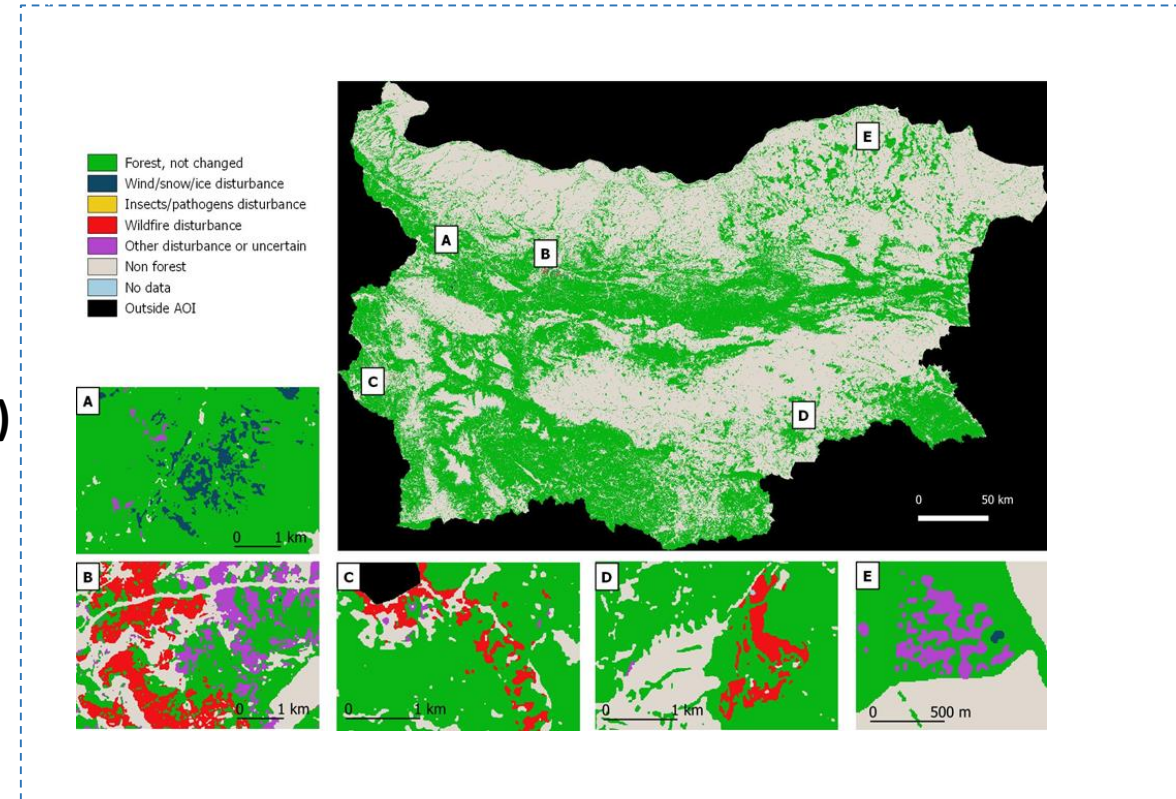


Country: Bulgaria

Team : Rumiana Vatseva, Lachezar Filchev

Remote Sensing priorities or 'hot topics'

- **Optical Earth Observation measurements of ecophysiology (SENSECO)** - to ensure that the practices of optical Earth Observation measurements of ecophysiology are compatible at various scales, enabling synergistic multi-sensor use and transferability and to guarantee the transfer and knowledge exchange on scaling methods in a European context.
- **Modular Energy Islands (MODENERLANDS)**
- **Forest Disturbance Inventory using Remote Sensing (FORES)**
 - The main objective is to develop and validate a set of remote sensing-based forest disturbance products, i.e. Forest disturbance type (FDIT) map, Forest disturbance severity (FDIS) map, and Post-fire regrowth (PFIR) map.
- The **National Scientific Program “Intelligent Agriculture”** aims to reduce costs for farmers, improve soil management and water quality, limit the use of fertilizers and pesticides, reduce greenhouse gas emissions, improve biodiversity and create a healthier environment for farmers and citizens through targeted scientific and applied research on the application of artificial intelligence in agriculture.



