LAND MONITORING ACTIVITIES OF THE ITALIAN NATIONAL SYSTEM FOR ENVIROMENTAL PROTECTION

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ISPRA
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dell'Ambiente

2016: A 'NEW' ISPRA

Set up of **National Environmental Protection System (SNPA)**

19 Regional and **2** Province's Environmental Protection Agencies, under the **chairmanship of ISPRA**

Workforce: over **10,000**

Duty to provide **coordinated nation-wide environmental monitoring and protection**

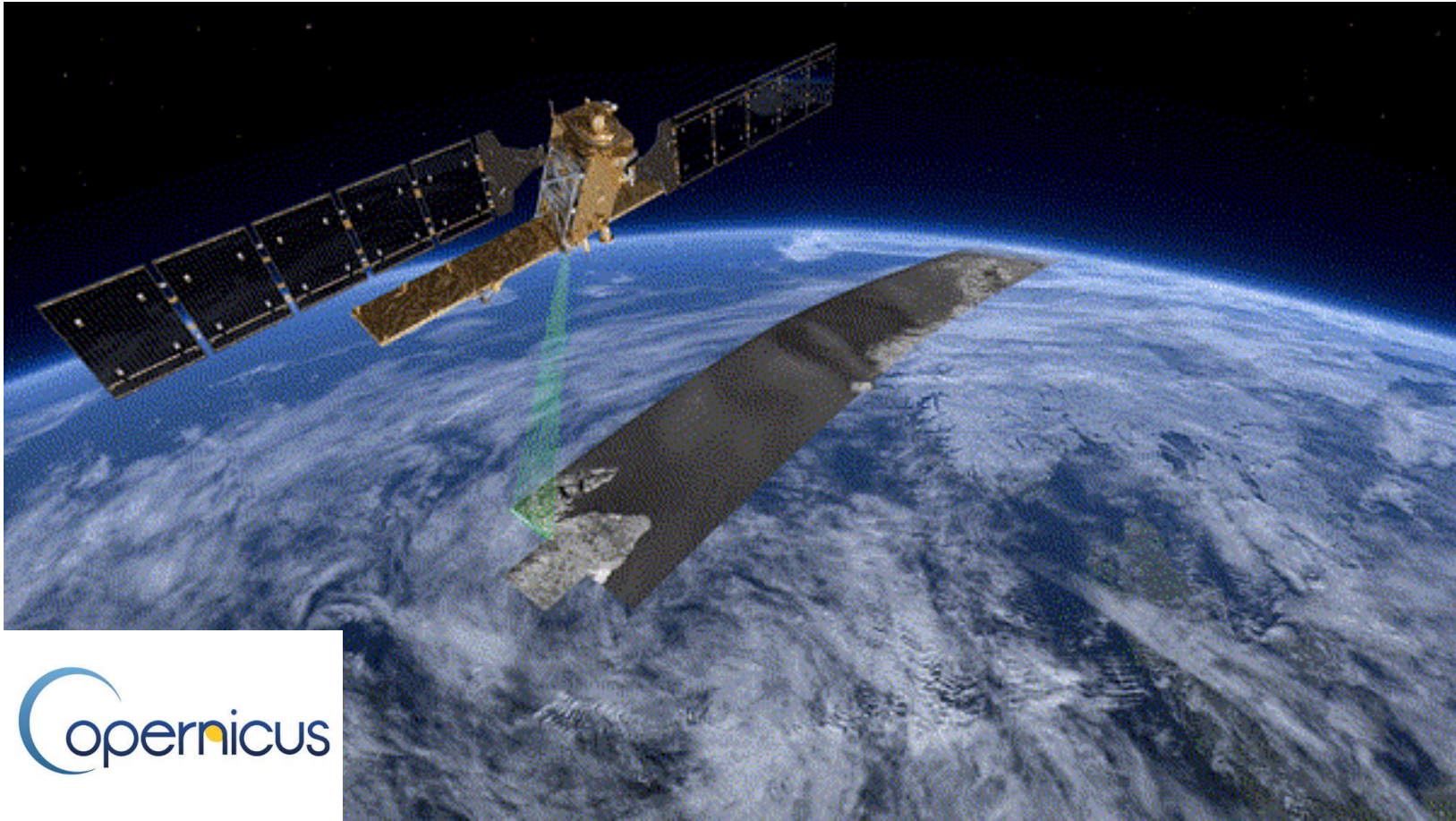**Power** to enforce the adoption of specific technical regulations

SNPA is responsible for land monitoring activities in Italy and publishes a report every year on land consumption, land processes and ecosystem services

