



Earth observation, Copernicus, its Academy and the need for renewed  
and new professional skills

Bernardo De Bernardinis and Maria Vittoria Castellani  
Copernicus Academy National Coordination

[bdb.posta@gmail.com](mailto:bdb.posta@gmail.com)

[maria.castellani@isprambiente.it](mailto:maria.castellani@isprambiente.it)

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# COPERNICUS NUMBERS AND ASSOCIATED QUESTIONS

Copernicus, the EU's strategic Earth Observation (EO) Programme, is the third largest provider of data and information in the world, offering through its three Components and its operational Services well over 600 open, free and free of charge informative products, for a volume of data and information exceeding 75 TBytes a day !!! ...



However, given this availability, is what Copernicus produces adequately known and are these informative products easily available, obtainable and usable by their potential users?

# COPERNICUS NUMBERS AND ASSOCIATED QUESTIONS

Assuming at least a general knowledge of Copernicus, as well as of the nature, significance and objectives of its User Uptake initiatives and in particular those concerning the Copernicus Academy, the answers to the previous questions could be spotted through an illustrative route and some applicative examples using some of the Copernicus Core Services.



It cannot be ignored that the Core Services are the priority and main objective of Copernicus.

So, such a route may be started noticing that what is produced by the operational Services along with what is provided by the other two Components for this purpose, is made available through two distinct but complementary modalities:

- ✓ specific web portals dedicated to each of the Core Services and to what they make use of
- ✓ platforms aimed at ensuring a single access to all the Core Services, information and data made available in the Programme, as well as, the availability of other services, in particular advanced IT services, but no longer open, free and free of charge

# COPERNICUS SERVICE COMPONENT: how to access to the Core Services data and information

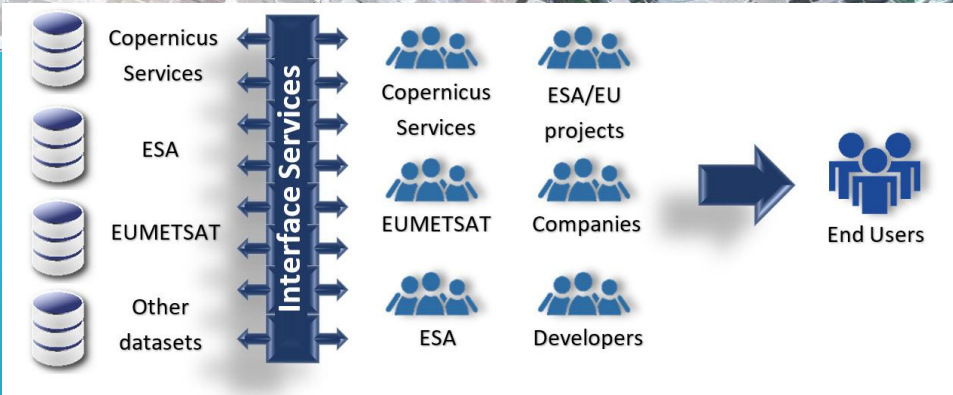


The processed data and the information produced by the different Copernicus Core Services are available through the respective dedicated web portals, listed hereafter.

Each of them has its own access rules and procedures and access, data and information are all free of charge and open, except for the Copernicus Security Service.

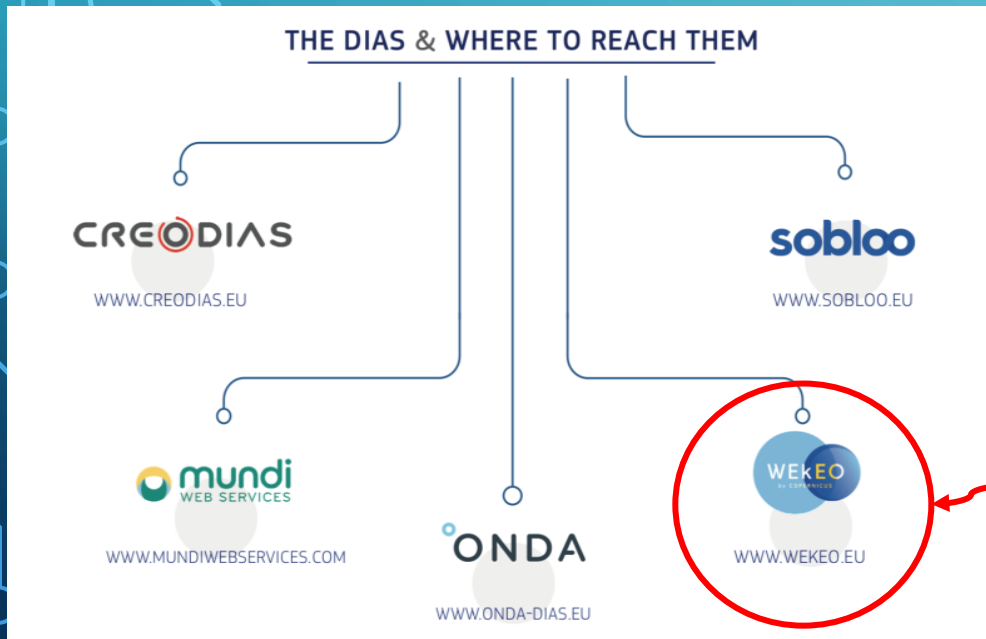
- Land-related data: <http://land.copernicus.eu>
- Atmosphere-related data: <http://atmosphere.copernicus.eu>
- Marine-related data: <http://marine.copernicus.eu>
- Emergency-related data: <http://emergency.copernicus.eu>
- Climate change-related data: <http://climate.copernicus.eu>

# THE DIAS: a way to simplify the existing system of heterogeneous platforms



To facilitate and standardise the access to the Core Services, the EC has funded the deployment of five cloud-based platforms to provide a centralised access to all Copernicus data, information and services, as well as to processing tools. These platforms are five and known as the **DIAS**, or **Data and Information Access Services** ...

... however, it appears that the EC, having launched the Destination Earth Strategic Action, intends to support and promote for the future only WEkEO as an institutional DIAS for Copernicus ...



In fact, "... as key organisations in the Copernicus Programme, EUMETSAT, ECMWF, EEA and MERCATOR OCEAN have combined their long-standing experience to develop the **WEkEO Copernicus DIAS** service ...".

