass Butterworth filter 1-35 [Hz] was applied, and the Fast Fourier Transform spectrum was done.

In order to provide relevant accuracy and significance of the interpreted results, two types of data were compared:

- First, the authors used the data already gathered from the field research undertaken in September 2015 at the mountain Plačkovica. All started in 2013 when prof. Lazo Pekevski forms the Seismological Observatory in Skopje as the lead expert of the team of university professors who set up a fixed antenna to receive and register the extreme-low frequencies from 1,400m heights, thus covering a large territory. Moreover, this antenna serves as a referent measurement point enabling purifying, correcting and comparing data obtained from other locations in its nearby vicinity. After performing several pilot measurements, as of 2015, prof. Pekevski with collaborators recorded and utilized data for scientific purposes (Popovski et al, 2017; Panov et al., 2016);
- Second, the authors undertook new measurements in Februarv 2019 directlv at the near vicinity of Kežovica Spa, as a case study for this research.

Figure 6: *Preparation phase and measurement instruments*
a – Preparations, Plačkovica (2015) *b - Induction antennas used in 2015*


c–Preparations, Kežovica Spa (2019) *d – Induction antenna used in 2019*


Source: *Authors*

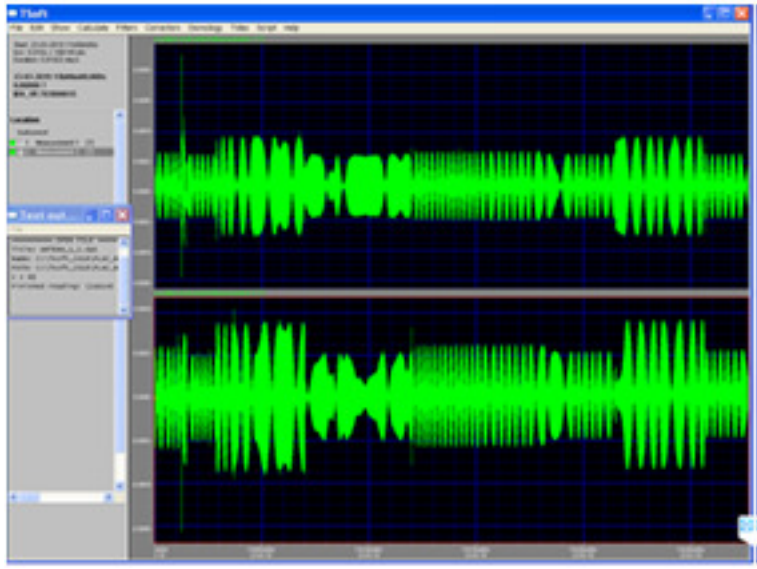
Figure 6 visually presents the preparation phase applied in 2015 (Figure 6a) and 2019 (Figure 6c), along with the applied measurement instruments on both locations Plačkovica (Figure 6b) and Kežovica Spa (Figure 6d), respectively. On both locations, the measurements were repeated in many various intervals during the day for one month period. This was done due to fact that the effects of the solar wind and magnetization differ during the day (and during the night) and vary on a range of timescales from minutes to hours. Through extensive research, for the purpose of the study, the authors extracted and interpreted data from a one month sample period, as a reference time period (September 2015 at Plačkovica location, and February 2019 at Kežovica Spa location).

Generally, the measurements upon which data are analyzed and the conclusions are made, spread over one month period, with constant recorded intervals of 2-3 hours. The time sample was randomly chosen, though the main focus was on the following momentums:

- Early mornings (7:00 – 9:00 o'clock), as the usual time when elderly local residents visit the spa for the regular daily bath;
- Noon periods (11:00 – 13:00 o'clock), as preferred time for medical treatments; and
- Early afternoons (15:00 – 17:00 o'clock), as the period when non-working residents often visit the spa for recreational purpose.