Provision of precise and accessible information to improve **environmental management** and mitigate climate change effects
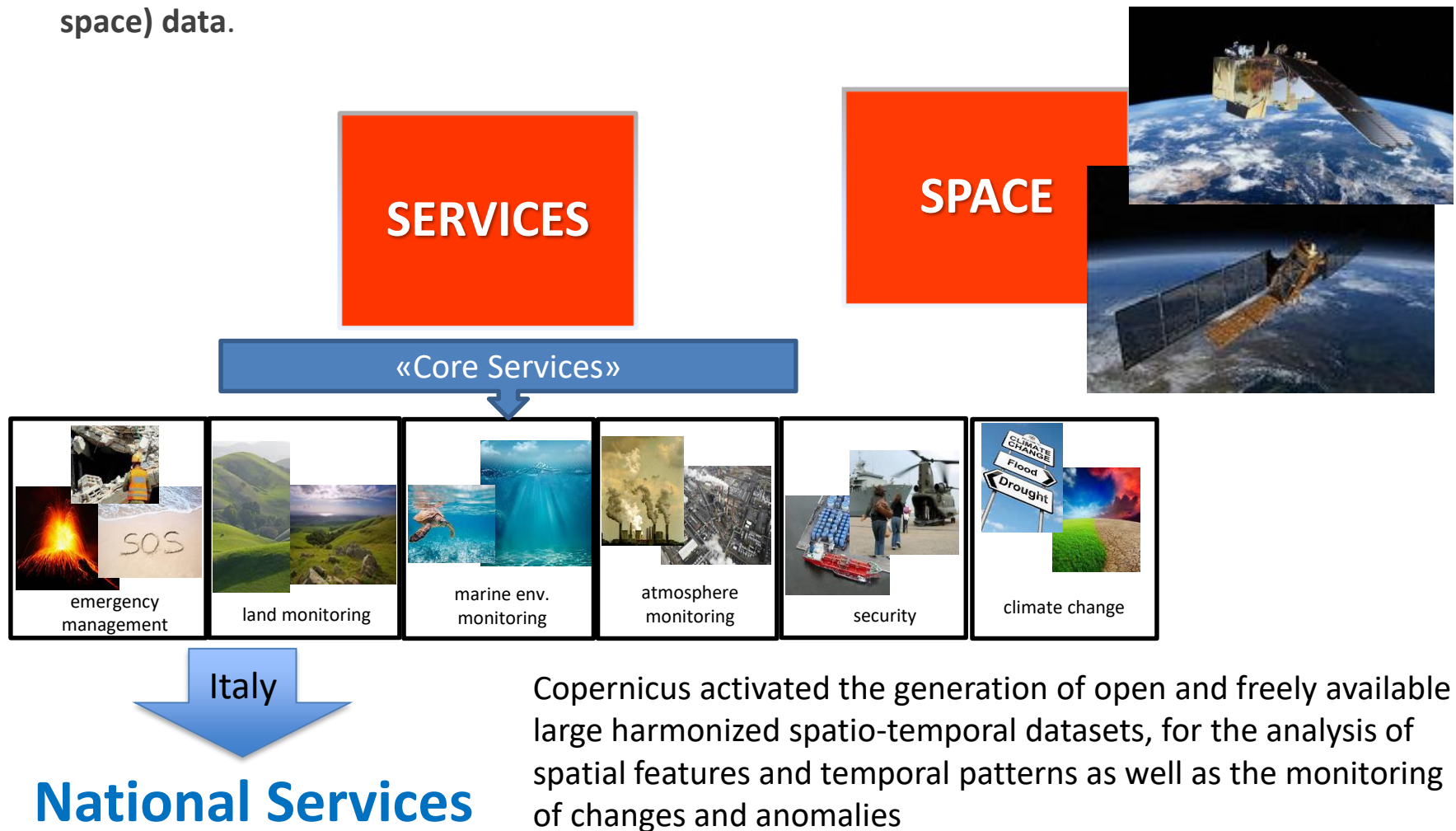
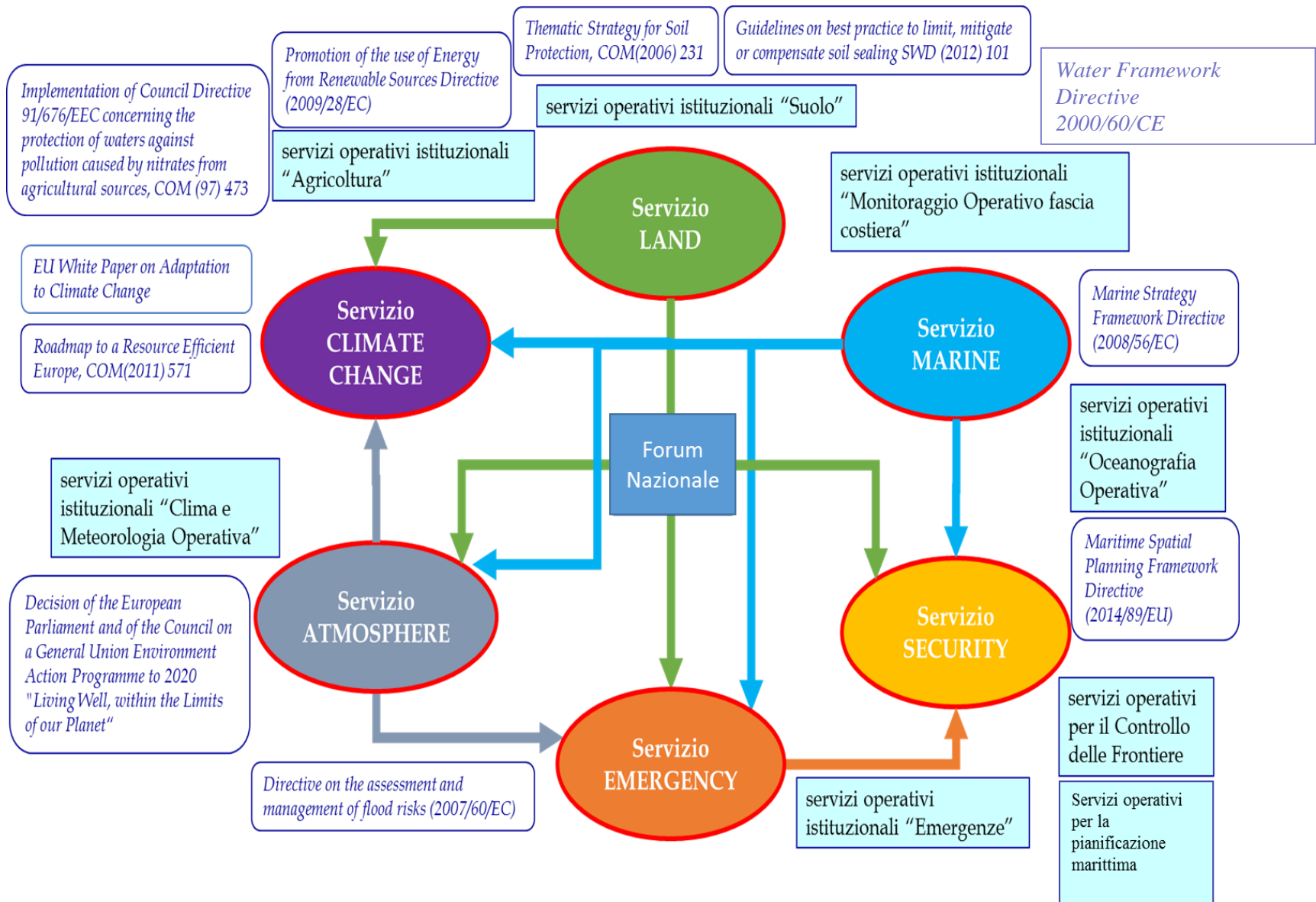**Multi-temporal comparison of satellite imagery**

Sentinel 2A - Turin 2015-2016

COPERNICUS PROGRAMME

- Copernicus is the European Earth Observation Programme, looking at our planet and its environment for the ultimate benefit of all European citizens.

- Copernicus offers information services based on **satellite Earth Observation and in situ (non-space) data**.

SERVICES

SPACE

«Core Services»

| emergency management | land monitoring | marine env. monitoring | atmosphere monitoring | security | climate change |

Italy

National Services

Copernicus activated the generation of open and freely available large harmonized spatio-temporal datasets, for the analysis of spatial features and temporal patterns as well as the monitoring of changes and anomalies

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Thematic Strategy for Soil
Protection, COM(2006) 231

Guidelines on best practice to limit, mitigate
or compensate soil sealing SWD (2012) 101

Promotion of the use of Energy
from Renewable Sources Directive
(2009/28/EC)

*Water Framework
Directive
2000/60/CE*

Implementation of Council Directive
91/676/EEC concerning the
protection of waters against
pollution caused by nitrates from
agricultural sources, COM (97) 473

servizi operativi istituzionali "Suolo"

servizi operativi istituzionali
"Agricoltura"

servizi operativi istituzionali
"Monitoraggio Operativo fascia
costiera"

EU White Paper on Adaptation
to Climate Change

Roadmap to a Resource Efficient
Europe, COM(2011) 571

servizi operativi
istituzionali "Clima e
Meteorologia Operativa"

Decision of the European
Parliament and of the Council on
a General Union Environment
Action Programme to 2020
"Living Well, within the Limits
of our Planet"

Directive on the assessment and
management of flood risks (2007/60/EC)