# COPERNICUS SERVICE COMPONENT: Copernicus Land Monitoring Service (CLMS)

**Global** <http://land.copernicus.vgt.vito.be/PDF/portal/Application.html#Home>



**Pan-European** <http://land.copernicus.eu/pan-european>



**Local** <http://land.copernicus.eu/local>



**Reference Data** <http://land.copernicus.eu/in-situ>



By now, more than 80 products are made available from CLMS to its site:

URL: <http://land.copernicus.eu/>

## Copernicus Land Monitoring Services

Home Global Pan-European Local In-situ

You are here: Home

### Copernicus - The European Earth Observation Programme



Copernicus is a European system for monitoring the Earth. Data is collected by different sources, including Earth observation satellites and in-situ sensors. The data is processed and provides reliable and up-to-date information about six thematic areas: land, marine, atmosphere, climate change, emergency management and security. The *land* theme is divided into four main components:

- Global**. The Global Land Service 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. The products are used to monitor the vegetation, the water cycle and the energy budget.
- Pan-European**. The pan-European component provides information about the land cover and land use (LC/LU), land cover and land use changes and land cover characteristics. The latter includes information about imperviousness, forests, natural grasslands, wetlands, and permanent water bodies.
- Local**. The local component focuses on different hotspots, i.e. areas that are prone to specific environmental challenges and problems. This includes detailed LC/LU information for the larger EU cities (Urban Atlas), riparian zones along European river networks and NATURA 2000 sites. It will also include maps of coastal areas.
- In-situ**. 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. Next to data provided by participating countries, Earth observation from space also yields pan-European reference datasets, such as a Digital Elevation Model.

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- Ask the service desk
- Contract opportunities
- EAGLE
- Events
- Land use cases
- News
- Partners
- Publications
- Technical library

Partners



# COPERNICUS SERVICE COMPONENT: Copernicus Land Monitoring Service (CLMS)

Global	<a href="http://land.copernicus.vgt.vito.be/PDF/portal/Application.html#Home">http://land.copernicus.vgt.vito.be/PDF/portal/Application.html#Home</a>
Pan-European	<a href="http://land.copernicus.eu/pan-european">http://land.copernicus.eu/pan-european</a>
Local	<a href="http://land.copernicus.eu/local">http://land.copernicus.eu/local</a>
Reference Data	<a href="http://land.copernicus.eu/in-situ">http://land.copernicus.eu/in-situ</a>

Global Pan-European Local Imagery and reference data Product portfolio - News and events - Language -

## Pan-European

Print User corner

- How to access our data
- Technical library
- Factsheets
- Use cases
- Looking for National projection & Expert products?

CORINE Land Cover

CLC+

High Resolution Layers

Biophysical parameters

European Ground Motion Service

Related Pan-European products

Global Pan-European Local Imagery and reference data Product portfolio - News and events - Language -

## Local

Print User corner

- How to access our data
- Technical library
- Factsheets
- Use cases
- Looking for National projection & Expert products?

Urban Atlas

Riparian Zones (RZ)

Natura 2000 (N2K)

Coastal Zones

The local component is coordinated by the European Environment Agency and aims to provide specific and more detailed information that is complementary to the information obtained through the Pan-European component. The local component focuses on different hotspots, i.e. areas that are prone to specific environmental challenges and problems. It will be based on very high resolution imagery (2,5 x 2,5 m pixels) in combination with other available datasets (high and medium resolution images) over the pan-European area. The three local components are:

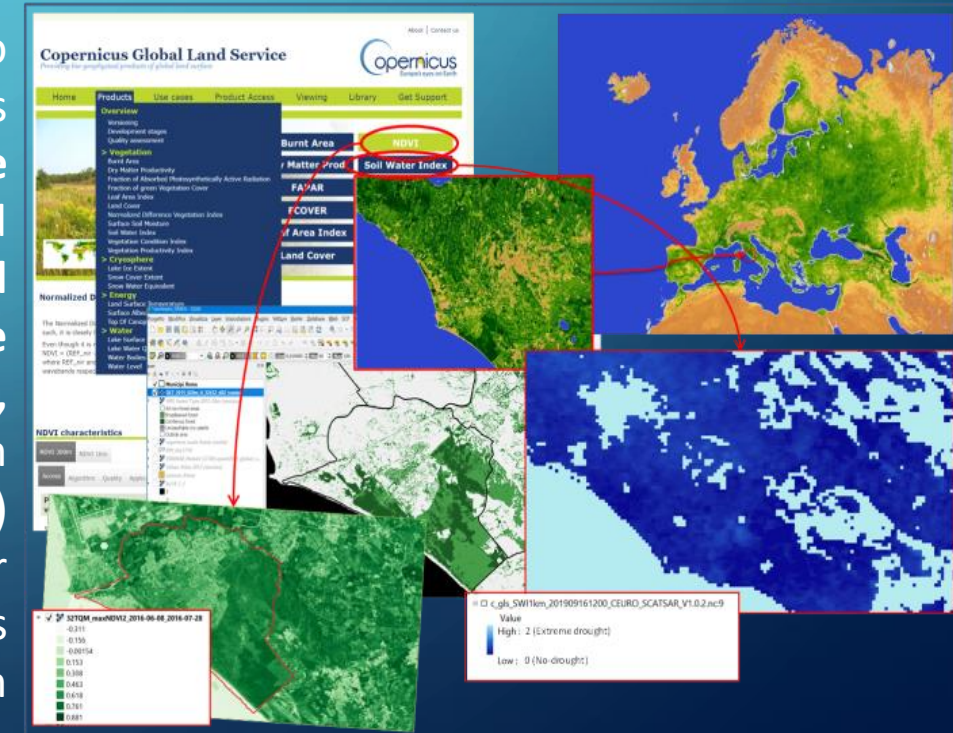
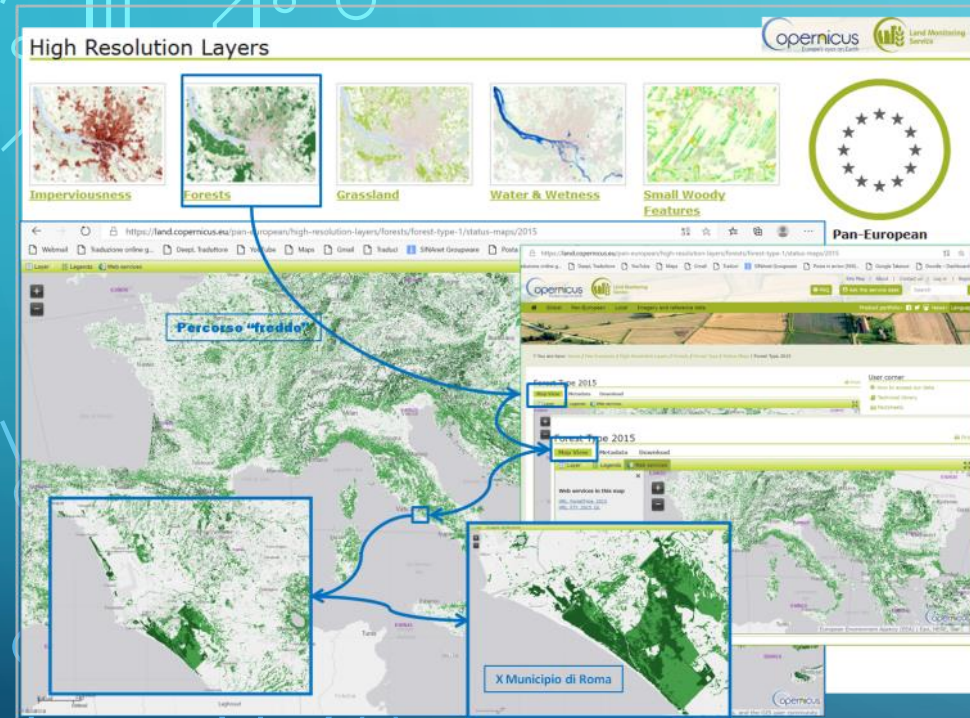
- Urban Atlas.** EU regional policy justifies the production and maintenance of detailed land cover and land use information over major EU city areas. The Urban Atlas provides pan-European comparable land cover and land use data covering a number of Functional Urban Areas (FUA). In 2012, an additional layer (Street Tree Layer - STL) was produced for a selection of FUA's as well as a building height dataset covering, originally, only the capital cities but now extended to additional 870 cities. The latest update refers to the 2018 reference year and accounts for the update of the land cover and land use product (including a revision of the 2012 reference year) as well as an update of the Street Tree Layer.
- 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 N2K.** 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.

