INTERNATIONAL SCIENTIFIC CONFERENCE
GEOBALCANICA 2015

PROCEEDINGS

5-7 June, 2015
Skopje, Republic of Macedonia
INTERNATIONAL SCIENTIFIC COMMITTEE

- Karl Donner, PhD, Adjunct Professor, Department of Geoinformatics, University of Salzburg, President of European Association of Geographers, Republic of Austria
- Blagoy Markoski, PhD, Full Professor, Institute of Geography, Faculty of Natural Sciences and mathematics, Ss. Cyril and Methodius University, President of Macedonian Geographical Society, Republic of Macedonia
- Matija Zorn, PhD, Senior Research Fellow, Assistant Director, Anton Melic Geographical Institute Research Centre of the Slovenian Academy of Sciences and Arts, Republic of Slovenia
- Georgi Zhelezov, PhD, Associate Professor, Head of Section "Physical Geography", National Institute of Geophysics, Geodesy and Geography, Bulgarian Academy of Sciences, Republic of Bulgaria
- Stefan Buzarovski, PhD, Professor of Geography, Director of the Centre for Urban Resilience and Energy, University of Manchester, United Kingdom
- Pavel Ptacek, PhD, Senior Lecturer, Department of Geography, Faculty of Science, Palacky University in Olomouc, Czech Republic
- Dubravka Spresce, PhD, Assistant Professor, Department of Geography, Faculty of Science, University of Zagreb, Republic of Croatia
- Rok Ciglic, PhD, Research Fellow, Head of Department of Geographic Information System, Anton Melic Geographical Institute, Research Centre of the Slovenian Academy of Sciences and Arts, Republic of Slovenia
- Sanja Klemen Bogdanic, PhD, Senior Research Associate, Institute for Migration and Ethnic Studies, Republic of Croatia
- Natacha Ravdar, PhD, Associate Professor, Karst Research Institute, Research Centre of the Slovenian Academy of Sciences and Arts, Republic of Slovenia
- Julia Hull, PhD, Research Scientist, Institute of Hydraulic Engineering and Water Resources Management, Vienna University of Technology, Republic of Austria
- Milena Mayrovna, PhD, Research Associate, Institute of landscape ecology, Slovak Academy of sciences, Slovak Republic

ORGANIZING COMMITTEE

-Svemir Gorin, PhD, Assistant Professor, Institute of Geography, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University, President of Geohalcanica Society, Republic of Macedonia
-Ivan Radovski, PhD, Assistant Professor, Institute of Geography, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University, Vice President of Geohalcanica Society, Republic of Macedonia
-Olgica Dimitrovska, PhD, Associate Professor, Institute of Geography, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University, Republic of Macedonia
-Milena Takanova, PhD, Assistant Professor, Institute of Geography, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University, Republic of Macedonia
-Vlado Mladenovski, MSc, Teaching Assistant, Institute of Geography, Faculty of Natural Sciences and Mathematics, Ss. Cyril and Methodius University, Republic of Macedonia

SUPPORTED BY:

- Ss. ,,Cyril and Methodius" University, Faculty of Natural Sciences and Mathematics - Skopje
- Eurogeo - European Association of Geographers
- Macedonian Geographical Society
CONTENTS

DETERMINING THE TEMPERATURE TREND OVER MARMARA REGION BY USING DATA SET FOR 1996 – 2006 PERIOD, Nilcean Akataş, Serhan Yeğilköy, Assoc. Prof. Dr. Alper Ünal, Istanbul Technical University, Faculty of Aeronautics and Astronautics, Turkey ................................................................. 1

DIGITAL AND CARTOGRAPHIC MODELLING OF VRŠAC MOUNTAINS TOPOGRAPHIC EXPOSITIONS, Associate Prof. dr Aleksandar Valjarević, M. Sc. Bojana Jandžiković, University of Kosovska Mitrovica Natural Science, Faculty Department of Geography - Serbia .......................... 9

ASSESSMENT OF WATER QUALITY AND WATER POLLUTION OF THE LUDA MARA RIVER IN THE REPUBLIC OF MACEDONIA, D-r Kole Pavlov, Prof. D-r Gjorgi Pavlovski, Josip Broz Tito High School, Skopje, Republic of Macedonia ................................................................. 15

