

GISAT

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Monitoring of main routes surroundings using Earth Observation

Luboš Kučera

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- SME geo-information company operating from 1991
- committed to Remote Sensing
- strong experience in EO related services for national, European and worldwide customers
- from data to information and consultancy
- from research (PPPs) to fully operational activities
- satellite data and geomatics software distribution

- **Environment**

Land cover/land use mapping and change analyses, soil erosion modeling, air & water pollution, ...

- **Agriculture**

Crop monitoring, crop acreages estimation, agrometeorological modeling, crop yield forecasting, subsidy control, precision farming, ...

- **Infrastructure and spatial planning**

GIS based management and planning, transport corridors mapping & monitoring, urban mapping, baseline maps, resource-demand tasks, ...

- **Defense, security, hazards**

Map update, terrain analysis, flood monitoring, multi-criteria risk analysis, ...

- **Earth exploration**

Oil&gas exploration, water resource detection, geological mapping, ...

- **Forestry**

Forest mapping&inventories, change detection, damage analyses, ...

- **Other**

Tailored geo-services/products for specific clients

- **GMES service provider**

ESA GSE projects: AquaSAGE & SoilSAGE, GUS, GSE Land, RESPOND

EEA Land Cover Mapping: FTSP Urban areas incl. soil sealing levels

EC FP7: Geoland-2, SAFER, G-MOSAIC

- **Support to EEA**

Partner in European Topic Center (ETC-TE, ETC-LUSI)

CORINE Land Cover mapping since CLC 1990

Member of CLC Technical Team

European CLC data integrator

- **ESA & DGs**

ESA PRODEX & PECS & AO projects

DG Joint Research Centre

„Monitoring of situation and changes in surroundings of main roads through remote sensing and laserscanning techniques and its contribution to sustainable expanse of transport“

Grant CG 912-105-520, Ministry of Transport, 2009-2010

Project leader:

Czech Technical University, Faculty of Civil Engineering, Department of Mapping and Cartography, Laboratory of Photogrammetry

prof. Dr. Ing. Karel Pavelka

Partners:

