SCERIN Programs Inventory Panel

1. **Bulgaria**
2. **Croatia**
3. **Czech Republic**
4. Greece
5. Hungary
6. FYR Macedonia
7. **Moldova**
8. **Poland**
9. **Romania**
10. Serbia
11. Slovakia
12. **Slovenia**
13. Ukraine

SRTI-BAS, Bulgaria

Space Research and Technology Institute – Bulgarian Academy of Sciences (SRTI-BAS)			
Project/Program	**Sponsor**	**Duration**	**Support** *(approximate funding level)*
EEOBSS: Education in Earth observation for Bulgarian secondary schools	ESA-PECS	2016-2018 24 months	~50k Euro
Testing Sentinel-2 vegetation indices for the assessment of the state of winter crops in Bulgaria (TS2AgroBg)	ESA-PECS	2016-2018 24 months	~200k Euro
GEO-CRADLE: Coordinating and integRating state-of-the-art Earth Observation Activities in the regions of North Africa, Middle East, and Balkans and Developing Links with GEO related initiatives towards GEOSS	European Comission Horizon 2020	30 months	1 of 19 partner organizations http://geocradle.eu/en/

Bulgaria, National Institute of Geophysics, Geodesy and Geography - Bulgarian Academy of Sciences

Rumiana Vatseva

Project/Program	Sponsor	Duration	Support (approximate funding level)
FP7-PEOPLE-2009-IRSES (Grant No 247608) IGIT - "Integrated geo-spatial information technology and its application to resource and environmental management towards the GEOSS"	EU	2011-2015	410,400 € L
FP7-ENV-2010 Balkan GEO Network (Grant No 265176) BalkanGEONet – Towards Inclusion of Balkan Countries into Global Earth Observation Initiatives	EU	2010-2013	1,200,000 € XL
COST ES1309 Innovative optical Tools for proximal sensing of ecophysiological processes (OPTIMISE)	EU	2015-2018	
COST TD1202 “Mapping and the citizen sensor”	EU	2013-2016	
Mapping urban green spaces based on remote sensing data: Case studies in Bulgaria and Slovakia	Bulgarian Academy of Sciences & Slovak Academy of Sciences	2015-2017	
Change Detection of Land Use and Land Cover in Coastal Zones of China (Fujian) and Bulgaria Using Multitemporal and Multiscale Remote Sensing Data	Bilateral science-technical cooperation between Bulgaria and People Republic of China	2008-2011	

Croatia, Faculty of Geodesy, University of Zagreb

Rumora Luka, Medak Damir, Pilaš Ivan

Geospatial monitoring of green Infrastructure by means of terrestrial, airborne and satellite imagery.

Goals:

- analyze and evaluate impact of particular imagery source (satellite, airborne, terrestrial) for monitoring and detecting Green Infrastructure at different scales
- use airborne and terrestrial high resolution imagery to validate and interpolate satellite imagery for usage in other urban areas
- detecting different types of Green Infrastructure on different scales (different imagery source);
- compare spectral footprint of particular type on different scales
- detect changes in urban vegetation areas through time on different scales
- research possibilities in detecting critical urban zones, like heat islands

Duration: 4 years (17-20)

Supported by Croatian scientific foundation

Relevant GR Projects

Project	Sponsor	Duration	Support/fund
ECOPOTENTIAL: improving future ecosystem benefits through earth observations	European Union's Horizon 2020 Research and Innovation Programme	2015-2019	14.874.340 Euros
GEO-CRADLE - Coordinating and integRating state-of-the-art Earth Observation Activities in the regions of North Africa, Middle East, and Balkans and Developing Links with GEO related initiatives towards GEOSS	European Union's Horizon 2020 Research and Innovation Programme	2016-2018	2.910.800 Euros
BEYOND - Building EGNSS capacity On EU & Neighboring multimodal Domains	FP7-REGPOT-2012-2013-1	3 years (2013-2016)	2,305,650 €

Jana Albrechtová, Charles University, Faculty of Science (FSCU), Prague, Czech Republic
Collaboration with: Lucie Kupkova, Dept. Applied Geoinformatics and Cartography FSCU
Petr Lukes, Lucie Homolova, Czechglobe; Petya Campbell – NASA/GSFC, UMBC

Project/Program	Sponsor	Duration	Support (funding level)

1. **"New spectral insight into biogeochemistry of small forested watersheds"** (Czech Grant Agency GACR 17-05743S), 2017-2019, PI - Lucie Homolova (CzechGlobe), co-PIs Zuzana Lhotakova (FSCU), Veronika Kopackova (Czech Geological Survey), small-medium

2. ***A) Characterization of leaf optical properties to anatomical structure of photosynthetic apparatus in connection with effects of environmental factors.***

   B) Use of leaf spectral properties for evaluation of tree physiological status. (Ministry of Education, Youth and Sports, NPUI LO1417), 2015-2019, Co-Pi Jana Albrechtova, medium

GlobalChange Research Institute CAS, Czech Republic

F. Zemek, O.Brovkina

1) Goals, programs and current priorities /projects *(key programs, capabilities of the institution(s) you represent)* – see next slides

2) Benefit(s) and requirement(s) with regard to SCERIN *(outcomes and needs)*

- joined activities, collaborations, other benefit(s) to your institution – establishment of collaboration between CzechGlobe and Scientific-Research Centre of Agriculture in Georgia, 2 research visits (Georgia – Brno)
- contribution(s) to SCERIN – participation in manuscript preparation

3) Future objectives of your institution/program and the role of SCERIN *(how can SCERIN contribute to your activities better)* - Agriculture, Forestry, Urban ecosystems

4) Remark(s) – CG conference

Recent projects - Department of Remote sensing

- HYPER – HyPlant Processing Chain, ESA – FLEX
- Mapping biochemical and biophysical indicators with airborne hyperspectral and chlorophyll fluorescence sensors, Ministry of Education, Youth and Sports CR
- Red Edge Positioning Techniques for Earth Observation Optical Mission, ESA
- Prognosis, indication of risk and prevention of natural fires and in the context of the current state of knowledge and conditions of climate change, Ministry of Interior CR
- OptiAgro - Optimizing the utilization of the production potential of the soil by locally targeted agro-technology, Ministry of Agriculture CR

CzechGlobe remote sensing infrastructure

VNIR

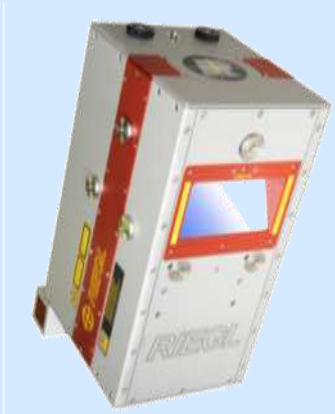
CASI-1500

SASI-600

Thermal

TASI-600

Laser scanning



Riegl LMS – Q780

SECOND CALL

CzechGlobe

INTERNATIONAL CONFERENCE

QUO VADITIS AGRICULTURE, FORESTRY AND SOCIETY UNDER GLOBAL CHANGE?