Results and discussion

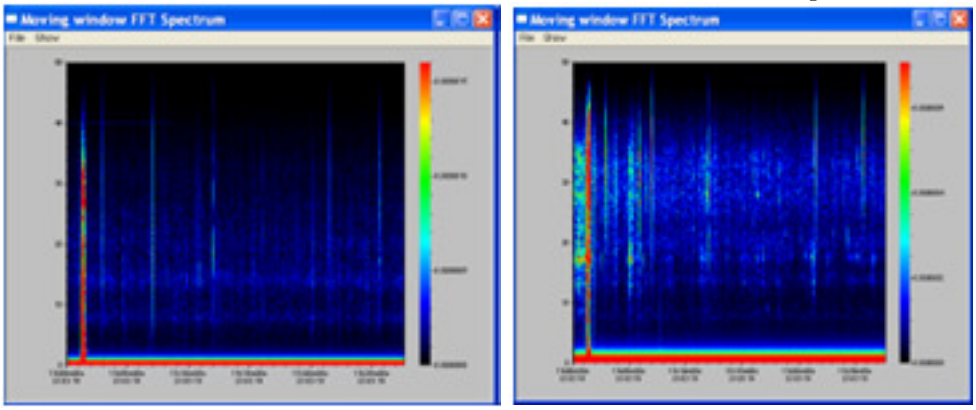
Figure 7: *Basic signal (top: Plačkovica, bottom: Kežovica Spa)*



Source: *Authors*

Figure 8: *Spectrogram*

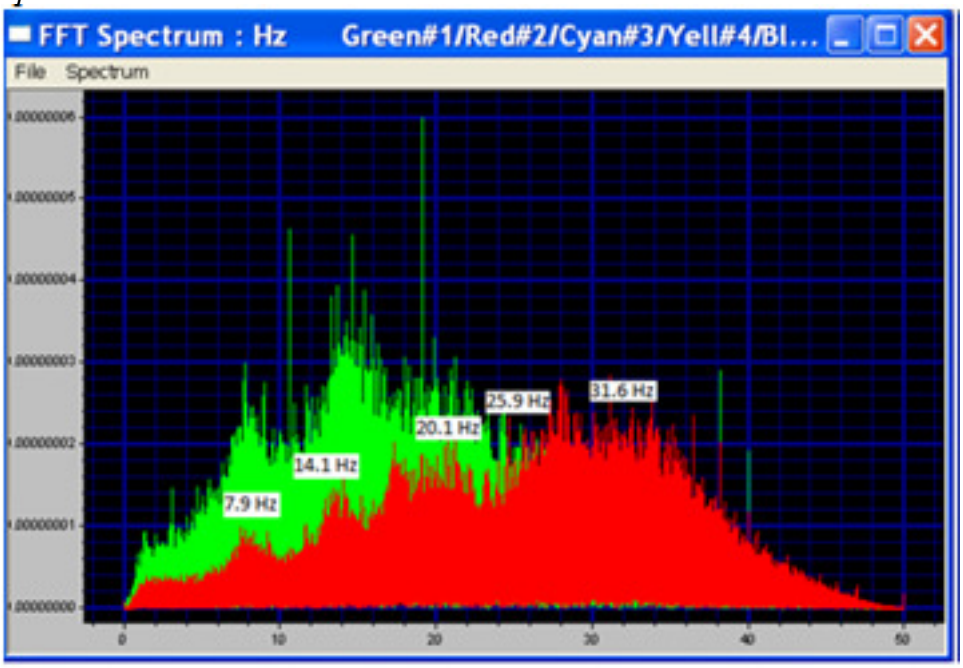
a - Plačkovica *b – Kežovica Spa*



Source: *Authors*

Figures 7 and 8 present just a small extract from numerous data obtained from the measurements in Plačkovica and Kežovica Spa. Figure 7 presents the basic signal from both locations, and figure 8 presents their spectrograms.

Figure 9: *Comparing Plačkovica (green) and Kežovica Spa (red) spectrums*



Source: *Authors*

A more close comparison is presented in Figure 9. The research revealed that Kežovica Spa has a significant presence of the basic pulsation of the Schumann resonance of 7.9[Hz] along with other harmonics at 14.1[Hz], 20.1[Hz], 25.9[Hz] and 31.6[Hz]. It is known that such impulses have positive therapeutic effects on humans, whereas the frequencies around 7-8[Hz] support the bone growth, frequencies around 10[Hz] support the ligament healing, while the frequencies around 15[Hz] are in favor for capillary formation, fibroblast proliferation and decrease skin necrosis (Human frequency blog b, 2019). Another positive impact of Schumman resonance on the human body is already vastly discussed (Babayev & Allahverdiyeva, 2005; Gubbins & Herrero-Bervera, 2007; Persinger & Saroka, 2015).