Servizio
LAND

Servizio
CLIMATE
CHANGE

Servizio
MARINE

Forum
Nazionale

Servizio
ATMOSPHERE

Servizio
SECURITY

Servizio
EMERGENCY

*Marine Strategy
Framework Directive
(2008/56/EC)*

servizi operativi
istituzionali
"Oceanografia
Operativa"

*Maritime Spatial
Planning Framework
Directive
(2014/89/EU)*

servizi operativi
per il Controllo
delle Frontiere

Servizi operativi
per la
pianificazione
marittima

servizi operativi
istituzionali "Emergenze"

Land Monitoring Service (pan-EU & local)

Land Monitoring Service (global)

Marine Environment Monitoring Service

Atmosphere Monitoring Service

Climate Monitoring Service

Emergency Management Service

Security Service (Border surveillance)

Security Service (Maritime Surveillance)

Security Service (Support to External Action)

In-situ Coordination

COPERNICUS LAND MONITORING SERVICE

The Copernicus Land Monitoring Service (CLMS) provides geographical information on land cover and on variables related, for instance, to the vegetation state or the water cycle.

It supports applications in a variety of domains such as spatial planning, forest management, water management, agriculture and food security.

emergency management

land monitoring

marine env. monitoring

atmosphere monitoring

security

climate change
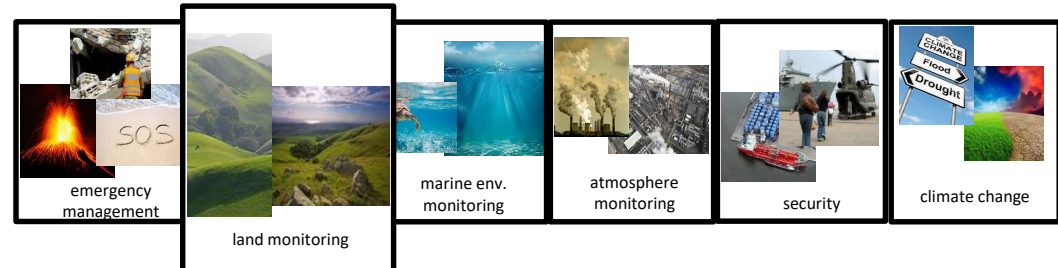
Components

Global

provides a series of bio-geophysical products on the status and evolution of the land surface at global scale at mid and low spatial resolution

Pan-European

provides information about the land cover and land use (LC/LU), land cover and land use changes and land cover characteristics

Local

focuses on different hotspots, i.e. areas that are prone to specific environmental challenges and problems

Reference data

All of the Copernicus services need access to in-situ data in order to ensure an efficient and effective use of Copernicus space-borne data

PAN-EU
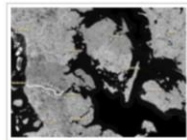
Image Mosaics CORINE Land Cover High Resolution Layers Reference Data
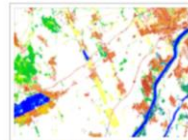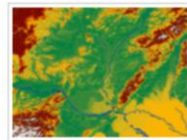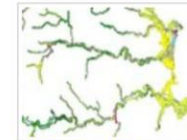
1) **Corine Land Cover** (1990-2000-2006-2012-2018*)

2) **High Resolution Layers**
- Imperviousness (*2006-2009*-2012-2015*-2018*)
- Forest Type and Tree Cover Density (2012-2015*-2018*)
- Permanent grasslands (2012-2015*-2018*)
- Wetlands (2012-2015*-2018*)
- Water bodies (2012-2015*-2018*)

# LOCAL

Urban Atlas Riparian Zones Natura 2000 (N2K)