2nd – 4th October 2017

In Velké Karlovice in the Beskid Mountains,

Czech Republic

CONFERENCE PROFESSIONAL SECTIONS:

1/ GLOBAL CHANGE AND AGRICULTURE,

2/ GLOBAL CHANGE AND FORESTRY,

3/ HUMAN DIMENSION OF GLOBAL CHANGE IMPACTS

http://czechglobe.cz/en/quo_vaditis_en/

http://hydap.czechglobe.cz/

http://mapserver.czechglobe.cz/

brovkina.o@czechglobe.cz
zemek.f@czechglobe.cz

MACEDONIA: Ivica Milevski, Institute of Geography - State University in Skopje

- Institute of Geography in Skopje is 90 years old – one of the oldest in the country.
- Our Institute has 4 courses and one is GIS with RS with about 20-30 students yearly as well as master studies, while PhD studies will start next year.
- Unfortunately our staff is only 24 persons, 13 professors, 9 assistants and 2 of technical staff.
- There are only 2 researchers which work on Remote Sensing on the Institute (I.M. and S.G.), but fortunately few students finishing its graduation in RS and will continue with master degree (as young researches).
- In the State University there are 3 other faculties with researches in RS (Faculty of Forestry, Civil Engineering and Agriculture).

Country_panel_

- We try to joint our efforts toward better cooperation and use of resources.
- Main topics of RS research in our Institute are natural hazards assessments (excess erosion, landslides, floods, forest fires), land cover changes, geomorphological and hydrological interpretation and modelling…
- We have several bilateral projects with Bulgaria (modelling of potential natural hazards with the help of RS) and we prepare with the same with Serbia.
- We have also the project with ATOMKI from Debrecen about glaciation reconstruction where RS will be used in huge extent.
- Proposals: about desertification on the south Balkan Peninsula, and abandoning of (arable) land…?
- Land cover changes vs natural hazards frequency and severity (CORINE, MODIS, NDVI…).

Republic of Moldova, Institute of Ecology and Geography, Iurii Bejan

1) Direction of investigations of the Institute:
- •Dynamics and evolution of natural ecosystems;
- •Integrated monitoring of environment and ecological restoration.

2) We are interested in using Landsat-8 and Sentinel-2 data, but also the knowledge of the processing methodology, in land use change monitoring.
Contributions to SCERIN will be the extension of the study Land cover changes and natural hazards on the territory of the Republic of Moldova.

3) Future objectives of the Institute (in corroboration with the SCERIN program):
- •Studying of dynamics and emphasizing of tendencies of modifications of ecosystems components under natural and anthropogenic factors' influence.
- •Evaluation of factors which can cause appearance of geoecological disasters.
- •Optimization of geosystems structure to ensure their stable functionality
- •Creation of informational database for land monitoring (CORINE LCLUC).
- •Training of scientific personnel of high qualification.

RS projects carried out now by Space Research Centre (CBK PAN), Poland

Main (most exciting ☺)!

- 1. AF3 - Advance Fire Fighting, EC FP7, 2014 - 2017, huge project (100%)
- 2. S2GLC Sentinel-2 classification for Global Land Cover, ESA, 2016-2017, middle size project (100%, CBK PAN)
- 3. Crop detection using multi-temporal SAR data, GUS (Statistical Office), 2015, 2016, 2017, middle size project (100%)
- 4. detection of poppy fields (in Poland and in Asian countries), ESA, 2016-2017, middle size (100%),

M. Nita, Romania

Project/Program	Sponsor	Duration	Support (funding level)
BearConnect Evaluating functional connectivity and factors influencing brown bear distribution, movements, and effective dispersal in current and future landscapes scenarios	http://www.biodiversa.org/	03-2017 to 02-2020	Total grant: € 1,397,615
Long-term forest degradation in Romania	Romanian Government	10-2017 to 10-2020	Total grant: € 100,00

POLAND: Institute of Geodesy and Cartography: Remote Sensing Center

http://www.igik.edu.pl

MONIKA TOMASZEWSKA

Research topics:

➢ Calibration and Validation of Earth Observation data:

- ESA Sentinel-1 Soil Moisture Product,
- Land Products Validation and Characterization in support to Proba-V, Sentinel -2 & 3 missions

➢ Agriculture / Drought:

- Yield forecasting, yield estimation in Europe
- Drought detection, Autumn conditions for winter crops and Analysis of snow cover
- Biomass and soil moisture assessment

➢ Bioenergy and carbon balance:

- Carbon balance and its variation and trends analysis
- Biomass potential and possibilities of energetic plants cultivation
- Agriculture – water pollution

➢ Forests:

- GlobBiomass project: characterize and to reduce uncertainties of forest aboveground biomass estimates
- Mapping the actual forest extent and structure
- Damage and windthrow assessment of mountainous (Tatra) forests
- impacts of winter warming events and air pollution on forest ecosystems

➢ Land-cover:

- production of all CORINE LC inventories: CLC1990, CLC2000, CLC02006 and CLC2012.
- verification and enhancement of the 5 high resolution layers (HRLs)

➢ Others:

- Changes of cloudiness in Poland
- Effect of climatic changes on grassland growth, its water conditions and biomass
- Ground deformations, Fires ,Floods

