

## **Questionnaire**

### **Summary of the main activities of the Institute of Geography, Slovak Academy of Sciences**

*Period: January 1, 2003 - December 31, 2006*

#### **I. Formal information on the assessed Organisation:**

##### **1. Legal name and address**

Geografický ústav SAV (Institute of Geography of SAS)

##### **2. Executive body of the Organisation and its composition**

Directoriat	name	age	years in the position
director	RNDr. Vladimír Ira, PhD.	54	2006 -
deputy director	RNDr. Anna Grešková, PhD.	51	2006 -
scientific secretary	Mgr. Daniel Michniak, PhD.	33	2006 -

##### **3. Head of the Scientific Board**

RNDr. Peter Podolák, PhD.

##### **4. Basic information about the research personnel**

- i. Number of employees with a university degree (PhD students excluded) engaged in research and development and their full time equivalent work capacity (FTE) in 2003, 2004, 2005, 2006 and average number during the assessment period
- ii. Organisation units/departments and their FTE employees with the university degree engaged in research and development

Research staff	2003		2004		2005		2006		average	
	No.	FTE	No.	FTE	No.	FTE	No.	FTE	No.	FTE
organisation in whole	25	23.01	25	23.36	26	23.22	27	22.35	25.75	22.985
Department of Physical Geography and Geomorphology	10	9.35	11	10.7	11	10.81	10	8.74	10.5	9.9
Department of Human Geography	10	8.66	9	7.66	10	7.41	10	8.04	9.75	7.9425
Department of Cartography and Geoinformatik Science	5	5	5	5	5	5	7	5.57	5.5	5.1425

## 5. Basic information on the funding

- i. Total salary budget<sup>1</sup> of the Organisation allocated from the institutional resources of the Slovak Academy of Sciences (SAS) in 2003, 2004, 2005, 2006, and average amount for the assessment period

Salary budget	2003	2004	2005	2006	average
total salary budget (millions of SKK)	9.808	9.707	9.973	10.055	9.886

## 6. URL of the Organisation's web site

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

## *II. General information on the research and development activity of the Organisation:*

### 1. Mission Statement of the Organisation as presented in its Foundation Charter

The mission of the Institute is the basic research in spatial structure of natural and socio-economic systems in mutual interaction, 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 goal of research in human geography is to analyse spatial organisation of population, settlement and economic activities with stress on population processes, settlement systems, and regional structure studies.

Generation of geoinformation systems, development of cartographic interpretation and remote sensing methods are also among the main work themes of the Institute.

<sup>1</sup> Sum of the brutto salaries without the fund contributions.

## 2. Summary of R&D activity pursued by the Organisation during the assessed period, from both national and international aspects and its incorporation in the European Research Area (max. 10 pages)

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

The researchers participating in the cluster: J. Beták, A. Grešková, J. Hanušin, M. Huba, J. Jakál, J. Lacika, M. Lehotský, J. Novotný, Ľ. Solín and J. Urbánek.

The evaluated period of research into river systems carried out at the Institute of Geography on the one side is characterized by a follow-up and further development of regional typification of basins and stream regimes in Slovakia, identification of regional variability in flood risk, the estimates of N-year discharges and introduction of so far almost ignored research area concerning the morphological properties and processes of river systems on the other. Joining of these two research areas into one has determined formation of the current focused both on cognition and assessment of fluvial forms and processes, understanding of their behaviour, morphological response to floods, solution of problems associated with their ecological conditions, revitalization and restoration, integrated management of basins and research into flood hazard and inundation territory mapping and compilation of flood maps. This trend connected with the promoted sustainability paradigm and the onset of climatic change has been concentrated in the EU Water Framework Directive (2000/60EU) and the EU directive about floods currently under preparation, aims of which are a good ecological state of waters, the integrated management of flood hazard and production of flood maps.

The research of river systems from the point of view of flood hazard is based on presumption that the indispensable basis for adoption of efficient prevention measures is the knowledge of regional variability of flood hazard, magnitude of flood risk and the scope of flooded territory caused by discharges with varied occurrence frequency. The main scientific outputs that were reached during the evaluated period include: a) the division of Slovakia by the criterion of flood hazard based on natural features of the particular basin into three regional types (Solín 2004), b) identification of regional types for the purpose of regional frequency analysis of the annual maximum discharges (Solín 2005a), c) the estimate of annual maximum discharges with varied occurrence frequency by the method of index flood (Solín 2005b, Solín 2006) and d) the outline of methodology for the compilation of flood maps applying the HEC-RAS, HEC-GeoRAS and Arc GIS software (Solín 2006). Various innovated approaches were applied. They include: the definition of the small basin as the basic spatial unit that is subject of regional division; an exhausting character of regional division by clustering the basic set of Slovakia's small basins into regional types and testing of hydrological heterogeneity within regional types delimited by physical properties of basins. The authors obtained the award "*Blue Planet*" for the project consisting in mapping the flood risk in small basins of the SR at the HYDROTECH Exhibition held on 16 –18 May 2006 in Bratislava.

Establishment of the new cluster, the research of river system morphology (hydromorphology) in Slovakia has required first of all presentation of the current theoretical and methodological conceptions and implementation of specialized terminology concerning the fluvial geomorphology by introducing Slovak equivalents to English terms. The result materialized in publishing several methodological guides about research concepts, behaviour and assessment of river systems and compilation of the Slovak-English hydromorphological dictionary (Lehotský, Grešková 2004). In agreement with principles of the holistic view of river systems, the model of hierarchic classification of river morphology as the basic tool for comprehension of their structures and processes was prepared. The model was tested on example of the Vydrica and Hybica river system. Sorting out and mapping of the lowest

taxonomic level of the model (morphohydraulic units) was tested on example of the Drietomica. The output was used for the study of interaction between these units and macrovertebrate communities, what has confirmed the usefulness of morphological data for hydrobiological disciplines and for assessment of the ecological quality of rivers. In 2005, the research of the windstorm effect on the river system of the Studený potok in the High Tatras, as well as research of bank erosion by the method of erosion pins, exact field GPS measurement and analysis of maps of various dates started. Simultaneously, research into the effect of bank tree vegetation upon the behaviour of the Vydrica river channel and analysis of biodiversity, accretion in inundation territory of the Danube in Bratislava and compilation of conceptual models of the development of Tatra valleys were started.

The level of anthropization of the hydrological cycle at the basin level was assessed on example of main basins in Slovakia and partial basins of the upper Váh while 5 sensibility indicators for the natural landscape component and 5 parameters for the establishment of anthropic impact were selected. Assessment of water movement in the landscape with regard to anthropic activities was presented at the level of regional water pollution aspects caused by the missing sewage systems in communes at the national level. The coefficient of basin response was determined on the basis of regression analysis of the relationship between morphological basin properties and discharge dynamics at the level of the Myjava basin. Theoretical aspects of assessment of restoration potential for the basin were elaborated as part of methodology.

Research of the karst landscape concentrated on the methodology applied to research of natural geomorphologic hazards and risks linked to karst surface and cave systems. It is now possible to prepare efficient measures that secure protection of caves and karstic waters which represent the second to most important drinking water resource following the Quaternary sediments.

The neotectonics in Slovakia was studied on example of the Poľana Mts., Štiavnické vrchy Mts. and Kysucké Bradlá Mts. Detailed mapping of the geomorphological division of the Slovakia in 1 : 50 000 scale – started in the year 2006.

The problem of regional typification of surface streams in the SR was solved in the national context with regard to implementation of the 2000/60 EU Water Framework Directive in Slovakia in cooperation with the Slovak Hydrometeorological Institute.

A common VEGA project was worked on in cooperation with the Department of Water Economy and the Landscape of the Slovak Technical University. The outputs of this cooperation are joint publications (Kohnová, Szolgay, Solín, Hlavčová 2006, Kohnová, Solín, Szolgay 2003).

Cooperation with the SPECTRA-PERSEUS-Centre of Excellence and the Faculty of Architecture STU in Bratislava concentrated on the question of river landscape research methodology. Efforts to develop the integrated river system research have resulted in the analysis of relationships between morphohydraulic units of river channel and macrovertebrate associations.

In the field of education a new subject *Fluvial geosystems and their management* was introduced at the Faculty of Natural Sciences Comenius University in two study programmes: Physical geography and Geoecology and Geoecology and landscape planning. This new subject has been lectured for three years now while 3 Bc., 5 Mgr. and 3 PhD students graduated in this field.

Inquiry of karstic phenomena and processes that take place in the landscape has facilitated preparation of methodology for the comprehensive protection of Slovak caves that have become part of the UNESCO world natural heritage.

*International context of the issue concerning floods and compilation of flood maps as well as research into morphological properties of river systems follows the EU trend to improve the ecological state of streams and to manage flood situations. International implications of the*

river system research have been documented in CC journals (Hanušín 2003, Lehotský and Grešková 2003, Solín 2005). The Twinning Light Project No. TLP 01 – 29 in cooperation with Danish experts has yielded the manual of particular procedures involved with assessment of morphological properties of streams (Hydromorphological assessment protocol for the Slovak Republic, Pedersen et al. 2004) in accord with the aims of the EU Water Framework Directive. [http://www.shmu.sk/File/implementacia\\_rsv/twinning/a1\\_Protocol\\_final.pdf](http://www.shmu.sk/File/implementacia_rsv/twinning/a1_Protocol_final.pdf)

Elaboration of methodology for interpretation and research of river landscape has contributed to the solutions of the *Management der Flusslandschaften* - MSO AG, Akademie für Raumforschung und Landesplanung (ARL), Hannover Project and was concluded with a chapter (Lehotský and Grešková 2005) in the monograph *Border-Free River Basins*. The project INTERREG III B CADSES, priority 3 – *Landscape, natural and cultural heritage, measure 3.2 – Protection and development of natural heritage* is the framework for the initiated research of river corridors in order to improve the network of protected areas in the wider region of the Tatra Mountains. Contact with the Working group on Great rivers of the International Association of Geomorphologists has been established and active participation in the Lyon conference (June 2007) is one of its outputs.

### **Research cluster: Society, environment and development**

Research of spatio-temporal differences in life sustainability and quality development at the national, regional and local levels has been conducted at the crosscut of scientific currents involved with the environment and territorial organization of society and its activities. Apart from the study of demogeographic phenomena, spatial behaviour of humans in the environment, socio-pathological phenomena, amenities, local and regional development associated with the sustainability issues and quality of life, this current also dealt with the analysis of the volume, structure and spatial distribution of migrations and assessment of its relationship to regional unemployment rates and other forms of spatial mobility.

A. Bezák, M. Huba, V. Ira, D. Kollár, P. Mariot (until 2004), A. Michálek, D. Michniak, F. Podhorský (until 2005), P. Podolák, V. Székely, J. Szöllös, I. Andráško, T. Bednárík (until 2003) were engaged in research on a diverse range of topics within cluster *Society, environment and development*.

Six research workers participated in the project *Changes of demographic development of Slovakia; Population Atlas of Slovakia*, carried out in cooperation with the Comenius University – Faculty of Natural Sciences, Department of Human Geography and Demogeography in 2003-2006. The project result is the *Population Atlas of Slovakia (2006)* and monograph published in English and Slovak versions Mládek, J. - Kusendová, D. - Marenčáková, J. - Podolák, P. - Vaňo, B., eds. Demogeographical analysis of Slovakia. Bratislava: Comenius University, 2006. 224 p. One researcher was the editor of a chapter in the *Atlas* and co-editor of both monographs. Human geographers from the IG SAS elaborated numerous maps (at the level of communes and districts) where the prevailing theme was the spatial mobility of population, particularly migration, commuting and time-spatial of population's mobility, which represented the substantial part of the chapter "Spatial movement of population". Another extensive series of maps and graphs deals with cartographic representation of several synthesised quality of life indicators (human development, living conditions, quality of life, quality of dwelling, etc) as well as socio-pathological phenomena (such as crime and drug addiction). Monographs complement the *Atlas*, as their themes are equally distributed into seven chapters. They represent a detailed analytical and synthesised evaluation of the present state and future population development of the SR. Research workers of the IG SAS also participated as authors in their edition.

The study of relationships between sustainability and quality of life, mutual links between their individual dimensions in the geographic context and based upon the previous comparative research, analysis of numerous studies and documents. A conclusion was

drawn that the relationship between metascientific concepts of sustainability and quality of life is interpreted in multiple ways. Some interpretations of these two concepts coincide, other give life quality wider interpretation while sustainability is considered only one of the quality of life criterion and some even explain sustainability as a superior concept where quality of life is considered only one of its attributes.

Comparison of quality of life and sustainable development has pointed to specific features in development of Slovakia in terms of wider international context. The overall trend is not satisfactory as far as sustainable future is concerned. As far as the assessment of quality of life is concerned, position of Slovakia has been determined not only by the level of the economic development, cultural factors or environmental situation, but also by the “heritage of the socialist era” and the state of the socio-economic transition.

Spatial analysis of quality of life in Slovakia characterized by 6 domains (demographic, education-informatization, security, material comfort and social security, equipment of dwelling and environmental quality) and by a comprehensive index showed that level of life quality far below average exists in districts that are situated in the problematic region of south-eastern and eastern Slovakia. This group of spatial units is characterized by low values of indicators of material comfort, education-information and equipment of dwelling. On the contrary, above-average values are typical for districts with high values of indexes in demography, material comfort and social security, equipment of dwelling and favourable values in environmental quality (region Bratislava, districts Trenčín, Martin and Banská Bystrica).

Findings of demogeographic research pointed to acceleration of the population ageing process in Slovakia (regressive type of population with insufficient rate of reproduction), to an extra high rate of regional disparity in life expectancy and the differing effect of factors that determine it in individual parts of the country. Assessment of rural population has shown that the long-lasting decrease of its representation in parts of Slovakia stopped. Analysis of population development according to individual size groups of communes has proved manifestation of suburbanization and deconcentration of population – they anticipate a principal turn in migration behaviour of population while until recently highly attractive urban centres now lose by migration, as the population prefers to live in the immediate hinterland of the biggest cities of Slovakia.

Geographical study of socio-economic problems associated with transformation of society revealed distinct differences in poverty rate, some socio-pathological phenomena, character of infrastructure and other socio-economic characteristics. Applying certain rate of generalization we may say that the common feature in manifestation of the majority of studied phenomena is the NW-SE gradient.

The rural area in Slovakia is still determined by the ongoing transformation processes as manifest in changes of spatial structures and spatial behaviour of population. Many of these changes determine life quality of rural population. Research has pointed to adverse effects of depopulation, fading role of agriculture in terms of employment and character of production, exclusion of some population groups and deteriorated public transport service that cause marginalization of a considerable part of rural regions and overall decrease of life quality.

Research of urban areas (on example of Bratislava) applied several approaches that make use of objective and subjective indicators of sustainable living. The concept of time-geography by means of the time-space budget technique identified places and time with the highest share of unsustainable activities (for instance, high material consumption, insensitive environmental behaviour, stress provoking behaviour and inappropriate ways of transport).