CARTOGRAPHICAL METHOD IN DIGITAL MODELLING OF HYDROGRAPHICAL CHARACTERISTICS IN THE EXAMPLE OF THE UPPER ZETABASIN, Docent Dr. Goran Barovic, Dusko Vujacic MSC, Faculty of Philosophy, Nikšić, University of Montenegro, Montenegro .... 23

LITHOSTRATIGRAPHIC CORRELATION AND RESERVOIR CHARACTERISATION OF TRIASSIC SEDIMENTS IN KNEJA-ISKAR AREA (CENTRAL NORTH BULGARIA), Assoc. Prof. Dr. Nikola Botoucharov, Diana Angelova, BSc., Sofia University “St. Kliment Ohridski”, Bulgaria ................................................................. 32

THERMAL MATURITY ASSESSMENT OF MIDDLE TRIASSIC ROCKS AND HEAT FLOW MODELING IN AGATOVO-SUHINDOL AREA (CENTRAL NORTH BULGARIA), Assoc. Prof. Dr. Nikola Botoucharov, Megi Angelova, BSc., Sofia University “St. Kliment Ohridski”, Bulgaria ........ 41

CONTAMINATION OF SELECTED COMPONENTS OF ENVIRONMENT IN THE MIDDLE SPIŠ REGION (SLOVAK REPUBLIC), Dr. Vladimir Cech, Prof. Eva Michaeli, Dr. Juliana Kroksova, Dr. Monika Ivanova, Faculty of Humanities and Natural Sciences, University of Prešov, Slovakia ................................................................. 49

DETAILED GEOMORPHOLOGICAL MAPPING OF THE SEA BOTTOM ON THE BASIS OF THE SOUTHERN BALTIC, Dr. Kazimierz Szefer, Prof. Stanisław Rudowski, Dr. Radosław Wrońlewski, Msc. Pani Yus Sitkiewicz. Maritime Institute in Gdańsk, Poland ................................................................. 57


PALEOPALYNOCOLOGICAL DATA ABOUT LABIATAE AND RANUNCULACEAE FAMILIES IN ELBASAN REGION, Admir Janče,“Aleksandër Xhuveni” Elbasani University, Albania ......................... 71

GEOTHERMAL ENERGY AS A RENEWABLE ENERGY SOURCE IN REPUBLIC OF SRPSKA, Dr. Vesna Ražičević; Dr Ćedomir Crnojarov, Faculty of Sciences, University of Banja Luka ................................................................. 77

EVALUATION OF ECOSYSTEM SERVICES ALONG URBAN-RURAL TRANSECTS IN SOUTHERN ITALY, Daniele La Rosa, Riccardo Privitera, Department Civil Engineering and Architecture, University of Catania, Italy ................................................................. 83

ESTIMATION HOURLY GLOBAL RADIATION UNDER CLEAR SKY CONDITIONS IN SOUTHEASTERN ANATOLIA REGION OF TURKEY, Zeynep Kılıçkıldere, Prof. Dr. Sema Topçu Department of Atmospheric Science, Istanbul Technical University, Istanbul-Turkey ................................................................. 91
MORPHO-BATHYMETRY AND GIS-PROCESSED MAPPING IN DELIMITING LACUSTRIAN WETLANDS: THE RED LAKE (ROMANIA), Prof. Dr. Gheorghe Rostandescu, Dr. Cristian Stoianu, Alexandru Ioan Cuza University of Iasi, Faculty of Geography and Geology, Department of Geography, Iasi, Romania.................................................................99

AN APPROACH OF GIS-BASED ASSESSMENT OF SOIL EROSION RATE ON COUNTRY LEVEL IN THE CASE OF MACEDONIA, Assoc. Prof. Dr. Ivica Miletvski, Faculty of Sciences, Ss. Cyril and Methodius University, Republic of Macedonia.................................................................111

ERROR RECOGNITION IN VELOCITY MODEL BUILDING FOR PRESTAK KIRCHOFF DEPTH MIRATION USING RMO ANALYSIS, Dr. Maya Grigorova, University of Mining and geology “St. Ivan Rilski”, Bulgaria.................................................................119

VELOCITY REDUCTION - A POINT IN VELOCITY MODEL BUILDING FOR PRE-STACK KIRCHOFF DEPTH MIRATION, Dr. Maya Grigorova, University of Mining and geology “St. Ivan Rilski”, Bulgaria.................................................................127