Windows taskbar: Cerca, 10:10

# COPERNICUS LAND MONITORING SERVICE: an example of use

... Even a less experienced user, interested in urban areas greenery and, in particular, in monitoring not only its typology and spatial distribution, but also its vegetative vigour over time, can pursue this goal by using a 'cold' route, namely by integrating the High Resolution Layers of the Pan-European with some of the products of the Global and Local services ...

... such as those relating to vegetation indices such as the **Normalized Difference Vegetation Index (NDVI)** and the **fraction of Absorbed Photosynthetically Active Solar Radiation (fAPAR)**, which in combination with the **Soil Water Index (SWI)** allows us to assess the water stress to which vegetation is subjected, even in urban areas ...





# COPERNICUS LAND MONITORING SERVICE: an example of use

... However, a somewhat more experienced user, namely trained and instructed, will be able to use a "hot" path, obtaining different and more extended information.

Thus, while following the "cold" path requires no further to obtain a well define information layer, but without any possibility to deepen and explore it, the "hot" path requires the use of a GIS platform, like QGIS.

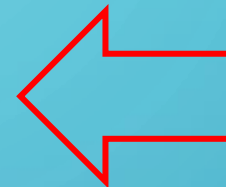
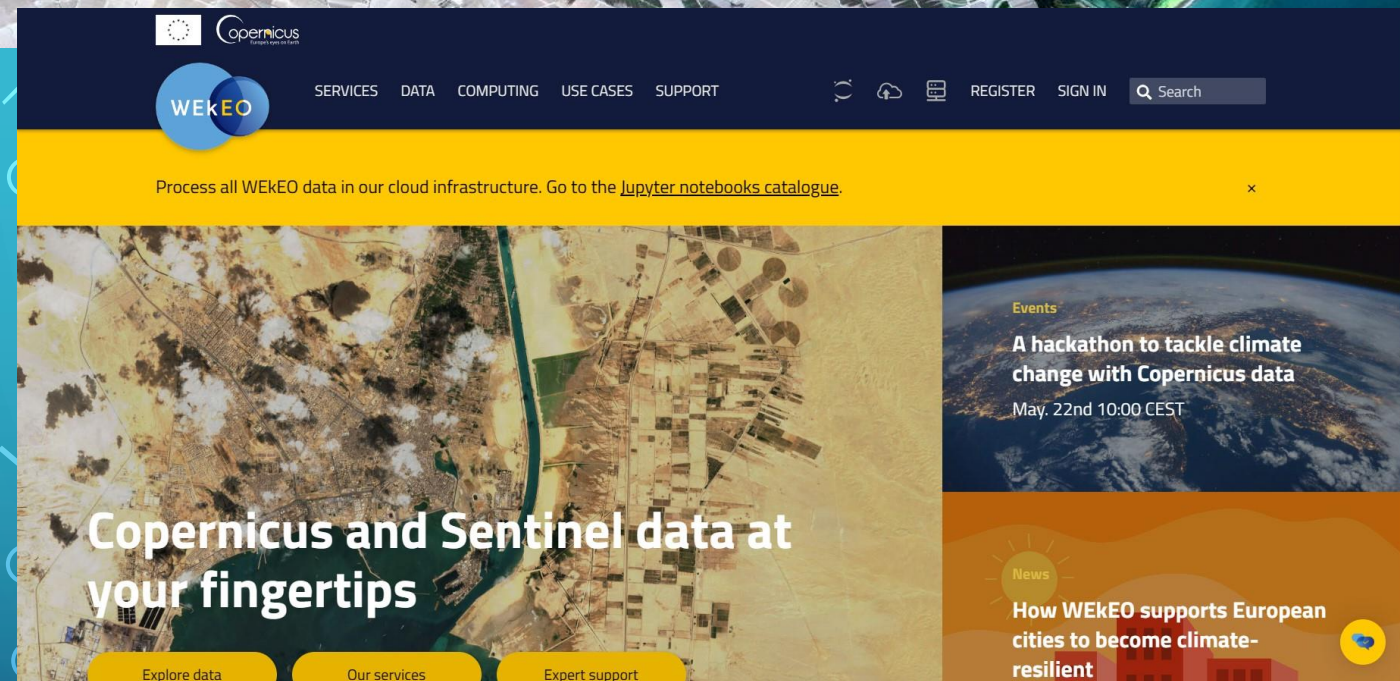
This allows us to manage and use the data and information made available and accessible by the CLMS, either in vector or raster format, further and provides the possibility of obtaining higher-level information in space and time ...

The screenshot displays the Copernicus Land Monitoring Service interface. At the top, it lists "High Resolution Layers" including Imperviousness, Forests, Grassland, Water & Wetness, and Small Woody Features. A "Pan-European" logo is also visible. Below this, a QGIS application window is shown, displaying a map of Rome with a red box highlighting the "Municipio di Roma" area. A red arrow points from this area to a detailed map of the "Copertura delle classi di latifoglie e conifere nei Municipi di Roma (ha)". This detailed map includes a bar chart showing the distribution of forest types (latifoglie and conifere) across various municipalities (V to XV). A table below the chart provides the source data for the land cover map of Rome.