Behavioural-geographical research has focused on urban environment (city wards of Bratislava) Results of intra-urban analysis in the Capital have pointed to possibilities of two basic approaches – i.e. objective (“city on the ground”) and the subjective (“city in the mind”) and above all to multi-dimensionality of the studied phenomenon. Comparison of the quality of life research achieved by means of objective and subjective indicators has revealed that

there are distinct differences in evaluation of some territories caused by existing stereotypes and insufficient cognition of the analysed environment.

Research into regional development concentrated on situation in infrastructure, possibilities and limitations of development identified based on developmental factors and models of developmental possibilities and limits in the selected regional systems. IG SAS in cooperation with the Institute of Sociology, SAS published the monograph by Ira, V. - Pašiak, J. - Falt'an, L. - Gajdoš, P. eds. *Forms of regional disparities in Slovakia (examples of selected districts)*. Bratislava: Sociologický ústav SAV, 2005. 381 p.

Spatial differentiation of Slovakia was characterised by means of economic performance indicators, which express the interaction between the determinants of local and regional competitiveness. Methods of geographical analysis were applied to the assessment of effects that varying levels of attractiveness attributable to regions (localities) exert on varied forms of spatial mobility of population (commuting).

Using the primary migration data drawn from the current population registration, which describe moves as individual demographic events, some selective features of internal migration in Slovakia during the 1996-2004 period were identified. It was found out that the net migration pattern by age and sex considerably differs from the regional structure of overall migration balance. Migration gains and losses are in average higher for females than for males. Higher attractiveness of bigger cities for the female migration component was definitely confirmed. On the other side, high migration losses of women occurred in small and peripheral regions. The highest gains of young population (aged 0-19) by migration are confined to regions in the south-western and southern parts of Slovakia, whereas the northern regions loose young population. The pattern of the net migration in the working age group is characterized by a very strong spatial focussing.

The international nature of research is demonstrated by cooperation under the project *The socio-geographical aspects of shaping new regional structures in Poland and Slovakia* with the Institute of Geography and Spatial Management, Polish Academy of Sciences (Warszawa) in the years 2003-2006. Representatives of the IG SAS took part in the Polish-Slovak seminar in Bratislava (2004), in the Slovak-Polish seminar in Ustka, PL (2006) and the regional symposium *Central Eastern Europe: Changing Spatial Pattern of Human Activity* in Warsaw (2004). The output of cooperation is in form of publications by the Polish authors in *Geografický časopis* and those by our authors in the journal *Europe XXI*: (Huba 2005, Ira 2005, Michniak 2005, Székely 2005).

The project "Geographical research of natural-landscape and socio-economic structure and their changes" was accomplished in cooperation with the Institute of Geonics, AS CR. Four Czecho-Slovak academic geographical seminars were organized (Brno - 2003, Bratislava – 2004, Brno - 2005 and Smolenice - 2006). Results of this cooperation have been published in two monothematic publications: Ira, V. - Vaishar, A., eds.: *Time-spatial aspects of transformation processes in the Czech Republic and in the Slovak Republic*. Bratislava, Institute of Geography SAS, 2004, 108 s. and Vaishar, A., Ira, V. eds.: *Geographical organization of Czechia and Slovakia at the present period*. Brno, Institute of Geonics of AS CR, 2005. 166 s.

Additional international research cooperation within the European Rural Development Network (ERDN) resulted in publishing chapters in monographs prepared by authors from IG SAS (Podolák 2005, Ira – Huba – Podolák 2006 and Székely – Michniak 2006).

Since 2006 the Institute has been participating in the international project „Protected Area Networks – Establishment and Management of Corridors, Networks and Cooperation (PANet 2010) within the programme INTERREG III B CADSES. The research contributes to the establishment of protected areas networks as components of integrated and sustainable spatial development strategies, in harmony with the European Spatial Development Perspective (ESDP), regional and national development strategies and activities concerning the rural development.

Publishing and editing activities: 3 monographs, several chapters in monographs, 7 studies in CC journals, almost one hundred studies in other national and foreign periodicals and papers in reviewed proceedings, 2 edited and published proceedings. More than five hundred citations responded to publications of the project team, including 15 in WOS and 6 in SCOPUS databases.

Four external PhD students finished their studies in the quoted research fields in the period in question and three of them are expected to defend their theses in 2007.

Four research workers in this research current participate in the educational activities in several chairs of the Faculty of Natural Sciences, Comenius University in Bratislava at the Faculty of Social and Economic Sciences, Comenius University in Bratislava, at the School of Health Care and Social Work of St Elisabeth in Bratislava and at the Chair of Regional Development, School of Economics and the Management of Public Administration in Bratislava (lectures on regional analysis, urban ecology, behavioural geography, regional dimension of sustainable development, human ecology, global issues and globalization, economic geography).

One research worker was appointed university professor in geographical sciences in 2006 and one team member submitted his thesis for Associated Professor in geography.

Research team members were simultaneously members of relevant bodies/commissions/councils: (e.g., membership in the VEGA Commission No. 3 for Sciences on Earth and Space, membership in Board of Slovak Research and Development Agency, membership in the SNC MaB, membership in the Scientific collegium of the SAS for the sciences about Earth and space, in the work group of the Accreditation commission, the counselling body of the Government of the Slovak Republic for the research area Geography). They were members in editorial boards of foreign scientific periodicals: *Przegląd Geograficzny* and *Moravian Geographical Report* and in national journals *Životné prostredie*, *Geografický časopis*, *Geographia Slovaca*, *Acta Environmentalica Universitatis Comenianae*, *Acta Facultatis Studiorum Humanitates et Naturae Universitatis Prešovensis*.

**Research cluster: *Landscape Changes, Application of Remote Sensing Data and the Geographic Information Systems, Cartography and Geo-information Science***

Research in the area of cartography, geo-information, and remote sensing was focused on the development of interpretation methods applied to satellite images for the purpose of identification, analysis and landscape change assessment in the 1990-2000 period as well as the relationship of such changes to the natural landscape structure at the regional, national and European levels. Research activities also comprised production of maps, which demonstrate the landscape changes.

The researchers involved in research cluster: J. Feranec, J. O'ahel', J. Pravda, K. Husár, T. Cebecauer (he works as an expert in the JRC in Ispra, Italy since September 2005; M. Šúri worked in the similar post in Ispra as well), J. Nováček since 2006.

Significance of the research orientation in the national and international contexts is characterized by facts as follows:

Data layer of land cover in Slovakia from 1990 was updated to the state in 2000 by computer aided interpretation of satellite images in the context of all-European project *CORINE Land Cover 2000* and land cover changes of Slovakia in the 1990-2000 period were identified, analysed and assessed. The obtained results are accessible at: <http://atlas.sazp.sk>.

Analysis of changes by administrative regions of Slovakia yielded characteristics of the landscape development and dynamics in the context of regional natural and socio-economic differences. The largest changes in regions Bratislava (BA) and Trnava (TT) include the



increments of water bodies (14.3 km<sup>2</sup> in BA and 28.3 km<sup>2</sup> in TT), as the result of finished construction of the Gabčíkovo Dam. The largest change in regions Banská Bystrica (BB) and Košice (KE) is the increase of transitional woodland (77.5 km<sup>2</sup> in BB and 119.5 km<sup>2</sup> in KE) due to intensive logging. Heterogeneous agricultural areas increased in regions Nitra (NI) and Žilina (ZI) (16.4 km<sup>2</sup> in NI and 98.7 km<sup>2</sup> in ZI); forest areas increased in regions Prešov (PO) and Trenčín (TN) (50.1 km<sup>2</sup> in PO and 25.2 km<sup>2</sup> in TN) due to natural regeneration of forest. Analysis of land cover changes was focused on agricultural landscape with the use of the CLC90 and CLC2000 datasets. Increase of the mosaic of fields, meadows and permanent crop areas by 13,111.7 ha above all in hinterland of rural settlements of northern and central Slovakia and in vineyard regions of the south-western part of the country are among the most important changes of agricultural land. The underlying cause is the restitution of the agricultural land and its lease to new farmers.

Methodology of interpretation of black-and-white aerial images for identification of land cover changes in the 1950-1990-2000 period in selected parts of Europe was elaborated for the *5th EU Framework Programme BIOPRESS* project. Application of this methodology is documented in the monograph: *Köhler, R., Olschofsky, K., Gerard, F. (2006). Land cover change in Europe from the 1950's to 2000. Hamburg (World Forestry), 364 p.*

The long-year research focused on methods of map representation was concluded by two monographs: Pravda, J.: *Brief lexicon of cartography*. Bratislava: Veda, 2003, 325 s. and Pravda, J. *Methods of map representation. Classification and examples*. Geographia Slovaca, 21. Bratislava: Geografický ústav SAV, 2006. 127 s.

International cooperation with the Institute of Geography of the Bulgarian Academy of Sciences and the Institute of space research of the BAS has cropped in solution of one scientific project.

Participation in the project of the 5th Framework Programme of the EU (BIOPRESS) and the international project (CLC2000) and two projects of the VEGA Grant Agency was also important.

Publication activities of the research workers with the quoted research orientation consisted of: 4 monographs, 5 chapters in monographs, 3 studies in CC journals (two additional were admitted and will be published by the beginning of 2007), 43 studies in other national and foreign periodicals, 14 papers in reviewed miscellanies. Four proceedings were edited and 2 proceedings have been prepared with authors of other centres. In the area of cartography, geo-information and remote sensing 200 citations were recorded including 23 in WOS a SCOPUS databases.

One PhD student concluded the external form of PhD study and successfully defended her thesis. One of the research team members read two lectures in every academic year at the Faculty of Natural Sciences Comenius University in Bratislava (*Purpose properties of the landscape* and *Environmental approaches in research of spatial structures*). One of the principal protagonists of this research orientation was appointed university professor in the branch Physical geography and geocology, another submitted the doctor thesis in geographic sciences in branch Geo-information science

Scientists participated in organization of one international conference, one seminar and two conferences at the Institute of Geography SAS: One specialised organizer of the conference and one member of organizational committee of the conference that were organized by other entity; six invited lectures at seminars and conferences abroad; presentation of 38 lectures at the national conferences and five lectures at conferences held abroad.

Research team members participated in several activities relevant in both national and international contexts. Eighteen (ISO EN) standards in the area of geographic information that were included in the STN system for the Slovak Office of Technical Normalization were processed; one worker has been sent by the Ministry of Education SR to the session of the *High-level Space Policy Group* to Paris, one was member of the Slovak delegation to the

session for competitiveness in Brussels and one member of the team was invited as the *expert of the technical team* under the CORINE Land Cover 2000 Project to secure preparation of interpreters in form of training seminars in individual European countries and control of satellite image interpretation results.

Research team members were simultaneously members of relevant bodies/commissions/councils: Commission for the thematic mapping of the International Cartographic Association, membership in the work group *Analysis of the landscape system in the environmental management* of the International Association of the Landscape Ecology (IALE), membership in the Commission for the research and peace use of space, part the Council of the Government of the SR for science and technology, membership in the National committee for space research COSPAR, in the National geographic committee, membership in the VEGA Commission No. 3 for Sciences on Earth and Space, membership in the Terminological Commission of the Office of geodesy, cartography and cadastre of the SR, membership in the Scientific collegium of the SAS for the sciences about Earth and space, in the work group of the Accreditation commission, the counselling body of the Government of the Slovak Republic for the research area No. 10 Environmental science and ecology. They were members of editorial boards of *Geografický časopis*, *Geographia Slovaca*, *Kartografické listy*, and *Geografia*.

### **3. Concept of R&D activity of the Organisation for the next four years (max. 5 pages)**

The research intent of the Institute of Geography SAS for 2007-2010 relies on facts that geography is one of integrated (holistic) sciences. It deals with geographic systems at different hierarchic levels. The principal mission of the modern geography is research into relationships between humans and nature in time and space. Geography explores the nature, the man-made environment and the society or individuals in their mutual interactions. Regarding the above said, no sharp boundaries exist between the following four research clusters - just on the contrary - they complement each other:

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

##### **i. Present state of knowledge and status of ongoing research related to the subject of the Concept, from both international and national perspective**

Research of morphological properties that characterize river systems has not been formulated as a complex scientific area in Slovakia that should develop permanently and systematically. The existing partial results could not capture the whole issue. Research of morphology was given more attention only recently in this country precisely by developing it in the premises of the IG SAS. Research of floods and their effects, compilation of flood maps, research of ecological status of river and basin systems in the world developed in the last three decades into a modern and topical current both in hydrology and fluvial geomorphology. In connection with the onset of global climatic change and the increasing frequency and intensity of floods it is necessary to cope with them in Slovakia at integrated hydrological and morphological levels. Only such approach facilitates compilation of flood maps that realistically reflect potentially flooded territories. Production of the map of regional geomorphologic division of Slovakia at scale 1 : 50 000, which is still missing is especially important in this context.

## **ii. Organisation's role or significance in the overall research effort within the field of the Concept on both the national and international scales**

The task and significance of the Institute of Geography in research of river system morphology in Slovakia is defined by the fact that this theme has been recently established precisely in this centre. Investigation of morphological and hydrological properties of river landscape makes it possible to study the ecological state of river systems, flood hazard and to compile flood maps. Extensive and hierarchically structure GIS database of physical characteristics of Slovak basins produced at the Institute of Geography contributes to it. Requests concerning knowledge and application options and outputs for education demonstrate significance and justification of such research. The above-quoted issue the same as geomorphologic mapping at the IG are supported by VEGA projects.

## **iii. Objectives of the Concept**

The principal aim of research of river system morphology is defining of morphological variability of types, present processes, properties of sediments, behaviour of natural and modified river reaches based on application of the hierarchic model of river morphology, estimates of flood hazard in terms of EU directive about estimation of floods and flood management, research of the morphological effect of floods at the level of model territories. A follow-up and development of cooperation in the national (Faculty of Construction of STU, Institute of Zoology SAS) and international context (7<sup>th</sup> Framework Programme, bilateral cooperation with the Sosnowiec University in Poland, participation in the EXCIMAP Work Group *EXCIMAP* oriented to exchange of experience in flood mapping in the European countries and in education are presumed.

## **iv. Proposed strategies and methods to be applied, and time schedule**

Identification of regional types of flood hazard and evaluation of small basins in Slovakia from the point of view of flood risk; analysis of basic morphological attributes of river systems, definition of geoinicators for identification of morphological trends and the operation of aggradation-degradation and sedimentation processes; processing of mapping keys and field protocols, field work (sample collection, measuring of transversal profiles, hydraulic geometry, compilation of databases, HEC-RAS model testing and production of flood maps; analysis of spatial differentiation of river channel in relation to associations of macrovertebrates and fish; mapping of geomorphologic units and compilation of the map representing regional geomorphologic division of Slovakia.

