



Copernicus – a national perspective

Applications

Downstream ideas

User uptake

Hungary

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EEA Hungarian country visit / Eionet NRC information day
Budapest, 27 June 2016



Institute of Geodesy, Cartography and Remote Sensing

1149 Budapest, Bosnyák tér 5.

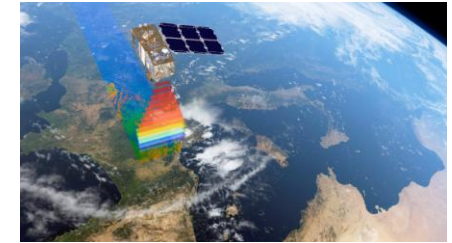
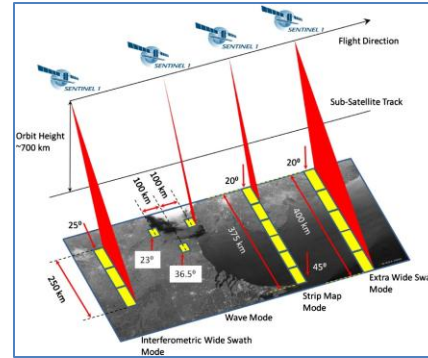
<http://www.fomi.hu>

Content

- Copernicus products and services
- National applications
- National research activities
- User uptake - National Copernicus user forum

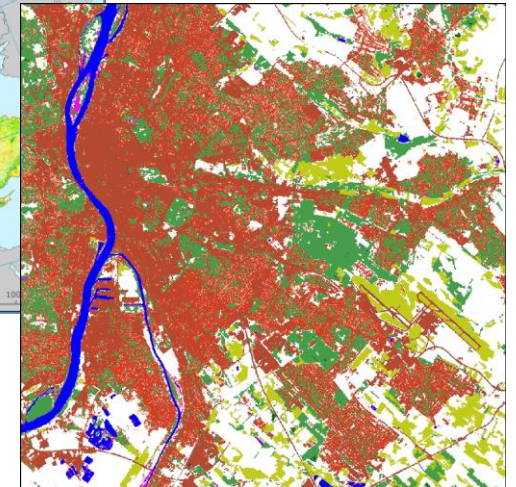
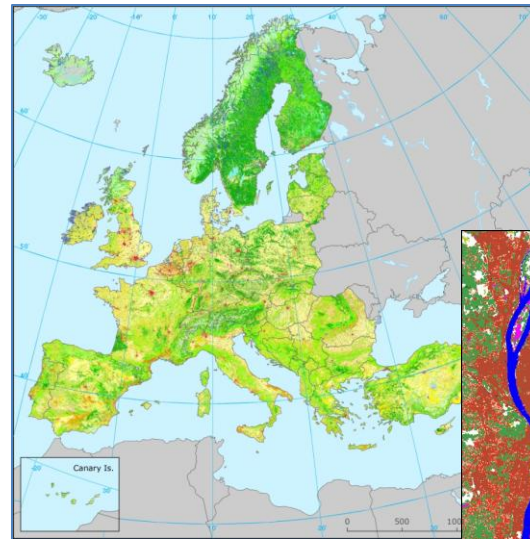
Earth Observation data

- Sentinel-1 (radar satellite data)
- Sentinel-2, 3 (optical satellite data)



Land monitoring services

- Pan-European component: Corine Land Cover, High-Resolution Layers, EU DEM, EU Hydro
- Local component: Urban Atlas, Riparian Zones, Natura2000
- Image mosaics (IMAGE2012)



Copernicus – related national applications (in FÖMI)