National activities

The National Centre for Research and Development Funded Projects

National Science Centre Funded projects

Foundation for Polish Science Funded projects

Scientific expertises

International activities

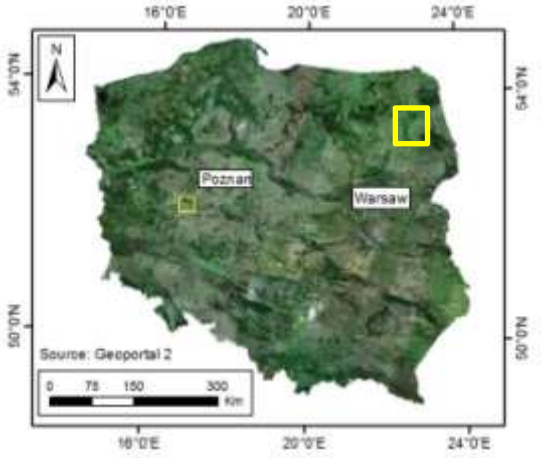
European Union Framework Projects

Polish-Norwegian Research Programme

Cooperation with: German Aerospace Center, Japan Aerospace Exploration Agency

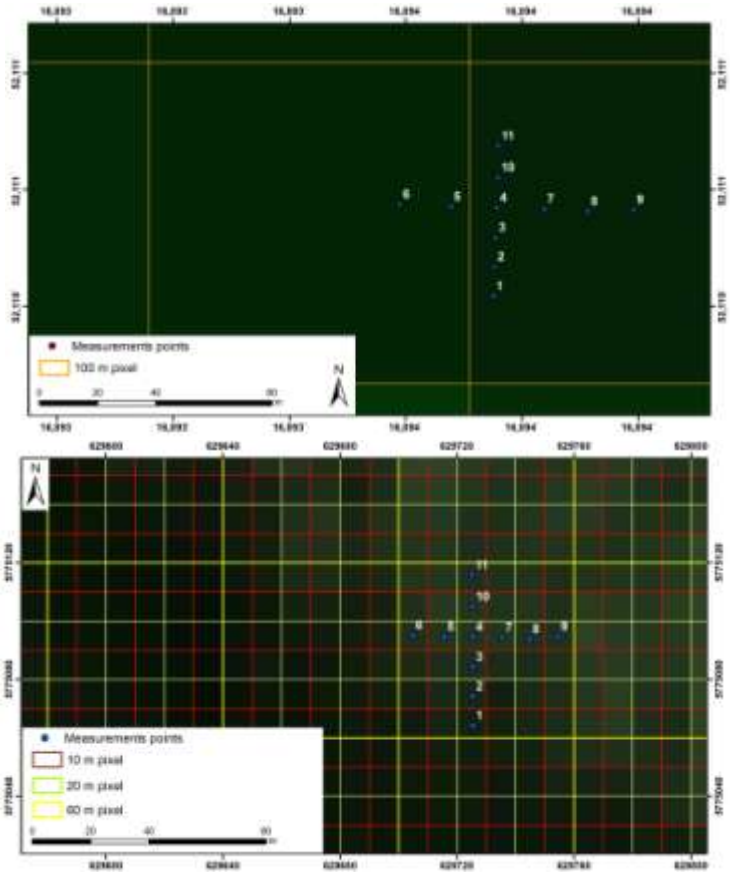
European Space Agency Funded projects

Land Products Validation and Characterisation in support to Proba-V, Sentinel-2 and Sentinel-3 missions



The main aim is to support calibration and validation activites related to biophisical products derived forom new ESA optical sensors.

Pixel's transect Proba-V (upper), S-2 (lower)



Set of ground measurements includes:

- Spectral responses by the ASD FieldSpec 4 Hi-Res,
- Leaf Area Index (LAI) (with LAI 2200 Plant Canopy Analyser),
- APAR (with AccuPar instrument),
- Soil moisture (with TRIME Field Measurement Devices)
- Wet and dry biomass (in a laboratory, from samples collected at measurement plots from the area of 0.5 x 0.5 m)
- Height of vegetation
- Carbon balance (with chamber method and Eddy-Covariance method)
- Type of vegetation cover and its development stage.

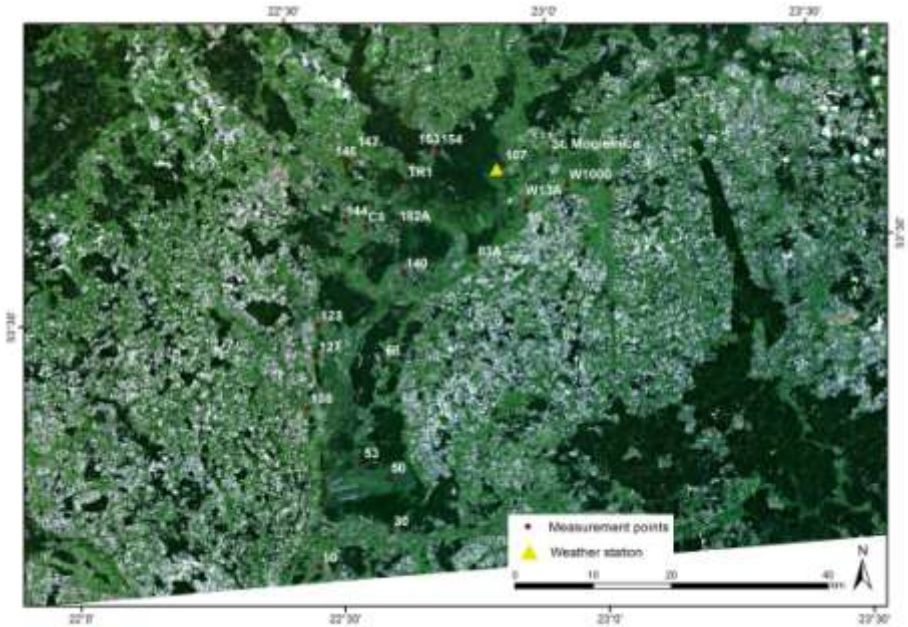
IGiK http://www.igik.edu.pl

Test sites areas (LPVP)

Agriculture test site

Sentinel-2 06-05-2016 RGB 432

Grasslands area at the wetlands



- The agriculture test site: at the western part of Poland, while the grasslands area at the wetlands at the eastern part of Poland.

- The choice of these locations has been done in regard to the knowledge about the test sites where other measurements have been done in the past. Also the agriculture plots are large and there is the variety of crop types.

ASAP – EO data based Service for Agriculture

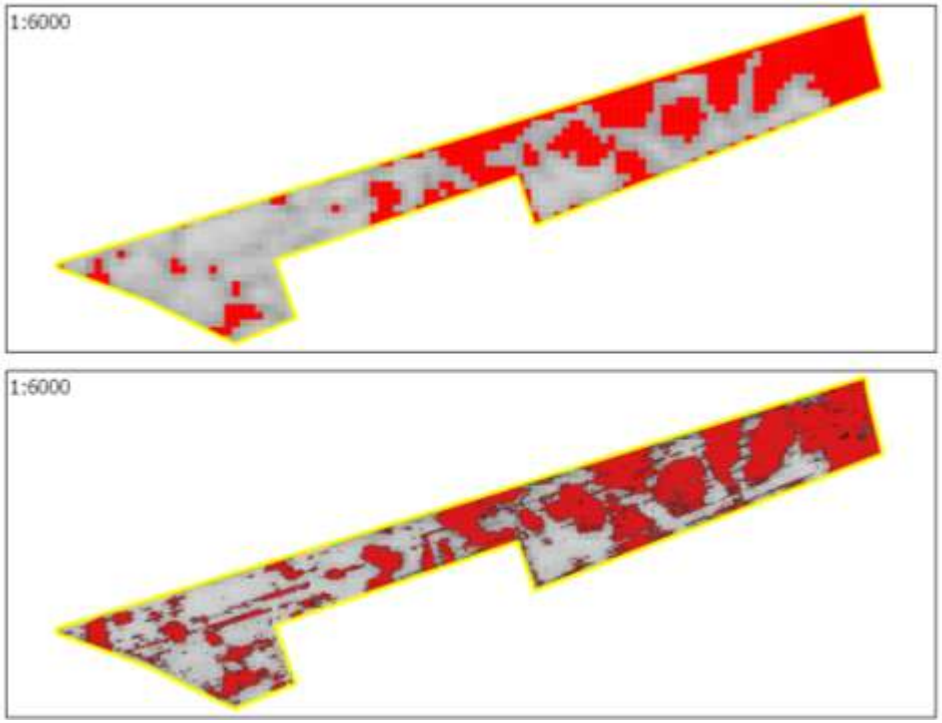
Title **“ASAP – Advanced Sustainable Agricultural Production”**

