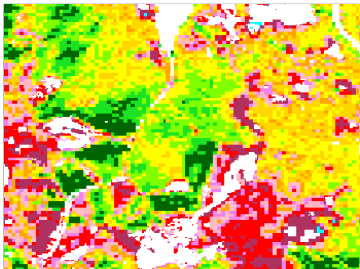
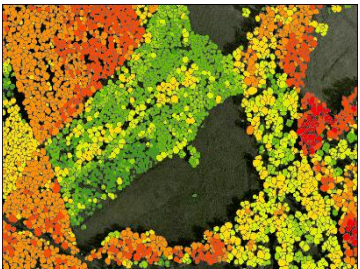
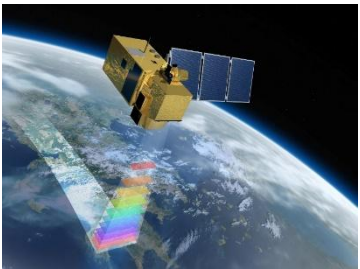


Using of GIS and RS for forest mapping, monitoring and mensuration in Slovakia



**Ivan SAČKOV, Tomáš BUCHA, Ivan BARKA,
Ľuboš HALVOŇ**
sackov@nlcsk.org

NATIONAL FOREST CENTRE
T. G. Masaryka 22
960 92 Zvolen
Slovakia



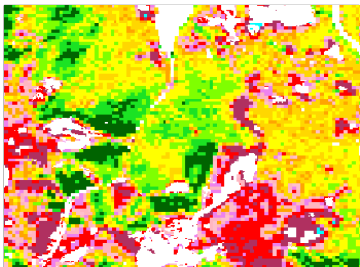
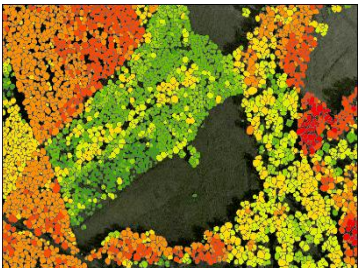
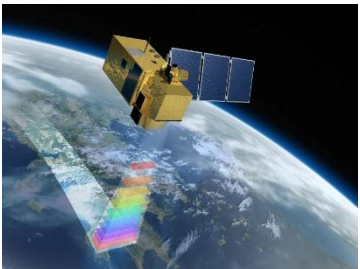
National Forest Centre (NFC)

- Semi-budgetary forestry agency established by the SK Ministry of Agriculture (MA SR) on 1 January 2006.
- The Centre reports directly to the Department of Forestry and Wood-processing of MA SR.

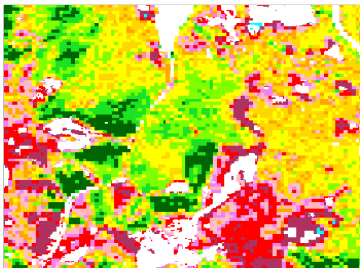
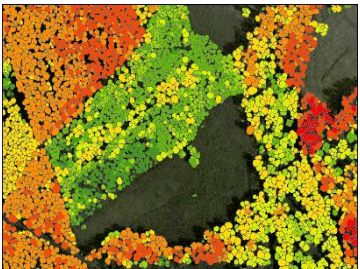
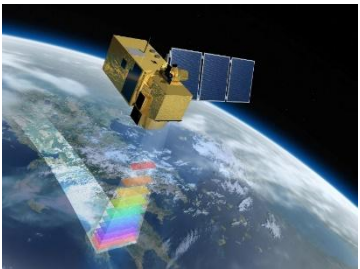
NFC Institutes

- **NFC – Forest Research Institute (NFC-FRI Zvolen) + Research Station**
 - Research on forest ecosystems and biodiversity, Remote sensing & GIS and Forest policy & economics; National forest inventory, Permanent monitoring (forest health, forest condition); National and/or international reporting on forests
- **NFC – Institute for Forest Resources and Information (NFC-IFRI Zvolen)**
 - Forestry statistics including game management and hunting; Sectoral information systems on forests and forestry; Mapping in forests; Digital forest photogrammetry & remote sensing; Timber market reporting; GIS-based applications; Customised software
- **NFC – Forest Management Planning Institute (NFC-FMPI Zvolen)**
 - Forest planning guidelines; Forest surveys; Administration of forest planning procedure (public procurement, assessment, compliance checking, approval); Forest fire monitoring; Corporate public procurement
- **NFC – Institute for Forest Consulting and Education (NFC-IFCE Zvolen)**
 - Forestry related advisory services; Forest pedagogics; Further education of forestry professionals; Public relations including promotion activities; Drafting projects and advising on EU Structural Funds; Examination of professional competence in forestry (certified forest managers, forest planners, etc.)