Land monitoring

- Land cover and land cover change mapping

Agricultural applications

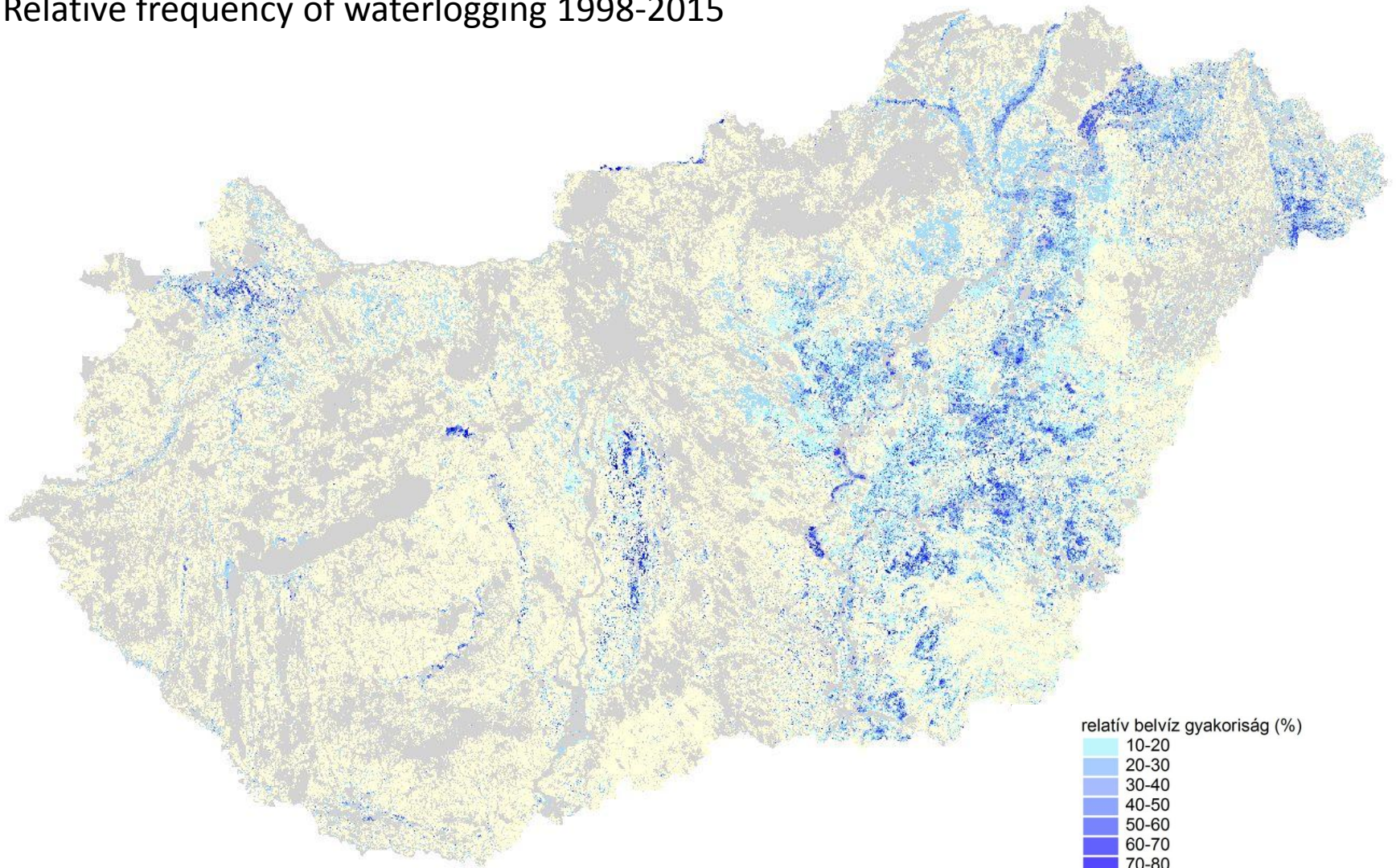
- Damage assessment: waterlog, flood, drought monitoring
- Vegetation monitoring
- Crop production forecast

Hazards and security

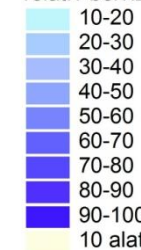
- Land Subsidence, landslide
- Coseismic and postseismic deformation (SAR interferometry)

Application of Earth Observation data (example)