Aims The proposed Agricultural Service is designed as a ‘One-stop-shop’ Service for Farmers and Owners of Agriculture Production Companies (and other various Users) providing information during the growing season in order to increase the efficiency of the management of the fields, and to obtain the highest potential yield with the optimal dosage of fertilizers.

www.asap.farmer.pl

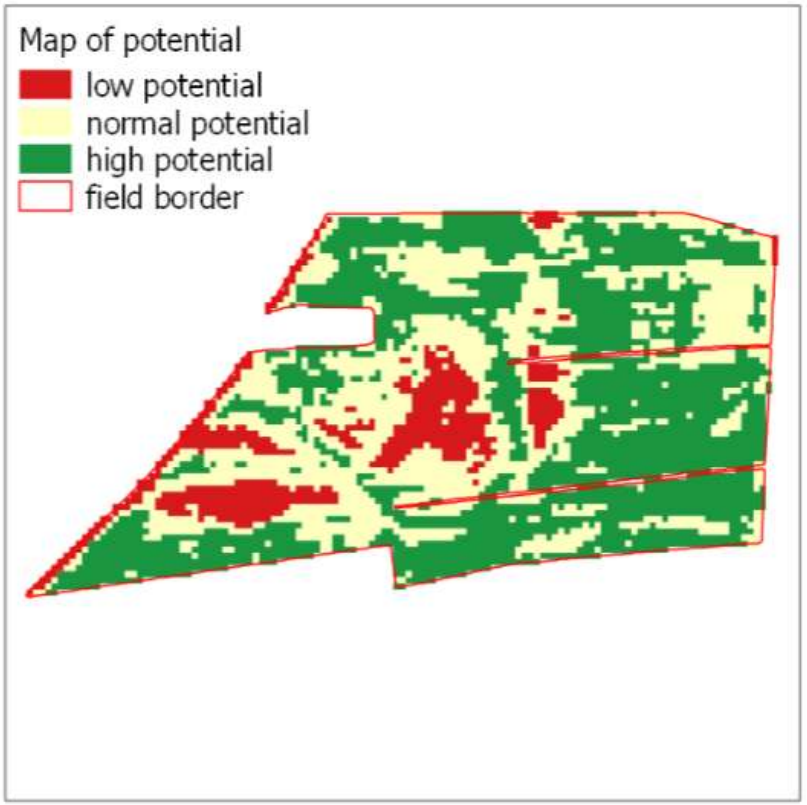
ASAP – EO data based Service for Agriculture

Map of frozen vegetation



Comparison of map of frozen vegetation delivered on the basis of aerial data (bottom) and satellite data (top). These maps were also compared with the in-situ observations from insurance company.

Map of yield potential



Model developed on the basis of correlation between the NDVI values in the end of the growing season and the map of yield derived from the computer installed in the farming vehicle.

Romania, Transilvania University of Brasov

Assoc.Prof. Mihai Daniel Nita

1) Goals, programs and current priorities /projects

Goals

Increase the capacity of the University to integrate students in the economic sector by implementing