Gisat s.r.o. – Earth Observation

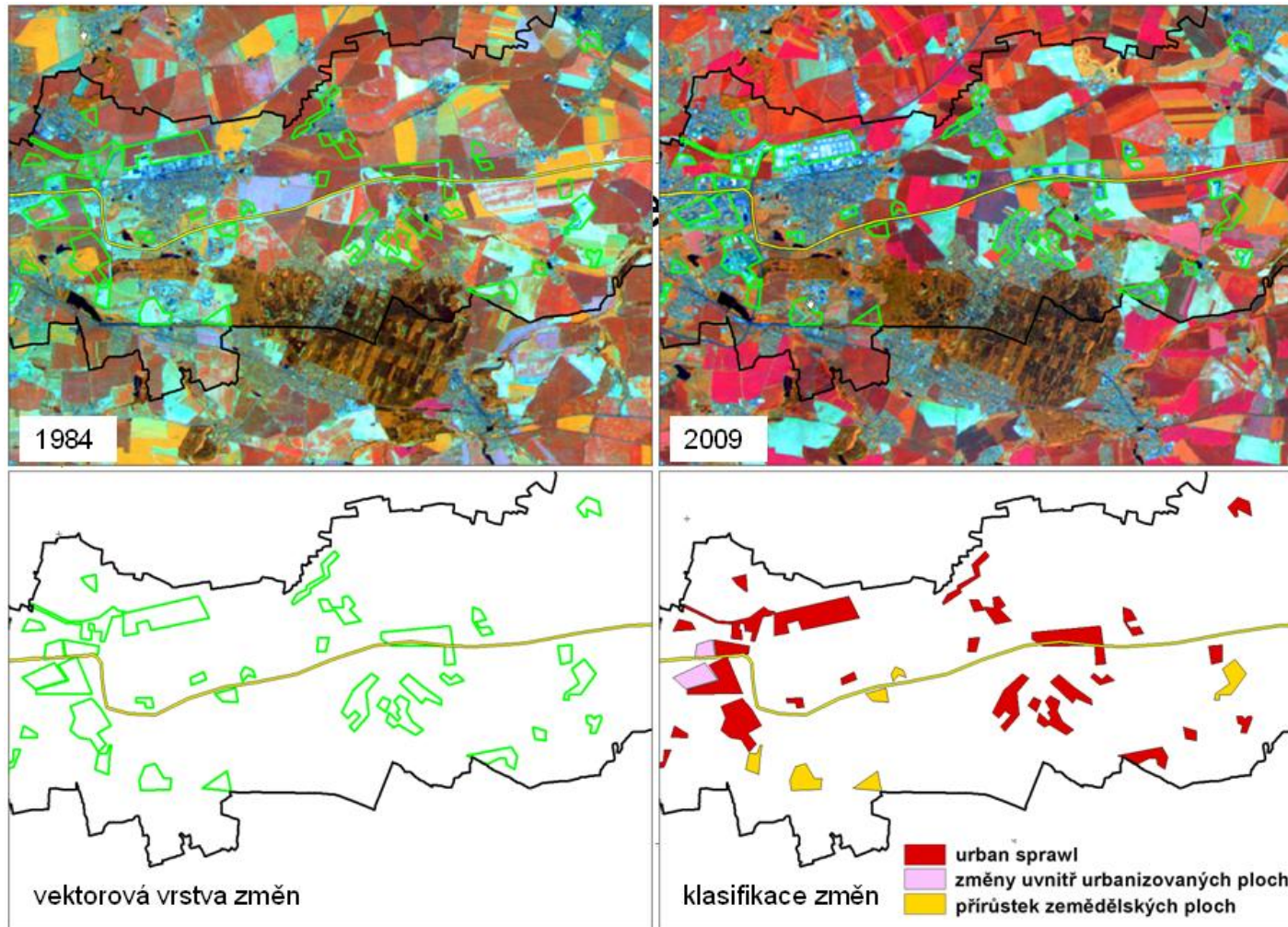
H.I.T.E. s.r.o. - Laserscanning

- **D11 highway Praha – Hradec Kralove**
 - construction since 1978
 - multitemporal satellite data & archive aerial orthophotos
 - focus on urban sprawl monitoring

- **Regional mapping**
 - entire route
 - mapped area of 678km²
 - 6 reference periods (1984, 1991, 1995, 2000, 2005, 2009)
 - 1 ha / 5 ha minimum mapping unit
 - GSE Land / Geoland nomenclature

- **Detailed mapping**
 - Praha Cerny Most
 - mapped area of 43km²
 - 6 reference periods (1975, 1979, 1990, 1995, 2003, 2007)
 - 0.25 ha minimum mapping unit
 - Urban Atlas nomenclature

- spatial and thematic description of land use changes ...