Relative frequency of waterlogging 1998-2015



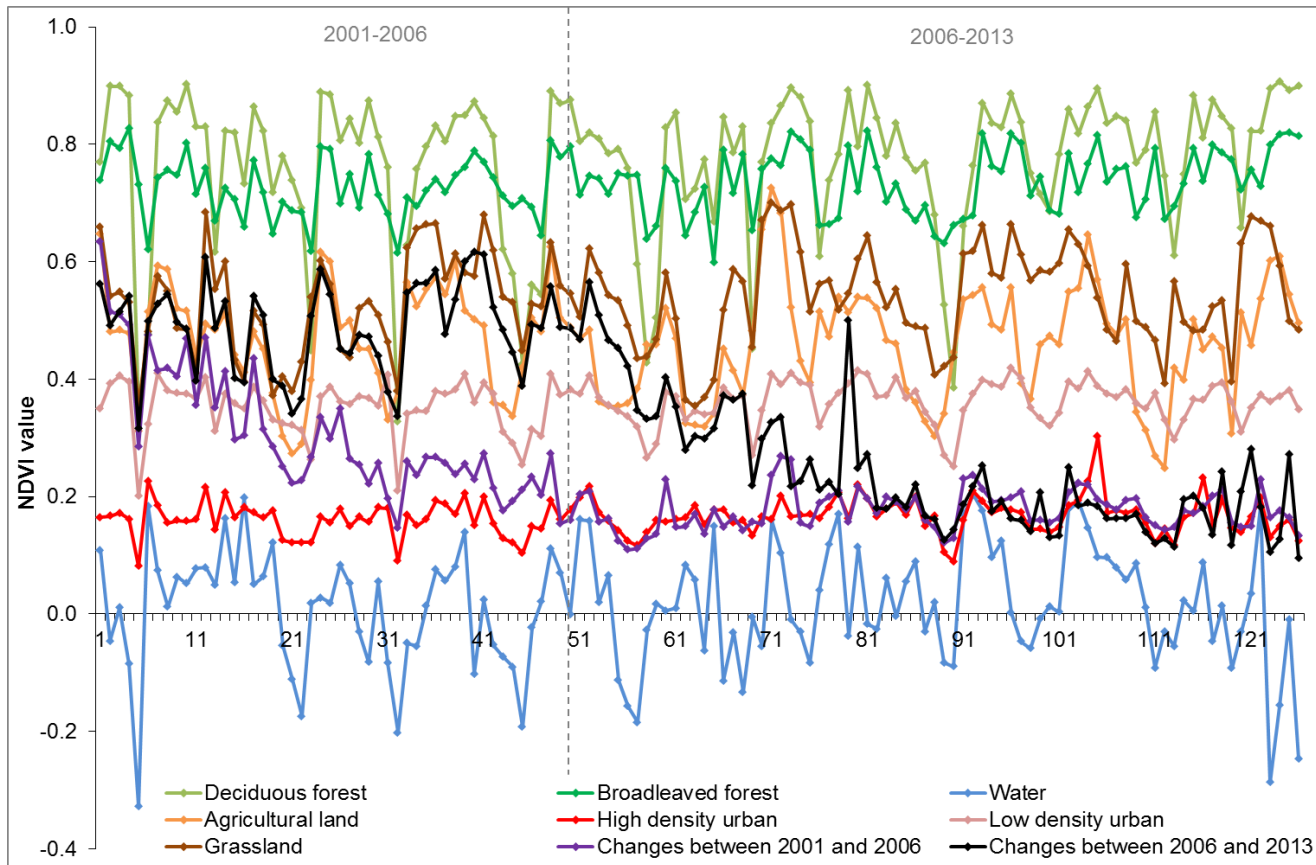
relatív belvíz gyakoriság (%)



