GEOTRENDS

2nd International Conference on Geoheritage & Geotourism

20–23rd September 2017
Wrocław/Poland

Organisers:

University of Wrocław, Institute of Geography and Regional Development
Polish Academy of Sciences
The Committee for Quaternary Research, Polish Academy of Sciences
The Committee for Earth Sciences,
Polish Academy of Sciences, Wrocław Branch
Polish Geographical Society, Wrocław Branch
Lower Silesian Tourist Organization
Loess Focus Group INQUA

ISBN 978–83–62673–60–5
Instytut Geografii i Rozwoju Regionalnego
Uniwersytet Wrocławski
Plac Uniwersytecki 1, 50–137 Wrocław

Conference program:

Tuesday, 19th of September 2017 (8 Kosiby street, Wroclaw)

18:00 Welcome and ice breaker party

Wednesday, 20th of September 2017 (Centrum Historii "Zajezdnia" 184 Grabiszyńska street, Wroclaw)

10:00–11:00 Registration

11:00–11:30 Opening ceremony

11:30–12:30 Plenary session

Thomas A. Hose – *Awheel Along Europe's Rivers: Geoarchaeological Trails for Cyclists*

Slobodan B. Marković, Đorđije A. Vasiljević, Nemanja Tomić, Sanja Božić, Thomas A. Hose, Milivoj B. Gavrilov, Miroslav D. Vujičić, Đurđa Miljković, Sava Janićević, Zoran Perić, Mateja Breg Valjavec, Matija Zorn – *Ice age geotourism: from great potentials to unlimited perspective*

Ian Smalley – *Loess in New Zealand: the dust on the heritage crust, the froth on the heritage broth*

12:30–12:50 Coffee break

12:50–14:50 Plenary session

Kenneth O'Hara-Dhand – *A landscape with birds: Merops apiaster in the loess lands*

Đorđije A. Vasiljević, Miroslav D. Vujičić , Slobodan B. Marković, Thomas A. Hose, Biljana Basarin, Tin Lukić – *Identification of potential geotourists in Vojvodina Region (North Serbia) – Preliminary study and results*

Ian Smalley – *Leonard Horner and the appreciation of Loess (and the development of the idea of Geoheritage)*

Andrij Ivchenko – *Geoheritage of Ukraine (history of research) and geotourism development in Ukraine*

Krzysztof Widawski, Zdzisław Jary, Piotr Oleśniewicz, Julita Markiewicz-Patkowska, Anna Zaręba – *Natural protected areas – its attractiveness for geotourism in the opinion of visitors on the example of Babiogórski National Park*

Discussion

15:00–16:00 Lunch

16:00–18:00 Visit to Centrum Historii "Zajezdnia" (Centre of History "Depot")

Thursday, 21st of September 2017 (University of Wroclaw, Institute of Geography and Regional Development, Department of Physical Geography, 34 Cybulskiego street, room 182)

10:00–11:30 Session

Miroslav D. Vujičić, Đorđije A. Vasiljević, Slobodan B. Marković, Thomas A. Hose, Nenad Tasić, Kristina Penezić – *Do geoscientists and archaeologist think alike? Imprints in loess and archaeological sites in Serbia*

Đurđa Miljković, Sanja Božić, Ljupče Miljković, Slobodan Marković, Mlađen Jovanović, Branko Ristanović, Tin Lukić, Dajana Bjelajac, Miroslav Vujičić – *Geosite assessment using three different methods – a comparative study of the Krupaj and the Žagubica Spring – represents of hydrological heritage of Serbia*

Yuriy Zinko, Leonid Skakun, Ihor Bublik, Albertina Buchynska, Oleh Yatsozhynskyi, Marta Malska, Andrzej Solecki – *Polish-Ukrainian Geotourist Route "Geo-Carpathians"*

Mateja Breg Valjavec, Aleš Smrekar, Matija Zorn – *Interpretation model of karst geoheritage in Dinaric Karst*

Jure Tičar, Nemanja Tomić, Mateja Breg Valjavec, Matija Zorn, Slobodan B. Marković, Milivoj B. Gavrilov – *Cave tourism in Slovenia: on the edge between mass tourism and geoheritage protection*

Discussion

11:30–11:50 Coffee break

11:50–13:20 Session

Ralph Wahnschafft – *Environmental conservation and sustainability in major geo-tourism destinations: Geo-tourism management in Shilin "Stone Forest", Kunming, China*

Milena Różycka, Piotr Migoń – *Visitors' background and expectations – how to incorporate into geosite assessment*

Sanja Božić, Tamara Jovanović, Nemanja Tomić, Đorđije Valsiljević, Slobodan Marković, Đurđa Miljković – *Exploring tourism motivation and constraints at multi-attraction geotourism destination: The case study of Viminacium, Serbia*

Dagmara Chylińska, Krzysztof Kołodziejczyk – *Geotourism in a city?*

Robert Faracik – *Geoheritage and Geotouristic Values of the Historic Cities in Central Europe*

Discussion

13:30–14:30 Lunch

14:30–15:15 Session

Zdzisław Jary, Marcin Krawczyk, Dariusz Krzyszkowski, Przemysław Mroczek, Kamila Ryzner, Jacek Skurzyński, Anna Solarska, Krzysztof Widawski – *Loess documentary sites and their potential for geotourism in Lower Silesia*

Maciej Zathey, Jan Blachowski – *Geological heritage and anthropogenic processes in policy of sustainable growth in regions*

Alicja Krzemińska, Katarzyna Jarosz, Anna Dzikowska, Anna Zaręba, Krzysztof Widawski – *Significance of megalithic monuments in the process of place identity creation and its tourism development*

15:15–15:45 Poster session

15:45–16:30 Discussion and summary

16:45–19:00 Wroclaw sightseeing

19:00 Official supper (in the city centre)

Friday, 22nd of September 2017

9:00 Start of Conference Fieldtrip – Geoheritage of Lower Silesia –
I day – Strzelińskie Hills, Stołowe (Table) Mountains Lunch, supper and accommodation included. Accommodation in Hotel Sonata***, Duszniki-Zdrój (http://sonataduszniki.pl/pl/).

Saturday, 23rd of September 2017

9:00 Conference Fieldtrip – Geoheritage of Lower Silesia –
II day – Stołowe (Table) Mountains, Kaczawskie Mountains Breakfast and lunch included.

~17:00 Coming back to Wroclaw

Exploring tourism motivation and constraints at multi-attraction geotourism destination: The case study of Viminacium, Serbia

Božić Sanja*, Jovanović Tamara, Tomić Nemanja, Valsiljević A. Đorđije, Marković Slobodan, Miljković Đurđa
Department of Geography, Tourism and Hotel Management, Faculty of Sciences, University of Novi Sad,
3 Trg Dositeja Obradovića, 21000 Novi Sad, Serbia
*Corresponding author: sanja.bozic@dgt.uns.ac.rs

The principal aim of this study was to apply an analytical scale for domestic tourism motivations and constraints for multi-attraction destinations (Božić et al., 2017), to the geotourism destination with multiple attractions – The Archeological Park Viminacium in Serbia. The research included 273 respondents who have visited more than one tourist site at Viminacium. This geotourism destination is considered to be a multi-attraction destination as it contains diverse natural and cultural heritage as it is home to both an archaeological and a palaeontological park with several mammoth fossils including the 1 million year old, complete skeleton of the Vika mammoth. At the archaeological park, visitors are also able to see the rich Roman archaeological heritage. The results of exploratory factor analysis, indicate four motivating factors (Knowledge and experience, Visiting attractions, Rest and relaxation, Research and prestige) as well as four constraints factors (Structural, Inter/Intrapersonal, Lack of information and recommendation, Lack of time). Finally, while some items were excluded from the scales during the confirmatory factor analysis (the second phase), the analysis confirmed the four-dimensional structure of Multi-attraction travel motivation and constraints scales. The results also indicate that one of the major problems for multi-attraction destinations in Serbia is the lack of information about the existing attractions. The results clearly indicate that lack of information/promotion is a major issue and a serious constraint responsible for a lower number of visitors. The analyzed destination surely possesses attractive sites, but not many people know about them and this is the biggest reason for not visiting them. In terms of travel motives, results show that people are interested in active participation through workshops and special events which can act as an important factor in attracting new visitors. Moreover, most multi-attraction destinations usually have either more valuable natural or cultural attractions. Destination management should focus on creating a unique visitor experience which would encompass both types of attractions. In this case, even if some visitors are not mainly interested in a certain type of attraction they would get a chance to experience them as a part of a unique tourism offer. The managerial implications of results are further discussed in the paper.

Interpretation model of karst geoheritage in Dinaric Karst

Mateja Breg Valjavec*, Aleš Smrekar, Matija Zorn
Anton Melik Geographical Institute, Research Centre of the Slovenian Academy of Sciences and Arts,
2 Novi trg, 1000 Ljubljana, Slovenia
*Corresponding author: mateja.breg@zrc-sazu.si

Geoheritage of Dinaric Karst is based on rich surface and underground geodiversity, which is generated by karst own natural processes acting in soluble carbonate rocks. Gradual transformation of natural landscape was made in the past by human-induced processes in order to provide arable land. It has resulted in an agro-karst landscape, where different man-reshaped landforms (e.g. cultural dolines) and man-made features (stone walls, shepards cottages, lime kilns, etc.) are intertwined by rare remains of "untouched" landforms that have all together high potential for development of sustainable geoturism. Despite the increasingly comprehensive treatment of nature and culture conservation in South East Europe, there is a distinct lack of high-quality and attractive interpretive material. Until recently, the concept of interpretation was rarely used, and it is still not widely established in this region.

In the article we present the interpretation model of karst geoheritage which is based on a three-level interpretation for different groups of visitors. It consists of a network of karst interpretation centres; each centre has its own in-situ interpretation polygon in its surrounding karst landscape along with a network of less known and not yet valorised micro hot spots of heritage in hinterland. We present karst dolines and roofless caves as the example of such potential karst hotspots. Besides, other karst hotspots will be integrated in to a network of interpretation centres, tied to four existing types of karst landscape in case study cross-border karst destination (Slovenia/Croatia): classical lowland karst of Kras Plateau (Slovenia), contact karst of Škocjan Caves (Slovenia), upland karst of Gorski kotar (Croatia), and coastal karst of Krk Island.

Geotourism in a city?

Dagmara Chylińska*, Krzysztof Kołodziejczyk
Department of Regional Geography and Tourism, Institute of Geography and Regional Development,
University of Wrocław, 1 Uniwersytecki square, 50–137 Wrocław, Poland
*Corresponding author: dagmara.chylinska@uwr.edu.pl

Geotourism is one of the most dynamically developing form of contemporary tourism. It consists in visiting places, single objects or their complexes or whole landscapes – all named here as 'geosites' – being extremely vital in a context of understanding geological history of Earth. They illustrate the evolution of Earth surface and the most evident effects of economical usage of its resources. Important purpose of geotouristic travels is also visiting modern interpretation museums and centers as well as viewpoints enabling a proper observation and interpretation of scenic panoramas. Independently from initial tourist motivations, due to geotourism and its tourism facilities tourists acquire often nearly professional knowledge on geoheritage and a special awareness of its value and a need of protection.

Geotourism is placed mostly in natural environment or anthropogenic (cultural) – industrial and postindustrial. Rarely is it associated with environments of human settlements – both rural or urban. However, there are plenty examples which show us that geotourism might be developed in an urban environment, becoming a form of urban tourism easily available and dedicated for everybody. The paper's authors, based on the selected examples (mostly from Poland and the Czech Republic), try to explain why it happens and in which way geotourism accompanies different forms of urban cognition, urban leisure and recreation as well.

Geoheritage and Geotouristic Values of the Historic Cities in the Central Europe

Robert Faracik
Institute of Geography and Spatial Management, Jagiellonian University in Cracow,
7 Gronostajowa st., 30–387 Cracow, Poland
e-mail: robert.faracik@uj.edu.pl

The tourist attractiveness of historic cities has usually been determined through the prism of cultural values. The origins and development of historic cities are, however, related to their specific geological location or to the occurrence of certain mineral resources. Geological heritage is present in culture; it has also been a silent witness to the cultural transformations. Geological structures are often the foundations of urban structures and urban fabric, and rocks are the backbone and building material of many urban and architectural forms. In many cases, the existence of cities is associated with the occurrence and exploitation of mineral resources, which have become the source of wealth and a factor of socio-economic development, for example the medieval mining centres adjacent to urban complexes of Central Europe.

Geological heritage is increasingly seen as part of what defines the tourist attractiveness of the city, enriching the offer for both tourists and locals. In addition to typical geological sites, such as the natural or post-mining rocks or geological structures (both on the surface and in the underground), the geological beauty of a region could be judged by looking at the city buildings and the decorative material used. Museums include precious mineralogical collections (special geological collections) as well as works of art and everyday objects of geological nature. Old mines and quarries are often multi-functional spaces in which exhibitions are arranged, as well as various cultural events take place.

This paper explores from a multidisciplinary perspective the richness of relations between the geological heritage, history and culture using the example of historical cities in Central Europe. It explores the consequences of geological heritage for the cultural landscape of these cities and their identity.

Awheel Along Europe's Rivers: Geoarchaeological Trails for Cyclists

Thomas A. Hose
School of Earth Sciences, University of Bristol,
Wills Memorial Building, Queens Road, Clifton, Bristol, BS8 1RJ, UK
e-mail: gltah@bristol.ac.uk

This paper presents an overview of the potential for geoarchaeological trails for leisure cyclists, as a form of sustainable tourism, in Britain and Europe. It necessarily briefly explores cycling tourism and notes its historical component potentially provides human interest material for geo-interpretative provision focussed on leisure cyclists. It then defines and discusses the key terms and concepts, when necessary placing them in a historical context. It briefly examines, highlighting the commonalities, the nature and needs of leisure cyclists and casual geotourists. For such individuals loess sites are of likely interest because of their importance to viticulture, agriculture and brick and tile production. The latter two are particularly associated with the Romans. Both Palaeolithic/Mesolithic and Roman times are also likely to be of interest to such individuals because of their pre-existing knowledge of them from schooldays and several popular television programmes. The two periods also represent pan-European history that predates modern Europe's past and current political tensions. Indeed, because they are politically neutral, they are ideal, together with loess studies, underpinnings for a pan-European geo-interpretative strategy involving both archaeologists and Earth scientists – geoarchaelogical trails for leisure cyclists.

Noting that river valleys have long been natural route-ways exploited for human expansion into Europe, as exemplified by Palaeolithic/Mesolithic and Roman history, and that many of today's way-marked cycle trails (such as the EuroVelo network) are routed beside rivers, such a strategy is considered in relation to them. The paper explores the potential for, and indicates the challenges in, developing the strategy by adapting existing and providing new geo-interpretative provision along and adjacent to cycle trails. Case studies at a variety of scales, that provide some detailed archaeological and loess geology contextualisation, from within a British region (central southern England) and a major river (Middle Thames) valley, together with two major (the Middle Danube and Middle Rhine) river valleys in Europe particularly noteworthy for their loess deposits, associated archaeological sites, and cycle trails, exemplify such possible provision. Finally, the paper suggests that a common relatively low-cost, mixed media, geo-interpretative and promotional approach can deliver the necessary materials to develop the strategy.

Geoheritage of Ukraine (history of research) and geotourism development in Ukraine

Andrii Ivchenko
Department of Geomorphology and Paleogeography, Institute of Geography of the National Academy of Sciences of Ukraine, 44 Volodymyrska st., Kyiv, 01034, Ukraine
e-mail: ivchenko@photoukraine.com

In the early 1960's, activity on identifying and preserving natural objects started on the territory of the Ukraine. Natural monuments are usually subdivided into botanical, zoological, hydrological, geological (geosites) and complex (state and local protection status). Legislative justification of the importance of preserving natural monuments (in particular, geosites) has become a prerequisite for deliberate work on their identification and provision of environmental protection status. Experts and geologists from the regional and central departments of the Ministry of Geology, scientists of the Academy of Sciences and members of the Society for the Protection of Nature carried out this work. The amount of geosites was growing abundantly – on average, starting from the 1960's, about 10 geosites of predominantly local significance received during each year as the geological landmarks.

An important event to promote geological heritage was the publication in 1985 of collective monograph – the reference guide «Геологические памятники Украины», which provides information on more than 700 geosites [1] that had protected status, or according to the compilers, it claimed. This work was a pioneer and remains a model for many experts, regional specialists and enthusiasts of study of inanimate nature. The monograph introduces the presentation of geological heritage sites for the existing, then and now administrative division of the country into 25 territorial regions.

Geological sites of Ukraine

Time is changing, countries change, geosites are sometimes destroyed, and geologists get new materials and add new objects of geological heritage, changing criteria for selecting geological objects, volume and aesthetics of reference data, changing the conservation status of individual geosites, and so on.

In 1995, Ukrainian scientists began collaborating with the European Association of the Conservation of the Geological Heritage – ProGEO, which was officially registered as an association in 2000. As part of the ProGEO association, Ukraine together with Poland, Belarus and Czech Republic forms the Central Europe Regional Group.

At the end of the 1990's, the Geological Survey of Ukraine initiated a new project for the modernization of the restored database of geological heritage data of Ukraine (the full name of the project «Systematization and description of geological sites of Ukraine, development of recommendations for their promotion, use and conservation») [2].

Performed the work of creating a national geoheritage database, the State Geological Information Geological Fund of Ukraine «Geoinform». All geoheritage sites have been described in a unified form based on international standards, classified by geological specialization on stratigraphical, paleontological, paleogeographical, mineralogical, ore-petrologic, geomorphological, volcanic, cosmogenical, speleological, technogenic and hydrologic-hydrogeological.

Over the 20 years of cooperation with ProGEO in Ukraine took place the Fourth General Assembly – ProGEO Symposium (Kyiv, Ukraine, 2006). Prepared and published the 4-volume bilingual (Ukrainian and English) edition of «Geological Landmarks of Ukraine» (2006–2011) [3] with descriptions of more than 700 geosites from all regions of Ukraine and created «Map of geological landmarks of Ukraine», which includes about 650 geosites.

Thus, it is safe to state that at present, almost all geosites that are worthy of attention within Ukraine are discovered, information about them is collected and processed. That is, the basis for the comprehensive development of geotourism has been created, but despite the prevalence of geological monuments in all regions of Ukraine, geotourist resources and activity in the regions vary considerably.

References:

1. Korotenko, N. et al. 1985. Geologicheskie pamyatniki Ukrainy, Kiev, 156 pp. (in Russian).
2. Ivchenko, A. 1997. Databases of the Ukrainian geosites (past, present and future). In: Proceeding of the ProGEO'97 in Estonia. Tallinn: 18–21.
3. Kalinin, V., Gurskiy, D. (eds.) 2006–2011. Geological landmarks of Ukraine. Kyiv–Lviv, V.I–IV (2006, V.1, 320 pp.; 2007, V.2, 320 pp.; 2009, V.3, 200 pp.; 2011, V.4, 280 pp.).