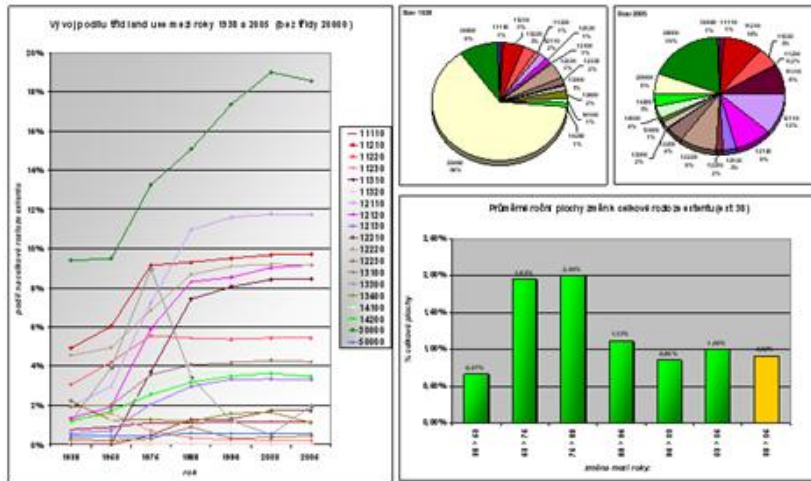


- ... in two mapping scales in 6 reference periods of last 30 years

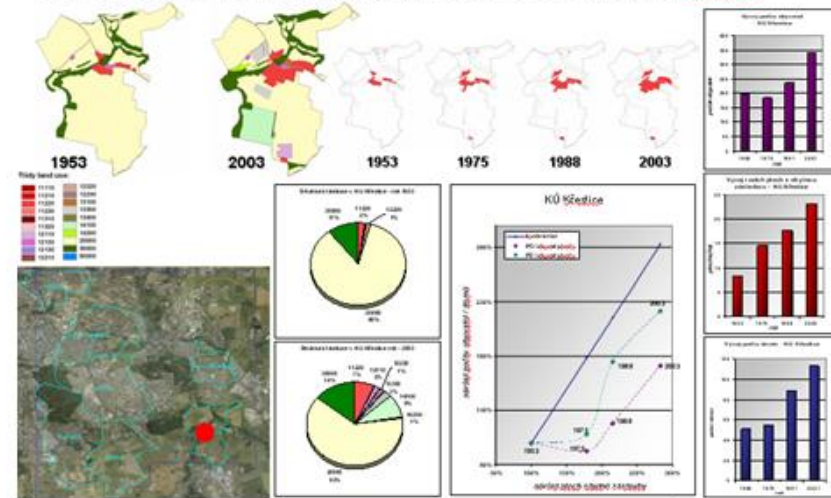


- focus on urban sprawl (scope, trends, inner structure & dynamics, ...)
- link to non EO data (socio-demographic statistics, soil data, environmental data, land planning data, ...)

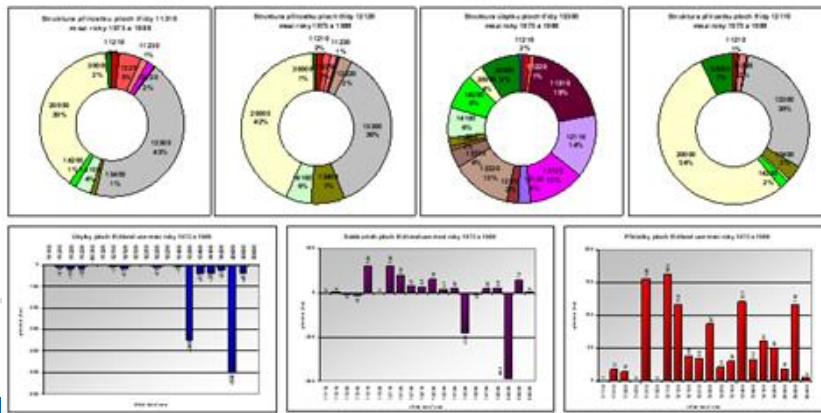
Land use change assessment: long term trends & change intensity



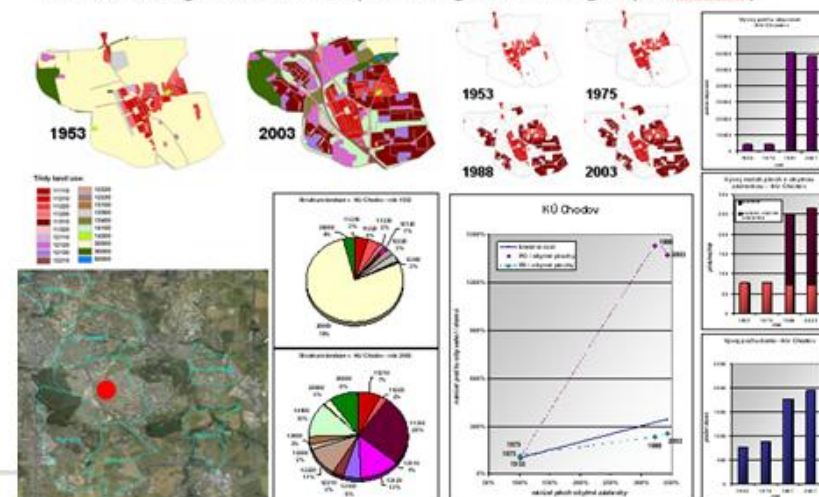
Land use change assessment: spatial insight into changes (KÚ Křeslice)