Methods of field mapping, building of database and production of map outputs in the GIS, application of mathematical statistics, levelling methods and GPS; methods of sediment sampling, discharge analyses, research of woody debris in river channels; comparisons of historic maps and the present state of river systems; research of river channel and floodplain profiles; frequency and size of extreme discharge analysis; application of 1D HEC-RAS hydraulic model.

First stage (2007-2008): further morphological research in river reaches of the Danube, Studený potok, Vydrica, Hybica and Belá; measuring of transversal profiles of floodplains and river channel and parameters of model basins as inputs for the 1D HEC-RAS model; identification of regional types of flood hazard for small basins of Slovakia.

Second stage (2008-2009): expansion of river morphology research adding the model territories of the lower Váh and Belá; analysis of flood risk and testing of 1D HEC-RAS model; investigation of relationship between morphological properties of river channel and macrovertebrates communities and selected fish species; compilation of model maps of *Regional geomorphologic division of Slovakia*.

Third stage (2009-2010): identification of behavioural types of river reaches in Slovakia; compilation of flood maps based on the 1D HEC-RAS models.

Continuously - assessment of morphological effect of floods in affected areas.

**Research cluster: Geographical Dimension of Socio-economic Changes and their Impact on Local and Regional Development**

**i. Present state of knowledge and status of ongoing research related to the subject of the Concept, from both international and national perspective**

Monitoring of socio-economic changes and regional development represents one of the most important areas of human geographical research both at the level of international and Slovak research. The research has gained additional impulses under the effect of the ongoing globalisation and the European integration processes which manifest in Slovakia by population, capital and information mobility.

**ii. Organisation's role or significance in the overall research effort within the field of the Concept on both the national and international scales**

The deepening regional differences in Europe represent a serious problem that emerges at different hierarchic levels. Individual EU member states are willing and prepared to participate in its solution. Facing regional disparities in Slovakia, an interdisciplinary approach where geography is one of important scientific resources, is required.

**iii. Objectives of the Concept**

The ongoing social changes in Slovakia have caused profound regional disparities. The dynamics of the present processes has modified the development of many social phenomena and also led to spatial changes. The aim of the geographical research is to concentrate on identification of those changes and population development (for instance social inequalities, changes in stratification of the society in the regional context, spatial movement of population, suburbanization issues). Meanwhile, observation of social consequences and social pathological phenomena attributable to economic transition is also presumed. Research will concentrate on exploration of social links in the environment and other themes that might facilitate deeper comprehension of behaviour of individuals and population groups in space and time. Attention will be given to the economic performance and competitiveness of localities and regions. These themes are related to the issue of population concentration and networking of economic subjects. Study of "human capital" quality will be considered the crucial factor of regional differentiation.

**iv. Proposed strategies and methods to be applied, and time schedule**

Research strategies will rely on the present state-of-the-art in cognition of spatial differentiation of Slovakia and experience drawn from the past research carried out in the context of the European programmes of regional development (e.g. European Rural Development Network). Objectives of the concept will be analysed using statistical techniques (e.g. location quotient, correlation analyses, indexes of specialization and spatial concentration, etc.), cartographic methods, questionnaire surveys and text interpretations, content analyses and graphic modelling. In the first stage (2007 - 2009), emphasis will be focused on adaptation to the conditions of the European research space and during the following stage (2009 – 2010), deepening of the knowledge about specific features of socio-economic changes and regional development of Slovakia will be stressed.

**Research cluster: Geographical Dimension of Sustainability and Quality of Life**

**i. Present state of knowledge and status of ongoing research related to the subject of the Concept, from both international and national perspective**

Significant political, social, and economic changes, technological progress, as well as growing global problems and threats, have increased an interest in issues relating to sustainability and the life quality at global, national and regional levels. Over the past few years, discussions about the terms 'Quality of Life' (QoL) and 'Sustainable Development' (SD) as well as the way in which they are applied and measured have gradually increased.

Significant changes and their considerable impact on the QoL modify the position of individuals in society. The previous development of industrial society was unsustainable. This situation is challenging the society (including research) to search for sustainable solutions. Geography belongs to integrative sciences possessing a sufficient potential for this type and theme of research.

## **ii. Organisation's role or significance in the overall research effort within the field of the Concept on both the national and international scales**

Since 1994, the theme was significantly represented in several successfully accomplished projects, for example, *Geographic criteria and indicators for the addressing nature of sustainable development*, *Selected temporal and spatial aspects of sustainable development in Slovakia*, *Temporal and spatial aspects of quality and sustainability of life* which led to the current project *Regions and their changes in terms of sustainability and quality of life*. The theme was and still is represented in several international projects, the research workers of IG SAS assisted to (*Improvement of the protected area network: example Tatra region - INTERREG IIIb CADSES*, *Mountain National Parks and Biosphere Reserves: sustainability and management - INYS*, *Carpathians Environment Outlook - UNEP*, etc). Several scientists of the IG SAS are well known experts in this field even in the international context and published more than one hundred scientific publications on these issues.

## **iii. Objectives of the Concept**

The research will focus on a geographical study of the QoL and SD of regions (at different hierarchical levels) and their changes. The aim is to deepen the theoretical and methodological knowledge of geographical research in the field of sustainability and quality of life. A spectrum of geographically relevant objective and subjective indicators will be employed in order to specify the content and the structure of terms 'sustainable development' and 'quality of life', to investigate spatial distribution of various sustainability and the life quality interlinked aspects (economic, socio-cultural, environmental, ethical) and to study relationships between the QoL and SD. The multi-scale multi-indicator methodological procedure employed in research will provide a comprehensive geographical assessment of the changes in quality and sustainability of life in regions of Slovakia.

The results of research in this field should support establishing/improvement of protected areas networks as components of integrated and sustainable spatial development strategies, specifically in accordance with the European Spatial Development Perspective (ESDP), regional and national development strategies and activities of rural development.

With respect to the growing importance of energy security issues, part of the research will be oriented towards the exploitation analysis of renewables with the aim to support sustainable energy sector.

Such an investigation can be of practical use for planners and decision makers faced with task of defining priorities for developmental strategies, policies and programmes.

## **iv. Proposed strategies and methods to be applied, and time schedule**

In our understanding, objective and subjective perspectives of sustainability and QoL are paralleled and complementary as two dimensions and are treated as aspects of a dynamic process of everyday life. In this concept we examine a combination of measurable physical and social aspects of the environment and their perception. This perception is not only related to the objective characteristics of the environment, but also personal and contextual aspects. In order to obtain a proper understanding of sustainability and QoL, it is necessary to employ both objective and subjective methods/evaluations (statistical, spatial and temporal comparisons, cartographic data processed in the ArcView environment, questionnaire technique for the analysis of the quality of life perception, for the subjective evaluation of sustainable/unsustainable way of living, for the perception analysis of places associated with the basic life functions, and search for the weighting system classifying the specific demogeographic social, economic, and environmental quality-of-life and sustainability

characteristics, the time-space budgets in the spatio-temporal analyses of everyday life activities).

First stage (2007): updating of the scientific knowledge on evaluation and measurement of sustainability and quality of life and their interrelations, defining the scope of the objective and the subjective dimensions, the range of indicators, and creation of basic criteria frameworks for their assessment.

Second stage (2008-2009): analyses of time-space budgets of everyday life activities in selected regions and their interpretation, analyses of places of selected basic human life functions (residential, leisure time, etc.) and their importance, analyses of spatial disparities in the quality of life and sustainability by specific domains (demogeographic, social, economic, environmental).

Third stage (2010): comparisons of subjective and objective assessment of quality of life and sustainability in selected regions and interpretation of their differences, interpretation of interrelations between basic dimensions of quality of life and sustainability and interpretation of interrelations between specific analysed domains of quality of life and sustainability in the geographical perspective.

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

#### **i. Present state of knowledge and status of ongoing research related to the subject of the Concept, from both international and national perspective**

The issue of land use and land use changes identification, analysis and assessment by application of remote sensing data has been and is studied within the framework of several international projects such as (*Land cover changes in COASTal zones*), *Earth Observation for Sustainable Development of Forest (EOSD)*, the national database of the USA (*National Land Cover Database – NLCD 2001*), and the Pan European project *BIOPRESS*. The most recent participation of Slovakia in this area is associated with the all-European project *CORINE Land Cover 2006 (CLC2006)*. The Institute of Geography SAS will take a significant part in its solution. One of important tasks under this project will be identification and assessment of land cover change in Europe, i.e. also in Slovakia in the years 2000-2006 based on satellite images. Outputs of this project will be incorporated into the *Global Monitoring for Environment and Security (GMES)* programme, which in turn is part of the world global monitoring system of our planet. The GMES is one of master programmes supported by the 7th EU Framework Programme.

#### **ii. Organisation's role or significance in the overall research effort within the field of the Concept on both the national and international scales**

The Institute of Geography SAS along with the Environmental Agency were the principal work centres of the CLC90 and CLC2000 projects in Slovakia and will continue working on the CLC2006 project. One of our scientists participated in preparation of the methodology for this all-European project. Workers of the department opened negotiations with the National Aerospace Laboratory (NLR) in Markness (Netherlands) about Institute's participation in the 7th EU Framework Programme in response to the offer of the NRL. Institute's participation in the *United Nations Year of Planet Earth (IYPE)* programme with the particular issue of *Resources* coordinated by Prof. Y. Himiyama of Hokkaido University of Education, Assahikawa, Japan is also underway. One of our workers has accepted invitation to consult the theme in Japan. Part of results obtained under the CLC2006 project will be used in the work on the issue of *Resources*.

### **iii. Objectives of the Concept**

Research activities will focus on identification, analysis and assessment of landscape samples – patterns on the basis of satellite data both at the regional and national levels which develop in the context of different natural and socio-economic conditions; on assessment of changes, development and stability of use and organization of rural landscape in Slovakia in the years 1970-1990-2000-2006 based on the CLC data in the GIS environment. Data obtained by interpretation of satellite images will be applied in integrated land use research based on methodology of geoecological and regional-geographic analysis. Identification and analysis of natural (reconstructed) landscape structure is the primary step in evaluation of suitability and spatial organization of land use. The real state of the present landscape is identified by means of topical information contained in the CLC2006 data layer. Land use will be also analysed by socio-economic functions that determine the ways and rate of societal use. Spatial analysis of land use will contribute to evaluation of landscape diversity and ecological stability in terms of the landscape system, basic elements of which are land cover classes analysed and assessed in relation to the natural landscape structure and relevant landscape functions. The results will be presented in maps that represent an important spatial information source for the landscape management and planning.

### **iv. Proposed strategies and methods to be applied, and time schedule**

The all-European methodology of satellite image interpretation will be applied to identification of landscape changes and the GIS technology will be used for the analysis and assessment of such changes in the course of the quoted activities. Solution of the described tasks in the field of landscape analysis and assessment is foreseen for the years 2007-2010.

### III. Partial indicators of the main activities:

#### 1. Research output

- i. List of the selected publications documenting the most important results of basic research. Total number of publications in the whole assessed period should not exceed the average number of the research employees

- [1] FERANEC, J. – CEBECAUER, T. – OŤAHEL', J. – ŠŮRI, M. Assessment of the selected landscape types of Slovakia in the 1970s and 1990s. In *Ekológia (Bratislava)*. Vol. 22, Supplement 2, 2003, pp. 161-167.
- [2] HANUŠIN, J. Landscape ecological aspects of the collectivized agricultural landscape in view of sustainability. In *Ekológia (Bratislava)*. Vol. 22, Supplement 2, 2003, pp. 367-376.
- [3] HUBA, M. – IRA, V. – HANUŠIN, J. – LEHOTSKÝ, M. – SZÖLLŐS, J. Regional aspect of development towards sustainable Slovakia. *Ekológia (Bratislava)*. Vol. 22, Supplement 2, 2003, pp. 66-78.
- [4] IRA, V. Rural space in Slovakia. Changes of spatial structures and spatial behavioural patterns. *Acta Universitatis Carolinae/Geographica*, 38, 1, 2003, 119-130.
- [5] OŤAHEL', J. Visual quality of the landscape: approaches to analysis. In *Ekológia (Bratislava)*. Vol. 22, Supplement 2, 2003, pp. 150-160.
- [6] PRAVDA, J. *Stručný lexikón kartografie. (Brief lexicon of Cartography)*. Bratislava: Veda, 2003, 325 p.
- [7] BALÁŽ, V. - WILLIAMS, A. - KOLLÁR, D. Temporary versus permanent youth brain drain: economic implications. In *International Migration*, vol. 42, no. 4, 2004, pp. 3-34.
- [8] HUBA, M. Sustainability concept and environmentally oriented integrated Sciences on landscape and society. In *Ekológia (Bratislava)*. Vol. 23, Supplement 1 (2004), pp. 69-76.
- [9] KOPECKÁ, M. The landscape-ecological plan in the process of rural landscape development supported by SAPARD. In *Geographia Polonica*. Vol. 77, no. 2 (2004), pp. 63-78.
- [10] LACIKA, J. Progressive evolution of the Bodva drainage basin (SE West Carpathians, Slovakia). In *Acta Universitatis Carolinae: Geographica*. Vol. 39, no. 1 (2004), pp.73-83.
- [11] LEHOTSKÝ, M. River morphology hierarchical classification (RMHC). In *Acta Universitatis Carolinae: Geographica*. Vol. 39, no. 1 (2004), pp. 33-45.
- [12] LEHOTSKÝ, M. - GREŠKOVÁ, A. Riverine landscape and geomorphology: ecological implications and river management strategy. In *Ekológia (Bratislava)*. Vol. 23, Supplement 1 (2004) pp. 190-197.
- [13] MICHÁLEK, A. Meranie chudoby v regiónoch (okresoch) SR. (Measurement of poverty in regions (districts) of Slovakia). In *Sociológia*, Vol. 36, no. 1, 2004, pp. 7-30.
- [14] OŤAHEL', J. - FERANEC, J. - CEBECAUER, T. Landscape changes identified by application of the CORINE land cover database: case study - part of the Záhorie lowland. In *Ekológia (Bratislava)*. Vol. 23, Supplement I (2004), pp. 252-263.



