

Questionnaire

Summary of the main activities of the Institute of Geography of the Slovak Academy of Sciences

Period: January 1, 2012 - December 31, 2015

1. Basic information on the institute:

1.1. Legal name and address

Geografický ústav Slovenskej akadémie vied
Institute of Geography of the Slovak Academy of Sciences

1.2. URL of the institute web site

<http://www.geography.sav.sk/>

1.3. Executive body of the institute and its composition

Directoriat	Name	Age	Years in the position
Director	prof. RNDr. Vladimír Ira, CSc.	63	2012 - 2015
Deputy director	prof. RNDr. Ján Oľahel', CSc.	66	2012 - 2014
Deputy director	Mgr. Daniel Michniak, PhD.	41	2014 - 2015
Scientific secretary	Mgr. Daniel Michniak, PhD.	41	2012 - 2014
Scientific secretary	Mgr. Pavel Šuška, PhD.	37	2014 - 2015

1.4. Head of the Scientific Board

RNDr. Milan Lehotský, CSc. (2012 – 2014)

RNDr. Monika Kopecká, PhD. (2014 – 2015)

1.5. Basic information on the research personnel

1.5.1. Number of employees with university degrees (PhD students included) engaged in research projects, their full time equivalent work capacity (FTE) in 2012, 2013, 2014, 2015, and average number of employees in the assessment period

	2012		2013		2014		2015		total		
	number	FTE	number	FTE	number	FTE	number	FTE	number	averaged number per year	averaged FTE
Number of employees with university degrees	27,0	20,340	30,0	20,830	29,0	20,610	26,0	19,880	112,0	28,0	20,415
Number of PhD students	9,0	7,500	6,0	4,590	5,0	5,000	5,0	3,260	25,0	6,3	5,088
Total number	36,0	27,840	36,0	25,420	34,0	25,610	31,0	23,140	137,0	34,3	25,503

1.5.2. Institute units/departments and their FTE employees with university degrees engaged in research and development

Research staff	2012		2013		2014		2015		average	
	No.	FTE	No.	FTE	No.	FTE	No.	FTE	No.	FTE
Institute in whole	27,0	20,340	30,0	20,830	29,0	20,610	26,0	19,880	28,0	20,415
Department of Physical Geography, Geomorphology and Natural Hazards	9,0	6,550	11,0	6,840	10,0	8,030	10,0	6,830	10,0	7,063
Department of Human and Regional Geography	11,0	8,330	12,0	8,860	12,0	8,120	10,0	7,800	11,3	8,278
Department of Geoinformatics	7,0	5,460	7,0	5,130	7,0	4,460	6,0	3,910	6,8	4,740

1.6. Basic information on the funding of the institute

Institutional salary budget and others salary budget

Salary budget	2012	2013	2014	2015	average
Institutional Salary budget <i>[thousands of EUR]</i>	380,366	381,942	372,826	363,695	374,707
Other Salary budget <i>[thousands of EUR]</i>	3,853	26,070	13,541	0,000	10,866

1.7. Mission Statement of the Institute as presented in the Foundation Charter

The Institute is focused on the basic research into the spatial structure of natural and socioeconomic systems in interactions, with special regard to the territory of Slovakia. In the sphere of physical geography, research deals with problems of structure, dynamics and human transformation of landscape systems concentrating upon the landscape potential, rational land use, quality of environment, and environmental hazards and risks. The main objective of research in human geography is to analyse spatial organisation of population, settlement and economic activities stressing the population processes, settlement systems, and regional structure studies. Generation of the geoinformation systems, development of cartographic interpretation and remote sensing methods are also among the main work themes of the Institute. The Institute pursued the basic research into sciences about Earth, environmental sciences, social and economic geography

and within the construction engineering (spatial planning, environment, geodesy, cartography and cadastre) based on scientific information acquired by the regional research.

The Institute provides expert and consultancy services in relevant fields. The Institute provides PhD studies in the sense of the generally binding legal provisions. The Institute secures publication of results reached in the research scientific activities in periodic and nonperiodic press and thematic maps. Publishing of periodic and non-periodic press is subject to guidelines issued by the Academy's Presidium.

1.8. Summary of R&D activity pursued by the institute during the assessment period in both national and international contexts, (recommended 5 pages, max. 10 pages)

Research cluster: Structure and Dynamics of Natural Landscape, Hazards and Risks

Research cluster focused on two mutually related research themes: elaboration of the issue of flood risk and hazard and research into river morphology changes and long-term development of the fluvial system. The researchers participating in the cluster: M. Cebecauerová, J. Jakál (till 2013), A. Kidová, J. Lacika, M. Lehotský, J. Novotný, M. Rusnák, P. Skubinčan, Ľ. Solín, J. Sládek and J. Urbánek (till 2014).

Results of the integrated flood risk assessment comprised several topics.

First topic was an analysis of the current state of flood protection in the Slovak Republic. At present, the approach to flood protection from that of purely structural means is gradually changing into the integrated flood risk management. Analysis of the current legal framework of the Slovak Republic and the document adopted by the Government for the flood protection pointed out that in Slovakia there is still an exclusive application of the engineering approach to flood protection (Solín 2014, ADFB36; Solín 2015, ADMB03; Solín & Skubinčan 2013b AED10).

Second theme was an assessment of flood risk for the municipalities in upstream basins. An integral part of the flood risk research is the assessment of vulnerability of social, economic and environmental systems (Solín & Skubinčan 2013a, ADNB17). Based on a combination of six proxy variables reflecting the vulnerability of economic and social system to flood damage and the loss suffered, its resistance to flooding and the ability to cope with the negative impacts of floods, the vulnerability index of municipalities was determined by multi-criteria analysis (Solín 2012, ADCA11). By combining the index flood hazard and social vulnerability index, flood risk index of municipalities in upstream basins was determined (Solín et al. 2014, AEC17).

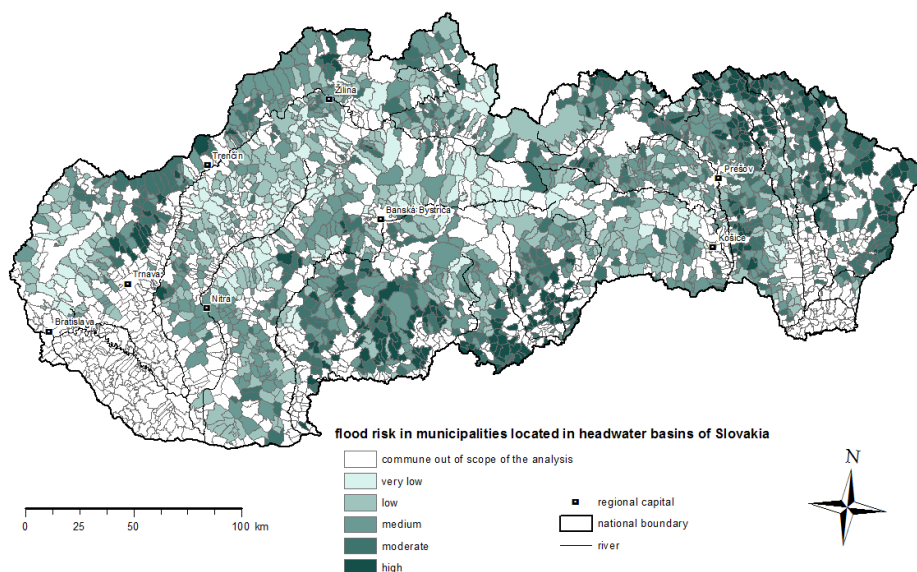


Fig. 1: Flood risk in municipalities located in headwater basins of Slovakia

Another research topic was an analysis of insurance against flood risks in Slovakia. Flood risk insurance is one of the tools to mitigate flood damage. Knowledge of this issue in Slovakia was still missing. Analysis of data from the insurance company Allianz showed that in the period 2002-2011

Slovakia experienced a significant reduction in the number of flood risk insurance policies. From insurance contracts in 2002 only 58 % were active also in 2011. Analysis of the spatial variability of insurance against flood risk showed that with the decreasing levels of the socio-economic status of municipalities the number of insurance contracts also decreases. This reduces also the ability of citizens to secure insurance flood risk that provides at least partially offset the negative impacts of floods (Madajová et al. 2013 AED05, Madajová et al. 2015 ADDA01).

Very important aspect of flood risk assessment is a scale of research. Methodological aspects of integrated flood risk assessment in the GIS environment by the method of multi-criteria analysis at regional level were presented in upstream basins of the Myjava River. The impacts of different methodologies to standardise the variables, their weights and aggregation models to the level of flood risk have been studied (Skubinčan 2015, DAI04).

Research in the river morphology has brought a wide spectrum of results.

The Nile River in northern Sudan from Khartoum to Lake Nasser (1,492 km length) has been classified into twelve segments based on the analyses of aerial photos (1985) and Landsat images (2000, 2005) in the GIS. The segments have been assessed and environmental issues (bank erosion, flood risk, channel infilling, sand encroachment-desertification, wastes and water pollution and flood risk) have been detected (Basir & Lehotský 2012, ADFB01).

Application of the geophysical methods (ERT and dipol-dipol techniques) at valley cross-sections focused on the assessment of the sedimentary environment in the Vydrlica and Ondava valley floors as well as on the detection of the discontinuity surfaces between the Quaternary sediments and pre-Quaternary rocks. The research proved a more than 20 meters infill of the Quaternary colluvial deposits in the Vydrlica valley. In the floodplain of the Ondava River fluvial Quaternary deposits and the discontinuity surface were detected in the depth 3-9 m. The differences in the thickness of deposits indicate the lateral migration of pre-Holocene river channels (Sládek 2014, ADFB35).

Response of the changing discharge to the disconnectivity in sediment fluxes condition was studied in the bypassed Danube channel. As far as the hydrological-sedimentary connectivity of channels is concerned, the following categories were discriminated: 1) Eupotamal - A, B1, B2; 2) Parapotamal - A, B; 3) Plesiopotamal and 4) Paleopotamal. The identification of discontinuity surfaces and particle-size changes in the vertical accretion stratigraphy was detected using drilled pits, digging trenches and the particle-size analysis. The scroll bar as it could be seen in 1992 developed into a new form of floodplain, that is, a floodplain pocket with more than 1 m thick layer of accreted sediments (Lehotský et al. 2013b, ADFB23; Lehotský et al. 2015a, AECA03).

Investigation of 19 samples of top-bar accreted sediments along 24.5 km long profile of the Belá River gives the evidence of the grain-size decline downstream in generally. Locally, the grain-size composition is influenced by sediment delivery from banks (Lehotský, et al. 2013c, AED04; Kidová 2013, DAI01).

The historical backgrounds of human interventions into the meandering belt made in pursue of flood defence and the identification of the response of river morphology to these interventions was studied in the lower Váh River. Changes in channel sinuosity, width of the inter-dike space and the length of right- and left-side dikes were identified on the channel-floodplain units scale analysing historical maps (1839) and orthophoto imageries (2004). Changes in the channel setting on the very local scale at three reaches were identified by comparison of historical cadastral maps (1863, 1864 and 1880) with orthophoto imageries (2004) (Lehotský, Matušicová 2014, ADFB21).

The effect of flood events on the lateral channel shift and bar pattern was studied using the multitemporal analyses of aerial photographs (1987, 2002, 2009) in the GIS on the example of the 13.5 km long meandering reach of the Ondava River. The average lateral channel shift per year was 1.1 m in 1987 – 2009, maximum 217 m. The river has eroded in total 35.6 ha and deposited 31.6 ha. Gravel bars in 1987, 2002, 2009 spread the channel total area by 21.1 ha, 17.8 ha and 19.7 ha. We conclude that frequent small floods, instead of causing destruction of the system, led to the stabilization of the channel, erosion of the concave bank and to the formation of the meandering planform. In contrast, the short recurrence interval of extreme floods led to an increased intensity of erosion processes, a change of the meandering planform to the slightly braided one, straightening of the channel and formation of gravel bars (Rusnák 2015, DAI03; Rusnák & Lehotský 2014a, ADCA10; Rusnák & Lehotský 2014b, ADFB34; Lehotský et al. 2013a, ABC07; Rusnák et al. 2015, AECA04).

The channel planform characteristics, cross-section and longitudinal morphometric and hydraulic parameters which were obtained from the analysis of the remote sensing imageries and from the field-measurements served for the assessment of the upper Topľa River channel recent dynamics. A special attention is dedicated to the assessment of step-pool morphology in headwaters. The morphodynamic characteristics of the river channel are presented through the assessment of the erosion and accumulation flood effects (Frändorfer & Lehotský 2013, ADNB03; Frändorfer & Lehotský 2014, ABB01; Lehotský et al. 2013a, ABC07).

Based on the analysis of maps and remote sensing data from nine time horizons (1823, 1938, 1949, 1961, 1973, 1986, 1992, 2003, and 2009) a database of parameters corresponding to fluvial forms was compiled for the Belá River erosion corridor. Selection of years 1949, 1961, 1973, 1986, 1992, 2003, and 2009 was motivated by the wish to be able to study the geomorphological response of the fluvial system to extreme flood discharges. The braided as well as migration indices have served as main tools for the assessment of changes in braided pattern. From 2003 until 2009 the number of islands increased by a third but the number of bars decreased by a half. In spite of higher channel water levels during the time of imaging in 2001 and 2008, the decrease of the braiding index value by a half was observed. The notable decrease of the migration index does not correspond to the increasing trend of the number of islands. The decreasing trend of the erosion corridor shows the long term degradation of the river system as is reflected by changes such as the channel straightening or the increase in the area of islands (Kidová & Lehotský 2012, ADNB07; Kidová & Lehotský 2013, ADFB12; Kidová & Lehotský 2015, AECA02; Kidová 2013, DAI01).

Besides, recent fluvial processes in Slovakia (Stankovič et al. 2012, ABC09), morphostructural relief analysis of north-eastern Slovakia (Lacika & Lehotský 2013, ADNB11), workshop material (Kidová et al. 2012a, AFDA02; Kidová et al. 2012b, AFDA04; Kidová et al. 2012c, AFDA03) were studied and the Slovak-English terminology of river morphology (Lehotský et al. 2015b, ABB02), the educational material (Lehotský 2015, GII51) and the book - story of mountains (Urbánek 2014, AAB05) were compiled. More than 50 citations responded to publications of the research teams, including in WOS and SCOPUS databases.

Research of the cluster has been financially supported by the VEGA Grant Agency projects: 2/0091/12 *Flood risk of municipalities in Slovakia*, 2/0106/12 *Natural and human-induced geomorphological and sedimentary changes in river system*, 2/0020/15 *Response of geomorphic-sedimentary connectivity/disconnectivity in fluvial system to environmental impacts* and the joint Polish-Slovak research project *The influence of hydrotechnical constructions on the development of fluvial systems of the Lower Vistula and the Danubian Lowland* (2010-2012).

Results were presented at important international conferences such as *Conference on Risk Analysis and Hazard Mitigation*, (New Forest UK, 2014), *River Basin and Flood Risk Management* (Bratislava 2013), *Carpatho-Balkan-Dinaric Conference on Geomorphology* (Stará Lesná 2013), conferences of *Association of Slovak Geomorphologists* (Ružomberok, 2012, Snina 2014), *International Association for Danube Research* (Szentendre 2012, Sofia 2014), *Forum Carpathicum* (Stará Lesná 2012), *European Geosciences Union General Assembly* (Vienna 2012, 2014), *Czech Association of Geomorphologists* (Sokolov 2013, Ústí nad Labem 2014, Plzeň 2015), *IGU Regional Conference* (Krakow 2014), *I.S. Rivers* (Lyon 2015).

Five PhD theses and three master theses were thematically included into the cluster research activity. The theme of river morphology and the riverine landscape is read at the Faculty of Nature Sciences, Comenius University in Bratislava as an independent single-semester subject.

Research cluster: Landscape Changes Explored by Application of Remote Sensing Data and the Geographic Information Systems

The researchers involved in research cluster: J. Feranec, T. Cebecauer (till 2014), K. Husár (till 2013), M. Kopecká, J. Nováček, J. Oťaheľ, R. Pazúr, A. Rábeková (till 2013), K. Rosina.

Identification and analysis of land use changes using remote sensing data was the principal theme of several Europe-wide projects of the European Environment Agency (EEA), such as *CORINE Land Cover 2012* (CLC2012) and *Urban Atlas* (UA), parts of the Copernicus Programme (originally referred to as the Global Monitoring for Environment and Security – GMES), contributing to the Global Earth Observation System of Systems – GEOSS. The CLC2012 project identified and assessed land cover (LC) changes in Slovakia and Europe in 2006-2012 while the UA project

analysed intensity of urban fabric in the larger urban zones (LUZ) of almost 700 European cities out of which eight are in Slovakia. Above mentioned projects at European level were thematically followed by the VEGA Grant Agency projects: *Time-spatial analysis of land use: dynamics of changes, fragmentation and stability assessments by application of the CORINE land cover data layers* (2010-2012), *Changes of cultural landscape: analysis of extension of urban fabric and farmland abandonment processes applying land cover databases* (2013-2015) and *Production, verification and application of population and settlement spatial models based on European land monitoring services* (2013-2016). Institute's researchers also participate in joint projects of the Slovak Academy of Sciences and the Bulgarian Academy of Sciences (particularly the Institute of Geography and National Institute of Geophysics, Geodesy and Geography in Sofia) and take part in activities of the IGU/LUCC – Commission on Land Use and Cover Change, especially editing and publishing of incoming volumes of the Atlas *Land Use Changes in Selected Regions in the World*.

Interpretation of remote sensing data allows for highly efficient monitoring of built-up area expansion (as well as other types of LC change) and quantification of growth pace. The assessment of changes in built-up areas at the super-regional level was based on the data derived from the CLC layers referred to as LC flow urbanization, LCFU. The LCFU represented changes of CLC classes of agricultural and forest landscapes to those of urbanised landscape. Mean annual enlargement of LCFU (96.5%) in Czechia exceeded the European average (16.4%) almost six-fold. The mean annual increase of LCFU in Slovakia (3%) consisted of the change of only a fifth of forest landscape into classes of urbanised landscape (16.4%) in compared periods of 1990-2006. The mean value of LCFU for 1990-2000 and 2000-2006 in Europe was 3.3% and 2.2 % respectively. The minimum size of the identified LCFU change was 5 ha; the changes were visualised in a regular grid of 3×3 km. The average values were calculated as the total area of LC change in favour of LCFU within a grid cell, divided by the area of the corresponding grid cell (Kopecká et al. 2015, AAB03; Feranec et al. 2012, ABC01; Feranec & Soukup 2012, ABC02; Feranec & Soukup 2013, ABC03).

CLC datasets were also used in the assessment of urbanised landscape in individual administrative regions of the Slovak Republic. In 2000-2006, the overall increase of built-up areas was 3,300 ha while the most distinct change was the decrease of the arable land area. A similar trend in urban development continued in 2006-2012 reaching the country's total of 7,405 ha (Kopecká et al. 2015, AAB03). Spatial changes derived from CLC data were compared with the cadastre data (Kopecká et al. 2015, AAB03). Changes in urban development in districts of the Administrative Region of Bratislava have been analysed based on the UA data which reported enlargement of built-up areas by 1,341 ha (Kopecká et al. 2015, AAB03; Pazúr et al. 2015a, ABC08) in 2006-2012. The UA data were also used to assess the change of landscape fragmentation in the territory of LUZ Nitra (Kopecká et al. 2015, AAB03; Kopecká & Nováček 2015, BEF03) as an example.

The assessment of changes in built-up areas on the local level has been processed using the town of Trnava (Kopecká et al. 2015, AAB03; Kopecká & Rosina 2014, ADN08; Kopecká et al. 2012b, AEC09) as an example. Very high resolution satellite images (WorldView2 and Ikonos satellites) and detailed vector layers from national database 'ZB GIS' were used for a detailed classification and identification of CLC classes at 5th hierarchic level and to estimate the degree of urban soil sealing (imperviousness) as an appropriate indicator of the environmental quality especially in terms of the temperature change. The share of sealed soil in the town's historic core was 65%, in apartment housing residential areas the average value was 43%, and in family housing areas it was 30% (Kopecká et al. 2015, AAB03). Results of the comparing study of change dynamics concerning urbanisation of towns Trnava and Burgas pointed to the different intra-urban structure and potential of their development (Kopecká et al. 2014b, ABC05). The mean annual increase of built-up area in Trnava and Burgas was 52.8 ha and 9.2 ha respectively while the infilling construction in Burgas (22.1 ha) was higher than in Trnava (5.9 ha).

Changes and spatial arrangement of the rural land use were studied using the natural landscape data layers of Slovakia and the CLC data layers for the years 1970, 1990, 2000, 2006, and 2012. Spatial heterogeneity of LC classes was analysed in different types of natural landscape in terms of selected factors (soil types, elevation, slope, georelief, accessibility of selected settlements and streams). An approach to the prediction of the spatial distribution of LC classes and land use arrangement by means of several statistical methods (logistic regression, exclusive autoregressive

model, regression correction) was presented (Pazúr et al. 2012, ADMA03; Pazúr et al. 2013, ADCA07).