Having in mind that usually, local residents who visit Kežovica Spa have problems with heart rhythms, brain, and nervous system activity, such registered magnetic field may stream with high positive signals. This is expected to affect in a most positive manner to visitors' heart rate, blood pressure and overall health condition and calming, as already discussed by HeartMath Institute (2019), Mitsutake et al., (2005), McCraty et al., (2012), and Ward and Henshaw (2016).

The results point that Kežovica Spa may easily be promoted as a tourist and recreational area that offer ultimate satisfaction in an ambient with positive and harmonious energy vibrations, thus attracting visitors, one-day trippers, excursionists and nature-lovers who appreciate and support local environmental quality.

Conclusion

The paper makes an attempt to draw attention to how to manage and utilize the Earth's magnetic field for tourism purposes. In order to do so, the study supports the thesis with results obtained by measuring the Schumann resonance in Kežovica Spa in Štip, Macedonia. Generally, by combining the insights from primary and secondary sources, it was found that Kežovica Spa, along with the surrounding vicinity of Štip (with particular reference to Plačkovica Mountain) receives natural electromagnetic waves with extremely low frequency, known as the Schumann resonance.

Furthermore, the study reveals that such effects may be perceived by tourists and visitors from different approaches, like psychological, physiological, neurological, etc. Hence, it may provoke to feel more relaxed, full of energy, revitalized and reenergized. That means that Kežovica Spa may attract much more visitors than the current number if being promoted as a recreational and leisure area that offers more than just an ordinary spa treatment.

Having in mind that the therapeutic benefit of the electromagnetic field radiation on human's health from a medical perspective has been scientifically proven, Kežovica Spa may gain an added value. Besides the ordinary balneology treatment, a new dimension may be added by putting a focus on a new product that may result in a comprehensive satisfaction in an ambient full of harmonious energy vibrations.

We strongly believe that a model for comparing the consumption of the "basic tourist product" with the consumption of a "new tourist product" may contribute to an adequate understanding of the findings. Hence, Kežovica Spa, along with Štip, needs to undergo the process of developing a new product for tourism consumption. This process goes in tandem with different tourism promotion strategies became popular in many cities around the world (Ben-Dahlia et al., 2013; Law, 1996; Selby, 2004). This may be a good opportunity for developing spa tourism based on positive impulses from nature, and creating and generating no negative impacts on the environment caused by tourism. Moreover, such innovative approach may lead to sustainable development, thus promoting and offering specific tourism product with zero seasonality.

When visitors of Kežovica Spa are going to be told that the Earth's magnetic field positively encode and interact with their consciousness, emotions, and thoughts, it is believed that they will be willing to extend the duration of the stay (being 2.7 days for 2018) and to visit the location again. The local economic development may be boosted, tourism private initiative may arise and Štip may be transformed from the largest urban industrial and educational center in the eastern part of Macedonia to the leading spa tourism city in the country. This, by all means, posts a necessity of creating tourism-friendly settings conditions from the environment and applies them pragmatically in the fast-growing tourism industry thus making stable and equitable local and regional economic prospects.

On the other hand, Macedonia lacks tourism planning which imposes the need of creating clearly defined and recognizable offer by designing niche tourist products (Petrevska et al., 2018). Consequently, key tourism players on a local, regional and national level need to identify such solution approaches that can proactively aim at increasing the visibility of Kežovica Spa as a destination that besides traditional way of consuming balneology spa services possesses additional positive aspects for rejuvenation and overall wellbeing, regardless of age and gender.

Limitation and future work

The research was limited by several factors that can serve as productive starting points for future work.

First, the measurements at Kežovica Spa were done in a short time period, so additional time extension spanning over a calendar year and numerous repetitions of measurements during the day-time period may be involved. This is to better assess signal impulses in the sampled location, but also to purify the data from magnetic storms and sub-storms, electric discharges and thunderstorms that occasionally appear.

Second, instead of measurements with only one mobile instrument, performing measurements with several more mobile induction antennas could be beneficial and advisable. This will enable comparison of data, particularly in the line of their consistency and accuracy.