- [15] OŤAHEL', J. - FERANEC, J. - CEBECAUER, T. - PRAVDA, J. - HUSÁR, K. *Landscape structure of district Skalica: change assessment, diversity and stability.* Geographia Slovaca. Bratislava: Geografický ústav SAV, 2004. 123 p. ISSN 1210-3519.
- [16] ŽIGRAI, F. - HUBA, M. Some metascientific remarks concerning the sustainable development of the society and the environment. In *Ekológia (Bratislava)*. Vol. 23, Supplement 1 (2004), pp. 403-411.
- [17] FERANEC, J. - OŤAHEL', J. - MACHKOVÁ, J. - NOVÁČEK, N. - PRAVDA, J. - CEBECAUER, T. - HUSÁR, K. Land Cover Changes in Administrative Regions of Slovakia in 1990 - 2000. In HIMIYAMA, Yuko et al. *Land Use/Cover Changes in Selected Regions in the World*. Volume IV. Asahikawa : International Geographical Union Commission on Land Use/Cover Change, 2005. ISBN 4-907651-04-X. pp. 25-31.
- [18] MICHÁLEK, A. - PODOLÁK, P. Spatial distribution of poverty and its features in Slovakia. In *European Spatial Research and Policy*. Vol. 12, No. 2 (2005), p. 161-176.
- [19] OŤAHEL', J. Landscape ecology: principles of cognition and the political - economic dimension. In WEINS, John et al. *Issues and Perspectives in Landscape Ecology: Studies in Landscape Ecology*. Cambridge: Cambridge University Press, 2005. ISBN 0-521-53754-1. pp. 297-306.
- [20] SOLÍN, L. Identification of homogeneous regional classes for flood frequency analysis in the light of regional taxonomy. In *Hydrological Sciences Journal: International Association of Hydrological Sciences. Association Internationale des Sciences Hydrologiques*. Vol. 50, no. 6 (2005), pp. 1105-1118.
- [21] SZÉKELY, V. Regionálne rozdiely vo vývoji priemyselnej zamestnanosti na Slovensku v rokoch 1980 a 2001. (Regional differences in the dynamics of industrial employment in Slovakia in the years 1980 and 2001). In *Ekonomický časopis*. Vol. 53, no. 3 (2005), s. 283-295.
- [22] HUBA, M. Values for a Sustainable Future vs. Global Problems and Threats. In *Filozofia*. Vol. 61, no. 7 (2006), pp. 520-532.
- [23] MLÁDEK, J. - KUSEDOVÁ, D. - MARENČÁKOVÁ, J. - PODOLÁK, P. - VAŇO, B., eds. *Demogeographical analysis of Slovakia*. Bratislava: Comenius University, 2006. 224 p. ISBN 80-223-2192-3.

## ii. List of monographs/books published abroad

- [1] KOHNŇOVA, S. - SZOLGAY, J. - SOLIN, L. - HLAVCOVA, K. *Regional methods for prediction in ungauged basins*. Ostrava: Key Publishing, 2006, 113 p. ISBN 80-87071-02-6

## iii. List of monographs/books published in Slovakia

- [1] PRAVDA, J. *Stručný lexikón kartografie. (Brief lexicon of Cartography)*. Bratislava: Veda, 2003, 325 p.
- [2] BEBLAVÁ, E. - BRAŽINOVČ, A. - GINTER, E. - GULIŠ, G. - HUBA, M. - NEMEC, J. - PAŽITNÝ, P. - PLAČINTÁR, E. - ROSA, V. - SEDLÁKOVÁ, D. - SIRÁK, M. - SZOMOLÁNYI, S. - VAGAČ, Ľ. - ZACHAR, D. - ZAJAC, R. -

- ZEMANOVIČOVÁ, D. *National human development report Slovak Republic 2001-2002*. Bratislava, UNDP 2003. 114 p.
- [3] PRAVDA, J. - KUSENDOVÁ, D. *Počítačová tvorba tematických máp. (Computer aided thematic map making)*. Bratislava: Univerzita Komenského, 2004, 264 p.
- [4] OŤAHEĽ, J. - FERANEC, J. - CEBECAUER, T. - PRAVDA, J. - HUSÁR, K. *Krajinná štruktúra okresu Skalica: hodnotenie zmien, diverzity a stability. (Landscape structure of district Skalica: change assessment, diversity and stability)*. Geographia Slovaca. Bratislava: Geografický ústav SAV, 2004. 123 p. ISSN 1210-3519.
- [5] IRA, V. - PAŠIAK, J. - FALŤAN, Ľ. - GAJDOŠ, P. eds. *Podoby regionálnych odlišností na Slovensku (príklady vybraných okresov). (Forms of regional differences in Slovakia (examples of selected districts))*. Bratislava: Sociologický ústav SAV, 2005. 381 p. ISBN 80-85544-39-3.
- [6] HUBA, M. - BERKOVÁ, A. - HANUŠIN, J. - IRA, V. - KLUVÁNKOVÁ-ORAVSKÁ, T. - KOZOVÁ, M. - TOPERCER, J. - LACIKA, J. - BETÁK, J. et al. *Smerom k trvalo udržateľnému tatranskému regiónu (nezávislá štúdia strategického charakteru). (Towards sustainable region of the Tatras (independent strategic study))*. REC Slovensko, STUŽ: Bratislava, 2005, 96 p. ISBN 80 969436-0-X.
- [7] JAKÁL, J. ed. *Jaskyne svetového dedičstva na Slovensku. (The caves of world heritage in Slovakia)*. Žilina: Knižné centrum, 2005, 160 p. ISBN 80-8084-235-4.
- [8] MLÁDEK, J. - KUSENDOVÁ, D. - MARENČÁKOVÁ, J. - PODOLÁK, P. - VAŇO, B., eds. *Demogeographical analysis of Slovakia*. Bratislava: Comenius University, 2006. 224 p. ISBN 80-223-2192-3.
- [9] MLÁDEK, J. - KUSENDOVÁ, D. - MARENČÁKOVÁ, J. - PODOLÁK, P. - VAŇO, B., eds. *Demogeografická analýza Slovenska. (Demogeographical analysis of Slovakia)*. Bratislava: Univerzita Komenského, 2006. 222 p. ISBN 80-223-2191-5.
- [10] NOVOTNÝ, J. *Geomorfologická analýza Kysuckých bradiel. (Geomorphologic analysis of the klippen Kysucké bradlá)*. Geographia Slovaca, 22, Bratislava: Geografický ústav SAV, 2006. 154 p. ISSN 1210-3519.
- [11] PRAVDA, J. *Metódy mapového vyjadrovania. Klasifikácia a ukážky. (Map representation methods. Classification and examples)*. Geographia Slovaca, 21. Bratislava: Geografický ústav SAV, 2006. 127 p. ISSN 1210-3519.
- [12] SOLÍN, Ľ. *Odhad N-ročných maximálnych prietokov regionálnou frekvenčnou analýzou. (N-year maximum discharge estimates by regional frequency analysis)*. Geographia Slovaca 23, Bratislava: Geografický ústav SAV, 2006. 68 p. ISSN - 1210-3519.

#### iv. List of other scientific outputs specifically important for the Organisation

- [1] *Population Atlas of Slovakia*. Bratislava: Univerzita Komenského, Prírodovedecká fakulta, 2006, 168 s. - 63 maps and 23 graphs elaborated by 6 authors from Institute of Geography of SAS.  
Population Atlas of Slovakia is the scientific analysis and cartographic interpretation of the demographic situation in Slovakia. It represents the first comprehensive processing of complete fundamental information on development, distribution, housing, dynamic and prognoses of population in Slovakia. The set of maps represents the work of a high scientific, informative and cultural value.

#### v. Table of research outputs

Table **Research outputs** shows research outputs in number of specified entries; these entries are then divided by FTE employees with a university degree (from Tab. Research staff) for all Organisation at the respective year; finally these entries are divided by the total salary budget (from Tab. Salary budget).

Research outputs	2003			2004			2005			2006			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
chapters in monographs, books published abroad	0	0.00	0.00	2	0.09	0.21	4	0.17	0.40	4	0.18	0.40	10	2.5	0.11	0.25
chapters in monographs, books published in Slovakia	4	0.17	0.41	2	0.09	0.21	9	0.39	0.90	24	1.07	2.39	39	9.8	0.42	0.99
CC publications	4	0.17	0.41	6	0.26	0.62	2	0.09	0.20	1	0.04	0.10	13	3.3	0.14	0.33
scientific publications indexed by other databases (SCOPUS)	3	0.13	0.31	7	0.30	0.72	1	0.04	0.10	1	0.04	0.10	12	3.0	0.13	0.30
scientific publications indexed by other databases (Google Scholar)	9	0.39	0.92	7	0.30	0.72	10	0.43	1.00	1	0.04	0.10	27	6.8	0.29	0.68
scientific publications in other journals	17	0.74	1.73	23	0.98	2.37	33	1.42	3.31	42	1.88	4.18	115	28.8	1.25	2.91
publications in proc. of international scientific conferences	16	0.70	1.63	19	25.00	1.96	25	1.08	2.51	9	0.40	0.90	69	17.3	0.75	1.74
publications in proc. of nat. scientific conferences	10	0.43	1.02	5	0.21	0.52	5	0.22	0.50	10	0.45	0.99	30	7.5	0.33	0.76
active participations at international conferences	42	1.83	4.28	45	1.93	4.64	40	1.72	4.01	43	1.92	4.28	170	42.5	1.85	4.30
active participations at national conferences	35	1.52	3.57	16	0.68	1.65	14	0.60	1.40	30	1.34	2.98	95	23.8	1.03	2.40

\* Chapters in monographs, books published in Slovakia in 2006 include 19 maps in *Population Atlas of Slovakia*, significant from the research content and the elaboration point of view

#### vi. Renormalized publications<sup>2</sup>

*Renormalized publications = number of CC publications in the given year times authorship's portion of the Organisation times the journal impact factor in 2005 divided by the median impact factor in the research field*

Renormalised publications	2003			2004			2005			2006		
	number	No. / FTE	No. / salary budget	number	No. / FTE	No. / salary budget	number	No. / FTE	No. / salary budget	number	No. / FTE	No. / salary budget
Renormalized publications	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00

#### vii. Standard manuscript page count<sup>3</sup>

Standard manuscript page count	2003			2004			2005			2006		
	number	No. / FTE	No. / salary budget	number	No. / FTE	No. / salary budget	number	No. / FTE	No. / salary budget	number	No. / FTE	No. / salary budget
page count	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0

#### viii. List of patents and patent applications

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#### ix. Supplementary information and/or comments on the scientific output of the Organisation

<sup>2</sup> This information is required only from the Organisations of the Section 2 of the Slovak Academy of Sciences.

<sup>3</sup> This information is required only from the Organisations of the Section 3 of the Slovak Academy of Sciences.

## 2. Responses to the scientific output

Table *Citations* shows specified responses to the scientific outputs; these entries are then divided by the FTE employees with a university degree (from Tab. Research staff) for all Organisation at the respective year; finally these entries are divided by the total salary budget (from Tab. Salary budget).

Citations	2002			2003			2004			2005			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
Web of Science	13	0.6	1.3	13	0.6	1.3	23	1.0	2.3	13	0.6	1.3	62	15.5	0.7	1.6
SCOPUS	3	0.1	0.3	3	0.1	0.3	5	0.2	0.5	2	0.1	0.2	13	3.3	0.1	0.3
Google Scholar	1	0.0	0.1	0	0.0	0.0	5	0.2	0.5	17	0.8	1.7	23	5.8	0.3	0.6
in monographs, conf. proceedings and other publications abroad	31	1.3	3.2	39	1.7	4.0	21	0.9	2.1	97	4.3	9.6	188	47.0	2.0	4.8
in monographs, conf. proceedings and other publications in Slovakia	222	9.6	22.6	156	6.7	16.1	121	5.2	12.1	319	14.3	31.7	818	204.5	8.9	20.7

### i. List of 10 top-cited publications and number of their citations in the assessment period

- [1] FERANEC, J. - OŤAHEL', J. *Land cover of Slovakia*. Bratislava, Veda, 2001, 124 p. (23 citations)
- [2] FERANEC, J. - OŤAHEL', J. - PRAVDA, J. *Land cover of Slovakia identified by the CORINE LC method*. Geographia Slovaca, roč. 11, Bratislava, Geografický ústav SAV, 1996, 95 p. (17 citations)
- [3] BOSSARD, M. - FERANEC, J. - OŤAHEL', J. (2000). *CORINE land cover technical guide - addendum*. 2000, Copenhagen EEA, 105 p. <http://terrestrial.eionet.eea.int> (15 citations)
- [4] JAKÁL, J. *Kras Silickej planiny (Karst of Silická planina)*. Martin, Osveta, 1975, 152 p. (14 citations)

- [5] BEZÁK, A. *Funkčné mestské regióny v sídelnom systéme Slovenska (Functional urban regions in the settlement system of Slovakia)*. Geografický časopis, Vol. 42, no. 1, 1990, 57-73. (13 citations)
- [6] HUBA, M. - IRA, V. - MAČÁKOVÁ, S. - ŠVIHLOVÁ, D. - ZÁBORSKÁ, Z. *Indikátory trvalo udržateľného rozvoja miest (Indicators of sustainable development of towns)*. Košice, ETP Slovensko, STUŽ SR, 2000, 99 p. (11 citations)
- [7] MAZÚR, E. *Žilinská kotlina a príahlé pohoria (Basin of Žilina and adjacent mountain ranges)*. Bratislava, Vydavateľstvo SAV, 1963. 184 p. (11 citations)
- [8] OŤAHEĽ, J. - POLÁČIK, Š. *Krajinná syntéza Liptovskej kotliny (Landscape synthesis of the Liptovská kotlina basin)*. Edícia vedy o Zemi a vesmíre, Bratislava, Veda, 1987, 120 p. (11 citations)
- [9] PRAVDA, J. *Mapový jazyk (Map language)*. Bratislava, Univerzita Komenského, 1997. 88 p. (11 citations)
- [10] HUBA, M. - HUDEK, V. - CHRENKO, M. - IRA, V. - KOVÁČ, M. - KOZOVÁ, M. - MEDERLY, P. - ŠVIHLOVÁ, D. - TOMA, P. - VILINOVIČ, K. *Trvalo udržateľný rozvoj - výzva pre Slovensko (Sustainable development – a challenge for Slovakia)*. REC Slovensko, Bratislava, 2001, 127 p. (9 citations)

**ii. List of top-cited authors from the Organisation (at most 10 % of the research employees) and their number of citations in the assessment period**

- [1] Prof. RNDr. Ján Oťahel', PhD. (169 citations)
- [2] Assoc. Prof. RNDr. Ján Feranec, PhD. (132 citations)
- [3] Prof. RNDr. Mikuláš Huba, PhD. (122 citations)

**iii. Supplementary information and/or comments on responses to the scientific output of the Organisation**

Numbers of citations of 3 other authors (A. Bezák, V. Ira, J. Urbánek) were between 119 – 121. Total number of citations in 2005 was 445.