THE IMPACT OF GLACIAL PROCESS ON THE EVOLUTION OF POLJES IN MONTENEGRO, Mirza Djetovic MSc, Prof. Dr Predrag Djetovic, University of Novi Sad, Faculty of Science, Department of Geography, Tourism and Hotel Management, Serbia.................................................................133

POSSIBILITIES OF GIS APPLICATION IN THE ORGANIZATION AND PRESENTATION OF TOURISM POTENTIALS - CASE STUDY OF SARAJEVO, Dr. Sc. Nusret Deskočić, Amra Banja, PhD student, Edin Hejja, PhD student, Amina Sivan, University of Sarajevo, Faculty of Science, Department of Geography - Bosnia and Herzegovina.................................138

TRANSFERABILITY OF GREENWAYS EXPERIENCES FOR SUSTAINABLE URBAN PLANNING FOR SUSTAINABLE URBAN PLANNING, Dr. Ricardo Pinheiro, Dr. Daniele La Rose, Department of Civil Engineering and Architecture, University of Catania, Italy.................................................................147

THE ABILITY OF IMPROVING GIS MAP MODELING, Associate Prof. dr Aleksandar Valiarević, Full Prof. dr Dragica Živković, University of Kosovska Mitrovica Natural Science Faculty Department of Geography - Serbia.................................................................155

THE EFFECTS OF THE ATMOSPHERIC PRESSURE ON EVAPORATION, Evren Özgür, Prof. dr. Kasim Koçak, Istanbul Technical University, Faculty of Aeronautics and Astronautics, Department of Meteorology, Turkey.................................................................161

THE POSSIBILITIES OF GIS DATABASE APPLICATION IN CHOSEN PRESENTATIONS OF REGIONAL GEOGRAPHIC CONTENTS IN THE PROCESS OF GEOGRAPHIC EDUCATION IN PRIMARY AND SECONDARY SCHOOLS IN BOSNIA AND HERZEGOVINA, Dr. Sc. Nusret Deskočić, Dr. Sc. Ranko Martić, Dr. Sc. Alma Potčić, Bora Avdić, PhD student, University of Sarajevo, Faculty of Science, Department of Geography - Bosnia and Herzegovina.................................................................169

SELF-ORGANIZATION OF ECOSYSTEMS: IS THERE AND TO WHAT EXTENT?, Assoc. Prof. Dr. Vasilij Zotic, Dr. Diana-Iliana Alexandru, Babeș-Bolyai University, Centre for Research on Settlements and Urbanism, Cluj-Napoca, Romania.................................................................177

ON THE RELATIONSHIP BETWEEN GEOSYSTEMIC SELF-ORGANIZATION AND SPATIAL PLANNING, Assoc. Prof. Dr. Vasilij Zotic, Dr. Diana-Iliana Alexandru, Babeș-Bolyai University, Centre for Research on Settlements and Urbanism, Cluj-Napoca, Romania.................................................................187

WRF SIMULATION OF TORNADO DEVELOPMENT: A CASE STUDY IN TUZLA, ISTANBUL, Kâbra Ağacı, Nihan Aktaş, Assoc. Prof. Dr. Ali Dentiz, Istanbul Technical University, Faculty of Aeronautics and Astronautics, Department of Meteorological Engineering, Istanbul, Turkey.................................................................197
COMMUNAL HYGIENE OF A PART OF THE URBAN AREA OF REPUBLIC OF SRPSKA, Dr Čedomir Crugunac, PhD, Dr Vesna Rašković, Faculty of Science, University of Banja Luka 323

TOURISM PLANNING BY TESTING SEASONALITY: REGIONAL APPROACH, Biljana Petrovska, Faculty of Tourism and Business Logistics, Goce Delcev University - Stip, Macedonia 331

PLANNING TOURISM DEVELOPMENT IN REGIONAL FRAMES, Biljana Petrovska, Saso Kjosev, Faculty of Tourism and Business Logistics, Goce Delcev University - Stip, Macedonia 337

SULINA (ROMANIA) - EUROPEAN MODEL OF ETHNIC AND RELIGIOUS COHABITATION, Prof. Dr. Gheorghe Romanescu, Prof. Dr. Vasile Eftović, Alexandra Ioan Cuza University of Iasi, Faculty of Geography and Geology, Department of Geography, Iasi, Romania 345