Finally, when doing a case study research, there is a risk for generalization of the findings and the danger of overrating details and specifics. This is often criticized as the biggest disadvantage when applying a case study method for research purposes (Muno, 2009; Sartori, 1994; Yin, 1984).

The limitations, however, do not diminish the significance of the findings, but they rather suggest some broad directions for further research. Notwithstanding the difficulties, this article assists in a better understanding of the distribution of the magnetic field signals, their dispersion and effects on current, but also on potential tourists and visitors. Overall, the research generates useful findings and points to valuable directions for further work.

References

1. Babayev, S. E., Allahverdiyeva, A. A. (2005). Geomagnetic Storms and their Influence on the Human Brain Functional State. *Revista CENIC Ciencias Biológicas*, Vol. 36, 1-7.

2. Balser, M., Wagner, C. A. (1960). Observations of Earth-ionosphere cavity resonances. *Nature*, Vol. 188, No. 4751, 638.

3. Ben-Dahlia, S., Collins-Kreiner N., Churchman A. (2013). Evaluation of an Urban Tourism Destination. *Tourism Geographies,* Vol. 15, No. 2, 233-249.

4. Brizhik, L., Del Giudice, E., Jorgensen, S.E., Marchettini, N., Tiezzi, E. (2009). The role of electromagnetic potentials in the evolutionary dynamics of ecosystems. *Ecological Modelling,* Vol. 220, 1865-1869.

5. Edwards, S. D. (2015). The global coherence initiative: Opportunities for scientific research and health promotion. *African Journal for Physical Health Education, Recreation and Dance*, https://www.researchgat e.net /publication/286869493, (13 December 2018).

6. Google images. *Images on Kežovica Spa*, https://www.kanal5.com.mk/ articles/216871/banja-kezhovica-prv-spacentar-vo-makedonija, and http:// discoverbg-mk.com/mk/item/kezovica-spa/ (20 February 2019).

7. Gorgieva, M., Popovski, K. (2001). Thermal spas in Macedonia. In: Proceedings of the International Workshop on Balneology and Water Tourist Centres International Geothermal Days "Germany 2001", 21-22 September, Bad Urach, Germany, 37-48.

8. Government of the Republic of Macedonia. (2016). National Strategy on Tourism Development 2016-2021, Skopje.

9. Gubbins, D., Herrero-Bervera, E. (2007). *Encyclopedia of Geomagnetism and Paleomagnetism*, Springer, Netherlands.

10. HeartMath Institute, (2019). *Effects of Geomagnetic, Solar and Other Factors on Humans*, https://www.heartmath.org/articles-of-the-heart/effects-geomagnetic-solar-factors-humans/, (1 February 2019).

11. Human frequency blog (b). *Reiki Frequencies and Schumann Resonances*, https://www.humanfrequencies.com/ (20 February 2019).

12. Law, M. C. (1996). *Tourism in Major Cities*. London: International Thomson Business Press.

13. Lynch, J. J. (2014). Hidden therapeutic dialogue: Decoding the language of the human heart. *Neuropsychotherapist*, July, 49-70.

14. Mitsutake, G., Otsuka, K., Hayakawa, M., Sekiguchi, M., Cornélissen, G., Halberg, F. (2005). Does Schumann resonance affect our blood pressure?, *Biomedicine & Pharmacotherapy*, Vol. 59, S10-S14.

15. McCraty, R. (2003). *The energetic heart. Bioelectric interactions within and between people.* HeartMath Research Centre, Boulder Creek, CA: Institute of HeartMath.

16. McCraty, R., Deyhle, A. & Childre, D. L. (2012). The Global Coherence Initiative: creating a coherent planetary standing wave. *Global Advances in Health and Medicine*, Vol. 1, No. 1, 64-77.

17. McCraty, R., Deyhle, A. (2015). The Global Coherence Initiative: Investigating the dynamic relationship between people and the earth's energetic systems. In: P. J. Rosch (Ed.), *Bio-electromagnetic and Subtle Energy Medicine*, 2nd Edition, Boca Raton, FL: CRC Press, 411-425.