Urban Atlas EU regional policy justifies the production and maintenance of detailed land cover and land use information over major EU city areas. The Urban Atlas provides pan-European comparable land use and land cover data covering a number of Functional Urban Areas (FUA). In 2012, an additional layer (Street Tree Layer - STL) was produced for a selection of FUAs.
Riparian Zones The next local component addresses land cover and land use in areas along rivers, i.e. the riparian zones. The rationale for this local component is provided by the need to monitor biodiversity at European level, amongst other in the framework of improving the "green" and "blue" infrastructures in the European Union.
Natura 2000 The Natura 2000 (N2K) areas are also important hotspots to have in consideration. The aim of the first N2K project was to assess whether Natura2000 sites are effectively preserved and whether a decline of certain grassland habitat types is halted.
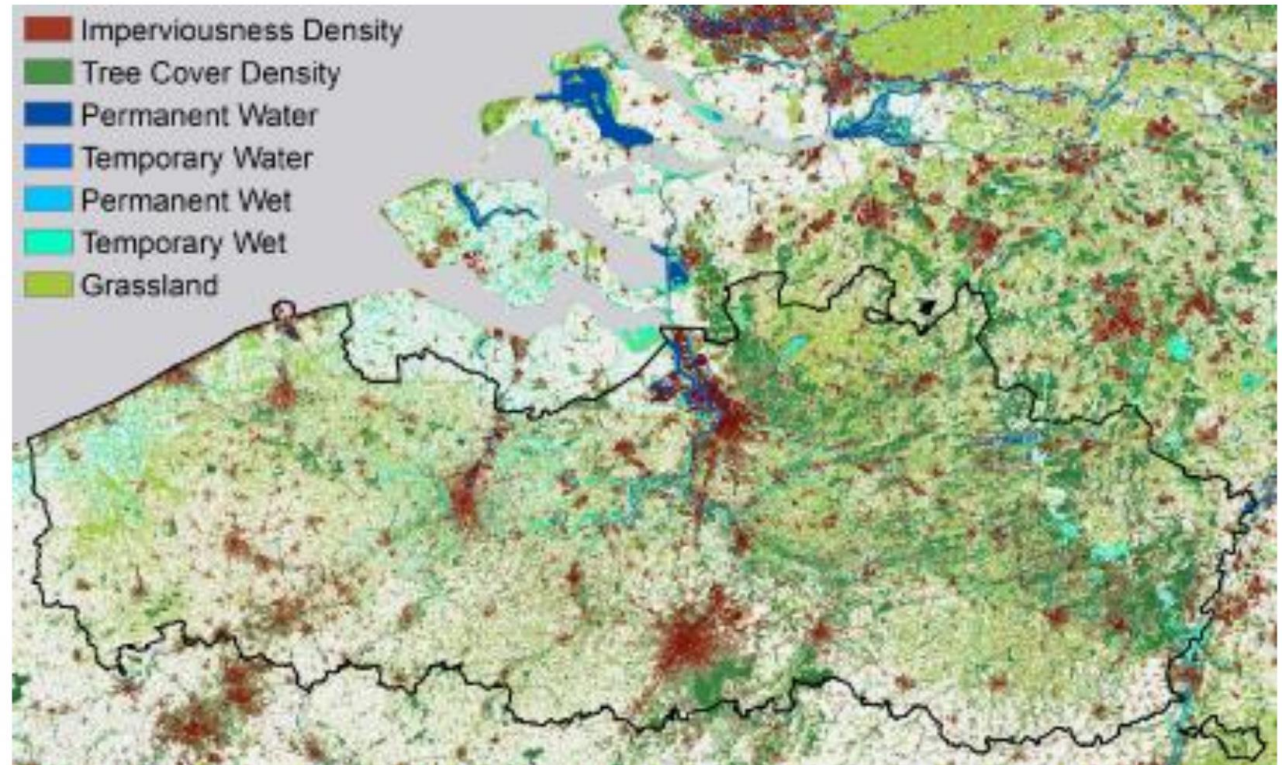
CORINE LAND COVER
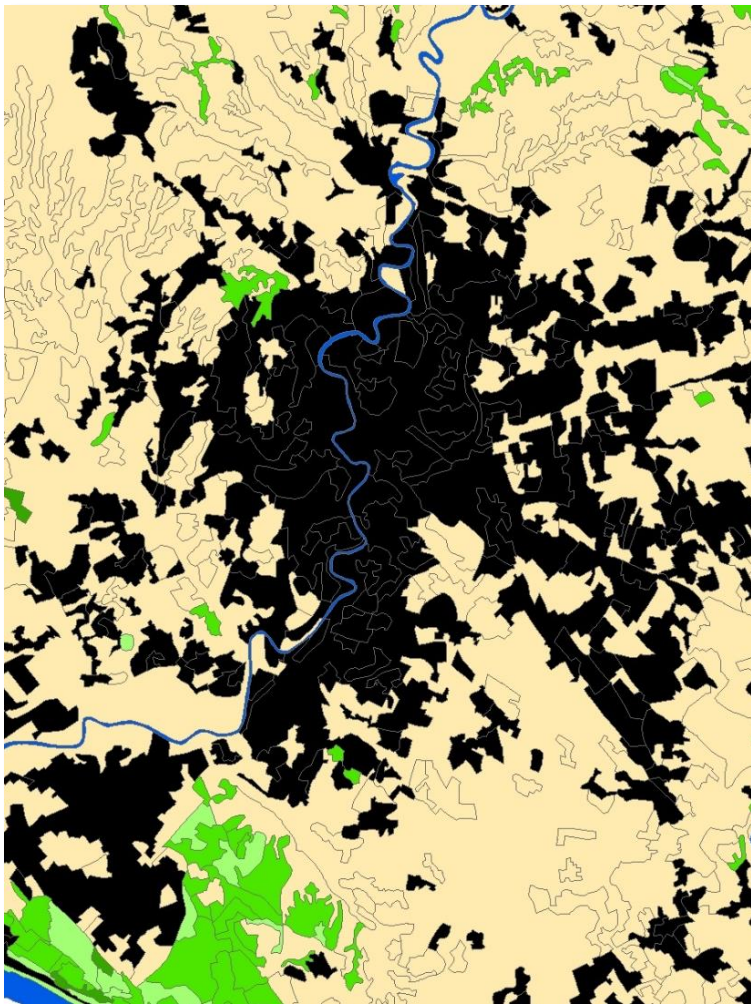
HIGH RESOLUTION LAYERS
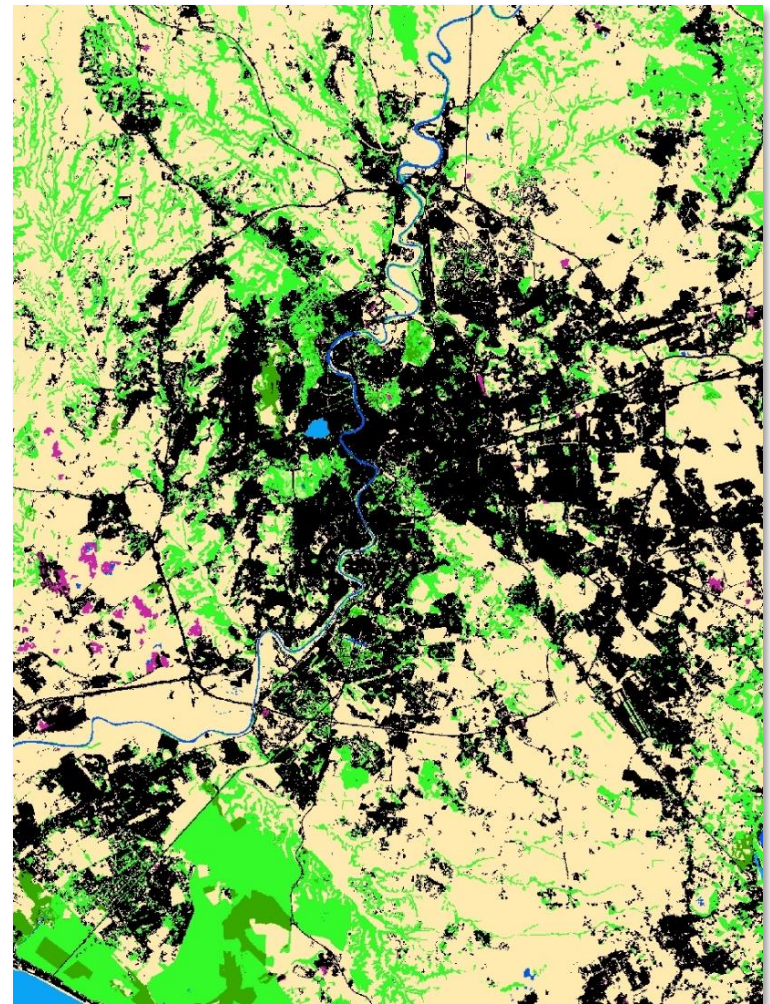
- HRLs on land cover production status:
  - 4 HRL2015 status layers published on the land portal; change layers to follow soon

Legend:
- Imperviousness Density
- Tree Cover Density
- Permanent Water
- Temporary Water
- Permanent Wet
- Temporary Wet
- Grassland

Land Monitoring

- CLC2018 production
  - all EE39 countries in production
  - Extra training sessions for national production teams on-going
  - 9 countries passed already 1st verification of CLC deliveries
- Technical specifications for HRL2018 being drafted
  - imperviousness (+ European settlements based on JRC ESM method under discussion)
  - forests
  - grasslands → parameters on intensity of management in view of agro-environmental monitoring of the CAP under investigation
  - wetness-water
- CfT for high resolution phenology product being prepared for publication
- EAGLE group contracted, working on draft specifications for CLC+.
  - Version 5 of draft specs in preparation