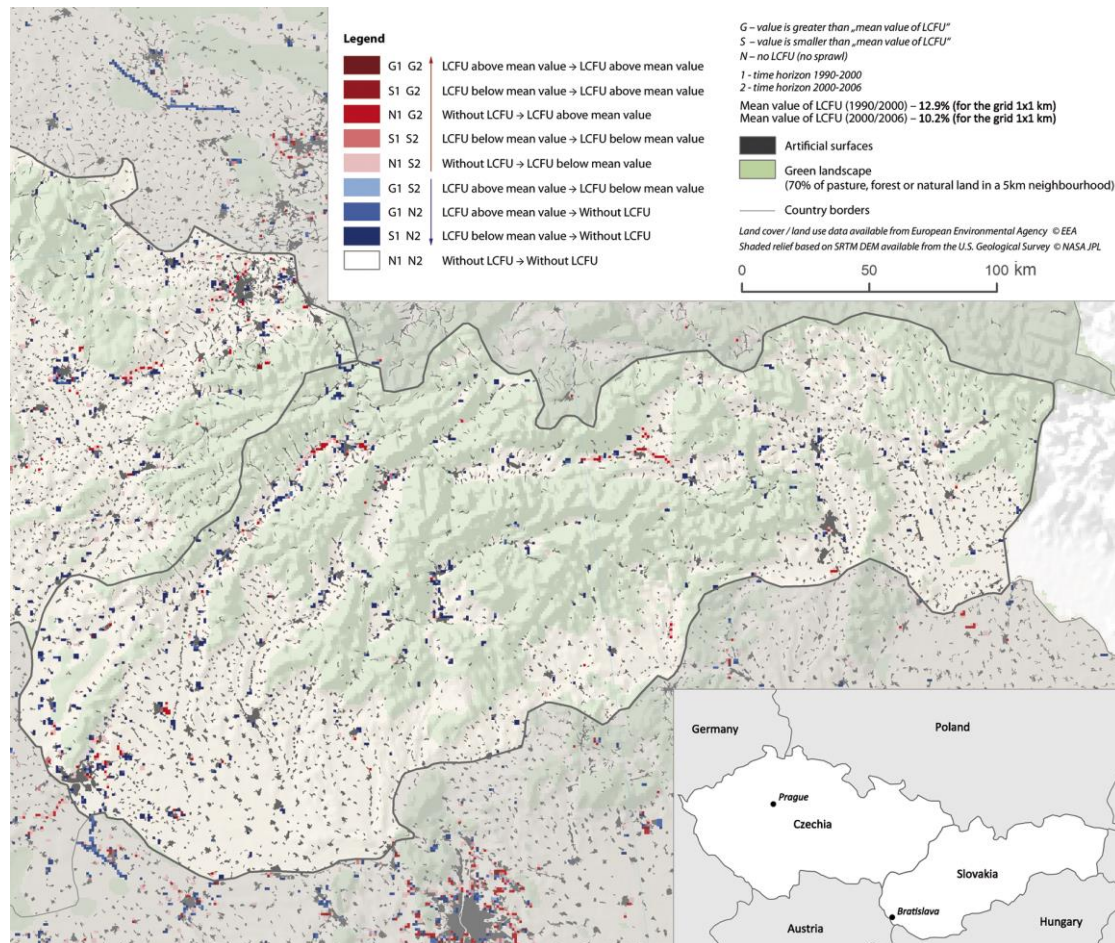


Fig. 2: LCFU dynamics in the years 1990 - 2000 - 2006 in Slovakia (Feranec & Soukup 2012, ABC02)

Abandonment of large-block plots of arable land and pastures in Slovakia was studied based on LC changes that took place in the period of transition (1990-2000) when 15,238 ha were lost and in the period of accession to the EU (2000-2006), further 4,927 ha of arable land were abandoned. A distinctly higher rate of abandonment during the transition period first of all in localities with the lower soil quality, poor access and next to not farmed plots (Pazúr et al. 2015b, ADCA08) was identified using the logistic regression which quantifies the effects of morphometric, biophysical, distance and demographic factors. The issue has also been studied in a comparative study on the international level (Kopecká et al. 2012a, ADCB01).

Changes of rural landscape with stress on extensification and abandonment of farmland were analysed according to the CLC databases and the natural landscape in districts of northern Slovakia (O'ahel' et al. 2014, AED09), Prešov (O'ahel' et al. 2012, AED08), and in four communes of central Považie region (Šebo & Kopecká 2014, ADN19) as examples.

The CLC data (European database) and the National Land Cover Dataset (NLCD, American database) are important information sources for the assessment of changes, fragmentation, urbanisation, and sustainable landscape development. Correct use of these databases requires knowledge about semantic similarity, compatibility, and inter-changeability of their content. The results of expert evaluation of the two databases confirmed only partial similarity and differentiated applicability (Feranec et al. 2014, ADCA01).

Theoretical works pointed to the scope of information potential inherent to remote sensing data, first of all, their temporal, qualitative and quantitative parameters necessary for the research of changes and potential of the landscape (Feranec et al. 2013b, ADFB04; Kopecká et al. 2014c, ADFB15). They also emphasised that the GIS processes these data into graphically eloquent, user-efficient and scientifically verifiable results. Notable results include theoretical works involved with the map-making issues and cartography at the European level (Feranec et al. 2013a, AEC04; Feranec et al. 2015, ADFB03), but also general questions concerning the research of cultural

landscape (Oťahel' & Ira 2013, ADFB31; Oťahel' & Pazúr 2013, AEC13; Hanušin et al. 2015, ADNB04), landscape management, planning and conservation (Kopecká 2013, ADFB13; Kopecká et al. 2014a, AEC08).

Data from European land monitoring services (of the above mentioned Copernicus programme) were used for the creation of population and settlement spatial models. The high resolution layer (HRL) Imperviousness was used as an ancillary variable in disaggregation of population density data from the level of communes into a grid with 100 m cell size (Rosina & Hurbánek 2012, ADFB33; Rosina et al 2012, AFC02). The use of HRL Imperviousness (along with the CORINE data) increased the accuracy of the estimate compared to the previously available disaggregated databases, which used only the CORINE data for this purpose. This improvement, however, is limited by the precision and adequacy of the HRL database and further improvement should be reached by the use of source units smaller than communes or by adding other data layers. The settlement modelling based on the national vector database SVM50 was used for quantification of broadband Internet availability as a variable characterising the peripherality of a territory (Rosina & Hurbánek 2013, ADCA09).

Two PhD students have completed their studies in the quoted research fields in the period in question. Two team members have achieved documented accomplishment in an academic research field and were appointed principal research workers. Research team members were simultaneously members of relevant bodies/commissions/ (J. Feranec, IGU Commission on Land Use/Cover, vice-chair) and councils or they were members in editorial boards of foreign scientific periodicals. Two research workers participated in the educational activities (related to the topics within cluster) at universities in Bratislava and Prešov. More than 70 citations responded to publications of the research teams, including in WOS and SCOPUS databases. Several papers were presented at the international conferences (in Cologne, Kyoto, Krakow, Moscow, Vienna, Sofia, Praha, Brno, Lednice, Smolenice, etc.).

Research cluster: Sustainability and Quality of Life in Changing Environment

Research of spatial-temporal differences in sustainability and quality of life at the national, regional and local levels has been conducted within research cluster dealing with changing environment (landscape) and spatial organization of society and its activities. The geographical view of the sustainability and quality of life issue is first of all based on investigation of the changing 'man – environment' interaction. Apart from the study of human spatial behaviour in changing environment, amenities, local and regional sustainable development associated with the life-quality issues, this cluster also dealt with the analysis of the changing (historical) cultural landscapes and time-space behavioural patterns in various types of environment.

The researchers I. Andráško (till 2014), M. Cebecauerová, B. Chrenka (till 2012), M. Huba, J. Hanušin, V. Ira, M. Madajová, J. Oťahel', R. Pazúr, P. Podolák, J. Szöllös, D. Šebo (till 2014), M. Ševčíková-Garitan (since 2013), P. Šuška and M. Šveda were engaged in research on a diverse range of topics within cluster.

Six research workers and two PhD students participated in the project: *Selected geographical aspects of environmental developments in Slovakia and its regions in the international context* (VEGA Grant Agency project No. 2/0111/12 – principal investigator M. Huba in 2012 and V. Ira in the period 2012-2014). The research project contributed to knowledge of geographically relevant phenomena and processes connected with environmental changes in terms of sustainable development, nature protection, landscape management and increase of quality of life on several hierarchic levels (international, national, regional and local). Analysis of the above mentioned phenomena and processes connected with the situation and changes in man's environment in cultural landscape (CL) has brought a fresh knowledge especially on the regional and local levels (exemplified by the Sub Little Carpathian Region in hinterland of Bratislava). Identification of historical CL including its changes as an important part of man's environment has greatly contributed to the discussion about the terminology and theoretical/methodological aspects of CL in geography. Factors that may influence formation of CL were analysed. Project prepared a proposal for the typological classification of CL as one of possible approaches to the definitions of CL types. Identification of the situation in historical CL as an indicator of the environmental quality was carried out by application of the methodology usable in environmental planning. The most significant publishing activities are Andráško 2013 (AAA01), Hanušin et al. 2012 (ADEB01), Ira

& Andráško 2013 (ADFB09), Ira 2013 (ADEB02), Šuška 2012 (ADNB22), Šuška & Stasíková 2013 (ADMB04), Šuška 2014a (AAB04), Ira 2015 (ADFB10), Šebo & Huba 2015 (ADNB21).

Five research workers from the Institute of Geography SAS (in collaboration with one research worker from the Institute of Landscape Ecology SAS) were involved in the project *Analysis of temporal-spatial dynamics of the selected cultural landscape structures in Slovakia, their protection and sustainable use* (VEGA Grant Agency project No. 2/0023/15 – principal investigator J. Hanušin) in the year 2015. The principal aim of the project was the time-spatial analysis of the dynamics in cultural landscape on different hierarchic levels in the territory of Slovakia, their generalisation, establishment of trends and establishment of framework principles of protection and sustainable use of cultural landscape. The first results of the project contributed to the theoretical and methodological knowledge gained by the geographical research into the subject cultural landscape (an overview of the state-of-the-art of cultural landscape studies in literature). First activities were focused on collection of the data, field and mapping works. Partial project outputs were published, for example Hanušin & Štefunková 2015 (ADNB05).

Until March 2013, the Institute participated in the international project within CENTRAL EUROPE 2007-2013 Programme - *Assessment and Sustainable Development of Cultural Landscape by Application of Innovative Participative and Visualizing Tools* (acronym *Vital Landscapes*). The pilot project for the IG SAS was named *Alternative to the Development of the Sub-Little Carpathian Cultural Landscape*, one of the pilot projects under the Project. Apart from the IG SAS, seven other academic and consulting centres from Czechia, Hungary, Germany, Austria, and Slovenia are taking part in the Project. The principal aim of the Project was protection, re-valuation, and support for sustainable development of unique cultural landscape types accompanied by promotion and propagation of innovative, participative and visualizing techniques. Integration of conservation with sustainable economic and social development is one of the important project objectives, which requires analysis of the present situation and proposition of new organizational, legislative, political, economic, and other tools. During its last phase (2012-2013) eight research workers participated on the project. Results of the project revealed that the historical cultural landscape becomes ever more fragmented, its important elements are often depreciated and some disappear altogether with the increasing anthropogenic pressure. Based on the assessment of the historical cultural landscape, the greatest problems of the existing historical cultural landscape in the Sub-Little Carpathian region are building activities pursued often in valuable localities, like historical vineyards, resulting in damage, devaluation and displacing of the surviving remnants of historical cultural landscape. Devastation of some traditional localities and of industrial heritage (e.g. paper mills, mills, forest railway) eroded the public awareness towards historical cultural landscape too. Another big threat to the historical cultural landscape (mainly for the vineyards) is suburbanization near Bratislava. The results of the project were presented on several events within the project frame (Budapest and Naumburg 2012, Vienna and Modra 2013) and on external events as well (Košice 2013, Warsaw 2013). Principal results of the project were published in various types of publication: Hanušin et al. 2013 (AAB02), Hanušin & Oťaheľ 2013 (ADFB06), Hanušin & Štefunková 2014 (AEC07), Hanušin et al. 2014 (ABC04), Šebo & Kopecká 2014 (ADNB19), Hanušin et al. 2015 (ADNB04), Podolák 2013 (ADEB08), Šebo & Huba 2013 (ADNB20).

Within this cluster, also the bilateral projects were conducted. The project *Temporal and spatial changes of regional structures in cultural landscape* (2012-2014, – principal investigator P. Šuška) was accomplished in cooperation with the Institute of Geonics, AS CR. Four Czech-Slovak academic geographical seminars were organised (Skalica 2012, Olomouc 2013, Piešťany 2014, and Brno 2015). The Slovak-Ukrainian project *Spatial Disparities in Slovak and Ukraine Rural and Urban Areas: Assessment of Sustainability and Quality of Life* (with the Institute of Geography of National Academy of Sciences of Ukraine for the period 2014-2016, principal investigator J. Szöllös) is focused on spatial disparities in sustainability and quality of life at different geographical levels and comparison of their subjective and objective dimensions. Two seminars were organised within framework of the project in Bratislava and Kyiv.

Three PhD students have completed their studies in the quoted research fields in the period in question. Three team members have achieved documented accomplishment in an academic research field and were appointed principal research workers. Research team members were simultaneously members of relevant bodies/commissions/ and councils or they were members in editorial boards of foreign scientific periodicals. Five research workers participated in the educational activities (related to the topics within cluster) in several chairs in domestic and foreign

universities (Bratislava, Prešov, Brno and Olomouc). More than 30 citations responded to publications of the research teams, including in WOS and SCOPUS databases. Several papers were presented at the international conferences (in Cologne, Kyoto, Vienna, Warsaw, Naumburg, Budapest, Praha, Brno, Litomyšl, Borová Lada/Kvilda, Smolenice, Piešťany, Skalica, Danišovce, etc.).

Research cluster: Society in Flux, Spatial Disparities, and Local and Regional Development

The research focused on various mutually related themes primarily concerning the research of regional structures, the endogenous potential and exogenous factors of development, the level of inter- and intraregional disparities and relevant dimensions of demographic, social, economic and infrastructural nature on several hierarchic levels (national, regional and local).

Researchers B. Chrenka (till 2012), V. Ira, N. Kočišová (since 2013), M. Madajová, A. Michálek, D. Michniak, P. Podolák, P. Skubinčan (till 2012), L. Stasíková (till 2012), V. Székely, J. Szöllös, M. Ševčíková-Garitan (since 2013), P. Šuška, M. Šveda, and Z. Veselovská participated in the cluster.

Several national and international projects were implemented: VEGA Grant Agency projects No. 2/0112/12 *Regional and spatial disparities in Slovakia; development in the last decade, the present status and consequences (2012-2014)*, No. 2/0086/12 *Endogenous potential and exogenous factors of local and regional development in Slovakia (2012 – 2014)*, since 2015 also the VEGA Grant Agency projects No. 2/0101/15 *Regional divergence, spatial disparities and marginal regions in the context of socio-economic development in Slovakia*, No. 2/0035/15 *Development trajectories of localities and regions - product of sector and spatial policies, territorial capital and decisions (2015 – 2017)*, and No. 1/0082/15 *Specifics of time-space human behaviour under the impact of socio-economic changes (2015 – 2017)*. In 2012, five research workers participated in the project co-financed by the EU and the state budget under the Cross-Border Cooperation Programme Poland-Slovak Republic 2007-2013: *Infrastructural and organizational possibilities of spatial accessibility improvement as a factor for development of the Polish-Slovak tourist regions (INFRAREGTUR)*, carried out in cooperation with the Institute of Geography and Spatial Organization, Polish Academy of Sciences (coordinator of the project) in 2009-2012. In 2013-2015, the bilateral *Polish-Slovak project Influence of investment and some related socio-economic processes on local and regional development in Poland and Slovakia* was also realised.

Within the above-mentioned cluster various topics were studied. Under the VEGA Project 2/0112/12 widening and elaboration of the theoretical and methodological background to the research of regional disparities (RD) were accomplished. An overview of the concepts and classification of methods including the most recent procedures was prepared; particular ways of the collection and processing of otherwise inaccessible (not registered data necessary for the measurement of interregional differences were proposed (Madajová & Šveda 2012, AEC10; Michálek 2012a, ADFB26; Michálek 2012b, ADNB14; Šveda & Podolák 2014, ADNB23; Veselovská 2013, ADFB38; Michálek 2014, ABD03). The quoted works contain theoretical and methodological guidelines for RD monitoring, which have not been processed so far in Slovakia and are applicable to other countries with a comparable socio-economic situation and development. In the field of empirical research a status, dynamic of changes and basic development tendencies of RD in Slovakia in the period 2001-2011 were documented (Madajová et al. 2014, ABD02; Michálek & Veselovská 2014, ABD06; Šveda 2014, ABD09; Michálek & Veselovská 2015, ADCA05). Results demonstrated a general improvement and qualitative shift of the situation in Slovakia in relation to several indicators of socio-economic and demographic nature but assertions about the gradual stabilisation of regional patterns have not been confirmed. The basic tendency in regional development in Slovakia in study period was that of divergence. A typical example of such development is poverty. Although it slightly decreased, in case of population threatened by poverty, its depth increased. The produced and less known model in Slovakia based on a comprehensive interpretation of poverty can be applied to identification of poverty regions and creation of regional and social policies aimed at mitigation of poverty on regional and local levels as well as preparation of schemes supporting employment and inclusion of citizens threatened by poverty or the poverty carriers into society (Michálek & Veselovská 2014, ABD06; Michálek & Veselovská 2015, ADCA05). RD were also analysed from the aspect of the new housing. Analysis of population development and new constructions in the hinterland of Bratislava documented manifestations of suburbanization and deconcentration of population. The

changed traditional migration behaviour pattern of population and manifestations of unrestrained suburbanisation (changes in traditional social-spatial structure of urban and rural communities, radical changes in land use and numerous other context) bring a number of problems for local governments and population in general (Podolák et al. 2012, AEC14; Podolák 2013, ADEB08; Šveda 2014, ABD09; Šveda & Križan 2012, ADDA06; Šveda & Podolák 2014, ADNB23; Šveda & Šuška 2014, ADNB24; Hanušin et al. 2015, ADNB04). Principal trends of transformation of the urban spatial structure and activity of one of the key factors, that is, the civil society, were identified from examples of spatial differences in production of commercial and residential real estates (Šuška 2012a, AEC20; Šuška 2012b, ADNB22; Šuška 2014b, ADDA05).

2011

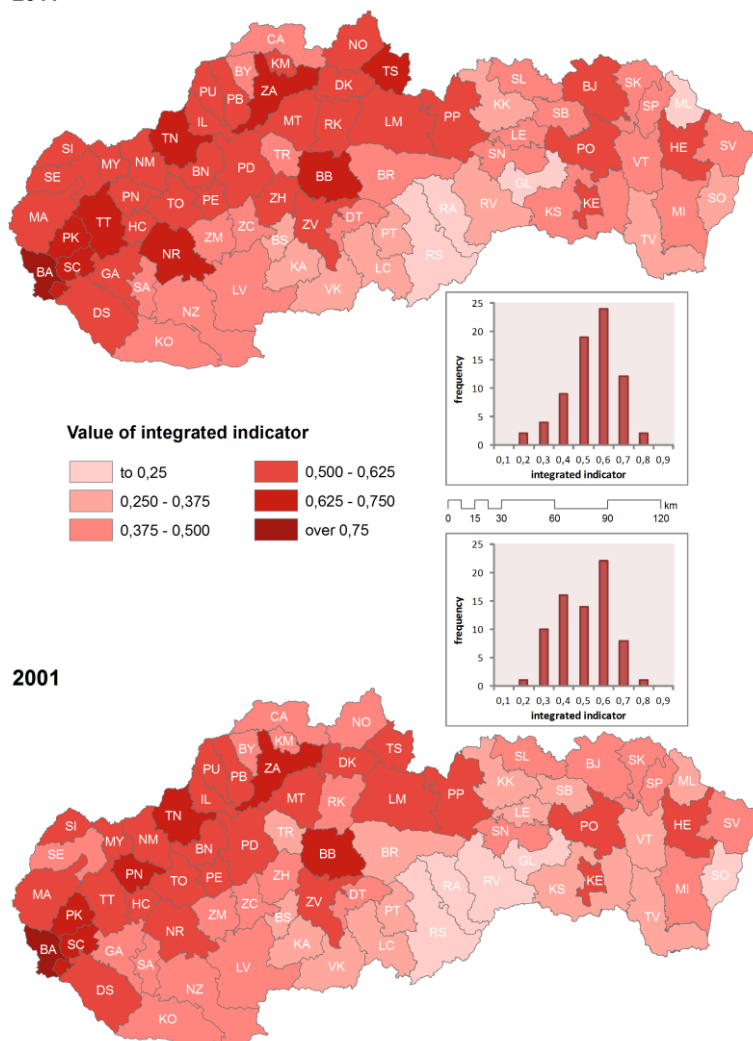


Fig. 3: Changes in the overall level of regional disparities in Slovakia (2001 and 2011)

Rural surrounding of Bratislava in the context of suburbanization processes has also been studied in the VEGA Grant Agency project No. 2/0086/12 focused mainly on identification and evaluation of the endogenous development potential of the rural territories. The surviving model of a monofunctional residential suburb connected with the dominant commuting to work, school and services from rural environment to urban areas creates numerous pressures on the rational functioning of the affected areas and is negatively perceived by both experts and general public. The outlasting absence of comprehensive development of suburban rural municipalities most often presented as the consequence of wrong approaches in the past and the present lack of funds represents an important threat for their sustainable development (Székely 2013b, ABC11; Székely 2014b, ABC10).

In contrast, the development of economically lagging rural areas is very often presented through the development of tourism. Regional cluster initiatives in tourism are generally promoted as a tool for the fulfilment of ideas about the successful regional and rural development. However, the development based on tourism had to face problems caused by the global economic and financial crisis, which caused change in behaviour of tourists. The comparisons of values of selected

regional indicators before and after establishment of tourism clusters in Orava and Turiec regions showed that the establishment of new tourism clusters are not automatically accompanied by the dramatic changes of regional and rural economic prosperity and/or sustainability in the first years of their activities. The comparisons of outcomes from various more or less competing territories with tourism cluster initiatives showed us that this development strategy is not appropriate for all rural areas, economies and/or communities (Székely 2013a, ADEB11; Székely 2014a, ADEB10; Székely 2014c, AECA05).

The identification of possibilities for the improvement of the tourist potential based on better spatial accessibility by public and automobile transport in different scales and the transfer of knowledge and experience from science to public (ministries, regional and local governments) and private sector (entrepreneurs in the field of tourism) were the principal objectives of the international project INFRAREGTUR. The project results in 2012 included organisation of the final conference in Cracow and preparation of two monographs in three languages (Więckowski et al. 2012a, AAA02; Więckowski et al. 2012b, AAB06; Więckowski et al. 2012c, BAB08). In the following years, the results of the project have been reflected in articles that appeared in scientific journals listed in CC and SCOPUS databases (Michniak et al. 2014, ADDA04; Michniak 2014, ADNB15; Więckowski et al. 2014, ADMB06; Michniak et al. 2015, ADCA06).

The 7th Slovak-Polish Geographical Seminar within the bilateral project with the Polish Academy of Sciences was held in 2014 in Smolenice. Attention of the cooperating parties focused on the study of the effects of investments and some related socio-economic processes into the development of localities and regions (Michniak 2015; ADMB02).