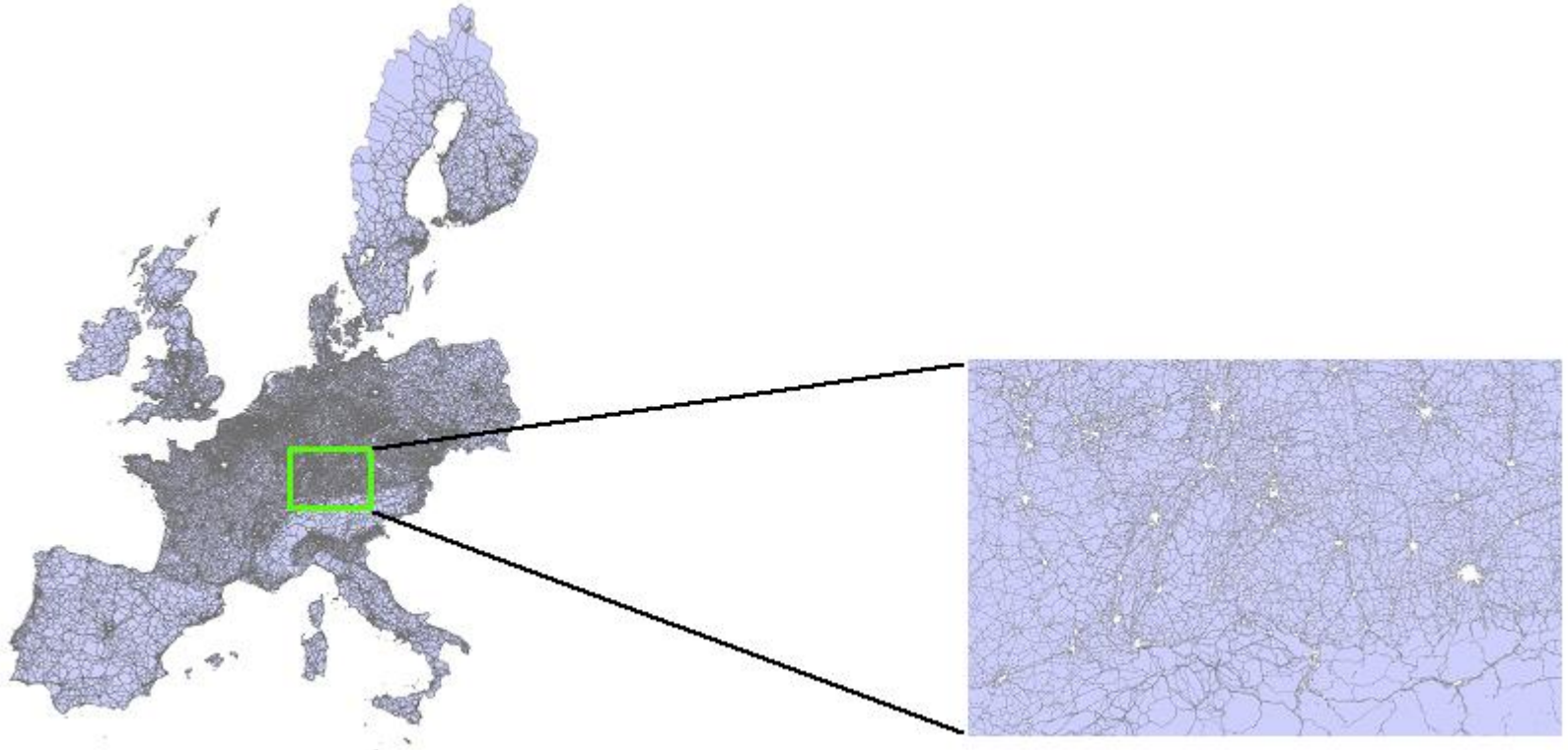
Land use change assessment: structural insight into changes