CORINE LAND COVER EVOLUTION

EEA/IDM/R0/17/003

Technical specifications for implementation of a new land-monitoring concept based on EAGLE
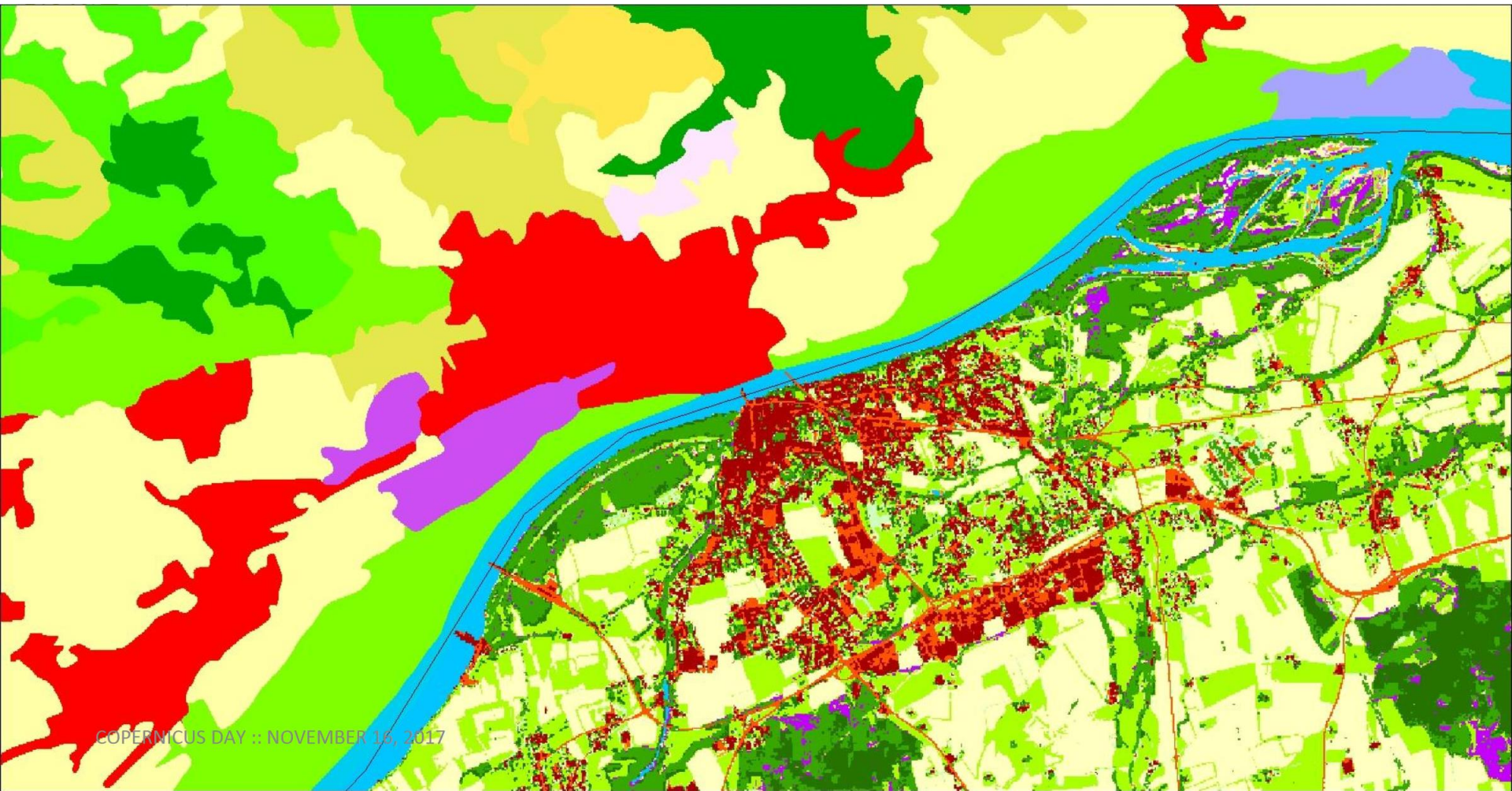