Key programs

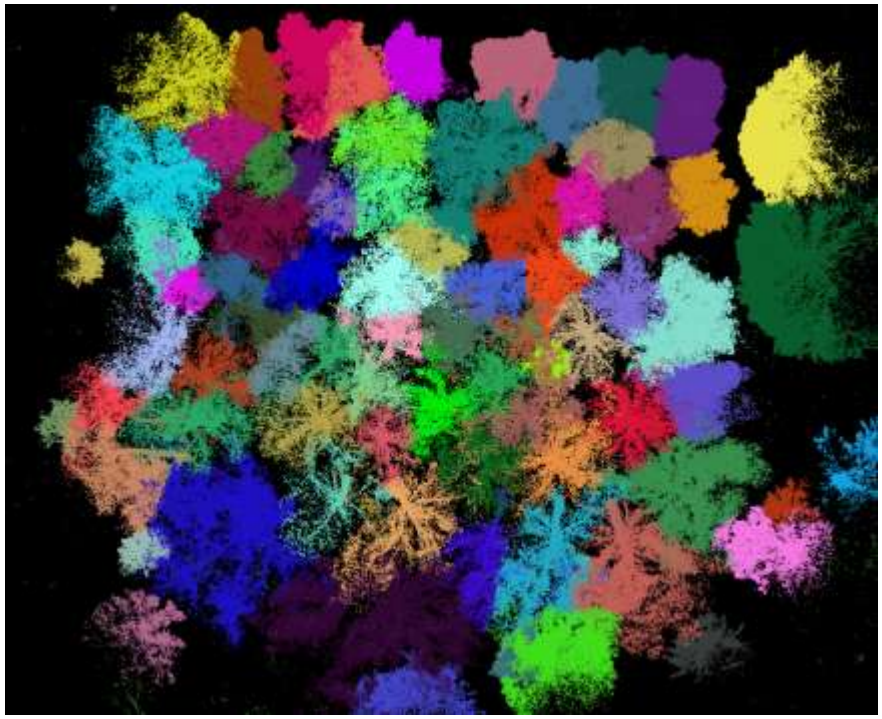
COREHABS
BEARCONNECT
LONGFORO

Capabilities of the institution

Geomatics Laboratory
Capacity for field inventory

Capabilities of the institution

Site Validation



Romania, Transilvania University of Brasov

Assoc.Prof. Mihai Daniel Nita

2) Benefit(s) and requirement(s) with regard to SCERIN *(outcomes and needs)*

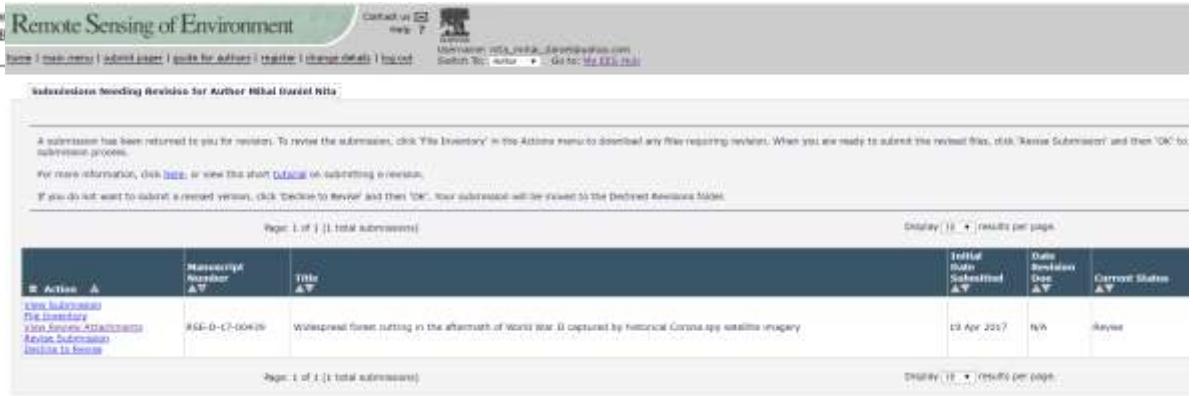
- joined activities, collaborations, other benefit(s) to your institution
  - Fulbright Visiting Professor
  - Joint proposal with Volker Radeloff

- contribution(s) to SCERIN

Historical forest management in Romania is imposing strong legacies on contemporary forests and their management

Catalina Munteanu [a,*], Mihai Daniel Nita [b], Ioan Vasile Abrudan [b], Volker C. Radeloff [a]

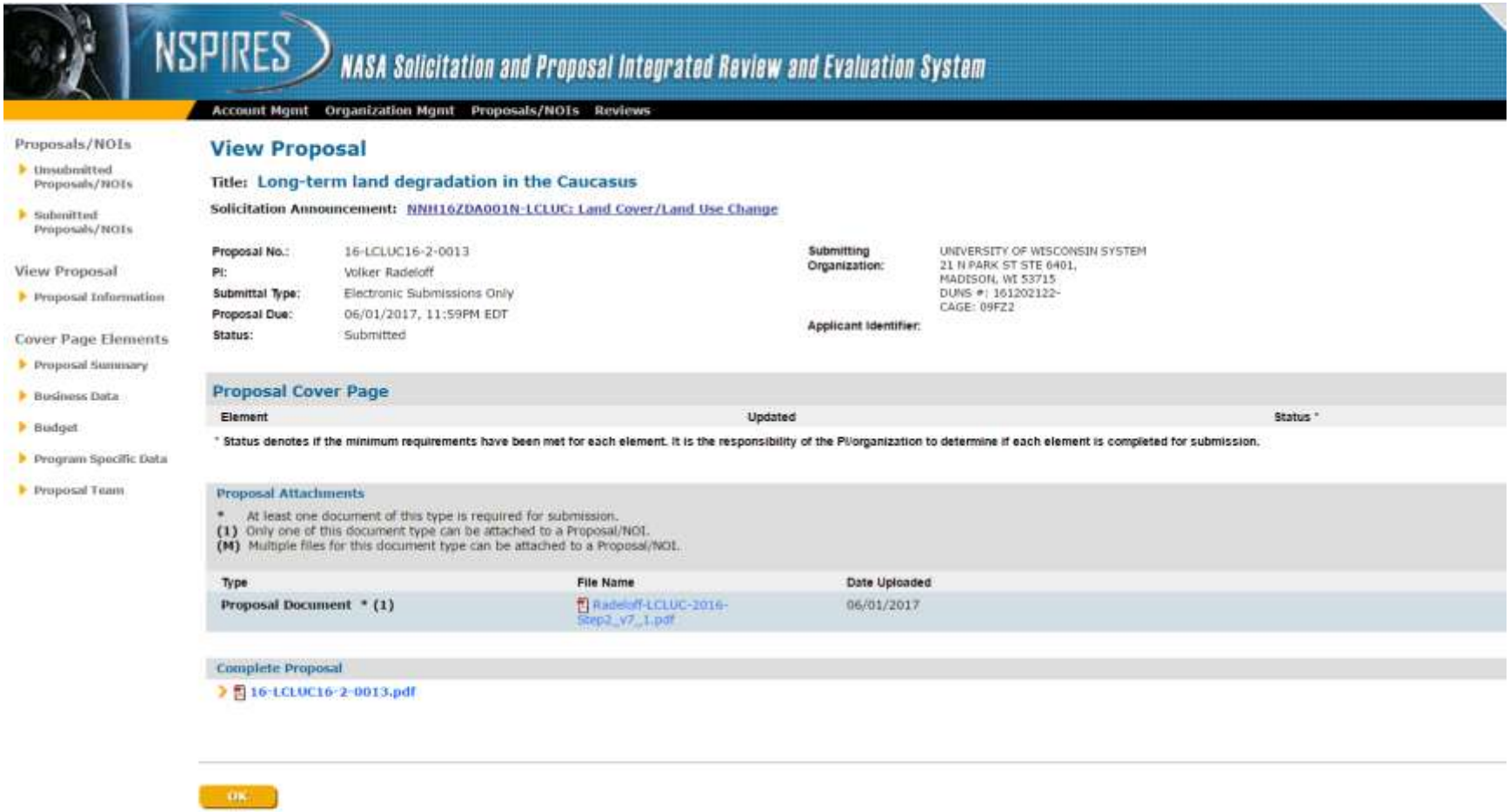
[a] SILVIS Lab, Department of Forest and Wildlife Ecology, University of Wisconsin-Madison
[b] Faculty of Silviculture and Forest Engineering, Transilvania University of Brasov, Sirul



Romania, Transilvania University of Brasov

Assoc.Prof. Mihai Daniel Nita

3) Future objectives of your institution/program and the role of SCERIN



Romania, Transilvania University of Brasov

Assoc.Prof. Mihai Daniel Nita

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4) Remark(s)

1. *Enhance the collaborations on projects and papers*
2. *Increase the visibility of our institutions through SCERIN*

Serbia, University of Novi Sad

Minučer Mesaroš

Project/Program	Sponsor	Duration	Support (approximate funding level) EUR
Improvement of drought and excess water monitoring for supporting water management and mitigation of risks related to extreme weather conditions	Interreg–Instrument for Pre-accession Assistance (IPA) Cross-border Cooperation Programme Hungary–Serbia	2017-2019	700 000

2) Benefit(s) and requirement(s) with regard to SCERIN *(outcomes and needs)*

✓*creating a curriculum for 4 year B.Sc degree in geographic information science, joint program with some SCERIN member institutions, inputs on experiences, recommendations*

✓*facilitate teaching staff and student mobility*

✓*Information about research grants opportunities for students and professors*

✓*joint projects and publications*

4) Remark(s)

A scientific conference on LCLUC in Novi Sad 2019 ?

