

Institute of Landscape Ecology

Slovak Academy of Sciences



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Institute of Landscape Ecology SAS

- Interdisciplinary organisation for basic (70 %) and applied (30 %) landscape-ecological research
- Scientific organisation
- Educational organisation



Institute of Landscape Ecology SAS

- All personnel: **53**
- Research staff: **29**
- PhD students: **10**

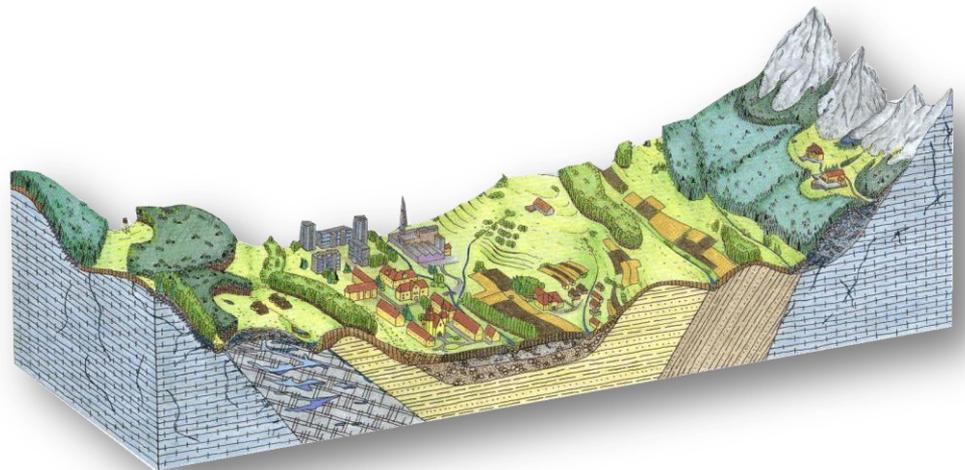


- Department of ecosystem analyses
- Department of landscape-ecological syntheses
- Department of diversity of ecosystems and landscape - Branch Nitra
- The Research Station Východná

Institute of Landscape Ecology SAS

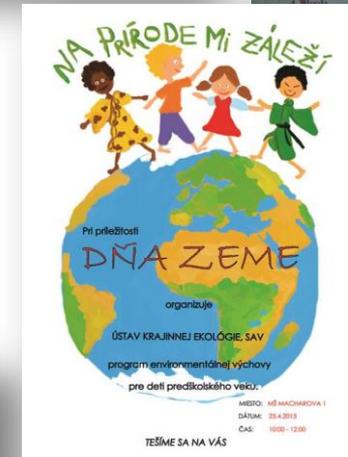
The object of research: Landscape

- Develops a theory and methods of landscape ecology
- Research of landscape, its components and processes, socio-ecological systems at different scales
- Research is built on interdisciplinary and transdisciplinary basis



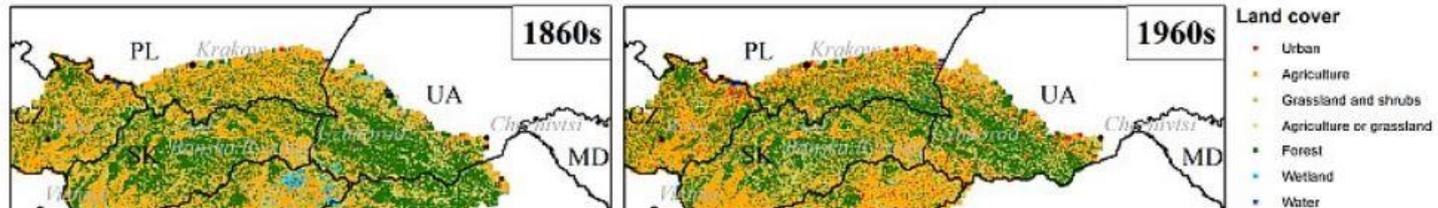
Pillars of the ILE SAS

- Basic research
- Applied research
- Promotion of research results
- Educational activities



Basic research

Research of landscape changes, their driving forces and social impact



- **INSPIRATION** - Integrated Spatial Planning, land use and soil management Research Action (**HORIZON 2020 project**)
- 200 years of changes in landscape use and land cover and their driving forces in the Carpathians (**NASA LCLUC Programme project**)
- **VEGA projects**



Basic research

Mapping and assessment of traditional agricultural landscape (TAL)

- national inventory (3013 sites)
- POINT - Policy Influence of Indicators (FP7 project)
- Atlas of landscape archetypes of Slovakia (APVV project)
- Diversity of the agricultural landscape and its ecosystem services (VEGA project)