NFC RS projects activity



- Innovative methods for monitoring and inventory of Danube floodplain forests based on 3D technologies of remote sensing, 2012-2014 (trans-boundary SK-HU)
- Innovative methods for forest fire monitoring and forest change mapping by satellite remote sensing, 2013-2014 (bilateral SK-CH)
- Centre of Excellence for decision support in forest and landscape, 2011-2015, (EU Structural Funds)
- LignoSilva, 2015-2016 (Centre of Excellence of Forest-based Industry, H2020)
- Satellite-based observation of forest ecosystems response to global environmental changes, 2008-2010 (national)
- Research of the methods of classification and structural models of favourable state of forest ecosystems in Slovakia Assessment of the state and development of forests with the help of remote sensing, 2008-2010 (national)
- Proposal: Slovak spatial data infrastructure of environmental particularities based on satellite images and satellite measurement - Feasibility study (Subject: ANNOUNCEMENT OF OPPORTUNITY AO/1-8224/15/NL/NDe 1st CALL FOR OUTLINE PROPOSALS UNDER THE PLAN FOR EUROPEAN COOPERATING STATES (PECS) IN SLOVAKIA; Reference: ESA/1/2015)

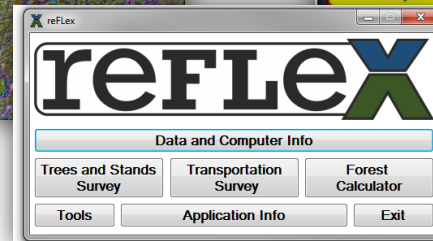
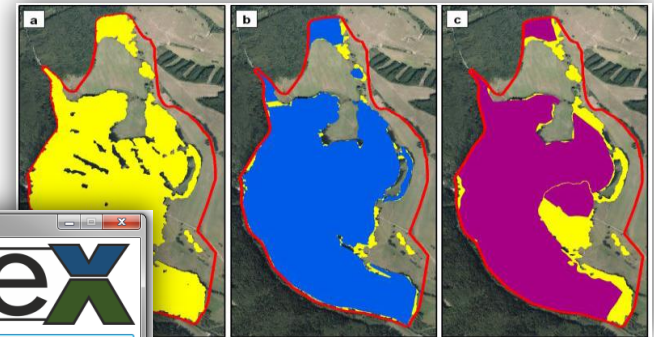
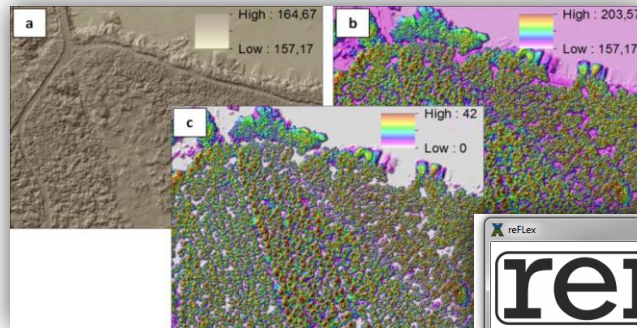


NFC RS infrastructure

- Airborne photogrammetric camera: Leica RCD30
- Airborne laser scanner: Leica ALS 70-CM
- Software application for processing RSE data: ERDAS, Leica, Trimble, Terrasolid Ltd.
- Software application for analysing RSE data: NFC

NFC RS portfolio

- Processing of remote sensing data
- Generation of digital relief model
- Forest mapping
- Contactless forest inventory and monitoring