The behavioural-geographical aspects of the local development and spatial disparities were also analysed (VEGA Grant Agency projects No. 2/0112/12 and No. 1/0082/15). The change of population's everyday life with numerous specificities of time-space behavioural patterns depending on the nature of the environment (urban, suburban and rural) was studied. The analysis and assessment of the time-spatial behaviour of population under the impact of socio-economic changes (Ira et al. 2014, ADNB06) was based on the methodical and conceptual framework of time-geography using the new procedures of collecting and analysing the individual time-space records (Madajová & Šveda 2012, AEC10; Madajová & Šveda 2013, ADMA02). Using the dual record of population's activities by means of time-space budgets (diaries) and precise GPS location it is possible to obtain a unique database about everyday life with a high time-space precision (Šveda & Madajová 2015, ADCA12).

Changes in commuting in Slovakia in the period 2001-2011 were analysed in the frame of the VEGA Grant Agency project No. 2/0035/15. Main changes include the increase of the total number of out-commuters, the increased number of cross-border commuters, strengthening of the position of Bratislava as the largest commuting centre in the country and large centres with important investments into automotive and electrical engineering industries (e.g. Trnava, Žilina and Nitra – Michniak 2015, ADFB28).

Current research and a debate about the creative cities and the importance of higher education institutions, formation of the creative-knowledge sector in contemporary cities has also been studied (VEGA Grant Agency projects No. 2/0111/12 and No. 1/0082/15). The specific position of the biggest cities in Slovakia with higher education institutions (Ira & Garitan 2014, ABD01) was demonstrated through the results of several analyses (the higher education sector, the share of economically active population working in creative industry of the total economically active population, analysis of creative industries). It is evident that a new understanding of the dynamics of the creative sectors and the interactions with higher education institutions needs to be implemented.

Three PhD students have completed their studies in the quoted research fields in the period in question. Three team members have achieved documented accomplishment in an academic research field and were appointed principal research workers. Research team members were simultaneously members of relevant bodies/commissions/ and councils or they were members in editorial boards of foreign scientific periodicals. Two research workers participated in the educational activities (related to the topics within cluster) at universities in Bratislava and Olomouc. More than 110 citations responded to publications of the research teams, including in WOS and SCOPUS databases. Several papers were presented at the international conferences (in Cologne, Kyoto, Paris, Warsaw, Krakow, Budapest, Praha, Brno, Smolenice, Piešťany, Skalica, etc.).

2. Partial indicators of main activities:

2.1. Research output

2.1.1. Principal types of research output of the institute: basic research/applied research, international/regional (ratios in percentage)

Basic research – 70 % / Applied research – 30 %,

International research – 20 % / Regional research – 80 %.

2.1.2 List of selected publications documenting the most important results of basic research. The total number of publications listed for the assessment period should not exceed the average number of employees with university degrees engaged in research projects. The principal research outputs (max. 5, including Digital Object Identifier - DOI) should be underlined

- ADCA01** FERANEC, Ján - SOLÍN, Ľubomír - KOPECKÁ, Monika - OŤAHEL', Ján - KUPKOVÁ, Lucie - ŠTYCH, Přemysl - BIČÍK, Ivan - KOLÁŘ, Jan - ČERBA, Otakar - SOUKUP, Tomáš - BRODSKÝ, Lukáš. Analysis and expert assessment of the semantic similarity between land cover classes. In *Progress in Physical Geography*, 2014, vol. 38, no. 3, p. 301-327. (3.885 - IF2013). (2014 - Current Contents). ISSN 0309-1333. DOI: 10.1177/0309133314532001
- ADCA07** PAZÚR, Róbert - LIESKOVSKÝ, Juraj - FERANEC, Ján - OŤAHEL', Ján. Spatial determinants of abandonment of large-scale arable lands and managed grasslands in Slovakia during the periods of post-socialist transition and European Union accession. In *Applied Geography*, 2014, vol. 54, p. 118-128. (2.650 - IF2013). (2014 - Current Contents). ISSN 0143-6228. DOI:10.1016/j.apgeog.2014.07.014
- ABC07** LEHOTSKÝ, Milan - FRANDOFER, Milan - NOVOTNÝ, Ján - RUSNÁK, Miloš - SZMAŇDA, Jacek B. Geomorphic/Sedimentary Responses of Rivers to Floods: Case Studies from Slovakia. In *Geomorphological Impacts of Extreme Weather*. - Dordrecht : Springer, 2013, s. 37-52. ISBN 978-94-007-6300-5. DOI: 10.1007/978-94-007-6301-2_3
- ADCA05** MICHÁLEK, Anton - VESELOVSKÁ, Zuzana. Poverty risk in districts of the Slovak Republic. In *Social Indicators Research*, 2015, vol. 124, no. 1, s. 67-83. (1.395 - IF2014). (2015 - Current Contents). ISSN 0303-8300. DOI: 10.1007/s11205-014-0785-5
- AAA02** WIĘCKOWSKI, Marek - MICHNIAK, Daniel - BEDNAREK-SZCEPAŃSKA, Maria - CHRENKA, Branislav - IRA, Vladimír - KOMORNICKI, Tomasz - ROSIK, Piotr - STĘPNIAK, Marcin - SZÉKELY, Vladimír - SLESZYŃSKI, Przemysław - ŚWIĄTEK, Dariusz - WIŚNIEWSKI, Rafał. *Polish-Slovak Borderland : transport accessibility and tourism*. Warszawa : Institute of Geography and Spatial Organization Polish Academy of Sciences, 2012. 323 s. Prace Geograficzne (Geographical Studies), no. 234. ISBN 978-83-61590-97-2. Dostupné na internete: <<https://books.google.sk/books?id=JeKLAqAAQBAJ&lpg=PA205&dq=Polish-Slovak%20Borderland&hl=sk&pg=PA205#v=onepage&q=Polish-Slovak%20Borderland&f=false>>
- AAA01 ANDRÁŠKO, Ivan. *Quality of life: an introduction to the concept*. Brno : Masarykova univerzita, 2013. 87 s. Geoinovace. ISBN 978-80-210-6669-4.
- AAB02 HANUŠIN, Ján - CEBECAUEROVÁ, Martina - HUBA, Mikuláš - IRA, Vladimír - LACIKA, Ján - MADAJOVÁ, Michala - OŤAHEL', Ján - PODOLÁK, Peter. *Kultúrna krajina podmalokarpatského regiónu* [Cultural Landscape of the Sub-little Carpathian Region]. Bratislava : Geografický ústav SAV, 2013. 157 s. ISBN 978-80-89580-03-3.
- AAB03 KOPECKÁ, Monika - ROSINA, Konštantín - OŤAHEL', Ján - FERANEC, Ján - PAZÚR, Róbert - NOVÁČEK, Jozef. *Monitoring dynamiky zastavaných areálov* [Monitoring the dynamics of built-up areas]. Rec. František Petrovič, Vladimír Falt'an. Bratislava : Geografický ústav SAV, 2015. 98 s. Geographia Slovaca, 30.

- AAB04 ŠUŠKA, Pavel. *Aktívne občianstvo a politika premien mestského prostredia v postsocialistickej Bratislave* [Active citizenship and the politics of the urban environment transformation in post-socialist Bratislava]. Rec. M. Huba, J. Podoba. Bratislava : Geografický ústav SAV, 2014. 145 s. Geographia Slovaca, 29. Dostupné na internete: <https://www.sav.sk/journals/uploads/03030947GS_29_Suska_Aktivne_obcianstvo_a_politika_premien_mestskeho_prostredia_v_postsocialistickej_Bratislave.pdf>. ISBN 978-80-89580-09-5. ISSN 1210-3519.
- AAB06 WIĘCKOWSKI, Marek - MICHNIAK, Daniel - BEDNAREK-SZCEPAŃSKA, Maria - CHRENKA, Branislav - IRA, Vladimír - KOMORNICKI, Tomasz - ROSIK, Piotr - STĘPNIAK, Marcin - SZÉKELY, Vladimír - SLESZYŃSKI, Przemysław - ŚWIĄTEK, Dariusz - WIŚNIEWSKI, Rafał. *Poľsko-slovenské pohraničie z hľadiska dopravnej dostupnosti a rozvoja cestovného ruchu* [Polish-Slovak borderland in terms of transport accessibility and tourism development]. Varšava : Instytut Geografii i Przestrzennego Zagospodarowania Polska Akademia Nauk ; Bratislava : Geografický ústav Slovenskej akadémie vied, 2012. 283 s. ISBN 978-83-61590-93-4.
- ABB01 FRANDOFR, Milan - LEHOTSKÝ, Milan. Morfologicko-sedimentová diferenciácia horského vodného toku a jeho odozva na povodňové udalosti [Morphological-sedimentary differentiation of mountain river and its response to flood events]. In *Geomorphologia Slovaca et Bohemica*, 2014, roč. 14, č. 1, s. 7-86. ISSN 1335-9541.
- ABB02 LEHOTSKÝ, Milan - KIDOVÁ, Anna - RUSNÁK, Miloš. Slovensko-anglické názvoslovie morfológie vodných tokov [Slovak-English terminology of river morphology]. Rec. M. Jakubis, P. Halaj. In *Geomorphologia Slovaca et Bohemica*, 2015, roč. 15 č. 1, s. 5-62. ISSN 1335-9541. Dostupné na internete: <http://www.asg.sav.sk/gfsb/v0151/GSeB_1_2015.pdf>.
- ABC01 FERANEC, Ján - SOUKUP, Tomáš - HAZEU, Gerard - JAFFRAIN, Gabriel. Land Cover and Its Change in Europe: 1990-2006. In *Remote Sensing of Land Use and Land Cover : principles and applications*. - Boca Raton : CRC Press, 2012, s. 285-301. ISBN 978-1-4200-7074-3.
- ABC02 FERANEC, Ján - SOUKUP, Tomáš. Land Cover and Land Use. In *Recent Landform Evolution : the Carpatho-Balkan-Dinaric Region*. - Dordrecht : Springer, 2012, s. 39-44. ISBN 978-94-007-2447-1.
- ABC05 KOPECKÁ, Monika - VATSEVA, Rumiana - FERANEC, Ján - OŤAHEL', Ján - ROSINA, Konštantín. Urban land cover changes: case studies Trnava (Slovakia) and Burgas (Bulgaria). In *Land Use/Cover Changes in Selected Regions in the World*. Volume IX. - Asahikawa : International Geographical Union Commission on Land Use/Cover Change : Hokkaido University of Education, 2014, s. 49-55. ISBN 978-4-907651-10-7.
- ABC08 PAZÚR, Róbert - KOPECKÁ, Monika - FERANEC, Ján. Changes of artificial surfaces of Bratislava in 2006-2012 identified by the Urban Atlas data. In *Land Use/Cover Changes in Selected Regions in the World*. Volume XI. - Asahikawa : International Geographical Union Commission on Land Use/Cover Change : Hokkaido University of Education, 2015, s. 37-42. ISBN 978-4-907651-12-1.
- ABC09 STANKOVIANSKY, Miloš - BARKA, Ivan - BELLA, Pavel - BOLTÍŽIAR, Martin - GREŠKOVÁ, Anna - HÓK, Jozef - IŠTOK, Pavol. - LEHOTSKÝ, Milan - MICHALKOVÁ, Monika - MINÁR, Jozef - ONDRÁŠIK, Martin - ONDRÁŠIK, Rudolf - PECHO, Jozef, RNDr. - PIŠÚT, Peter - TRIZNA, Milan - URBÁNEK, Ján. Recent Landform Evolution in Slovakia. In *Recent Landform Evolution : the Carpatho-Balkan-Dinaric Region*. - Dordrecht : Springer, 2012, s. 141-175. ISBN 978-94-007-2447-1.
- ABD01-ABD08 Regionálne a priestorové disparity na Slovensku, ich vývoj v ostatnom desaťročí, súčasný stav a konzekvencie = Regional and spatial disparities in Slovakia: development in the last decade, the present status and consequences. Editori Anton Michálek, Peter Podolák. Bratislava : Geografický ústav SAV, 2014. 211 s. Geographia Slovaca, 28. ISBN 978-80-89580-08-8. ISSN 1210-3519.
- ADCA02 FERANEC, Ján - SOUKUP, Tomáš. Map presentation of changes in Europe's artificial surfaces for the periods 1990-2000 and 2000-2006. In *Central European Journal*

of Geosciences, 2013, vol. 5, no. 2, p. 323-330. (0.506 - IF2012). (2013 - Current Contents). ISSN 2081-9900.

- ADCA03 JEDLIČKA, Karel - SLÁDEK, Ján - ŠILHAVÝ, Jakub. Semiautomatic construction of isobase surfaces: a case study from the central Western Carpathians. In *Computers and Geosciences*, 2015, vol. 78, p. 73-80. (2.054 - IF2014). (2015 - Current Contents). ISSN 0098-3004.
- ADCA04 KUBINSKÝ, Daniel - WEIS, Karol - FUSKA, Jakub - LEHOTSKÝ, Milan - PETROVIČ, František. Changes in retention characteristics of 9 historical artificial water reservoirs near Banská Štiavnica, Slovakia. In *Open Geosciences*, 2015, vol. 7, no. 1., p. 880-887. (0.663 - IF2014). (2015 - Current Contents). ISSN 2081-9900. Dostupné na internete: <<http://www.degruyter.com/view/j/geo.2015.7.issue-1/geo-2015-0056/geo-2015-0056.xml>>.
- ADCA06 MICHNIAK, Daniel - WIECKOWSKI, Marek - STĘPNIAK, Marcin - ROSIK, Piotr. The impact of selected planned motorways and expressways on the potential accessibility of the Polish-Slovak borderland with respect to tourism development. In *Moravian Geographical Reports*, 2015, vol. 23, no. 1, s. 13-20. (0.872 - IF2014). (2015 - Current Contents). ISSN 1210-8812. Dostupné na internete: <<http://www.degruyter.com/view/j/mgr.2015.23.issue-1/mgr-2015-0002/mgr-2015-0002.xml?format=INT>>.
- ADCA08 PAZÚR, Róbert - OŤAHEL, Ján - MARETTA, Martin. The distribution of selected CORINE land cover classes in different natural landscapes in Slovakia: Methodological framework and applications. In *Moravian Geographical Reports*, 2015, vol. 23, no. 1, s. 45-56. (0.872 - IF2014). (2015 - Current Contents). ISSN 1210-8812. Dostupné na internete: <<http://www.degruyter.com/view/j/mgr.2015.23.issue-1/mgr-2015-0005/mgr-2015-0005.xml?format=INT>>.
- ADCA09 ROSINA, Konštantín - HURBÁNEK, Pavol. Internet availability as an indicator of peripherality in Slovakia. In *Moravian Geographical Reports*, 2013, vol. 21, no. 1, p. 16-24. (2013 - Current Contents, WOS, SCOPUS). ISSN 1210-8812.
- ADCA10 RUSNÁK, Miloš - LEHOTSKÝ, Milan. Time-focused investigation of river channel morphological changes due to extreme floods. In *Zeitschrift für Geomorphologie*, 2014, vol. 58, no. 2, p. 251-266. (0.661 - IF2013). (2014 - Current Contents). ISSN 0044-2798.
- ADCA11 SOLÍN, Ľubomír. Spatial variability in the flood vulnerability of urban areas in the headwater basins of Slovakia. In *Journal of Flood Risk Management*, 2012, vol. 5, no. 4, p. 303-320. (1.000 - IF2011). (2012 - Current Contents). ISSN 1753-318X.
- ADCA12 ŠVEDA, Martin - MADAJOVÁ, Michala. Merging diaries and GPS records: The method of data collection for spatio-temporal research. In *Moravian Geographical Reports*, 2015, vol. 23, no. 2, s. 12-25. (0.872 - IF2014). (2015 - Current Contents). ISSN 1210-8812. Dostupné na internete: <http://www.geonika.cz/EN/research/ENMgr/MGR_2015_02.pdf>.
- ADDA02 MICHÁLEK, Anton. Identifikácia a zmeny marginálnych regiónov na Slovensku (z aspektu sociálno-ekonomickej marginality) = Identification and changes of margined regions in Slovakia (in terms of socio-economic marginality). In *Ekonomický časopis*, 2015, roč. 63, č. 9, s. 922-943. (0.434 - IF2014). (2015 - Current Contents, WOS, SCOPUS, EconLit). ISSN 0013-3035.
- ADDA06 ŠVEDA, Martin - KRIŽAN, František. Prejavy komerčnej suburbanizácie vo vybraných odvetviach hospodárstva v zázemí Bratislavy = The Manifestation of Commercial Suburbanization in the Selected Sectors of Economy in the Hinterland of Bratislava. In *Ekonomický časopis*, 2012, roč. 60, č. 5, s. 460-481. (0.274 - IF2011). (2012 - Current Contents, WOS, SCOPUS, EconLit). ISSN 0013-3035.
- ADEB10 SZÉKELY, Vladimír. From enthusiasm to scepticism: tourism cluster initiatives and rural development in Slovakia. In *Studies in Agricultural Economics*, 2014, vol. 116, no. 2, p. 74-81. (2014 - Econlit, CABI Agricultural Economics). ISSN 1418-2106.
- ADMB03 SOLÍN, Ľubomír. Recent Slovak flood protection relative to integrated flood risk management. In *International Journal of River Basin Management*, 2015, vol. 13, no. 4, p. 463-473. (2015 - SCOPUS). ISSN 1571-5124.

- ADNB01 CEBECAUEROVÁ, Martina - LEHOTSKÝ, Milan. Komplexita ripariálnej zóny - príklad rurálneho segmentu vodného toku Torysa = Complexity of riparian zone - case study of rural segment of the River Torysa. In *Geografický časopis*, 2012, roč. 64, č. 2, s. 133-154. (2012 - SCOPUS). ISSN 0016-7193.

2.1.3 List of monographs/books published abroad

- AAA01 ANDRÁŠKO, Ivan. *Quality of life: an introduction to the concept*. Brno : Masarykova univerzita, 2013. 87 s. Geoinovace. ISBN 978-80-210-6669-4.
- AAA02 WIĘCKOWSKI, Marek - MICHNIAK, Daniel - BEDNAREK-SZCEPAŃSKA, Maria - CHRENKA, Branislav - IRA, Vladimír - KOMORNICKI, Tomasz - ROSIK, Piotr - STĘPNIAK, Marcin - SZÉKELY, Vladimír - SLESZYŃSKI, Przemysław - ŚWIĄTEK, Dariusz - WIŚNIEWSKI, Rafał. *Polish-Slovak Borderland : transport accessibility and tourism*. Warszawa : Institute of Geography and Spatial Organization Polish Academy of Sciences, 2012. 323 s. Prace Geograficzne (Geographical Studies), no. 234. ISBN 978-83-61590-97-2.

2.1.4. List of monographs/books published in Slovakia

- AAB01 ANDRÁŠIOVÁ, Katarína - BELIČKOVÁ, Katarína - BEŇUŠKOVÁ, Zuzana - BOBULOVÁ, Lenka - MLÁDEK-RAJNIAKOVÁ, Jana - NOVÁKOVÁ, Katarína - OLŠAVSKÁ, Miriam - PARÍKOVÁ, Magdaléna - PROFANTOVÁ, Zuzana - ŠEBO, Dušan. *Žili sme v socializme I. : kapitoly z etnológie každodennosti* [We Used to Live in Socialism I: Chapters from the Ethnology of Daily Life]. Bratislava : Ústav etnológie SAV, 2012. 350 s. ISBN 978-80-88997-49-8.
- AAB02 HANUŠIN, Ján - CEBECAUEROVÁ, Martina - HUBA, Mikuláš - IRA, Vladimír - LACIKA, Ján - MADAJOVÁ, Michala - OŤAHEL', Ján - PODOLÁK, Peter. *Kultúrna krajina podmalokarpatského regiónu* [Cultural Landscape of the Sub-little Carpathian Region]. Bratislava : Geografický ústav SAV, 2013. 157 s. ISBN 978-80-89580-03-3.
- AAB03 KOPECKÁ, Monika - ROSINA, Konštantín - OŤAHEL', Ján - FERANEC, Ján - PAZÚR, Róbert - NOVÁČEK, Jozef. *Monitoring dynamiky zastavaných areálov* [Monitoring the dynamics of built-up areas]. Rec. František Petrovič, Vladimír Falťan. Bratislava : Geografický ústav SAV, 2015. 98 s. Geographia Slovaca, 30. ISBN 978-80-89580-11-8.
- AAB04 ŠUŠKA, Pavel. *Aktívne občianstvo a politika premien mestského prostredia v postsocialistickej Bratislave* [Active citizenship and the politics of the urban environment transformation in post-socialist Bratislava]. Rec. M. Huba, J. Podoba. Bratislava : Geografický ústav SAV, 2014. 145 s. Geographia Slovaca, 29. Dostupné na internete: <https://www.sav.sk/journals/uploads/03030947GS_29_Suska_Aktivne_obcianstvo_a_politika_premien_mestskeho_prostredia_v_postsocialistickej_Bratislave.pdf>. ISBN 978-80-89580-09-5. ISSN 1210-3519.
- AAB05 URBÁNEK, Ján. *Malé Karpaty - príbeh pohoria* [Malé Karpaty – story of mountains]. Rec. Juraj Hreško, Miloš Stankovič. Bratislava : Veda, 2014. 143 s. ISBN 978-80-224-1362-6.
- AAB06 WIĘCKOWSKI, Marek - MICHNIAK, Daniel - BEDNAREK-SZCEPAŃSKA, Maria - CHRENKA, Branislav - IRA, Vladimír - KOMORNICKI, Tomasz - ROSIK, Piotr - STĘPNIAK, Marcin - SZÉKELY, Vladimír - SLESZYŃSKI, Przemysław - ŚWIĄTEK, Dariusz - WIŚNIEWSKI, Rafał. *Poľsko-slovenské pohraničie z hľadiska dopravnej dostupnosti a rozvoja cestovného ruchu* [Polish-Slovak borderland in terms of transport accessibility and tourism development]. Varšava : Instytut Geografii i Przestrzennego Zagospodarowania Polska Akademia Nauk ; Bratislava : Geografický ústav Slovenskej akadémie vied, 2012. 283 s. ISBN 978-83-61590-93-4.