**3. Research status of the Organisation in the international and national context**

**• International/European position of the Organisation**

**i. List of the most important research activities documenting international importance of the research performed by the Organisation, incl. major projects (details of projects should be supplied under Indicator 4). Collective membership in the international research organisations, in particular within the European Research Area**

- [1] BIOPRESS - 5<sup>th</sup> Framework Programme EU project (2002-2004)
- [2] CORINE Land Cover 2000 – PHARE project (2002-2004)

- [3] Comparative research of regions and towns – bilateral Slovak-Hungarian project (2001-2003)
- [4] Geographic research of nature-landscape and socio-economic structures and their changes – bilateral Slovak-Czech project (2001-2003)
- [5] Comparative studies of environmental hazards and regional development in Romania and Slovakia – bilateral Slovak-Romanian project (2001-2003)
- [6] Dynamics of geomorphologic processes in space and time – bilateral Slovak-Polish project (2001-2003)
- [7] Socio-geographical aspects of shaping new regional structures in Poland and Slovakia – bilateral Slovak-Polish project (2003-2006)
- [8] Changes of the rural landscape in Slovakia and Bulgaria in 1990-2000 identified by application of the CORINE land cover data) - bilateral Slovak-Bulgarian project (2005-2007)
- [9] Action 2324 - Solar Electricity - SOLAREC - 6<sup>th</sup> Framework Programme EU project (2006-2007)
- [10] Carpathians Environment Outlook - United Nations Environment Programme, preparation of chapter State of Environment and Policy Measures in book Carpathians Environment Outlook, (2005-2006)
- [11] Mountain National Parks And Biosphere Reserves: sustainability and management project INYS – International Networking of Young Scientists (2006-2007)
- [12] Improvement of the protected areas network (the example Tatra region) - INTERREG IIIB CADSES programme (2006-2008)
- [13] Collective membership in European Rural Development Network

## ii. List of international conferences (co-) organised by the Organisation

- [1] *Carpatho-Balkan Conference on Geomorphology*, Bratislava, 8.-12.9. 2003.
- [2] *Actual questions of socio-geographical organisation of Czechia and Slovakia before EU accessing* (8th Czech-Slovak academic geographic seminar), Brno, 12.11. 2003.
- [3] *Regional Organisation of Society and Quality of Life in the Czech Republic and Slovakia* (9th Czech-Slovak Academic Geographical Seminar), Bratislava, 18.11. 2004.
- [4] *The socio-geographical aspects of shaping new regional structures in Poland and Slovakia* (3. Slovak-Polish Academic Geographical Seminar), Bratislava, 26.4. – 28.4. 2004.
- [5] *Historical maps*, Bratislava, 17.3.2005.
- [6] *Quality of life in Geographical Research* (10th Czech-Slovak academic geographic seminar), Brno, 23.11. 2005.
- [7] *Regions an their Development in Geographical Research* (Czech-Slovak Academic Geographical Seminar), Smolenice, 28.-29.11.2006.
- [8] *Socio-geographic aspects of shaping new regional structures in Poland and Slovakia* (Polish-Slovak Seminar). Ustka (Poland), 30.8.-3.9. 2006.

### iii. List of international journals edited/published by the Organisation

- [1] Geografický časopis (Geographical Journal)

### iv. List of edited proceedings from international scientific conferences and other proceedings

- [1] IRA, V. - VAISHAR, A. eds. *Časovo-priestorové aspekty transformačných procesov v Českej republike a v Slovenskej republike (Time-spatial aspects of transition processes in the Czech Republic and in the Slovak Republic)*. Bratislava: Geografický ústav SAV, 2004, 108 s.
- [2] VAISHAR, A. – IRA, V. eds. *Geografická organizace Česka a Slovenska v současném období (Geographical organization of Czechia and Slovakia at present time)*. Brno: Ústav geoniky Akademie věd ČR, 2005, 166 s.

### • National position of the Organisation

#### i. List of selected most important national projects (Centres of Excellence, National Reference Laboratories, Agency for the Promotion of Research and Development (APVV/APVT), National Research Programmes, Scientific Grant Agency of the Slovak Academy of Sciences and the Ministry of Education (VEGA), and others)

- [1] Mapping and evaluation of landscape using remote sensing and the GIS technology. (project supported by VEGA Grant Agency 2001-2003)
- [2] Internal migration and regional population dynamics in Slovakia in the years 1980-2000 (project supported by VEGA Grant Agency 2003-2005)
- [3] Spatial and temporal aspects of quality and sustainability of life (project supported by VEGA Grant Agency 2003-2005)
- [4] Neotectonics and its reflections in relief of the Slovak Carpathians (project supported by VEGA Grant Agency 2003-2005)
- [5] Spatial differentiation of hydrological cycle of landscape structures and hydro-ecological assessment of land use in the light of sustainability (project supported by VEGA Grant Agency 2003-2005)
- [6] Floods – identification of regional variability of flood risk and estimation of T-year period floods (project supported by VEGA Grant Agency 2003-2005)
- [7] Structure of the rural landscape: analysis of the development, changes and spatial organization by application of the CORINE land cover databases and the geographical information systems (project supported by VEGA Grant Agency 2004-2006)
- [8] Regions and their changes from the perspective of quality and sustainability of life (project supported by VEGA Grant Agency 2006-2006)
- [9] Economic performance and competitiveness of localities and regions (project supported by VEGA Grant Agency 2006-2006)



- [10] Types and evolution models of valley and channel-floodplain geosystems (project supported by VEGA Grant Agency 2006-2006)
- [11] Identification and mapping of flood risk (project supported by VEGA Grant Agency 2006-2006)
- [12] Regional geomorphologic division of Slovakia 1:50 000 (project supported by VEGA Grant Agency 2006-2006)
- [13] A potential for the use of renewable energies in the territory of Slovakia (project supported by VEGA Grant Agency 2006-2006)

#### ii. List of national scientific conferences (co)-organised by the Organisation

- [1] *60 rokov Geografického ústavu SAV (60 years of the Institute of Geography, SAS)*. Smolenice, 23.-25.4.2003.
- [2] *Geografická informácia. Terminológia v normách ISO (2002–2003). (Geographical information. Terminology in ISO standards (2002-2003))*. Bratislava, 12.11.2003.
- [3] *Aktivity v kartografii 2004. (Activities in Cartography 2004)*. Bratislava, 5.10.2004.
- [4] *Seminár pri príležitosti nedožitých 80. narodenín prof. Mazúra. (Seminar at the occasion of the unlived 80th birthday of Prof. Mazúr)*. Bratislava, 9.11. 2005,
- [5] *Aktivity v kartografii 2006. (Activities in Cartography 2006)*. Bratislava, 27.9.2006.
- [6] *Changes of the rural landscape in Slovakia and Bulgaria in 1990-2000 identified by application of the CORINE land cover data*. 10.-19.6.2006, Bratislava, Trnava region.
- [7] *4. vedecká konferencia pri príležitosti nedožitých 90. narodenín prof. RNDr. Michala Lukniša, DrSc. (4<sup>th</sup> scientific conference at the occasion of the unlived 90th birthday of Prof. Michal Lukniš)*. Bratislava, 19.12. 2006.

#### iii. List of national journals published by the Organisation

- [1] *Geographia Slovaca*
- [2] *Kartografické listy (Cartographic Letters)*
- [3] *Geomorphologia Slovaca* - journal published by the Association of Slovak Geomorphologists in cooperation with the Institute of Geography
- [4] *Geografia* - journal published by Geoservis in cooperation with the Institute of Geography

#### iv. List of edited proceedings of national scientific conferences/events

- [1] PRAVDA, J. (ed.): *Geografická informácia. Terminológia v normách ISO (2002–2003) (Geographic information. Terminology in ISO standards)*. Bratislava: Geografický ústav SAV, 2003, 84 s.
- [2] HUBA, M. co-editor of the monothematic issue of journal *Životné prostredie*. Vol. 37, no. 2, 2003.
- [3] KUDELA, K. - FERANEC, J. - MACHO, L. editors of monograph *Space research in Slovakia 2002-2003*. Košice: UEF SAV, 2004, 58 s.

- [4] FERANEC, J. - PRAVDA, J. editors of *Aktivity v kartografii 2004 (Activities in cartography 2004)*. Bratislava: Geografický ústav SAV, 2004, 184 s.
- [5] HUBA, M. co-editor of journal *Životné prostredie*. Vol. 38, no. 5, 2004.
- [6] IRA, V. co-editor of journal *Životné prostredie*. Vol. 39, no. 6, 2005.
- [7] HUBA, M. co-editor of journal *Životné prostredie*. No. 4, 2005 monothematic issue
- [8] FERANEC, J. - PRAVDA, J. editors of *Aktivity v kartografii 2006 (Activities in cartography 2006)*. Bratislava: Kartografická spoločnosť SR a Geografický ústav SAV, 2006, 233 s.
- [9] KUDELA, K. - FERANEC, J. - MACHO, L. editors of monograph *Space research in Slovakia 2004-2005*. Košice: Ústav experimentálnej fyziky SAV, 2006, 66 s.
- [10] HUBA, M. - IRA, V. co-editors of monothematic issue of journal *Životné prostredie*. Vol. 40, no. 6, 2006.
- [11] MATLOVIČ, R. - IRA, V. editors of monothematic issue of journal *Acta Facultatis Studiorum Humanitates et Naturae Universitatis Prešovensis. Prírodné vedy. Folia geographica, no. 9, 2006.*

- **International/European position of the individual researchers**

- i. **List of invited/keynote presentations at international conferences, documented by an invitation letter or programme**

- [1] FERANEC, J. *Problems encountered in relation to the complexity of mapping the CORINE land cover classes*. Technical workshop of I&CLC2000 project, Brussels, Belgium, 28.-29.10.2003.
- [2] HUBA, M. *Slovak experience in implementing sustainable development*. Workshop on Governance for Implementation of the Outcomes of the World Summit on Sustainable Development for Countries with Economies in Transition. Istanbul, Turkey, 15.-19.9. 2003.
- [3] FERANEC, J. *Interpreters' rules (photo-to-photo interpretation manual)*. BIOPRESS Annual Meeting. Barcelona (Sitges), Spain, 17.-19.3.2004
- [4] FERANEC, J. *CORINE land cover nomenclature: harmonization experiences and efforts*. Global observation for forest and land cover dynamics workshop. FAO, Rome, Italy, 15.-16.7.2004.
- [5] IRA, V. *Geografia času (Time-geography)*. Přírodovědecká fakulta, Univerzita Karlova, Prague, Czech Republic, 15-16.12.2004.
- [6] IRA, V. *Človek a jeho vnímanie prostredia (Man and his perception of the environment)*. Přírodovědecká fakulta, Univerzita Karlova, Prague, Czech Republic, 15-16.12.2004.
- [7] IRA, V. *The Tatras biosphere reserve (Slovakia): implementation of the biosphere reserve concept and transboundary co-operation*. International Conference of UNESCO Transboundary Reserves: Following-up on 'Seville+5'. Fischbach, Germany, 11.-14.11.2004.
- [8] IRA, V. *Sustainable Development, Quality of Life and Tourism*. 10. International conference „Cestovní ruch, regionální rozvoj a školství“. Jihočeská Univerzita, ZF, KCR, Tábor, Czech Republic, 11.-13.5. 2005.

- [9] BEZÁK, A. *Priestorová koncentrácia interregionálnych migrácií na Slovensku. (Spatial concentration of interregional migration in Slovakia.* International conference Hledání pravidelností geografické organizace společnosti a prostředí (Identification of regularities in geographic organization of society and environment) Prague, Czech Republic, 23.9. 2005.
- [10] FERANEC, J. - LEHOTSKÝ M. - SOLÍN, L. - KUDELA, K.: *Activities of the Institute of Geography SAS and Institute of Experimental Physics SAS related to Earth Observation.* International conference „Cooperation in Applied Earth Observation/GMES“, Berlin, Germany, 27.-29.9. 2005.
- [11] FERANEC, J. - OŤAHEL', J. - NOVÁČEK, J. *Changes of agricultural landscape in the administrative regions of Slovakia in 1990-2000* International conference „European Rural Development Network“, Tylicz, Poland, 20.-24.10. 2005.
- [12] HUBA, M. *Josef Vavroušek a jeho odkaz. (J. Vavroušek and his legacy - the leading paper at the conference Sustainable development – an opportunity to cooperate.* Prague, Czech Republic, 1.-2.6. 2005.
- [13] HUBA, M. *Global Threats and the Search for a Solution (Human Values for a Sustainable Future).* 55th Pugwash Conference on Science and World Affairs. Hirošima, Japan, 21.- 27.7. 2005.
- [14] FERANEC, J. *Zisťovanie zmien krajinej pokrývky (land cover) počítačom podporovanou vizuálnou interpretáciou satelitných snímok (CAVI). (Land cover change identification by computer aided visual interpretation of satellite images)* lecture at the seminar organized by Centrum inovácií a transferu technológií Európskeho sociálneho fondu, held on 5 April 2006 at Katedra aplikovanej geoinformatiky a kartografie Prírodovedeckej fakulty Univerzity Karlovej, Prague, Czech Republic, 23.3. 2006.
- [15] FERANEC, J. *CORINE land cover nomenclature: description of CORINE classes relevant for HNV mapping in Central-Eastern Europe.* Meeting of participants of the „Identifying of high nature value farmland: improving the use of European datasets on the basis of national expert knowledge“. Project at the Joint Research Centre, Ispra, Italy 22.6. 2006.
- [16] FERANEC, J. - STOIMENOV, A. - OŤAHEL', J. - VATSEVA, R. - KOPECKÁ, M. - BETÁK, J. - HUSÁR, K. *Zmeny krajinej pokrývky identifikované aplikáciou dát CORINE land cover na príklade regiónov Trnava a Plovdiv (Land cover changes identified by CORINE land cover data on example of regions Trnava and Plovdiv)* at the international conference *150 years of geography at the Charles University Prírodovedecká fakulta Univerzity Karlovej, Prague, Czech Republic., 10.11. 2006.*
- [17] HUBA, M. *Human Values and a Sustainable Future.* Conference of German International Society: *Environment and international cooperation.* Smolenice, Slovakia, 25.11. 2006.
- [18] IRA, V. - HUBA, M. - PODOLÁK, P. *Sustainable development of rural areas in Slovakia (with the case study Poľana BR).* 4th ERDN Seminar “Endogenous Factors Stimulating Rural Development”. Mađralin, Poland, 14.10. 2006.
- [19] SZÉKELY, V. - MICHNIAK, D. *Existence and quality of Slovak rural municipalities' websites – differentiating factor of rural competitiveness.* 4th ERDN Seminar “Endogenous Factors Stimulating Rural Development”. Mađralin, Poland, 13.10. 2006.
- [20] OŤAHEL', J. - FERANEC, J. - BETÁK, J. - KOPECKÁ, M. - HUSÁR, K. *Rural landscape development and landscape changes in 1990-2000: case study of*

*Trnava region*. 14th international symposium „Implementation of landscape ecology in new and changing conditions“. Stará Lesná, Slovakia, 4-7.10.2006.