Basic research

Assessment of ecosystems and ecosystem services



- OpenNESS - Operationalisation of Natural Capital and EcoSystem Services (FP7 project)
- Evaluation of ecosystem functions and services of the cultural landscape (APVV project)
- Biodiversity and ecosystems assessment (ETC BD project)



Basic research



Long-Term Ecological Research (LTER)

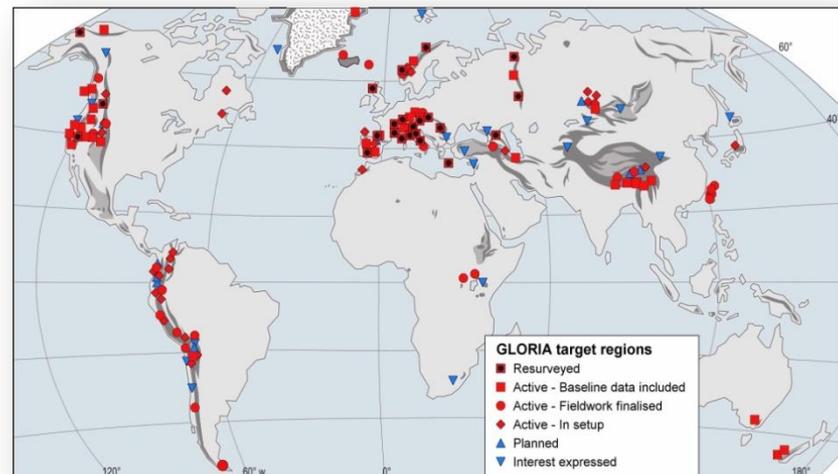
- Member of global network ILTER, founder of LTER-Europe
- Co-ordination of national network LTER Slovakia
- Co-ordination of research in 4 LTER sites and 2 LTSER platforms



- eLTER - European Long-Term Ecosystem and Socio-Ecological Research Infrastructure (**HORIZON 2020 project**)
- Advance_eLTER - Advancing the European Long-Term Ecosystem, critical zone and socio-ecological Research Infrastructure towards ESFRI (**HORIZON 2020 project**)

Basic research

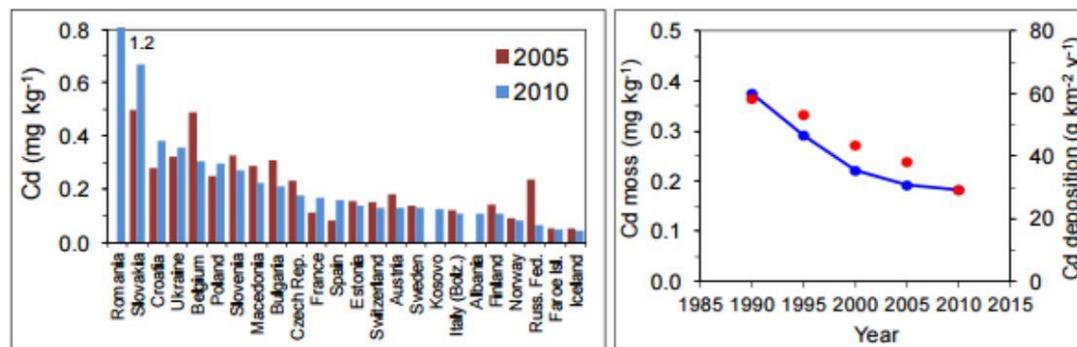
- Observing, monitoring and assessment of mountain flora affected by climate changes: follow-up activities of the project GLORIA - observing the effect of climate change on species composition of vegetation
- ILE SAS - member of monitoring network of research sites: 128 active target regions located in the alpine zones of Europe, Asia, North and South America, Africa, Australia and Oceania
- Study area in SK: Vysoké and Západné Tatry Mts.



Basic research

Evaluation of quality of the environment

- Assessment of spatial and time trends of accumulation of heavy metals and nitrogen in mosses in Slovakia for 25 years (ICP Vegetation)
- Evaluation of environmental quality of rural settlements (VEGA project)
- Green Infrastructure of Slovakia (VEGA project)