Institute of Landscape Ecology
Slovak Academy of Sciences

Research

Landscape ecology

- Landscape mapping and classification
- Landcover mapping and analysis
- Landscape changes, landscape processes
- Landscape modelling
- Landscape planning and management
- Landscape protection

Biodiversity research

Nature conservation

Long-term ecological reserach

Publication activities

Education

Networking and scientific events

Slovenia, Research Centre, Slovenian academy of Sciences, Arts & CO Space-SI , *Tatjana Veljanovski, Krištof Oštir*

1) Goals, programs and current priorities /projects *(key programs, capabilities of the institution(s) you represent)*

- *Small but leading research group for remote sensing in Slovenia, with over 30 years of tradition.*
- *Active in national and European projects (EU FP projects, ESA PECS projects, INTERREG projects, not successful in EU H2020 projects)*
- *Active and enhanced cooperation with national institutions: forestry , agriculture, civil protection.*

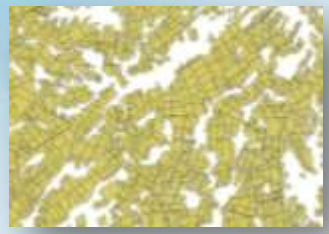
2) Benefit(s) and requirement(s) with regard to SCERIN *(outcomes and needs)*

- joined activities, collaborations, other benefit(s) to your institution
- contribution(s) to SCERIN
  - *Interested in joined activities in regional monitoring, with potential and enhanced field/aerial data exchange for satellite products validation capabilities, knowledge exchange.*
  - *Interests in calibration fields developement in the region (if any) and strenghtening the joinment to calibration /validation networks.*
  - *Knowledge and practice exchange in regional monitoring and sateliite data time series analysis, multitemporal classifications and similar.*

3) Future objectives of your institution/program and the role of SCERIN *(how can SCERIN contribute to your activities better)*

- *Slovenia would be happy to join the SCERIN network more intensively and benefit of University of Maryland and NASA netwoking and knowledge, as well as regional connections and knowledge.*

4) Remark(s) *(your 1-2 additional points of importance, if any)*



Space Research Institute (Ukraine)

Mykola Lavreniuk, Mykola Meretskyi

Space Research Institute, Ukraine

Project/Program	Sponsor	Duration	Support (funding level)
Sigma	Euro Commicion	2013-2017	K200$
Sen2Agri	ESA	2016-2017	K45€