Projects/ Success stories / Good practices

Achieved

Topic: FoReS

Main objectives: The main objective of the activity is to develop and validate a set of remote sensing-based forest disturbance products, i.e. Forest disturbance type (FDIT) map, Forest disturbance severity (FDIS) map, and Post-fire regrowth (PFIR) map.

Geographical dimension: Bulgaria

Synergies: EFi, Water Framework Directive

NETWORKING OPPORTUNITIES: Evaluation of the forest disturbance types and severity in the MedRIn and SCERIN network of countries; in-situ data mapped for forest disturbances across the networks; mapping exercise of the forest disturbance studies and projects in the members of the networks

Future plans

- *Topic:* Modular energy islands (MODENERLANDS)
- *Main objectives:* To work on the concept of Modular Energy Island acting as a platform to maximise collection and conversion of the diverse renewable energy sources available and efficiently transfer them to the network.
- *Geographical dimension:* Black Sea region
- *Synergies:* Climate Change EU strategy, renewable energy
- **NETWORKING OPPORTUNITIES between MedRIN and SCERIN:** Assessment and geographic distribution of the renewable energy resources; Energy Islands strategies for climate change adaptation through real-world case studies.

Country: Czech Republic



SCERIN-10



FACULTY OF SCIENCE
Charles University

Teams:

Charles University: Jana Albrechtová, Lucie Kupková, Zuzana Lhotáková

CzechGlobe: František Zemek, Olga Brovkina, Miroslav Píkl, Petr Lukeš

Remote Sensing ‘hot topics’:

- Adverse environmental risks on production and non-production functions of agricultural ecosystems (*SCERIN-10 presentation of P. Lukeš, 06/26*)
- Urban ecosystem from multisource/scale RS data – surface heating islands, human perception, functions of urban greenery (*SCERIN-10 presentations of O. Brovkina, F. Zemek, M. Píkl, 06/27*)
- Monitoring of natural and anthropogenic disturbances (*SCERIN-10 presentations of CzechGlobe members 06/26*)
- Retrieval of plant functional traits through time series analysis of satellite observations (*SCERIN-10 presentation of P. Lukeš, 06/26*)
- LCLUC impact on local hydrology and climate in the Krkonoše Mts. National Park (*SCERIN-10 presentation of L. Kupkova, 06/26*)