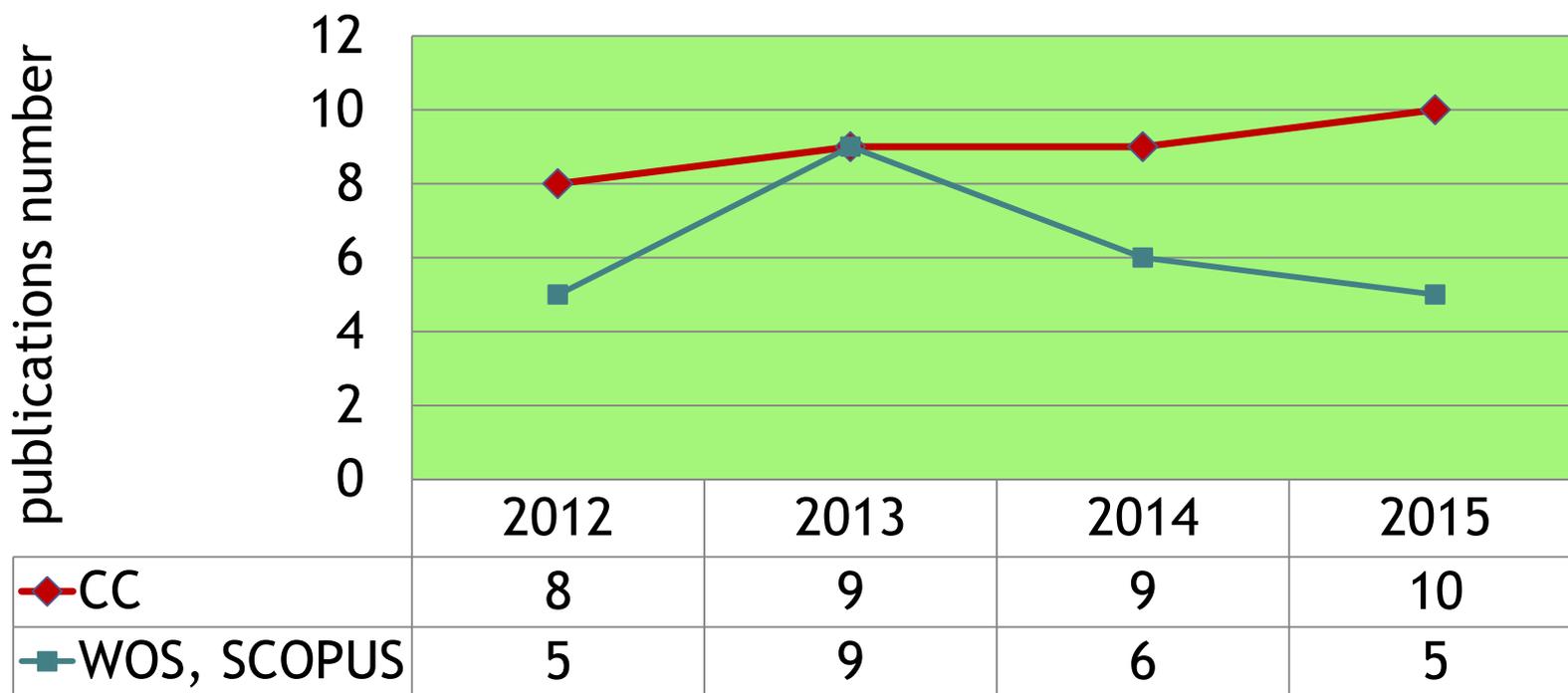
Basic research

Research, development and application of advanced methods of geoinformatics and remote sensing

- **EBONE - The European Biodiversity Observation Network (FP7 project)**
- **Development of the adaptive plant protection forecasting system within a collaboration of border viticultural areas for purpose to increase their competitiveness (HU-SK project)**
- **The ecological model of tourism development based on assessment of localization and realization assumptions of landscape with use of GIS tools and quantitation methods (VEGA project)**