2.1.5. List of other scientific outputs specifically important for the institute, max. 10 items

- AGI01 HANUŠIN, Ján - CEBECAUEROVÁ, Martina - HUBA, Mikuláš - IRA, Vladimír - LACIKA, Ján - MADAJOVÁ, Michala - OŤAHEL', Ján - PAZÚR, Róbert - PODOLÁK, Peter -

ŠVEDA, Martin. *Alternatívne rozvojové scenáre podmalokarpatskej kultúrnej krajiny : záverečná správa : výstup 3.2.1. - Regionálne rozvojové scenáre krajiny* [Alternatives of Development Scenarios of the Sub-little Carpathian Cultural Landscape : final report : (output 3.2.1 - Regional Landscape Development Scenarios)]. Bratislava : Geografický ústav SAV, 2013. 111 s. ISBN 978-80-89580-06-04.

- AGI02 HANUŠIN, Ján - CEBECAUEROVÁ, Martina - HUBA, Mikuláš - IRA, Vladimír - LACIKA, Ján - MADAJOVÁ, Michala - OŤAHEL, Ján - PAZÚR, Róbert - PODOLÁK, Peter - ŠVEDA, Martin. *Alternatives of Development Scenarios of the Sub-little Carpathian Cultural Landscape : final report : (output 3.2.1 - Regional Landscape Development Scenarios, PP4 Institute of Geography SAS, Bratislava, Slovak Republic)*. Bratislava : Institute of Geography SAS, 2013. 97 s. ISBN 978-80-89580-05-7.
- BAB08 WIĘCKOWSKI, Marek - MICHNIAK, Daniel - CHRENKA, Branislav - IRA, Vladimír - KOMORNICKI, Tomasz - ROSIK, Piotr - SZÉKELY, Vladimír - SLESZYŃSKI, Przemysław - WIŚNIEWSKI, Rafał. *Možnosti zlepšenia dostupnosti a rozvoja cestovného ruchu v poľsko-slovenskom pohraničí - námety, odporúčania a dobré príklady* [The potential for improved accessibility and tourism development in the Polish-Slovak borderland - conditions, recommendations and good practices]. Varšava : Instytut Geografii i Przestrzennego Zagospodarowania Polska Akademia Nauk ; Bratislava : Geografický ústav Slovenskej akadémie vied, 2012. 85 s. ISBN 978-83-61590-84-2.
- ABD10 URBÁNEK, Ján - NOVOTNÝ, Ján. *Geomorfológia južnej časti Malých Karpát : kartografické spracovanie - samostatná mapa* [Geomorphology of the southern part of the Malé Karpaty Mts. : independent map]. Rec. Juraj Hreško, Miloš Stankoviansky. In URBÁNEK, Ján. *Malé Karpaty - príbeh pohoria*. - Bratislava : Veda, 2014. ISBN 978-80-224-1362-6.

Land Cover map layer for Bratislava self-governing region - for the study Urban planning and landscape study for protection against flash floods in the Small Carpathian region in 2014.

Land cover database: case study Trnava - years 2002 and 2011 (minimum mapping unit 0,25 ha)

Database of forest fragmentation - Tatra Mountains for time horizons 1990, 2000, 2006, and 2012

GIS database on flood hazards in municipalities in Slovakia (shp. file) with attributes: place of flood events, data of flood events and type of flood events. The basis for the creation of a database were annual reports on the course and consequences of floods processed Ministry of Agriculture and Ministry of Environment SR and the reports news of agency TASR and SITA. The data are available since 1996.

Databases of selected river corridors:

The Belá River corridor (length 23,6 km): landforms characteristics based on analyses of historical maps and aerial photos for time horizons 1823, 1938, 1949, 1961, 1973, 1986, 1992, 2003, and 2009 and remotely sensed data generated by UAV (channel length 2 km).

The Ondava River corridor (length 13,2 km) landforms characteristics based on analyses of historical maps and aerial photos for time horizons 1949, 1961, 1972, 1981, 1987, 2002, and 2009, 14 channel cross-sections (2013), 179 granulometric samples and remotely sensed data generated by UAV (areas 250x420 and 180x150 m).

The Topľa River corridor (length 39,8 km): landforms characteristics based on analyses of historical maps and aerial photos for time horizons 1949, 1961, 1981, 1987, 2002, and 2009 and 86 channel cross-sections (16 in 2013 and 70 in 2015).

2.1.6. List of patents, patent applications, and other intellectual property rights registered abroad, incl. Revenues

-

2.1.7. List of patents, patent applications, and other intellectual property rights registered in Slovakia, incl. revenues

-

2.1.8. Table of research outputs (as in annual reports).

Papers from international collaborations in large-scale scientific projects (Dwarf team, ALICE Collaboration, ATLAS collaboration, CD Collaboration, H1 Collaboration, HADES Collaboration, and STAR Collaboration) have to be listed separately.

Scientific publications	2012			2013			2014			2015			total			
	number	No. / FTE	No. / salary budget	number	No. / FTE	No. / salary budget	number	No. / FTE	No. / salary budget	number	No. / FTE	No. / salary budget	number	averaged number per year	av. No. / FTE	av. No. / salary budget
Scientific monographs and monographic studies in journals and proceedings published abroad (AAA, ABA)	1,0	0,036	0,003	1,0	0,039	0,003	0,0	0,000	0,000	0,0	0,000	0,000	2,0	0,5	0,020	0,001
Scientific monographs and monographic studies in journals and proceedings published in Slovakia (AAB, ABB)	2,0	0,072	0,005	2,0	0,079	0,005	3,0	0,117	0,008	2,0	0,086	0,005	9,0	2,3	0,088	0,006
Chapters in scientific monographs published abroad (ABC)	5,0	0,180	0,013	2,0	0,079	0,005	4,0	0,156	0,011	2,0	0,086	0,005	13,0	3,3	0,127	0,009
Chapters in scientific monographs published in Slovakia (ABD)	0,0	0,000	0,000	0,0	0,000	0,000	9,0	0,351	0,024	0,0	0,000	0,000	9,0	2,3	0,088	0,006
Scientific papers published in journals registered in Current Contents Connect (ADCA, ADCB, ADDA, ADEB)	3,0	0,108	0,008	2,0	0,079	0,005	5,0	0,195	0,013	9,0	0,389	0,025	19,0	4,8	0,186	0,013
Scientific papers published in journals registered in Web of Science Core Collection and SCOPUS (ADMA, ADMB, ADNA, ADNB)	6,0	0,216	0,016	9,0	0,354	0,024	12,0	0,469	0,032	7,0	0,303	0,019	34,0	8,5	0,333	0,023
Scientific papers published in other foreign journals (not listed above) (ADEA, ADEB)	3,0	0,108	0,008	7,0	0,275	0,018	3,0	0,117	0,008	2,0	0,086	0,005	15,0	3,8	0,147	0,010
Scientific papers published in other domestic journals (not listed above) (ADFA, ADFB)	10,0	0,359	0,026	15,0	0,590	0,039	11,0	0,430	0,030	4,0	0,173	0,011	40,0	10,0	0,392	0,027
Scientific papers published in foreign peer-reviewed proceedings (AEC, AECA)	10,0	0,359	0,026	6,0	0,236	0,016	6,0	0,234	0,016	3,0	0,130	0,008	25,0	6,3	0,245	0,017
Scientific papers published in domestic peer-reviewed proceedings (AED, AEDA)	6,0	0,216	0,016	6,0	0,236	0,016	1,0	0,039	0,003	0,0	0,000	0,000	13,0	3,3	0,127	0,009
Published papers (full text) from foreign and international scientific conferences (AFA, AFC, AFBA, AFDA)	7,0	0,251	0,018	0,0	0,000	0,000	1,0	0,039	0,003	0,0	0,000	0,000	8,0	2,0	0,078	0,005
Published papers (full text) from domestic scientific conferences (AFB, AFD, AFBB, AFDB)	0,0	0,000	0,000	0,0	0,000	0,000	1,0	0,039	0,003	0,0	0,000	0,000	1,0	0,3	0,010	0,001

- **Supplementary information and/or comments on the scientific outputs of the institute.**

2.2. Responses to the research outputs (citations, etc.)

2.2.1. Table with citations per annum.

Citations of papers from international collaborations in large-scale scientific projects (Dwarf team, ALICE Collaboration, ATLAS collaboration, CD Collaboration, H1 Collaboration, HADES Collaboration, and STAR Collaboration) have to be listed separately.

Citations, reviews	2011		2012		2013		2014		total		
	number	No. / FTE	number	No. / FTE	number	No. / FTE	number	No. / FTE	number	averaged number per year	av. No. / FTE
Citations in Web of Science Core Collection (1.1, 2.1)	216,0	7,759	271,0	10,661	266,0	10,387	295,0	12,748	1048,0	262,0	10,274
Citations in SCOPUS (1.2, 2.2) if not listed above	121,0	4,346	110,0	4,327	149,0	5,818	156,0	6,742	536,0	134,0	5,254
Citations in other citation indexes and databases (not listed above) (3.2,4.2,9,10)	17,0	0,611	23,0	0,905	53,0	2,070	5,0	0,216	98,0	24,5	0,961
Other citations (not listed above) (3, 4, 3.1, 4.1)	559,0	20,079	572,0	22,502	576,0	22,491	656,0	28,349	2363,0	590,8	23,164
Reviews (5,6)	2,0	0,072	2,0	0,079	5,0	0,195	2,0	0,086	11,0	2,8	0,108

2.2.2. List of 10 most-cited publications, with number of citations, in the assessment period (2011 – 2014).

- [1] BOSSARD, M. - FERANEC, Ján - OŤAHEL', Ján. CORINE land cover technical guide - Addendum 2000 : technical report [elektronický zdroj]. No. 40. Copenhagen : European Environment Agency, 2000. 105 s. Názov prebraný z internetu. Požaduje sa Acrobat reader. Dostupné na internete: <http://reports.eea.europa.eu/tech40add/en/tech40add.pdf>. (281 citations)
- [2] ŠÚRI, Marcel - HOFIERKA, Jaroslav. A New GIS-based Solar Radiation Model and Its Application to Photovoltaic Assessments. In Transactions in GIS, 2004, vol. 8, no. 2, p. 175-190. (2004 - SCOPUS). ISSN 1361-1682. (87 citations)
- [3] BEZÁK, Anton. Funkčné mestské regióny na Slovensku = Functional urban regions in Slovakia. Bratislava : Geografický ústav SAV, 2000. 89 s. Geographia Slovaca, 15. ISSN 1210-3519. (78 citations)
- [4] FERANEC, Ján - OŤAHEL', Ján. Krajinná pokrývka Slovenska = Land cover of Slovakia. 1. vyd. Bratislava : VEDA, 2001. 124 s. ISBN 80-224-0663-5. (75 citations)
- [5] BÜTTNER, George - FERANEC, Ján - JAFFRAIN, Gabriel. CORINE land cover update 2000 : technical guidelines [elektronický zdroj]. Copenhagen : European Environment Agency, 2002. 56 s. Technical report, 89. Názov prebraný z internetu. Požaduje sa Acrobat reader. Dostupné na internete: <http://www.pedz.uni-mannheim.de/daten/edz-bn/eua/02/techrep89.pdf>. ISBN 92-9167-511-3. (71 citations)
- [6] FERANEC, Ján - JAFFRAIN, Gabriel - SOUKUP, Tomáš - HAZEU, Gerard. Determining changes and flows in European landscapes 1990-2000 using CORINE land cover data. In Applied Geography, 2010, vol. 30, no. 1, p. 19-35. (2.324 - IF2009). (2010 - Current Contents). ISSN 0143-6228. (70 citations)
- [7] ŠÚRI, Marcel - HULD, T.A. - DUNLOP, E.D. PV-GIS: a web-based solar radiation database for the calculation of PV potential in Europe. In International Journal of Sustainable Energy, 2005, vol. 24, no. 2, p. 55-67. (2005 - SCOPUS). ISSN 1478-6451. (60 citations)
- [8] MARIOT, Peter. Geografia cestovného ruchu = Geography of tourism. Bratislava : VEDA, 1983. 248 s. (55 citations)
- [9] MAZÚR, Emil - LUKNIŠ, Michal - BALATKA, Břetislav - LOUČKOVÁ, Jaroslava - SLÁDEK, Jaroslav. Geomorfologické členenie SSR a ČSSR : mapa 1: 500 000 = Geomorphological division of Slovakia and Czechoslovakia : map 1: 500 000. Bratislava : Slovenská kartografia, 1986. Mapa 1 list. (50 citations)
- [10] HOFIERKA, Jaroslav - ŠÚRI, Marcel. The Solar Radiation Model for Open Source GIS: Implementation and Applications. In Proceedings of the Open Source Free Software GIS - GRASS users conference 2002. Editor M. Ciolli, P. Zatelli. - Trento, 2002, [17 p.]. Názov z webovej stránky. (50 citations)

2.2.3. List of most-cited authors from the Institute (at most 10 % of the research employees with university degree engaged in research projects) and their number of citations in the assessment period (2011– 2014).

- | | | |
|-----|--------------|---------------|
| [1] | Ján Feranec | 901 citations |
| [2] | Ján Oťahel' | 674 citations |
| [3] | Vladimír Ira | 337 citations |

• Supplementary information and/or comments on responses to the scientific output of the institute.

- [1] J. Feranec a J. Oťahel' – Literary Fund Premium (Prémia Literárneho fondu) for outstanding scientific response to one work in the category of Technical Sciences and Geosciences. Awarded by: Literary Fund (Literárny fond), Section for scientific and professional literature and computer programs

Description: Award for a distinguished scientific response to a work: Bossard M., Feranec J., Otáhel J. CORINE land cover technical guide, Addendum 2000: technical report No 40, Copenhagen

- [2] A. Michálek – award of VEGA committee (Scientific Grant Agency of the Slovak Academy of Sciences and the Ministry of Education) for excellent results achieved in the project Regionálne a priestorové disparity na Slovensku, ich vývoj v ostatnom desaťročí, súčasný stav a konzekvencie (Regional and spatial disparities in Slovakia; development in the last decade, the present status and consequences), 1/2012-12/2014.
- [3] The most-cited publication published in the assessment period 2012-2015 with 17 citations: AAB06 WIECKOWSKI, Marek - MICHNIAK, Daniel - BEDNAREK-SZCEPAŃSKA, Maria - CHRENKA, Branislav - IRA, Vladimír - KOMORNICKI, Tomasz - ROSIK, Piotr - STĘPNIAK, Marcin - SZÉKELY, Vladimír - SLESZYŃSKI, Przemysław - ŚWIĄTEK, Dariusz - WIŚNIEWSKI, Rafał. *Polsko-slovenské pohraničie z hľadiska dopravnej dostupnosti a rozvoja cestovného ruchu* [Polish-Slovak borderland in terms of transport accessibility and tourism development]. Varšava : Instytut Geografii i Przestrzennego Zagospodarowania Polska Akademia Nauk ; Bratislava : Geografický ústav Slovenskej akadémie vied, 2012. 283 s. ISBN 978-83-61590-93-4.

2.3. Research status of the institute in international and national contexts

- **International/European position of the institute**

- 2.3.1. List of the most important research activities demonstrating the international relevance of the research performed by the institute, incl. major projects (details of projects should be supplied under Indicator 2.4). Max. 10 items.**

- [1] *Activities in the International Geographical Union (IGU) and the International Cartographic Association (ICA):* Ján Feranec was a member of executive committee of the Commission on Land Use and Cover Changes in the IGU and in 2014 became its vice-president. Vladimír Ira as a Chairman of the Slovak National Geographical Committee was active in work of the IGU General Assemblies (representatives of IGU National Committees). Researchers of the Institute participated at IGU international conferences in Cologne (2012), Kyoto (2013), Cracow (2014), and Moscow (2015). Ján Feranec was a vice-president of the Commission on Thematic Mapping from Satellite Imagery in 2013-2015 and in 2015 became a vice-president of the Commission on Sensor-driven Mapping in the International Cartographic Association (ICA).
- [2] *Carpatho-Balkan-Dinaric Conference on Geomorphology.* The Institute co-organised international conference on the occasion of 50th anniversary of foundation of the Carpatho-Balkan Geomorphological Commission (CBGC) in 2013. The event was attended by 80 participants from eight countries. The main objective of the CBGC is to provide a platform for the exchange of knowledge and for the solving of common geomorphic research tasks concerning the Carpatho-Balkan mountain system.
- [3] *Urban Atlas.* Under the contract with the Institut Géographique National France International (IGN FI) and in the context of the Urban Atlas project connected to the Copernicus - The European Earth Observation Programme; the Institute of Geography provided the interpretation of the control points (located in the urban zones) in the satellite images of selected European cities.
- [4] *Project VITAL LANDSCAPES – Valorisation and Sustainable Development of Cultural Landscapes using Innovative Participation and Visualisation Techniques.* The Institute was a partner of a multilateral project under the Central Europe 2007-2013 Programme, which involved also partner institutions from Germany, Austria, Czechia, Hungary, Poland, and Slovenia: The general objective of the project was to protect Central European (CE) cultural landscapes by supporting sustainable regional development and by linking nature/landscape protection with socio-economic development.
- [5] *Project INFRAREGTUR – Infrastructural and organizational possibilities of spatial accessibility improvement as a factor for development of the Polish-Slovak tourist regions.* The Institute was a partner of a bilateral project under the Cross-border cooperation

Programme Poland-Slovakia 2007-2013. Lead partner of the project was the Institute of Geography and Spatial Organisation of the Polish Academy of Sciences. The main aim of the project was to identify opportunities of accessibility improvements on different spatial scales in order to increase tourism potential. Second aim was a transfer of scientific knowledge and experience to the administrative sector.

- [6] *Project COST Action ES1306 Connecting European connectivity research.* The COST project is an appropriate platform for the research of connectivity in terrestrial and water systems because it will gather together existing expertise to advance the field of connectivity in a concerted way. The key benefit of the project will therefore be to establish connectivity as a research paradigm. The project permits transfer of current understanding into useable science, by developing it's conceptual basis and transferring it into a series of monitoring and modelling tools that will provide the platform for indices that will inform holistic management of catchment systems. Participants in the project represent 23 European countries.
- [7] The Institute of Geography MAD has bilateral cooperation agreements with academic institutes in Czechia, Poland, Hungary, Bulgaria, and Ukraine.
- [8] The researchers of the Institute of Geography were members of editorial boards of 14 scientific journals published abroad (6 memberships in Czechia, 5 in Poland, 2 in Hungary, 1 in Austria and Romania).
- [9] The Institute of Geography is a member of international organisations: Global Water Partnership and European Rural Development Network.
- [10] The Institute organised 11th Joint Meeting of International Association for Danube Research (IAD) National Representatives & Expert Group Leaders (national representatives of Hungary, Croatia, Serbia, Austria, Germany, Romania and Slovakia), 27.05.-28.05.2013, Bratislava, Slovakia.

2.3.2. List of international conferences (co)organised by the institute.

- [1] Infraštruktúrne a organizačné možnosti zlepšenia priestorovej dostupnosti ako činiteľ rozvoja poľsko-slovenských regiónov cestovného ruchu (Infrastructural and Organisational Possibilities for the Improvement of Spatial Accessibility as a Factor Contributing to the Development of Polish-Slovak Tourist Regions), Krakov, 19.06.-19.06.2012
- [2] Geomorfológia a integrovaný výskum krajiny (Geomorphology and Integrated Landscape Research), Ružomberok, 10.09.-12.09.2012
- [3] Karpatsko-balkánsko-dinárska geomorfologická konferencia (Carpatho-Balkan-Dinaric Conference on Geomorphology), Stará Lesná, 24.06.-28.06.2013
- [4] Reflexie časovo-priestorových výskumov v geografii (Reflections on Time-Spatial Research in Geography) Conference held on the occasion of the foundation of the Institute of Geography SAS, Smolenice, 18.11.-19.11.2013
- [5] Geomorfológia a environmentálne výzvy (Geomorphology and Environmental Challenges), 8th annual conference of ASG SAS, Snina, 06.10.-08.10.2014
- [6] 7. slovensko-poľský geografický seminár (7th Slovak-Polish Geographical Seminar), Smolenice, 27.11.-28.11.2014
- [7] Management a udržateľný rozvoj národných parku (Management and Sustainable Development of National Parks), Borová Lada/Kvilda, 02.10.-04.10.2015
- [8] Migračná kríza a jej demografické, environmentálne, bezpečnostné a iné súvislosti (Migration Crisis. Enviromental, Safety and other Implications), Bratislava, 13.11.-13.11.2015

2.3.3. List of edited proceedings from international scientific conferences.

- [1] FAI10 *Reflexie časovo-priestorových výskumov v geografii : zborník abstraktov = Reflections of Time-Space Research in Geography.* Eds. Vladimír Ira, Daniel Michniak, Pavel Šuška, Martin Šveda. Bratislava : Geografický ústav SAV, 2013. 68 s. ISBN 978-80-89580-07-1.

- [2] FAI14 *Geomorfológia a environmentálne výzvy : zborník abstraktov =*
Geomorphology and Environmental Challenges. Editor Ján Novotný. Bratislava : Asociácia slovenských geomorfológov pri SAV : Geografický ústav SAV, 2014. 50 s. ISBN 978-80-971702-1-9.
- [3] FAI17 *Processes and Patterns in Highly Dynamic Mountain Fluvial Systems : international field seminar.* Edited by B. Wyżga, J. Zawiejska, M. Lehotský. Institute of Geography, Pedagogical University of Cracow : Institute of Nature Conservation, Polish Academy of Sciences : Institute of Geography, Slovak Academy of Sciences, 2012. 36 s. ISBN 978-83-61191-52-0.
- [4] *Carpatho-Balkan-Dinaric Conference on Geomorphology – Book of Abstracts and Excursion guide.* Edited by J. Novotný, M. Lehotský, Z. Rączkowska, Z. Machová. Geomorphologia Slovaca et Bohemica 1/2013.