Loess documentary sites and their potential for geotourism in Lower Silesia

Zdzisław Jary[1]*, Marcin Krawczyk[1], Dariusz Krzyszkowski[1], Przemysław Mroczek[2], Kamila Ryzner[1], Jacek Skurzyński[1], Anna Solarska[1], Krzysztof Widawski[3]

[1] Department of Physical Geography, Institute of Geography and Regional Development, University of Wrocław, 1 Uniwersytecki square, 50–137 Wrocław, Poland

[2] Department of Geoecology and Palaeogeography, Maria Curie-Skłodowska University, 2d Al. Kraśnicka, 20–718 Lublin, Poland

[3] Department of Regional Geography and Tourism, Institute of Geography and Regional Development, University of Wrocław, 1 Uniwersytecki square, 50–137 Wrocław, Poland

*Corresponding author: zdzislaw.jary@uwr.edu.pl

Although “Soft” Rock Geosites are not excessively popular and appreciated, they can provide interpretative facilities and services not only for geoscientists and students but also for constantly expanding group of conscious tourists.

One of the legally protected forms of nature preservation in Poland are documentary sites. These are important places for scientific and didactic reasons, but its role in geotourism promotion is rarely seen. There are 175 documentation sites in the entire country, but only 2 in Lower Silesian Voivodship, including the “Loess of Vine Mountain” documentary site established in 2016 in Trzebnica.

The documentary site “Loess of Vine Mountain” (51°18'44.45 N, 17°4'14.68 E, 192,5 m a.s.l.) is located in an old clay pit in NE part of the Trzebnica city, ca 25 km north of Wrocław. The loess wall is situated in the southern portion of the quarry. The Late Pleistocene loess sequence is 6 m high and 50 m long. The loess and loess derived sediments lie mostly on stony pavement, where Lower Palaeolithic artefacts have been found in 1980-ies. In some parts of the exposure loess was deposited directly on Neogene clay.

The most important goal of protecting the documentary site "Loess of Vine Mountain" is the preservation of the sedimentary rocks of several geological formations occurring in superposition because of its scientific and teaching qualities: Late Pleistocene loess, Pleistocene moraine pavement and Neogene clay. There are well visible periglacial structures (ice-wedge casts, cryoturbation, gelifluction) in the loess exposure which are the evidence of the Late Pleistocene climate change - the occurrence and disappearance of permafrost in this area. All these geological phenomena deserve particular attention of scientists. However, their interpretative facilities and services for geotourism should be highlighted and appreciated.

There are another loess section which is of special importance for Quaternary science in Lower Silesia – Biały Kościół in Strzelin Hills (ca 40 km south of Wrocław). This loess-soil sequence represents well preserved palaeoclimatic and palaeonvironmental archive of the last interglacial-glacial cycle (the last 130 000 years). We plan to establish loess documentary site in Biały Kościół in the near future – to promote geoheritage and geotourism in Strzelin Hills.

Significance of megalithic monuments in the process of place identity creation and its tourism development

Alicja Krzemińska[1]*, Katarzyna Jarosz[2], Anna Dzikowska[3], Anna Zaręba[4], Krzysztof Widawski[4]
[1] Department of Geomorphology, Institute of Geography and Regional Development, University of Wrocław, 1 Uniwersytecki square, 50–137 Wrocław, Poland
[2] General Tadeusz Kościuszko Military Academy of Land Forces, 109 Piotra Czajkowskiego st., 52–007 Wrocław, Poland
[3] International University of Logistics and Transport in Wrocław, 19 Sołtysowicka st., 51–168 Wrocław, Poland
[4] Department of Regional Geography and Tourism, Institute of Geography and Regional Development, University of Wrocław, 1 Uniwersytecki square, 50–137 Wrocław, Poland
*Corresponding author: alicja.krzeminska@uwr.edu.pl

For thousands of years, all over the world, megaliths have been a significant cultural element, as well as sacred sites and power places. Nowadays, megaliths act as a strong magnet for tourists, who appreciate their history, esoterica and magic. Some megaliths were used for astronomical observations, so vital to maintain the continuity of harvest and crop. Other megalithic constructions were erected for funerary purposes, and served as individual or collective burial chambers. Megalithic structures are usually referred to as belonging to the European Neolithic, but, it has to be stressed out, that some megalithic constructions date back to the Bronze Age, and were built also on other continents. Megaliths are a vital element of landscape, and, owing to historical reasons, they are a sui generis monument, commemorating prehistoric cultures. At the same time, along with the remaining elements of the natural and cultural environment, they create a unique image of a place identity, attracting large numbers of tourists. Interestingly, despite such a strong attractor as megaliths, there are still many places where tourism does not develop as fast as it could be assumed. Due to the above mentioned aspects, a comparative analysis of several megalithic sites have been conducted: in Poland, Sweden, Portugal and Denmark. The following elements have been analysed: the megaliths close surrounding, the existing and planned or under-construction tourist and communication infrastructure, as well as architectural and spatial technical solutions and development. Also the key negative and positive elements have been defined, influencing tourist potential of the places in question, and being a tourist attractiveness factor of a region.

Mining traditions of the Złotoryja region as a basis for creation of a linear product within the framework of geotourism in the Kaczawskie Foothills

Janusz Łach
Department of Regional Geography and Tourism, Institute of Geography and Regional Development, University of Wrocław, 1 Uniwersytecki square, 50–137 Wrocław, Poland
e-mail: janusz.lach@uwr.edu.pl

The aim of the article is to indicate the geotourism values of the Kaczawskie Foothills region as a significant potential for creation of a linear tourism product. Geological, mineralogical and natural resources of the region together with cultural relics of the former mining are an interesting and little known object of research focused on tourist attractiveness in the context of geotourism development. Two-way research on the potential of geotourism has also shown the motivation of visitors and their expectations about creating geothematic trails. Geotourism research on the former mining infrastructure of the Kaczawskie Foothills helps to preserve this type of cultural heritage.

Ice age geotourism: from great potentials to unlimited perspective

Slobodan B. Marković[1]*, Đorđije A. Vasiljević[1], Nemanja Tomić[1], Sanja Božić[1], Thomas A. Hose[2,1], Milivoj B. Gavrilov[1], Miroslav D. Vujičić[1], Đurđa Miljković[1], Sava Janićević[1], Zoran Perić[1], Mateja Breg Valjavec[3], Matija Zorn[3]

[1] Department of Geography, Tourism and Hotel Management, Faculty of Sciences, University of Novi Sad, 3 Trg Dositeja Obradovića, 21000 Novi Sad, Serbia

[2] School of Earth Sciences, University of Bristol, Wills Memorial Building, Queens Road, Clifton, Bristol, BS8 1RJ, UK

[3] Anton Melik Geographical Institute, Research Centre of the Slovenian Academy of Sciences and Arts, 2 Novi trg, 1000 Ljubljana, Slovenia

*Corresponding author: slobodan.markovic@dgt.uns.ac.rs

There have been five known ice ages in the Earth's geological history, while the Earth is experiencing the Quaternary Ice Age during the present geological time. Within Quaternary Ice Age, there are many periods of more severe glacial conditions and those more temperate known as glacial periods and interglacial phases, respectively. The Earth is currently in one such interglacial period of the Quaternary Ice Age, with the last glacial period of the Quaternary having ended approximately 11,700 years ago, with the start of the Holocene epoch.

Many important and well developed geoheritage and geotourism destinations can be regarded as the Quaternary Ice Age sites, such as South Dakota Mammoth hot springs, La Brea Tar Pits, Altamira and Lascaux caves as well as many magnificent Alpine glacial wellies. In spite of the fact that these valuable geosites provide important information about crucial periods of human evolution, their importance to general public and thus tourism attractiveness is not at high level. Moreover, some of these sites still lack in tourism and fundamental infrastructure, interpretation and proper management.

Accordingly, in this study, the emphasis will be on just two of the numerous potentials for enormous improvement of tourism attractiveness of the Quaternary Ice Age geotourism sites. The first one is a better utilisation of enormous marketing potential of the cartoon movies “Ice Age” and the second is a high possibility of establishment of a thematic park similar to “Jurassic Park” concept (such it was presented in the famous adventure film directed by Steven Spielberg), but with cloned Ice Age animals potentially located in the current tundra ecosystems with developed special model of the destination management.

Geosite assessment using three different methods – a comparative study of the Krupaj and the Žagubica Spring – represents of hydrological heritage of Serbia

Đurđa Miljković*, Sanja Božić, Ljupče Miljković, Slobodan Marković, Mlađen Jovanović, Branko Ristanović, Tin Lukić, Dajana Bjelajac, Miroslav Vujičić

Department of Geography, Tourism and Hotel Management, Faculty of Sciences, University of Novi Sad,
3 Trg Dositeja Obradovića, 21000 Novi Sad, Serbia
*Corresponding author: djurdja.miljkovic@dgt.uns.ac.rs

Hydrological heritage, a segment of geoheritage, is a relatively new concept in the field of geosite assesment. The principal aim of this study is to apply M-GAM (Modified geosite assesment model) for comparative analysis of the Krupaj Spring and the Žagubica (Mlava) Spring, area located in Homolje, in Eastern Serbia. According to the classification of geosites of National Council for geoheritage of Serbia, these sites are on the list of protected sites ('hydro(geo)logical' heritage sites) of extraordinary national importance; however, they still haven't gained necessary recognition in Serbia. Thus, their assessment according to different market segments should provide a clear picture of their current state. As M-GAM considers that not all indicators for evaluation of geosites are of the same importance, this paper applies two methods for comparing and determining the importance of indicators and subindicators in the model (Analytical-hierarchy process – AHP and descriptive statistics done in SPSS). Also, it is assumed that different market segments will give different importance to some indicators in the model, which would result in different evaluation scores for the same geosites. The paper also provides a comparative analysis of the assessment done by two different market segments – general tourists and geo experts. The results gained by AHP and descriptive statistics are quite similar, which confirms the reliability of respondents' answers and the results gained. In addition, the results of the assessment indicate that both market segments give more importance to the Main values of the model (compared to Additional values), however, tourist give much more importance to Scenic/Aesthetic value (within Main values), while geoexperts give more importance to Scientific value and Protection. Within Scenic/Aesthetic value for both segments Rarity is the most important subindicator. On the other hand, within Protection, geo experts give more importance to Vulnerability and Current state of the geosites, while tourists give more importance to the Current level of protection. Tourism and Functional vales are more important for tourists, as it was expected. On balance, the analyzed sites are differently positioned in the evaluation matrix, and implications are further discussed in the paper.

Geotouristic potential of "The Racławice Panorama" and the significance of the unique cycloramic painting for the promotion of the Miechów Upland (Poland)

Przemysław Mroczek[1]*, Zdzisław Jary[2], Slobodan Marković[3], Krzysztof Widawski[4]

[1] Department of Geoecology and Palaeogeography, Maria Curie-Skłodowska University, 2d Al. Kraśnicka, 20–718 Lublin, Poland

[2] Department of Physical Geography, Institute of Geography and Regional Development, University of Wrocław, 1 Uniwersytecki square, 50–137 Wrocław, Poland

[3] Department of Geography, Tourism and Hotel Management, Faculty of Sciences, University of Novi Sad, 3 Trg Dositeja Obradovića, 21000 Novi Sad, Serbia

[4] Department of Regional Geography and Tourism, Institute of Geography and Regional Development, University of Wrocław, 1 Uniwersytecki square, 50–137 Wrocław, Poland

*Corresponding author: loess@poczta.umcs.lublin.pl

"The Racławice Panorama" (Polish: Panorama Racławicka; 1893–1894) is a monumental (15×114 meter) cycloramic painting. The image of Jan Styka and Józef Kossak is an example of a painting commemorating an authentic historical event immortalized in a realistic landscape setting. The Polish-Russian battlefield (1793), immortalized on it, is an interesting object for research on the processes of anthropogenic erosion in loess areas, in this case a fragment of the Miechów Upland (typical Polish loess region). In analyzing the landscape presented on the canvas, especially the particular elements of the relief, the problems are: whether the landscape of the Racławice area is authentic, whether it actually dates back to the Kościuszko Uprising, or is one hundred years younger and corresponds only to the views recorded by J. Styka and W. Kossak? The elements of the landscape seen in the image are discussed by the authors, with the authentic, contemporary battlefield documented in Racławice.

The tourist attractiveness of the landscape presented in the picture is used only to a small extent by Racławice (the unit of the rank of the commune) or Miechów (district). On the scale of the Małopolska voivodship, the place of battle at Racławice is almost completely unused. Nowadays, the image is more associated with the museum in Wrocław than with the authentic area where the battle took place.

The analysis of the landscape recorded on "The Racławice Panorama" indicates that it has a very high promotional potential, not only for historical but also for geotouristic use. This image largely reflects the contemporary natural landscape of the battlefield. In spite of the over a hundred year period which has passed since the creation of the work its content is still valid. Particularly well presented are the loess forms of relief from the loess plateau through the slope to the bottom of the river valley presented faithfully with the landscape of the battlefield. In the picture, typical loess slopes, road gullies, as well as dry eroded-denudational valleys have been presented. Similarly, the soil cover and the vegetal cover are similarly authenticated. This makes the individual parts of the image can be easily integrate contemporary terrain in the area of the battlefield.

A landscape with birds: *Merops apiaster* in the loess lands

Ken O'Hara-Dhand
School of Geology, Geography & the Environment, University of Leicester, Leicester LE1 7RH, UK
e-mail: kod2@le.ac.uk

Loess deposits can be appreciated in the context of geoheritage. Geoheritage encompasses loess. And the loess deposits present ground living birds with an acceptable living environment. In Europe the European bee eater (Merops apiaster) is an indicator of loess deposits. The loess meeting in Poland in 2011 (6th Loess Seminar) included a field trip to western Ukraine which allowed remarkable observations of sand martins (bank swallows) in the loess at Korshiv. This observation led to the formulation of the 'Heneberg Compromise', an indicator of the suitability of ground for bee eater nesting. Loess fits the Heneberg Compromise strong enough to support the tunnel, but brittle and granular enough to be excavated. Bee eaters deliver an awareness of the nature of the ground- a useful adjunct to 'just looking'.

The whole concept of geoheritage spins on appreciation; the bee eaters are part of the appreciation of loess deposits and loess landscapes.

Just recently it has been discovered that Bee Eaters have been found nesting in various parts of the UK and in particular in East Leake in the south of Nottingham.

A pair of Bee Eaters in the quarry at East Leake, Nottinghamshire

The geology of this location is brownish sand and small pebbles and without further inspection it can only be assumed that the sand martins have nested in one wall of the quarry. Normally they nest at a depth of 0.5m below the surface.

These exotic, kaleidoscopic visitors certainly look more suited to their southern European and African homelands, but increasingly they've been turning up on our grey and rainy isle, appearing at random in County Durham (2002), Herefordshire (2005), Isle of Wight (2014) and Cumbria (2015). Another species being pushed north by climate change, it would seem.

The interesting question here is what has made them move to a colder environment! There are a number of possibilities such as climate change, or just sheer chance being carried across by strong winds. Environmental issues in what was their normal environment. These possible factors need to be studied further as some important issues need to be resolved.

Also are any other species appearing in the United Kingdom which was not their normal habitat? In south London in and around Richmond Park are now found, in great numbers, the green Indian parakeet. However, it is believed that these were pets that escaped. The main thing is that they has successfully adapted to the UK climate.

The birds first came to Britain as pets but some escaped into the wild and are now a common site in suburban South East England, particularly west London and Kent, although they have been as far north as Scotland.

While native woodland birds have suffered from climate change and loss of habitat, the tropical birds have thrived in warmer temperatures.

In the latest estimate, the British Trust for Ornithology (BTO) said the population has now reached a record 20,000, the majority of which are living in the South East.

Bedecked with emerald green feathers and a rose-red beak, the ring-neck parakeet was brought to the UK from India and was first reported in the wild in 1969.

By 1996, there were 1,500 of the birds living in the wild, by 2002 there were 6,000.

Reference:
Smalley, I.J., O'Hara-Dhand, K. A, McLaren, S., Svircev, Z., Nugent, H. 2013. Loess and bee-eaters I: Ground properties affecting the nesting of European bee-eaters (Merops apiaster L1758) in loess deposits. Quaternary International 296: 220-226.

Visitors' background and expectations – how to incorporate into geosite assessment

Milena Różycka*, Piotr Migoń
Department of Geomorphology, Institute of Geography and Regional Development, University of Wrocław,
pl. Uniwersytecki 1, 50-137 Wrocław, Poland
*Corresponding author: milena.rozycka@uwr.edu.pl

Evaluation of geosites aimed at assessing their educational and tourist use value is usually attempted as one-variant exercise, with an 'interested visitor' and his/her preferences in mind. This is then reflected in rankings of geosites and choices for further development. However, visitors to geosites range from experts in the field to casual tourists who arrive with no a priori expectations and little background to understand the complexity of phenomena present at a particular locality. To see how visitors' preferences may influence results of evaluation, the following procedure was implemented. In the first step, three groups of visitors were distinguished: specialists, interested, and casual. Then it was assumed that different properties of geosites (e.g. scientific value, educational value, scenic value, added value, state of preservation, accessibility) will be valued in different ways by representatives of each group. This was reflected in different weights assigned to the same criterion if these were to evaluate from different perspectives. The actual evaluation was carried out on a sample of 30 geosites in the West Sudetes, SW Poland, showing themes related to volcanic geology and rock-controlled geomorphology. Emphasis on different criteria resulted in considerable changes in the positions of certain geosites in the rankings which has practical implications for local initiatives to develop geotourism in the region. A number of geosites appealing to experts may generate disappointment among casual visitors if they are not accompanied by proper interpretative facilities.

Geotourism in the western part of Myślibórz Lakeland

Cyprian Seul
Department of Geotechnics, West Pomeranian University of Technology in Szczecin,
17 Aleja Piastów, 70–310 Szczecin, Poland
e-mail: cyprian@zut.edu.pl, seulcyprian@wp.pl

The combination of landscape, historical and cultural values of the area provides a full picture of the area, which can be attractive to tourists for various visitor needs. Some visitors to the region pay more attention to historical objects, some emphasize the specific nature of the landscape, others look for lively and inanimate nature (eg nature monuments) or seek for contemporary attractions (eg beach, fishing grounds).

The western part of Myślibórz Lake District is one of the lesser known tourist regions of Poland. This is the area where the Oder Valley (with the westernmost part of Poland) is situated, with marshy areas with peatbogs and waterfowl habitats. The next area is the moraine upland area of the maximum extent of the Pomeranian glaciation phase with numerous glacial and hydrovalous forms with very varied terrain. This area is not attractive in mass tourism but an excellent area for the development of geotourism.

In Poland, Cedynia (the Battle of Mieszko I in 972) and Siekierki with the war cemetery (the site of the Oder raids in 1945 by the Polish Army) were the most famous in Poland.

In order to protect unique places natural areas have been created protected areas (reserves, natural monuments), landscape parks or in recent years – geostations. The State Geological Institute records the geological sites (geostations). There are 19 geostations in this area. There are both exposures of sediment, terrain forms or viewpoints.