Municipality	Area (ha)	Latifoglie (ha)	Conifere (ha)
V	10000	10000	0
VI	10000	10000	0
VII	10000	10000	0
VIII	10000	10000	0
IX	10000	10000	0
X	10000	10000	0
XI	10000	10000	0
XII	10000	10000	0
XIII	10000	10000	0
XIV	10000	10000	0
XV	10000	10000	0

Fonte dati: Carta di copertura del suolo di Roma

# WEKEO: how to access and learn to use it and a CLMS example



“... The WEKEO DIAS (one of the five Copernicus Data and Information Access Services (DIAS) co-founded by the European Commission, in 2018) addresses a wide range of users from all disparate domains (institutions, private sector, entrepreneurs, scientists or members of the civil society, etc.) and provides them with a single distributed tool for accessing, visualizing and analyzing **all Copernicus data and services** (What data is available in WEKEO?), including Big Data analysis tools, to develop applications tailored to their specific needs and value-added services.

# WEKEO: how to access and learn to use it

**WEKEO** SERVICES **DATA** COMPUTING USE CASES SUPPORT REGISTER SIGN IN Search

Process all WEKEO data in our cloud infrastructure

**Layers: 2** Jobs

- Global 10-daily Normalized Difference Vegetation Index 333M**  
01/01/2021 | 00:00  
0 0.2 0.4 0.6 0.8
- Sea water velocity m/s**  
15/08/2023 | 12:00 | -0.5 m  
0 1 2 3

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2014 Jul 2015 Jul 2016 Jul 2017 Jul 2018 Jul 2019 Jul 2020 Jul 2021 Jul 2022 Jul 2023 Jul

lobehq

# WEKEO: how to access and learn to use it

The screenshot displays the WEKEO web application interface. At the top, there is a navigation bar with the WEKEO logo and menu items: SERVICES, DATA, COMPUTING, USE CASES, and SUPPORT. A search bar is also present. Below the navigation bar, a yellow banner reads "Process all WEKEO data in our cloud infra". The main content area shows a map with two data layers: "Global 10-daily Normalized Difference Vegetation Index" and "Sea water velocity m/s". A red circle highlights the "DATA" menu item in the top navigation bar. Another red circle highlights the information icon (i) for the "Global 10-daily Normalized Difference Vegetation Index" layer. A detailed metadata panel is open for this layer, titled "Global 10-daily Normalized Difference Vegetation Index 333M".

**Global 10-daily Normalized Difference Vegetation Index 333M**

**Abstract**

The Normalized Difference Vegetation Index (NDVI) is a proxy to quantify the vegetation amount. It is defined as  $NDVI = \frac{NIR - Red}{NIR + Red}$  where NIR corresponds to the reflectance in the near infrared band, and Red to the reflectance in the red band. It is closely related to FAPAR and is little scale dependant.

**Classification**

<b>Dataset ID</b>	EO:CLMS:DAT:CGLS_GLOBAL_NDVI300_V1_333M
<b>Published</b>	VITO NV, 21 December 2016
<b>Copernicus service</b>	CLMS (Land)
<b>Area</b>	Global
<b>Time</b>	Past
<b>Tags</b>	Land · NDVI

**Resources**

- JSON metadata
- XML metadata

**Contacts**

<b>Principal Investigator</b>	VITO NV
<b>Originator</b>	VITO NV

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# WEKEO: how to access and learn to use it

The screenshot displays the WEKEO web application interface. At the top, there is a navigation bar with the WEKEO logo and menu items: SERVICES, DATA, COMPUTING, USE CASES, and SUPPORT. A search bar is also present. Below the navigation bar, a yellow banner reads "Process all WEKEO data in our cloud infra...". The main content area shows a map with several data layers overlaid. A red circle highlights the "DATA" menu item in the top navigation bar. Another red circle highlights a plus sign icon in the "Layers" panel, which lists "Global 10-daily Normalized Difference Vegetation Index" and "Sea water velocity m/s". A third red circle highlights a gear icon in the layer settings. On the right side, a "Catalogue" window is open, showing a list of datasets. The "Filters" section includes a "FREE-TEXT SEARCH" field and a "FEATURED 27" section. The "FAVOURITES" section is empty. The "DATASETS 433" section lists several datasets, including "SRAL Level 1B - Sentinel-3", "Global Ocean Physics Analysis and Forecast", and "SENTINEL-1 Synthetic Aperture Radar (SAR)". Each dataset entry includes a thumbnail image, a title, a description, and buttons for "Details" and "Add to map...".

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# WEKEO: how to access and learn to use it

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WEKEO    SERVICES    DATA    COMPUTING    USE CASES    SUPPORT    REGISTER    SIGN IN    Search

Layers: 2 +

- Global 10-daily Normalized Difference Vegetation Index
- Sea water velocity m/s

**Catalogue**    Datasets 433

Filters

FREE-TEXT SEARCH

SRAL Level 1B - Sentinel-3

**Catalogue**    Datasets 21

Filters

FREE-TEXT SEARCH

CLMS

FEATURED 8

FAVOURITES

COPERNICUS SERVICE

- C3S (Climate) 1
- CLMS (Land) 20

AREA

Europe 21

TIME

Past 21

TAGS

- Climate 1
- Cryosphere 8
- Digital elevation model 1
- Hydrology 2
- Ice 2
- Land 20
- Land cover 3
- Phenology 5
- Plant phenology index 5
- Snow 2
- Urban 1
- Vegetation 8

**CORINE Land Cover 1**

The CORINE Land Cover (CLC) inventory was initiated in 1985 (reference year 1990). Updates have been produced in 2000, 2006, 2012, and 2018. It consists of an inventory of land cover ...

Details    Add to map

**EU-DEM and Derived Products 5**

EU-DEM v1.0 is a digital surface model (DSM) of EEA39 countries representing the first surface as illuminated by the sensors. It is a hybrid product based on SRTM and ASTER GDE...

Details    Add to map...

**EU-Hydro 2**

EU-Hydro is a dataset for all EEA39 countries providing a photo-interpreted river network, consistent of surface interpretation of water bodies (lakes and wide rivers), and a drainage model (als...

Locate    Measure    Set AOI    Settings

0 m    -2,000    -4,000    -6,000

# WEKEO: how to access and learn to use it

The image is a collage of screenshots from the WEKEO web application, illustrating its interface and data processing capabilities. The screenshots are arranged in a layered, overlapping fashion, with red circles and lines highlighting specific features and navigation elements.

