



EU collaborations with NASA LCLUC Program & Current Priorities



ioannis Manakos, Dr.

Centre for Research and Technology Hellas
Information Technologies Institute
Visual Analytics, Virtual & Augmented Reality Laboratory

European Association of Remote Sensing Laboratories
Special Interest Group in Land Use & Land Cover

Life services	Biodiversity Habitats Health
Geo services	Land Cover & Land Use Agriculture Forestry
IT services	Modelling & Simulation Feature Extraction Uncertainty handling






Framework conditions

Current priorities



Trends

- 
- Various resolutions**
 - Different sensors**
 - Diverse classification schemes**

 - Multi-modal & -source data**
 - Process automation**
 - Web downstream services**
 - Tailor made solutions**

 - Pan-European layers (+ global & local components)**
 - Variables for earth system monitoring**
 - Free data policy**

Assets or Issues

- Multiple applications
- International coordination
- Product validation
- Mission continuity

- Engagement of member states
- Research
- Standardization, Harmonization
- INSPIRE Directive: Key step to ensure compatibility among spatial data infrastructures
- CORINE Land Cover updates





Framework conditions

EU Current priorities



EU:

Big data research

Data mining

Downstream services

Societal benefit areas

(Agriculture, Biodiversity, Climate, Disasters, Ecosystems, Energy, Health, Water, and Weather)

Coupling with in situ networks

Engage citizens through citizen observatories

Multidiscipline research and innovation

Multimodal and –source data processing

Data and processes harmonization

Change detection

Uncertainty handling

Roles (credit: EARSeL) :

- **Research** should continue R&D into new techniques and technologies and enable the knowledge transfer into both public and private actors.

- **Public bodies** should fulfil their mission to supply core public information needs (in line with their thematic and geographic mandates).

- **Private sector** (industry) should take responsibility and risk in delivering Copernicus Services and accessing and developing new markets for geospatial information.





Framework conditions

EU Current priorities



Society and policy driven studies

	5-10 year trends	20+ years outlook	Progress to policy targets
Protecting, conserving and enhancing nature			No target
Terrestrial and freshwater biodiversity			No target
Land use and soil functions			No target
Resource efficiency and the low-carbon economy			
Material resource efficiency and material use			
Water			
Waste management			
Air pollution			
Greenhouse gas emissions and climate change mitigation			
Marine			
Climate			
Energy consumption			
Safeguarding from environmental risks to health			
Transport and related environmental health risks			
Industrial pollution and related environmental health risks			N.A.
Water use and related environmental health risks			
Urban systems			
Noise pollution (especially in urban areas)			
Indicative assessment of trends and outlook			
Climate change health risks			
Chemical			



CREDIT:
THE EUROPEAN ENVIRONMENT
STATE AND OUTLOOK 2015
 SYNTHESIS REPORT
 European Environment Agency
 Kongens Nytorv 6
 1050 Copenhagen K
 Denmark

Emergence of needs for the EO industry





Framework conditions

Current priorities



Industry needs (credit: EARSC position paper on Industry Access to Copernicus Sentinel Data, 2013) :

- Imagery from anywhere on the earth's surface available in Europe.
- Imagery that is easily discoverable and easy to identify as covering a particular location on the ground. This implies that available imagery is geo-corrected (level 2/3).
- SAR imagery in coastal areas - which has consequences for the mode changing of the sensors.
- Early knowledge (1 to 3 months ahead) of what imagery will be available and when.
- Assembly of imagery data together with in-situ data (atmospheric corrections, AIS, land measurements, etc).
- A combination of SAR and optical imagery with observations taken within a short time of each other.
- Near-real time availability (critical for many applications).
- Adequate bandwidth to allow data to be downloaded in a short time.
- Available as standard OGC compliant web-services.