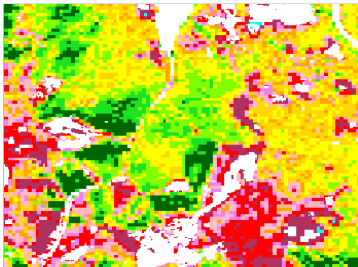
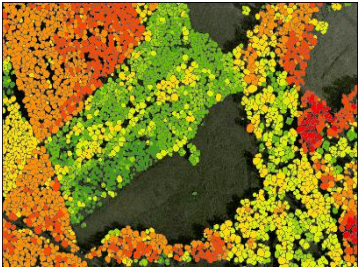
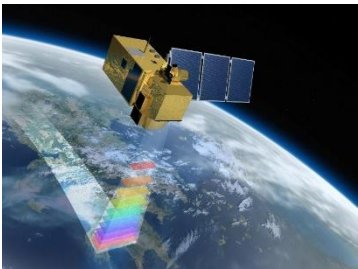
SCERIN (South Central and Eastern European Regional Information Network)

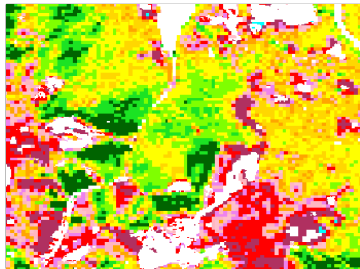
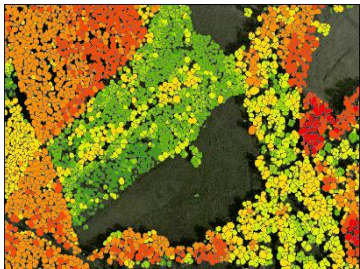
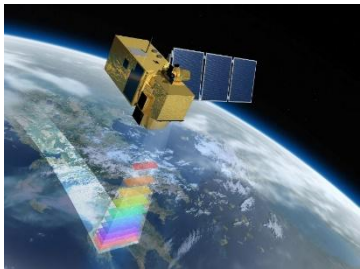
GTOS (Global Terrestrial Observing System); GOFCC-GOLD (Global Observation of Forest and Land Cover Dynamics)

- ...promote and coordinate the production and provision of Earth System observations
- ...work together with the regional forest and land management agencies to ensure continuous, high quality observations for operational and management applications, facilitating feasible and sustainable natural resources management practices

NFC (National Forest Centre)

- ...provides the forest monitoring and mensuration at a national, regional and local level. In order to increase the economic and environmental efficiency of monitoring, the NFC continuously investigates and develops innovative methods based on RS, which minimizes the need for physically and economically demanding ground measurements. Subsequently, the NFC simultaneously started to work on developing their own software solution "reFLex" (remote Forest Land explorer) focusing on forest monitoring directly from RS data.



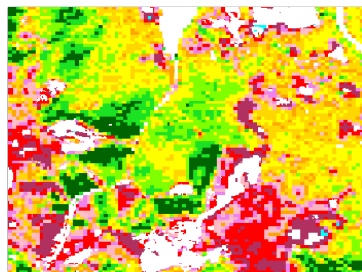
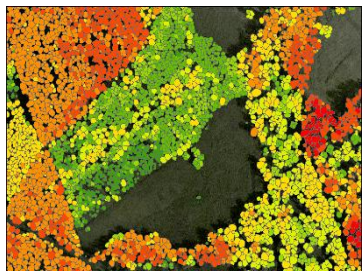
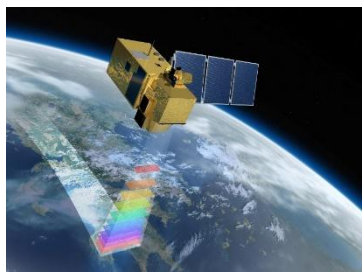


A. what SCERIN can contribute to your country and organization

- Networking and potential of cooperation with international experts
 - Building of methodology, reports, scientific papers, IT solutions
 - Building of project consortium (H2020, Intereg, ESA...)
 - Building of international datasets

B. what is the contribution to SCERIN of your country and organization

- Our country/organization is credible partner for cooperation at everything from part A
- Especially in the area:
 - Methodology/Practice/Cost analyse of different type of forest monitoring and mensuration (terrestrial, aerial level)
 - Implementation of innovations, software products and web map services into forestry practice
 - Forest management plane preparation



Using of GIS and RS for forest mapping, monitoring and mensuration in Slovakia



**Ivan SAČKOV, Tomáš BUCHA, Ivan BARKA,
Ľuboš HALVOŇ**
sackov@nlcsk.org

NATIONAL FOREST CENTRE
T. G. Masaryka 22
960 92 Zvolen
Slovakia