2.3.4. List of journals edited/published by the institute:

2.3.4.1. WOS (IF of journals in each year of the assessment period)

-

2.3.4.2. SCOPUS

- [1] Geografický časopis (Geographical Journal)

2.3.4.3. other databases

-

2.3.4.4. not included in databases

- [1] Geomorphologia Slovaca et Bohemica – journal published by the Association of Slovak Geomorphologists in cooperation with the Institute of Geography

• National position of the institute

2.3.5. List of selected projects of national importance

- [1] Vybrané geografické aspekty vývoja životného prostredia Slovenska a jeho regiónov v medzinárodnom kontexte (*Selected geographical aspects of the environment in Slovak regions and the country as a whole in the international context*), 1/2012-12/2014.
- [2] Prírodné a človekom indukované geomorfologické a sedimentárne zmeny fluvialneho systému (*Natural and human-induced geomorphological and sedimentary changes in river system*), 1/2012-12/2014.
- [3] Regionálne a priestorové disparity na Slovensku, ich vývoj v ostatnom desaťročí, súčasný stav a konzekvencie (*Regional and spatial disparities in Slovakia; development in the last decade, the present status and consequences*), 1/2012-12/2014.
- [4] Časovo-priestorová analýza využívania krajiny: hodnotenie dynamiky zmien, fragmentácie a stability aplikáciou dátových vrstiev CORINE land cover (*Time-spatial analysis of land use: dynamics of changes, fragmentation and stability assessments by application of the CORINE landcover data layers*), 1/2010-12/2012.
- [5] Povodňové riziko obcí Slovenska (*Flood risk of municipalities in Slovakia*), 1/2012-12/2014.
- [6] Endogénny potenciál a exogénne faktory lokálneho a regionálneho rozvoja Slovenska (*Endogenous potential and exogenous factors of local and regional development in Slovakia*), 1/2012-12/2014.
- [7] Tvorba, verifikácia a aplikácia priestorových modelov zaľudnenia a osídlenia na báze európskych služieb pre monitoring krajiny (*Production, verification and application of population and settlement spatial models based on European land monitoring services*), 1/2013-12/2016.
- [8] Zmeny kultúrnej krajiny: analýza procesov rozširovania zástavby a pustnutia poľnohospodárskej pôdy aplikáciou databáz o krajinnej pokrývke (*Changes of cultural landscape: analysis of extension of urban fabric and farmland abandonment processes applying land cover databases*), 1/2013-12/2015.

- [9] Špecifiká časovo-priestorového správania človeka pod vplyvom spoločensko-ekonomických zmien (*Specifics of time-space human behaviour under the impact of socio-economic changes*), 1/2015-12/2017.
- [10] Hodnotenie povodňového rizika a jeho integrovaný manažment na regionálnej úrovni (*Flood risk assessment and its integrated management on regional level*), 1/2015-12/2017.

2.3.6. Projects of the Slovak Research and Development Agency (APVV)

-

2.3.7. Projects of the Scientific Grant Agency of the Slovak Academy of Sciences and the Ministry of Education (VEGA)

- [1] Vybrané geografické aspekty vývoja životného prostredia Slovenska a jeho regiónov v medzinárodnom kontexte (*Selected geographical aspects of the environment in Slovak regions and the country as a whole in the international context*), 1/2012-12/2014.
- [2] Prírodné a človekom indukované geomorfologické a sedimentárne zmeny fluvialneho systému (*Natural and human-induced geomorphological and sedimentary changes in river system*), 1/2012-12/2014.
- [3] Regionálne a priestorové disparity na Slovensku, ich vývoj v ostatnom desaťročí, súčasný stav a konzekvencie (*Regional and spatial disparities in Slovakia; development in the last decade, the present status and consequences*), 1/2012-12/2014.
- [4] Časovo-priestorová analýza využívania krajiny: hodnotenie dynamiky zmien, fragmentácie a stability aplikáciou dátových vrstiev CORINE land cover (*Time-spatial analysis of land use: dynamics of changes, fragmentation and stability assessments by application of the CORINE landcover data layers*), 1/2010-12/2012.
- [5] Povodňové riziko obcí Slovenska (*Flood risk of municipalities in Slovakia*), 1/2012-12/2014.
- [6] Endogénny potenciál a exogénne faktory lokálneho a regionálneho rozvoja Slovenska (*Endogenous potential and exogenous factors of local and regional development in Slovakia*), 1/2012-12/2014.
- [7] Tvorba, verifikácia a aplikácia priestorových modelov zaľudnenia a osídlenia na báze európskych služieb pre monitoring krajiny (*Production, verification and application of population and settlement spatial models based on European land monitoring services*), 1/2013-12/2016.
- [8] Zmeny kultúrnej krajiny: analýza procesov rozširovania zástavby a pustnutia poľnohospodárskej pôdy aplikáciou databáz o krajinnej pokrývke (*Changes of cultural landscape: analysis of extension of urban fabric and farmland abandonment processes applying land cover databases*), 1/2013-12/2015.
- [9] Analýza časovo-priestorovej dynamiky vybraných štruktúr kultúrnej krajiny Slovenska, ich ochrana a udržateľné využívanie (*Analysis of temporal-spatial dynamics of the selected cultural landscape structures in Slovakia, their protection and sustainable use*), 1/2015-12/2017.
- [10] Špecifiká časovo-priestorového správania človeka pod vplyvom spoločensko-ekonomických zmien (*Specifics of time-space human behaviour under the impact of socio-economic changes*), 1/2015-12/2017.
- [11] Odozva geomorfologicko-sedimentovej spojitosti/nespojivosti fluvialneho systému na environmentálne vplyvy (*Response of geomorphic-sedimentary connectivity/disconnectivity in fluvial system to environmental impacts*), 1/2015-12/2017.
- [12] Regionálna divergencia, priestorové nerovnosti a marginálne regióny v kontexte sociálno-ekonomického vývoja na Slovensku (*Regional divergence, spatial disparities and marginal regions in the context of socio-economic development in Slovakia*), 1/2015-12/2017.
- [13] Hodnotenie povodňového rizika a jeho integrovaný manažment na regionálnej úrovni (*Flood risk assessment and its integrated management on regional level*), 1/2015-12/2017.
- [14] Rozvojové trajektórie lokalít a regiónov – produkt odvetvových a priestorových politík, teritoriálneho kapitálu a rozhodnutí (*Development trajectories of localities and regions - product of sector and spatial policies, territorial capital and decisions*), 1/2015-12/2017.

2.3.8. Projects of SAS Centres of Excellence

- [1] Hradý na Slovensku. Interdisciplinárny prierezový pohľad na fenomén hradov (Castles in Slovakia. Interdisciplinary cross-sectional view on the castle phenomenon), 10/2013-10/2017.

2.3.9. National projects supported by EU Structural Funds

-

2.3.10. List of journals (published only in the Slovak language) edited/published by the institute:

2.3.10.1. WOS (IF of journals in each year of the assessment period)

-

2.3.10.2. SCOPUS

-

2.3.10.3. Other databases

-

2.3.10.4. Not included in databases

- [1] Geographia Slovaca
[2] Kartografické listy (Cartographic Letters)

- **Position of individual researchers in an international context**

2.3.11. List of invited/keynote presentations at international conferences, as documented by programme or invitation letter

- [1] FERANEC, J.: *Selected monitoring activities in Slovakia with a potential link to GEOSS*. Seminarium GEO (Group in Earth Observation)/GEOSS (Global Earth Observation System of Systems) – calls for the development of free sharing of data and methods of Earth Observation. Prague, Czechia, 13.-14.2.2012.
- [2] HUBA, M.: *25 rokov formulovania a presadzovania udržiateľného rozvoja (Twenty-five years formulating and implementing sustainable development)*. Czech-Slovak conference RIO+20: from sustainable development to retreat? Olomouc, Czechia, 8.11.2012.
- [3] IRA, V.: *Landscape Protection, Sustainability and Quality of Life: Linkages Between Biodiversity and (Socio-)Cultural Diversity*. EuroEnviro2012 Conservation is not Isolation, 18th European Students Symposium on the Environment, Bratislava, Slovakia, 21.5.2012.
- [4] HUBA, M.: *Reflexia krajiny v súčasnej slovenskej politike (Reflection of the country in the current Slovak politics)*. International conference 'Lidé a krajina II (People and country II)'. Skalný Mlýn, Czechia, 5.4.2013.
- [5] HUBA, M.: *Central Europe: what does it mean in the 21st Century?* International seminarium Central Europe in the 21st Century, Prague, Czechia, 24.4.2013.
- [6] IRA, V. – HANUŠIN, J. – MADAJOVÁ, M.: *The role of territorial capital in the regional development (cultural landscape of the Sub-Little Carpathian Region)*. Warsaw Regional Forum 2013 'Territorial Capital – concepts, indicators & policy', Warsaw, Poland, 7.-13.10.2013.
- [7] MICHNIAK, D.: *Dostupnosť poľsko-slovenského pohraničia a rozvoj cestovného ruchu: verejná vs. individuálna doprava. Accessibility of the Polish-Slovak borderland and tourism development: public vs. individual transport*. Socio-economic Forum of the Euroregion Tatras 'Transport accessibility between Poland and Slovak: barriers, restrictions and opportunities for development', Nowy Targ, Poland, 25.11.2013.
- [8] IRA, V.: *Význam geografie v učebných plánoch a študijných programech (několik poznámek geografa - vědce a VŠ pedagoga) (Importance of geography in school curriculum (some*

comments of geographer – scientist and university teacher). International seminar Geographical Didactical Days (GEODID), České Budějovice, Czechia, 20.-22.11.2014.

- [9] MICHNIAK, D.: *The role of railways in tourism development: examples from Slovakia*. International conference 'Voyager en Europe médiane'. Paris, France, 19.-20.3.2015.

2.3.12. List of researchers who served as members of the organising and/or programme committees

- [1] Ján Feranec – member of programme committee for the international conference '21. Kartografická konferencia' (21th Cartographic Conference), Lednice, Czechia, 2015
- [2] Ján Feranec – member of scientific committee for the international conference 'ICA European Symposium on Cartography', Vienna, Austria, 2015
- [3] Vladimír Ira – member of organising committee of the conference 'Manažment a udržateľný rozvoj národných parků' (Management and Sustainable Development of National Parks), Borová Lada/Kvilda, Czechia, 2015.
- [4] Vladimír Ira – chairman of programme committee of the international conference 'Reflexie časovo-priestorových výskumov v geografii - slávnostné stretnutie a konferencia pri príležitosti 70. výročia založenia GgÚ SAV' (Reflections on Time-Spatial Research in Geography. Celebratory meeting and conference on the occasion of the 70th anniversary of the IG SAS), Smolenice, Slovakia, 2013.
- [5] Anna Kidová – member of organising and programme committee of the international conference 'Geomorfológia a environmentálne výzvy' (Geomorphology and Environmental Challenges), Snina, Slovakia, 2014.
- [6] Anna Kidová – member of organising committee of the international conference 'Carpatho-Balkan-Dinaric Conference on Geomorphology', Stará Lesná, Slovakia, 2013.
- [7] Milan Lehotský – member of programme committee of the international conference 'The 40th IAD Conference: The Danube and Black Sea Region – Unique Environment and Human Well Being Under Conditions of Global Changes', Sofia, Bulgaria, 2014.
- [8] Milan Lehotský – chairman of organising and programme committee of the international conference 'Geomorfológia a environmentálne výzvy' (Geomorphology and Environmental Challenges), Snina, Slovakia, 2014.
- [9] Milan Lehotský – chairman of organising committee of the international conference 'Carpatho-Balkan-Dinaric Conference on Geomorphology', Stará Lesná, Slovakia, 2013.
- [10] Milan Lehotský – member of programme committee of the international conference 'Reflexie časovo-priestorových výskumov v geografii - slávnostné stretnutie a konferencia pri príležitosti 70. výročia založenia GgÚ SAV' (Reflections on Time-Spatial Research in Geography. Celebratory meeting and conference on the occasion of the 70th anniversary of the IG SAS), Smolenice, Slovakia, 2013.
- [11] Milan Lehotský – member of programme committee of the international conference 'Výskum, využívanie a ochrana jaskýň' (Research, use and protection of caves), Liptovská Sielnica, Slovakia, 2013.
- [12] Milan Lehotský – vice-chairman of programme and organising committee of the international conference 'Geomorfológia a integrovaný výskum krajiny' (Geomorphology and Integrated Landscape Research), Ružomberok, Slovakia, 2012.
- [13] Michala Madajová - member of organising committee of the international conference 'Reflexie časovo-priestorových výskumov v geografii - slávnostné stretnutie a konferencia pri príležitosti 70. výročia založenia GgÚ SAV' (Reflections on Time-Spatial Research in Geography. Celebratory meeting and conference on the occasion of the 70th anniversary of the IG SAS), Smolenice, Slovakia, 2013.
- [14] Anton Michálek – member of programme committee of the international conference 'Reflexie časovo-priestorových výskumov v geografii - slávnostné stretnutie a konferencia pri príležitosti 70. výročia založenia GgÚ SAV' (Reflections on Time-Spatial Research in Geography. Celebratory meeting and conference on the occasion of the 70th anniversary of the IG SAS), Smolenice, Slovakia, 2013.

- [16] Daniel Michniak – member of programme committee of the international conference 'Reflexie časovo-priestorových výskumov v geografii - slávnostné stretnutie a konferencia pri príležitosti 70. výročia založenia GgÚ SAV' (Reflections on Time-Spatial Research in Geography. Celebratory meeting and conference on the occasion of the 70th anniversary of the IG SAS), Smolenice, Slovakia, 2013.
- [17] Daniel Michniak – chairman of organising committee of the international conference 'Reflexie časovo-priestorových výskumov v geografii - slávnostné stretnutie a konferencia pri príležitosti 70. výročia založenia GgÚ SAV' (Reflections on Time-Spatial Research in Geography. Celebratory meeting and conference on the occasion of the 70th anniversary of the IG SAS), Smolenice, Slovakia, 2013.
- [18] Daniel Michniak – member of programme and organising committee of the international conference 'Infraštruktúrne a organizačné možnosti zlepšenia priestorovej dostupnosti ako činiteľ rozvoja poľsko-slovenských regiónov cestovného ruchu', Krakow, Poland, 2012.
- [19] Ján Novotný – member of organising and programme committee of the international conference 'Geomorfológia a environmentálne výzvy' (Geomorphology and Environmental Challenges), Snina, Slovakia, 2014.
- [20] Ján Novotný – member of organising committee of the international conference 'Carpatho-Balkan-Dinaric Conference on Geomorphology', Stará Lesná, Slovakia, 2013.
- [21] Ján Novotný – member of organising committee of the international conference 'Reflexie časovo-priestorových výskumov v geografii - slávnostné stretnutie a konferencia pri príležitosti 70. výročia založenia GgÚ SAV' (Reflections on Time-Spatial Research in Geography. Celebratory meeting and conference on the occasion of the 70th anniversary of the IG SAS), Smolenice, Slovakia, 2013.
- [22] Ján Novotný – member of programme and organising committee of the international conference 'Geomorfológia a integrovaný výskum krajiny' (Geomorphology and Integrated Landscape Research), Ružomberok, Slovakia, 2012.
- [23] Ján Oľahel' – member of programme committee of the international conference 'Reflexie časovo-priestorových výskumov v geografii - slávnostné stretnutie a konferencia pri príležitosti 70. výročia založenia GgÚ SAV' (Reflections on Time-Spatial Research in Geography. Celebratory meeting and conference on the occasion of the 70th anniversary of the IG SAS), Smolenice, Slovakia, 2013.
- [24] Miloš Rusnák - member of organising and programme committee of the international conference 'Geomorfológia a environmentálne výzvy' (Geomorphology and Environmental Challenges), Snina, Slovakia, 2014.
- [25] Ján Sládek – member of organising and programme committee of the international conference 'Geomorfológia a environmentálne výzvy' (Geomorphology and Environmental Challenges), Snina, Slovakia, 2014.
- [26] Ján Sládek – member of organising committee of the international conference 'Carpatho-Balkan-Dinaric Conference on Geomorphology', Stará Lesná, Slovakia, 2013.
- [27] Vladimír Székely – chairman of programme and organising committee of the international conference '7. Slovensko-poľský geografický seminar' (7th Slovak-Polish Geographical Seminar), Smolenice, Slovakia, 2014.
- [28] Pavel Šuška – member of organising committee of the international conference 'Reflexie časovo-priestorových výskumov v geografii - slávnostné stretnutie a konferencia pri príležitosti 70. výročia založenia GgÚ SAV' (Reflections on Time-Spatial Research in Geography. Celebratory meeting and conference on the occasion of the 70th anniversary of the IG SAS), Smolenice, Slovakia, 2013.
- [29] Martin Šveda – member of organising committee of the international conference 'Reflexie časovo-priestorových výskumov v geografii - slávnostné stretnutie a konferencia pri príležitosti 70. výročia založenia GgÚ SAV' (Reflections on Time-Spatial Research in Geography. Celebratory meeting and conference on the occasion of the 70th anniversary of the IG SAS), Smolenice, Slovakia, 2013.

- **Position of individual researchers in a national context**

2.3.13. List of invited/keynote presentations at national conferences, as documented by programme or invitation letter

- [1] HUBA, M.: *Land-Urbia 2013 - pár slov na úvod*. Konferencia o integrovanom plánovaní mesta a krajiny LAND-URBIA 2013 (*Land-Urbia 2013: several introductory words*. Conference about Integrated Urban and Landscape Planning), Nitra 18.4.2013.
- [2] HUBA, M.: *Tretí sektor a samospráva ako aktívni účastníci legislatívneho procesu a participácie na činnosti NR SR*. Národná konferencia projektu WTD – Working Together for Development, (*Third Sector and Self-Government and Active Participants of the Legislation Process and Activities of the National Council of the SR*. National conference of WTD Project Working Together for Development, Bratislava, 4.10.2013.
- [3] HUBA, M.: *Viacúrovňový dialóg zameraný na identifikáciu a presadzovanie spoločných cieľov v oblasti energetickej a klimatickej politiky na národnej úrovni*. Konferencia Národnej platformy Projektu NET – CoM – NETworking the Covenant of Mayors (*Multi-level Dialogue About Identification and Enforcement of Common Objectives in the Field of Energy and Climate Policies on the National Level*. Conference of the National Platform for the NET – CoM – NETworking the Covenant of Mayors Project, Bratislava, 6.11.2013.
- [4] OŤAHEL', J. – PAZÚR, R.: *Kultúrna krajina: geoekologická a historická pamäť, reálny fyzický stav a spoločenské funkcie*. Vedecké kolokvium: 'Premeny poznania geografickej reality', ktoré sa uskutočnilo pri príležitosti životných jubileí prof. RNDr. Evy Michaeli, PhD. a prof. RNDr. Jána Harčára, CSc., Prešov (Cultural Landscape: Geo-Ecological and Historical Memory, Real Physical Status and Social Functions. Scientific Colloquium: 'The Changing Cognition of Geographical Reality' held on the occasion of the life anniversary of Prof. RNDr. Eva Michaeli, PhD and Prof. RNDr. Ján Harčár, CSc, 25.4.2013.
- [5] OŤAHEL', J. – IRA, V.: *Krajina – integrujúca koncepcia výskumných programov na Geografickom ústave SAV*. Vedecká konferencia 'Krajina - ekológia, využívanie a ochrana (súčasnosť a trendy vo výskume a monitoringu krajiny) (Landscape: the Integrating Concept of Research Programmes at the Institute of Geography SAS. Scientific Conference 'Landscape, Ecology, Use, and Conservation (the present and the trends in landscape research and monitoring)), Banská Bystrica, 29.5.2013.
- [6] HUBA, M.: *Naše verejné priestory v teórii a praxi* (Our Public Spaces in Theory and in Reality). LAND-URBIA, Nitra, 24.4.2014.
- [7] MICHNIAK, D.: *Dopravná dostupnosť slovensko-poľského a pohraničia a rozvoj cestovného ruchu: doprava verejná a individuálna*. Kongres malých a stredných podnikov Vyšehradskej skupiny (Transport Accessibility of the Slovak-Polish Boundary Area and the Development of Tourism: Individual and Public Transports). Demänovská Dolina, 10.9.2015.
- [8] KOPECKÁ, M.: *Využitie údajov Urban Atlas pri mapovaní zmien krajiny*. Aktuálne výzvy v kartografii, (Application of Urban Atlas Data in Mapping of Landscape Changes. Topical Challenges of Cartography), Bratislava, 26.11.2015.

2.3.14. List of researchers who served as members of organising and programme committees of national conferences

- [1] Ján Feranec – member of organising and programme committee of the conference 'Aktivity v kartografii' (Activities in Cartography), Bratislava, Slovakia, 2012.
- [2] Ján Hanušin – chairman of programme and organising committee for the conference 'Historická kultúrna krajina podmalokarpatského regiónu – výzva alebo nevyužitá možnosť?' (Historical Cultural Landscape of the Sub Little Carpathian Region or Unused Opportunity?), Modra, Slovakia, 2013.
- [3] Ján Hanušin – chairman of programme and organising committee for the conference 'Možnosti identifikácie, zachovania a ďalšieho využitia zvyškov kultúrnej krajiny v Malých Karpatoch a v príľahlej časti Podunajskej nížiny' (Options of Identification, Conservation, and Further Use of Remnants of Cultural Landscape in the Little Carpathians and the Contiguous Part of the Danube Lowland), Svätý Jur, Slovakia, 2012.