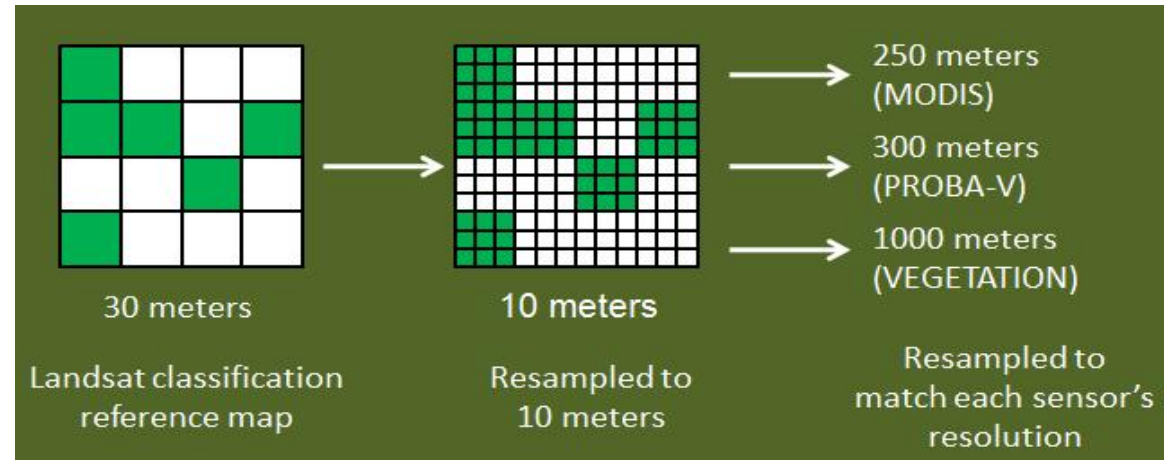


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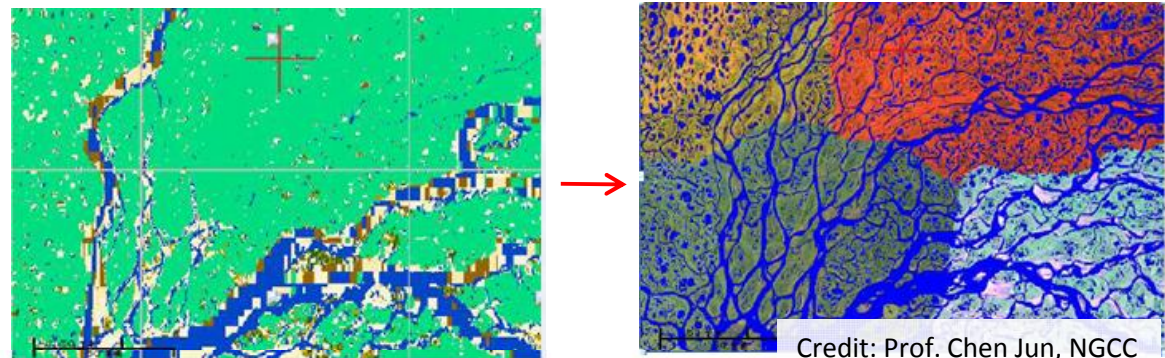


Till now numerous research activities are supported by NASA Earth Observation products across Europe at continental, regional, and local level, especially following 2008.

Today numerous on going and planned research activities are based on the security of data abundance of e.g. Landsat and as surrogates to non yet existing Sentinel data, e.g. relevant H2020 projects or supporting Global Cover validation exercises.



A. Azzi, I. Manakos, C. Kalaitzidis, M. Schardt, H. Gallaun, "PROBA-V performance assessment for forest cover mapping over the atlantic biogeographical region of Europe", 2011, EARSel eProceedings Journal, 10(2), 166-173.



Chinese GLC 2010 mapping and validation: from coarse resolution to 30m GLC maps

I. Manakos, K. Chatzopoulos-Vouzoglani, Z. Petrou, L. Filchev, A. Apostolakis, "GlobalLand30 Mapping Capacity of Land Surface Water in Thessaly, Greece", 2015, Land 4(1), 1-18.

Tomorrow complementarity & synergy to enhance EO products & services

thank you NASA ✓





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First joint Workshop of the EARSeL Special Interest Group on Land Use & Land Cover and the



Berlin, March 2014



<http://www.earsel.org/SIG/LULC/index.php>





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Future possibilities for joint activities – **Discussion seeds** :

1. common exercises initiation with members of the LULC SIG of EARSeL, setting specific challenges and concepts to pursue and test;
2. common working groups establishment, based on the example of your S-2 preparatory studies, but expanded in the sense of engaging more members and seeking for alternative additional funding sources;
3. common publications (book, text releases, etc.);
4. setting up a follow up bi-annual WS for brain storming based on the success of Berlin 2014
5. Setting up regional network observatories to support joint activities

(note: communication, wherever needed, with ESA and other EU high level Entities shall be sought and carried out with the relevant designated representatives)