Country: Czech Republic

SCERIN-10

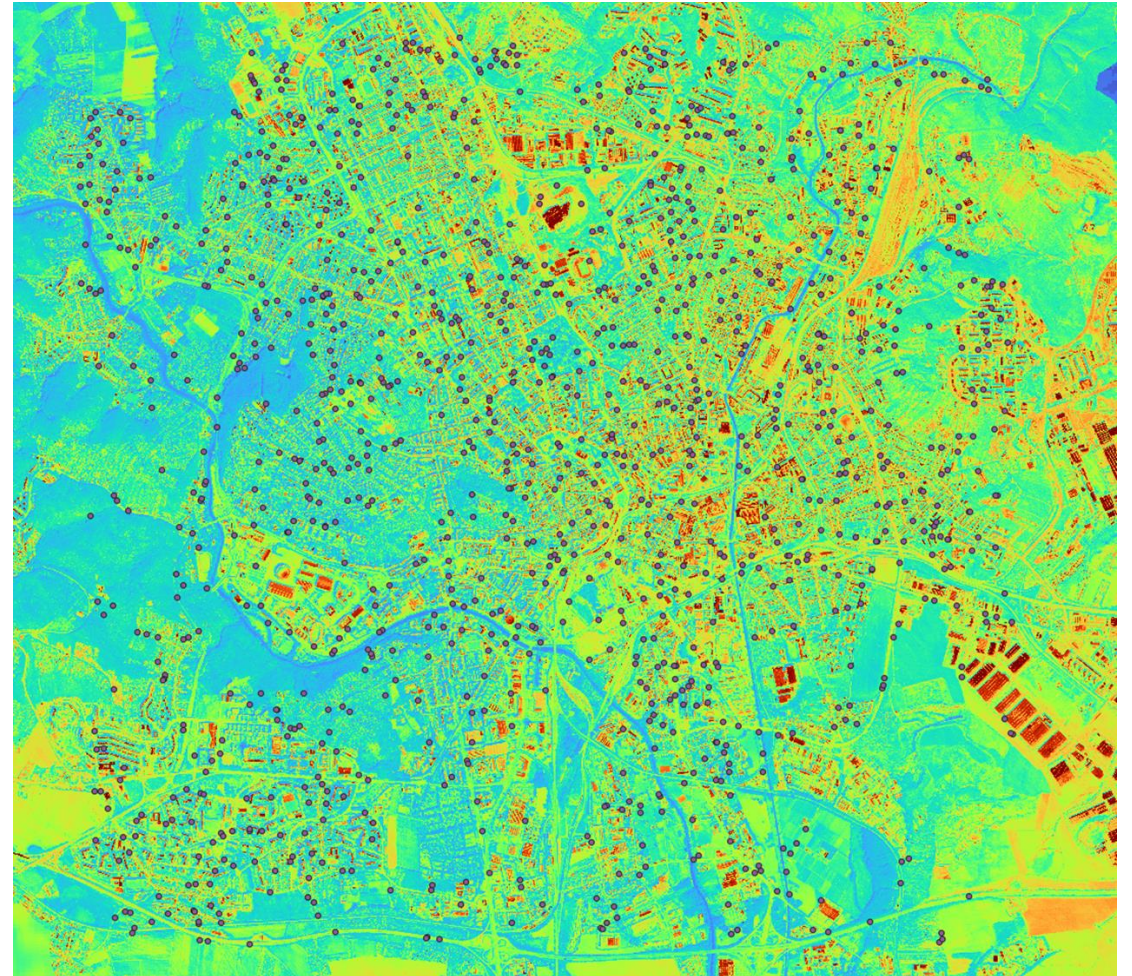
Team: František Zemek, Olga Brovkina, Miroslav Píkl



Remote Sensing 'hot topics' of CzechGlobe:

- Urban ecosystem from multisource/scale RS data – surface heating islands, human perception, functions of urban greenery
- Monitoring of natural and anthropogenic disturbances

Thermal properties of Brno city and heat perception



<http://tekob.czechglobe.cz/>

Country: Czech Republic



SCERIN-10



FACULTY OF SCIENCE
Charles University

Teams:

Charles University: Jana Albrechtová, Lucie Kupková, Zuzana Lhotáková

CzechGlobe: František Zemek, Olga Brovkina, Miroslav Píkl, Petr Lukeš

Achieved

- *Results: certified methods, proven technologies, certified maps, web portals, practical applications for Czech city municipalities ..*
- *Geographical dimension: Europe, USA;*
- *National and European infrastructure, integration into international research structures;*
- *NETWORKING OPPORTUNITIES (within a GOFC-GOLD SCERIN): scientific publications, participation at the international conferences, joined SCERIN project (USA-Czech), joined R&D projects (Ukraine-Czech, Slovenia - Czech)*

Future plans

- *Main objective: to maintain our research goal to develop innovative RS based solutions allowing to study spatio-temporal changes of ecosystems under various environmental and anthropogenic pressure.*
- *NETWORKING OPPORTUNITIES (within a GOFC-GOLD SCERIN): scientific publications, participation at the international conferences, joined scientific experiments,*
- *joined R&D project,*

Country: Czech Republic

Achieved joint SCERIN – U.S. Projects in 2022:

SCERIN-10



FACULTY OF SCIENCE
Charles University

Charles University: Jana Albrechtová, Lucie Kupková, Zuzana Lukešová
CzechGlobe: Petr Lukeš, Marián Švik