- [4] Mikuláš Huba – member of organising and programme committee of the conference '40 rokov Limitov rastu', (40 Years of Limits to Growth), Bratislava, Slovakia, 2012.
- [5] Vladimír Ira - member of programme committee of the international conference 'Kvalita života 2015' (Quality of Life 2015), Liberec, Czechia, 2015.
- [6] Vladimír Ira - member of organising committee of the conference 'Maloobchod a nákupné správanie spotrebiteľov / Časovo-priestorové kontexty dekoncentračných procesov v zázemí Bratislavy' (Retail and Shopping Behaviour of Consumers/Time-Spatial Context of Deconcentration Processes in the Hinterland of Bratislava), Smolenice, Slovakia, 2015.
- [7] Vladimír Ira - member of programme committee of the conference '19. česko-slovenský geografický akademický seminár – Časové a priestorové zmeny regionálnych štruktúr kultúrnej krajiny' (19th Czech-Slovak Geographical Academic Seminar 'Temporal and Spatial Changes of Regional Structures of Cultural Landscape'), Piešťany, Slovakia, 2014.
- [8] Vladimír Ira - member of organising committee of the conference 'Maloobchod v priestore a čase' (Retail in Space and Time), Smolenice, Slovakia, 2013.
- [9] Vladimír Ira - member of organising committee of the conference '17. česko-slovenský geografický akademický seminár' (17th Czech-Slovak Geographical Academic Seminar), Skalica, Slovakia, 2012.
- [10] Vladimír Ira - member of organising committee of the conference 'Nové impulzy v regionálnom rozvoji stredoeurópskeho priestoru' (New Impulses in Regional Development of the Central-European Space), Nitra, Slovakia, 2012.
- [11] Monika Kopecká – Member of organising and programme committee of the conference 'Aktivity v kartografii' (Activities in Cartography), Bratislava, Slovakia, 2014.
- [12] Ján Novotný – member of organising committee of the conference 'Nové impulzy v regionálnom rozvoji stredoeurópskeho priestoru', Nitra (New Impulses in Regional Development of the Central-European Space), Slovakia, 2012.
- [13] Peter Podolák – member and organising committee for the conference 'Historická kultúrna krajina podmalokarpatského regiónu – výzva alebo nevyužitá možnosť?' (Historical Cultural Landscape of the Sub Little Carpathian Region or Unused Opportunity?), Modra, Slovakia, 2013.
- [14] Peter Podolák – chairman of programme and organising committee for the conference 'Možnosti identifikácie, zachovania a ďalšieho využitia zvyškov kultúrnej krajiny v Malých Karpatoch a v príľahlej časti Podunajskej nížiny' (Options of Identification, Conservation and Further Use of Remnants of Cultural Landscape in the Little Carpathians and the Contiguous Part of the Danube Lowland), Svätý Jur, Slovakia, 2012.
- [15] Pavel Šuška – member of programme committee of the conference '20. česko-slovenský geografický akademický seminár' (20th Czech-Slovak Geographical Academic Seminar), Brno, Czechia, 2015.
- [16] Pavel Šuška – chairman of programme and organising committee of the conference '19. česko-slovenský geografický akademický seminár – Časové a priestorové zmeny regionálnych štruktúr kultúrnej krajiny' (19th Czech-Slovak Geographical Academic Seminar. Temporal and Spatial Changes of Regional Structures of Cultural Landscape), Piešťany, Slovakia, 2014.
- [17] Pavel Šuška – chairman of programme and organising committee of the conference '25 rokov premien Bratislavy' (25 Years of Changing Bratislava), Bratislava, Slovakia, 2014.
- [18] Pavel Šuška – member of programme committee of the conference – 18. česko-slovenský geografický akademický seminár 'Inovativní trendy a přístupy v geografickém výzkumu v České republice a na Slovensku' (18th Czech-Slovak Geographical Seminar 'Innovative Trends and Approaches in Geographical Research in the Czechia and in Slovakia'), Olomouc, Czechia, 2013.
- [19] Pavel Šuška – chairman of organising committee of the conference '17. česko-slovenský geografický akademický seminár' (17th Czech-Slovak Geographical Academic Seminar), Skalica, Slovakia, 2012.
- [20] Martin Šveda – member of programme and organising committee of the international conference 'Maloobchod a nákupné správanie spotrebiteľov / Časovo-priestorové kontexty

dekoncentračných procesov v zázemí Bratislavy' (Retail and Shopping Behaviour of Consumers/Time-Spatial Context of Deconcentration Processes in the Hinterland of Bratislava), Smolenice, Slovakia, 2015.

- [21] Martin Šveda – vice-chairman of the programme and organising committee of the conference '25 rokov premien Bratislavy' (25 Years of Changing Bratislava), Bratislava, Slovakia, 2014.

- **Supplementary information and/or comments documenting the international and national status of the Institute**

The researchers or the Institute presented 214 oral presentations at international conferences and 37 presentations at national conferences in the years 2012-2015.

Róbert Pazúr, PhD – postdoc at the Institute of Geography obtained one year long research stay at Swiss Federal Institute for Forest, Snow and Landscape Research WSL in Birmensdorf (Switzerland) in 2015 (since 1 September 2015).

Tomáš Daňek, PhD – researcher at the Faculty of Science, Palacký University in Olomouc spent a research stay in the Institute of Geography in 2015 (10 March – 17 April 2015).

The Institute of Geography SAS organised or co-organised also conferences for Slovak or Czech and Slovak academic community. Among them there were serial events with a long tradition such as 17th - 20th annual seminars of geographers from Slovakia a Czech republic 'Česko-slovenský geografický akademický seminár' (Czech-Slovak Geographical Academic Seminar) and biennial conference 'Aktivity v kartografii' (Activities in Cartography) organised in 2012 and 2014.

List of conferences of national importance co-organised by Institute:

- [1] 40 rokov Limitov rastu (40 Years of Limits to Growth), Bratislava, Slovakia, 13.3.2012.
- [2] Aktivity v kartografii (Activities in Cartography), Bratislava, Slovakia, 11.10.2012.
- [3] Nové impulzy v regionálnom rozvoji stredoeurópskeho priestoru (New Impulses in Regional Development of the Central-European Space), Nitra, Slovakia, 10.10.-11.10.2012.
- [4] 17. česko-slovenský geografický akademický seminár (17th Czech-Slovak Geographical Academic Seminar), Skalica, Slovakia, 23.10.-24.10.2012.
- [5] Možnosti identifikácie, zachovania a ďalšieho využitia zvyškov kultúrnej krajiny v Malých Karpatoch a v príľahlej časti Podunajskej nížiny (Options of Identification, Conservation, and Further Use of Remnants of Cultural Landscape in the Little Carpathians and the Contiguous Part of the Danube Lowland), Svätý Jur, Slovakia, 7.11.2012.
- [6] Historická kultúrna krajina podmalokarpatského regiónu – výzva alebo nevyužitá možnosť? (Historical Cultural Landscape of the Sub Little Carpathian Region or Unused Opportunity?), Modra, Slovakia, 27.3.2013.
- [7] Maloobchod v priestore a čase (Retail in Space and Time), Smolenice, Slovakia, 18.4.-19.4.2013.
- [8] 18. česko-slovenský geografický akademický seminár – Inovativní trendy a přístupy v geografickém výzkumu v České republice a na Slovensku (18th Czech-Slovak Geographical Seminar – Innovative Trends and Approaches in Geographical Research in the Czech Republic and in Slovakia), Olomouc, Czech Republic, 23.10.-24.10.2013.
- [9] Aktivity v kartografii (Activities in Cartography), Bratislava, Slovakia, 23.10.2014.
- [10] 19. česko-slovenský geografický akademický seminár – Časové a priestorové zmeny regionálnych štruktúr kultúrnej krajiny (19th Czech-Slovak Geographical Academic Seminar – Temporal and Spatial Changes of Regional Structures of Cultural Landscape), Piešťany, Slovakia, 30.9.-1.10.2014.
- [11] 25 rokov premien Bratislavy (25 Years of Changing Bratislava), Bratislava, Slovakia, 23.10.-24.10.2014.
- [12] Maloobchod a nákupné správanie spotrebiteľov / Časovo-priestorové kontexty dekoncentračných procesov v zázemí Bratislavy (Retail and Shopping Behaviour of

Consumers/Time-Spatial Context of Deconcentration Processes in the Hinterland of Bratislava), Smolenice, Slovakia, 14.10.-15.10.2015.

- [13] 20. česko-slovenský geografický akademický seminár (20th Czech-Slovak Geographical Academic Seminar), Brno, Czech Republic, 19.11.-20.11.2015.
- [14] Kvalita života 2015 (Quality of Life 2015), Liberec, Czech Republic, 2.12.-3.12.2015.

Memberships and positions in international scientific societies, unions and national committees:

- [1] Ján Feranec – vice-president of the Commission on Sensor-driven Mapping in the International Cartographic Association (ICA), (2015 –)
- [2] Ján Feranec – member of the Commission on Thematic Mapping from Satellite Imagery (ICA), (2012 – 2013); vice-president (2013-2015)
- [3] Ján Feranec – vice-president of the on Land Use and Cover Changes in the International Geographical Union (IGU), (2014 – 2015)
- [4] Ján Feranec – member of executive committee of the Commission on Land Use and Cover Changes in the International Geographical Union (IGU), (2012 – 2013)
- [5] Ján Feranec – member of COSPAR national committee, (2012 –)
- [6] Mikuláš Huba – member of Slovak National Geographical Committee (Slovenský národný geografický komitét), (2012 –)
- [7] Mikuláš Huba – member of European Forum for Renewable Energy Sources, (2015 –)
- [8] Vladimír Ira – national representative in the International Geographical Union, (2012 –)
- [9] Vladimír Ira – member of the National Committee of the Programme Man and the Biosphere - MaB UNESCO, (2012 –)
- [10] Vladimír Ira – member of Slovak National Geographical Committee (Slovenský národný geografický komitét), (2012 –)
- [11] Jozef Jakál – honorary member of the Carpatho-Balkan-Dinaric Geomorphological Commission, (2012 – 2013)
- [12] Milan Lehotský – national representative in the International Association for Danube Research, (2013 –)
- [13] Milan Lehotský – member of the International Association for Danube Research, (2013 –)
- [14] Milan Lehotský – member of the International Association for Landscape Ecology, (2012 –)
- [15] Milan Lehotský – national representative in the International Association of Geomorphologists, (2012 –)
- [16] Ján Oľahel' – member of the International Association for Landscape Ecology, (2012 –)
- [17] Ján Oľahel' – member of Slovak National Geographical Committee (Slovenský národný geografický komitét), (2012 –)
- [18] Peter Podolák – member of Slovak National Geographical Committee (Slovenský národný geografický komitét), (2012 –)
- [19] Miloš Rusnák – member of the International Association for Danube Research, (2015 –)
- [20] Ľubomír Solín – member of the International Association of Hydrological Sciences (IAHS), (2012 –)

Membership in editorial boards of scientific journals:

- [15] Ján Feranec – Acta Geographica UC, member of editorial board (2012 –)
- [16] Ján Feranec – Kartografické listy, member of editorial board (2012 –)
- [17] Ján Feranec – Przegląd Geograficzny, member of editorial board (2012 –)
- [18] Mikuláš Huba – Acta Universitatis Palackianae Olomucensis, Geographica , member of editorial board (2012 –)

- [19] Mikuláš Huba – Geografický časopis, member of editorial board (2012 –)
- [20] Mikuláš Huba – Geographia Slovaca, member of editorial board (2012 –)
- [21] Mikuláš Huba – Krásy Slovenska, member of editorial board (2012 –)
- [22] Mikuláš Huba – Životné prostredie, member of editorial board (2012 –)
- [23] Mikuláš Huba – Envigogika, member of editorial board (2013 –)
- [24] Vladimír Ira – Acta Geographica Universitatis Comenianae, member of editorial board (2012 –)
- [25] Vladimír Ira – Acta Universitatis Palackianae Olomucensis, Geographica, member of editorial board (2012 –)
- [26] Vladimír Ira – Folia Geographica, member of editorial board (2012 –)
- [27] Vladimír Ira – Geografický časopis, editor-in-chief (2012 –)
- [28] Vladimír Ira – Geographia Slovaca, editor-in-chief (2012 –)
- [29] Vladimír Ira – Geographical Bulletin, member of advisory board (2012 –)
- [30] Vladimír Ira – Mitteilungen der Österreichischen Geographischen Gesellschaft, member of editorial board (2012 –)
- [31] Vladimír Ira – Revue Roumaine de Geographie, member of editorial board (2012 –)
- [32] Vladimír Ira – Životné prostredie, member of editorial board (2012 –)
- [33] Vladimír Ira – Geographia Moravica, member of editorial board (2014 –)
- [34] Vladimír Ira – Development, Environment and Foresight, member of editorial board (2015 –)
- [35] Jozef Jakál – Aragonit, member of editorial board (2012 – 2013)
- [36] Jozef Jakál – Geografický časopis, member of editorial board (2012 – 2013)
- [37] Jozef Jakál – Slovenský kras, member of editorial board (2012 – 2013)
- [38] Monika Kopecká – Vedecké práce VÚPOP, , member of editorial board (2013)
- [39] Ján Lacika – Geografia, editor-in-chief (2012 –)
- [40] Ján Lacika – Geographia Slovaca, editor (2012)
- [41] Ján Lacika – Krásy Slovenska, member of editorial board (2012 –)
- [42] Milan Lehotský – Acta Environmentalica Universitatis Comenianae, member of editorial board (2012 –)
- [43] Milan Lehotský – Geografický časopis, member of editorial board (2012 –)
- [44] Milan Lehotský – Geographia Slovaca, member of editorial board (2012 –)
- [45] Milan Lehotský – Geomorphologia Slovaca et Bohemica, editor-in-chief (2012 –)
- [46] Milan Lehotský – Acta Scientiarum Polonorum, Formation Circumiectus, member of editorial board (2015 –)
- [47] Anton Michálek – Geographia Slovaca, member of editorial board (2012 –)
- [48] Daniel Michniak – Geografický časopis, editor (2015 –)
- [49] Ján Novotný – Geomorphologia Slovaca et Bohemica, editor (2012 –)
- [50] Ján Oľahel' – Geografia, member of editorial board (2012 –)
- [51] Ján Oľahel' – Geografická revue, member of editorial board (2012 –)
- [52] Ján Oľahel' – Geografický časopis, member of editorial board (2012 –)
- [53] Ján Oľahel' – Geographia Slovaca, member of editorial board (2012 –)
- [54] Ján Oľahel' – Moravian Geographical Reports, member of editorial board (2012 –)
- [55] Peter Podolák – Geographia Slovaca, member of editorial board (2012 –)
- [56] Peter Podolák – Geografický časopis, member of editorial board (2013 –)
- [57] Vladimír Székely – EUROPA XXI, member of editorial board (2012 –)
- [58] Vladimír Székely – Studies in Agricultural Economics, member of editorial board (2012 –)
- [59] Vladimír Székely – Acta Universitatis Lodziensis, Folia Geographica Socio-Oeconomica, member of editorial board (2013 –)

- [60] Vladimír Székely – Studia Obszarów Wiejskich / Rural Studies, member of editorial board (2014 –)
- [61] Pavel Šuška – Geografický časopis, editor (2012 –)
- [62] Martin Šveda – Geographia Slovaca, editor (2013 –)
- [63] Ján Urbánek – Geografický časopis, member of editorial board (2012 – 2014)

Memberships in advisory boards of the National Council, Government, ministries, EU institutions etc.:

- [1] Ján Feranec – Accreditation committee working group of the SAS on 'Research area 9 – Physics and Earth and Space Science', (2012)
- [2] Ján Feranec – Attestation Commission of the Slovak Technical University in Bratislava, member (2012 - 2015)
- [3] Ján Feranec – Commission for space activities in the Slovak Republic, Ministry of Education, Science, Research and Sport of the Slovak Republic, member of the Scientific Council of Earth and Space (2015 –)
- [4] Ján Hanušin – Interdepartmental Coordination Group for the implementation of the Water Framework Directive for the Ministry of Environment, a member for the Union of Towns and Cities of Slovakia (Únia miest Slovenska) (2012 -)
- [5] Ján Hanušin – project 'Adaptation strategies of European cities' (Bratislava City Hall), member of a working group (2012)
- [6] Mikuláš Huba – Union of Towns and Cities of Slovakia, expert (2012 –)
- [7] Mikuláš Huba – Advisory Board of REC – Slovakia (Regional Environmental Center), member (2012 – 2014)
- [8] Mikuláš Huba – Governmental Committee for Reconstruction and Development of the High Tatras Mountains, external member (2012 – 2014)
- [9] Mikuláš Huba – The NGO Committee Our Tatras, assistant coordinator (2012 –)
- [10] Mikuláš Huba – Expert Panel on Nature and Landscape Protection (National Council), Chairman (2014 –)
- [11] Mikuláš Huba – member of international expert panel for the project 'Nature Outlook' managed by government agency PLB Netherlands Environmental Assessment Agency (2014 –)
- [12] Vladimír Ira – Union of Towns and Cities of Slovakia, expert (2012 –)
- [13] Jozef Jakál – Slovak Caves Administration, an external consultant in the field of physical geography and geomorphology (2012 – 2013)
- [14] Jozef Jakál – Terminological commission at the Slovak Museum of Nature Protection and Speleology, member (2012 – 2013)
- [15] Anton Michálek – Government Council for Crime Prevention, member (2012 –)
- [16] Daniel Michniak – Slovakia-Poland Intergovernmental Commission, a member of the working group on spatial planning and construction (2013 –)
- [17] Ján Novotný – Terminological commission of the Geodesy, Cartography and Cadastre Authority of the Slovak Republic, member (2014 –)
- [18] Ján O'ahel' – Accreditation committee working group of the SAS on 'Research area 9-2 – Earth and Space Science', (2012 –)
- [19] Ján O'ahel' – Accreditation committee working group of the SAS on 'Research area 9 – Physics and Earth and Space Science', (2012)
- [20] Peter Podolák – Terminological Committee of the Ministry of the Interior SR, member (2012 –)

2.4. Tables of project structure, research grants and other funding resources

- **International projects and funding**

2.4.1. Major projects within the European Research Area and other important project – Framework Programmes of the EU, ERA-NET, European Science Foundation, NATO, COST, INTAS, etc. (here and in items below please specify: type of project, title, grant number, duration, total funding and funding for the institute, responsible person in the institute and his/her status in the project, e.g. coordinator “C”, work package leader “W”, investigator “I”),

	Project title	Typ / Project number	Duration in months	Funding for the Institute (EUR)	Role of the Institute / Responsible person
2012	Valorisation and Sustainable Development of Cultural Landscapes using Innovative Participation and Visualisation Techniques	2CE164P3	4/2010-3/2013	161 200	I
	Infrastructural and organizational possibilities of spatial accessibility improvement as a factor for development of the Polish-Slovak tourist regions	WTSL.02.01.00-14-087/08	8/2009-6/2012	72 494	I
2013					
2014	Connecting European connectivity research	COST Action ES1306	4/2014-4/2018	580	I
2015	Quantification of morphological changes in river channels and its impact on flood risk	12_PA05-C2	11/2015-7/2016		I

2.4.2. Other international projects, incl. total funding and funding for the institute

-

2.4.3. Other important, international projects and collaborations without direct funding (max. 10 projects)

- [1] *Urban sprawl mapping in Slovakia and Bulgaria based on an extended CORINE Land Cover nomenclature* - bilateral Slovak-Bulgarian interacademic project, 1/2012-12/2014
- [2] *The influence of hydrotechnical constructions on the development of fluvial systems of the Lower Vistula and Danubian Lowland*, bilateral Slovak-Polish interacademic project, 1/2010-12/2012
- [3] *Time-spatial changes of regional structures and cultural landscape*, bilateral Czech-Slovak interacademic project, 1/2012-12/2014
- [4] *Residential environment in the housing estates in V4 countries and Armenia*, project funded by International Visegrad Fund, 4/2012-9/2012
- [5] *Influence of investment and some related socio-economic processes on local and regional development in Poland and Slovakia*, bilateral Slovak-Polish interacademic project, 1/2013-12/2015

- [6] *Spatial Disparities in Slovak and Ukraine Rural and Urban Areas: Assessment of Sustainability and Quality of Life*, bilateral Slovak-Ukrainian interacademic project, 1/2014-12/2016
- [7] *Mapping urban green spaces based on remote sensing data: Case studies in Bulgaria and Slovakia*, bilateral Slovak-Bulgarian interacademic project, 1/2015-12/2017
- [8] *Quantification of morphological changes in river channels and its impact on flood risk*, project funded by Danube Region Project Fund, 11/2015-7/2016

- **National projects and their funding**

2.4.4. Projects supported by the Slovak Research and Development Agency (APVV)

Role of the Institute e.g. coordinator "C", investigator "I".

	Project title	Typ / Project number	Duration in months	Funding for the Institute (EUR)	Role of the Institute / Responsible person
2012					
2013					
2014					
2015					

2.4.5. Projects supported by the Scientific Grant Agency of the Slovak Academy of Sciences and the Ministry of Education (VEGA) for each year, and their funding

VEGA	2012	2013	2014	2015
Number	6	7	7	8
Funding in the year (EUR)	53 578	50 152	41 947	48 806

- **Summary of funding from external resources**

Research activities of the Institute of Geography during the assessment period 2012-2015 were financed also from external sources. Regular support was from VEGA Grant Agency projects. Particularly important were two projects VITAL LANDSCAPES and INFRAREGTUR co-financed by ERDF, that to a large extent have contributed to financial stability of the Institute. Important sources of finances were also several research contracts as e.g. Urban Atlas and others.

¹ Excluding projects for the popularisation of science

2.4.6. List of projects supported by EU Structural Funds

-

2.4.7. Summary of external resources of the EU Structural Funds (ERDF/ESF)

Role of the Institute in the project, e.g. coordinator "C", work package leader "W", investigator "I".

Year	Project title	Project number	Duration in months	Funding for the Institute (EUR)	Role of the Institute
2012	Valorisation and Sustainable Development of Cultural Landscapes using Innovative Participation and Visualisation Techniques	2CE164P3	4/2010-3/2013	161200	I
	Infrastructural and organizational possibilities of spatial accessibility improvement as a factor for development of the Polish-Slovak tourist regions	WTSL.02.01.00-14-087/08	8/2009-6/2012	72494	I
2013					
2014					
2015					

External resources	2012	2013	2014	2015	total	average
External resources (milions of EUR)	0,118	0,077	0,050	0,060	0,305	0,076
External resources transfered to coooperating research institute (milions of EUR)	-	-	-	-	0,000	

- **Supplementary information and/or comments on research projects and funding sources**

The Institute was active in submitting of the project proposals in the period 2012-2015 in order to obtain finance for research, but unfortunately many of them were not successful.

Under the general call of the APVV Grant Agency three projects proposals were submitted in 2013:

- *Reálne a vnímané priestorové disparity kvality života (Real and perceived spatial disparities of quality of life)* – the applicant organization: Institute of Geography SAS,
- *Hodnotenie povodňového rizika základných sídelných jednotiek v malých povodiach SR a schémy jeho integrovaného manažmentu na národnej a regionálnej úrovni (Flood risk assessment of basic residential units in small basins of the SR and its integrated management schemes at national and regional level)* – the applicant organisation: Institute of Geography SAS,
- *Vplyv nepriepustných povrchov na klímu miest v kontexte globálnej klimatickej zmeny (Effect of impermeable surfaces on the urban climate in the context of global climate*

change) – the applicant organisation: Výskumný ústav pôdoznanectva a ochrany pôdy (Soil Science and Conservation Research Institute).