- [21] LEHOTSKÝ, M. - GREŠKOVÁ, A. *Response of river channel system to windblown forest: case study the Studený potok brook (the High Tatras)*. 14th international symposium „Implementation of landscape ecology in new and changing conditions“. Stará Lesná, Slovakia, 4-7.10.2006.
- [22] GREŠKOVÁ, A. - LEHOTSKÝ, M. - PASTUCHOVÁ, Z.: *River channel geodiversity and macroinvertebrate assemblages*. 14th international symposium „Implementation of landscape ecology in new and changing conditions“. Stará Lesná, Slovakia, 4-7.10.2006.

ii. **List of employees who served as members of the organising and/or programme committees for international conferences**

- [1] Urbánek, J. - member of organizational committee *Carpathian-Balkan geomorphologic conference* 8. -12.9.2003, Bratislava.
- [2] Jakál, J. - member of organizational committee *Carpathian-Balkan geomorphologic conference* - 8.-12. 9. 2003, Bratislava (member of honorary chairmanship).
- [3] Huba, M. - member of preparatory committee of international conference *Johannesburg + 1* (Towards sustainable development), Olomouc, April 2003.
- [4] Ira, V. - member of organizational committee of the *8th Czech-Slovak academic geographic seminar*, Brno, 12.11. 2003.
- [5] Ira, V. - member of organizational committee at the *3rd Slovak-Polish Academic Geographical Seminar The socio-geographical aspects of shaping new regional structures in Poland and Slovakia*, Bratislava, 26.4. – 28.4. 2004.
- [6] Podolák, P. - member of organizational committee at the *3rd Slovak-Polish Academic Geographical Seminar The socio-geographical aspects of shaping new regional structures in Poland and Slovakia*, Bratislava, 26.4. – 28.4. 2004.
- [7] Székely, V. - member of organizational committee at the *3rd Slovak-Polish Academic Geographical Seminar The socio-geographical aspects of shaping new regional structures in Poland and Slovakia*, Bratislava, 26.4. – 28.4. 2004.
- [8] Ira, V. - member of organizational committee at the *9th Czech-Slovak academic geographic seminar Regional organization of society and quality of life in the CR and SR*, 18.11.2004, Geografický ústav SAV, Bratislava.
- [9] Kollár, D. - member of organizational committee at the *9th Czech-Slovak academic geographic seminar Regional organization of society and quality of life in the CR and SR*, 18.11.2004, Geografický ústav SAV, Bratislava.
- [10] Feranec, J. - member of organizational committee of the *16th Cartographic conference*, 7.-9.9.2005, Brno.
- [11] Huba, M. - member of expert panel at the *7th World Congress on Recovery, Recycling and Re-integration*, Beijing 25. -29.9.2005.
- [12] Ira, V. - member of organizational committee of the *10th Czech-Slovak academic geographic seminar*, Brno, 23.11. 2005.
- [13] Jakál, J. - member of organizational committee of International scientific conference *Research, exploitation and protection of caves*, Demänovská dolina, 26.-29. 9. 2005.

- [14] Pravda, J. - member of organizational committee of the conference *Historical maps*, Bratislava, 17.3. 2005.
- [15] Ira, V. - chairman of organizational committee of the 11th Czech-Slovak academic geographic seminar: *Regions and their development in geographic research*, Smolenice, 28.-29.11.2006.
- [16] Kollár, D. - member of organizational committee of the 11th Czech-Slovak academic geographic seminar: *Regions and their development in geographic research*, Smolenice, 28.-29.11.2006.

**iii. List of employees who served as members of important international scientific bodies (e.g. boards, committees, editorial boards of scientific journals)**

**Editorial boards of scientific journals:**

- [1] Bezák, A. - member of editorial board of the Polish journal *Przegląd Geograficzny* (2003-2006).
- [2] Huba, M. - member of editorial board of *Carpathi – Journal for Nature Conservation, Monitoring and Management in Carpathian Protected Areas* (2003-2006)
- [3] Mariot, P. - member of editorial board of the journal *Moravian Geographical Reports* (2003-2004)

**International boards and committees**

- [4] Bezák, A. - corresponding member of the commission on Population and Environment of International Geographical Union (IGU) (2003-2004)
- [5] Feranec, J. - member of commission Thematic Mapping from Satellite Imagery of International Cartographic Association (ICA) (2006-2006)
- [6] Huba, M. - member of International Union for the Conservation of Nature and Natural Resources (IUCN) (2003-2006)
- [7] Huba, M. - member of advisory committee for the Regional Environmental Center for Central and Eastern Europe office in Slovakia (2003-2006)
- [8] Huba, M. - member of board of The Northern Alliance for Sustainability (ANPED) (2003-2006)
- [9] Huba, M. - member of expert group for indicators of sustainability of the UN Commission for sustainable development (2003-2004)
- [10] Huba, M. - member of International Sustainable Development Research Network (ISDRN) (2003-2005)
- [11] Huba, M. - scientific coordinator of the thematic group Values for a Sustainable Future, European EcoForum (2003-2006)
- [12] Huba, M. - honorary vice chairman of the Společnost pro trvalo udržitelný život (Society for sustainable living) in Czech Republic (2006)
- [13] Huba, M. - honorary member of the Czech association of the Club of Rome (2006)
- [14] Ira, V. - member of Board of European Environmental Bureau Brussels (2005-2006)
- [15] Ira, V. - member of Association of American Geographers (2006)

- [16] Jakál, J. - corresponding member of the Commission on Sustainable Development & Management of Karst Terrains of International Geographical Union (IGU) (2003)
- [17] Jakál, J. - member of Carpathian-Balkan geomorphologic commission (2003-2006)
- [18] Lacika, J. - scientific secretary of Carpathian-Balkan geomorphologic commission (2004-2006)
- [19] Lacika, J. - scientific secretary of Carpatho-Balkan-Dinaric Regional Working Group of International Association of Geomorphologists (IAG) (2006)
- [20] Oťahel', J. - member of working group Analyse of landscape system in environmental management of International Association for Landscape Ecology (IALE) (2003-2005)
- [21] Solín, Ľ. - member of International Association of Hydrological Sciences (IAHS) (2003-2006)

#### **iv. List of international scientific awards and distinctions**

- [1] Székely, V. was awarded the commemorative medal at the occasion of *X – lecie Komisji Geografii Komunikacji Polskiego Towarzystwa Geograficznego*, Arłamów, 23.5.-26.5.2004
- [2] Huba, M. was awarded the title of the Ambassador of Environment (category Science) by the German International Society. Dortmund / Smolenice, 25.11.2006

#### **• National position of the individual researchers**

##### **i. List of invited/keynote presentations at national conferences documented by an invitation letter or programme**

- [1] FERANEC, J. - OŤAHEL', J. - CEBECAUER, T. *Dynamika zmien krajinnej pokrývky – zdroj informácií o zmenách krajiny. (Land cover change dynamics – source of information about changes in the landscape)* Lecture at the conference: 60 years of the Institute of Geography SAS, Congress Centre Smolenice, 23.-24.4.2003.
- [2] HUBA, M. *Poučenie zo Svetového summitu o trvalo udržateľnom rozvoji. (Lesson learned of the World Summit on sustainable development)* Slovakia a year after Johannesburg. Smolenice, 29.-30.4.2003.
- [3] IRA, V. - MICHÁLEK, A. - PODOLÁK, P. *Humánna geografia a transformácia spoločnosti v SR (pohľad na vybrané problémy transformácie, ako aj na súčasný stav a budúcnosť humánno-geografických výskumov). (Human geography and transformation of society in the SR – a view of selected problems associated with transformation and the present and future of human geographic research.)* Lecture at the conference: 60 years of the Institute of Geography SAS, Congress Centre Smolenice, 23.-24.4.2003.
- [4] SOLÍN, Ľ. - GREŠKOVÁ A. *Hydrogeografická regionálna typizácia a jej rozvoj na Geografickom ústave SAV. (Hydrogeographic regional typification and its development at the IG SA)* Lecture at the conference: 60 years of the Institute of Geography SAS, Congress Centre Smolenice, 23.-24.4.2003
- [5] MICHÁLEK, A. *Nepeňažné miery chudoby. (Non-monetary measures of poverty).* Interdisciplinary seminar for Friedrich Ebert Stiftung *Otázky merania chudoby (Questions of poverty measurement)*, Bratislava, 12.10.2004.

- [6] IRA, V. - HUBA, M. - LEHOTSKÝ, M. *Príspevok do diskusie o súčasnosti a budúcnosti geografického výskumu na Slovensku v medzinárodnom kontexte. (Contribution to the discussion of the present and future geographic research in Slovakia in international implications.)* Theoretical and methodological seminar *Development, present and future of the Slovak geography in the 21st century.* Fakulta humanitných a prírodných vied, Prešovská univerzita, Prešov, 5.9.2005.
- [7] JAKÁL, J. *Vedecký prínos Antona Droppu pre poznanie krasu a jaskýň. (The scientific contribution of Anton Droppa to cognition of karst and caves.)* 5th Scientific conference: *Výskum, využívanie a ochrana jaskýň. (Research, use and protection of caves).* Demänovská dolina 26.-29.9.2005.
- [8] HUBA, M. *Odkaz osobnosti a vedeckej školy profesora Emila Mazúra pre slovenskú geografiu. (Legacy of the personality and scientific school of Prof. E. Mazúr for the Slovak geography).* Seminar at the occasion of unlied 80th birthday of Prof. Mazúr. Geografický ústav SAV, Bratislava, 9.11.2005.
- [9] OŤAHEL', J. - FERANEC, J. *Výskum využitia krajiny: minulosť a súčasnosť v kontexte Slovenska. (Land use research: past and presence in the context of Slovakia.)* Seminar at the occasion of unlied 80th birthday of Prof. Mazúr. Geografický ústav SAV, Bratislava, 9.11.2005.
- [10] URBÁNEK, J. *Krajinné syntézy 80. rokov. (Landscape syntheses of the 1980s).* Seminar at the occasion of unlied 80th birthday of Prof. Mazúr. Geografický ústav SAV, Bratislava, 9.11.2005.
- [11] JAKÁL, J. *Krasová problematika v prácach Emila Mazúra. (Issue of karst in studies of Emil Mazúr).* Seminar at the occasion of unlied 80th birthday of Prof. Mazúr. Geografický ústav SAV, Bratislava, 9.11.2005.
- [12] FERANEC, J. - PRAVDA, J. *Kartografické aspekty prezentácie výsledkov celoeurópskych programov CORINE a GMES. (Cartographic aspects of results obtained under all-European programmes CORINE and GMES).* Conference *Aktuálne problémy kartografie, katastra nehnuteľností a pozemkových úprav. (Topical problems of cartography, cadaster, and parcel adjustments).* Bratislava, 21.9.2006.
- [13] IRA, V. *Vybrané aspekty spoločenskovedného výskumu v BR Tatry. (Selected aspects of the social research in the Tatra BR).* International conference *Science and research for the needs of nature protection in the Tatra National Park.* Tatranská Štrba, 24.11.2006.

ii. **List of employees who served as members of organising and programme committees of national conferences**

- [1] Feranec, J. - chairman of organizational committee for the conference *60 years of the Institute of Geography SAS*, 23.-25.4.2003, Smolenice.
- [2] Ira, V. - vice chairman of organizational committee for the conference *60 years of the Institute of Geography SAS*, 23.-25.4.2003, Smolenice.
- [3] Podolák, P. - member of organizational committee for the conference *60 years of the Institute of Geography SAS*, 23.-25.4.2003, Smolenice.
- [4] Grešková, A. - member of organizational committee for the conference *60 years of the Institute of Geography SAS*, 23. -25.4.2003, Smolenice.
- [5] Cebecauer, T. - member of organizational committee for the conference *60 years of the Institute of Geography SAS*, 23.-25.4.2003, Smolenice.

- [6] Lacika, J. - member of organizational committee of the conference *60 years of the Institute of Geography SAS*, 23.-25.4.2003, Smolenice.
- [7] Feranec, J. - member of organizational committee at the *15. cartographic conference*, 4.-5.9.2003, Zvolen.
- [8] Jakál, J. - member of organizational committee at the conference *Research, exploitation and protection of caves*, 5.-8. 10 2003, Tále.
- [9] Feranec, J. - chairman of organizational committee at the conference *Geographic information. Terminology in ISO standards (2002–2003)*, 12.11.2003, Bratislava.
- [10] Pravda, J. - member of organizational committee at the conference *Geographic information. Terminology in ISO standards (2002–2003)*, 12.11.2003, Bratislava.
- [11] Jakál, J. - member of organizational committee for the scientific colloquium *Ochtinská aragonitová cave – unique natural phenomenon of the world natural heritage*, Teplý vrch, 26.-28. 10.2004.
- [12] Lacika, J. - member of organizational committee at the conference *Results of the most recent geomorphologic research – geomorphologic mapping and chronology*, Košice, 16.-17. 9. 2004.
- [13] Urbánek, J. - organizer of the seminar at the occasion of not lived 80th birthday of Prof. Mazúr. 9.11. 2005. Geografický ústav SAV, Bratislava.
- [14] Ira, V. - member of organizational committee at the 14th SGS congress: *Geography in the changing world*, Banská Bystrica, 11. – 14. 9. 2006.
- [15] Feranec, J. - member of organizational committee and chairman of the thematic commission for the *17th cartographic conference*, 6.-7.9.2007, Bratislava
- [16] Lacika, J. - member of organizational committee for the scientific conference: *State-of-the-art of geomorphologic research in 2006*, Banská Bystrica, 12. – 13. 9. 2006
- [17] Lacika, J. - member of organizational committee for the *14th SGS congress*, Banská Bystrica, 12.-14. 9. 2006
- [18] Novotný, J. - member of organizational committee for the *14th SGS congress*, 11.-14.9. 2006, Banská Bystrica

**iii. List of employees serving in important national scientific bodies (e.g. boards, committees, editorial boards of scientific journals)**

**Editorial boards of scientific journals:**

- [1] Bezák, A. - editor in chief of *Geografický časopis* (2003-2006)
- [2] Bezák, A. - head of editorial board of *Geographia Slovaca* (2003-2006)
- [3] Bezák, A. - member of editorial board of *Acta Facultatis Rerum Naturalium Universitatis Comenianae, Geographica* (2003-2006)
- [4] Bezák, A. - member of editorial board of *Všeobecná encyklopédia Beliana* (2003-2006)
- [5] Feranec, J. - editor of *Geografický časopis* (2003-2006)
- [6] Feranec, J. - vice chairman of editorial board of *Geographia Slovaca* (2003-2006)
- [7] Huba, M. - member of editorial board of *Životné prostredie* (2003-2006)
- [8] Huba, M. - member of editorial board of *Geographia Slovaca* (2006)