D3: Draft design concept and CLC-Backbone, CLC-Core technical specifications, including requirements review.
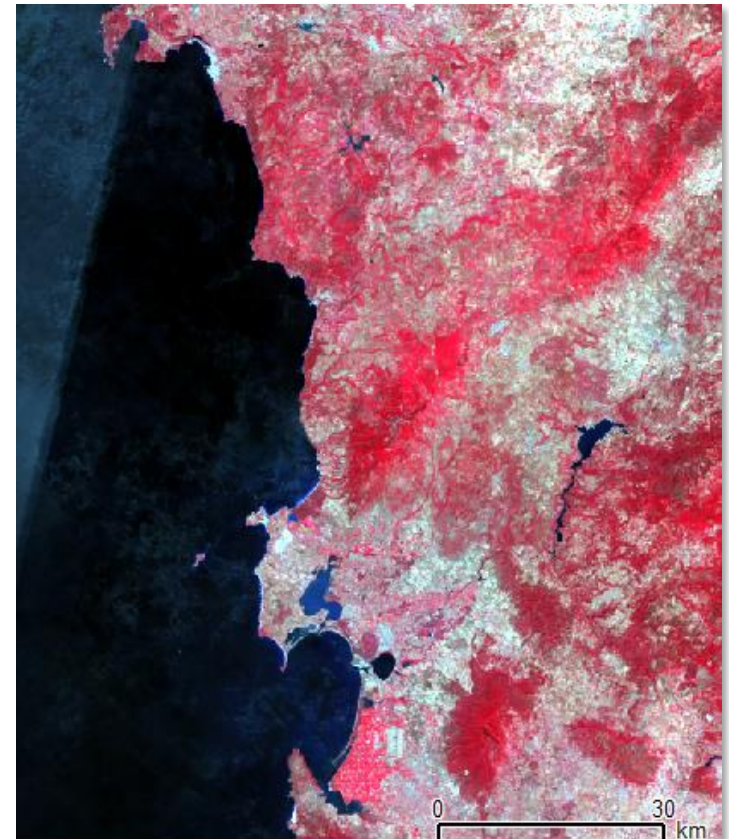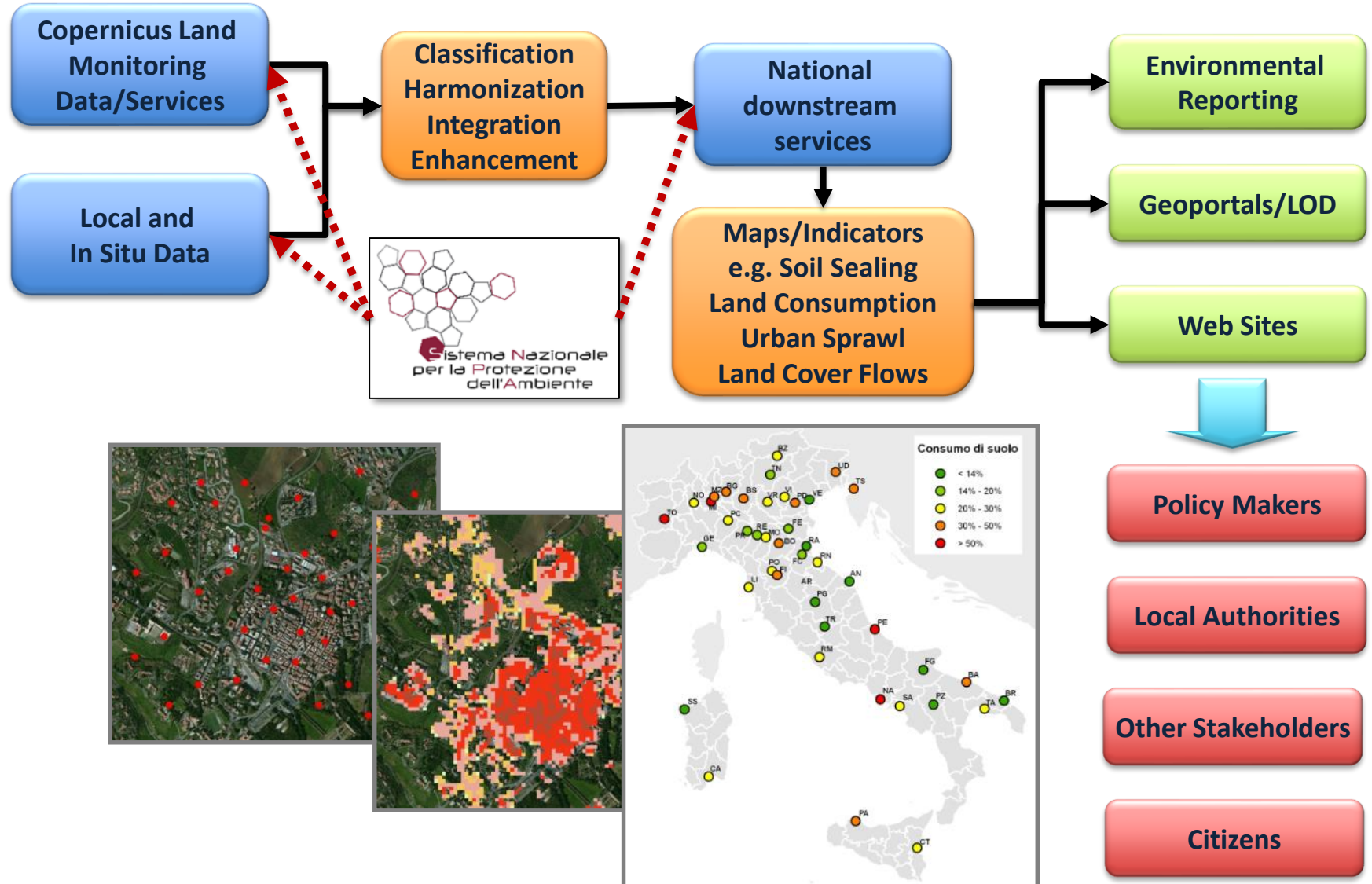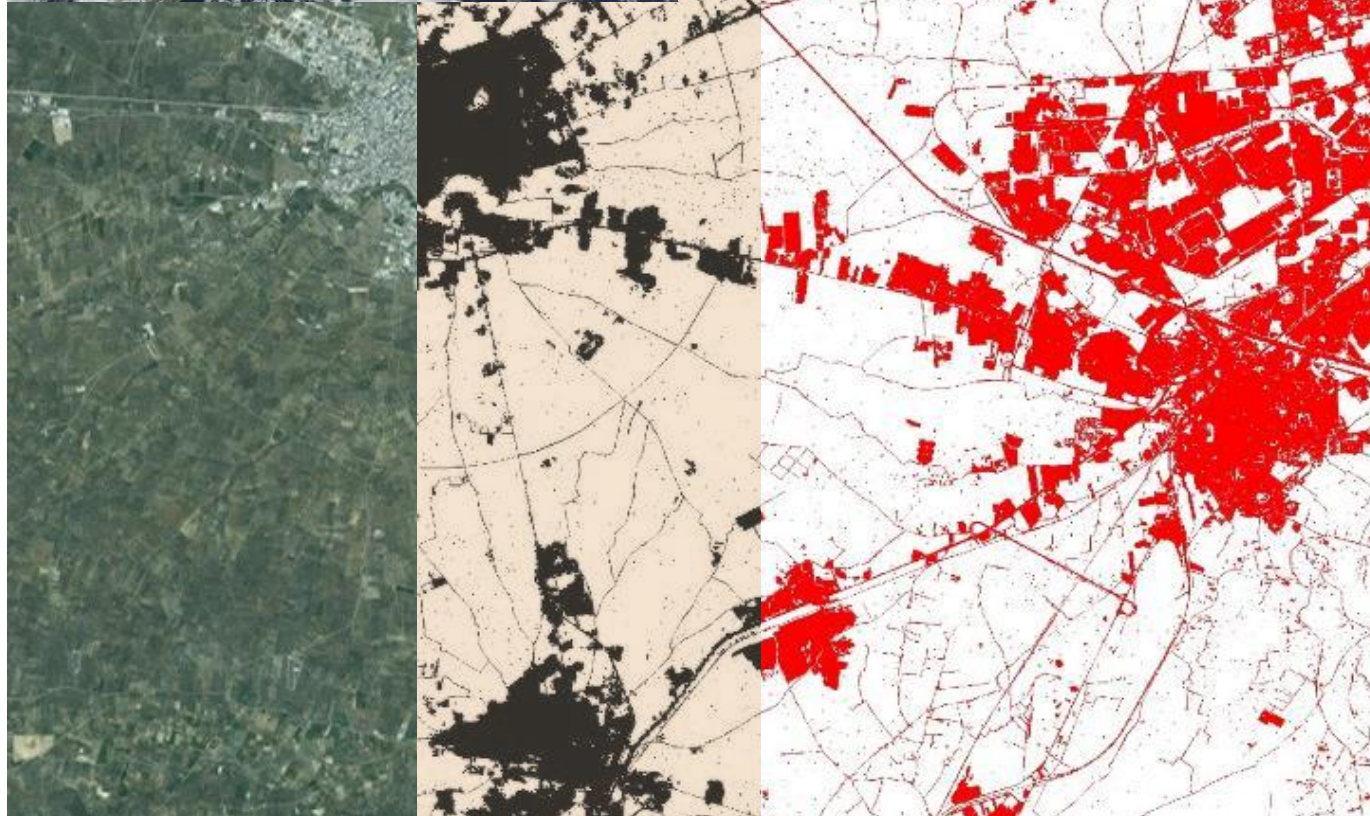
Version 3.0