Through the western part of Myślibórz Lake District, there are hiking trails ("Nadodrzański Trail", "Moreno Hills Trail", "Paradise Valley Trail" and "Green Oder" trails.

One of the attractive places is Cedynia (medieval town developed on the edge of the Oder Valley and moraine upland) with a nice viewpoint on the Odra Valley (Czcibora Mountain). Another interesting tourist destination is the Oder Valley in the Krajnik region with the "Valley of Love" in Zaton and the lookout point to the Oder Valley. It is worth to pay attention to the overlapping boulders "twins" in the forests of Krzymów (the second largest in the West Pomeranian Voivodship after the rock in Tychowo). Very interesting place in terms of tourism is the town of Moryń on the Morzycko Lake. With full walls and a church from the turn of the 13th and 14th century it is called the Carcassonne Polish. In the western part of Myślibórz Lake District there are also medieval sacral buildings.

Cross-border co-operation between the Joachimstahl and Municipality of Moryń under the Interreg IVa program (2007 - 2013), with the help of the Pomeranian Branch in Szczecin, the State Geological Institute (the main coordinator was Ryszard Dobracki), was established in 2012 "Geopark - Postglacial land on the Odra River" with headquarters in Moryń on the Polish side and in Gross-Ziethen, near Joachimstahl, Germany. The main tourist attraction of the Geopark in Moryń is the "Alest of Pleistocene Stars" - a tourist trail along the Mokrzycko Lake with the exposition of animals and boulders from the "Ice Age".

In the western part of Myślibórz Lake District, there is the only place in the West Pomeranian region of the occurrence of single sheets of loess cover between Cedynia and Moryń. Klępicz's position is best documented. Due to its geological attractiveness it is worth giving it the rank of geostation. There is a geostation site near Orzechowo (late glacial settlements) and on the road from Stara Rudnica to Stary Kostrzyn the geostation of Eem sediments.

References:

1. Alexandrowicz, Z., Miśkiewicz, K. 2016. Geopark – od idei do realizacji, ze szczególnym uwzględnieniem Polski. Chrońmy Przyr. Ojcz. 72 (4): 243–253
2. Dobracki, R. 2011. Geopark epoki lodowca nad brzegami Odry – centrum Moryń. Konferencja Geoparki – Georóżnorodność – Geoturystyka. Instytut Nauk o Ziemi UMCS, Lublin, 6–8.06.2011: 18–19.
3. Górska-Zabielska, M., Dobracki, R. 2015. Petrographic Garden in Moryń – a new geotouristic attraction in western Poland. Landform Analysis 29: 73–80
4. Matecka, M., Matecki, R. 2017. Zachodnie Zakole Odry wokół Puszczy Piaskowej. OTE Pracowania Kamyk Zielony Małgorzata Matecka, Zatoń Dolna 12.
5. Cegła, J., Kozarski, S. 1976. Osady lessopodobne na morenach czołowych stadium pomorskiego fazy zasięgu maksymalnego lobu Odry. Sprawozdania PTPN za 1973 r: 38–40.
6. Piotrowski. A., Brose. F., Sydor. P., Seidler. J., Pisarska-Jamroży. M. 2012. Osady interglacjału emskiego w Siekierkach. In: XIX Konf. Stratygrafia Plejstocenu Polski „Korelacja osadów plejstocenu na pograniczu Polsko-niemieckim w Dolinie Dolnej Odry" (red. A. Piotrowski), Cedynia, 3–7 września 2012 r. Państwowy Instytut Geologiczny. Państwowy Instytut Badawczy, Warszawa: 161–163.

Loess in New Zealand: the dust on the heritage crust, the froth on the heritage broth

Ian Smalley
Centre for Loess Research & Documentation, School of Geology, Geography & the Environment, Leicester University, Leicester LE1 7RH, UK
e-mail: ijs4@le.ac.uk

Four pioneers of loess investigation in New Zealand have been identified and discussed: they are Julius von Haast, F. W. Hutton, John Hardcastle and Robert Speight. Of this four Haast, Hutton & Speight could be considered professional earth scientists; Hardcastle was definitely an outsider, he was a newspaperman, a journalist, mostly at the *Timaru Herald* newspaper. He can also be seen as a pioneer within the world of GeoHeritage.

Hardcastle lived most of his life in Timaru, in the South Island of New Zealand, and he contributed enormously to the study of the local loess. He is now being recognised as the inventor of loess stratigraphy and a pioneer of palaeoclimatology. But alongside this scientific recognition should come the realisation that Hardcastle was a significant pioneer in the study of geoheritage – the idea of linking remarkable geology to an informed public.

His major work was the short book of 'Notes on the Geology of South Canterbury' (published by *Timaru Herald* in 1908, republished by *Loess Letter* 2014); it can be seen as an early classic of geoheritage writing.

Considering NZ as a geoheritage site is rewarding; NZ surely would rank very high in the list of desirable geoheritage locations; the pink & white terraces have gone, swept away by volcanic action, but much remains. There are 'crustal' sites in NZ, the National Park volcanoes are splendid and accessible: Tongariro, Ngauruhoe (Mt.Doom) and Ruapehu provide fine examples of crustal geoheritage. There are 'dynamic geomorphology' sites: to see a glacier go to the Southern Alps and admire the Fox glacier and the Franz Joseph glacier, go to the Rakaia and see one of the most famous braided rivers. No shortage of fine geoheritage in NZ, but, on top, in addition, perhaps overlooked, is the loess, the dust on the crust. To see the loess with the eye of geoheritage is more difficult; as L.S.Berg observed, it can be a very un-exciting material. But it repays study. The great loess deposits of the world repay visitation & study. The NZ deposit in the South Island is not particularly spectacular but it has John Hardcastle as guide and transmitter of enthusiasm. JH was the perfect geoheritage enthusiast, and he was well placed within the *Timaru Herald* to tell the stories. The *Timaru Herald* was, in effect, the first newspaper to have a geoheritage correspondent. His contributions were gathered together to form the 1908 book.

The 1908 book should be studied as a geoheritage primer; here is a knowledgeable enthusiast addressing an intelligent audience (the people of Timaru & Christchurch). Hardcastle made a good case for loess as a suitable topic for geoheritage deliberations. He pointed to mountains (the Southern Alps), great rivers (eg the Rangitata) and associated deposits. Make comparisons to the Sudeten Mountains, the River Odra- and associated loess deposits.

Leonard Horner and the appreciation of Loess (and the development of the idea of Geoheritage)

Ian Smalley
Centre for Loess Research & Documentation, School of Geology, Geography & the Environment, Leicester University, Leicester LE1 7RH, UK
e-mail: ijs4@le.ac.uk

We identify three dates in the development of the study and appreciation of loess. The first, 1824, is when Karl Caesar von Leonhard includes a section on Loess in vol. 3 of his book 'Charakteristik der Felsarten' and thus gives the material definition and validity. The Von Leonhard book was essentially a catalogue of definable ground materials.

The second is when Charles Lyell, in 1833, after being shown the loess at Heidelberg by Von Leonhard, includes a descriptive section in vol. 3 of the 'Principles of Geology'. The Principles becomes a remarkably famous tract on geology and carries the word on loess to all corners of the World. In fact a copy reached Charles Darwin in Valparaiso in 1834, catching up with HMS Beagle.

The third (proposed) is in 1833 when Leonard Horner presented his paper on 'The Geology of Bonn' to the Geological Society of London. Horner was not a great scholar like Lyell or Darwin but he was possibly the first to realise what an interesting material loess was. By 1836 the Romantic Movement was running its course but the idea had been implanted that rocks and landscapes, in fact geology in general, were of interest. They could be appreciated and enthused over. Wordsworth and Coleridge had done their work in the Lake District and the idea of 'Nature' was taking hold. Appreciation of the natural world is more or less the definition of Geoheritage. Geoheritage involves cultural activity = appreciation and enjoyment.

Horner realised that loess presented more than a material to be defined or a landscape to be mapped, it was something more than this.

The paper was not published until 1836, by which time the UK Government had appointed Horner to be Inspector of Factories and he had set out on the long and difficult task of removing children from factories and making life tolerable for the working people. So he had little time for further geological activity, although he continued to be very active in the Geological Society of London. We are perhaps overstating his case to be a pioneer of geoheritage but he certainly had a role to play in developing the interest in loess, which, as L.S. Berg remarked, is not at first sight a particularly attractive material.

Cave tourism in Slovenia: on the edge between mass tourism and geoheritage protection

Jure Tičar[1]*, Nemanja Tomić[2], Mateja Breg Valjavec[1], Matija Zorn[1], Slobodan B. Marković[2], Milivoj B. Gavrilov[2]
[1] Anton Melik Geographical Institute, Research Centre of the Slovenian Academy of Sciences and Arts,
2 Novi trg, Ljubljana, Slovenia
[2] University of Novi Sad, Faculty of Sciences, Department of Geography, Tourism and Hotel Management,
3 Trg Dositeja Obradovića, Novi Sad, Serbia
*Corresponding author: jure.ticar@zrc-sazu.si

Slovenia is considered as “the cradle of karst geotourism”. World's first tourist cave was the Vilenica Cave located on the Kras Plateau (Classical Karst, SW Slovenia). One of the most visited tourist caves in SE Europe is the Postojna Cave (SW Slovenia) with more than one million visitors of the cave and surrounding karst geotourist attractions in 2016. The management of caves is strictly regulated according to the Underground Cave Protection Act (Ur. l. RS 2004), because all caves in Slovenia (app. 12,000) are defined as natural heritage of national importance and are owned by the state. The law defines the activities in caves, mostly outlining the prohibited impacts on cave environment. Some regulations have also been applied for tourist activities, due to the commercial use and adaptation of the tourist caves inventory.

The principal aim of this study was to determine the current state and further cave tourism potential by following global trends of sustainable geotourism. The methodology is based upon the 'modified geosite assessment model' (M-GAM), developed by Tomić and Božić (2014). The M-GAM represents a modification of GAM model created by Vujičić et al. (2011). For the purpose of this study, ten representative tourist caves in Slovenia were selected: Škocjan Caves (UNESCO), Postojna Cave, Vilenica Cave, Križna Cave, Županova Cave, Snežna Cave, Pekel Cave, Kostanjevica Cave, Divača Cave and Dimnice Cave. The study was done with two online questionnaire surveys, separately for experts (N=10) on certain tourist cave and for tourists (N=331) visiting those caves. The questionnaire for tourist was assessed with snowball sampling via different mailing lists, social media and local schools, tourist offices and municipalities in the vicinity of tourist caves.

The preliminary results of model show some differences in current tourism management of ten studied caves.

Identification of potential geotourists in Vojvodina Region (North Serbia) – preliminary study and results

Đorđije A. Vasiljević[1]*, Miroslav D. Vujičić [1], Slobodan B. Marković[1], Thomas A. Hose[2], Biljana Basarin[1], Tin Lukić[1]
[1] Department of Geography, Tourism and Hotel Management, Faculty of Sciences, University of Novi Sad,
3 Trg Dositeja Obradovića, 21000 Novi Sad, Serbia
[2] School of Earth Sciences, University of Bristol, Wills Memorial Building, Queens Road, Clifton, Bristol, BS8 1RJ, UK
*Corresponding author: vasiljevic80©gmail.com

Geotourists as visitors with specific preference on geoheritage and attractive geodiversity have been identified and characterized by many authors from worldwide. As Serbia is still area of geotourism in its initiating phase, this kind of research has not been conducted so far. Furthermore, geotourism as special interest form of travel does still not exist in this region, and is mostly related to speleotourism and pure admiration of aesthetic values of geodiversity. Consequently, this study, as preliminary geotourism study, was conducted to reveal if there is a certain level of interest for geoheritage amongst general public. The questionnaire was conducted in 2012 on the territory of Vojvodina Province (North Serbia) with total number of respondents of 198 persons.

With lack of geotourism terminology within study area, people are not familiar of existence, attractiveness and even degradation of geodiversity. Hence, questions were based to discover respondents' habits and tendencies during travel, their attitude in everyday life, especially towards nature (including abiotic component). Finally, the aim of this study was to indirectly reveal if there are some social-demographic characteristics that could be profiled as potential geoheritage lovers - geotourists. With specific profiles identified, results may be later used for geotourism planning, education, promotion and management in the Vojvodina region and wider.

Do geoscientists and archaeologist think alike? Imprints in loess and archaeological sites in Serbia

Miroslav D. Vujičić[1]*, Đorđije A. Vasiljević[1], Slobodan B. Marković[1], Thomas A. Hose[2], Nenad Tasić[3], Kristina Penezić[3]
[1] University of Novi Sad, Faculty of Sciences, Department of Geography, Tourism and Hotel Management,
3 Trg Dositeja Obradovića, Novi Sad, Serbia
[2] School of Earth Sciences, University of Bristol, Wills Memorial Building, Queens Road, Clifton, Bristol, BS8 1RJ, UK
[3] Department of Archaeology, University of Belgrade, Serbia
*Corresponding author: miroslav.vujicic@dgt.uns.ac.rs

As there is immense overlapping of geological and archaeological/palaeontological sites, archaeologists and geoscientists often collaborate at same locality towards new discoveries and conservation actions. Moreover, this collaboration has become known de facto as geoarchaeology, which proved that advances in areas of archaeological science with a strong geological, sedimentological or pedological component have significantly furthered the understanding of processes' formation, improved interpretations and helped develop site preservation. Thus there is evident necessity of the mutual work of these two disciplines in order to provide better understanding of our past, in particular within conservational activities. For the research purposes authors used previously developed GAM (geosite assessment model) and applied analytical-hierarchy process to evaluate weights of criteria (GAM indicators) for geoscientists (GS) and archaeologists (AR). Preliminary results showed similar weight values for Scientific/Educational value (GS - 0.725) and (AR - 0.514), ranked at the top of the hierarchy for both groups. There were slight change in the Scenic/Aesthetic (0.209 - GS) and (0.087 - AR), for geoscientist it was ranked second and for archaeologists it was ranked third and last. Regarding Protection (0.066 - GS) and (0.399 - AR) values, it was ranked third and last for geoscientist and second for archaeologists. When weights of subindicators were examined main impression is that geoscientists have more interest in research, and archaeologists show the balance between research and conservation. Also, misbalance between two groups was found in ranking subindicator criteria related to viewpoints and surface. Protection subindicators have similar values for both groups. CR is below 0.1, which proves that the result is sufficiently accurate and there is no need for adjustments in comparison.

Environmental conservation and sustainability in major geo-tourism destinations: Geo-tourism management in Shilin "Stone Forest" Geo-Park, Kunming, China

Ralph Wahnschafft
c/o Global Forum on Human Settlements, Berlin, Germany
e-mail: Ralph.Wahnschafft@gfhsforum.org

During recent years, China's domestic tourism economy has been growing. An estimated 4.4 billion domestic trips were undertaken in 2016, an annual increase of 11 per cent. China has an abundance of outstanding cultural, natural and geological heritage sites including more than 200 registered geo-parks. Rapid growth in tourism provides respective municipalities and communities with important opportunities for income growth, economic development and diversification. However, due to continuous increases in visitor numbers local tourism destination management authorities also face formidable challenges at the same time. Destinations, including geo-parks, need to sustain their tourist infrastructure and their local economy. They need to satisfy visitor expectations and provide memorable tourist experiences, in spite of high visitor traffic. They also need to protect their natural and geological resource base, the physical attractiveness and environmental integrity, and avoid local air, soil, water and noise pollution. Placing emphasis on these common sustainability concepts and principles is increasingly important for all forward looking tourism destinations, and in particular for tourism "hot spots". Against this background, this presentation reviews one selected major national geo-tourism site in China. The UNESCO-registered world heritage site of Shilin "Stone Forest" is a unique and wide spread karst formation estimated to be 270 million years old. Over the millennia, seismic activity and erosion have carved unique limestone formations. The "Stone Forest" is a day-trip destination located about 90 km from Kunming city in Yunnan Province. In 2016, it received between 10,000 and 30,000 visitors each day, totalling more than 4 million annually. Shilin's destination management authority has developed its tourism related infrastructure and its services in an exemplary manner. On arrival, visitors are directed to large off-site car park areas from where electric shuttle buses ferry visitors to and from the site entrance, thereby avoiding transport-related local air or noise pollution. Entrance fees are comparatively high for local and foreign visitors alike. Revenues are sufficient to generate the funds needed for site management and maintenance. The site has clear signage and offers visitors guidance along alternative trails, depending on visitor strengths, time and interests. Visitors with less physical strength or handicaps may also take advantage of a complimentary on-site "hop on – hop off" electric bus service to reach the main look-out points. At various on-site locations local residents including ethnic minorities are offered opportunities to sell local food products or handicrafts, or perform music or dances to gain income. Some restrictions on visitor acess during peak periods many need to be considered. However, in many ways Shilin "Stone Forest" could be regarded as a "best practice" example for sustainable development and management of tourist "hot spots", not only in China, but also in other countries.

Selected illustrations:

© Ralph Wahnschafft

Natural protected areas – its attractiveness for geotourism in the opinion of visitors on the example of Babiogórski National Park

Krzysztof Widawski[1]*, Zdzisław Jary[2], Piotr Oleśniewicz[3], Julita Markiewicz-Patkowska[4], Anna Zaręba[1]

[1] Department of Regional Geography and Tourism, Institute of Geography and Regional Development, University of Wrocław, 1 Uniwersytecki square, 50–137 Wrocław, Poland

[2] Department of Physical Geography, Institute of Geography and Regional Development, University of Wrocław, 1 Uniwersytecki square, 50–137 Wrocław, Poland

[3] University School of Physical Education in Wrocław, 35 al. I.J. Paderewskiego, 51–612 Wrocław, Poland

[4] WSB University in Wrocław, 29/31 Fabryczna st., 53–609 Wrocław, Poland

*Corresponding author: krzysztof.widawski@uwr.edu.pl

This article examines the tourist role of protected areas important for their unanimated nature potential. In Poland the highest form of legal protection is national park. Babiogórski National Parks is one of 23 national parks in Poland. The aim of this article is to present its tourist attraction based on its geotourist potential considered by tourists who visit this park. At the beginning a brief history of protection of Babia Góra is presented. Based of stock-taking sightseeing method an analysis of the most important tourist attractiveness elements (like infrastructure or tourist values) is done. The focus on the values of unanimated nature is made grouping them into four main categories. As the result of research on infrastructure the most important accommodation units were indicated present at the surroundings of this National Park which is vital for its tourist capacity. For the correct functioning of tourist movement at the protected area the supporting infrastructure is important bearing a lot of functions. The function of channelling of the tourist movement as well as the didactic function are the most important for protection and correct use of geotourist values. Among the many elements of the supporting infrastructure the most important ones are tourist and didactic routes (their course and themes are presented). The most important part of the article is the presentation of the participants of the tourist movement' opinions on the Babiogórski National Park tourist attractiveness. A surveys was conducted and then analysed on 308 respondents in 2011. They were asked to judge both the quality of infrastructure as well as attraction of geotourist values together with their adaptation to reception by the tourist movement. The results analysis served as a base to appraise the state and perspectives for the geotourism development in Babiogórski National Park from the point of view of the receivers of tourist product i.e. the protected area.