GEOSTRATEGIC HYPOTHESES FOR INTEGRATION AND DISINTEGRATION IN THE FUTURE OF THE REPUBLIC OF MACEDONIA, Prof. Dr. St. Dimitrina Naneva, SEE “St. Kliment Ohridski”, Bulgaria 359

THE IMPORTANCE OF NATURAL ELEMENTS FOR THE DEVELOPMENT OF TOURISM IN NEGORSKA SPA – GEVELLIA IN MACEDONIA, PhD Koteški Cane, Prof. Dr. Nikola V. Dimitrov, Prof. Dr. Zlatko Jakovlev, Faculty Tourism and Business Logistics – University „Otce Doylek“ Stip, Macedonia 363

GEOGRAPHY OF THE NEW ELECTORAL SYSTEM AND CHANGING VOTING PATTERNS IN HUNGARY, Zoltán Kovács, György Vida, Department of Economic and Social Geography, University of Szeged and Institute of Geography, Research Centre for Astronomy and Earth Sciences, Hungarian Academy of Sciences 369

TERRITORIAL VARIATIONS OF RECENT ELECTIONS RESULTS IN BOSNIA AND HERZEGOVINA AS A FACTOR OF ITS MODERN POLITICAL-GEOGRAPHIC DEVELOPMENT, Dr. Sc. Ranko Mirić, Boris Avdić, MA, Amra Bandić, PhD student, Amina Sivac, assistant, University of Sarajevo, Faculty of Science, Department of Geography – Bosnia and Herzegovina 379

IMPACT OF ALBANIAN AGRICULTURAL REFORMS IN GJIROKASTRA REGION, Ass. Prof. Dr. Albina Sinani, “Ethem Bey” University, Department of Geography, Gjirokastër, Albania 389

EVOLUTION OF RURAL AND URBAN POPULATION IN SOUTHERN ALBANIA, Ass. Prof. Dr. Albina Sinani, “Ethem Bey” University, Department of Geography, Gjirokastër, Albania 403

MANAGEMENT ROLE IN DEVELOPMENT OF TOURISM, KOSOVO CASE, Halić Halili, MEDITER University, Kosovo 411

WHEN ISLAMIZATION MEETS (WESTERNIZED) NEOLIBERALIZATION A META-ETHNOGRAPHY OF NIGHTLIFE IN POST-SOCIALIST SARAJEVO, Dr. Jordi Notre, Mr. Jordi Martín-Díaz, New University of Lisbon, Portugal 419

GEOMORPHOLOGICAL RISKS, SUBURBANISATION AND NEOLIBERALISATION OF THE URBAN SPACE IN POST-WAR SARAJEVO, Mr. Jordi Martín-Díaz, Dr. Jordi Notre, Dr. Marc Oliva, Mr. Pedro Palma, University of Barcelona, Spain 427

TERRITORIAL CONSOLIDATION REFORMS – EUROPEAN EXPERIENCES OF 21ST CENTURY, Prof. Pawel Swianiewicz, University of Warsaw, Department of Local Development and Policy, Faculty of Geography and Regional Studies 435
REGIONAL DISPARITIES IN SLOVAKIA IN TERMS OF DEMOGRAPHIC INDICATORS, RNDr. Gabriela Repaská, PhD, RNDr. Katarína Vilínová, PhD, RNDr. Jana Nemethová, PhD, Doc. RNDr. Alena Dubcová, CSc, Constantine the Philosopher University in Nitra, Faculty of Natural Sciences, Department of Geography and Regional Development, Slovakia................................................................. 445

GEOGRAPHICAL PATTERNS OF CULTURAL VALUES, ENTREPRENEURSHIP AND ECONOMIC DEVELOPMENT, Associate Professor Dr. Riste Temjanovski, Assistant Professor Dr. Tamara Jovanov Marjanova, Goce Delcev University – Faculty of Economics, Stip, Republic of Macedonia................................................................. 453

THE EFFECTS OF CHANGING INTERNATIONAL POLITICAL ECONOMY TO MACEDONIAN FOREIGN TRADE, Ass. Prof. Dr. M. Ozan Sarayi, Ass. Prof. Dr. Sukru Inani, Inonu University - Department of Economics, Turkey .................................................................................................................. 461

SOCIO-GEOGRAPHIC CHARACTERISTICS OF THE ALBANIAN FAMILY DURING THE TRANSITION PERIOD IN THE SOUTH OF ALBANIA, Assoc. Prof. Dr. Valbona Duri, “E. Çajë” University, Gjirokaster, Albania................................................................. 499