nem támogatható terület

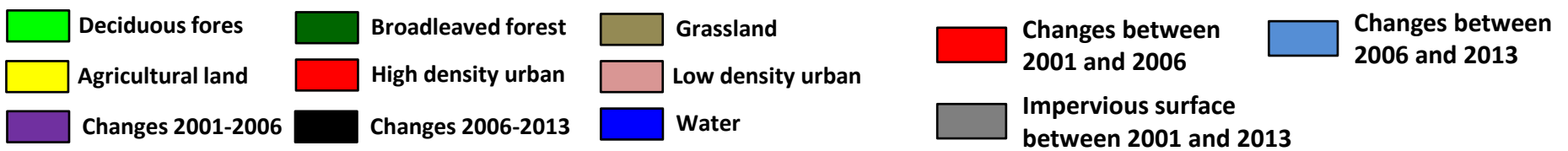
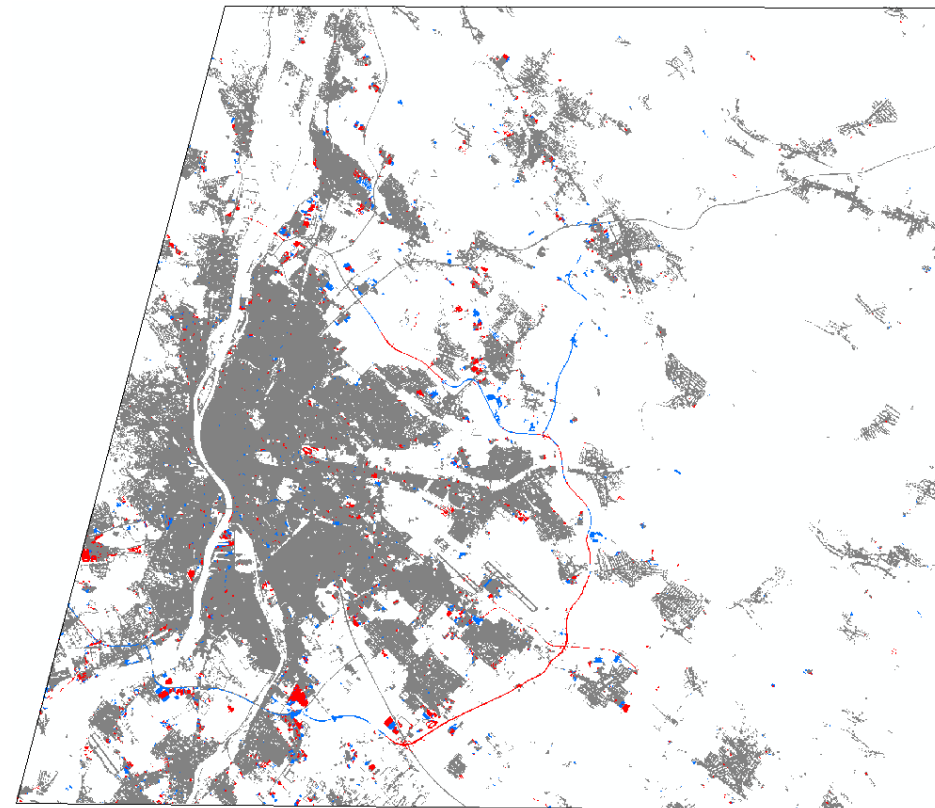
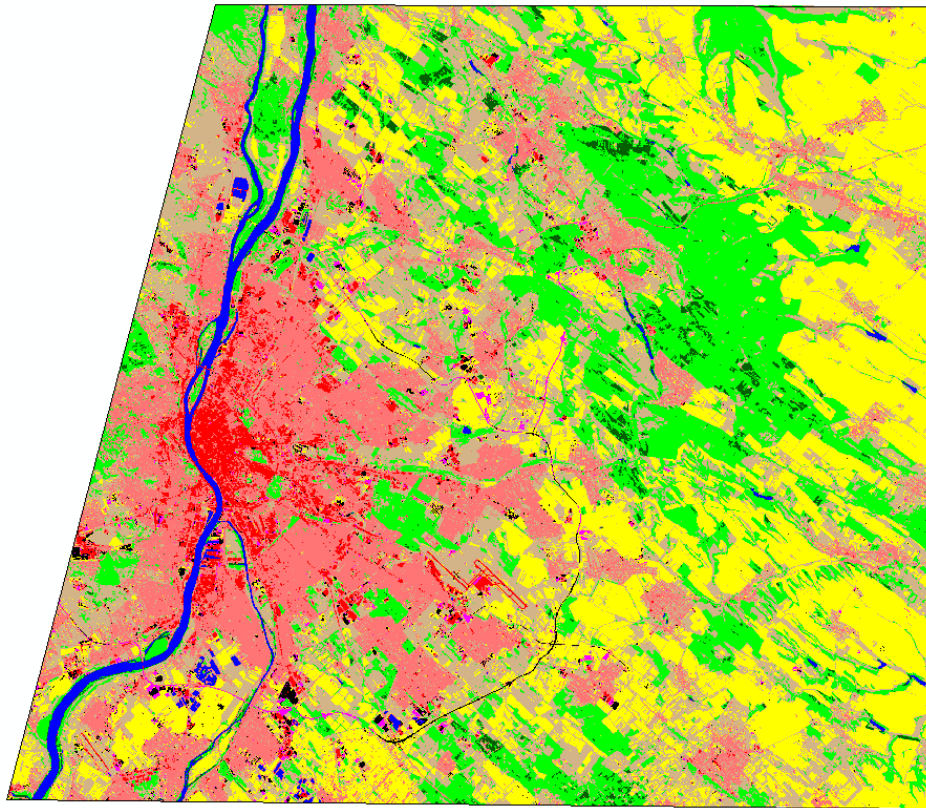
Copernicus – related research in FÖMI

- Improved land cover classification & change detection by time series analysis



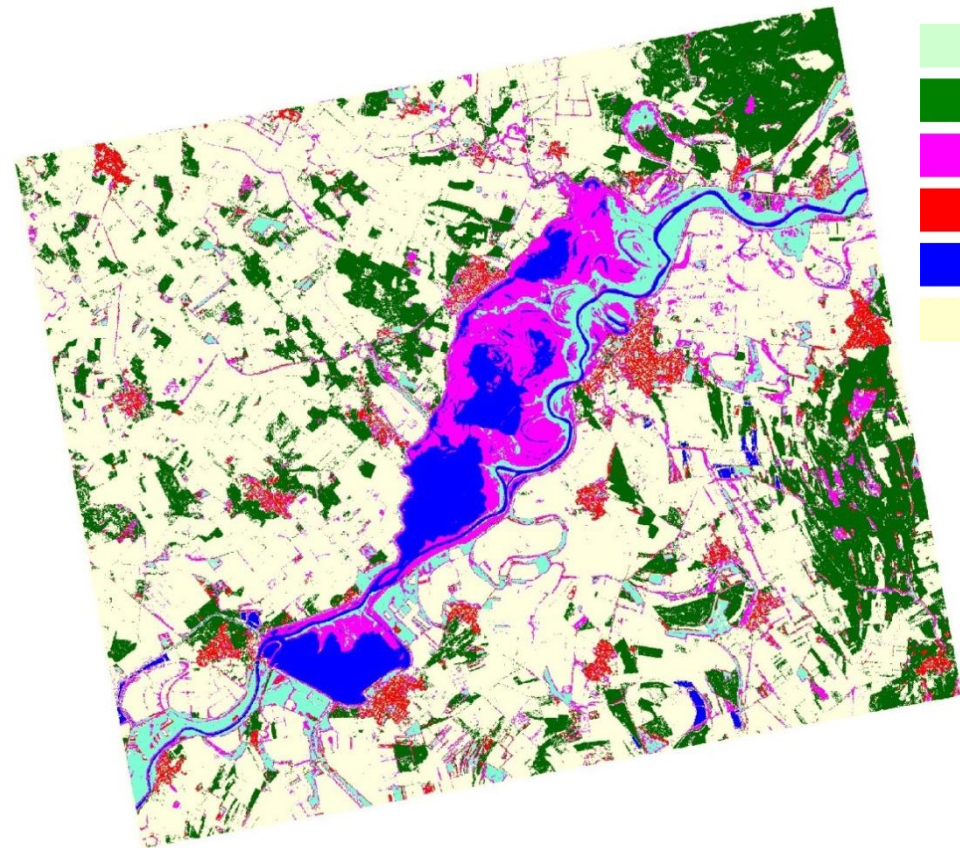
- Six spectral bands + NDVI bands were used (882 bands)
- Seven land cover and two changed classes derived