- LCLUC Program NASA (2018-2022) 80NSSC18K0337 : Prototyping MuSLI canopy Chlorophyll Content Assessment of Vegetation Function and Productivity. **PI –P. Campbell, Co-I J. Albrechtová**
- Ministry of Education Czechia (2018-2022) LTAUSA18154: Assessment of ecosystem function based on observation of vegetation quantitative parameters retrieved from data with high spatial, spectral and temporal resolution. **PI – J. Albrechtová, Co-I, P. Lukeš**, collaborators from NASA LCLUC Program: **P. Campbell UMBC / NASA and H.Epstein, University of Virginia, USA**



Land-Cover / Land-Use Change Program



Švik, M., Lukeš, P., Lhotáková, Z., Neuwirthová, E., Albrechtová, J., Campbell, P.E. and Homolová, L., 2023. Retrieving plant functional traits through time series analysis of satellite observations using machine learning methods. *International Journal of Remote Sensing*, 44(10), pp.3083-3105. <https://doi.org/10.1080/01431161.2023.2216847> © 2023 Informa UK Limited, trading as Taylor & Francis Group

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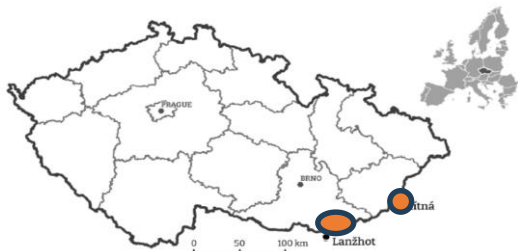


Figure 1. Map of Czech Republic depicting the two study sites, Lanžhot and Stitná.

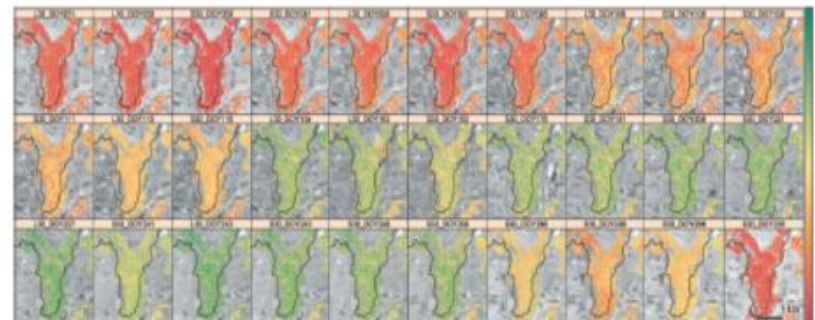


Figure 8. Estimated chlorophyll content at Lanžhot for 2019. The black line is the border line of the Czech Republic.

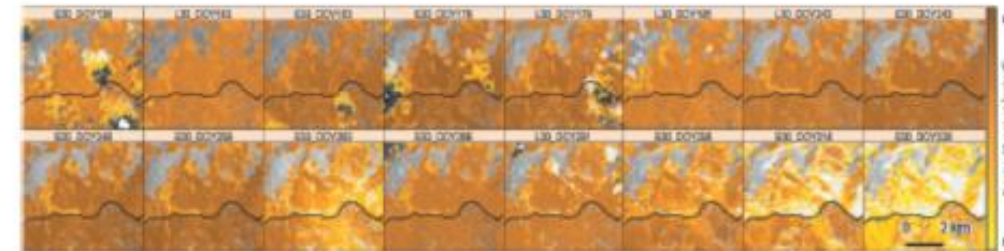


Figure 9. Estimated carotenoid content at Stitná for 2020. The black line is the border line of the Czech Republic. Some of the sudden changes in the images are due to imperfect filtering of clouds in areas outside the narrower region of interest.

Country: **Czech Republic**

SCERIN-10

Future Plans – submitted joint SCERIN – U.S. Proje



FACULTY OF SCIENCE
Charles University

Charles University: Jana Albrechtová, Lucie Kupková, Zuzana Lho

CzechGlobe: Petr Lukeš



Land-Cover / Land-Use Change
Program

LCLUC Program NASA (submitted May / 2023):

- 1) “Commercial Smallsat data analysis for advancing the HLS products for agricultural and forest productivity” NASA/ROSES 2023;
- 2) „Comparing the Function and Resilience of Protected and Cultivated Vegetation Land Covers by Integrating Thermal, Reflectance, Lidar and Field Observations“. NASA/ROSES 2023.