CHANGES IN FUNCTIONAL USE OF DISPERSED SETTLEMENTS IN SLOVAKIA (CASE STUDY NOVOBANSKA ĠTALOVÁ AREA), RNDr. Lucia Šolcová, PhD, RNDr. Magdaléna Nemčíková, PhD, RNDr. PaedDr. Ján Veselovský, PhD, RNDr. Hilda Kramářová, PhD, Constantine the Philosopher University in Nitra, Faculty of Natural Sciences, Department of Geography and Regional Development, Slovakia................................................................. 499

ANALYSIS OF SELECTED INDICATORS OF POVERTY IN THE V4 COUNTRIES, RNDr. PaedDr. Ján Veselovský, PhD, RNDr. Magdaléna Nemčíková, PhD, RNDr. Lucia Šolcová, PhD, RNDr. Hilda Kramářová, PhD, Constantine the Philosopher University in Nitra, Faculty of Natural Sciences, Department of Geography and Regional Development, Slovakia................................................................. 483

BUSINESS ENVIRONMENT FACTORS AND BUSINESS PERFORMANCE: THE CASE OF MACEDONIA – A DEVELOPING ECONOMY, Assistant Professor Dr. Tamara Jovanov Marjanova, Associate Professor Dr. Riste Temjanovski, Goce Delcev University – Faculty of Economics, Stip, Republic of Macedonia........................................................................ 491


THE SPATIAL ”RESPONSE” OF THE TRANSITION: THE CASE OF BULGARIA, Assoc. Prof. Dr. Stelian Dimitrov, Elena Todorova, Sofia University “St. Kliment Ohridski”, Bulgaria .......................................................................................... 507


WHAT IS THE INFLUENCE OF ACTIVELY ENGAGING STUDENTS WITH LEARNING PROCESS ON STUDENTS’ SUCCESS? AN EXPERIMENTAL RESEARCH IN GEOGRAPHY EDUCATION, Assoc. Prof. Dr. Filkret TUNA, Fatih University, Dept. of Geography, Istanbul – Turkey.................................................................................................................. 521

REGENERATION OF INDUSTRIAL HERITAGE IN TERMS OF SUSTAINABLE TOURISM DEVELOPMENT, Ass. Prof. Dr. Nevena Ćurčić, Doc. Dr. Vuk Garača, Doc. Dr. Svetlana Vukosav, Doc. Dr. Milan Bradić, University of Novi Sad, Faculty of Sciences, Department of Geography, Tourism and Hotel Management, Novi Sad, Serbia .......................................................................................... 527
THE IMPORTANCE OF NATURAL ELEMENTS FOR THE DEVELOPMENT OF TOURISM IN NEGORSKA SPA - GEVGELIJA IN MACEDONIA

PhD Koteski Cane
Prof. Dr. Nikola V. Dimitrov
Prof. Dr. Zlatko Jakovlev

1Faculty Tourism and Business Logistics University "Goce Delchev" - Stip, Macedonia

ABSTRACT
In this paper the natural elements are presented: geographic - orographic position, relief, climate, hydrography and geology of the area of non-forest spa. Special emphasis will be put on a weather climate and hydrothermal features, such as: air temperature, humidity, precipitation, insolation, spa features water therapy treatment, drinking and more. Features that have a direct impact on the development of spa tourism in Negorska spa - Gevgelija.

Keywords: natural elements, weather, climate, hydrothermal, spa tourism.

INTRODUCTION
Gevgelija municipality occupies SE part of Macedonia, borders with a country of the European Union (Greece). It covers an area of 48.5 hectares or 485 km2. Negorski and spas are on the SE slopes of Mount Kozuf, 5 km north - west of the city of Gevgelija, and at an altitude of only 59 meters. Also, it is the lowest spa in Macedonia. This spa is considered to be used firstly by Shukri - Pasha.

TRANSPORT CONNECTION
Here goes the highway E75 (European Corridor 10) which connects Central Europe with Greece and Asia Minor. The spa by air is connected to the world through airports in Skopje Petrovac (169km), Ohrid (262km) and Thessaloniki (99km). Vardar river, which is not navigable.
Map 1. Geografiska position Negorska spa in Macedonia

Map 2. Geographical location of the Municipality of Gevgelija in Macedonia
RELIEF FEATURES
Relief rather affects the climate of the flora and fauna as well as the distribution of the population and the determination of its lifestyle. According to geological and pedological composition and morphological characteristics of the area the spa separates into different parts.
Most important for the spa Mount Kozhuh where dyskinesia sides down to the spa and is an important factor for the development of tourism, especially for picnic recreational activities. Beautiful landscapes and forest vegetation provide beautiful walks.