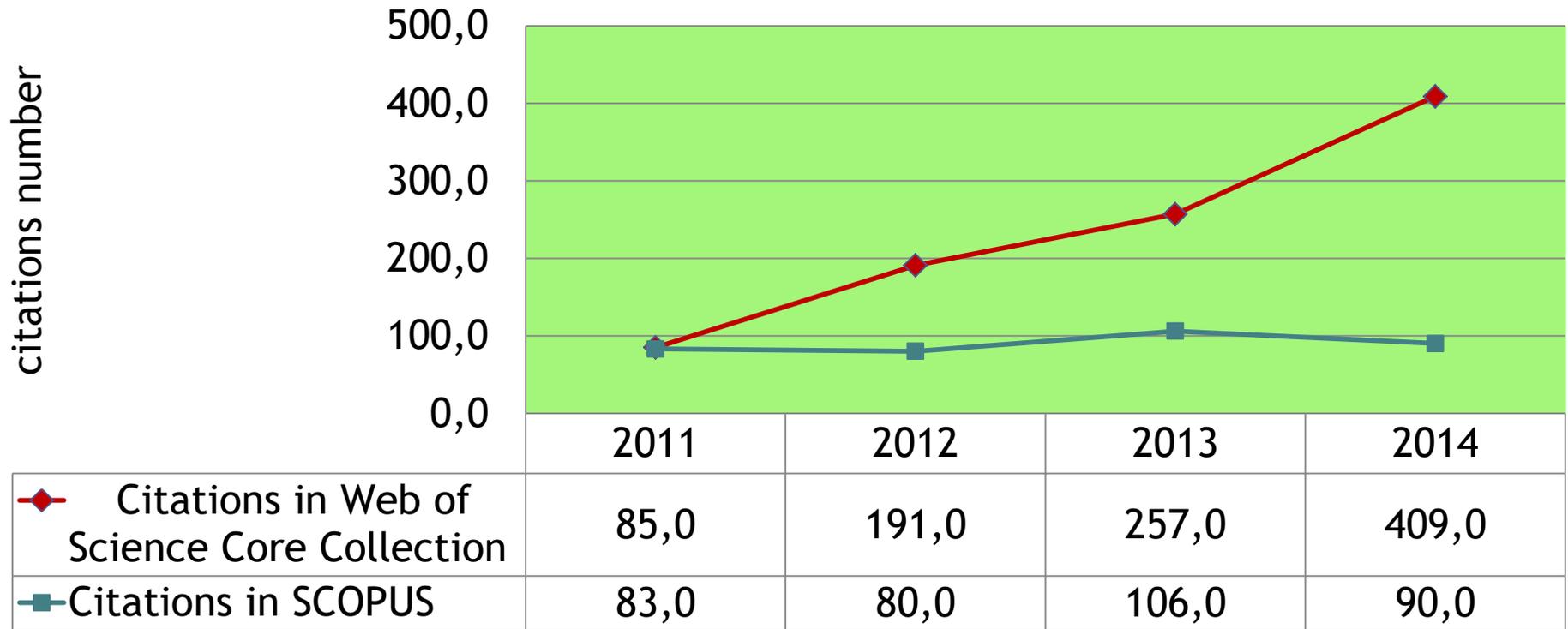
Basic research

Number of publications in CC, WOS core collection, SCOPUS (2012 - 2015)



Basic research

Number of citations in WOS and SCOPUS (2011-2015)



Applied research

Main goal: **transfer of scientific knowledge into real practice**, especially in landscape planning, nature conservation, decision-making and environmental legislation process

Our clients:

- EU bodies: DG Research, DG Environment, DG Agriculture, European Environment Agency (Copenhagen)
- State administration
- Regional and local municipalities



Applied research



European Topic Centre on Biological Diversity

- Client: European Environmental Agency, Copenhagen
- Since 2002, current project 2014-2018
- 13 partners led by the Nature History Museum, Paris

ILE SAS main tasks:

- Support to EU nature reporting: Habitats Directive Art17, HD Annexes Adaptation, State of Environment Report
- Natura 2000 and Emerald: Natura 2000 sufficiency assessment - 16 EU member countries
- Biodiversity and Ecosystem Assessments: Ecosystem Map and Assessment, Grassland Assessment, Copernicus





Applied research

External monitoring team of LIFE Programme

- Client: DG Environment, EASME
- Since 2005, current project 2015-2018
- NEEMO EEIG - legal entity comprising 9 companies, partnership with 3 other companies



- **Main task:** Monitoring of LIFE projects (currently 111 projects) in six countries (SK, CZ, PL, HU, HR, RO)
- 16 monitors: 3 internal staff, 13 foreign contracted experts
- Technical assistance, Administration and financial management

Applied research

New Biogeographical Process

- Client: DG Environment
- Since 2011, current project 2015-2017
- 6 partners: ECNC (lead), Eurosite, ILE SAS, ELO, CEEweb, and EUROPARC

- **Main task:** Scientific and technical background information for the benefit of Natura 2000 Seminars

http://ec.europa.eu/environment/nature/natura2000/seminars_en.htm



Educational activities

PhD study

- Programme: 4.3.1 Landscape protection and landscape utilisation - Environmental studies
- PhD study is provided in cooperation with the Constantine Philosopher University in Nitra, Department of Ecology and Environmental Sciences
- 11 supervisors; ca 9 PhD students annually
- Courses for foreign students: 8 PhD students in 2015/2016 from Poland (6), Spain (1) and Czech Republic (1), two master students from Belgium

Educational activities

- **Environmental education** at primary and secondary schools, developed a program of **education on sustainable development**
- Preparation of textbooks and teaching materials
- **Environmental Natural Laboratory** in Suchá n/Parnou