Joint Experiment of Crop Assessment and Monitoring

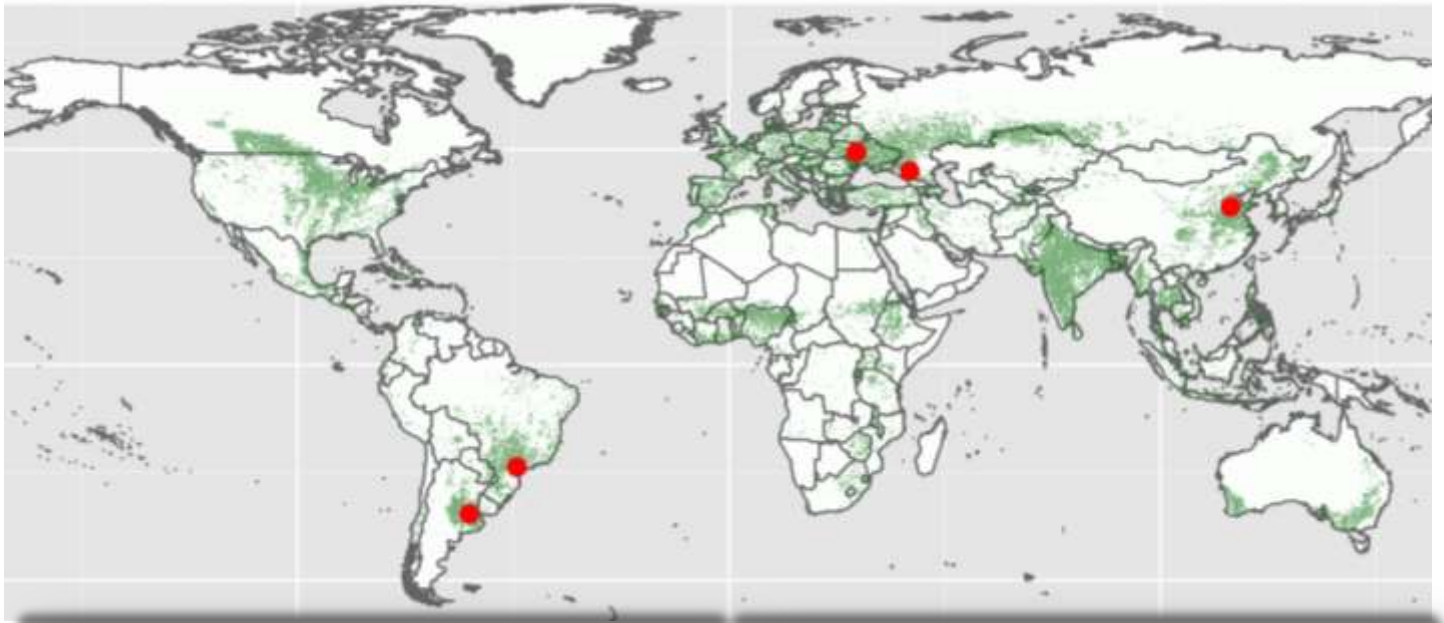
GROUP ON EARTH OBSERVATIONS

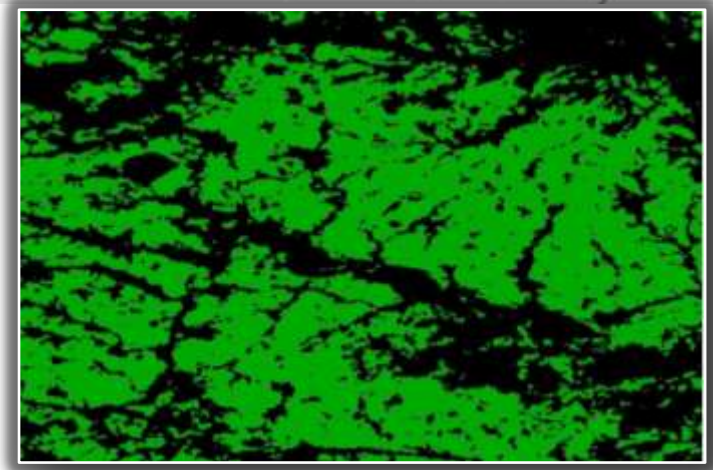
JECAM GOALS

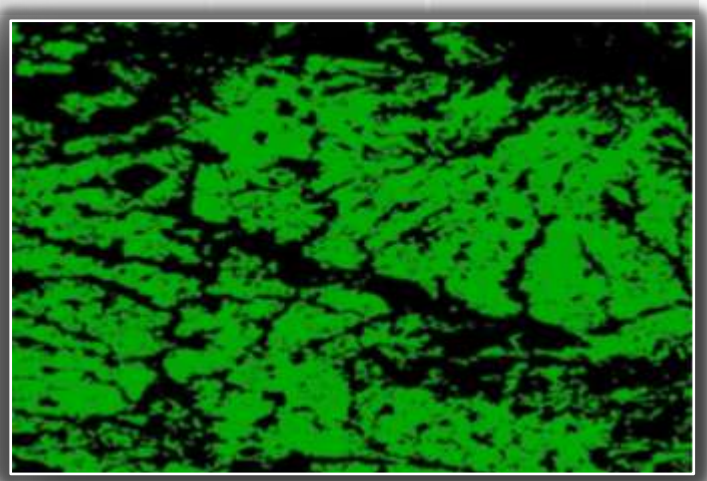
The overarching goal of JECAM is to reach a convergence of approaches, develop monitoring and reporting protocols and best practices for a variety of global agricultural systems.

JECAM experiments

site	method	OA
Ukraine	iki	93.62
Ukraine	inta	96.58
Ukraine	radi	95.91
Ukraine	sri	98.04
Ukraine	ucl	97.58
Argentina	iki	90.74
Argentina	inta	92.66
Argentina	radi	90.52
Argentina	sri	95.49
Argentina	ucl	85.33
Brazil	iki	90.26
Brazil	inta	89.54
Brazil	radi	84.45
Brazil	sri	91.60
Brazil	ucl	91.15
China	iki	90.58
China	inta	91.23
China	radi	90.58
China	sri	90.58
China	ucl	88.31
Russia	iki	98.19
Russia	inta	95.40
Russia	radi	94.48
Russia	sri	98.38
Russia	ucl	95.21







SPOT5 Take5 experiment

- SPOT5 as a simulator of the image time series for
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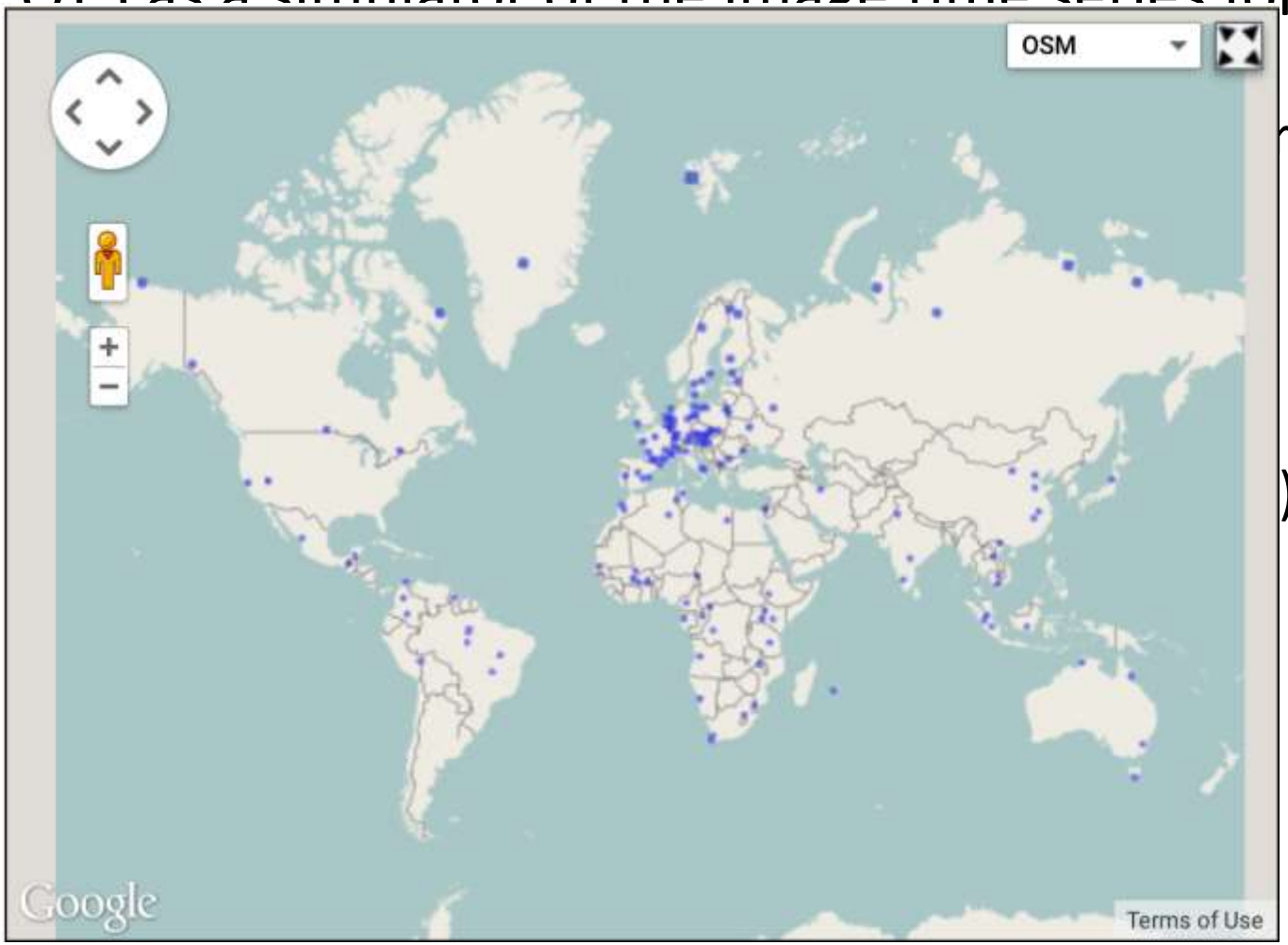
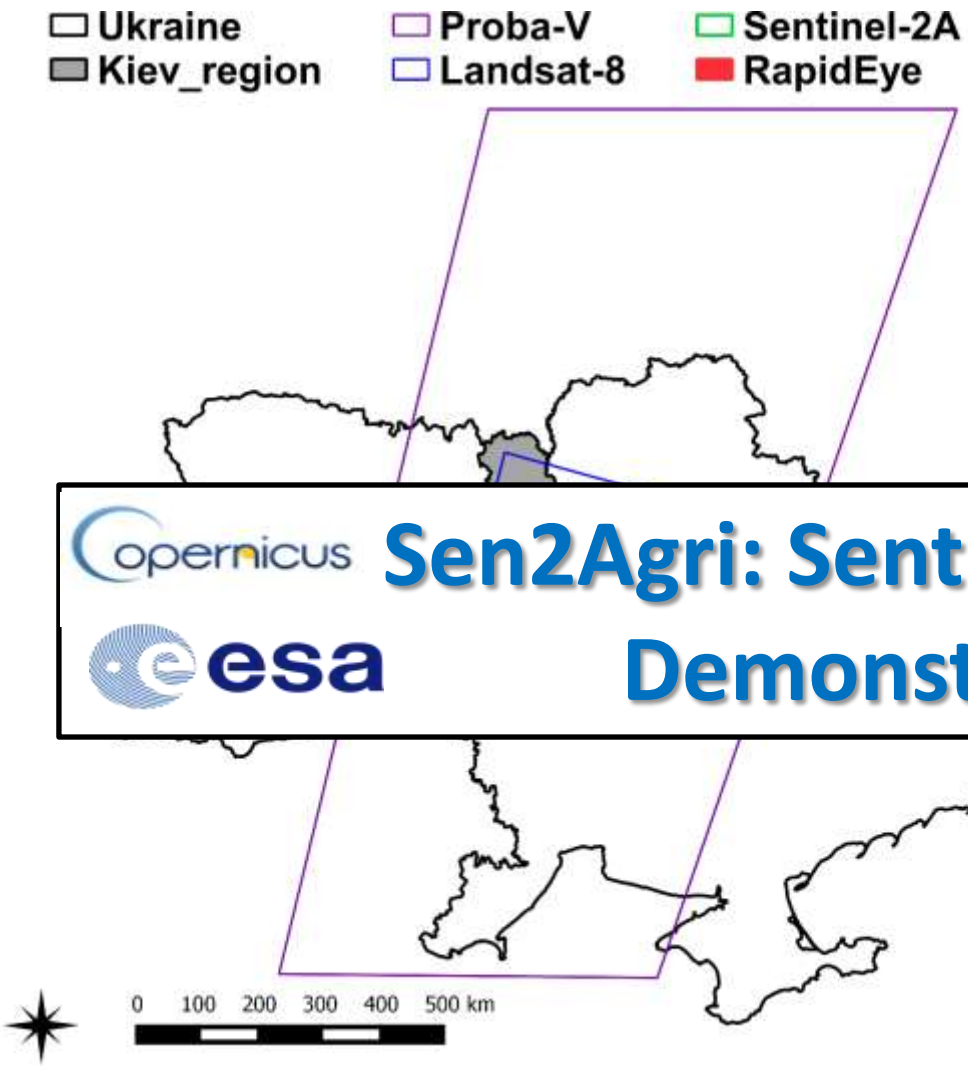