• **PI –P. Campbell, International Collaborators: J. Albrechtová, P. Lukeš**

Ministry of Education Czechia (submitted by 06/30/2023):

3) Integration of RS optical, thermal and LiDAR data and in situ observations to assess the function and resilience of forest and grasslands in ecosystems with varying levels of management. temporal resolution.

PI – J. Albrechtová, Co-I, P. Lukeš, collaborators from NASA LCLUC Program:

P. Campbell UMBC / GSFC NASA and H.Epstein, Univeristy of Virginia, USA



Country: Croatia

Team : Pilas Ivan, Damir Klobucar, Mateo Gasparović

Remote Sensing priorities or 'hot topics'

ESA – Croatia cooperation agreement (2018-2023)

2 accepted proposals:

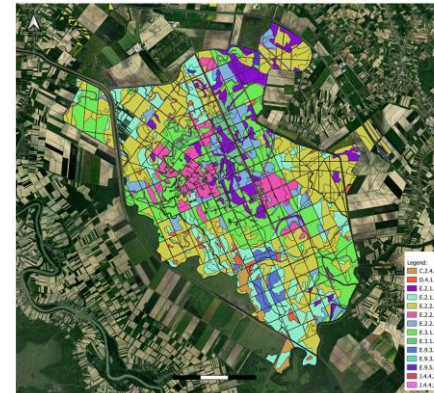
- **Earth Observations and Artificial Intelligence for the Natura2000 floodplain forests mapping** – Croatian Forest Research Institute, Faculty of Geodesy - Zagreb, Croatian Forests, Faculty of Electrical Engineering and Computing – Zagreb
- **Automatic monitoring of narrow-leaved ash (*Fraxinus angustifolia* Vahl) forests by remote sensing methods and Copernicus data** - Faculty of Geodesy - Zagreb, Croatian Forests

Potential Hot topic:

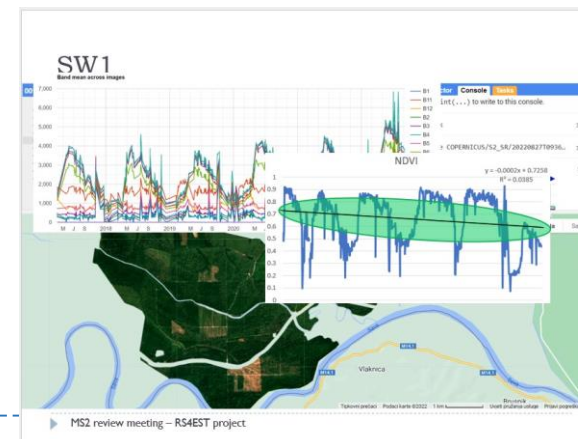
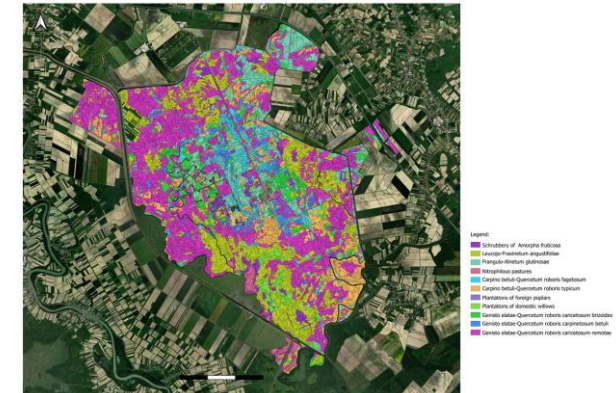
- Consequences of the war activities (1991-1995) and EU accession (2013) on the Land Use Change in Croatia

Provide an illustration or map of relevance to your top 1-2 topics (e.g., map of fire risk, agricultural or forest drought , etc.)