- Top Screenshot:** Shows the WEKEO logo and a navigation menu with options: SERVICES, DATA, COMPUTING, USE CASES, SUPPORT, REGISTER, and SIGN IN. A search bar is also visible.
- Second Screenshot:** Displays a map with a data layer titled "Global 10 daily Normalized Difference Vegetation Index". A red circle highlights a plus sign icon in the "Layers" panel, indicating the ability to add more layers.
- Third Screenshot:** Shows a "Catalogue" window with a "Filters" section. A red circle highlights the "Filters" label, and another red circle highlights the "FREE-TEXT SEARCH" input field.
- Fourth Screenshot:** Shows a "Catalogue" window with search results. A red circle highlights the "FREE-TEXT SEARCH" input field, and another red circle highlights the "Plant phenology index" dataset in the list of results.
- Fifth Screenshot:** Shows a map with two data layers: "Global 10-daily Normalized Difference Vegetation Index 333M" and "Sea water velocity m/s". A red circle highlights the "Global 10-daily Normalized Difference Vegetation Index 333M" layer title.
- Sixth Screenshot:** Shows a map with a "Catalogue" window. A red circle highlights the "FREE-TEXT SEARCH" input field, and another red circle highlights the "Plant phenology index" dataset in the list of results.

Red lines connect these highlighted elements across the different screenshots, showing the flow of interaction: from the main navigation to adding layers, then to searching for specific datasets in the catalogue, and finally to viewing those datasets on the map.

# WEKEO: how to access and learn to use it

The image is a collage of four screenshots from the WEKEO web application, illustrating the user interface and data access process. Red circles and arrows highlight key features:

- Top Screenshot:** Shows the main navigation menu with 'DATA' circled in red. Below the menu, a yellow banner reads 'Process all WEKEO data in our cloud infra...'. The 'Layers' panel on the right shows a '+' icon circled in red.
- Second Screenshot:** Shows a 'Catalogue' window with a 'Filters' section circled in red. The search bar contains 'Free-text search' and 'Text'.
- Third Screenshot:** Shows a global map with a 'Layers: 2' panel on the left. The top layer, 'Global 10-daily Normalized Difference Vegetation Index 333M', is circled in red. Below it, 'Sea water velocity m/s' is also visible.
- Bottom Screenshot:** Shows a 'Catalogue' window with 'Filters' and 'Datasets 21' sections. The search bar contains 'clms' (circled in red). The 'CLMS (Land)' dataset is highlighted in the featured section. The 'Plant phenology index 5' dataset is circled in red in the bottom list.



# WEKEO: how to access and learn to use it

Navigation menu: WEKEO, SERVICES, DATA, COMPUTING, USE CASES, SUPPORT (circled in red). Below the menu, a yellow banner reads: "Process all WEKEO data in our cloud infrastructure. Go to the [Jupyter notebooks](#)".

WEKEO Support  
Expert support is always at your service

Layers: 2 + Jobs  
Global 10-daily Normalized Difference Vegetation Index 333M  
01/01/2021 | 00:00  
Sea water velocity m/s  
15/08/2023 | 12:00 | -0.5 m

Help Center  
Get instant answers about WEKEO service

Go to WEKEO Data Catalogue Jupyter Catalogue JupyterHub English

### Let's bring Earth Observation knowledge at your fingertips

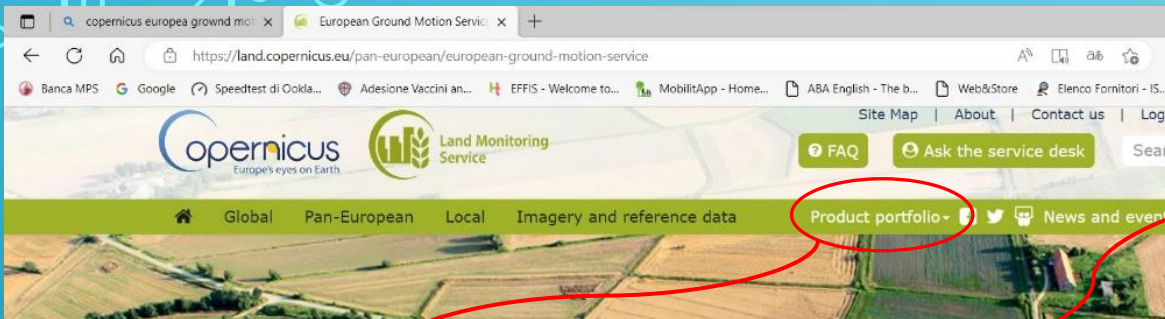
Search for articles...

- What data is available in WEKEO?
- How to download WEKEO data?
- What is the WEKEO JupyterHub?
- How to launch an instance (Virtual Machine) on WEKEO?
- How to access Copernicus and Sentinel products using Data Viewer?
- Advantages of the Essential, Advanced and Paid Cloud Computing plans

Getting Started with WEKEO  
Everything you need to know to get started with the

WEKEO Data Viewer and Catalogue  
Let's discover the data Catalogue, data science and future

# COPERNICUS LAND MONITORING SERVICE : the Radar Interferometry and the EGMS



Welcome to the EGMS

The European Ground Motion Service (EGMS) provides consistent and reliable information regarding natural and anthropogenic ground motion over the Copernicus Participating States and across national borders, with millimetre accuracy.

The EGMS represents a baseline for ground motion applications at continental, national and local level.