Promotion of results

Presentation of scientific knowledge to public to raise environmental and ecological awareness



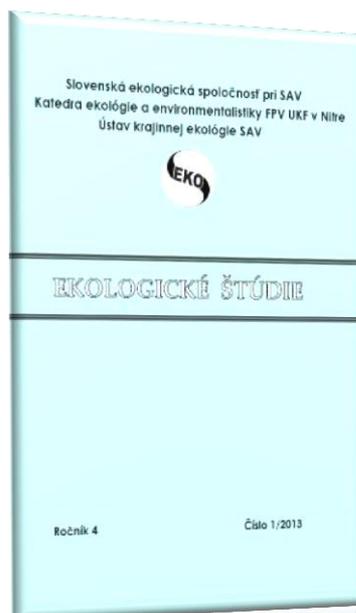
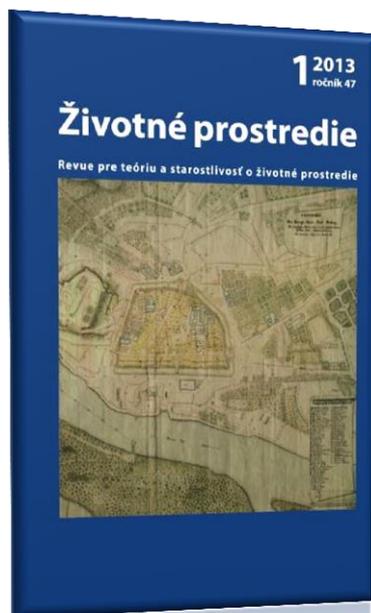
Promotion of results

- National exhibitions: **AGROKOMPLEX, CONECO**
- Researchers night
- Open door day
- Landscape Festival
- Celebrating Earth Day
- Green week EU
- Environmental Natural Laboratory



Editorial activities

- Ecology (Bratislava)
- Environment (**Životné prostredie**)
- Ecological studies (**Ekologické štúdie**)



International activities

- **European Commission: Global Change** (including climate change) - FP5, FP6, FP7, HORIZON 2020
- **NATO Science Programme** - environmental panel
- **European Academies Science Advisory Council** - Environmental Steering Panel
- **European Academy of Sciences and Arts**, Salzburg
- **UNESCO Headquarters**, Department for Ecological Sciences and Earth Sciences, Paris



International activities

- **LIFEWATCH-ERIC** - European infrastructure for biodiversity and ecosystem research
- **EU Strategy for the Danube Region** - Priority Area 7
- **DIVERSITAS** (up to 2014,) now **Future Earth**
- **EPBRS** - European Platform for Biodiversity Research Strategy



International activities

- **ALTER-Net** - A Long-Term Biodiversity, Ecosystem and Awareness Research Network
- **EucaLand** - European Cultural and Agricultural Landscapes
- **Landscape Europe** network - *Coordination*
- **European Alliance for Global Changes**
- **Science for Carpathians** - *founder, executive committee*



S4C Science for the Carpathians



EUCALAND - Network

European Culture expressed in Agricultural Landscapes

Social and policy impact

- **Support to EU environmental and nature conservation policy: ETCB, LIFE programme**
- **Support to national Rural Development Programme: TAL inventory as basis for HNMF protection and management**
- **Red list of species, habitats and invasive alien species in the Carpathians**
- **Management Plan for the National Nature Reserve Parížske marshes**
- **Implementation of ecological networks for 5 regions and 2 villages**

Social and policy impact

Strategic documents:

- Rural Development Programme 2014 - 2020 - Strategic environmental assessment
- Integrated regional strategy of the Trnava Region
- Territorial Development Strategy of the city of Trnava and its functional area

EIA, SEA documents

Application of innovative Earth observation methods

Implementation of ES concept in the urban and regional planning policy

Research strategy

The key research topics for next period:

Global megatrends and their impact on landscape

- Research focused on mapping, spatial modelling and assessment of GMT influences on landscape structure, its individual components and landscape processes
- Transfer of scientific knowledge into environmental policy



Research strategy

- **Innovative methods for landscape research planning** - developing innovative methods of efficient use of landscape resources and potentials
- **Mapping of ecosystems and assessment of ecosystem services**
- **Spatial-temporal integrated modelling** of response and adaptability of ecosystems to global changes



Research strategy

- Long-term assessment of traditional agricultural landscape (TAL)
- Long-term ecosystem research in the European LTER network
- Observation and assessment of alpine ecosystems influenced by climate change
- Assessment of air pollution impact to environment
- Observation and assessment of agro-ecosystems for the need of precision farming



Thank you for the attention!