CLIMATE CHARACTERISTICS OF THE SPA AREA
The spa is influenced by the Mediterranean, it is located only 80 km from the coast of the Gulf. On the north it is surrounded by mountains and the continental influence from the north of Macedonia is poorly felt.

AIR TEMPERATURE
In the period 1961-1990, Negorska spa has the highest air temperature of all spas in Macedonia 14.0 °C, while in the period 1991-2013 year highest average annual air temperature was recorded in 2013 of 16.3 °C. The highest temperatures occur from June to September, especially in July and August. This temperature allows excellent conditions for the hot season. In winter the temperature does not fall below zero and it provides excellent living conditions through winter, in the spa, which is a huge advantage over other spas in Macedonia. Between 1961-1990 and 1991-2013 year notice an increase in air temperature in the area of non-forest spa of 14 °C to 16.3 °C.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>15.6</td>
<td>15.6</td>
<td>15.6</td>
<td>15.6</td>
<td>15.6</td>
<td>15.6</td>
<td>15.6</td>
<td>15.6</td>
<td>15.6</td>
<td>15.6</td>
<td>15.6</td>
<td>15.6</td>
<td>15.6</td>
</tr>
<tr>
<td>2015</td>
<td>15.6</td>
<td>15.6</td>
<td>15.6</td>
<td>15.6</td>
<td>15.6</td>
<td>15.6</td>
<td>15.6</td>
<td>15.6</td>
<td>15.6</td>
<td>15.6</td>
<td>15.6</td>
<td>15.6</td>
<td>15.6</td>
</tr>
</tbody>
</table>


PRECIPITATION
According precipitation Negorska spa has a Mediterranean regime.
Table 2. Annual amounts of rainfall (mm) in the area of non-forest spa - Gevgelija in Macedonia.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount</td>
<td>592.4</td>
<td>555.7</td>
<td>541.7</td>
<td>447.2</td>
<td>720.3</td>
</tr>
<tr>
<td>Amount</td>
<td>752.4</td>
<td>753.4</td>
<td>832.6</td>
<td>591.3</td>
<td>657.1</td>
</tr>
<tr>
<td>Amount</td>
<td>688.3</td>
<td>398.7</td>
<td>401.7</td>
<td>498.8</td>
<td>843.5</td>
</tr>
<tr>
<td>Year</td>
<td>2001</td>
<td>2002</td>
<td>2003</td>
<td>2004</td>
<td>2005</td>
</tr>
<tr>
<td>Amount</td>
<td>927.7</td>
<td>591.4</td>
<td>589.5</td>
<td>899.9</td>
<td>870.9</td>
</tr>
<tr>
<td>Year</td>
<td>2006</td>
<td>2007</td>
<td>2008</td>
<td>2009</td>
<td>2010</td>
</tr>
<tr>
<td>Amount</td>
<td>631.4</td>
<td>589.1</td>
<td>417.6</td>
<td>769.9</td>
<td>271.6</td>
</tr>
</tbody>
</table>


In the period 1961-1990, the maximum in the months of November and December 93.1 mm 74.1 mm, while the period from 1991 to 2013 year the maximum was recorded in 2010 in the months of February to October 168.0 mm 534.8 mm. According to the table we see that precipitation for the period 1961-1990 is higher by 18.4 mm in the period 1991 to 2013 year, where the average annual precipitation is 664.0 mm mean precipitation in the last 25 years of continuous decline in the area of non-forest spa. Most of the precipitation during the year in the form of rain.

SOLAR INSOLATION

The area of non-forest spa has the lowest number of cloudy days of all spas in Macedonia. On average there are 69.4 days and a tourist importance value.