Copernicus – related research in FÖMI



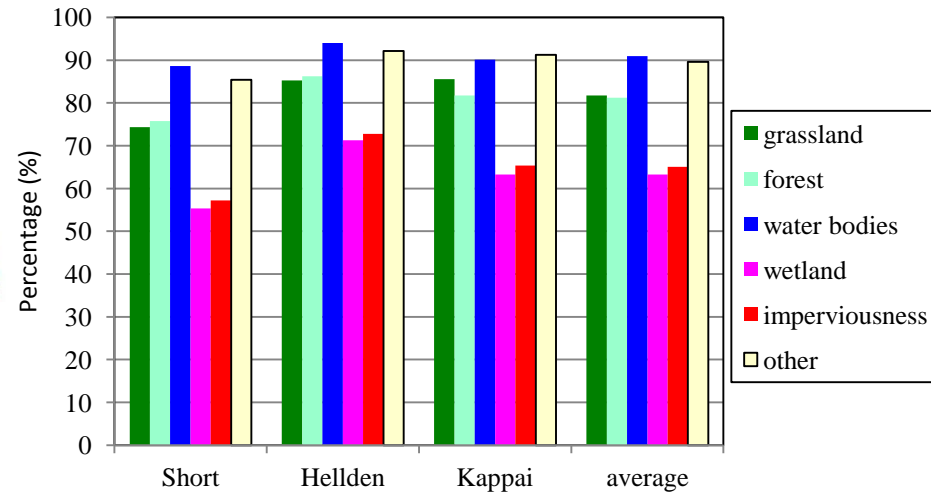
Copernicus – related research in FÖMI

- Synergic use of SAR – optical satellite imagery (Sentinel-1 / 2) for creating Copernicus compatible HR land cover layers



Result compared to reference data:

Overall accuracy: 87%
Kappa accuracy: 82 %



Copernicus – research (in FÖMI)

National case study (Copernicus funding)

- Goal: bottom-up creation of European CLC data using EAGLE approach
- Test area - Hungary