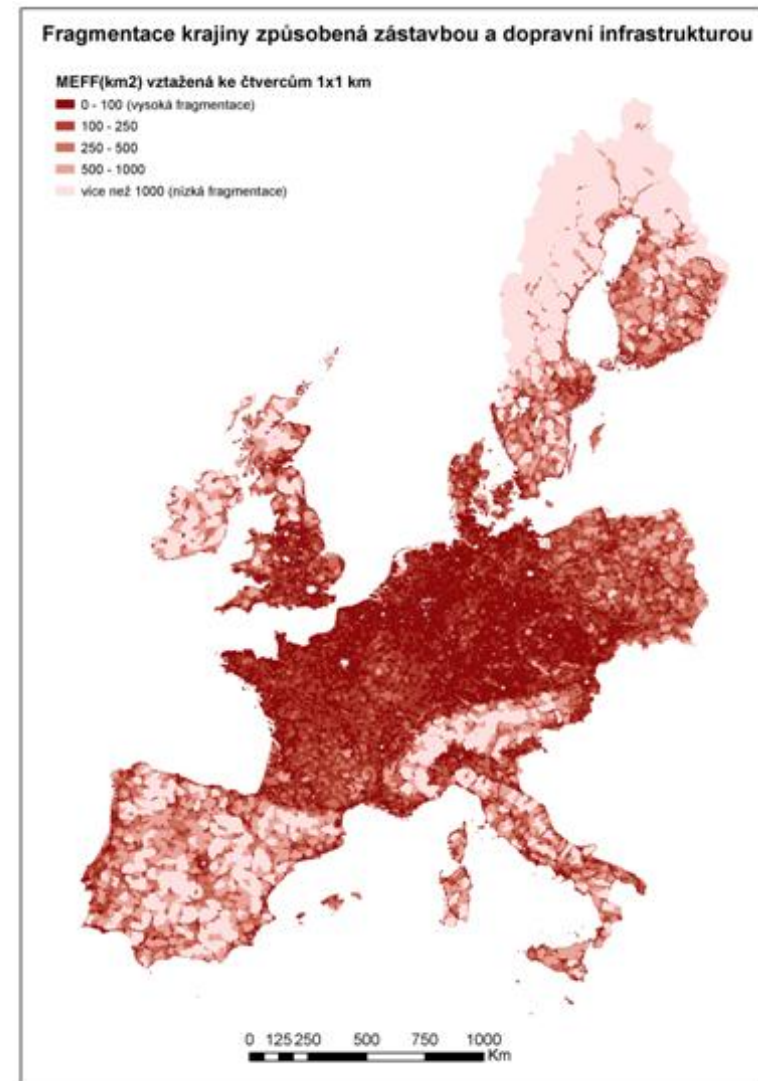
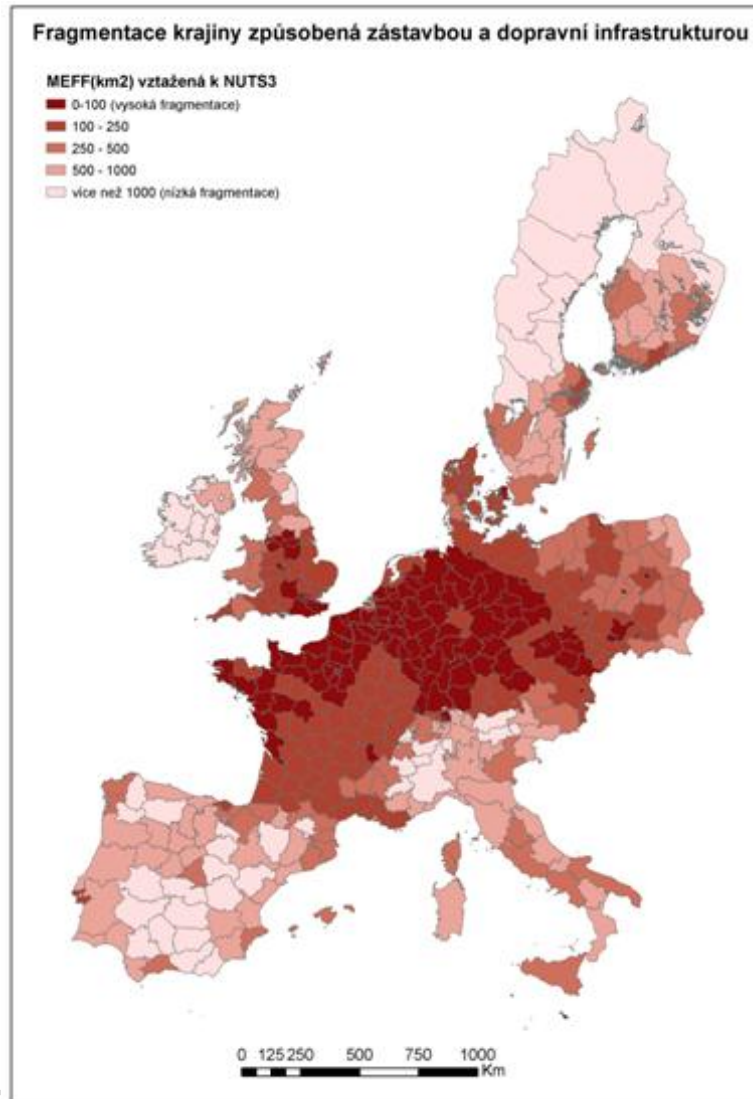
Land use change assessment: spatial insight into changes (KÚ Chodov)



- methodology developed for EEA (ETC-LUSI)
Joechen A.G. Jaeger - Landscape division, splitting index and effective mesh size - new measures of landscape fragmentation)
- applied for EU24 countries
- road & railway network



- applied for NUTS3 regions and for 1km x 1km grid



Thank you for your attention