Under the general call of the APVV Grant Agency four projects proposals were submitted in 2014:

- *Integrovaný prístup k hodnoteniu a manažmentu povodňového rizika: príkladové štúdie na národnej, regionálnej a lokálnej úrovni* (An integrated approach to the assessment and management of flood risks: case studies at national, regional and local levels) APVV-14-0237 – the applicant organisation: Institute of Geography SAS,
- *Reálne a vnímané priestorové disparity kvality života* (Real and perceived spatial disparities of quality of life) APVV-14-0825 – the applicant organisation: Institute of Geography SAS,
- *Vplyv nepriepustných povrchov na klímu miest v kontexte globálnej klimatickej zmeny* (Effect of impermeable surfaces on the urban climate in the context of global climate change) APVV-14-0193 – the applicant organisation: Výskumný ústav pôdoznanectva a ochrany pôdy (Soil Science and Conservation Research Institute).
- *Centrum regionálnych analýz* (Centre for Regional Analysis) APVV-14-0529 – the applicant organisation: Faculty of Natural Sciences of the Comenius University.

Under the general call of the APVV Grant Agency six projects proposals were submitted in 2015 and two of them were succesful:

- *Suburbanizácia – vývoj a dopady na sociálno-priestorovú štruktúru zázemia Bratislavy* (The suburbanisation – development and impact on socio-spatial structure of hinterland of Bratislava) APVV-15-7137 – the applicant organisation: Institute of Geography SAS,
- *Integrované hodnotenie povodňového rizika v horských, podhorských a pahorkatinných oblastiach Slovenska: príkladová štúdia okresu Myjava* (Integrated assessment of flood risk in mountain, foothill and upland areas of Slovakia: Example of district Myjava) APVV-15-0218 – the applicant organisation: Institute of Geography SAS,
- *Pokročilé metódy satelitnej SAR interferometrie v hodnotení zosuvnej aktivity urbanizovaných oblastí* (Advanced methods of satellite SAR interferometry for evaluation of landslide activity in urbanised areas) APVV-15-0223 – the applicant organisation: Faculty of Natural Sciences of the Comenius University,
- *Centrum regionálnych analýz* (Centre for Regional Analysis) APVV-15-0424 – the applicant organisation: Faculty of Natural Sciences of the Comenius University.

Successful APVV projects proposals:

- *Vplyv nepriepustného pokrytia pôdy na klímu miest v kontexte klimatickej zmeny* (Effect of impermeable soil cover on urban climate in the context of climate change) APVV-15-0136 – the applicant organisation: Národné poľnohospodárske a potravinárske centrum (The National Agricultural and Food Centre),
- *Medzigeneračné sociálne siete v starých mestách, kontinuita a inovácie* (Intergenerational social networks in ageing cities, continuity and innovations) APVV-15-0184 – the applicant organisation: Faculty of Natural Sciences of the Comenius University.

International projects:

APVV call bilateral cooperation Slovakia – China 2012

- *Interoperability of land cover monitoring between European Union and China: analysis of landscape dynamics in selected regions* – project partner Research Centre for Spatial Information of the Fujian Province, Fuzhou University

Cross-border Cooperation Programme Slovak Republic – Czech Republic 2007-2013

- *Podpora vzdělávání k posílení spolupráce a regionálnímu rozvoji česko-slovenského pohraničí* – Lead partner: Institute of Geonics of the Czech Academy of Sciences (2013)

European Innovation Partnership on Water

- *Revitalization of waterways in Poland* (2013)

International Council for Science (ICSU) Grant Programme (2014)

- *Atlas presentation and assessment of land use/cover change and its prediction across the World* – Lead partner: International Geographical Union

Intereg Danube Transnational Programme (2015)

- *Rehabilitation of Floodplains and Evaluation of Risks* – Lead partner: Institute of Geography, Faculty of Sciences, University of Pécs
- *Green Infrastructure as a Tool to Control Urban Sprawl* – Lead partner: Lechner Nonprofit Kft., Budapest

International Visegrad Fund (2015)

- *Evaluation of transport infrastructure developments: Visegrad experience in European context* – Lead partner: Institute of Geography and Spatial Organization PAS
- *'Our common present' - sustainability of human society as a historical and multistakeholder issue* – Lead partner: Ústav pro soudobé dějiny AV ČR

Plan for European Cooperating State (PECS) – (2015)

- *Slovak spatial data infrastructure of environmental particularities based on satellite images and satellite measurement* – feasibility study – Applicant organisation: National Forest Centre, Zvolen
- *Insight into remote sensing research – awareness activities for students* – Applicant organisation: Institute of Geography SAS

2.5. PhD studies and educational activities

2.5.1. List of accredited programmes of doctoral studies, period of validity

4.1.36 Physical geography and geoecology (2007 -)

4.1.38 Regional geography (2007 -)

2.5.2. Summary table on doctoral studies (number of internal/external PhD students; number of foreign PhD students, number of students who successfully completed their theses, number of PhD students who quit the programme)

PhD study	31.12.2012			31.12.2013			31.12.2014			31.12.2015		
Number of potential PhD supervisors	15			13			15			17		
PhD students	number	defended thesis	students quitted	number	defended thesis	students quitted	number	defended thesis	students quitted	number	defended thesis	students quitted
Internal	8,0	0,0	0,0	5,0	4,0	1,0	6,0	1,0	0,0	4,0	4,0	0,0
External	1,0	0,0	0,0	1,0	0,0	0,0	0,0	0,0	1,0	1,0	0,0	0,0
Other supervised by the research employees of the institute	9,0	1,0	0,0	8,0	1,0	0,0	6,0	3,0	0,0	6,0	0,0	0,0

2.5.3. Summary table on educational activities

Teaching	2012	2013	2014	2015
Lectures (hours/year) ²	358	276	179	221
Practicum courses (hours/year) ²	109	90	112	40
Supervised bachelor theses (in total)	0	0	0	2
Supervised diploma theses (in total)	25	30	4	9
Supervised PhD theses (in total)	21	19	11	11
Members in PhD committees (in total)	7	7	8	7
Members in DrSc. committees (in total)	2	1	1	1
Members in university/faculty councils (in total)	6	6	5	5
Members in habilitation/inauguration committees (in total)	3	3	4	4

2.5.4. List of published university textbooks

- ACB01 GAJDOŠ, Alfonz - MAZÚREK, Jaroslav - TOLMÁČI, Ladislav - HOUDKOVÁ, Z. - BAAR, Vladimír - MADLEŇÁK, Tibor - LACIKA, Ján. *Regionálna geografia Európy* [Regional geography of Europe]. Bratislava : Veda, 2013. 592 s. ISBN 978-80-224-1304-6.

2.5.5. Number of published academic course books

- BCI01 BURIAN, Libor - JENČO, Marián - RUSNÁK, Miloš. *GRASS GIS : geovedné aplikácie* [GRASS GIS: geoscience applications]. Rec. Michal Gallay, Karel Jedlička. Bratislava : Univerzita Komenského v Bratislave : Slovenská akadémia vied, 2015. 103 s. Dostupné na internete: <<http://staryweb.fns.uniba.sk/index.php?id=4386>>. ISBN 978-80-223-3804-2.

2.5.6. List of joint research laboratories/facilities with universities

-

- **Supplementary information and/or comments on doctoral studies and educational activities**

Jiří Teichmann, MSc – PhD student at the Faculty of Science, Palacký University in Olomouc spent a research stay in the Institute of Geography in the period from 7 January 2014 to 31 March 2014 (3 months).

Anna Chrobak, MSc – PhD student at the Pedagogical University of Cracow spent a stay in the Institute of Geography under the Erasmus+ Programme in the period from 1 November 2015 to 31 January 2016 (3 months).

Cooperation with universities:

- [1] Faculty of Natural Sciences of the Constantine the Philosopher University in Nitra
Type of cooperation: Cooperation agreement
Duration: 1998 –
Focus: Cooperation in education, research and science activities
- [2] Faculty of Natural Sciences of the Comenius University in Bratislava
Type of cooperation: Cooperation agreement

- Duration: 2006 –
 Focus: Cooperation in education, research and science activities
- [3] Faculty of Science of Palacký University in Olomouc, Czechia
 Type of cooperation: Cooperation agreement
 Duration: 2008 –
 Focus: Cooperation in education, research and science activities

2.6. Social impact

2.6.1. List of the most important results of applied research projects. Max. 10 items

- [1] Project VITAL LANDSCAPES - Valorisation and Sustainable Development of Cultural Landscapes using Innovative Participation and Visualisation Techniques aimed to contribute to preserving the quality, diversity and beauty of cultural landscapes as required by the European Landscape Convention and the Territorial Agenda of the EU. Within the frame of Vital Landscape project Institute of Geography, SAS set a pilot project Alternatives for the Development of the Sub-Little Carpathian (SLCR) Cultural landscape. Different types of activities performed within the Project enabled to gain a spectrum of views on problems related to the historical cultural landscape. The leaflet on Project, booklet on SLCR cultural landscape and final reports in printed and CD version both in Slovak and English languages were distributed among local and regional administrative bodies, NGOs, and relevant experts. In total some 350 project outputs in various formats were distributed. (AAB02, ABC04, AGI01, AGI02 and others). Four meetings and small conferences for local stakeholders were performed. Photo competition 'My Landscape in Time' was aimed at raising of public awareness of the locals in the SLCR of the historical context of their region. The photos – results of the competition - were presented on exhibition in Modra and distributed on CDs as well. There were a number of significant social impacts which accompanied the international publication 'Vital Landscapes' (chapter IV Historical Cultural Landscapes – Problems and Reflections prepared by IG SAS). Four hundred prints in English were distributed among experts and institutions in Germany, Austria, Czechia, Slovenia, Poland, Hungary and Slovakia.
- [2] Project INFRAREGTUR – Infrastructural and organizational possibilities of spatial accessibility improvement as a factor for development of the Polish-Slovak tourist regions. One of the main aims of this project was a transfer of scientific knowledge and experience to the administrative sector. Results of this project were published in two books in three languages Slovak, Polish, and English (AAA02, AAB06, BAB08). More than 700 publications in Slovak and Polish languages were distributed among experts in the fields of transport and tourism in respective ministries, NGOs, regional and local governments and to the private sector (entrepreneurs in the sectors of tourism). On a base of this project there were invited presentations at Socio-economic forum of the Euroregion Tatry '*Transport accessibility between Poland and Slovak: barriers, constraints and opportunities for development*' in Nowy Targ in 2013 and at *Congress of Small and Medium Enterprises of the Visegrad Group 'Tourism and transport infrastructure'* in Demänovská Dolina in 2015 that organised Slovak-Polish Chamber of Commerce. D. Michniak became a member of Working Group on Spatial Planning and Construction of the Slovak-Polish Intergovernmental Commission on Cross-border Cooperation in 2013 and in 2014 was invited to its meeting in Cracow.
- [3] Flood risk assessment and its integrated management on regional level (VEGA Grant Agency Project). Integrated flood risk assessment and management is very current social problem. The local and government authorities are also aware of that. The mayors of six municipalities of upper basin of River Myjava (Vrbovce, Sobotište, Podbranč, Myjava, Brestovec a Stará Myjava) participated in the organization of the questionnaire survey on flood hazard and flood damage that we have made in their communities. Along with the head of the District Office Myjava an APVV project proposal focused on the assessment of flood risk in municipalities of Myjava District was prepared in 2015.

- [4] Monitoring the dynamics of built-up areas (AAB03). The process of urban expansion is associated with a number of long-lasting ecological, economic and social effects. For example, urban sprawl contributes significantly to the loss of fertile farmland, to soil sealing and to the loss of ecological soil functions. The increase in built up areas reduces the size of wildlife habitats and increases landscape fragmentation. Despite various efforts to eliminate negative effects of urbanization, urban areas have increased rapidly in Europe in recent decades. Thus, monitoring the dynamics of built-up areas presents a major challenge with regard to sustainable land use. Results of comparable measurement using a consistent data across different regions will support managers and policymakers with the allocation of resources for the better protection of agricultural soils and landscape quality, and more sustainable political decision-making related to land use. The data also provide a basis for scenarios regarding the future development of urban expansion.
- [5] Project URBAN ATLAS. The Institute of Geography under the contract with the Institut Géographique National France International contract research with is involved in project connected to the Copernicus – The European Earth Observation Programme. Urban Atlas is providing pan-European comparable land use and land cover data for Large Urban Zones with more than 100.000 inhabitants. It was created to fill a gap in the knowledge about land use in European cities.

2.6.2. List of the most important studies commissioned for the decision-making authorities, the government and NGOs, international and foreign institutes

- [1] Comments to document Draft of the Operational Programme Quality of environment. Expertise for the Union of Towns and Cities of Slovakia, the Ministry of Environment of the Slovak Republic, 2013.
- [2] Spatial planning. The role of the Polish-Slovak neighbourhood in Central Europe. Expertise for the Ministry of Foreign Affairs of the Republic of Poland and the Ministry of Foreign Affairs of the Slovak Republic, 2013.
- [3] Definition of towns and cities regions in Slovakia, including an assessment of functional types of settlements based on population density, using raster technology. Expertise for: Ministry of Transport, Construction and Regional Development of the Slovak Republic, 2014.
- [4] Urban planning and landscape study for protection against flash floods in the Small Carpathian region, Bratislava self-governing region, creation of a Land Cover map layer and cooperation on flood threat assessment, 2014

2.6.3. List of contracts and research projects with industrial and other commercial partners, incl. revenues

- [1] *Analysis of challenges, needs and potentials of the CENTRAL EUROPE area and strategic orientations in view of the transnational cooperation for the period 2014-2020*, Partner: ÖIR GmbH, Vienna, 2012-2013, funding: 3,700 €
- [2] *Urban Atlas*, Partner: Institut Géographique National France International, Paris, 2013-2016, funding: 15,000 €
- [3] *Quality Assessment of the CORINE Land Cover 2012 and CORINE Land Cover Change 2006-2012*, Partner: Institut Géographique National France International, Paris, 2015, funding: 1,000 €
- [4] *Urban planning and landscape study for protection against flash floods in the Small Carpathian region*, Partners: Faculty of Natural Sciences of the Comenius University, Bratislava self-governing region, 2014-2015, funding: 1,900 €

2.6.4. List of licences sold abroad and in Slovakia, incl. Revenues

-

2.6.5. List of most important social discourses under the leadership or with significant participation of the institute (max. 10 items)

Mikuláš Huba served as a member of the Slovak parliament (2012-2016) and president of the Expert Panel on Nature and Landscape Protection Parliamentary Committee on Agriculture and Environment. The institute thus participated in several important social debates and collaborated with the National Council of the Slovak Republic in setting-out of several expert activities such as seminar 'Migration crisis and its demographic, environmental, safety and other context' or 'Day of Forest and Landscape in the Parliament'.

2.6.6. Summary of relevant activities, max. 300 words

The Institute of Geography was a partner of two projects VITAL LANDSCAPES and INFRAREGTUR co-financed by ERDF with aims in basic and also applied research. Outputs of these projects were publications, other materials and recommendations for experts in various fields e. g. public administration, regional and local development, environmental protection, transport, and tourism. Prof. Huba as a member of the Slovak parliament in 2012-2016 tried to transfer his professional knowledge to wide spectrum of activities. Researchers of the Institute commissioned important studies for regional governments and ministries. An important impacts had also contracts with Institute Geographique National France International in Paris and ÖIR GmbH in Vienna.

2.7. Popularisation of Science (outreach activities)

2.7.1. List of the most important popularisation activities, max. 20 items

- [1] Michala Madajová, Anna Kidová, Róbert Pazúr, Konštantín Rosina, Miloš Rusnák, Ján Sládek, Peter Skubinčan, Pavel Šuška, Martin Šveda: Pochopiť krajinu - dokument Centra vedecko-technických informácií SR z cyklu Spektrum vedy - (To understand the landscape – Documentary of the Centre of Scientific and Technical Information from the cycle Spectrum of Science), RTVS, 5.12.2013, documentary film
- [2] Ján Feranec: Meniace sa Slovensko očami satelitov (Changing Slovakia in the eyes of satellites), VEDA, vydavateľstvo SAV, 19.6.2013, publication.
- [3] Linda Stasíková: Mapa kriminality (Map of crime), TV Markíza, 9.7.2012, TV,
- [4] Vladimír Ira, Pavel Šuška, Michala Madajová, Anna Kidová, Miloš Rusnák, Martin Šveda: Geografické výskumy vzťahu človek - prostredie v doktorandskom štúdiu v Geografickom ústave SAV, Deň otvorených dverí v rámci Týždňa vedy a techniky (Geographical research of the relationship human - environment in doctoral studies at the Institute of Geography, the Week of Science and Technology), Geografický ústav SAV, Bratislava, 10.11.2015, Lecture/Discussion.
- [5] Ján Feranec: Krajinná pokrývka Slovenska a jej zmeny: 1990-2000-2006 (Land cover of Slovakia and its amendments: 1990-2000-2006), European Space Expo, Bratislava, 19.5.2013, Lecture/Discussion.
- [6] Ján Feranec: Vstúpili sme do ESA? (Have we joined the ESA?), Pravda, 27.2.2015, Press.
- [7] Ján Urbánek: Zem stále pracuje (The Earth is still working), Život č. 50 / 8.12.2012, Press.
- [8] Milan Lehotský: Rieky a potoky pochodujú, ich pohyb treba sledovať – rozhovor (Rivers and streams march, their movements should be monitored – interview), Obecné noviny, 24.1.2012, Press.
- [9] Ján Lacika: Poznávanie Slovenska (Learning Slovakia), Bratislava, 21.6.2014, Broadcast.
- [10] Ján Sládek: Rozhovor na tému Ako rieky menia podobu krajiny (Interview on the topic How rivers change lanscape), Český rozhlas – rádio Vltava, 14.5.2014, Broadcast.
- [11] Pavel Šuška: Živé mesto (Vibrant City), Rádio FM, 9.11.2015, Broadcast.
- [12] Monika Kopecká: Obraz krajiny ako svedectvo kultúry života národa (The landscape as a testimony to the cultural life of the nation), Mestské kultúrne stredisko Nové Zámky, 12.3.2013, Lecture/Discussion.
- [13] Mikuláš Huba: O príčinách environmentálnej kriminality, Envirofilm – Banská Štiavnica (The causes of environmental crime, Envirofilm - Banská Štiavnica), 18.5.2012, Lecture/Discussion.

- [14] Mikuláš Huba: Prednáška o ochrane historických štruktúr krajiny (Lecture on the protection of historic structures of the landscape), Trenčín, 14.11.2013, Lecture/Discussion.
- [15] Ján Lacika: Publicaton, 77 naj Slovensko (77 Top Slovakia), Bratislava, 25.5.2014.
- [16] Ján Lacika: Divy Bratislavy (Wonders of Bratislava), Bratislava, 19.6.2013, Publication.
- [17] Ján Feranec: Satelitné údaje o Zemi (Satellite data about the Earth), Správy SAV, č. 6-7, p. 19, 2012, Press.
- [18] Ján Feranec, R. Pazúr: Satelity sledujú zmeny zástavby v Európe (Satellites track changes in built environment of Europe), Správy SAV, č.7-8, pp.16-17 2014, Press.
- [19] Ján Lacika: Vývoj riečnej siete Slovenska (Development of river network in Slovakia), Bratislava, 17.12.2014, Lecture/Discussion.
- [20] Ján Lacika, Ján Hanušin, Daniel Kollár: Slovensko nás baví, výstava kníh Bibliotéka (We enjoy Slovakia, book exhibition Bibliotéka), Incheba, Bratislava, 6.11.2015, Lecture/Discussion.

2.7.2. Table of outreach activities according to institute annual reports

Outreach activities	2012	2013	2014	2015	total
Articles in press media/internet popularising results of science, in particular those achieved by the Institute	35	28	17	8	88
Appearances in telecommunication media popularising results of science, in particular those achieved by the Institute	4	4	11	1	20
Public popularisation lectures	6	8	6	8	28

- **Supplementary information and/or comments on popularisation activities, max. 300 words**

-

2.8. Background and management. Human resources and implementation of recommendations from previous assessment

2.8.1. Summary table of personnel

Personnel	2012	2013	2014	2015
All personnel	44,0	45,0	43,0	41,0
Research employees from Tab. Research staff	0,0	0,0	0,0	0,0
FTE from Tab. Research staff	0,000	0,000	0,000	0,000
Average age of research employees with university degree	49,1	46,5	46,9	47,1

2.8.1.1. Professional qualification structure (as of 31.12. 2015) FEMALE

FEMALE	AGE								
Number of	< 30	31 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60 - 64	> 65
DrSc. / prof.	-	-	-	-	-	-	-	-	-
II.a / Assoc. prof.	-	-	-	1	-	-	-	-	-
Other researchers PhD./CSc.	-	2	-	1	-	-	-	-	-
doc. / Assoc. prof.	-	-	-	-	-	-	-	-	-

2.8.1.2. Professional qualification structure (as of 31.12. 2015) MALE

MALE	AGE								
Number of	< 30	31 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60 - 64	> 65
DrSc. / prof.	-	-	-	-	-	-	-	3	1
II.a / Assoc. prof.	-	2	2	1	-	2	1	3	1
Other researchers PhD./CSc.	2	2	-	-	-	-	-	-	-
doc. / Assoc. prof.	-	-	-	-	-	-	1	-	-

2.8.2. Postdoctoral and mobility scheme

2.8.2.1. Postdoctoral positions supported by national and international resources

-

2.8.2.2. Postdoctoral positions supported by external funding

-

2.8.2.3. SAS stipends and SASPRO stipends

The Institute had two candidates for SASPRO stipends in 2015. Both candidates were after the second round of competitions among the candidates enrolled in category B, which has been accorded the status of a substitute.

- [1] Md. Surabuddin Mondal, PhD (NIMS Institute of Engineering & Technology, NIMS University, Jaipur, India) with a project proposal 'Land Use Land Cover Change Modeling in three chosen Slovak cities - Bratislava, Trnava and Žilina, using Geoinformatics' (Professional guarantee M. Kopecká)
- [2] Yuanxu Ma, PhD (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences) with a project 'Estimation of River Channel Roughness and Its Application in Flood Flow Modelling in the Bratislava Bypassed Channel of the Danube River' (Professional guarantee M. Lehotský).

2.8.2.4. Internal funding - the Slovak Academy of Sciences Supporting Fund of Stefan Schwarz

-

2.8.3. Important research infrastructure (max. 2 pages)

The computer equipment along with the necessary software is the base infrastructure for research at the Institute of Geography. In addition to them also other technical instruments are necessary mainly in the Department of Physical Geography, Geomorphology and Natural Hazards.