Geotourism starts with the accessible information. Internet as a tool for the Lower Silesia geo-values promotion

Krzysztof Widawski[1]*, Agnieszka Rozenkiewicz[1], Piotr Oleśniewicz[2], Julita Markiewicz-Patkowska[3]

[1] Department of Regional Geography and Tourism, Institute of Geography and Regional Development, University of Wrocław, 1 Uniwersytecki square, 50–137 Wrocław, Poland

[2] University School of Physical Education in Wrocław, 35 al. I. J. Paderewskiego, 51–612 Wrocław, Poland

[3] WSB University in Wrocław, 29/31 Fabryczna st., 53–609 Wrocław, Poland

*Corresponding author: krzysztof.widawski@uwr.edu.pl

The success of each tourist product in the contemporary world depends mainly on the information. Such information should be properly prepared, adequately presented and – most of all – accessible. It is widely known that the basic source of information for the potential tourists is the Internet.

This paper investigates the state of information on geoheritage or, more broadly, on geotourist offer that can be found on the Internet at the example of Lower Silesia. In order to achieve the intended goal a short discussion about the division of the tourist values in the literature is presented at the beginning which served as the starting point for the selection of particular values promoted afterwards. A place of the geotourist values within this group is submitted. This part of the article is completed with a presentation of the tourist natural values of Lower Silesia with special emphasis on the values presented in the Geotourist guide – one of the most complex presentation of this kind of resources in Poland.

Next an analysis is made of official documents being the base for actions aiming at promotion of the tourist values especially the geotourist ones. These are mainly strategies of tourism development at different levels: Lower Silesia voivodship and the selected counties where the most important geo-values or geoheritage complexes of the region are located. One of the most important example is Kłodzko county officially called in their strategy "The Tourist County".

In the following part another analysis is presented concerning information on natural values promoted on public administration or local authorities websites. Other websites (e.g non-profit organizations or institutions that run the geoheritage) content is also investigated.

Selected websites were examined for their accessibility and the manner of value presentation. The summary is an attempt to indicate ways of development and suggestions for the implementation of changes that could possibly improve the present situation.

Geological heritage and anthropogenic processes in policy of sustainable growth in regions

Maciej Zathey[1,3]*, Jan Blachowski[2,3]
[1] Wroclaw University of Science and Technology, Faculty of Architecture, 53/55 B. Prusa st., 50–317 Wroclaw, Poland
[2] Wroclaw University of Science and Technology, Faculty of Geoengineering, Mining and Geology,
15 Na Grobli st., 50–421 Wrocław
[3] Institute for Territorial Development, 1a J. Wl. Dawida st., 50–527 Wroclaw, Poland
*Corresponding author: maciej.zathey@irt.wroc.pl

Present-day policy of development of European regions is based on both the dictate of innovation and technological progress, and increasingly refers to endogenous and unique resources. Among these intraregional resources are: human capital, social capital, economic specialisations and irreplaceable natural resources including geoheritage.

Unique landforms that had developed in the course of natural processes and as a consequence of human activity, from the perspective of developing a palette of tourist attractions, can be of significant value. This can result in creating leverage for local economic development, based on services and small craftsmanship/businesses.

Sustainable growth policy expects that natural heritage will be preserved in a form that is changed as little as possible and available for future generations. Nature conservation is an action that as a rule restricts tourism. However, paradoxically, introduction of forms of nature protection is an indication of a given area or object attractiveness as it confirms its value and worth.

There is a risk of overexploiting a resource and decreasing its attractiveness in the result of excessive anthropopressure. On the other hand, for example in the case of open pit mining, exploitation of natural resources allows to observe dynamic and human controlled processes of transforming surface of the land and in consequence processes of reclamation and restoration. These processes are also an element of geological heritage and influence the shaping of new landscape followed by creation of tourist attraction and new economic specialisation of a region.

The presentation will refer to examples from Lower Silesia (Poland) and Saxony (Germany).

Polish-Ukrainian Geotourist Route "Geo-Carpathians"

Yuriy Zinko[1]*, Leonid Skakun[1], Ihor Bublik[1], Albertina Buchynska[1], Oleh Yatsozhynskyi[1], Marta Malska[1], Andrzej Solecki[2]
[1] Ivan Franko National University of Lviv, 1, Universytetska str., Lviv, 79000, Ukraine
[2] Institute of Geological Sciences, University of Wrocław, 9 Maksa Borna square, 50–205 Wrocław, Poland
*Corresponding author: zinkoyuriy@gmail.com

The problem of geotourism development in the Carpathians has become important in the last decade. One of the geotourism projects in the Ukrainian and Polish Carpathians, which was implemented in 2012–2013, focused on the development of the international geotourist route "Geo-Carpathians" within the framework of the "Neighborhood Programme Poland-Belarus-Ukraine" in 2007–2013.

For the Ukrainian Carpathians, the last decade has been characterized by intensification of the study and conservation of the geological heritage, realized by researchers from geological and geomorphological disciplines and geological and environmental services. Activities in the field of conservation and tourism use in the Polish Carpathians are becoming more intense.

One of the first international initiatives on the implementation of geotourism in the Carpathian region will be realized on the Ukrainian-Polish border in the project "Geo-Carpathians Ukrainian-Polish Tourist Route", elaborated within the framework of the international "Transboundary Cooperation Program Poland-Belarus-Ukraine 2007–2013." It was developed by the educational institutions of Ukraine and Poland, namely the Higher Technical School in Krosno (Subcarpathian Voivodeship) and the Ivan Franko National University of Lviv. Within the framework of the project, the concept was elaborated and a transboundary geotourist route extending over 700 km was equipped. The main tasks implemented in this two-year project (2012–2013) were as follows: cataloguing of geotourist objects (geotourist attractions) on the research territory; cataloguing of infrastructure – lodging and food; justification and identification of the geotourist route; promotion of the geotourism product on the domestic and international markets. The geotourist route runs through the mountain ranges of the Krosno and Przemysl subregions (Subcarpathian Voivodeship) and Lviv and Ivano-Frankivsk regions. There are 28 information boards with a description of the most important geotourism attractions on the route.

As a result of the study of the Ukrainian and Polish parts of the geotourist route based on scientific, educational and recreational criteria, 40 potential geotourism attractions (altogether 80), which could be included as components of the georoute, were selected. Out of all objects, 28 geosites were selected, which became part of the created geotourist route. All other routes can be included after the appropriate updating of informational, educational and geotourism infrastructures.

Within the trans-boundary geotourist route "Geo-Carpathians", five types of geosites have been identified: 1) stratigraphic, "the bottom of the ancient sea", outcropping of rocks from 100 to 5 million years; 2) geotectonic, with the presentation of folds and faults; 3) mining, with the presentation of oil fields, mud volcanoes, and mineral springs; 4) paleogeographic, "the traces of ancient catastrophes," with the presentation of volcanic activity and earthquakes; 5) geomorphosites with a demonstration of rock complexes and river canyons.

The geosites are of regional significance and are characterized by high dynamism, since all of them are intensively visited tourist objects and undergo considerable anthropogenic loading. Therefore, it is important to provide conservation measures, in particular, regarding the control of tourist traffic, establishment of additional infrastructure and continuous monitoring of the objects' state.

Conference Fieldtrip – day 1, part 1 (Geotouristic region of the Strzelin Hills, Sudetic Foreland, SW Poland)

Anna Solarska, Zdzisław Jary
Department of Physical Geography, Institute of Geography and Regional Development, University of Wrocław,
1 Uniwersytecki square, 50–137 Wrocław, Poland
e-mail: solarskaa@wp.pl; zdzislaw.jary@gmail.com

Friday, 22nd of September 2017
9:00–10:00 Wrocław – Biały Kościół
10:00–11:30 Biały Kościół
11:30–12:00 Biały Kościół – Ziębice
12:00–13:00 Lunch in Ziębice

1. General information

Strzelin Hills are located in southwestern Poland in the foreland of the East Sudetes, precisely within the Niemcza-Strzelin Hills (Fig. 1). There is a considerable diversity of geological structure and relief of terrain, as well as the geomorphological transformation or changes in the landscape connected with settlement and agro-industrial economy. Geoheritage of the Strzelin Hills makes up an enormous variety of natural or semi-natural objects and technical monuments located in a relatively small area (192.5 km²).

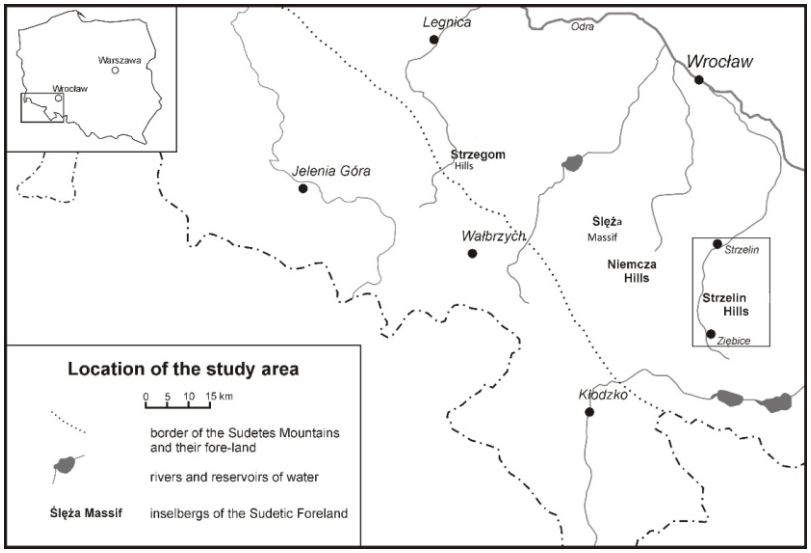

Fig. 1. Location of the study area

The Strzelin Hills features specific landform characteristics, resultant from protracted and complex geomorphological evolution (Migoń, 2014). Certain individual landforms are rare or even unique on a regional scale. Geomorphic elements worth particular attention include: the overall pattern of parallel ridges and vales that mainly reflects selective erosion of lithologically complex bedrock, tor and crag formations, river gorges of significant scenic and scientific value, as well as diverse erosional landforms in loess terrains. Among the latter are deep gully systems which do not have equivalents elsewhere in the Sudetic Foreland. The geomorphic landscape of the Strzelin Hills is considered as one of the oldest in Poland and its evolution can be traced back to the early Cenozoic.

2. Geological structure and relief of the Strzelin Hills

The Strzelin crystalline massif is composed of heterogenous gneiss nucleus (Fig. 2), which were split by fault in the direction NW-SE (Żelaźniewicz, 2005). They are covered by quartzites and quartzite schists, mica schists, marbles and amphibolites. Metamorphic rocks are intruded by granitoids dated from the Carboniferous period. The traces of Cenozoic volcanism are situated in the middle of Strzelin Hills. On the surface partially lie degraded clay and fluvioglacial covers formed in Pleistocene. Dust deposits are represented by loess developed during the last interglacial-glacial cycle.

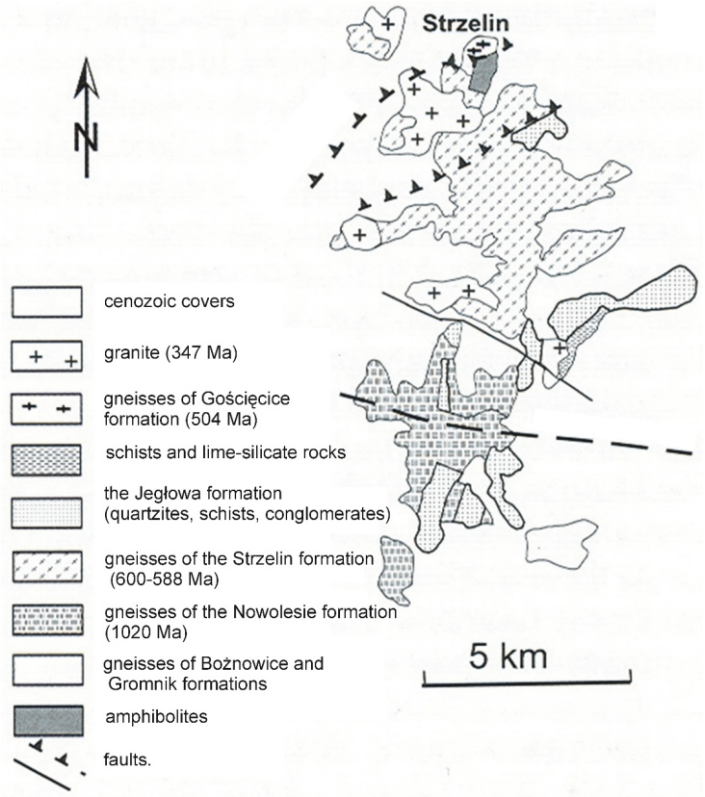

Fig. 2. Geological sketch of surroundings of the Strzelin Hills (according to Żelaźniewicz, 2005).

Geology of the Strzelin Hills is representative of the Sudetic Foreland. Crystalline rocks characteristic of Foresudetic Block occur in this small area. Most of them have been exploited. On the loess covers fertile soils were formed. It contributed to agriculture development and affected relief transformations.

Relief of the Strzelin Hills exhibits features of upland morphology (Fig. 3). Their wide and flattened ridges unfurl at an altitude of 200–300 m above sea level were cut by deep valleys. The highest peak is Gromnik (392.6 m above sea level). In source craters dry valleys or gullies were often formed. Strzelin Hills are drained by left-bank tributaries of the Krynka river and right-bank tributaries of the Oława river.

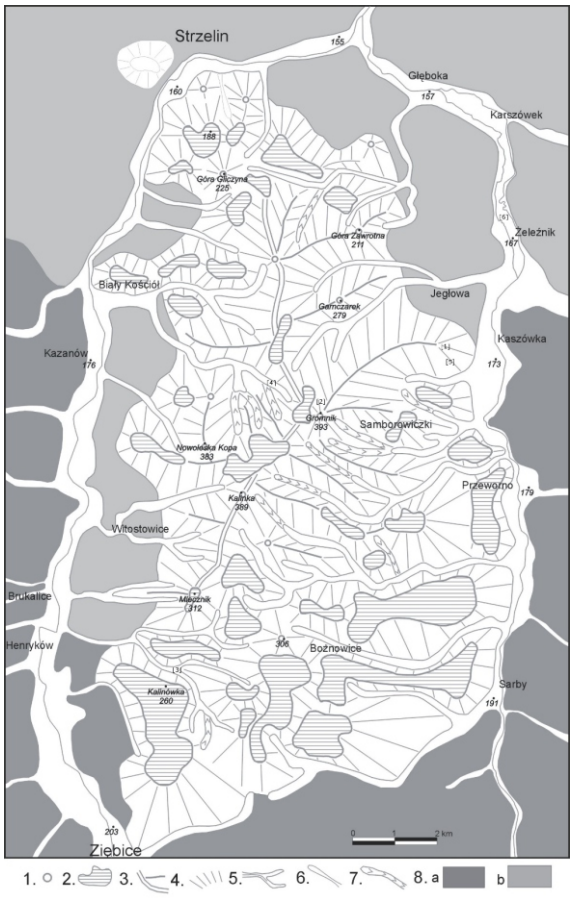

Fig. 3. The geomorphology of the Strzelin Hills. Relief developed on solid rocks: 1 – summits, 2 – planation surfaces, 3 – ridges (main and second rate), 4 – slopes; Fluvial morphology: 5 – valleys, 6 – dry valleys, 7 – upper parts of valleys (V-shaped or gullies); Relief developed on loose rocks (glacial, fluvioglacial, aeolian): 8- a. hilly plateau, b. glacial plains. Geosites: [1] – Quarry of quartzite and quartz schist in Jegłowa, [2] – Tors in the Gromnik Massif, [3] – Zuzanka valley – small epigenetic canyon and rock outcrops, [4] – Pogródka valley– fluvial forms with gully features, [5] – Goethe's tors, [6] – Oxbow lakes and palaeochannels in Krynka valley.

3. Outline of the settlement

First traces of settlement were dated from the Neolithic Period (Żerelik, 2002). It was around 5.5 thousands years BP (Teisseyre, 1994). The area of forested land has decreased significantly in favour of agricultural crops in the thirteenth-fifteenth centuries (Goliński, 2007). Industry was developed from the fourteenth century based on an available rock resources. In the second half of the eighteenth century an abundance of ponds (around 112) were created (Biały et al., 1974; Strauss, 1981). The main phase of development of the network of settlements occurred at the turn of the nineteenth and twentieth century.

4. Geotouristic region of the Strzelin Hills

There are showed several selected objects of geoheritage (Figure 3), which represent following scientific domains: geomorphology, pedology, history, hydrogeology, mineralogy, palaeogeography, petrology, sedimentology, structure geology and mineral deposits. In connection with them, very diverse geomorphological problems in the field of structural geomorphology (tors, inselbergs), fluvial geomorphology (small canyons), geomorphological processes (variety of gullies, dry valleys, mass movement in quarries or pits) prevail. Geological topics are also common, mainly geological structure (petrography, mineralogy). Presence of the historical issues is linked with an interesting, economic past of the Strzelin Hills.

5. Quarry of quartzite and quartz schist in Jegłowa

The quarry near Jegłowa is one of the few places in Poland where there are such large amounts of mountain crystals. There are specimens from 5 to 10 cm long. The exploitation began in the seventeenth century with miners working in tunnels (Strauss, 1981, Staffa et al. 2008). Since the half of 19th century they have begun an open pit exploitation of quartzite and quartz schist.

The quarry is about 0.4 km^2 in area. The western part of the pit, which is closed, has a depth of 33 m, a width up to 130 m and is about 450 m length. Access to the western part from the north and east is limited by almost vertical walls which reach directly to a reservoir of water. In the quarry there are also rocky walls accessible for tourism. Slag heaps were piled up on the rocky shelves (up to 30 m in height). It is possible that boulders can move on steeper slopes.

6. Tors in the Gromnik massif

There are several tors formed in denudation way. They are preserved in form of two sets of tors on ridges on both sides of a small valley. Tors were built from a slate (Żelaźniewicz, 2005). These kind of rock was formed during metamorphism of marine sediments of Devonian age (about 400 million years ago; Szuszkiewicz et al., 2007). On the surface of tors there are visible traces of folds, which were formed during the collision of East and Central Sudetes (Żelaźniewicz, 2005). The slate has high concentration of iron.

Probably because of that, there are more lightning strikes in the Gromnik massif, than in other area of the Strzelin Hills (Szuszkiewicz et al., 2007).

7. Zuzanka valley – small epigenetic canyon and rock outcrops

The epigenetic gorge of Zuzanka river is found in Skalice near Henryków. It began to develop after the regression of the Saalian ice sheet. In the bottom of the valley a channel was formed, which has a width up to 1.5 m and cuts its own alluvial deposits.