10.11.2017
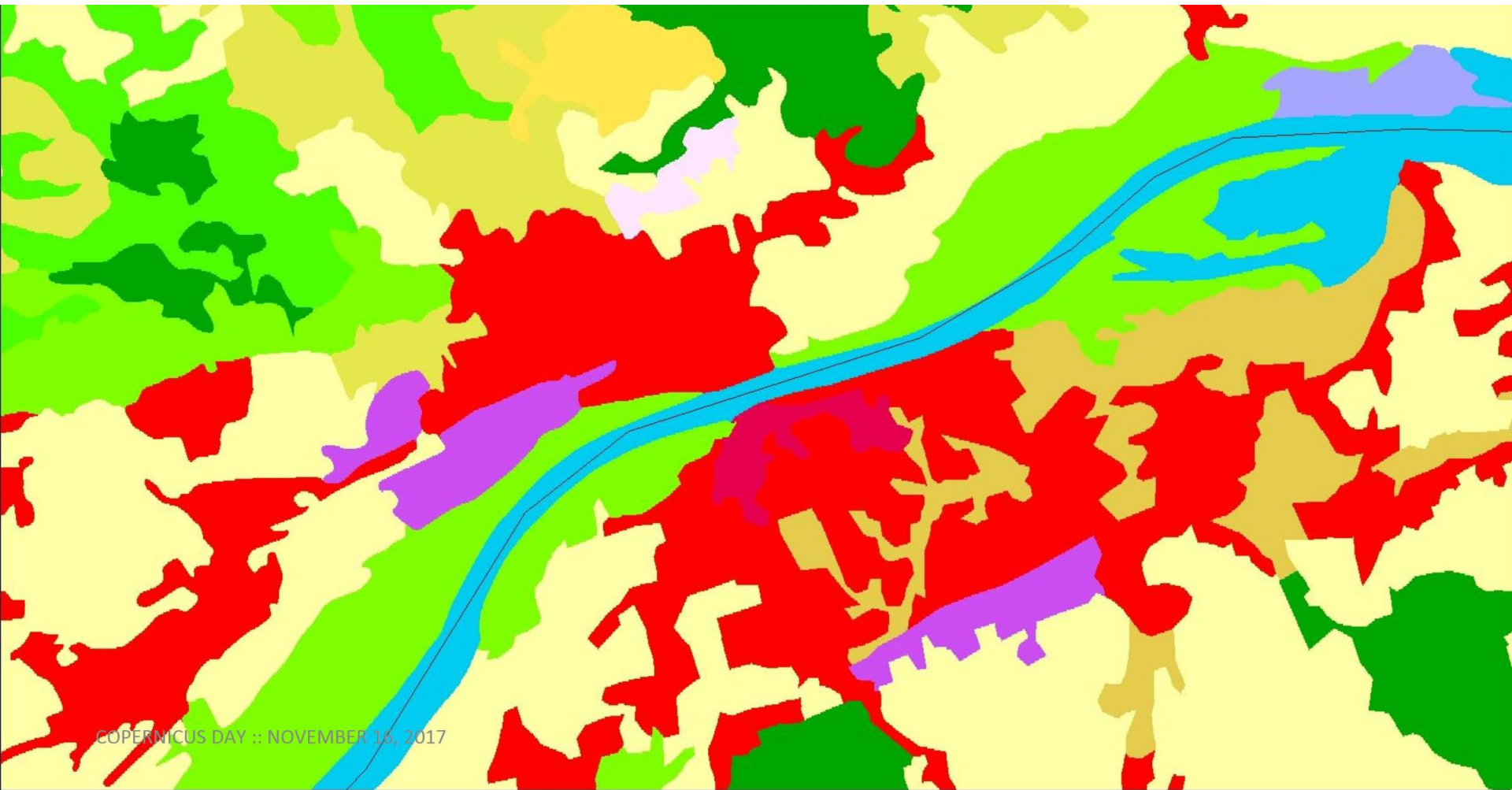
CLC Backbone → CLC Core → CLC + → CLC Legacy