**Please consult the [FAQ](#) for general questions and known issues.**

Get access

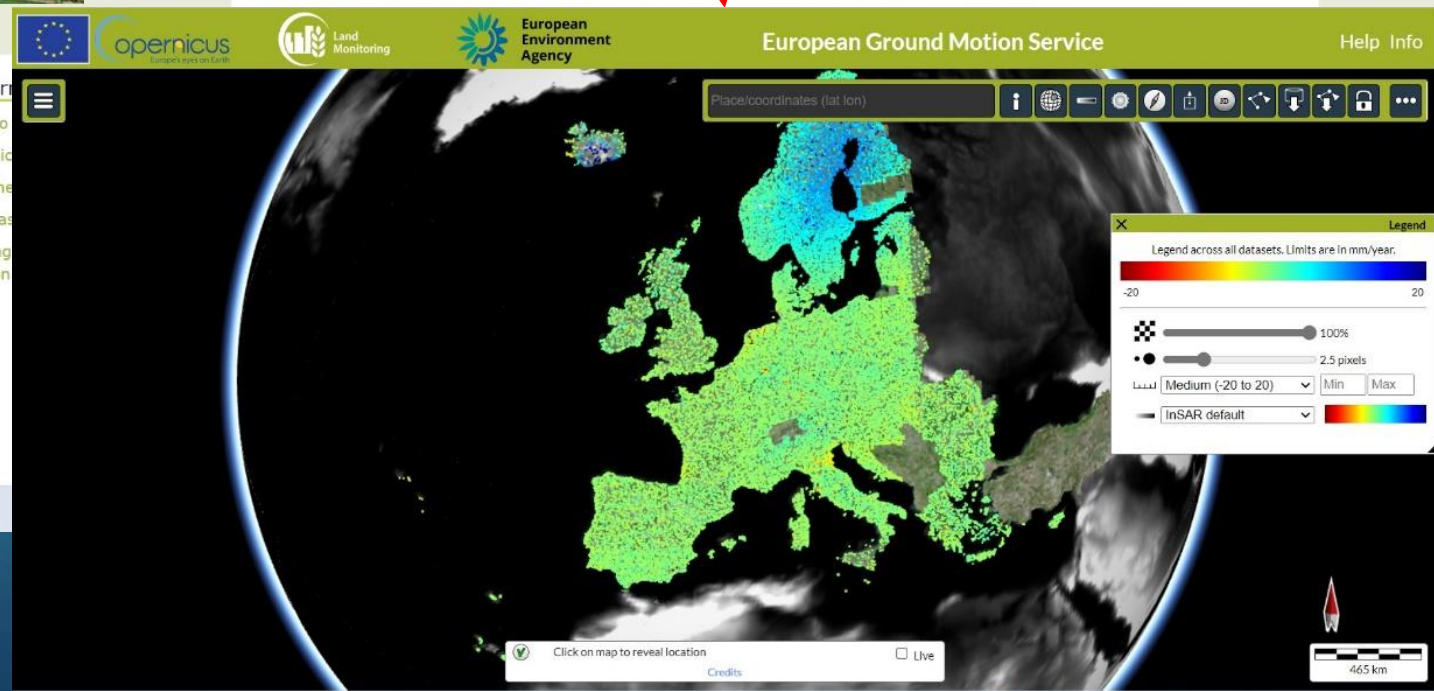
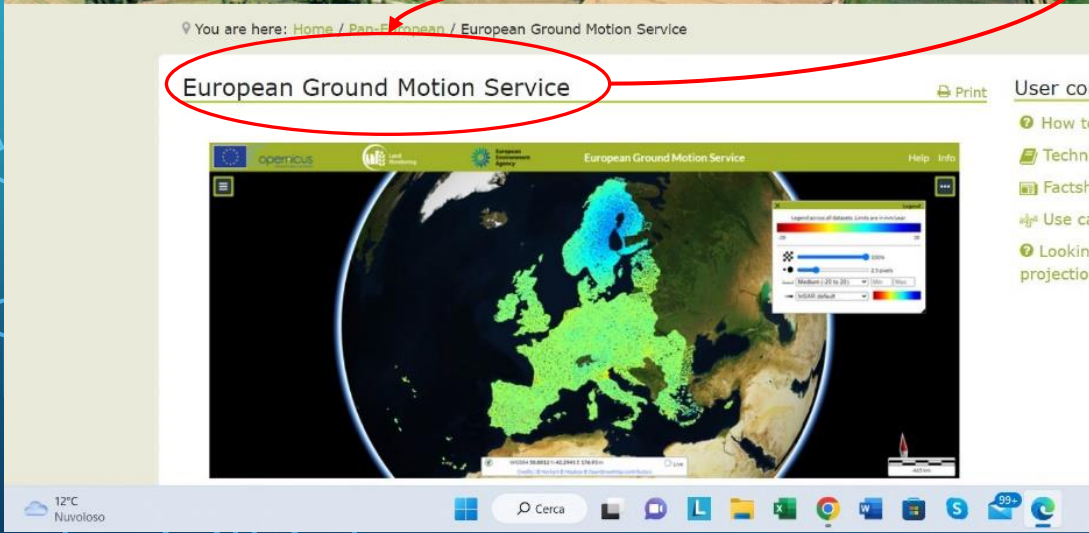
View and download EGMS data via the [EGMS Explorer](#).

Get quick video introductions to the [EGMS](#) and the [EGMS Explorer](#).