There are also remnants of old river channels. They preserve in the form of a cut off, dry meanders. Tors located on the slopes show the Holocene weathering profiles and the effects of mass movements. Below the gorge an alluvial fan can be spot, which is not clearly visible.

In morphology of this valley traces of human exploitation of raw materials have been recorded. Approximately 50 m above the breakthrough this valley was divided by dam, which is about 8 m high. A fish pond were located there in in the past.

8. Pogródka valley– fluvial forms with gully features

It is a river valley, which was evolved probably as a gully in the early Holocene. Erosion of a bedrock channel led to the intersection of water-bearing strata and in the gully appeared a steady flow. The valley retains currently features of a typical gully. Its lateral branches have character of classical loess gullies.

9. Goethe's tors

Goethe's tors are a former, small quarry of so-called date-quartzite (Szuszkiewicz et al., 2007). These rocks are marked by elongated mineral grains looking like a date fruit. Apparently they were admired by Johann Wolfgang von Goethe during his travel to the Lower Silesia (Maliszewski, 1993, Szuszkiewicz et al., 2007). Initially it was an opencast mine, but there are also remains of tunnels. Mountain crystals occurs there in both shapes: single and crystalline-brush.

10. Oxbow lakes and palaeochannels in Krynka valley

There are fluvial forms representing a transformation of a channel system in the Holocene. They were preserved within a bottom of the valley at 1.7 km section. Several generations of the cut off river bends retains on both sides of the channel. Oxbow lakes are situated closest to the currently channel of Krynka river. They are the youngest and filled by water. Older cut off river bends were almost completely filled by mineral and organic sediments and they were called palaeochannels. There are remains of a natural channel of Krynka river.

11. Protection

The most useful forms of inanimate nature protection in Poland are natural monuments, documentary sites of abiotic nature and nature-landscape complex. In addition an inventories and documentations of geosites on the international and national level are carried out (Słomka et al., 2006). In parallel, there are being prepared also many publications about geological and geomorphological heritage in various scientific centers in Poland (Badura et al., 2003; Welz, 2005; Knapik et al., 2007; Radwanek-Bąk, 2009; Alexandrowicz et al., 2009).

Geopark is a nature protection category aiding the promotion of geotourism, but haven't been established a form of nature protection in the Polish legislation yet. Despite this geoparks are being developed in Poland to protect geoheritage and as a response to the needs of tourists. The association of the Niemcza-Strzelin Hills Geopark has been established in 2013. The perimeter of the geopark was enlarged in 2016 and then the name of this association was changed for Sudetic Foreland Geopark. Geopark achieves its goals through:

1. Supporting geotourism and economic development in the region;
2. Conducting scientific activities (collecting, processing and systematizing knowledge about the natural, cultural and social environment);
3. Organizing trainings, courses, seminars, conferences and lectures related to geotourism, recreation and protection of the natural and cultural heritage;
4. Organizing educational activities in the geopark;
5. Carrying out a publishing, journalistic and educational activities;
6. Realizes investments related to the geotourism and culture;
7. Cooperates with governmental and local administration, social organizations as well as business entities to promote and protect the natural and cultural heritage;
8. Cooperates with international associations mainly within the European Geopark Network and UNESCO Geopark Network.

12. Conclusions

The Strzelin Hills are attractive for geotourism. Geotouristic values is represented by features of the inanimate environment of the Sudetic Foreland and also some of characteristic fragments of the Sudetes. The presented geoheritage objects were selected as geosites and geomorphosites, which can have the greatest value for geotourism. They prove also the high scientific significance of the Strzelin Hills for geology, geomorphology and others domains. Additionally, good accessibility of the most of examined sites and site-sets is an important advantage for development of geotourism in the Strzelin Hills.

In order to use the geological and geomorphological values of this region for the development of geotourism, their appropriate presentation and interpretation are necessary, since the meaning of the rather subdued landforms is not easy to decipher for non-professionals (Migoń, 2014). Just because it was important to include this area into the geopark network.

Bibliography:

Alexandrowicz, Z., Urban, J., Miśkiewicz, K. 2009. Geological Values of Selected Polish Properties of the UNESCO World Heritage List. *Geoheritage* 1, 43–52.

Badura, J., Gawlikowska, E., Kasiński, J.R., Koźma, J., Kupetz, M., Piwocki, M., Rascher, J. 2003. Geoarpk „Łuk Mużakowa" – proponowany transgraniczny obszar ochrony georóżnorodności. *Przegląd Geologiczny* 51, 54–58.

Biały, F., Czachorowska, I., Goliński, Ż., Maleczyńska, E., Pięczka, W., Radomiński, T., Restel, A., Sahaj, T., Sydor, J. 1974. Strzelin. Monografia geograficzno-historyczna miasta i powiatu. Zakład Narodowy im. Ossolińskich, Wrocław, 268 pp.

Goliński, M. 2007. Dzieje zamku na Gromniku. In. Jaworski, K., Pankiewicz, A. (eds.), Gromnik. Z dziejów zasiedlenia i zagospodarowania szczytu. Wydawnictwo Instytutu Archeologii Uniwersytetu Wrocławskiego, Wrocław, 9–24.

Knapik, R., Sobczyk, A., Aleksandrowski, P. 2007. Karkonoski Park Narodowy – proponowany obszar ochrony georóżnorodności w Europejskiej Sieci Geoparków. In. Štrusa J., Knapik R. (eds.), Geoekologické problémy Arkono, Sborn. Mez. Věd. Konf., říjen 2006, Svoboda n. Úpou. Opera Corcontica 44, 2, 585–592.

Maliszewski, J., 1993. J. W. Goethe na Śląsku: o podróży poety w 1790 roku. Państwowy Instytut Naukowy, Instytut Śląski, Opole.

Migoń, P., 2014. Rzeźba Wzgórz Niemczańsko-Strzelińskich na tle Przedgórza Sudeckiego – specyfika i znaczenie dla rozwoju geoturystyki, (w:) Tarka R., Jawecki B., Moskwa K., (red.): Walory przyrodnicze Wzgórz Niemczańsko-Strzelińskich. T. 2. Ocean, Wrocław. p. 142.

Radwanek-Bąk, B. (eds.) 2009. Georóżnorodność i atrakcje geoturystyczne województwa małopolskiego. Wydawnictwo Kartograficzne "Compass", Kraków.

Słomka, T., Kicińska-Świderska, A., Doktor, M., Joniec, A. (eds.) 2006. Katalog obiektów geoturystycznych w Polsce. Akademia Górniczo-Hutnicza w Krakowie, http://www.mos.gov.pl/kategoria/2398_katalog_obiektow_geoturystycznych_w_polsce/, 21.10.2010.

Staffa, M., Mazurski, K.R., Czerwiński, J., Pisarski, G. 2008. Wzgórza Niemczańsko-Strzelińskie. Przedgórze Paczkowskie. Słownik Geografii Turystycznej Sudetów, Wydawnictwo I-BIS, Wrocław, vol. 21 (A–M, N–Ż), 1089 pp.

Strauss, S., 1981. Strzelin i Wzgórza Strzelińskie. Zakład Narodowy im. Ossolińskich, Wrocław, 227 pp.

Szuszkiewicz, A., Madej, S., Knapik, R., 2007. Dokumentacja geologiczno-przyrodnicza wyrobisk i kamieniołomów na trasie planowanego Strzelińskiego Szlaku Kamieniołomów i Minerałów, cz. I, manuscript.

Teisseyre, A.K. 1994. Spływ stokowy i współczesne osady deluwialne w lessowym rejonie Henrykowa na Dolnym Śląsku. *Acta Universitatis Wratislaviensis* 1586, *Prace Geologiczno-Mineralogiczne* 63, 188 pp.

Welc, E., 2005. Propozycje tras geoturystycznych w paśmie Magury Wątkowskiej (Beskid Niski). *Geoturystyka* 2, 2, 43–52.

Żelaźniewicz, A. 2005. Przeszłość geologiczna. In. Fabiszewski J. (eds.), Przyroda Dolnego Śląska, Polska Akademia Nauk Oddział we Wrocławiu, 61–134.

Żerelik, R. 2002. Dzieje Śląska do 1526 roku. In. Czapliński M. (eds.), Historia Śląska, Acta Universitatis Wratislaviensis 2364, 14–116.

Loess-soil sequence in Biały Kościół – geosite for scientists, students and geotourists

Marcin Krawczyk[1]* Zdzisław Jary[1], Piotr Moska[2], Przemysław Mroczek[3], Jerzy Raczyk[1], Kamila Ryzner[1], Jacek Skurzyński[1], Cyprian Seul[4], Anna Solarska[1], Krzysztof Widawski[5]

[1] Department of Physical Geography, Institute of Geography and Regional Development, University of Wrocław, 1 Uniwersytecki square, 50–137 Wrocław, Poland

[2] Silesian University of Technology, Institute of Physics – Centre for Science and Education, 22B Konarskiego st., 44–100 Gliwice, Poland

[3] Department of Geoecology and Palaeogeography, Maria Curie-Skłodowska University, 2d Al. Kraśnicka, 20–718 Lublin, Poland

[4] Department of Geotechnics, West Pomeranian University of Technology in Szczecin, 17 Aleja Piastów, 70–310 Szczecin, Poland

[5] Department of Regional Geography and Tourism, Institute of Geography and Regional Development, University of Wrocław, 1 Uniwersytecki square, 50–137 Wrocław, Poland

*Corresponding author: marcin.krawczyk@uwr.edu.pl

The loess-soil section Biały Kościół (Strzelin Hills) is located in an old clay pit, several meters from the road linking the Strzelin and Henryków (λ = 17°01'30''E, ϕ = 50°43'30''N). The loess profile is placed on the west slope of the Oława valley at an altitude of approximately 185 m above sea level (Fig. 1).

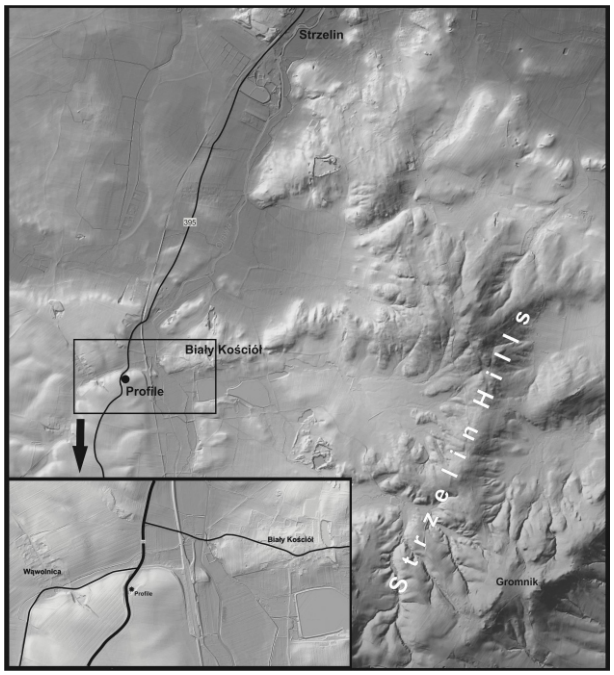

Fig. 1. The location of the Biały Kościół loess section

Detailed pedosedimentary sequence with short description of the basic units is presented on figure 2.

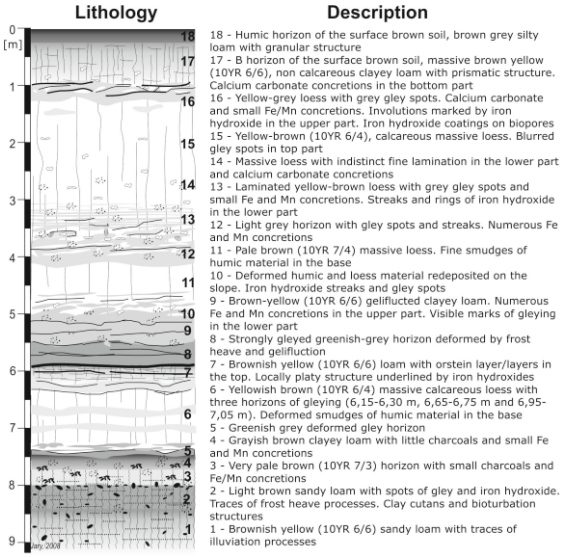

Fig. 2. Pedosedimentary sequence and description of the basic units in the Biały Kościół loess-soil section

Biały Kościół loess-soil sequence consists of five litho-pedostratigraphic units developed during the Late Pleistocene and Holocene: two polygenetic fossil soils/soil sets (S1 and L1SS1) and two calcareous loess units (L1LL1, L1LL2). In the top of the younger loess unit recent soil has developed (S0).

The pedocomplex S1 was probably formed during three intensive soil formation stages of forest-type pedogenesis (Eemian Interglacial, Brörup and Odderade Interstadials) interrupted by two cold periods (Herning and Rederstall stadials). There are evidence of periglacial and other deformational processes within the palaeosol S1 (e.g. cryo-desiccation cracks, desert pavements) which demonstrate the complex history of this pedocomplex.

Above the pedocomplex S1 lower loess unit L1LL2 was deposited during the cold period of Lower Pleniweichselian. There are several weak tundra-gley horizons within this lithostratigraphic unit which are the proofs of short term climate changes during this period.

In the top of L1LL2 loess unit the next fossil soil complex L1SS1 was developed with strong evidence of tundra-gley soil processes formation. L1SS1 soil separates two main stages of loess accumulation during the Last Glacial. However, morphological characteristic and presence of periglacial phenomena suggest tundra-gley type of pedogenesis. Chronostratigraphic position of L1SS1 soil is correlated with the Middle Pleniweichselian. During this period loess sedimentation was reduced almost to zero. The top of L1SS1 soil was deformed by gelifluction, frost heave and other periglacial processes.

Over the gelifluction horizon the L1LL1 loess unit occurs deposited during Upper Pleniweichselian. In the lower part of L1LL1 loess the weak tundra-gley soil was developed. There are several other weak tundra-gley horizons within L1LL1 unit which are evidence for short climate variations in the time of loess accumulation. Rapid changes of grain size composition and other proxies within L1LL1 loess unit suggests sudden changes of environmental conditions.

In the top of L1LL1 unit the modern brown soil S0 has developed.

The loess profile at Biały Kościół has been presented several times to participants of International Symposiums and its role as a key section of Late Pleistocene loess in SW Poland is commonly appreciated. The loess-soil sequence at Biały Kościół represents very well preserved palaeoclimatic and palaeonvironmental archive of the last 130 000 years. Due to its scientific and didactic values Biały Kościół loess section will be established as loess documentary site in in the near future.

Loess-soil sequences occur in many loess areas in Europe and in the world. What is more, most of them consist of similar litho- and pedostratigraphic units. These features makes it possible to compare them with each other: their age, origin and other characteristics. Loess is a product of climate changes. The main characteristic of the climate is its variability in space and time. This true is the best recorded in loess-soil sequences.

Same as in Austria, Hungary or Serbia well exposed loess profiles might become interesting for new generation of geotourists. There is constantly expanding group of tourists who are discovering the mysteries of the Quaternary epoch recorded at the loess sequences. Of course, it requires a special ways of presentation. The most important is to explain scientific results in very clear and understandable way using variety of modern techniques.

The profile location itself is a great asset for planned documentary site. The sequence is situated only 50 m from the voivodeship road No. 395. So, reaching this geosite should not be a problem for potential tourists of all ages.

Conference Fieldtrip – day 1, part 2 (Stołowe Mountains)

Filip Duszyński
Department of Geomorphology, Institute of Geography and Regional Development, University of Wrocław, pl. Uniwersytecki 1, 50-137 Wrocław, Poland
e-mail: filip.duszynski@uwr.edu.pl

Friday, 22nd of September 2017
13:00–14:00 Ziębice – Karłów
14:00–17:00 Szczeliniec Wielki
17:00–17:30 Karłów – Kudowa-Zdrój
17:30–18:00 Kudowa-Zdrój
18:30–19:00 Kudowa-Zdrój – Duszniki-Zdrój

1. General information on Stołowe (Table) Mountains

The Stołowe (Table) Mountains (Fig. 1) are situated in the central part of the Sudetes, at the border between Poland and Czech Republic. The mountain range extends over a distance of 16 km in the NW-SE direction, being up to 7 km wide. The name of the Stołowe Mountains is strictly related to their distinctive appearance – they are a classic example of a stepped tableland, clearly reflecting strength differences between subsequent lithological units. The uppermost part of the tableland consists of remnant plateaus, with the highest mesa of Szczeliniec Wielki (919 m a.s.l.) and slightly lower but much more extensive Skalniak (915 m a.s.l.) and Narożnik (851 m a.s.l.) plateaus to the south. The planar surfaces of the table mountains are bounded by steep escarpments that descend towards the so called 'main plateau'. It constitutes the intermediate, most extensive level the of the tableland. From the north the main plateau is limited by the prominent northern escarpment that rises above the surrounding terrains

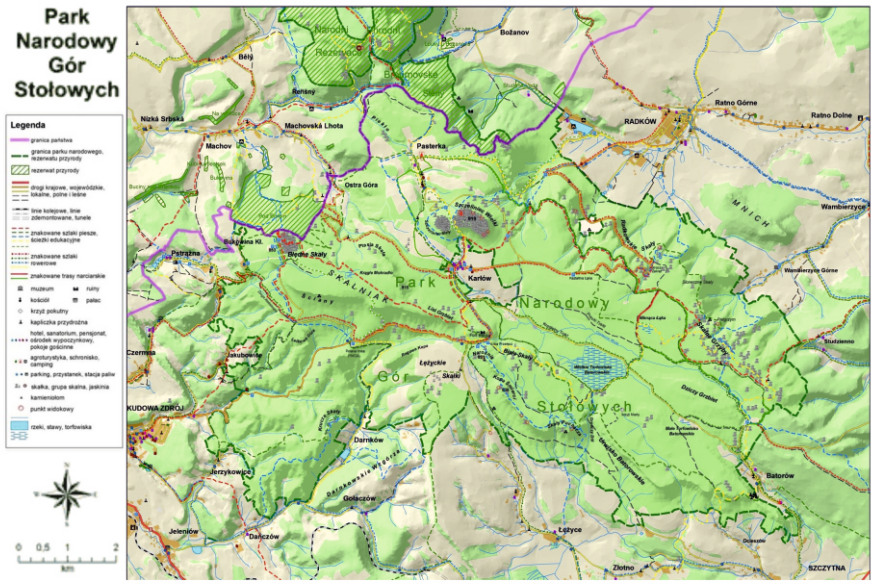

Fig. 1. Tourist map of the Stołowe (Table) Mountains National Park (source: http://www.pngs.com.pl/pl/turystyka/turyst3.html)

Geologically, the Stołowe Mountains are underlain by a nearly 400 m thick sedimentary succession spanning the interval from late Cenomanian to late Turonian. It consists of a sequence of alternating sandstones and fine-grained rocks (marls, mudstones, claystones and calcareous sandstones) originating from shallow marine environment. The sandstones can be subdivided into three lithological units. The upper one is quartz sandstone with siliceous matrix (late Turonian), the middle one is arkozic sandstone (middle Turonian), whereas the lowermost one is the weakest glauconitic sandstone (Cenomanian). The characteristic feature of sandstone layers in the Stołowe Mountains is their regular jointing pattern. Two vertical joint sets are present (they are striking approximately at 40° and 130°) together with the third one being close to horizontal. The joints divide sandstone into cubic compartments which usually reach the dimensions from 1 m to 10 m.