Official forest habitat map of the State Forestry Service

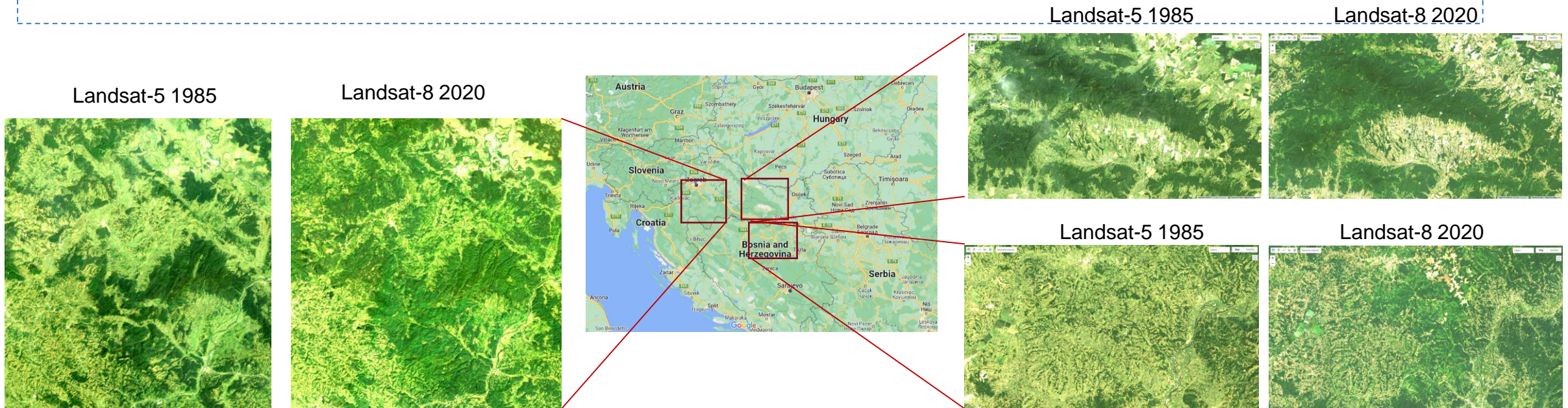


Produced map of the habitats using GEOBIA and Random Forest



Future plans

- **Consequences of the war activities (1991-1995) and EU accession (2013) on the Land Use Change in Croatia**
- *Geographical dimension: Croatia (Bosnia & Herzegovina)*
- *Automatized Land Cover Change assessment using Google Earth Engine, Machine Learning and the Landsat Data Continuity Mission (+ Socio-economic & demographic spatial statistics)*
 - *1982 – 1990 stable LC in a socialist system (ex Yugoslavia, Socialistic Federal Republic Of Croatia)*
 - *1990 - 1995 War of Independence (Republic of Croatia)*
 - *1995 – 2013 Post-Conflict Economic Reconstruction (EU Pre-accession period)*
 - *2013 – 2023 EU Member State (EU Cohesion policy)*



Numerous EO projects in the public, private, governmental, and academia sectors
 Here only a minimal sample is presented that originates from eos.itigr experience

Remote Sensing priorities or 'hot topics' in the country:

- Agriculture----->
- Forestry----->
- Air pollution
- Climate change
- Coastal monitoring----->
- Tourism (interaction with the environment)
- Urban areas
- Biodiversity, habitats, ecosystems----->
- Land cover/ use change----->
- Civil protection
- Capacity building----->
- Water resources management----->
- Environmental monitoring----->
- UAV applications for environmental monitoring,
 agriculture, urban areas, infrastructure surveillance,--->
 etc.
- Journalism----->

Country: Greece Team: I. Manakos

The image displays a collection of logos for various Earth Observation (EO) projects and organizations. The logos are arranged in a grid-like fashion, corresponding to the list of remote sensing priorities on the left. The logos include:

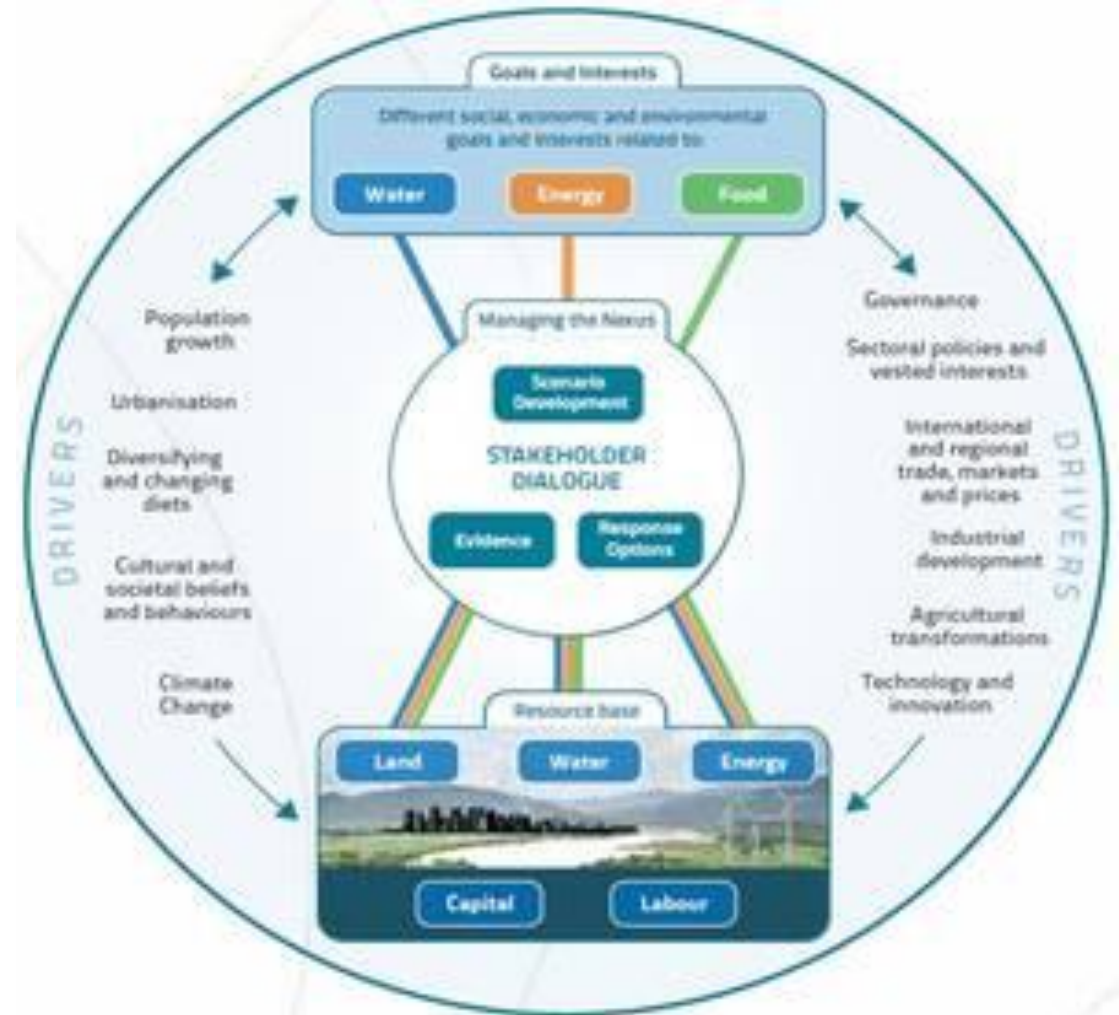
- NEXTLAND**: A logo with a stylized green leaf and the text 'NEXTLAND'.
- DigiRYZi**: A logo with the text 'DigiRYZi' in a stylized font.
- DIGI COTTON**: A logo featuring a cotton plant and the text 'DIGI COTTON'.
- MedEOS**: A logo with the text 'MedEOS' and a globe icon.
- e-shape**: A logo with a red 'e' and the text 'e-shape'.
- EOP**: A logo with a globe and the text 'EOP'.
- PONTOS**: A logo with a stylized blue and green shape and the text 'PONTOS'.
- WQeMS**: A logo with a satellite and a water drop, and the text 'WQeMS'.
- AQUACYCLE**: A logo with a green water drop and the text 'AQUACYCLE'.
- MEDWAYCAP**: A logo with a green water drop and the text 'MEDWAYCAP'.
- EO TIST**: A logo with an orange and the text 'EO TIST'.
- ΕΕΟΒSS**: A logo with a globe and the text 'ΕΕΟΒSS'.
- SnapEarth**: A logo with a stylized eye and the text 'SnapEarth'.