Mid-long term application

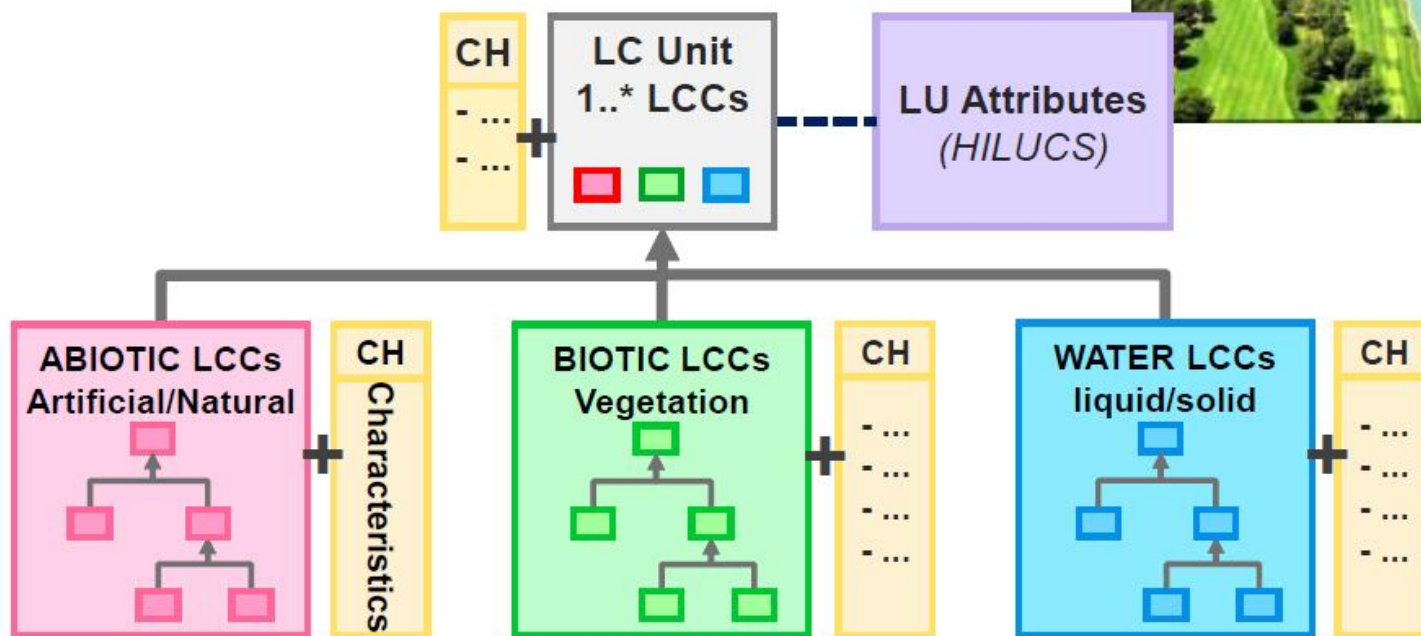
- Setting up high-resolution national land monitoring system
- Potential input for various national applications:
 - Green infrastructure
 - Ecosystem services assessment
 - Landscape evaluation
 - ...