Big Satellite Data – optical



RapidEye:

- Swath Width – 77 km
- Revisit time: Daily (off-nadir) / 5.5 days (at nadir)
- **Cost – non free**

Sentinel-2:

- Swath Width – 100 km
- Revisit time: 10 days

Copernicus esa **Sen2Agri: Sentinel-2 National level Demonstration**

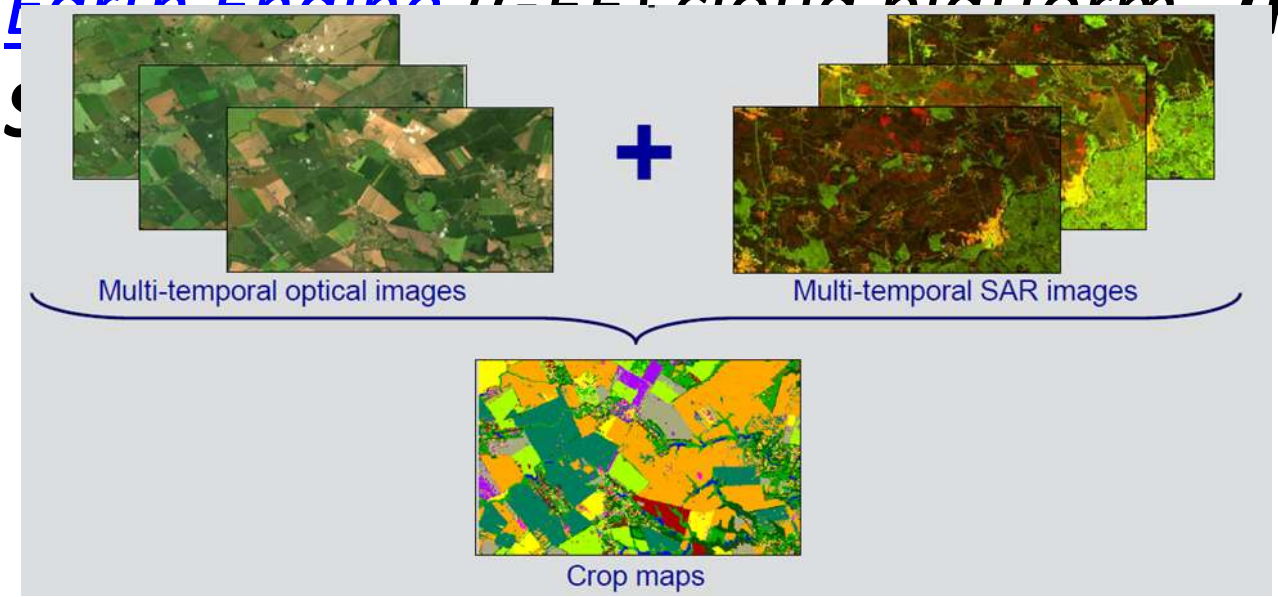
- **Cost – free**

Proba-V:

- Swath Width – 2250 km (full field of view)
- **Cost – free**

GEE Award, 2016

- **Google Earth Engine Research Award** 2016
  "Land cover mapping for big areas with use of optical and SAR data on the basis of Google Earth Engine (GEE) cloud platform" **(Prof. A. S**



Thank you!