Country: Hungary

Team : Levente Ronczyk, Dániel Kristóf, Dávid D. Kovács

Remote Sensing priorities or 'hot topics' (top 3-4) Please provide a (short) description of the objective(s) of the project (max. 2-3 sentences)

- Water–energy–food nexus
 - Agriculture
 - Industrial crop mapping, status, territory, crop rotation, etc
 - Drought
 - Conditions, effected areas and crops,
 - Water access
 - Land cover land use affects
 - Urbanization
 - Forestry
 - Degradation, climate change




ESA contribution (georeturn)

- Most of the R&D activities under the umbrella of ESA (ITT)
- One of the main efforts is Danube Data Cube (joint development of Hungarian, Austrian and Slovenian institutions and companies)
 - Agriculture



From basic algorithms to Marketplace


DANUBE DATA CUBE 

[Log out](#)


No Credit

- Marketplace
- AOI manager
- Growing Seasons
- Aquacrop Sandbox
- EOxHub
- Explorer


Application




AOI Manager
CropOM
Create AOI polygons, and configure custom Dynamic Data Cube for ...
From €40




Growing Seasons
CropOM
Define Growing Seasons for crop modelling for AOI geometries.
From €40



Aquacrop Sandbox
CropOM
GUI for irrigation management and yield prediction.
From €1,500



Flow
CropOM
Processing chain orchestration tool for Dynamic Data Cubes
From €1



Explorer
EOX
Interactive interface for regional drought assessment.
From €1

Application oriented platform (technology push from ESA)

The screenshot displays the DANUBE DATA CUBE application interface. At the top, a dark green header contains the text "DANUBE DATA CUBE" next to a logo. Below the header is a navigation menu on the left with the following items: Marketplace, AOI manager, Growing Seasons, Aquacrop Sandbox (highlighted), EOxHub, and Explorer. The main area features a satellite map from Google with a 1 km scale bar and a "1 km" label. A "Google" logo is visible in the bottom left of the map area. On the right side, there is an "Irrigation schedule" panel with a close button (x), an "Irrigation date" field with a calendar icon and a plus sign, and an "Amount [mm] *" field. Below these fields is a "RUN MODEL" button. At the bottom of the map area, there is a text prompt: "Choose an AOI in order to see the Growing seasons".

Hirdetés

Magyarországon vendégeskedett a NASA egyik vezető kutatója

2023 / 06 / 17 / BOBÁK ÁRON

#NASA #KÖRNYEZET #TUDOMÁNY #TERMÉSZET



Hirdetés

Az amerikai űrhivatal 1997-ben hívta életre földfelszínborítással és földhasználat-változással foglalkozó programját (LCLUC), amelynek elsődleges feladata, hogy a távoli érzékelő technológiák (például műholdas rendszerek) segítségével feltérképezze a bolygó felszínét (például vegetáció, vizek, termőföldek, emberek által épített infrastruktúra) valamint ezek használatában bekövetkezett változásokat. A program végső célja, hogy egy folyamatosan frissülő, globális leltár létrehozásával megértsük és modellezhessük is ezeket a változásokat, így a szakértők már előzetesen pontosan tudnák, hogy bizonyos tervezett vagy folyamatban lévő változások milyen hatást fognak gyakorolni a környezetre lokális és globális szinten.