The upper and middle sandstones are much stronger than the complex of fine-grained rocks. Hence, they act as a caprock being able to support vertical cliffs up to 40 m high. Marls and mudstones are truncated by concave slope sections which occupy most of the escarpment longitudinal profile. The typical feature of middle and lower escarpment slopes is the presence of extensive sandstone boulder mantles that extend up to 1 km away from the cliff lines. The boulders are often scattered even on the nearly level foot slope zones.

The Late Cretaceous succession is underlain by Permian clastic sedimentary rocks. These are generally highly weathered sandstones and conglomerates that outcrop along the northern escarpment of the Stołowe Mountains. To the southwest the tableland is replaced by more 'typical' mountainous relief characterized by the presence of dense valley network. However, although geographically this part belongs to the same mountain range, it is developed within granite bedrock of Carboniferous age.

There is a general agreement that the dominant evolutionary pathway of the tableland is long-term escarpment backwearing. The process has been linked with mass movements – mainly toppling, block slides and rock falls – and, more recently, with non-catastrophic in situ disintegration of marginal parts of sandstone plateaus. In all these cases underground water flow at the contact between permeable sandstones and impervious fine-grained rocks is believed to be the causative factor.

2. Northern escarpment

When seen from a distance, northern escarpment is the most prominent feature of the Stołowe Mountains. The escarpment extends at a distance of c. 40 kilometres in the NW-SE direction, being present both in Polish and Czech side of the Stołowe Mountains (in Czech Republic it is known as Broumovské Stěny, the name given after the town of Broumov situated nearby). On Polish side the escarpment looks most impressive in the western part. There, it raises some 300 m above the surrounding terrains. The height of the escarpment systematically decreases to the east, reaching less than 100 m near the town of Polanica-Zdrój.

Northern escarpment is crowned by vertical rock walls, being 30-40 m high in the western part. The cliffs are built from arkozic middle Turonian sandstone (the so called Middle Jointed Sandstone) which overlies weaker sedimentary formations – mainly marls, mudstones and fine-grained sandstones. Further down, beneath the altitude of 550-500 m a.s.l., the escarpment truncates week Permian sedimentary rocks. Middle and lower slopes are covered by allochthonous boulders, often of considerable size. In some localities they form dense accumulations.

The characteristic feature of northern escarpment, not to be found elsewhere in the Stołowe Mountains, is the presence of large amphitheatres. These landforms are semi-circular embayments which are separated from each other by protruding spurs. They are believed to be analogic forms to sapping cirques known from the Colorado Plateau. The total number of amphitheatres in the Stołowe Mountains is 14, but those in the western part of northern escarpment are much more prominent. For example, the Pośna cirque above the town of Radków covers the area of 0,5 km^2 and is more than 220 m deep.

It is supposed that the occurrence of recesses is related to the lines of preferential water outflow. In such circumstances erosional processes act more efficiently, leading to frequent mass movements and quick disintegration of sandstone caprock. The lack of similar landforms within the southern escarpment of the Stołowe Mountains may appear as a curiosity but it is explained to be the result of preferential drainage to the north.

3. Szczeliniec Wielki

Szczeliniec Wielki (919 m a.s.l.; Fig. 2) is a classic example of mesa, with nearly level plateau surface bounded by steep escarpments. The table mountain raises some 150 m above the surrounding main plateau and is the highest and most popular summit of the Stołowe Mountains. From the geological point of view Szczeliniec Wielki is built of sandstone caprock that overlies weaker sedimentary formations. The sandstone is of upper Turonian age (the so called Upper Jointed Sandstone) and its thickness is around 70 m. The caprock may be divided into three parts of different characteristics. The lower-most portion is rather weak glauconitic sandstone that does outcrop within the slope. The middle one is massive quartz sandstone that supports impressive rock walls reaching up to 40 m, with well visible regular jointing. The upper part of sandstone caprock is characterized by the presence of cross-bedding structures of large scale. The complex of rocks beneath the sandstone slab comprises mainly of mudstones and claystones.

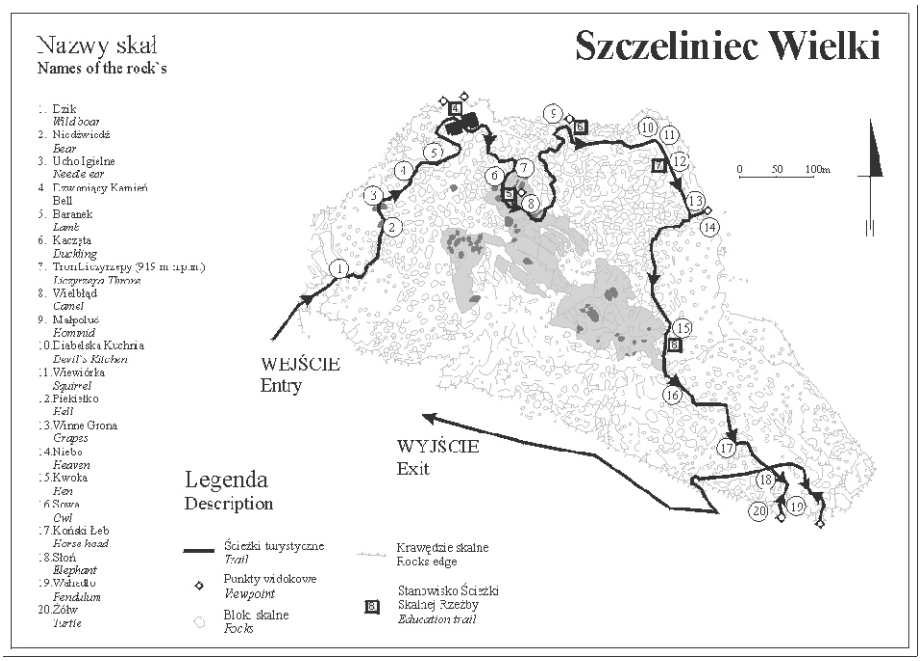

Fig. 2. Plan of Szczeliniec Wielki (source: http://www.pngs.com.pl/pl/turystyka/turyst3.html)

The top surface of Szczeliniec Wielki is characterized by the presence of tor-like features. They were carved from large-scale cross-bedded sandstone by long-term weathering. The tors often attain impressive appearance and hence are named as 'Camel', 'Great Grandfathers Chair' and many others. In the central part of the mesa narrow corridors and passageways are typical. They are clearly structurally controlled as they are developed along the system of vertical joints. It is noteworthy that many joint-bounded blocks are moved from their original position. It indicates the loss of support from beneath, possibly as a result of removal of weathered material.

Towards the northern margin of the mesa some best examples of mass movements in the Stołowe Mountains can be found. Among a series of deep clefts and open joints two are best known – Devil's Kitchen and Little Hell. The former is rather narrow and indicates the initial stage of tilting. The latter is much bigger – it extends over a distance of 100 m and its outer wall is inclined by 20° from vertical position. The presence of toppling phenomenon within the northern margin of Szczeliniec Wielki has at list three reasons. First, it is related to the fact that heavy sandstone slab affects underlying deformable rocks, causing their squeezing out. This, in turn, results in the loss of support for sandstone caprock. Second, in the northern part of the mesa one of joint sets is parallel to the cliff line which creates structural predisposition for block tilting. Third, Szczeliniec Wielki is drained towards north-east which causes both plastic deformations of underlying marls and mudstones and the erosional removal of material from the border between caprock and sub-caprock complex.

Not only toppling is responsible for escarpment retreat of the mesa. LiDAR-derived images leave no doubts that north-eastern slopes were once remodelled by rotational slide, too. However, it has been suggested recently that particularly important role might be played by slow processes of in situ disintegration of marginal parts of the mesa. The example of a cliff line section that turned into a chaos of joint-bounded blocks can be observed along the tourist trail to Szczeliniec Wielki.

The discovery and first exploration of Szczeliniec Wielki dates back to the end of 18th century. At this time, Prussian king Friedrich Wilhelm II decided to build the fortification at the newly established border between Prussia and Austria. He intended to make use of Szczeliniec Wielki for this purpose. After coming to the village of Karłów (Carlsberg at this time) he was guided to the top of Szczeliniec Wielki by local inhabitant, Franz Pabel. The king was so enchanted by the beauty of the mesa that he resigned from the plans of building the fortress. Instead of it, he decided to make Szczeliniec Wielki available to tourists and he made Franz Pabel responsible for this task. Pabel has built the stairs leading to the top of Szczeliniec Wielki for 23 years. In 1813 his work was appreciated by the next Prussian king Friedrich Wilhelm III, who honoured him with the title of official mountain guide – the first mountain guide in Europe. It is worth mentioning that the tourist trail in the rock labyrinth at the top of the mesa is also the work of Franz Pabel. In the 19th century the trail was extended to two deep clefts in the northern margin that were mentioned above. In 1845 the tourist lodge in the Swiss style was built on Szczeliniec Wielki – it is used until today.

Conference Fieldtrip – day 2 (Kaczawske Foothills)

Milena Różycka*, Piotr Migoń
Department of Geomorphology, Institute of Geography and Regional Development, University of Wrocław, pl. Uniwersytecki 1, 50-137 Wrocław, Poland
*Corresponding author: milena.rozycka@uwr.edu.pl

Saturday, 23rd of September 2017

8:15–10:30	Duszniki Zdrój – Dobków
10:30– 11:30	Visit to the Sudetic Educational House in Dobków
11:30–12:00	Dobków – Sędziszowa
12:00–13:30	'Organ pipes' at Wielisławka Hill (columnar jointing in rhyolite) + lunch
13:30–14:00	Sędziszowa – Czartowska Skała (Devil's Rock)
14:00–1 5:00	Czartowska Skała (Devil's Rock) – basalt neck and viewing point
15:00	Czartowska Skała (Devil's Rock) – Wrocław

1. General setting of the Kaczawskie Foothills – the Land of Extinct Volcanoes

The Land of Extinct Volcanoes is the name of a relatively small area (c. 1000 km²) comprised by 13 communes and two cities with district rights (i.e. Złotoryja and Jawor) that all belong to the Kaczawa Partnership (Partnerstwo Kaczawskie), the public-benefit organization established in the early 2000s for the purpose of the promotion and sustainable development of the region. Geographically, the Land of Extinct Volcanoes involves most of the Kaczawskie Foothills and Kaczawskie Mountains in the West Sudetes and a part of the Sudetic Foreland, with areal predomination of the former (Fig. 1). With the plethora of relicts of ancient volcanism from different geological periods, the region is unique in Poland.

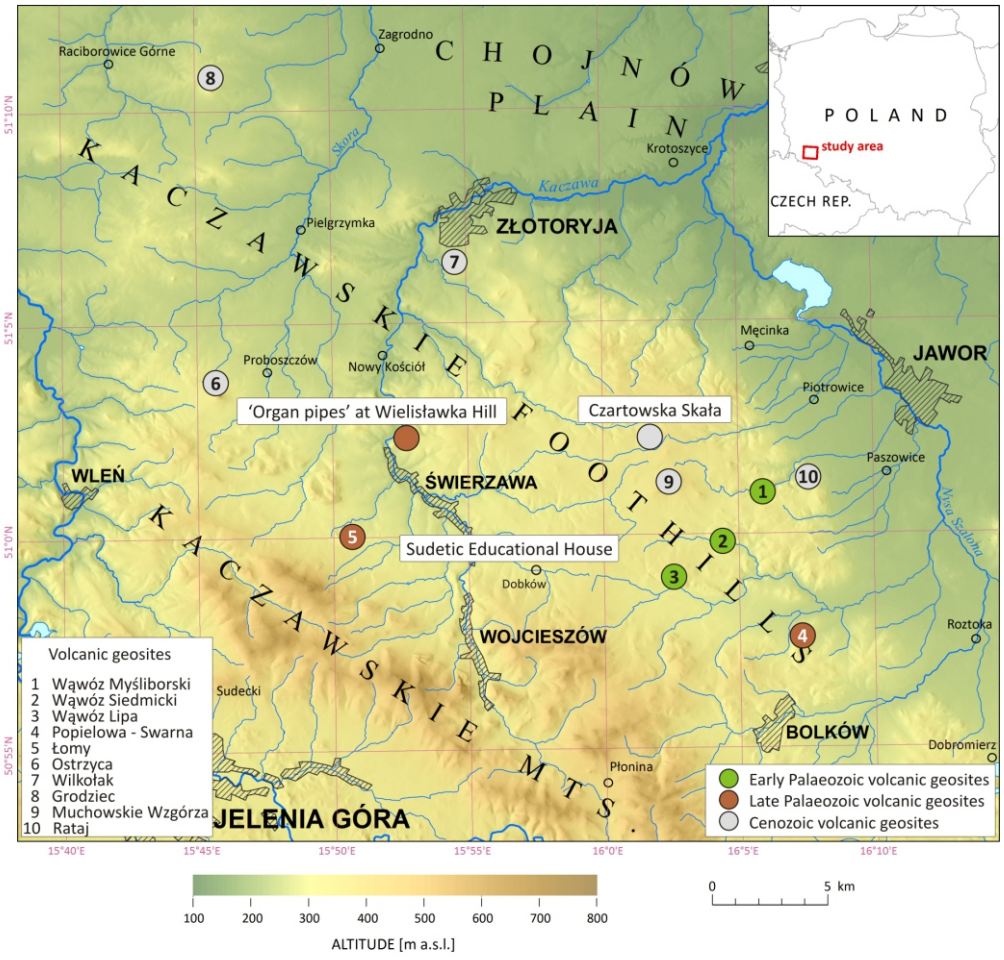

Fig. 1. The Land of Extinct Volcanoes with the location of the sites mentioned in this text

The region of Pogórze Kaczawskie (= Kaczawskie Foothills) is located in the north-western part of the Sudetes and is a low-altitude terrain of subdued relief (with altitudes hardly exceeding 450 m a.s.l.), locally enhanced by residual bedrock hills built of more resistant rock types and deeply incised sections of river valleys. Long known among professionals for varied geology and polygenetic morphology, for the last two decades it has been promoted as a geotourist destination, with relicts of ancient volcanism as one of the main assets. In tourist promotion the phrase 'Land of Extinct Volcanoes' is used and while it is not entirely correct from the scientific point of view, it highlights the unique position of the region in the country.

Bedrock includes pre-Variscan metamorphic rocks, mainly greenschists and phyllites, partly overlain by Permo-Mesozoic sediments of the North-Sudetic Basin, mainly sandstones. The eastern boundary of the area is marked by a distinct mountain front related to the Sudetic Marginal Fault, active since the latest Oligocene. In the Quaternary, during the Oxygen Isotope Stage 12, the area was reached and overridden by the Scandinavian ice sheet, which left behind a thin cover of glacial and outwash deposits. Issues of the possible existence of nunataks at the time of maximum ice extent and the magnitude of glacial erosion in the ice-marginal terrain have been debated and are far from being unequivocally solved.

In the geological history of the Kaczawskie Foothills volcanism occurred repeatedly. Three principal periods of volcanic activity are distinguished and broadly dated for early Palaeozoic (Cambrian–Silurian), Permian and Cenozoic. The oldest period was typified by submarine eruptions and effusions. These ancient lava flows of basaltic composition have been changed into greenschists and greenstones during the Variscan orogeny, although locally retain original pillow lava appearance. Distant age and subsequent burial and metamorphism preclude the possibility for any element of original effusive morphology to survive. Greenschists and greenstones build the ridges of the Kaczawskie Mountains, south of the Kaczawskie Foothills, and crop out in the eastern part of the latter (e.g. Wąwóz Myśliborski = Myślibórz Gorge, Wąwóz Siedmicki = Siedmica Gorge, Wąwóz Lipa = Lipa Gorge, see Fig. 1).

The second phase of volcanism in the region coincided with the end of the Palaeozoic era. Permian volcanic activity postdated the Variscan orogeny and, in contrast to the earlier stage, occurred in terrestrial conditions. Volcanism was bimodal, with rhyolites and trachybasalts as dominant lithologies. Pyroclastic deposits are sandwiched between lava flows and sheets in certain localities. In the Kaczawskie Foothills region remnants of Permian volcanic activity can be observed within the area corresponding to the North-Sudetic Basin (e.g. Wielisławka, Popielowa – Swarna, Łomy).

The last period of volcanism typifies the Cenozoic, with the oldest rocks K–Ar dated for c. 38 Ma and the youngest erupted c. 21 Ma ago. Volcanic materials are usually referred to as 'basalts', but various intermediate volcanic rocks can also be recognized. Most volcanoes erupted from craters, so that isolated, singular outcrops of Cenozoic volcanic rocks dominate within the limits of the Kaczawskie Foothills. These are remnants of former volcanic conduits leading to long eroded volcanic cones, but some occurrences are interpreted as plugs and others as probable subaerial flows. Columnar jointing in the basalts is common (e.g. Ostrzyca, Wilkołak, Czartowska Skała).

Volcanic rocks of the region vary in terms of their geomorphological significance, although in general, they are stronger than the surrounding non-volcanic rocks and form elevation of terrain. These may be a few kilometre long ridges on Early Palaeozoic greenschists (mainly in the Kaczawskie Mountains) or isolated domes, cones or rounded hills on younger volcanics. At a smaller scale, rocks of volcanic origin often form tors and crags, from a few to more than 15 m high. They occur not only in ridge and hillslope settings but are also present in gorge sections of fluvial valleys. Basalts may also form asymmetric crags, but the majority of basalt exposures in the region are artificial, in former quarries. Thus, it is important to note that although the geoheritage discussed here can be considered as volcanic, landforms built of volcanic rocks are not volcanic landforms in a strict sense, but owe their origin to differential denudation.

2. (Geo)tourism in the region

Although rich in geoheritage properties, the Kaczawskie Foothills remained overshadow by its close neighbour, the Karkonosze Mountains, which have been a major tourist destination in this part of Central Europe since more than 200 years. For many decades, tourism played a marginal role in the economy of the region; nevertheless, certain localities with volcanic rocks exposed at the surface generated local interest. These included places known for cultural geoheritage (e.g. Grodziec castle on top of a basanite plug), locations offering good viewing points (e.g. greenschist tors on the main ridge of the Kaczawskie Mts, top of Mt Ostrzyca) and exposures of particularly impressive columnar jointing (e.g. Wielisławka with its 'organ pipes').

More evident focus on volcanic geoheritage is observed since the 1980's, when thematic hiking trails were marked and the first popular science publications appeared. A few volcanic rock outcrops were declared protected nature monuments, and the establishment of nature reserves, although for the principal reason of biological conservation, ensured conservation of several further sites.