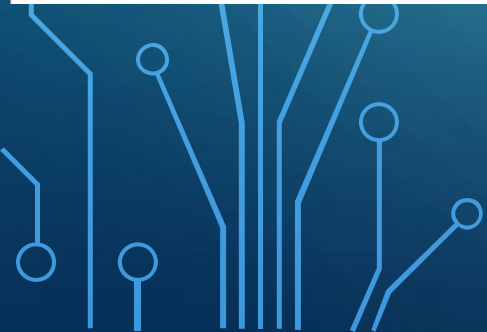
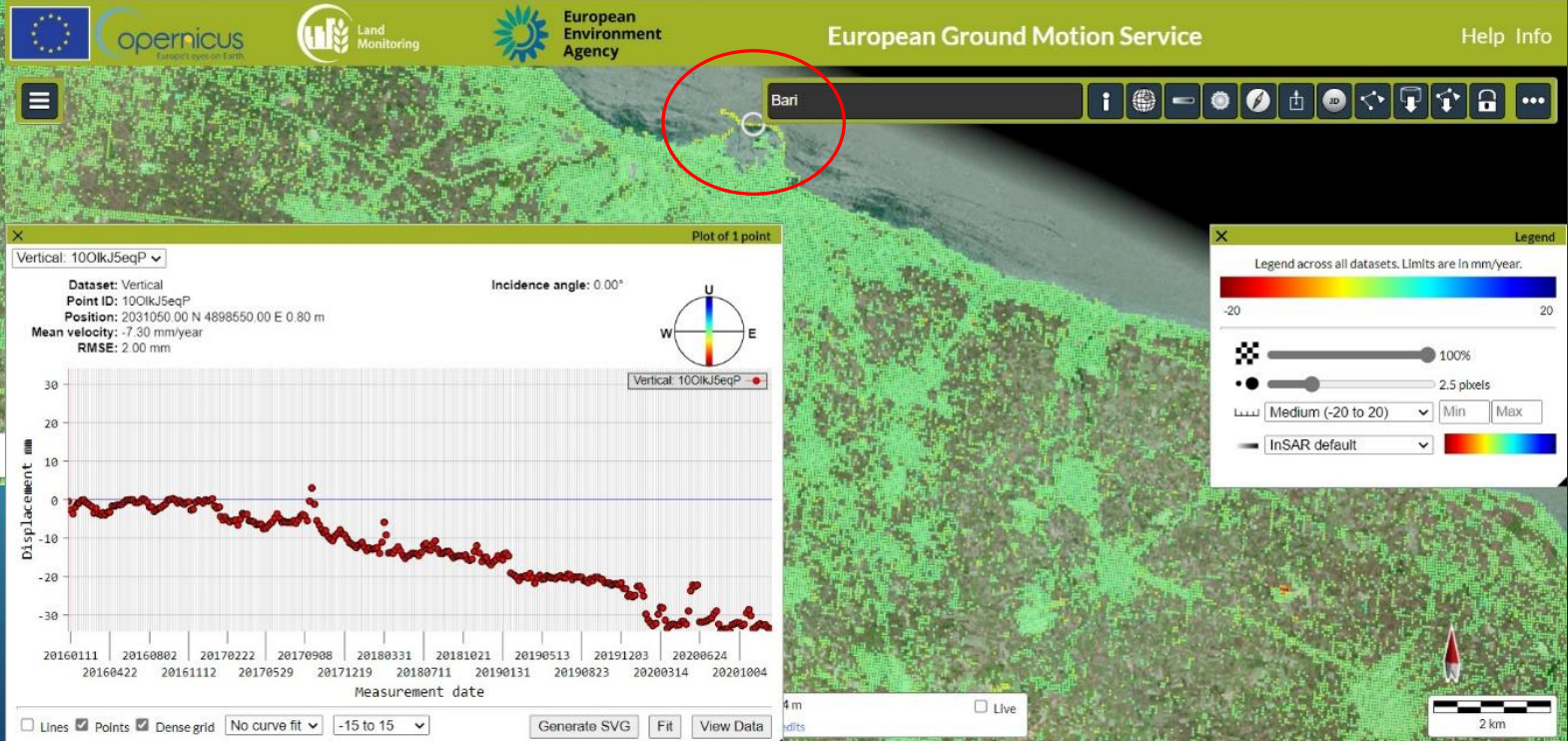
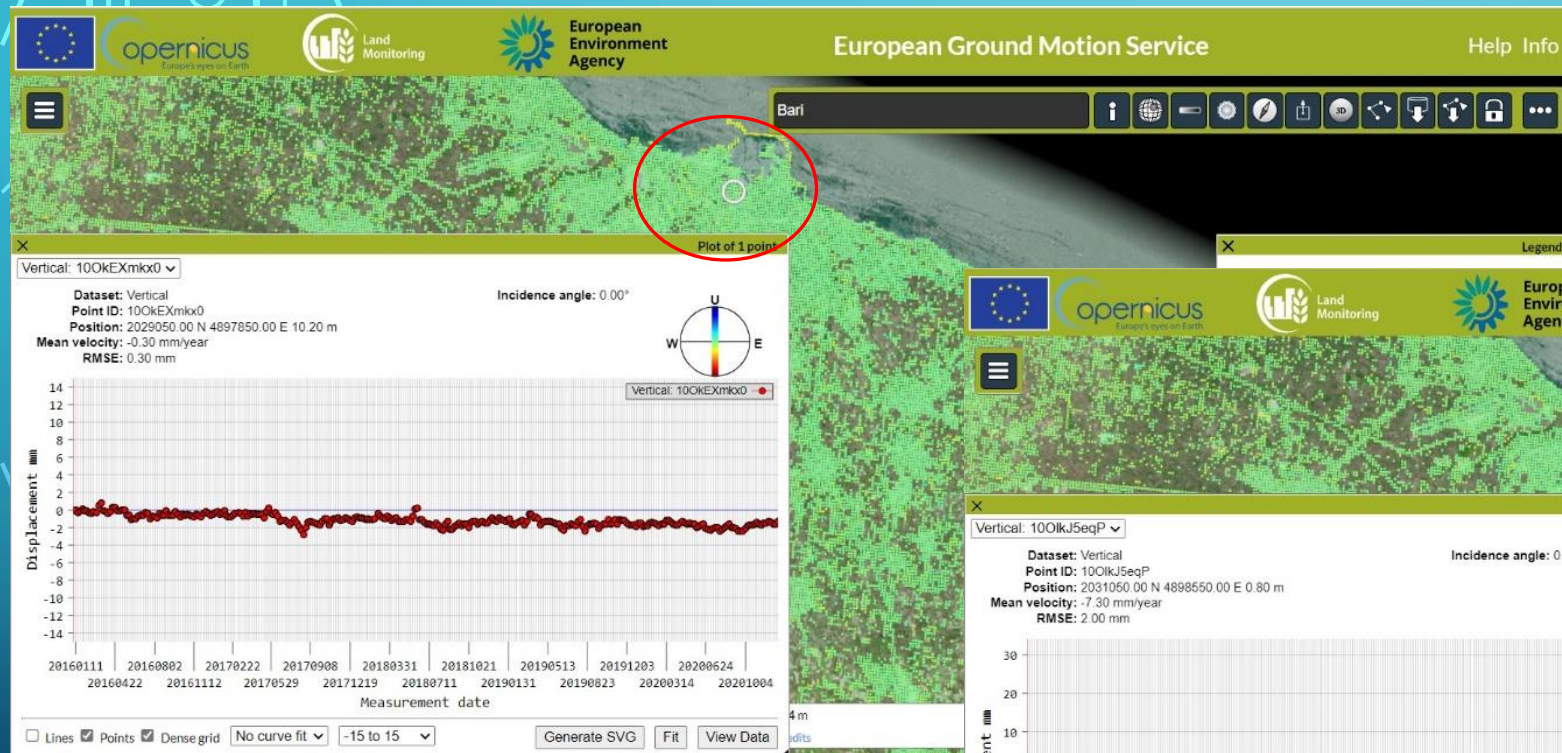
Read about how to [use the EGMS Explorer](#).

Learn how best to [use EGMS products](#).

Understand the EGMS



# COPERNICUS LAND MONITORING SERVICE : the Radar Interferometry and the EGMS



# COPERNICUS LAND MONITORING SERVICE : the Radar Interferometry and the EGMS

The screenshot displays the European Ground Motion Service (EGMS) web interface. At the top, there are logos for the European Commission, Copernicus, Land Monitoring, and the European Environment Agency. The main header reads "European Ground Motion Service" with "Help Info" links on the right. A search bar contains the text "Ischia". Below the search bar is a toolbar with various map navigation icons. The main map area shows a satellite-style map of the Ischia region with a color-coded overlay representing ground motion data. A legend window is open on the right, titled "Legend", with the text "Legend across all datasets. Limits are in mm/year." and a color scale from -20 to 20. The legend also includes controls for a checkerboard pattern (set to 100%), a dot size (set to 2.5 pixels), a dropdown menu set to "Medium (-20 to 20)", and a color bar labeled "InSAR default". At the bottom of the map, a status bar shows the coordinates "WGS84 40.7594 N 14.1338 E -0.00 m", a "Live" checkbox, and a "Credits" link. A scale bar for 2 km and a north arrow are also visible.

