



FACULTY OF SCIENCE
Charles University

DEPARTMENT OF APPLIED GEOINFORMATICS AND CARTOGRAPHY

Department of Applied Geoinformatics and Cartography

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RESEARCH AREA & EXCELLENCE

Geoinformatics, Cartography, Remote Sensing

- Spatial data modelling
- Application of GIS in environmental systems
- Mathematic cartography
- Photogrammetry
- Remote sensing
- Rock mapping using automation in cartography
- Development and application of digital terrain models
- Application of hyperspectral and LIDAR data for cartography and land cover
- Creating accurate 3D models of buildings and vegetation

Mission

To apply geoinformatics and cartography know-how and tools to explore and monitor the environment and implement geoinformatics in interdisciplinary research.

KNOW-HOW & TECHNOLOGIES

Content of Research

The Department of Applied Geoinformatics and Cartography in Primary and Applied Research focuses on various topics, such as acquiring, processing and analysing geospatial data, geographic information systems, remote sensing, creating and evaluating of cartographic products, application modelling and more.

Main Capabilities

Analysis, consulting and/or assistance in dealing with the following issues:

- GIS
- Environmental modelling
- Cartography
- Remote sensing
- Laser scanning
- 3D
- Education and capacity building in geoinformatics

EXPECTATIONS & OFFERS

Offers

We can offer our partner spatial analysis, map creation, obtaining and processing information from remote sensing data, programming in GIS and 3D, and creation of Spatial Data Infrastructure (SDI).

Requirements

We are looking to cooperate with academic partners, private and public institutions, and non-governmental organizations in the fields of geoinformatics and cartography.

KEY RESEARCH EQUIPMENT

- Satellite data receiving station
- Software and hardware for satellite data processing
- Laboratory for hyperspectral and laser scanning data processing
- Field spectroradiometer
- Terrestrial laser scanner
- GIS and Spatial Data Infrastructure (SDI)
- High-quality GPS receivers

PARTNERSHIPS & COLLABORATIONS

Academic partners: Moravian Land Library in Brno | Masaryk University in Brno | National Institute of Public Health | University of Geneva (SUI) | Space Research Centre of the Polish Academy of Sciences (PL) | South African National Space Agency (RSA) | African Regional Centre for Space Science and Technology in French (FRA) | Aristotle University of Thessaloniki (GR) | The National Research Council of Italy (IT) | University of Twente (NL)

Private and Public Sector: HCP International | Central European Data Agency, a.s. | Sprinx Systems a.s. | GISAT s.r.o. | Land Survey Office of the Czech Republic: Krkonoše Mountains National Park, Bohemian Switzerland National Park, Low Tatras National Park (Slovakia) | European Space Agency (ESA) | National Aeronautics and Space Administration (NASA)

Main Projects

- INASAMP – Innovative tools for the automated management and updating of maps for navigation systems, the EPSILON programme for the support of applied research and experimental development, Technology Agency of the Czech Republic (TACR), 2015–2017
- Earth Observation Capacity Building for Baltic Countries and Eastern Europe, European Space Agency (ESA), 2014–2016
- FLOREO (Demonstration of ESA Environments in support to FLOod Risk Earth Observation monitoring)
 - the creation of a Web service to estimate flood risks through the processing of satellite data and ground measurements, <http://www.floreo.cz>
- EOPOWER (Earth Observation for Economic Empowerment), 2013–2015, Seventh Framework Programme, EU, <http://www.eopower.eu>
- Impact of political and economic transition on land use changes in Czechia and Poland: the identification of key factors and processes, 2014–2015, MOBILITY project, Ministry of Education, Youth and Sports

- INMON – Innovation of Methods for Monitoring the State of Health Norway Spruce Stands in the Ore Mountains with the Use of Hyperspectral Data, 2012–2015, Ministry of Education, Youth and Sports
- TEMAP – Technology for access to Czech map collections: methodology and software for the protection and re-use of national cartographic heritage, 2011–2015, Ministry of Culture
- Mapping of natural foci of zoonoses transmissible to humans and evaluation of their adaptation due to climate changes. 2010–2014, Ministry of Health: <http://web.natur.cuni.cz/gis/klistata>
- Assessment of Mining-related Impacts Based on Utilization of ARES Airborne Hyperspectral Sensor, 2009–2012, Czech Science Foundation: <http://web.natur.cuni.cz/gis/temap>

ACHIEVEMENTS

- Development the WINKART SW tool for work with different cartographic projections: <http://www.winkart.cz>
- Development of the Detectproj SW tool for the estimation of unknown cartographic projections and parameters from maps: http://web.natur.cuni.cz/~bayertom/detectproj/det_sw.html
- Cooperation on the Georeferencer SW tool for visual integration of historical map layers and overlaying these on aerial imagery and modern base maps: <http://help.georeferencer.org>