Nature reserves exist on three basalt outcrops, Mt Wilkołak (since 1959), Mt Ostrzyca (since 1962) and Muchowskie Wzgórza (since 2015), with the former established explicitly to conserve a unique outcrop of columnar jointing in basalt. Another two outcrops of impressive columnar jointing, at Mt Czartowska Skała and Mt Rataj, are protected as nature monuments. Finally, nearly the entire eastern part of the Kaczawskie Foothills region is included in the 'Chełmy' Landscape Park (established in 1992), and volcanic heritage has been given due prominence since its setting up.

The last decade has witnessed increased and more coordinated activity towards the promotion of regional geoheritage, especially volcanic heritage, that involves publication activities, guided tours, erection of information panels, conferences for local communities, international partnership and opening of a regional visitor centre dedicated primarily to volcanic past of the region (Sudetic Educational House). Plans to apply for the status of a UNESCO Global Geopark are being considered, and systematic inventory of geosites is one of the goals for the near future.

In a recent project aimed at economic development of the area and carried out since 2004 by the Kaczawa Partnership (Partnerstwo Kaczawskie), the phrase 'Land of Extinct Volcanoes' has been chosen as a label, through which the region would be identified. As sole emphasis on geoheritage was seen as insufficient in tourist promotion of the region, parallel activities have been undertaken to revive the area and to increase the identity of place among its inhabitants. Of particular interest are the development of rural tourism, revitalization of traditional village architecture, promotion of local handicraft and 'endangered professions'.

3. Fieldtrip sites

I. Sudetic Educational House in Dobków

In the last 5 years or so, various activities have been undertaken in the region in order to increase its visibility as a tourist destination in general, and to promote geoheritage-based tourism in particular. They are carried out by the Kaczawa Partnership (Partnerstwo Kaczawskie), the 'Chełmy' Landscape Park, and independently by some local players and enthusiasts. For a considerable part of these developments, volcanic heritage is central.

An ambitious project finished recently has been the adaptation of an old traditional farmstead in Dobków—one of the villages in the region—for a centre of regional education within which geoheritage in general and volcanism in particular are the central themes. The interactive, multimedia exposure was opened in August 2015 and was visited by more than 3 000 guests during the first month.

II. 'Organ pipes' at Wielisławka Hill

Located on the right bank of the Kaczawa river, the double-peaked hill of Wielisławka (372 and 369 m a.s.l.), with its dome-like morphology, is the most spectacular element of the Late Palaeozoic volcanic heritage in the region. Its western slopes are undercut by a disused quarry, active in the 19th century, with rhyolitic walls up to 30 m high and, thus, seen from a long distance. The unique feature of the exposure is impressive columnar jointing. Fan-arranged near-vertical joints give the quarry outcrop an appearance of a gigantic rock organ pipe. The second, less evident, set of joints is perpendicular. Due to exceptional scientific and educational value the former quarry has been declared a nature monument.

The 'Trail of Extinct Volcanoes' connects the site with the other sites of volcanic geoheritage nearby. Additional, ecological and historical values of the site accounted for the creation of a nature and geological trail 'Around the Wielisławka Hill' in 2007. It presents rock exposures, caves, adits, remnants of medieval hillfort and castle and a variety of flora and fauna as well.

III. Czartowska Skała (Devil's Rock)

The basaltic conical hill of Czartowska Skała (Devil's Rock) is a prominent local landmark, rising above a nearly flat, open terrain in the water divide setting in the eastern part of the Kaczawskie Foothills. Surrounding rocks occupied by fields and meadows are mainly greenschists. The hill is among the highest in the region (468 m) and a good vantage point, with the view towards the Karkonosze Mts in the distance, weather permitting. An old two-tier quarry undercuts the western, southern and eastern slopes of the hill, revealing a simple fanlike pattern of

columnar jointing, with individual columns more than 10 m long and 15–20 cm wide. It is assumed that volcanic activity occurred c. 20 million years ago in a single phase and Czartowska Skała is a typical neck. The 'Trail of Extinct Volcanoes' connects Czartowska Skała with other sites of volcanic geoheritage nearby. The outcrop of impressive columnar jointing is protected as a nature monument, has been partly cleared of vegetation recently, and a specialist geology-focused information panel has been erected.

Multicultural heritage of Wrocław as the basis for the tourist product – selected examples

Krzysztof Widawski
Department of Regional Geography and Tourism, Institute of Geography and Regional Development, University of Wrocław, 1 Uniwersytecki square, 50–137 Wrocław, Poland
e-mail: krzysztof.widawski@uwr.edu.pl

Introduction

Urban tourism is an important concept linked with the material resources of the culture. City as a tourist destination is known for ages. One of the most important aims of traveling in the 18th century (grand tour) were the big cities. Both English and continental aristocracies went to the southern Europe with special interest for the Italian cities like Rome, Florence, Venice, Genova or Naples. Their attractiveness was defined by the material heritage and the level of cultural development of their inhabitants (Kowalczyk, 2001).

Contemporary urban tourism is defined as a tourism practiced in the urban environment with the multiple motivations like the sightseeing of the monuments or the professional activity with the congress, business or conference tourism. This kind of migration flourishes, and cities as the zones of different infrastructure fulfill those different needs. One of the motivations for the tourist migrations to the cities is leisure. The concept embraces a visit in leisure park, theatre or opera, a night in the casino or afternoon shopping (Badulescu et al., 2005).

Urban tourism as the base of the tourist product blends perfectly with the changes of the length of tourist stay in the last decades. Contemporary society (usually called post-industrial) travels more often per season but stays are shorter. At present a European citizen needs to be more flexible in managing his time both professional and spare. For tourism it means increase of the number of journeys in a year but each tourist stay is reduced in time. The weekend tourism is more popular than the traditional long term stay. A tourist answer to such needs is an offer called city break – short three or four days lasting trips to the big touring centers where the main product is linked with the material heritage but also events or just shopping. It is often difficult to define the main purpose of the visit since the monuments, gastronomy or shopping are of equal importance and each can be a part of the urban tourist product (Widawski, 2005).

A tourist product in the common sense is anything that a tourist is willing to pay for. Mendlik (1995) defines a tourist product sensu stricto and sensu largo. In the first case a product is everything a tourist buys separately or as the service and in the second case – everything the tourist experiences from the moment of home departure until arriving home after the journey.

Product sensu stricto is a product built on the material elements like tourist values or the infrastructure and on the immaterial goods like the services. The quality of the tourist product is influenced by the organizer of the offer. The values themselves are not enough to create the product. They should be presented in the most attractive way to the potential client.

One of the most important tourist values that a city can offer are the cultural goods (Gaworecki, 2000, Lijewski et al., 2008) – the elements of the material heritage like the monuments and historical buildings. They could be the main part of the tourist offer or can constitute an important item of the complementary offer.

In this matter Wrocław is one of the most important historic towns not only in the region but in the whole country. It seems natural to compare it with Cracow, Poznan or Warsaw. It is a great sightseeing center, a combination of different values of a high range. Cultural values are the result of a long and complicated history the city has gone through. Its contemporary tourist attractiveness is based on multicultural values. In this paper the attention will be paid to two main kinds of products: city thematic routes and different kind of events.

History of Wrocław as a cultural background

The geographical location is crucial for the multicultural phenomenon: Wrocław is situated in Central Europe or more precisely in Lower Silesia region on the banks of Odra river where the Amber and Kings Routes crossed. Such an attractive position had to cause some problems with identity. In its history the city used to belong to:

- Great Moravian State,
- Piast Poland,
- Bohemian Kingdom,
- Habsburg Monarchy,
- Kingdom of Prussia,

- German Empire,
- Weimar Republic,
- the Third Reich.

Since 1945 – a year when the world most cruel conflict ended – Wrocław came back to its roots and became a part of Poland once again. Through ages Wrocław was known by the different names like: Wrotizla, Wretslaw, Presslaw, Wratislavia, Breslau, Wrocław. The cultural heritage preserved in the city that constructs contemporary urban landscape can be divided, concerning its origin, into five main groups associated with five cultural periods of the city development: Piast, Bohemian, Habsburg, Prussian and German period and contemporary Poland.

Piast period started in 990 year – times of the rule of duke Mieszko I – and remained Polish untill 1335. In the year 1000 Wrocław became the seat of Bishop. It was beginning of the development of material culture linked with the catholic religion expressed in many ways – the most visible ones are buildings like churches and cloisters. From that time it is worth mentioning the cloister of the Benedictian order in Ołbin, Augustian order and its church of the Holy Mary on the Sand. In those days due to the dynamic development of the city founded on the German law the German culture started to be more visible in the landscape of Wrocław e.g. one of the biggest town halls in Poland. In that period the surface of 133 ha was inhabitated by 14,000 persons that made Wrocław one of the biggest towns in this part of Europe. It is quite difficult to show the precise start of the Bohemian period. One could say it is form the very beginning – as the legend says the name of the city was taken from the Czech knight Vratislav who died in 921. The province was regained from the Czechs by Piasts in 1335. The material witness of that time is e.g. Saints Stanislaw, Vaclav and Dorothy Church. Czech culture can be seen also in the many monuments and chapels dedicated to Saint John of Nepomuk – clearly present both in the Silesian landscape as well as in Wrocław.

Crucial for the Habsburg influence was the year 1454 – a year of the incorporation of Wrocław into the Habsburg empire where it remained until 1741. This political situation corresponds with the baroque style in the architecture well represented in Wrocław landscape. Jesuits Academia (University of Wrocław) built in 1702 contains the real baroque masterpiece i.e. Leopold's Hall associated with the University church dedicated to the Holy Name of Jesus. Although the cathedral belongs to the gothic style, one of the important chapels of baroque style of the city (Elector's Chapel) is part of this main Wrocław church. It is worth mentioning that at about that time the reformation spirit came to Wrocław. The protestants however usually used the already existing churches, formerly catholic, among them of St. Elisabeth and St. Magdalene.

As the result of the defeat in the Silesian wars Habsburg empire lost its northern part i.e. Lower Silesia with its capital in Wrocław which now became Prussian (from 1741 till 1871 when Kingdom of Prussia became a part of German Empire till the end of WWI). In 1918 incorporated into Weimar Republic lasted till 1933 to start a new tragic chapter of its history – III Reich. Anyway city remained German practically till the end of World War II. Due to the, historically speaking, quite fresh presence of German elements in the landscape, it is obvious that this material culture dominates in the urban landscape of Wrocław. There was however a period (quite short) of the French influence here: Napoleon's brother sieged the city and after the conquest, ordered to demolish the medieval walls which gave impulse to the city development. At the place of the walls the system of the green promenades appeared. The changes in the city can be observed in every part, mainly in the old town and downtown as in case of the liquidated moat where in 1811 the first botanical garden was founded by professors Heyne and Linke. Some other important objects in Wrocław belong to this period like the Centennial Hall – an unique structure so important for the history of the architecture that it become the first and only UNECO heritage list inscription in the city and one of three existed in whole region. Other examples are bridges that Wrocław is famous for as e.g. Kaiserbrucke (Grunwaldzki Bridge) – a first hanging crossing in the city, or the Central Railway Station in the Tudor style form the mid of 19th century.

After the World War II the main task for Poland was to rebuild the destroyed parts of the town, some of them were demolished in 90% of its substance. Nowadays the multicultural character of the city is stressed as the main value to take into account while creating the urban structure (Widawski, 2012).

History of the city – main events:

10th century – Czech rule – named by the Czech Prince – Vratislav; last decade of the century – Polish country
Year 1000 – Wrocław as seat of Wrocław diocese
13th century – integration of the settlements of the Odra River Islands
1261 – Town location based on the German law

1335 – according to the treaty after the death of Prince Henry Wrocław principality becomes a part of Czech kingdom
1526 – after the death of Czech king Silesia together with Wrocław becomes a part of Habsburg Empire
15th and 16th century – new fortifications started to be built
1523 – Wrocław experiences the Reformation
1702 – Emperor Leopold I founds Jesuits Academy with two faculties
1741 – as a result of Silesian wars Wrocław becomes a part of the Prussia Kingdom and became one of the three capitals
1807 – French occupation - demolition of the defensive walls
1811 – first state University – University of Wrocław
1842 – first railway connection Wrocław – Oława; city starts to be an important
1877 – first tramway pulled by horses (in 1893 electric tramway)
I World War – Wrocław avoids the demolition
2nd and 3rd decades of 20th century – development of the city districts: Sępolno, Biskupin, Muchobór
World War II until 1944 – number of inhabitants increases up to almost a million
1945 – Festung Breslau (Breslau Fortress) defends from February till the 6th of May 1945. City was destroyed in 70%
1945 – Exchange of the inhabitants upon the Posdam Conference – Polish administration and Polish inhabitants from the central Poland and Lwów area
1948 – Recovered Territories Exhibition and Worlds Congress of the intellectualists visited by delegations of 46 countries
Communist regime – reconstruction and development of new districts
August 1980 – one of the most important centers of the Solidarity movement
1985 – opening of the Panorama Racławicka painting
1990 – new reality, recovery of the original herb of the city linked with its history in German times, revitalization of the city architecture (Antkowiak, 1991; Wrzesiński, 2006)

Cultural values of Wrocław

The tourist potential of Wrocław is unique. According to Wyrzykowski (Wyrzykowski et al., 2005) the material potential of the city can be divided into three main categories concerning its value and attractiveness to tourists. There are buildings and structures of highest, high and average attractiveness. The table below presents the complex presentation of the most important material cultural values.

Tab. 1. Cultural material values of Wrocław

Type of attraction	Number of units	Highest	High	Average
Churches and sacred buildings	53	7	28	18
Public buildings	46	6	19	21
Fortifications and bunkers	17	1	8	8
Technical structures and devices	40	2	19	19
Tenement houses and residential buildings	26	1	20	5
Monuments	38	4	20	14
Museums	16	5	7	4
Total	236	26	121	89

Source: own elaboration based on Wyrzykowski et al., 2005

Among the most important in the cultural landscape due to its history, due to its tradition are the religious buildings, mainly churches. Although Wrocław is called a city of one hundred parishes not all are of the tourist importance nevertheless this kind of buildings play the most important role for cultural tourist product. Among 53 units of tourist value seven are recognized as the ones that could attract the tourist movement by themselves. These are:

- St. Mary Magdalene Church – 1243–1260, architectural style: Romanesque with Romanesque portal from 12th c. from Ołbin Monastery, gothic; bridge connecting the church' two towers (so called Witches Bridge);

- Holy Name of Jesus Church – 1689–1698, Baroque style, altar designed by Tausch, some sculptures made by Mangoldt, one of the best copies of Pieta from 19th c.;
- St. Clare's Church – 1257, rebuilt 1693–1699, includes two church interiors of St. Clare and St. Jadwiga's; inside a mausoleum of Piast dynasty members: Henry III the White, Henry V the Heavy, Henry VI the Good;
- St. Adalbert's Church – 1251–1330, 15th c., 1711–1730, one of the biggest gothic temples in Wrocław, a baroque chapel from 1715–1730 dedicated to blessed Czesław, some sculptures made by Mangoldt;
- Holy Virgin Mary Church – 2nd half of 14th c., the biggest gothic church in the city: 78 m length, 25 m width and 24 m high inside;
- The Holy Cross and St. Bartholomew's Church – 1288, 1350–1400, first two storeys' church in Silesia built of the Latin cross plan. Both towers were built in 14th c.;
- St. John the Baptist's Cathedral – 1240–1272, 1300–1360, 17th c. and 18th c., the gothic chapels built till 1408, towers finished in gothic style in 1416 around 56 m high, between 1683–1732 structure got the baroque elements together with chapels (Antkowiak, 1991a. 1991b, Kotkowska, et al, 1997).

The structures presented above are of different styles but mainly they are gothic and around half of them are situated in the biggest religious complex of Wrocław – Ostrów Tumski (considered the oldest part of the city) and an official seat of the bishop of Wrocław diocese. Although the synagogue – the only one left – is not of the highest range among the religious buildings it is worth mentioning due to its importance for the cultural product of Wrocław. The White Stork Synagogue was built between 1827 and 1829, designed by Langhans. During the WWII the building became warehouse. It was rebuilt between 1995–2005 and now belongs to the Jewish community of Wrocław.

The number of public buildings of tourist importance is relatively high especially if compared with the previously presented category and is almost equal if the highest mark is considered. As it can be expected most of them are concentrated in the Old Town district or the downtown area. The six most important structures are:

- Old Town Hall, built in the gothic style between 12th and 16thc. and renovated in 19th c.,
- The main building of the University of Wrocław, most outstanding example of the baroque civil structure in the city built 1728–1742, with Aula Leopoldina and Oratorium Marianum baroque halls,
- The Centennial Hall, built 1911–1913,
- The Opera, 19th c. 1837–1841 and 1871–1872,
- The Main Railway Station, built between 1855–1857 in Tudor's historic style,
- The Olympic Stadium, whole complex built in two stages: 1925–1929 and 1936–1939.

The gothic or baroque constructions are spread all over the city and because of that are the most important for tourism. Apart from this the Centennial Hall as the only object in Wrocław inscribed into UNESCO world heritage attracts many tourist too.

Wrocław used to be a fortified city since medieval time until early 19th century but now just a few structures worth mentioning are left. There is only one structure of the highest value because of its tourist attractiveness – Town Arsenal, at present the Military Museum. The structure existing from 1459 became the Arsenal in 16th c. moved from the cellars of the Town Hall. The object is of rectangular shape with 73 × 55 m yard inside. The eastern wing (the newest one) was added in 17th c. (Burak, 2012).

Among the 40 technical structures and devices just a pair got the highest possible range. These are:

- The suspended Grunwaldzki bridge built between 1908–1910,
- The steel Steeple – built for the Recovered Territories Exhibition in 1948.

Other structures important for the tourist attractiveness of Wrocław are the tenement houses and residential buildings. It is worth mentioning that in this group just 19% of the potential presented have an average range – the lowest among the values. The majority of the structures are at least important for tourists and one of them on the other hand is recognized as the most important for tourist attractiveness of the city. It is a western frontage of Town Square. Mainly due to the existence of the houses like:

- The House Under the Griffins,
- The House Under the Golden Eagle,
- The House Polish Court,
- The House Under the Golden Sun,
- The House Under the Blue Sun,
- The House Under the Seven Electors.

Finally among the most important cultural values in Wrocław there are four monuments of the highest range: Aleksander Fredro monument from 1879, brought from Lwów after WWII and placed on the Market Square, the replica of Pillory from 1492 on the Eastern side of Market Square, St John of Nepomuk baroque column from 1732 at the front of the Holy Cross Church in Ostrów Tumski and Monument dedicated to the Victims of Katyń in Słowackiego Park from 2000.