- [9] Ira, V. - member of editorial board of Životné prostredie (2004-2006)
- [10] Ira, V. - head of editorial board of Geographia Slovaca (2006)
- [11] Ira, V. - member of editorial board of Acta Facultatis Studiorum Humanitates et Naturae Universitatis Prešovensis. Prírodné vedy. Folia geographica (2006)
- [12] Jakál, J. - editor in chief of Geomorphologia Slovaca (2003-2004)
- [13] Jakál, J. - member of editorial board of Geografický časopis (2003-2006)
- [14] Jakál, J. - member of editorial board of Slovenský kras (2003-2006)
- [15] Jakál, J. - member of editorial board of Aragonit (2003-2006)
- [16] Lacika, J. - editor of Geomorphologia Slovaca (2003-2006)
- [17] Lacika, J. - editor of Geographia Slovaca (2006)
- [18] Lacika, J. - member of editorial board of Biodiverzita hypogeických húb (2006)
- [19] Lehotský, M. - member of editorial board of Acta Environmentalica Universitatis Comenianae (Bratislava) (2006)
- [20] Lehotský, M. - member of editorial board of Geographia Slovaca (2006)
- [21] Michálek, A. - member of editorial board of Geographia Slovaca (2006)
- [22] Novotný, J. - member of editorial board of Geomorphologia Slovaca (2005-2006)
- [23] Ořahel, J. - member of editorial board of Geographia Slovaca (2003-2006)
- [24] Podolák, P. - member of editorial board of Geographia Slovaca (2003-2006)
- [25] Pravda, J. - member of editorial board of Geografický časopis (2003-2006)
- [26] Pravda, J. - member of editorial board of Geographia Slovaca (2003-2006)
- [27] Pravda, J. - member of editorial board and editor of Kartografické listy (2003-2006)
- [28] Solín, J. - member of editorial board of Geographia Slovaca (2003-2006)
- [29] Urbánek, J. - member of editorial board of Geografický časopis (2003-2006)
- [30] Urbánek, J. - member of editorial board of Geographia Slovaca (2003-2006)
- [31] Urbánek, J. - member of editorial board of Geomorphologia Slovaca (2003-2006)

#### **Membership and functions in national committees**

- [32] Bezák, A. - member of the National Geographical Committee (2003-2006)
- [33] Feranec, J. - member of the National Geographical Committee (2003-2006)
- [34] Feranec, J. - member of the National Committee on Space Research (COSPAR) (2003-2006)
- [35] Huba, M. - member of the National Committee of International Scientific Committee on Environmental Problems (SCOPE) (2003-2006)
- [36] Huba, M. - member of the National IALE Committee
- [37] Ira, V. - member of the National Committee for the UNESCO Programme Man and Biosphere (MaB) (2003-2006)
- [38] Jakál, J. - member of the National Geographical Committee (2003-2005)

[39] O'ahel', J. - member of the National Geographical Committee (2003-2006)

#### **Activities in Slovak scientific societies**

[40] Bezák, A. - committee member of the Society for Regional Science and Policy - Slovak section (2003-2006)

[41] Feranec, J. - secretary of the Cartographic Society of the SR (2003-2006)

[42] Huba, M. - chairman of the Society for Sustainable Living in the SR (2003-2006)

[43] Ira, V. - vice chairman of the executive committee of the Slovak Geographical society SAS (2003-2005)

[44] Huba, M. - committee member of the Slovak Association of the Club of Rome (2006)

[45] Ira, V. - vice-president of the Slovak Geographical Society SAS (2006)

[46] Ira, V. - vice chairman of the Society for Sustainable Living in the SR (2003-2006)

[47] Ira, V. - committee member of the Slovak Association of the Club of Rome (2006)

[48] Lacika, J. - chairman of the Slovak Geographical Society SAS – branch in Bratislava (2003-2006)

[49] Lacika, J. - scientific secretary of the Association of Slovak Geomorphologists SAS

[50] Lehotský, J. - committee member of the Association of Slovak Geomorphologists SAS (2005-2006)

[51] Michniak, D. - secretary of the Slovak Geographical Society SAS – branch in Bratislava (2003-2006)

[52] Novotný, J. - scientific secretary of the Slovak Geographical Society SAS (2003-2006)

[53] Székely, V. - committee member of the Society for Regional Science and Policy - Slovak section (2003-2006)

[54] Urbánek, J. - chairman of the Association of Slovak Geomorphologists SAS (2003-2006)

[55] O'ahel', J. - main committee member of the Slovak Association for Landscape Ecology (2003-2006)

[56] Beták, J. - administrator of the website to the Slovak Geographical Society SAS and the website to the Association of Slovak Geomorphologists SAS (2005-2006)

#### **Other scientific bodies:**

[57] O'ahel', J. - member of the VEGA Commission No. 3 for Sciences on Earth and Space (2003-2006)

[58] Székely, V. - member of the VEGA Commission No. 3 for Sciences on Earth and Space (2003-2006)

[59] Feranec, J. - member of Scientific Collegium of the SAS for Sciences on Earth and Space (2003-2006)

[60] Ira, V. - member of Scientific Collegium of the SAS for Sciences on Earth and Space (2003-2006)

- [61] Urbánek, J. - member of Scientific Collegium of the SAS for Sciences on Earth and Space (2003-2006)

#### iv. List of national awards and distinctions

- [1] Huba, M. obtained *distinction of the Presidency of the SAS* for his activities in the legislative process concerning the approval of a new Act on budgetary rules necessary for preservation of the budgetary chapter corresponding to SAS.
- [2] Pravda, J. obtained *the Prize* of the section for scientific and specialized literature and computer programmes of Literárny fond of the SR in the category of encyclopaedias and dictionaries for his *Brief lexicon of cartography*.
- [3] Institute of Geography SAS was awarded *the Gold Medal* of Prírodovedecká fakulta Univerzity Komenského in Bratislava.
- [4] *Prize of the SAS* for results reached in international scientific cooperation granted by the Scientific Board of the SAS to the following workers of IG: Feranec, J., Oľahel, J., Cebecauer, T., Pravda, J., Husár, K. for their work: *Krajinná pokrývka Slovenska a jej zmeny v období 1990-2000 v kontexte projektu Image and CORINE land cover 2000 (Land cover of Slovakia and its changes in 1990-2000 in the context of Image and CORINE land cover 2000 Project)*.
- [5] *Honorary plaque of D. ŠTÚR SAS* for merits in nature sciences granted by the Presidency of SAS to Urbánek, J.
- [6] Solín, Ľ. obtained the award *Modrá planéta (Blue Planet)* granted at the exhibition HYDROTECH 16. -18. 5. 2006, Bratislava for the project: *Mapping of flood risk in small basins in Slovakia*.
- [7] Jakál, J. obtained the Prize of Literárny fond – section for scientific and specialized literature for the publication *Jaskyne svetového dedičstva na Slovensku (The World Heritage Caves in Slovakia)*.
- [8] Jakál, J. was nominated the *Important personality of the SAS in year 2006*.

#### Supplementary information and/or comments documenting international and national status of the Organisation

#### 4. Project structure, research grants and other funding resources

- **International projects and funding**

- i. **List of major projects within the European Research Area – 5th and 6th Framework Programme of the EU, European Science Foundation, NATO, COST, INTAS, CERN, etc. (here and in items below please specify: type of project, title, grant number, duration, funding, responsible person in the Organisation and his/her status in the project, e.g. coordinator, principal investigator, investigator)**

**[1] BIOPRESS**

type of project: 5<sup>th</sup> Framework Programme EU project  
 grant number: EVK2-CT-2002-00178  
 duration: 2002-2004  
 funding: EU  
 responsible person: Assoc. Prof. Ján Feranec, PhD. (coordinator)

**[2] CORINE Land Cover 2000**

type of project: PHARE project  
 grant number: 147-OIM-2002  
 duration: 2002-2004  
 funding: EU  
 responsible person: Assoc. Prof. Ján Feranec, PhD. (coordinator)

**[3] Improvement of the protected areas network (the example Tatra region)**

type of project: INTERREG IIIB CADSES programme  
 grant number: 5D194  
 duration: 4/2006-3/2008  
 funding: EC - European Regional Development Fund (ERDF)  
 responsible person: RNDr. Ján Hanušin, PhD. (coordinator)

**ii. List of other international projects incl. funding**

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**iii. List of other important projects and collaborations without direct funding**

- [1] Comparative research of regions and towns – bilateral Slovak-Hungarian project (2001-2003)
- [2] Geographical research of nature-landscape and socio-economic structures and their changes – bilateral Slovak-Czech project (2001-2003)
- [3] Comparative studies of environmental hazards and regional development in Romania and Slovakia – bilateral Slovak-Romanian project (2001-2003)
- [4] Dynamics of geomorphologic processes in space and time – bilateral Slovak-Polish project (2001-2003)
- [5] Socio-geographical aspects of shaping new regional structures in Poland and Slovakia – bilateral Slovak-Polish project (2003-2006)
- [6] Changes of the rural landscape in Slovakia and Bulgaria in 1990-2000 identified by application of the CORINE land cover data) - bilateral Slovak-Bulgarian project (2005-2007)
- [7] Action 2324 - Solar Electricity - SOLAREC - 6<sup>th</sup> Framework Programme EU project (2006-2007)
- [8] Carpathians Environment Outlook - United Nations Environment Programme, preparation of chapter State of Environment and Policy Measures in book Carpathians Environment Outlook, (10/2005-10/2006)
- [9] Mountain National Parks And Biosphere Reserves: sustainability and management project INYS – International Networking of Young Scientists (2006-2007)

- **National projects and funding**
  - i. **List of projects supported by the Agency for the Promotion of Research and Development (APVV/APVT), National Research Programmes, and their funding**  
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  - ii. **Number of 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**

<b>VEGA</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
<b>number</b>	6	6	6	7
<b>funding (millions of SKK)</b>	0.581	0.563	0.665	0.663

- **Summary of funding from external resources**

<b>External resources</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>total</b>	<b>average</b>
<b>external resources (millions of SKK)</b>	1.157	0.681	0.754	0.922	3.514	0.879
<b>external resources transferred to cooperating research organisations (millions of SKK)</b>	0.000	0.000	0.000	0.000	0.000	0.000
<b>ratio between external resources and total salary budget</b>	0.118	0.070	0.076	0.092	--	0.089
<b>overall expenditures (millions of SKK)</b>	16.298	16.399	16.850	16.263	65.810	16.453

**Supplementary information and/or comments on research projects and funding resources**

## 5. Organisation of PhD studies, other pedagogical activities

- i. List of accredited programmes of doctoral studies (as stipulated in the previously effective legislation as well as in the recently amended Act on the Universities)

### Old programmes:

13-01-9 Physical geography and geoecology

13-02-9 Human geography

13-03-9 Regional geography

13-05-9 Cartography and geoinformatics

### New programmes:

4.1.36 Physical geography and geoecology

4.1.38 Regional geography

- ii. Summary table on doctoral studies (number of internal/external PhD students; number of students who completed their study by a successful thesis defence; number of PhD students who quitted the programme)

PhD study	31.12.2003			31.12.2004			31.12.2005			31.12.2006		
number of potential PhD supervisors	19			19			20			18		
PhD students	number	defended thesis	students quitted	number	defended thesis	students quitted	number	defended thesis	students quitted	number	defended thesis	students quitted
internal	2	0	1	2	0	0	1	0	0	0	0	0
external	12	1	5	11	2	0	7	1	3	7	0	1
supervised at external institution by the research employees of the assessed organisation	2	0	0	4	0	0	5	0	0	8	0	0

- iii. Postdoctoral positions supported by

a) external funding (specify the source)

-

b) internal funding - the Slovak Academy of Sciences Supporting Fund of Stefan Schwarz

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**iv. Summary table on pedagogical activities in undergraduate programmes for each year**

Teaching	2003	2004	2005	2006
lectures (hours/year)	184	192	220	300
practicum courses (hours/year)	60	36	70	65
supervised diploma works (in total)	1	1	7	7
members in PhD committees (in total)	7	10	10	13
members in DrSc. committees (in total)	4	4	4	3
members in university/faculty councils (in total)	1	1	1	2
members in habilitation/inauguration committees (in total)	3	2	3	3

**v. List of published university textbooks**

[1] PRAVDA, J. *Mapový jazyk (Map language)*. Bratislava: Univerzita Komenského, 2.vydanie, 2003, s. 105.

**vi. Number of published academic course books**

-

**vii. List of joint research laboratories/facilities with the universities**

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**viii. Supplementary information and/or comments on doctoral studies and pedagogical activities**

The Institute enjoys a national reputation as a leading centre of geographical research with personalities providing unique lectures (those only lectured in Slovakia) in several topics (Regional Analysis, Behavioural Geography, Human Ecology, Urban Ecology, Regional Dimension of Sustainable Development, Objective Landscape Properties).

**6. Direct output to the society**

**(applications of results, popularisation and outreach activities)**

**i. List of the most important results of applied research projects**

[1] Feranec, J. - Ořahel, J. - Cebecauer, T. – Pravda, J. – Husár, K. Identification and assessment of long-term landscape changes in regional dimension (district of Skalica), study for the Environmental section of the District Office in Skalica. (2003).

- [2] Feranec, J. - Cebecauer, T. - O'ahel', J. *Manual of computer aided visual interpretation of aerial B&W photographs*. Bratislava (Institute of Geography, Slovak Academy of Sciences), 2003, p. 104. – Land cover changes in selected parts of Europe for the period 1950-1990 are identified based on this manual.
- [3] Expert study *Regional typification of surface streams in the SR from the point of view of mean annual discharge*. Processed at the Institute of Geography SAS in cooperation with the Slovak Hydrometeorological Institute in the course of the 2000/60 EU Framework Directive on Water implementation. (2003).
- [4] Expert study *Land use change assessment by administrative units based on statistical and geographical information sources* processed for the Soils and Soil Protection Research Institute, which was part of the report *Analysis of causes and consequences of landscape degradation*. (2004).

**ii. List of the most important studies commissioned for the decision-making authorities, the government and NGOs, international and foreign organisations**

- [1] Huba, M. collaborated in preparation of the *Vision of long-term development of Slovakia until 2020* for the Office of the Government SR and was co-author of the National Development Plan of the SR for the Government (2003).
- [2] Huba, M. participated in preparation of the *National report on human development in the SR* (2003).
- [3] Huba, M. and Ira, V. collaborated in compilation of the *Action plan of sustainable development in the SR* for the Office of the Government of the SR (2005).
- [4] Pravda, J. participated in processing nine ISO EN standards in the field of geographic information, which were implemented in the STN system for the Slovak Office for Technical Normalization (2005).
- [5] J. Jakál, editor and author of four chapters included in the specialized book *Caves of the world heritage in Slovakia*. The results are not only applicable in the field of nature and landscape protection but also in management of natural resources, in water and forest management and in tourism. The book was supplied to the Ministry of the Environment of the SR, Administration of the National Park of Slovenský kras and to the Administration of Slovak Caves (2005).
- [6] Huba, M. - Berková, A. - Hanušin, J. - Ira, V. - Klúvanková-Oravská, T. - Kozová, M. - Topercer, J. - Lacika, J. - Beták, J. et al. *Towards sustainable Tatra region (independent strategic study)*. REC Slovensko, STUŽ: Bratislava, 2005, 96 s. ISBN 80 969436-0-X.
- [7] Expert study for the Ministry of the Environment SR and Administration of TANAP Izakovičová, Z. - Oszlányi, J. - Boltžar, M. - Hreško, J. - Grotkovská, L. - Kenderessy, P. - Petrovič, F. - Valkovcová, Z. - Vološčuk, I. - Celler, S. - Dítě, D. - Ira, V. - Kozová, M. *Krajinnno-ekologicky optimálne priestorové a funkčné využitie územie biosférickej rezervácie Tatry. (Ecologically Optimal Spatial and Functional Organization of Landscape in the Tatra Biosphere Reserve)*. ÚKE SAV, Bratislava, 181 p. + 7 maps (2005).
- [8] Andráško, I. - study *Perception of life quality in urban quarters of Bratislava*. Research of life quality in Bratislava through survey targeted to assessment of selected life conditions in the city by its population and overall life quality level in urban quarters was carried out in cooperation with the Magistrate of the Capital of the SR. The questionnaire was prepared in electronic form and reference to it is has been placed on the official website of the city ([www.bratislava.sk](http://www.bratislava.sk)), (2006).