Within the project SPECTRA+ (Centre for the Settlement Infrastructure Development of the Knowledge Economy) financed by the Structural Funds (OP R & D) the Institute obtained in 2010 the external communication *Model for technological line for the remote sensing data processing, printing and reproduction of cartographic outputs* (wide format scanner, large format printer, multifunction device, notebook and computer with ArcGIS software in the total amount of 26.5 thousands €). Other equipment and software were acquired under the project financed by APVV and VEGA Grant Agencies.

Equipment and technical infrastructure is related to acquisition of spatial data from field measurement and encompasses the software for data extraction, management and analyses. Technical infrastructure is concentrated mainly in the Department of Physical Geography, Geomorphology and Natural Hazards and it is frequently used in the research projects.

Spatial data information and high accuracy position is obtained by total positioning station Leica TCR 307, GPS Leica GS20 and GPS Leica Zeno 5. Leica TCR 307 is a high-quality electronic total station with 7' angle accuracy, continuous and absolute encoders. Memory on board can store up to 8000 fix points, which will save you the purchase of data collectors and an RS232C data output connector is provided for use with a data collector or external computer. Leica GS20 is professional GPS handheld data mapper with Leica survey grade antenna AT501, which ensures highest quality of GPS signal and allows receive real-time corrections. Leica Zeno 5 is rugged GPS handheld with full phone functionality and high-sensitivity GPS receiver supporting 2 - 5 m accuracy (without antenna) or high precision GPS with smart antenna Leica Zeno GG03 used as a DGPS smart antenna (L1 phase) or highly accurate L1/L2 GNSS smart antenna with centimetre accuracy in real time or after post-processing.

For data management in GPS or for extraction and converting of data is used DigiTerra Explorer software (software for mobile field mapping, GIS data collection and maintenance along with field-to-office workflow) and GIS Data Pro (software supports GIS data collection with Leica Geosystems GPS data collection systems the GS50 and GS20 PDM).

Spatial data analysis, visualisation and interpretation for understanding relationships, patterns, and trends is performed by licensed or open source software. Institute is used commercial GIS software ArcGIS and open source software GRASS GIS and Quantum GIS for surface and terrain analyses. Corel DRAW Graphics Suite 11 is used for data visualisation.

SonTek YSI FlowTracker for measurement velocity of water and sonar Lowrance HDS 5 for water bodies bathymetry are used for analyses of hydrology.

SonTek YSI FlowTracker is handheld acoustic doppler velocimeter for measurement physical characteristic of flow water (velocity, temperature) and is used for river discharge measurements.

Lowrance HDS 5 is sonar with accurate internal GPS antenna (GPS/GLONASS), electronic compass and StructureScan® HD sonar modules, which imaging underwater terrain or underwater structure and bottom contours.

For analyses of sediments and soil particles is used RETSCH – AS200 Digit. Device is used for quantitative particle size analysis via dry sieving with test sieves from 0.063 mm to 31.5 mm and analytical laboratory scales AND EJ 300. For soil and sediment sampling is used survey kit for sampling up to 5 m by Eijkelpamp. Statistical analyses of sediments particle size is carried out by GRADISTAT software. SEDIMETRICS Digital Gravelometer is special software for optical sediment analyses and allows measure unconsolidated gravel sediments from field from digital photographs. Proceq SilverSchmidt BN is used for measurement rock surface hardness.

The Institute of Geography have successfully established Unmanned Aerial Vehicles (UAVs) into the research of river landscape. The Institute was one of the first scientific institutions in Slovakia that used UAV for its own research. The evolution of the avulsion channel of the Ondava River segment near Stropkov (eastern Slovakia) has been monitored since 2012. Digital elevation model of landslide area inside Svätý Anton village (central Slovakia) has been realised in cooperation with Department of Engineering Geology of the Faculty of Natural Sciences of the Comenius University. 3D model and orthophoto of 1.4 km long section of the Belá River (north Slovakia) was created in 2015. This very dynamic river site was chosen for monitoring of river channel evolution as well as evolution of river banks and landslide located on 30 m high left bank of the river.

BioMedware SpaceStat – a comprehensive software package used for statistical analysis of spatial data (such as geographically weighted regression) and spatially autocorrelated data (geostatistical

methods such as kriging), detection of spatio-temporal patterns, interpolation, exploratory spatial data analysis, the creation of spatial weights sets and variogram models.

SPSS Statistics – a software package used for statistical analysis in social sciences. Software SPSS includes e.g. descriptive statistics (cross tabulation, frequencies, descriptives, explore, descriptive ratio statistics), bivariate statistics (means, t-test, ANOVA, correlation (bivariate, partial, distances), nonparametric tests), prediction for numerical outcomes (linear regression) and prediction for identifying groups (factor analysis, cluster analysis (two-step, k-means, hierarchical), discriminant).

2.8.4. Description of how the results and suggestions of the previous assessment were taken into account

Protocol of evaluation of SAS scientific organization in regular evaluation of period 1.1.2007 – 31.12.2011 contained following comments:

1. Research outputs: Number of indexed CC articles is lower than the international standard. The strong side of the scientific output is the number of international and domestic monographs and map outputs.
2. Response to the scientific outputs: Structure of responses corresponds to the structure of published outputs.
3. Research status of the organization within the international and national context: The Institute is the leading centre in the frame of the Slovak geographical institutions. It is working on the theme that won its place on the international scene. There is a potential to reach international standard in various fields.
4. Projects structure, research grants and other external funding resources: Project structure, grants and other sources mostly correspond to dual, that is, both the nature-scientific and human-scientific nature of geography. The obvious reserve is the absolute volume of finances from external resources and means obtainable for international projects.
5. Organization of PhD education and other pedagogical activities: Absence of defended theses in internal form of PhD study. Very good participation in teaching of geography.
6. Socio-economic outputs: Outputs focused on the practical sphere, first of all, the decision-making level represent an evident contribution to the solution of problems related to the studied themes.
7. Popularisation and outreach activities: Very good level of popularisation.
8. Background and management: infrastructure and personal development: Very good level of Institute's management.

Response to the comments of the previous assessment:

- AD 1. The average number of CC articles and SCOPUS articles has increased. In spite of improvements during last few years, number of CC articles is still slightly lower than the international standard. Number of national and international monographs (chapters in quality monographs published by renowned houses) is one of the strengths of the Institute.
- AD 2. Structure of responses is better than the structure of published outputs. The share of CC articles from all peer reviewed publications increased from 5.3% (assessment period 2007-2011) to 10.5% (assessment period 2012-2015). The percentage of responses increased from 9.3 to 25.8 (WOS citations) and from 8.6 to 13.2 (SCOPUS citations).
- AD 3. As far as the national context is concerned the Institute is the leading centre of Slovak geography. The issue of landscape cover changes, hydro-geographical studies of riverine landscape, and suburbanisation and geographical aspects of accessibility have been internationally recognised while the perspective of geography of time (time-spatial behavioural patterns) is also promising.
- AD 4. Project structure responds to the dual nature of geography (human geography: humanities and sciences about humans on the one side and physical geography: natural sciences). The persisting problem is lack of finances from external sources and international projects. The Institute was active in submitting of various project proposals. This activity

resulted to the successful approval of two APVV projects and one ESPON project in the first half of 2016.

AD 5. The Institute participates in teaching of geography at the Slovak and international universities (including the PhD studies). Nine internal PhD students successfully defended PhD thesis in the evaluated period.

AD 6. Outputs focused on the practical sphere, especially on the decision-making level, represent an evident contribution.

AD 7. Popularisation remains on very good level.

AD 8. During evaluated period the Institute's management did not changed much.

Suggestions of the previous assessment:

1. Consider the reduction of studied themes and issues.
2. Improve the structure of published outputs in order to increase the international impact of research results.
3. Strive for funds, first of all those from important international projects.
4. Motivate the researchers to enhance their qualifications/skills in accord with the reached results and response.

Response to the suggestions of the previous assessment:

AD 1. Discussion concerning research strategy and future development of the Institute for the next five years in the last part of the assessment period resulted to the reduction of the number of research clusters from 4 to 3.

AD 2. The average number of CC and SCOPUS articles has increased in comparison to the previous assessment period. Proportion of outputs on the international level increased in case of CC articles from 5.3% to 10.5%. As far as international impact it is possible to state that the percentage of responses increased from 8.1 to 24.1 (WOS citations in publications abroad) and from 2.8 to 5.4 (SCOPUS citations in publications abroad).

AD 3. The Institute was active in submitting of various project proposals. This activity resulted to the successful approval of two APVV projects and one ESPON project in the first half of 2016.

AD4. Results of the young and younger middle-age generation motivated the researchers to enhance their qualifications and they have obtained the senior researcher degree (Dr. Pazúr, Dr. Šuška, Dr. Šveda, Dr. Kopecká, Dr. Novotný, and Dr. Michniak).

- **Supplementary information and/or comments on management, research infrastructure, and trends in personnel development**

3. Research strategy and future development of the institute for the next five years (2016-2020) (Recommended 3 pages, max. 5 pages)

Research cluster: Structures, processes and hazards of river systems – their response to and impact on the natural and socio-economic systems

3.1. Present state of the art in both the national and the international contexts

Understanding diversity, drivers of development and responses of the geomorphic-sedimentary and land cover layers of riverine landscapes to the direct and indirect climatic and human induced impacts leads to the interpretation of the current behaviour of rivers as well as to designing the scenarios of their future development. Involving such a kind of knowledge into the ecosystem service (economic, environmental and social) research provides tools for the integrated rivers/river basins management decisions.

Flood hazard is one of the most important manifestations of river systems. Evaluation of its negative consequences not only with regard to attributes of flood hazard, but also in relation to the vulnerability of environmental and socio-economic systems and their ability to cope with the negative consequences of the flood is the basis for an integrated flood risk assessment and management, which is gradually replacing the traditional paradigm of a purely engineering approach to flood protection.

3.2. Research strategy of the institute in the national and the international contexts, objectives and methods

Shifts in the river management priorities from a 'hydraulic engineering' paradigm towards a more holistic focus on sustainable management and ecological outcomes require an effective understanding of the diversity, pattern, functionality and evolution of riverine environments. Valley floors contain a wide array of riverscapes consisting of unique morphologies and processes, which support an assortment of aquatic and terrestrial life. Valley floor geodiversity ensures an appropriate range of available habitat in terms of both morphological features and the processes that (de)form them. Understanding the controls on the quantity, quality and distribution of natural habitat in and around fluvial systems provides an insight into the distribution, changes, and resilience of the associated ecosystems. The emphasis in research will be placed on:

- a) further generation of riverscape database in the GIS concerning braided and meandering gravel-bed rivers and the Danube River morphology, land cover, vegetation and hydrological regime using historical maps, aerial photographs, the UAV and Lidar scanning, surface and geophysical cross-section measurements, dating techniques and hydrological archives;
- b) classification of landforms, vegetation and land cover categories, analyses of their changes, relationships, diversity and connectivity using the GIS tools, and the identification of stages and contemporary evolutionary trends of floodplain development in relation to recent flood events and environmental impacts;
- c) multi-temporal application of the riverscape ecosystem services analysis using gathered data at different scales in order to assess their spatial-temporal pattern, changes and individuality, and draw up measurements for sustainable and healthy river system development.

The engineering approach to flood protection is still an important element of the flood risk management plans, but in the light of the climate change is its exclusive application unsustainable in the long term and implementation of an integrated approach is necessary. In Slovakia, due to strong traditions, the exclusive application engineering approach still persists and efforts of our research are to support the process of transition from the structural flood protection to integrated flood risk management. The research strategy of integrated assessment and management of flood risks in the next five years will be based on case studies in selected river basins. The emphasis will be placed on:

- a) assessment of the current state of river channels in the mountain, foothill and upland areas. The aim is to identify and map the local factors, which accelerate the emergence of flood hazard. The research is based on the mapping of sediments deposited in the riverbed, occurrence of the bank and bottom vegetation and solid waste in the river channels, materials stored on the river banks, and the analysis of land use in the watershed. Research will be conducted via field mapping with the GPS and data processing in the GIS;

- b) assessment and management of flood risk based on perception by residents. By the method of questionnaire survey knowledge on the awareness of residents of flood hazard, their experiences with flood, their opinions on flood protection and their ability to cope with the negative impacts of flood will be found out. Taking into account social aspects of flood risk reduction is an important part of integrated flood risk management.
- c) evaluation of alternative variants of flood risk management by the method of multi-criterial analysis to select an optimal strategy for flood risk management

Research cluster: Land use/land cover change (LUCC) research based on remote sensing

3.1. Present state of the art in both the national and the international contexts

Identification and analysis of land use (LU) changes via application of remote sensing data was the principal theme of several all-European projects of the EEA, and will continue such as Urban Atlas (UA), parts of the Copernicus Programme, contributing to the Global Earth Observation System of Systems – GEOSS. The UA project analyses intensity of urban fabric in the hinterland of almost 700 bigger European cities including 8 in Slovakia and the Institute of Geography of the SAS will participate in this project. Institute's researchers will also participate in joint projects of the Slovak Academy of Sciences (SAS) and the Bulgarian Academy of Sciences (particularly the Institute of Geography and National Institute of Geophysics, Geodesy and Geography in Sofia) and continue to participate in activities of the IGU/LUCC – Commission on Land Use and Cover Change, especially editing and publishing of incoming volumes of the Atlas Land Use Changes in Selected Regions in the World.

3.2. Research strategy of the Institute in the national and the international contexts; objectives and methods

Research activities invested in this cluster by the Institute of Geography SAS, along with the Slovak Hydrometeorological Institute and Soil Science and Conservation Research Institute, will focus on the identification and assessment of the effects exerted by impervious surfaces in urban agglomerations on mezzo- and micro-climate in the conditions of climate change (Effects of Soil Sealing on the Climate of Cities in the Context of Climate Change, a project approved by the Slovak Research and Development Agency). Researchers of the Institute will concentrate on the analysis and assessment of urban development intensity and causes of its changes, as well as on identification of urban heat islands by analysis of satellite data (for instance, those of Sentinel and Landsat 8). The resulting database about the intensity and type of urban development will be the basis for the comparison and assessment of changing climate in the cities in various climate change scenarios. Results will be verified by the comparison with the ground meteorological measurements. Three cities, i.e. Bratislava, Trnava and Žilina, typical for extensive growth of built-up areas and a little awareness of the risk ensuing from the changing climate, have been chosen for implementation of our objective. Project outputs will provide a valuable tool for the scientific environmental planning and decision-making of city administrations.

Another part of the present research cluster will be the investigation of a project funded from the Slovak Scientific Grant Agency VEGA titled 'Changes in Agricultural Land Use: Assessment of the Dynamics and Causes Applying Land Cover Data and Selected Environmental Characteristics'. Prior experience in identification of land cover (LC) changes based on satellite images (especially that drawn from the CORINE Land Cover Project) will contribute to the assessment of agricultural landscape dynamics in Slovakia. Study of extensification and intensification, as well as determination of the dominant biophysical and socio-economic factors affecting these processes, will be among the main objectives. Compilation of a database of urban development on farmland over the past decade will also be a significant output. Results of this Project will contribute to the explanation of LU-related consequences of sudden and profound institutional changes that took place in the former socialist countries of Central and Eastern Europe.

Geoinformation technologies and data layers of the Copernicus programme, also referred to as the European service for landscape monitoring (CORINE Land Cover, UA, high resolution layers HRL, e.g. imperviousness, very high resolution layers VHRL, Global Human Settlement Layer GHSL, and others) will be further used for the identification and assessment of changes in urban development and in the degree of imperviousness (in the range of 0-100%). Changes in urban fabric are appropriate indicators for the analysis of the developments in settlement structure, spatial distribution of population and intensity of land use. Research efforts will be put in validation

of land cover data layers by means of VHR aerial images interpretation, comparison of the data layers *inter se* and with population rasters in order to cross-validate and identify changes in the scope of urban development extent and spatial structure of settlement.

Another area of research within this cluster that is the subject of VEGA Grant Agency project 'Analysis of temporal-spatial dynamics of the selected cultural landscape structures in Slovakia, their protection and sustainable use', are cultural landscape changes focusing on the assessment of the processes, which cause changes in structures of cultural landscape on various hierarchic levels (local, microregional and regional).

Researchers of the Institute of Geography participated in the preparation of the ESA (European Space Agency) projects presented to the first PECS (Programme for European Cooperating States) call in July 2015. Part of the strategy in the immediate future will be an increased effort to continue in these activities in 2016.

Research cluster: Development trajectories of localities and regions in the context of socio-economic changes

3.1. Present state of the art in both the national and the international contexts

The economic growth in the last years led to the improvement of economic and social conditions, parameters of life standard and quality on the national level but it was much less important on the regional level. One of the priorities of the EU Cohesion Programme is to project the results of the economic growth into elimination of differences and disparities between regions. In spite of the preference given to this aim and considerable funding invested, it is obvious that the policy of regional convergence does not bring the expected effects and requires search for the new solutions to problems connected and determined by the increasing divergence. Aggregated divergence on the regional level has caused and still causes an increase of disparities between regions. Localities and regions with different values of their territorial capital are subject not only to the continuous development but also to dynamic changes. They are exposed in their development trajectories to different, at first glance, attractive challenges (innovation) that boost their competitiveness on the one side, and to different economic, social and ecological threats, which they are not able to cope with on the other. The different development trajectories of localities and regions have been caused by the specific responses to globalisation, dynamic changes in sector and spatial policies, which influence the strategic, spatially selective decisions of investors and common population. Presence or absence of development incentives in territorial units along with the level of their adaptation to the changed conditions and a creative use of their endogenous potential lead to a distinct spatial differentiation (the phenomenon of socio-economic disparities). Geographical analysis which is able to provide relevant knowledge about mutual relationships of actors in the spatial context plays a significant role in the search for possible solutions to this complex issue.

3.2. Research strategy of the Institute in the national and the international contexts, objectives and methods

The research of development trajectories of localities and regions covers a wide spectrum of themes that have to be examined from many aspects. Therefore, the research strategies will rely on the present state-of-the-art in the cognition of spatial (intra- and interregional) disparities together with (direct or indirect) influence of different endogenous and exogenous factors on spatial differentiation, and also cognition of the praxis of spatial planning and territorial governance in Slovakia. The contribution of the cluster will dwell in two spheres. Broadening and elaboration of the theoretical and methodological salient points for the research into the relationships between the socio-economic development, disparities and deepening problems of some regions in the specific conditions of small open economies like that of the Slovak Republic are presumed. The contribution will be in comprehension, adoption and dissemination of empirically recorded indispensability of appearance of changes in spatial systems which depending on their capacity of adaptation to the new situation can act either as accelerators of their, economic and socio-cultural development or as unwanted incentives breaking their lock and leading to the stagnation or even crash of the system. This topic will be studied in the first stage (2016-2017). Contribution on the empirical level will be in identification of the most important forms of inequities, their level, spatial differentiation and concentration, and in mapping the changes in local and regional trajectories in the Slovak territorial units that can be provoked by the re-evaluation of their endogenous territorial

capital and/or distinct strategic investment decision. Also the qualitative analysis of the praxis of spatial planning and territorial governance in Slovakia is assumed and it should contribute to the cross-national comparative research of the variation of territorial governance and spatial planning within the EU member states. Particular emphasis will be placed on the analysis of geographically relevant manifestations of population's time-space behaviour in different types of environments (urban, suburban and rural) connected with changes of socio-economic situation in Slovakia and on the research of loneliness of the elderly in urban environment. Slovak society is facing an intensive aging of population and the problem will become more serious in the future. A new understanding of the dynamics of the creative sectors and the interactions with higher education institutions and new directions in cultural landscape studies (cultural geographical studies that emphasise the communicative and representational aspects of cultural landscape, the social and environmental costs of cultural landscape degradation and relationship between cultural landscape and identity) will be implemented. This scientific orientation will be typical for the second stage (2018-2020). Final aim of the cluster is the identification of regions with the top level of socio-economic and cultural marginality, critical assessment of responses of selected spatial systems (represented not only by their political and business entities as the key local and regional actors but also by population and its decisions about the change of places of residence or work, or temporary visit) to the newly emerged incentives generally referred to as endogenous and exogenous factors of local and regional development and the prediction of further development in case and under conditions of the ongoing divergent development.

Specific properties and manifestations of the process of regional divergence, territorial capital and strategic investment decisions with spatial impact will be analysed using the complementary scientific methods – quantitative (statistical techniques), and qualitative methods (interviews, questionnaire surveys, content analyses and text interpretations). Results will be presented with the help of cartographic methods and graphic modelling using GIS software. Results which can serve as background material to the discussion about the determinants of spatial differentiation from the point of view of local and regional socio-economic growth, stagnation or depression will be presented in national and international print media and at the national and international conferences. Cluster activity assumes efficient cooperation not only on the national level (cooperation with the authorities in individual regions and with the Faculty of Natural Sciences, Comenius University in Bratislava is planned) but also on international level (several Czech Universities centres, Polish Academy of Sciences, Czech Academy of Sciences and several academic institutions in the European Union). The theme will be represented by the international project, the Institute of Geography assisted to (the ESPON Applied Research Project COMPASS - Comparative Analysis of Territorial Governance and Spatial Planning Systems in Europe: the IG SAS will be involved in the years 2016-2018 as a subcontractor).

Project proposals submitted to 7RP or H2020	2012	2013	2014	2015
Institute as coordinator	-	-	-	-
Institute as participant	-	-	-	-

4. Other information relevant for the assessment

The Institute of Geography has a specific position because it carries out research at the interface of Earth sciences, environmental sciences, social sciences and humanities. Each area of scientific research should be evaluated in a different way using other parameters of assessment.

The Institute of Geography also would like to state three comments that were formulated during the preparation of the Principles for regular evaluation of SAS research institutes for the period 2012 – 2015:

1. Considering the specificities of the individual institutes, in the evaluation process of each institute should be a foreign expert of given scientific discipline included.
2. In the evaluation process of the institutes at international level, it is appropriate to assess the outputs and their quality in a given field with respect to the amount of input sources.
3. The evaluation panel should not assess only the position of the Institute in the European research area, but also to their development trends (e.g. in publication activities, citations, submission of project proposals).

Bratislava, August 1st, 2016