Table 3. A year in the amount of osnovuovanje (hours) in the area of non-forest spa - Gevgelija R. Macedonia in the period 1991-2013 year.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount</td>
<td>2274.0</td>
<td>2766.5</td>
<td>2346.9</td>
<td>2381.3</td>
<td>2590.7</td>
<td>2344.4</td>
<td>2467.6</td>
<td>2467.7</td>
<td>2401.7</td>
<td>2920.0</td>
<td>2637.0</td>
<td>2531.5</td>
<td>2404.3</td>
<td>2492.0</td>
<td>2463.0</td>
<td>2637.0</td>
<td>2531.5</td>
<td>2404.3</td>
<td>2492.0</td>
<td>2637.0</td>
<td>2463.0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Total insolation between 1961-1990 totaled 2374.0 hours is one of the most important tourist values which Nagorska spa has in relation to all other spas in Macedonia. The insolation is most prominent during the summer months and is very important for tourist arrivals to the spas. In the period 1991-2013, the greatest insolation was in 2000 where insolation reached 2634.7 hours. In the period 1991-2013, the average annual insolation was 2414.3 hours an increase of insolation for 40.3 hours in the period 1961-1990.
RELATIVE HUMIDITY
Relative humidity is also a very important climate element for the curing opportunities of the spa.

Table 4. Annual relative humidity in the area of

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium - Year</td>
<td>71</td>
<td>64</td>
<td>60</td>
<td>59</td>
<td>66</td>
<td>70</td>
<td>65</td>
<td>66</td>
<td>66</td>
<td>65</td>
<td>73</td>
<td>73</td>
<td>66</td>
<td>65</td>
<td>72</td>
<td>66</td>
<td>65</td>
<td>61</td>
<td>62</td>
<td>63</td>
<td>65</td>
<td>64</td>
<td>65</td>
<td>64</td>
</tr>
</tbody>
</table>


Between 1951-1975 years the average annual humidity amounted to 71%, while in the period from 1991 to 2013, the highest relative humidity was in 2002 73%. In the past 23 years from 1991-2013 the average annual relative humidity amounted to 65.3%. In the period 1951-1975, the relative humidity was reduced to 5.7%.

WINDS IN (%)

Table 5. Average annual frequency of wind (%) in the area of non-forest spa - Gevgelija - R. Macedonia.

<table>
<thead>
<tr>
<th>Place</th>
<th>N</th>
<th>NE</th>
<th>E</th>
<th>SE</th>
<th>S</th>
<th>SW</th>
<th>W</th>
<th>NW</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gevgelija</td>
<td>224</td>
<td>23</td>
<td>101</td>
<td>73</td>
<td>29</td>
<td>27</td>
<td>136</td>
<td>317</td>
<td></td>
</tr>
</tbody>
</table>


Winds have low speed and perform ventilation and act refreshingly. In the space of Vardarce Negorska bath appears NW wind at an annual frequency of 156 %, the wind moves from the mountain Kozuv along the river Sermenska. This wind occurs in the summer months of July with frequency of 238 % and August of 220 %.

FEATURES OF THE WATER AND CURING CAPABILITIES
Water springs have volcanic origin. There are three sources, that "hot spa", with temperature of 40 °C, and "cold spa" with water temperature of 36 °C. New measurements 40 °C. In its chemical and physical properties the water is homo thermal, slightly mineralized and slightly radioactive. The main chemical composition of the water comprises of sodium sulfate. The water is used for the treatment of: neurological disorders, gynecological disorders, respiratory disease, chronic bronchitis - laryngitis and tracheitis, chronic gastritis, ulcers and stomach cancer, inflammatory bile, inflammatory bowel disease, disorders of the locomotor system, condition after rheumatic fever, Behlerova disease - initial stage, degenerative rheumatism (arthritis, spondylosis), extra-articular rheumatism, consequences of trauma and war wounding, uric diathesis
inperiodically stronger deterioration, cardiovascular diseases, all forms of coronary disease, chronic inflammatory motor rheumatism, chronic evolutionary polyarthritis.

CONCLUSION
- Negorska spa has a favorable geographical position;
- The spa has a favorable road, rail and air connection;
- The spa has a favorable landscape features;
- Average annual air temperature in the period 1961-90 and 1991 / 2013 year increased from 14 °C to 16.3 °C;
- Precipitation mostly represented by rain, precipitation in the period 1961-90 is higher by 18.4mm compared to the period from 1991 / 2013 year;
- Relative humidity in the period 1991 / 2013 year decreased in the period 1951 / 75 year of 5.7%:
- The most common winds in the area of non-forest spa Vardarec, NW and local winds.
- Water from Negorska spa has tremendous healing capabilities.

REFERENCE