LAND MONITORING ACTIVITIES OF THE ITALIAN NATIONAL SYSTEM FOR ENVIRONMENTAL PROTECTION

Michele Munafò    ISPRA
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.
LAND COVER AND URBAN EXPANSION

2006
COPERNICUS SENTINEL SATELLITE DATA

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 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.

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.
COPERNICUS SERVICES TO SUPPORT NATIONAL POLICY AND EU REPORTING

Water Framework Directive 2000/60/CE


EU White Paper on Adaptation to Climate Change

Roadmap to a Resource Efficient Europe, COM(2011) 371

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


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

servizi operativi istituzionali “Suolo”

servizi operativi istituzionali “Agricoltura”

servizi operativi istituzionali “Monitoraggio Operativo fascia costiera”

Water Framework Directive 2000/60/CE

Servizio LAND

Servizio CLIMATE CHANGE

Servizio ATMOSPHERE

Servizio SECURITY

Forum Nazionale

Direttiva sul bilanciamento e gestione dei rischi di inondazioni (2007/60/EC)


servizi operativi istituzionali “Clima e Meteorologia Operativa”

servizi operativi istituzionali “Oceanografia Operativa”

servizi operativi per il Controllo delle Frontiere

servizi operativi per la pianificazione marittima
Overview - Copernicus Services & Components

- 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
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.
1) **Corine Land Cover** *(1990-2000-2006-2012-2018*)

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

**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
Pan-European component

- HRLs on land cover production status:
  - 4 HRL2015 status layers published on the land portal; change layers to follow soon
**pan-European component**

- **CLC2018 production**
  - all EE39 countries in production
  - Extra training sessions for national production teams on-going
  - 9 countries passed already 1\textsuperscript{st} verification of CLC deliveries
- **Technical specifications for HRL2018 being drafted**
  - imperviousness (+ European settlements based on JRC ESM method under discussion)
  - forests
  - grasslands \rightarrow 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
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
SENTINEL 2
LAND MONITORING AND ENVIRONMENTAL REPORTING

Copernicus Land Monitoring Data/Services → Classification Harmonization Integration Enhancement → National downstream services → Maps/Indicators e.g. Soil Sealing Land Consumption Urban Sprawl Land Cover Flows → Environmental Reporting, Geoportals/LOD, Web Sites → Policy Makers, Local Authorities, Other Stakeholders, Citizens

Local and In Situ Data

Maps/Indicators e.g. Soil Sealing Land Consumption Urban Sprawl Land Cover Flows

National downstream services

Environmental Reporting

Geoportals/LOD

Web Sites

Policy Makers

Local Authorities

Other Stakeholders

Citizens
LAND TAKE/SOIL SEALING

Copernicus EU map
National map
(ISPRA/SNPA)
7.64% LAND CONSUMPTION IN ITALY

23 039 KM² (2016)

12.96% LOMBARDIA
2.91% VALLE D’AOSTA
12.21% VENETO
10.76% CAMPANIA
3.75% SARDEGNA
3.38% BASILICATA
5 000
HA LOST IN 6 MONTHS
(NOV. 2015-MAY 2016)

3
M² PER SECOND

648 ha LOMBARDIA
23 ha VALLE D’AOSTA
563 ha VENETO
9 ha UMBRIA
18 ha BASILICATA
585 ha SICILIA
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!