SENTINEL 2

LAND TAKE/SOIL SEALING

Copernicus EU map

National map (ISPRA/SNPA)

12,96% LOMBARDIA

2,91% VALLE D'AOSTA

12,21% VENETO

7.64%

LAND CONSUMPTION IN ITALY

3,75% SARDEGNA

10,76% CAMPANIA

23 039

3,38% BASILICATA

KM² (2016)

Legenda

Consumo di suolo (% 2016)

■ ≤ 3
■ 3 - 5
■ 5 - 7
■ 7 - 9
■ 9 - 15

648 ha LOMBARDIA

23 ha
VALLE D'AOSTA

563 ha VENETO

5 000

HA LOST IN 6
MONTHS

(NOV. 2015-MAY 2016)

9 ha UMBRIA

3

M² PER SECOND

18 ha BASILICATA

585 ha SICILIA

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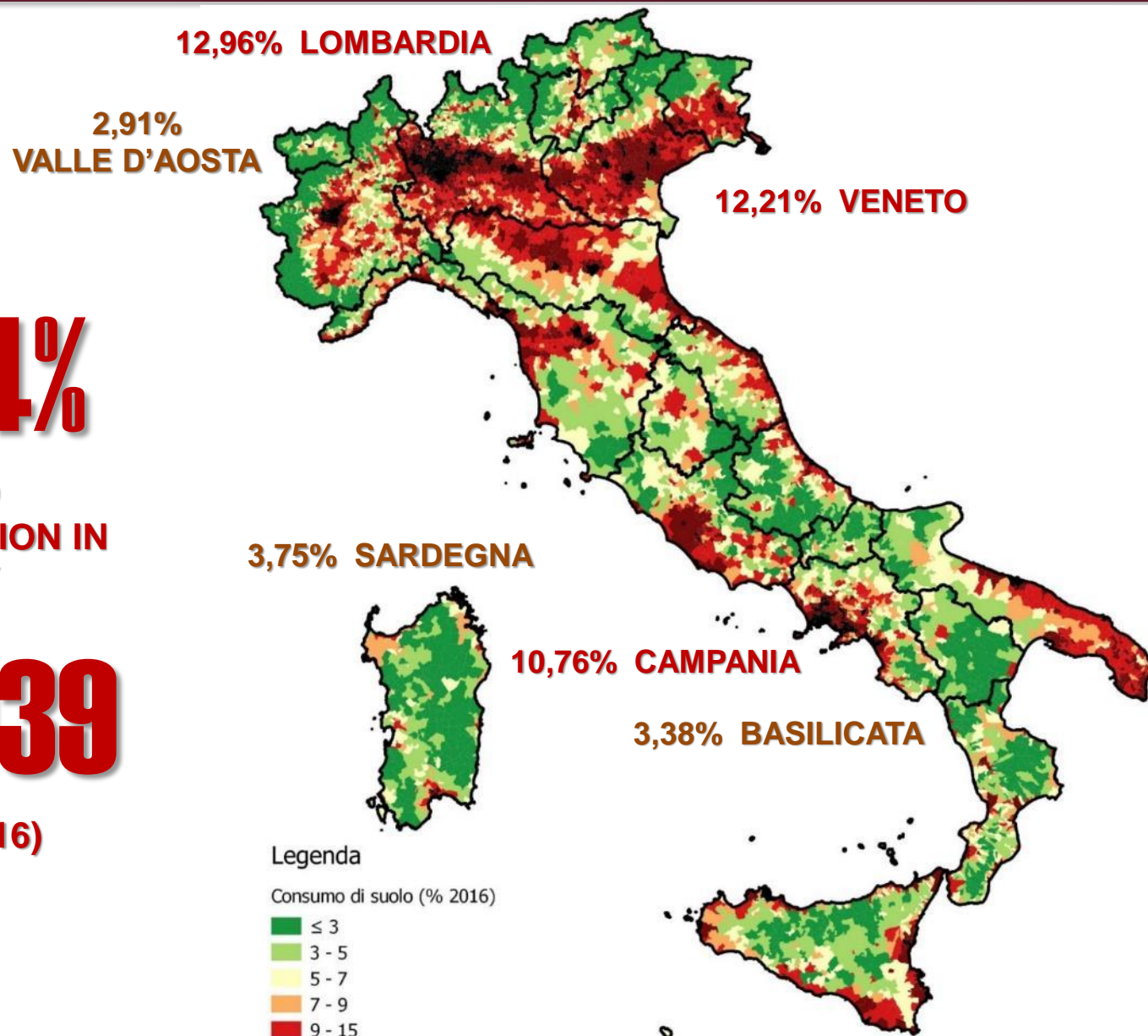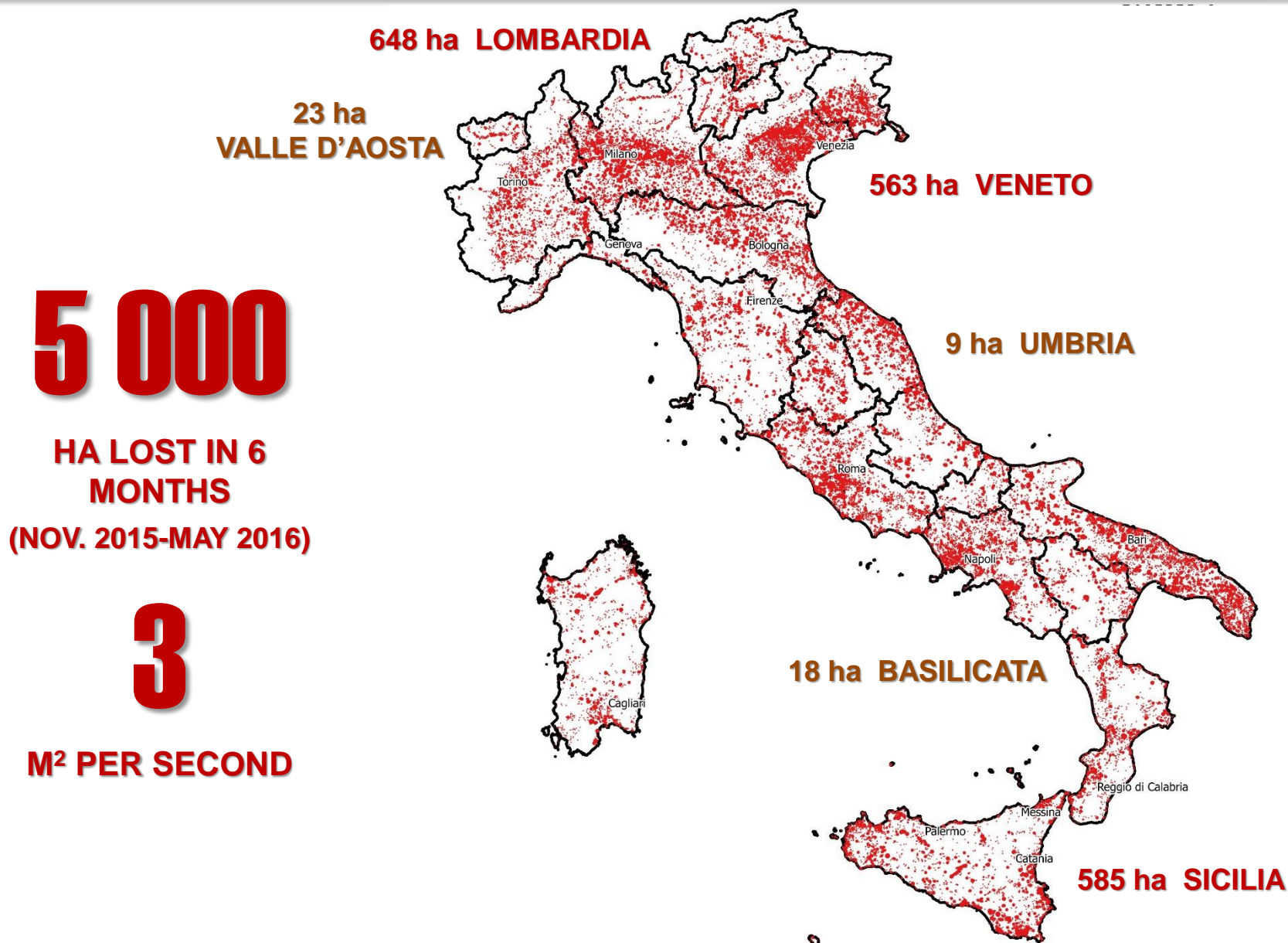
SNPA has started publishing data (indicators) on land monitoring in Linked Open Data (LOD) format - a technological and methodological approach to link the Open Data of the database - making them part of **a single global and shared information space**.
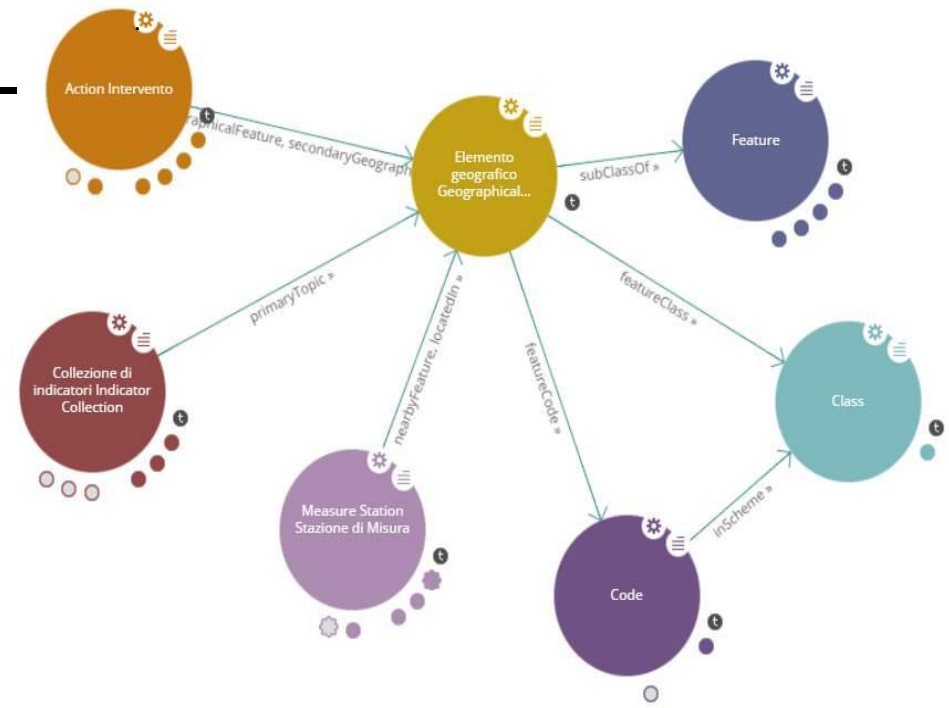
THANK YOU FOR YOUR ATTENTION!