18. Muno, W. (2009). Fallstudien und die vergleichende Methode. In: Pickel, S., Pickel, G., Lauth, H.-J., Jahn D. (Eds), *Methoden der vergleichenden Politik- und Sozialwissenschaft*, Wiesbaden, 113-131.

19. Nickolaenko, A. P., Besser, B. P., Schwingenschuh, K. (2003). Model computations of Schumann resonance on Titan. *Planetary and Space Science*, Vol. 51, No. 13, 853-862.

20. Nickolaenko, A. P. (1997). Modern aspects of Schumann resonance studies. *Journal of Atmospheric and Solar-Terrestrial Physics,* Vol. 59, No. 7, 805-816.

21. Nickolaenko, A. P., Hayakawa, M. (2002). *Resonances in the Earth-Ionosphere Cavity*, Kluwer Acad., Norwell, Mass.

22. Nickolaenko, A. P., Rabinowicz, L. M. (1982). On the possibility of existence of global electromagnetic resonances on the planets of solar system1. *Earth*, Vol. 6, No. 10.6, 18-3.

23. Panov, Z., Karanakova Stefanovska, R., Minov, K., Blagica D., Popovski R. (2016). Rehabilitation of the landslide – monitoring, measures and procedures for fast rehabilitation, Proceedings of the Scientific and Technical Union of Mining, Geology and Metallurgy from the VII International Geomechanics Conference, 27 June-01 July 2016, Varna, Bulgaria.

24. Persinger, A. M., Saroka, S. K. (2015). Human Quantitative Electroencephalographic and Schumann Resonance Exhibit Real-Time

Coherence of Spectral Power Densities: Implications for Interactive Information Processing, *Journal of Signal and Information Processing,* Vol. 6, 153-164.

25. Petrevska, B., Collins-Kreiner, N. (2017). Double Life Cycle: Determining Tourism Development in Macedonia. *Journal of Tourism and Cultural Change*, Vol. 15, No. 4, 319-338.

26. Petrevska, B., Krakover, S., Collins-Kreiner, N. (2018). Preserving the Cultural Assets of Others: Jewish Heritage Sites in Macedonian Cities. *Tourism Geographies*, Vol. 20, No. 3, 549-572.

27. Popovska-Vasilevska, S., Armenski, S. (2016). Geothermal potential of Macedonia and its utilization. In: Papic, P. (Ed.), *Mineral and thermal waters of Southeastern Europe*, Springer, 131-146.

28. Popovski, R., Pekevski, L., Panov, Z. Doneva, B., Karanakova Stefanovska, R. (2017). Monitoring of seismic activity of the earth dam Topolnica mine Bucim, Republic of Macedonia, Proceedings from the 7th Balkan Mining Congress *"Balkan Mining for the Friendship and Progress"*, 11-13 October 2017, Prijedor, Bosnia and Herzegovina.

29. Planet Earth. *Images on Earth magnetic field*, http:planet-earth-2017.com (20 February 2019).

30. Price, C. (2000). Evidence for a link between global lightning activity and upper tropospheric water vapor. *Nature*, Vol. 406, No. 6793, 290.

31. Rosch, P. J. (2014). Why the heart is more than a pump. *Neuropsychotherapist,* July, 1-13.

32. Sartori, G. (1994). Compare Why and How. Comparing, Miscomparing and the Comparative Method. In: Dogan, Mattei/Kazancigil, Ali (Hrsg.): 14-34.

33. Selby, M. (2004). Consuming the city: conceptualizing and researching urban tourist knowledge. *Tourism Geographies*, Vol. 6, No. 2, 186-207.

34. Schumann, W. O. (1952). *On the radiation-free self-oscillations of a conducting sphere which is surrounded by an air layer and an ionospheric shell* (in German), Z. Naturfirsch. A, 7, 149.

35. Ward, P. J., Henshaw, L. D. (2016). *Geomagnetic Fields, their Fluctuations and Health Effects*, unpublished, https://www. researchgate.net/publication /242259262.

36. Williams, E. R. (1992). The Schumann resonance: A global tropical thermometer. *Science*, Vol. 256, No. 5060, 1184-1187.

37. Yin, R. K. (1984). *Case study research: Design and methods* (1st ed.). Beverly Hills, CA: Sage Publications.