EAGLE – principles

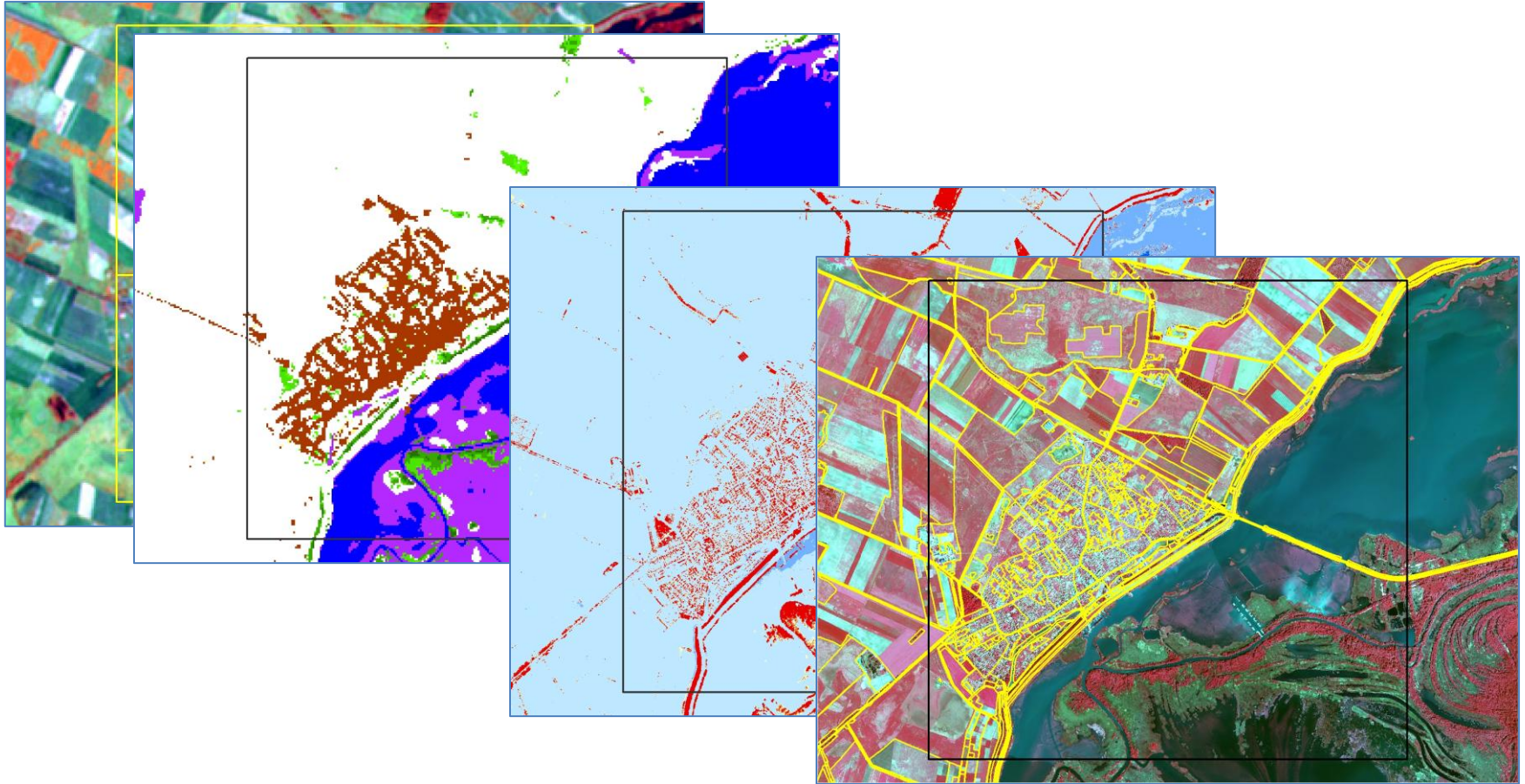
Structure of the EAGLE model

Description of landscape with

- Land Cover Components (LCC)
- Land Use Attributes (LUA)
- Landscape Characteristics (CH)



Bottom-up CLC case study – input data

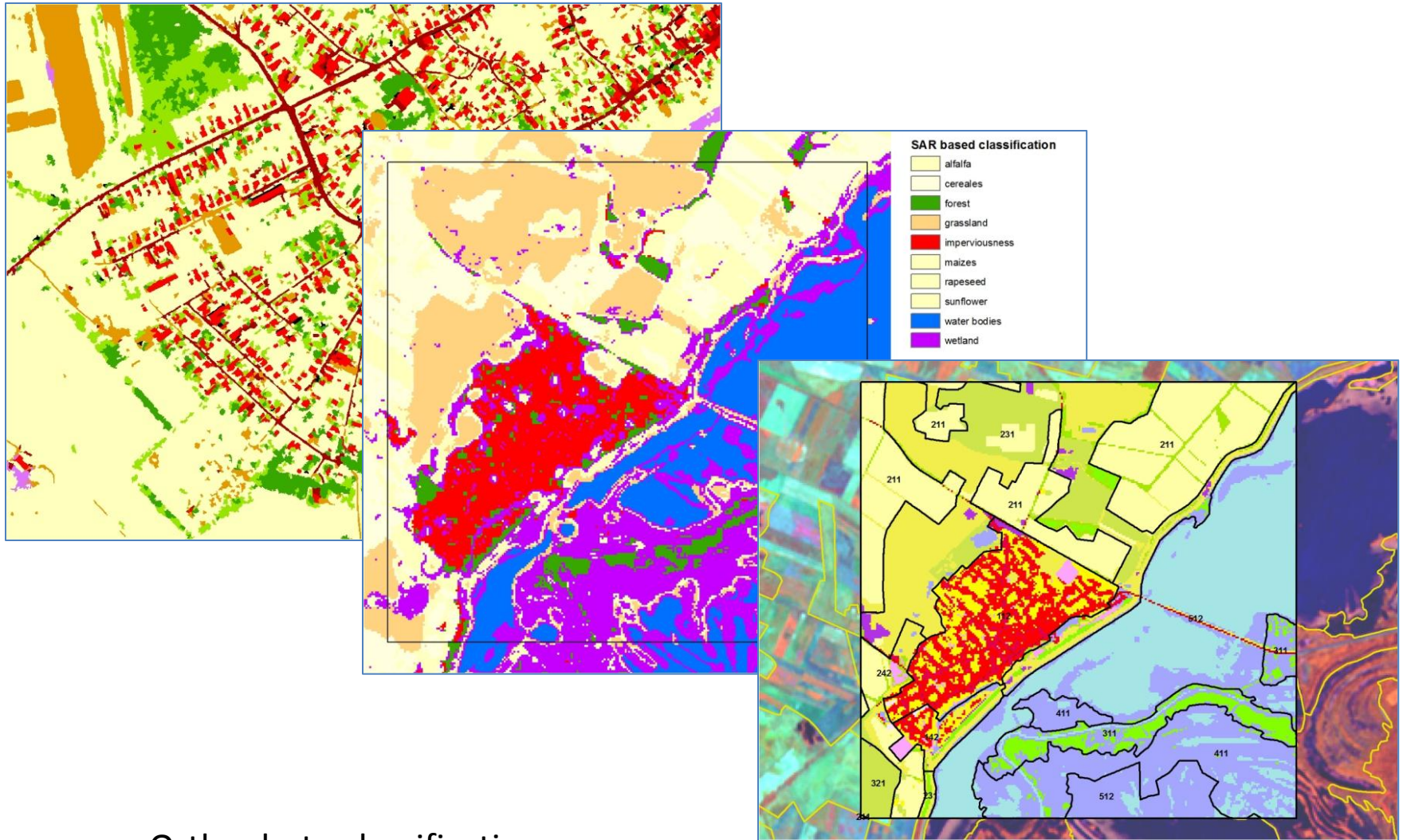


Optical and SAR satellite imagery, Copernicus data

National data: natural/IR orthophoto, height of objects (Dfm), LPIS...