In the category of museums five are recognized as ones of the international range. These are:

- National Museum in the former Silesian Parliament House from 19th c.,
- Panorama Racławicka – the biggest painting in Poland painted in 1894 in Lwów, brought to Wrocław and exposed in 1985,
- Historical Museum – the Old Town Hall opened in 1968,
- Museum of the University of Wrocław with Aula Leopoldina, Oratorium Marianum, Mathematical Tower opened in 1992,
- Museum of Cemetery Art – formerly the Old Jewish Cemetery opened in 1987.

All the mentioned objects are part of many tourist cultural products designed for the tourists in order to make the cultural potential of Wrocław more attractive and more visible. To be successful city has to elaborate a proper strategy of tourism development. Among many ideas or products worth mentioning, for this paper, are the examples that take into consideration the cultural potential in its diverse character.

Tourist products of Wrocław in the Strategy of Tourism Development

There is a slight problem with defining of what way the cultural potential should be used for the tourist purposes. One of the ideas that undergo the process of realization are the tourist products of Wrocław proposed by the local authorities. All of them are based both on the natural and cultural values. It is worth recognizing how the cultural potential of this historic city may be used. The strategy of the tourism development of Wrocław, proposed and approved by city council focuses on six tourist products:

1. City break – Wrocław the Meeting Place,
2. Multicultural,
3. Business tourism, congresses tourism and incentive tours,
4. Fun and Entertainment,
5. Recreation in the city,
6. Physical condition and beauty.

All these products are part of the Strategy of the tourism development in Wrocław realized during the last eight years within the Strategic goal III, Operational aim III-1, Operational activity III-1.1 – Cultural tourism, Task III-1.1.1., III-1.1.2, III-1.1.3, III-1.2.1, III-1.2.2, III-1.3.1 (www.turystykadolnyslask.pl).

Every product according to the strategy is based on different assumptions. These assumptions for the first product are:

Tab. 2. Tourist product of Wrocław "City break – Wrocław the Meeting Place"

Main purpose of visit		City Break – Wrocław the Meeting Place, sightseeing of the city, sightseeing tourism
Elements of product	**Values**	Monuments of the city (Ostrów Tumski, Old Town) Viewpoint on the historical buildings: cathedral, St Elizabeth church, Mathematical tower Recreation zones (parks, gardens, boulevards, Odra islands) Events (Vratislavia Cantans, Wrocław Non Stop and o thers) The city night illumination Diverse leisure and gastronomy in the city center City's atmosphere (young people, active center of business and academic education) Legends of the city, artistic life, monuments of the history
	Infrastructure	City well communicated with good access to the main tourist values, parking places A large number of the gastronomy and trade units, two tourist information points in the Market Square A number of the regional products linked with Wrocław Local authority engagement for the seasonal look of the city (holiday times, celebrations etc.) Existing base of the tourists services for tourist guides to bike rental
Important features of the product		Diverse forms of passing the spare time, Usually 2 to 4 days visits, in case of foreign tourist even till one week combined with the visiting the neighbourhood of city
A product placement in the city space		Market square and surroundings, Ostrów Tumski, Szczytnicki Park, Japanese Garden, Centennial Hall, Zoo Garden and Olympic Stadium, Odra islands
Possibilities of the product's development		Combination with the active forms of recreation Proposal of the thematic routes Development based on the cyclical thematic events Combination with the cycling and water routes of the city
Target groups for product		National and international tourists, students of the other academic centers, businessmen, multigenerational families, individual and group tourism
Potential value of the product		High quality, the increasing tourism movement in the near future caused by the increase of the number of tourist attractions and the security in the city

Source: www.turystykadolnyslask.pl, *Strategia…*

The proposed product – "City break – Wrocław the Meeting Place" seems to be a successful one. The idea of the product was based on two main elements:

- Wrocław, due to its history, is a place of meeting of different cultures which can be a good excuse for creation of the product based on this multicultural potential,
- according to the research Wrocław is a transit tourist destination offered by Polish tour-operators as a place to stay for no longer that 3 days and 1 – 2 nights and the usual sightseeing package with the assistance of the professional guide takes between 3 to 5 hours (www.dolnyslask.pl, *Strategia rozwoju turystyki dla Wrocławia…*).

Another tourist product of Wrocław that uses its multicultural potential is called "Multicultural".

Tab. 3. Tourist product of Wrocław: "Multicultural"

Main purpose of visit		Sightseeing of the city, cognition of different cultures, culinary tours, shopping (local products of the local artists and craftsmen)
Elements of product	**Values**	Religious monuments Cultural events Festivals Places of leisure – clubs and pubs Meetings with the representatives of different cultures Restaurants offered the dishes of the national cuisines linked with Wrocław
	Infrastructure	Hotels Restaurants Pubs Cultural centers Workshop of artists and craftsmen Low cost airlines Railway transport
Important features of the product		Product that prolongs the stay of tourist in Wrocław Visits for the exact events – festivals or of religious character Thematic stays dedicated to the artistic life of the district Culinary trips
A product placement in the city space		Jewish quarter in the Old Town Synagogue Evangelic Church Orthodox Church of St Barbara Catholic church of St Anthony form Padua Market Square with its restaurants offering the national and minorities cuisines
Possibilities of the product's development		A niche events – festivals, events of the national minorities, concerts and art shows of the young artists
Target groups for product		Cultural tourism fans Tourist of the nationalities linked with Wrocław Weekend tourists Shopping tourists Culinary tourists
Potential value of the product		Potentially high value of the product – a chance for the repetition of the Kazimierz district (Cracow) success

Source: www.turystykadolnyslask.pl, *Strategia…*

These two products described above use the cultural potential of the city in the highest grade. But other four offers of Wroclaw authorities also take advantage of this background although in the complementary way. In the "*Business tourism, congresses tourism and incentive tours*" among the main values of the product the concentration of the cultural values to be visited in the Old Town and Ostrów Tumski is mentioned. Also the architectural uniqueness of the main congress centre of Wrocław – Centennial Hall together with its neighbourhood – Japanese garden, Szczytnicki Park and Zoo Garden are pointed. The historic center of the city is mentioned also in the product "*Fun and Entertainment*" where Market Square is presented as of great cultural value serves as the meeting point for people searching for fun in the pubs, clubs and while participating in one of the many events offered by the city. The "*Recreation in the city*" although focuses on the active form of spending time in the capital of Lower Silesia offers a different way of perception of the cultural value treating it more like a pleasant landscape to be seen while practicing the recreational activities. In this product the cultural values are a good excuse for a walk, a kind of stroll among the buildings of Old Town, mainly Market Square or Japanese Garden. A product that almost entirely avoids the theme of cultural values is "*Physical condition and beauty*". As the main values the infrastructure for beauty & spa is presented. The representative attractions are new spa centers and wellness, fitness clubs and plastic surgery

centers. The only place where the cultural value is mentioned is Olympic Stadium but mainly as the spa complex where the historic aspect is rather not worth mentioning.

The cultural products for tourist visiting Wrocław have a stable position in the tourist development of the city. The SWOT analysis for Wrocław recognizes the strong points of its tourist attractiveness. Among the crucial 14 ones for the development the *reach cultural offer of the city, or multicultural character that open the city for the cultural meetings and enhancing the ethnic tourism* are mentioned. More detailed elements point the diversity of the architectural styles with the most important representation – Centennial Hall of the UNESCO list. All that can be, in the opinion of the authors, a good background for the creation of the new cultural city routes. As the strong point the recognisability of the Market Square and the tenement houses of the Old Town is stressed. Finally as a unique value in the Poland and Europe are the bridges of Wrocław which expresses the specific character of the city – a great number of 117 speaks for itself.

The strong point of the tourist attractiveness is, paradoxically, a lack of such. Just two of them are mentioned:

- Lack of cultural routes that would join the material objects with the immaterial cultural goods creating the linear tourist products,
- Relatively poor cultural offer in the low season (winter) that doesn't respond the tourists expectations.

Another quite interesting point of chances in SWOT analysis also refers in some way to the cultural potential of the city – without stressing the existing values the text presents a brand new chance for Wrocław – the relatively numerous industrial potential that could be soon the beginning of the development of new form of tourism – industrial tourism.

Tourist product of Wrocław – good practices

The presented city tours are just one of the proposals but significant and most influential because they are offered on the official website of Wrocław as representative presentation of the town's heritage.

Tab. 4. Urban cultural routes

Tour name	Description	Additional information
Quick Wrocław	The most beautiful monuments of the capital of Lower Silesia, the walk in the center of Wrocław, Old Town, Ostrów Tumski, Odra Promenade	Guided tour, 2 hours
Classic Wrocław	The most precious monuments of Wrocław from University building (Aula Leopoldina, Oratorium Marianum, Mathematical Tower), cathedral with baroque chapels	Optional visit in Panorama Racławicka and break in regional restaurants, Guided tour, 3.5 hour
Medieval Wrocław	Mysterious Wrocław. The most beautiful Roman and gothic monuments of the city, visit of Town hall, cathedral with the tower	Guided tour, 3.5 h, optional coffee break and visit in the Piast Mausoleum
Baroque Wrocław	The most beautiful baroque monuments of the city – University with Aula and Oratorium and baroque chapels of the cathedral	Guided tours, 3.5 h., optional coffee break and visit in the Royal Palace
Former Breslau	Travel in time to Wrocław before WWII. A walk with the photo of the old Wrocław form the beginning of 20th c. the most beautiful monuments form this period	Guided tour, optional visit in University and coffee break
Centennial Hall and fountain show in Pergola	Visit in the hall, Japanese Garden. Fountain show	Guided tour, optional visit in ZOO and cruise by the Odra river

Tour name	Description	Additional information
Wrocław Jewish route	Visit in the Jewish district, synagogues, old and new Jewish cemetery , Edith Stein house	Guided tour based on the old photos of the city
Wrocław by bike	A biking tour through the city center, Centennial Hall, Szczytnicki Park	For groups of 10 or 20 persons, guided tour, full bike service, 3.5 h
Wrocław by night	A night walk in the center of the city, legends and mysteries, meeting with lamplighter	Guided tour, optional cruise by the Odra river by night
Route of the Dwarfs in Wrocław	Sightseeing with the thematic map presenting the seats of the different dwarfs within the Old Town	A tour for the children, optional map of the dwarfs, guide trained for the children tours
Legends of Wrocław	Legends of the city for young people, the oldest monuments of the city and its mysteries	Guided tour, 2 h
Wrocław for seniors	Route of the most important monuments in the city: University, cathedral, Panorama	For groups, 1 h, optional a cruise by

Source: own elaboration on the base of the Internet resources

The presented 14 different thematic routes concern the same cultural potential and are intended to present Wrocław as a whole from different angles. Two main subzones of the tourist penetration embrace all the potential:

- Old Town together with Ostrów Tumski,
- Centennial Hall zone.

The first concentrates on the most important monuments of the city that witnessed its historical development. The second one although younger (within the border of Wrocław since 19th c.) is significant due to its uniqueness – the main attraction is based on the world wide known range – a UNESCO inscription.

In the case of Old Town zone almost every offer (with just one exception) starts, goes through or finishes in the Market square presenting all tenement houses surrounding the town hall – the most important dominant of the square. In nine routes the main building of University and the University church are present in both possible ways – with detailed guided visits or just admired from the outside. It is similar in case of the cathedral and Holy Cross and St. Bartholomew church – in ten out of 14 routes one can visit both churches. There is no point to quote all possible monuments to be visited on the way through Wrocław as each time it is the same list – the main problem lays in a way of presenting it.

Certainly a standard way of sightseeing of the monuments remains still the most popular one but there are also others – some of them even surprising - presenting the same value from a new point of view. Such an interpretation of the product gives it a different meaning and makes it more attractive which provides a concrete income for tourism due to the prolongation of the stay and this in turn brings growth of the local society welfare (Freeman, 1977). There is a strong intention (also in Wrocław) to attract people by interpreting in many ways the same cultural value which is usually heterogenic in its character. A good example of this phenomenon could be the Cathedral. It is a structure of religious provenience built through ages in the mixture of styles. Below there is a sample of 14 different thematic routes cathedral serves for:

- *Medieval Wrocław* – due to its main structure, built in gothic style;
- *Baroque Wrocław* – the most important, this time, are the chapels of this style: chapel of the Holy Sacrament, Electoral Chapel or chapel of St. Elizabeth;
- *Former Breslau* – cathedral with its tower presented also as a good viewpoint – a chance to watch the former Breslau for the birds view;

- *Wrocław by night* – Cathedral as an excuse for the dark tale about the "head in the wall" and the illuminations of the cathedral presenting known structure in a different way (and light!);
- *Route of the Dwarfs in Wrocław* – one of the most important buildings of Wrocław presented to children through the most peculiar inhabitant of Ostrów Tumski – a dwarf named Tumski;
- *Legends of Wrocław* – cathedral as an excuse for the legend about Dumpling Gate and about John the Babtist;
- *Wrocław for seniors* – cathedral, or Ostrów Tumski, as a good starting point for the cruise by the Odra river.

Finally the cathedral can be a good excuse for the special events that happen during the season – a visit of the church, its catacombs and other places no accessible for the regular tourists through the year. This event is called Night of Churches.

This leads us to the specific cultural value offered by Wrocław – cultural events. Wrocław seems to be one of the best equipped cities in Poland in this matter. The offer for tourist is divided into categories:

- Music festivals – 32 cyclical events of a different range from regional like Tumskie Evenings to the worldwide known like International Festival Wratislavia Cantans,
- Theatre festivals – 11 festivals like Review of the Actor's Song or Brave Festival presenting the forgotten or threaten cultures,
- Film festivals – 4 festival, among them, internationally recognized International Film Festival T-Mobile New Horizon,
- Literature festivals – 7 different meetings, mainly of the national range with the exception for the International Festival of Story and International Festival of Detective Stories,
- Interdisciplinary festivals – 12 different festivals devoted to different activities like science Lower Silesian Festival of Science, Festival of Jewish Culture SIMCHA, Festival of Wrocław, or Nights of Churches,
- Festivals of art – 5 festivals, among them International Drawing Contest (www.wroclaw.pl).

Although the official website of Wrocław presents just 71 festivals it is worth mentioning that this number describes just cyclical events with its traditions. But it is just a small part of the total offer that can embrace hundreds of different meetings, exhibitions, shows. Just picking one day from the high season, for example 19 of July 2014 on the list of events of a different kind in Wrocław there are 69 of them! (http://pik.wroclaw.pl/d2014-07-19).

Conclusions

Wrocław as one of the big cities in Europe (34th place) with so complicated history offers the tourist product based on its culture that maintain the European level what can serve as a good start point. There are the products of a different type but quite similar to the examples from other corners of western Europe. In almost every historical city one of the popular urban thematic routes is "*city by night*". The same experience can be met in "*Wrocław by night*". As in the other cities Wrocław offers "*Night of Museums*" or "*Night in Churches*". Once established the main issue – multicultural character of the potential and long, complicated history it remains faithful to this. It is presented in many ways but the urban thematic routes is the most important. These presented in the paper are the representative sample of multiplicity of the proposal although offered by the official authorities on the official website – usually the most popular place to seek for such information. In each the same set of values is intend to be presented in a different way, as presented on the example of the cathedral. It is very important to focus on only on the maintaining the acceptable European level but to find some other way to distinguish the multicultural products. And there is an intent to create such. This could be an offer dedicated to the different groups of costumers concerning the age. There are the routes for children, young people and for seniors. There is an offer of the route for which an excuse is a protagonist of the series of detective stories – Eberhard Mock. The story takes place in German Wrocław (Breslau) before WWII and an important part of the atmosphere are the detailed descriptions of the topography of old Wrocław. The proposal gains importance among the young and middle-aged reader and is of national or even regional range (a novel gained the number of followers also in Germany). An exceptional offer of urban route is *The Route of the Quarter of Four Denominations* that perfectly shows the uniqueness of the multicultural character of the city that rose from the four different cultures, four different religions. This proposal has a perfect condition to be an internationally recognized tourist product what would place Wrocław among the most important cultural destinations of this part of Europe.

Bibliography:

- Antkowiak Z., 1991, *Kościoły Wrocławia*, Muzeum Archidiecezjalne we Wrocławiu, Wrocław
- Badulescu I in., 2005, *Cultural tourism in urban areas. Study –case: Oradea city, Romania*, [in:] *Conditions of the foreign tourism development in Central and Eastern Europe. Volume 8. Urban tourism – present state and development perspectives*, University of Wrocław, Institute of Geography and Regional Development, Department of Regional and Tourism Geography, Wrocław, p. 9–21
- Burak M., 2012, *Arsenał Wrocławski – przewodnik historyczny*, wydanie II poprawione i uzupełnione, Muzeum Miejskie Wrocławia, Wrocław
- Freeman T., 1977, *Interpreting our heritage*, University of North Carolina, Chapel Hill
- Gaworecki W., 2000, *Turystyka*, Warszawa, PWE- Kowalczyk A, 2001, *Geografia turyzmu*, Wyd. Naukowe PWN, Warszawa
- Kotkowska E., Raczyńska-Sędzikowska M., 1997, *Kościół pod wezwaniem Najświętszego Imienia Jezus we Wrocławiu*, Wydawnictwo Studio Seise, Wrocław
- Lijewski T., Mikułowski B., Wyrzykowski J., 2008, *Geografia turystyki Polski*, PWE, Warszawa
- Medlik S., 1995, *Leksykon podróży, turystyki, hotelarstwa*, Wyd. Naukowe PWN, Warszawa
- Widawski K., 2012, *Krajobraz kulturowy Dolnego Śląska – panorama dziejów*, [in:] Mazurski K., (red.) *Mijające krajobrazy Polski, Krajobraz dolnośląski kalejdoskopem jest…*, Kraków, Proksenia, p. 43–58
- Widawski K, Galant G., 2005, *Folklore festivities as a tourist offer in urban environment of Spain on the example of Sevilla*, [in:] *Conditions of the foreign tourism development in Central and Eastern Europe. Volume 8. Urban tourism – present state and development perspectives*, University of Wrocław, Institute of Geography and Regional Development, Department of Regional and Tourism Geography, Wrocław, p. 223–237
- Wrzesiński W., *Dolny Śląsk, Monografia historyczna*, 2006, Wydawnictwo Uniwersytetu Wrocławskiego, Wrocław
- Wyrzykowski J., Marak J., Klementowski K., Sołtysik M., 2005, Urban tourism in Wrocław – present state and development perspectives, [in:] Conditions of the foreign tourism development in Central and Eastern Europe. Volume 8. Urban tourism – present state and development perspectives, University of Wrocław, Institute of Geography and Regional Development, Department of Regional and Tourism Geography, Wrocław 2005, s. 393–436

Internet sites:

www.wroclaw.pl (date of access: 30.11.2014)

http://www.wroclaw.pl/files/ESK/aplikacja_na_nowo_pl.pdf (date of access: 5.12.2014)

http://www.mkidn.gov.pl/media/docs/2014/20140530_Projekt_WPR_ESK2016_zal.pdf (date of access: 05.12.2014)

www.turystykadolnyslask.pl (date of access: 26.11.2014)

http://pik.wroclaw.pl/d2014-07-19 (date of access: 10.12.2014)

Notes

Notes