- [9] Expert study for the Ministry of the Environment SR and Administration of TANAP, by Huba, M. - Andráško, I. - Berková, A. - Beták, J. - Bíziková, L. - Cebecauerová, M. - Hanušín, J. - Ira, V. - Lacika, J. - Klúvanková-Oravská, T. - Maňkovská, B. - Kozová, M., Pirošík, V. - Plesník, P. - Soták, Š. - Stanová, E. - Topercer, J.: *Analysis of the Tatra region, assessment of the sustainable development potential and partial syntheses*, (2006).
- [10] Expert study for the UNESCO MaB Programme Izakovičová, Z. - Oszlányi, J. - Boltižar, M. - Hreško, J. - Grotkovská, L. - Kenderessy, P. - Petrovič, F. - Valkovcová, Z. - Vološčuk, I. - Celler, S. - Dítě, D. - Ira, V. - Kozová, M. *Ecologically Optimal Spatial and Functional Organization of Landscape in the Tatra Biosphere Reserve of UNESCO*. ILE SAS - SNC on the UNESCO programme MaB, Bratislava. 45 p. (2006).

### iii. List of the most important popularisation activities

- [1] The Institute of Geography organized the *Day of open door* as part of the Week of science and technology on 11. 11. 2004, 11. 11. 2005, 21. 11. 2006
- [2] Presentation of research results and informing of students and teachers about accredited study programmes at the Institute of Geography SAS (Department of Geography and Regional Development, Faculty of Natural Sciences, Constantine the Philosopher University in Nitra) on 22. November 2006 – during the Week of Science and Technology.

### Contributions in newspapers and magazines:

- [3] Feranec, J. - Machková, N. *Satelit mapuje pokrývku Európy (1). (Satellite surveys the European land cover (1))*. SME, 1, 2003
- [4] Feranec, J. - Machková, N. *Satelit mapuje pokrývku Európy (2). (Satellite surveys the European land cover (2))*. SME, 6, 2003.
- [5] Feranec, J. - Ořahel, J. - Cebecauer, T. - Machková, N. - Nováček, J.: *Satelitné snímky pomáhajú mapovať Európu. (Satellite images help to map Europe)*. Správy SAV, 9, 2003, p. 13.
- [6] Podhorský F. *Peugeot a Citroen na Slovensku – Investícia desaťročia. (Peugeot and Citroen in Slovakia – investment of the decade)*. Geografia, 11, 3, 2003, p. 113-114.
- [7] Feranec, J. *Príspevok satelitov k monitorovaniu Európy. (Contribution of satellites to monitoring of Europe)*. Správy SAV, 7-8, 2005, p. 5-6.
- [8] Michálek, A. *Príjmové nerovnosti a ich priestorová diferenciácia: Analýza príjmu podľa veľkosti sídla a identifikácia nízkopríjmových obcí. (Income disparities and their spatial differentiation: Analysis of income by size of settlement and identification of low-income communes)*. Geografia. Vol. 13, no. 2, 2005, p. 57-63.
- [9] Pravda, J. *Diagramové mapy (kartodiagramy) v praxi. (Diagrams maps (cartodiagrams) in practical life)*. Geografia. Vol. 13, no. 4, 2005, p. 158-161.
- [10] Pravda, J. *Kartogramy v praxi. Geografia. (Cartograms in practical life)*. Vol. 13, no. 4, 2005, p. 161-164.
- [11] Huba, M. *O udržateľnej budúcnosti Tatier I., II. a III. časť. (About sustainable future of the Tatras, in 3 parts)*. Domino fórum, no. 48/2005, 49/2005 a 50/2005.
- [12] Beták, J. *Zem na monitore. (Earth on the monitor)*. Geografia. Vol. 14, no. 4, 2006.

- [13] Hanušín, J. - Huba, M. Zlatý trojuholník bez pozlátká. Postrehy a fakty z Dillí, Jaipúru a Agry. (*The golden triangle divested of gild. Impressions and facts from Delhi, Jaipur and Agra*). Geografia. Vol. 14, no. 3, 2006, p. 92-100.
- [14] Lacika, J. *Predstavujeme chránené územia na Slovensku. (Introduction to protected areas in Slovakia)*. Geografia. Vol. 14, no. 1, 2006, p. 40-41.
- [15] Lacika, J. *Do maďarského Novohradu, Námet na školský výlet. (The Hungarian Novohrad, an idea for school trip)*. Geografia, Vol. 14, no. 3, 2006, p. 112-117.
- [16] Lacika, J. *CHKO Biele Karpaty. (PLA of the White Carpathians)*. Geografia. Vol. 14, no. 3, 2006, p. 129-130.
- [17] Feranec, J. - Machková, N. *Racionálne využívanie zdrojov. (Rational use of resources)*. Správy SAV, 7-8, 2006, p. 20-21.

#### **Presentations in radio:**

- [18] Kollár, D. *Baedeker of Slovakia*. Radio station Twist, every Saturday from 12.9.2003 to 20.12.2003.
- [19] Kollár, D. *Slovakia – travelling in regions*. Slovenský rozhlas, programme *Nočná pyramída*, 10.6.2003.
- [20] Feranec, J. An interview in Slovenský rozhlas, in programme: Afternoon with radio (1.9.2005) – about changes of the Slovakian land cover in the years 1990-2000, identified in the framework of the Pan European Project CORINE land cover.
- [21] Kollár, D. Interview in radio - Slovenský rozhlas – programme *Nočná pyramída* - 20.7. 2005
- [22] Solín, L. IG SAS prepared the map of flood risk in small basins - radio station Slovensko, on 31.8.2006
- [23] Solín, L. Interview about flood risk maps – Radio station, morning broadcasting on 31. 8. 2006
- [24] Ira, V. *Slovakia will loose precious biotopes if Tatras are not treated sensitively* – radio station Okey, Spectrum, 25.2.2006
- [25] Huba, M. *Wood fretter is the pretence to log in the Tatras say conservationists and experts* - radio station Expres, Infoexpres, 17.7.2006

#### **Presentations in TV:**

- [26] Kollár, D. *Slovakia – travelling in regions*, TV station Markíza, 9.7.2003.
- [27] Feranec, J. Presentation – characteristics of results obtained in the CORINE land cover project at the TV station STV2 (29.10. 005).
- [28] Ira, V. Interview about sustainable development and tourism at TV station ČT1, on 12.5.2005
- [29] Solín, L. *Floods as research subject* - TV station TA 3, Správy, on 31.8.2006
- [30] Solín, L. *Flood maps will change the coverage of insurance policies* - TV station ČT1TA 3, main news, on 10.9.2006
- [31] Solín, L. *The majority of floods in Slovakia are caused by relatively small streams* - TV station STV 1, news STV, on 3.4.2006
- [32] Huba, M. *ŠL TANAP assert that overpopulation of wood fretter could have been prevented* - TV station TA 3, news, on 17.7.2006

- [33] Huba, M. *Conservationists of Bratislava have gained additional positive points* - TV station STV 2, Regional news at 18.25, on 28. 9. 2006
- [34] Huba, M. *Slovakia spends only 9 Euro yearly per person in the environment* - TV station ČT1, TA 3, main news, on 24.03.2006
- [35] Huba, M. *Architectural face of Bratislava* - TV station STV 2, Regional journal, on 29.9.2006
- [36] Huba, M. *Global problems* – TV station STV 2, Under the lamp, 16.11.2006

**Press conferences:**

- [37] Solín, L. *Mapping of flood risk in small basins of the SR* – briefing of the 1st dept. of SAS on 31.8.2006 in Bratislava.
- [38] Ira, V. *Forms of regional disparities in Slovakia* – briefing on 20.4.2006 in Bratislava.
- [39] Ira, V. *Landscape-ecologically optimal spatial and functional use of the Tatra Biosphere Reserve of UNESCO* – briefing on 25.2.2006 in Bratislava.

**Books:**

- [40] Kollár, D. - Lacika, J. *Oravské Beskydy – Orava*. Bratislava: Dajama, 2006, 160 p. (also in English.)
- [41] Lacika, J. *Tatry*. Bratislava: Dajama, 2006, 128 p. (also in English, Hungarian, Polish, Russian and German)
- [42] Lacika, J. – Ondrejka, K. *Národné parky a chránené krajinné oblasti Slovenska. (National Parks and Protected Landscape Areas of Slovakia)*. Bratislava: Dajama, 2006, 272 p.

**iv. List of patents issued abroad, incl. revenues**

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**v. List of the patents issued in Slovakia, incl. revenues**

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**vi. List of licences sold abroad, incl. revenues**

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**vii. List of licences sold in Slovakia, incl. revenues**

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**viii. List of contracts with industrial partners, incl. revenues**

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**ix. List of research projects with industrial partners, incl. revenues**

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**x. Summary of outreach activities**

<b>Outreach activities</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>total</b>
studies for the decision sphere, government and NGOs, international and foreign organisations	5	1	4	3	13
articles in press media/internet popularising results of science, in particular those achieved by the Organization	5	13	19	19	56
appearances in telecommunication media popularising results of science, in particular those achieved by the Organization	17	8	4	12	41
public popularisation lectures				7	7

**xi. Supplementary information and/or comments on applications and popularisation activities**

**7. Background and management. Staffing policy and implementation of findings from previous assessments**

**i. Summary table of personnel**

<b>Personnel</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
all personnel	48	47	47	44
research employees from Tab. Research staff	25	25	26	27
FTE from Tab. Research staff	23.01	23.36	23.22	22.35
averaged age of research employees with university degree	49	50	49	48

## ii. Professional qualification structure

Number of	2003	2004	2005	2006
DrSc.	3	3	3	2
PhD / CSc.	22	21	23	21
Prof.	1	1	1	2
Doc./Assoc. Prof.	4	4	4	2

## iii. Status and development of research infrastructure incl. experimental, computing and technical base (description of the present infrastructure, premises, and material and technical resources. Infrastructure, instrumentation and major technical equipment necessary for the achievement of the objectives specified in the research Concept)

The Institute is equipped with standard computer technology. Apart from common programmes, the available software includes ArcView GIS 3.2, Arc GIS 9.1 (limited finances allowed purchasing of one licence only) and HEC-RAS. Financially more demanding technology includes the GPS station, levelling apparatus and laser distancemeter. In future it will be necessary to invest more means into technology necessary for field research focused on survey of river channel morphology and flood hazard. It means that also a flowmeter, a sieving system for assessment of grain size sediments assessment and the RIVERMorph VI software will have to be procured.

## iv. Status and development of bibliographic resources, activities of the Organisation's library and/or information centre

The library of the Institute of Geography is a public scientific library specialized in geographical sciences. The library is included in SAS library-information network headed by the Central library of the SAS. It provides information service for scientific workers, university teachers and PhD students. The other task of the library is to develop and maintain information databases, to distribute and exchange scientific publications of the Institute.

	31.12. 2003	31.12.2004	31.12.2005	31.12.2006
Books and journals	17555	17463	16896	17031
PhD thesis and other documents:	276	279	283	295
CD ROM	0	0	17	47
Number of incoming periodicals:	178	177	177	169

## v. Describe how the results and suggestions of the previous assessment were taken into account

The Institute of Geography, SAS enjoys a national and an international reputation as a leading centre of geographical research in some fields, and is consistently ranked as one of the Slovakia's premier institutions in terms of the quantity and quality of its research output. The Institute is characterised by, and strongly committed to, a vibrant research culture, organised into three main clusters. Each of these clusters fosters synergies and

collaboration amongst its staff members and cooperating researchers from Slovak and Central European geographical institutes and geographical departments at universities.

Research cluster *Landscape change, application of remote sensing data and the GIS, cartography and geo-information science* has withheld its good international position thanks to participation in international projects.

The issue of sustainable development in cluster *Society, environment and development* has been widened by the study of geographical aspects proper to quality of life. Research results in this field were published not only in national journals but also in foreign periodicals quoted in CC. International cooperation in this area has been strengthened. Studies concerning the local and regional development have been also added to this research cluster.

Research cluster *Structure and dynamics of the natural landscape, hazards and risks* has been reshaped as follows: apart from traditional geomorphologic research and regional typification of basins and stream regimes in Slovakia, identification of regional variability in flood risks, also the theme concerning the morphological properties and processes of river systems is now researched. This field is also topical and important at the international level.

The publishing activity of the IG SAS scientists in impact journals in general increased and so did the share of publications in English. Research results were also published in form of several monographs.

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

The following important databases were produced at the Institute of Geography:

- database CORINE Land Cover 2000 in Slovakia;
- database concerning population movement in Slovakia by communes in 1970-2006;
- database of physical characteristics of small basins in the SR was widened by two additional attributes: percentage of soil types and N-year maximum discharges.

### **Other information relevant to the assessment**

Institute of Geography is part of the Section I (Inorganic Nature Sciences) of the Slovak Academy of Sciences together with other 14 institutes belonging to Earth and Space Sciences, Mathematical, Physical Sciences, Information Science, and Technical Sciences.

The nature of research carried out at the Institute of Geography SAS has some specific features, which make it partly different from research covered by the Section I (Inorganic Nature Sciences). Geography is one of integrated (holistic) sciences. It bridges geography of the natural world (physical geography) and geography of human-created world (human geography). It is characterized by at least three essential characteristics:

Emphasis on location – geography is concerned with the location and spatial variation in both physical and human phenomena on the Earth surface.

Emphasis on society-nature relationship - stress is laid upon the interrelation of phenomena, links between aspects of the natural environment of the particular area, and the human population occupying or modifying it.

Emphasis on regional analysis - appropriate spatial segments of Earth surface (regions) are identified, their internal (intraregional) morphology and ecological linkages are traced, and external (interregional) relationships established.

Regarding the above said, it is natural that there exist comparatively conspicuous differences in research orientation within research clusters and that the results as well are different and hardly comparable with outputs of other sciences (especially Mathematical, Physical Sciences, Information Science, and Technical Sciences).

### **Conclusion**

The questionnaire was elaborated using source material about activities of the Institute of Geography, SAS and negotiated with the Scientific Board.

Bratislava, February 2007

RNDr. Vladimír Ira, PhD.  
Director