Crowd-sourced data: OSM..

Input data + derived data → National high-res CLC



Orthophoto classification

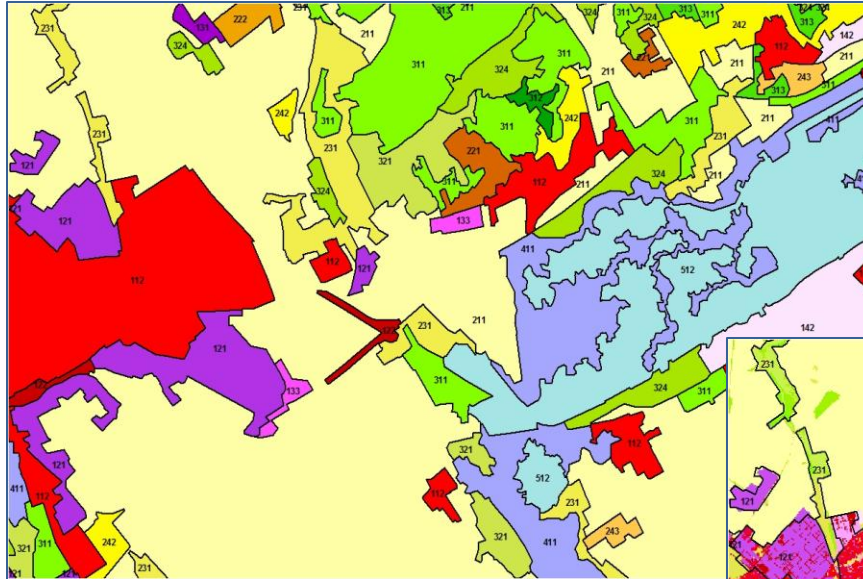
SAR-based classification (synergetic use of optical+radar satellite data)

National case study - methodology

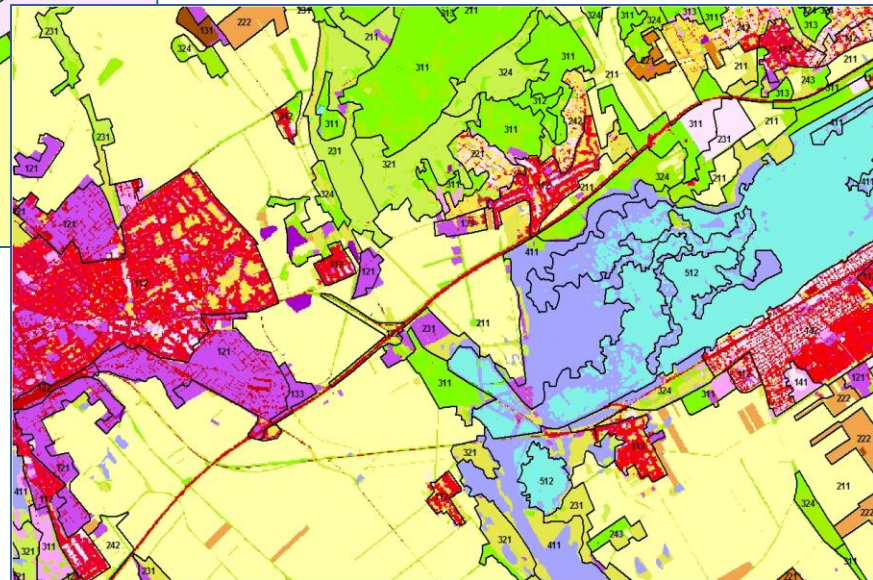
Preliminary national hi-res CLC results



Lake Velencei and surroundings



CLC2012 (25ha)



Hi-resolution CLC (0,04 ha)

Copernicus – research (in FÖMI)

National case study supported by Copernicus

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Mid-long term application

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User uptake – national Copernicus user forum

Copernicus products and information for Hungary

- Copernicus layers in national projection
- Detailed description of products in national language
- Maps and statistics
- Ad-hoc support for users

Establishing Copernicus user community (in preparation)

- Organizing workshops, user meetings
- Initiating and supporting downstream services

Thank you for your attention!

Further information:

COPERNICUS land monitoring (information & available data): <http://land.copernicus.eu/>

EAGLE: <http://land.copernicus.eu/eagle>

Copernicus land monitoring data for Hungary:



<http://www.fomi.hu/portal/index.php/projektjeink/foldfelszin-monitorozas-corine>

National case study:

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