# COPERNICUS LAND MONITORING SERVICE : the Radar Interferometry and the EGMS

European Ground Motion Service

Ischia

Vertical: 1008jDpBqJ

Incidence angle: 0.00°

Dataset: Vertical  
Point ID: 1008jDpBqJ  
Position: 1979450.00 N 4670350.00 E 69.20 m  
Mean velocity: 67.90 mm/year  
RMSE: 4.90 mm

WGS84 40.8279 N 14.1252 E 56.19 m

European Ground Motion Service

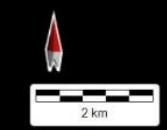
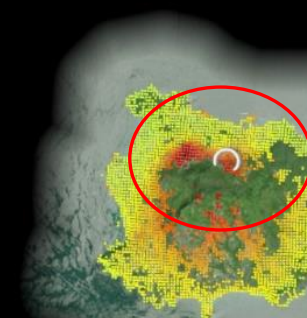
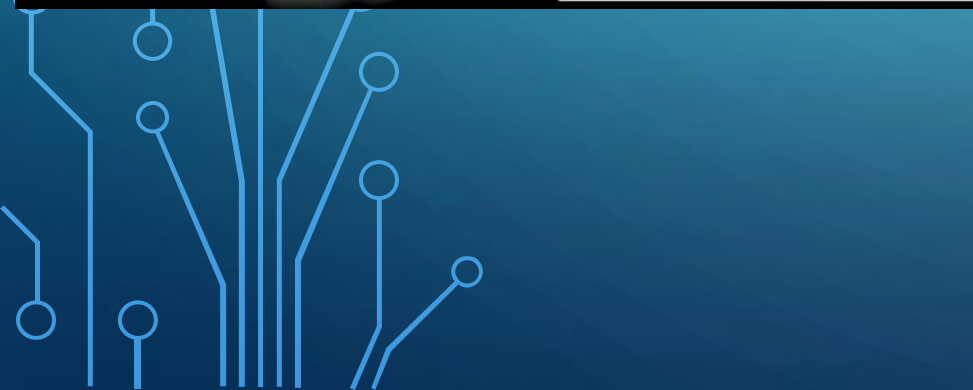
Ischia

Vertical: 1000dadxyR

Incidence angle: 0.00°

Dataset: Vertical  
Point ID: 1000dadxyR  
Position: 1969750.00 N 4651950.00 E 185.70 m  
Mean velocity: -14.20 mm/year  
RMSE: 2.90 mm

WGS84 40.7401 N 13.9023 E 173.85 m



# COPERNICUS EMERGENCY MANAGEMENT SERVICE: an introduction and some examples of use

CEMS answers to the civil protection needs to face and recovery from floods, tsunamis, earthquakes, landslides, forest fires, etc. and, even if only authorized users can trigger the service, everybody can access maps on its site: <http://emergency.copernicus.eu/>



Implemented by the European Commission as part of the Copernicus Programme

Home    FAQ/Service Overview    Access to EMS data

## Copernicus Emergency Management Service

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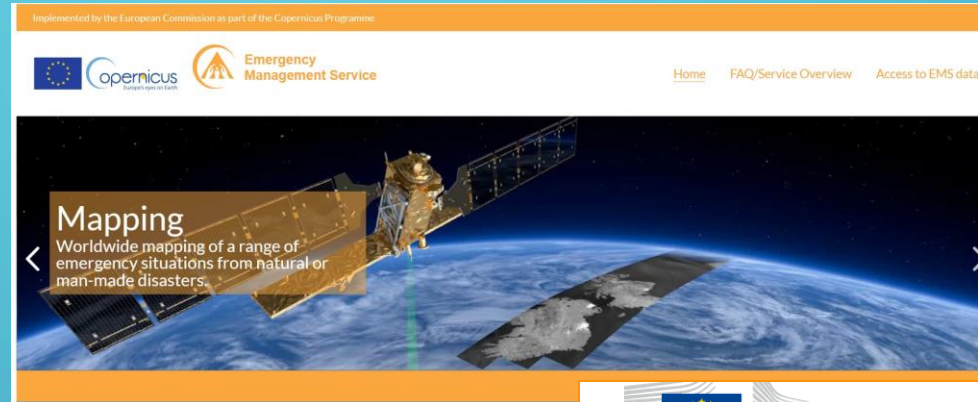
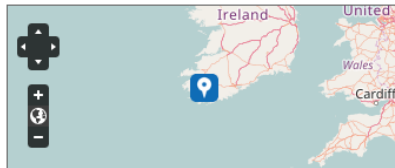
# COPERNICUS EMERGENCY MANAGEMENT SERVICE: an introduction and some examples of use

[EMSR249] Hurricane Ophelia in Ireland

## EMSR249: Hurricane Ophelia in Ireland

**Event Time (UTC):** 2017-10-16 06:00  
**Event Time (LOC):** 2017-10-16 07:00  
**Event Type:** Storm (Extra-tropical storm)  
**Activation Time (UTC):** 2017-10-15 19:23  
**Reference maps produced:** 0  
**Delineation maps produced:** 16  
**Grading maps produced:** 13  
**Activation Status:** Open  
**Affected Countries/Territories:**  
 Ireland

**Authorized User:**  
 Ireland|National Directorate for Fire and Emergency Management  
**Activation Reason:**  
 Hurricane Ophelia is forecast to hit the western to south eastern coasts of Ireland the 16/10/2017 from 06:00 onwards with extreme winds, storm surges, waves and flooding.



Rapid Mapping

Risk and Recovery

COPERNICUS Emergency Management Service

Home | What is Copernicus | EMS - Mapping | EMS - Early Warning System

LATEST NEWS · 2017-10-16 | [EMSR250] Forest fire Portugal

EMS - MAPPING

- Service Overview
- Who can use the service
- How to use the service
- Products: Rapid Mapping
- Products: Risk and Recovery
- Quality control / Feedback
- User Guide

RAPID MAPPING

- List of Activations
- Map of Activations
- GeoRSS Feed

RISK AND RECOVERY

**List of EMS Rapid Mapping Activations**

Act. Code	Title	Event Date	Type	Country/Terr.	Feed
EMSR250	Forest fire Portugal		Wildfire	Portugal	
EMSR249	Hurricane Ophelia in Ireland	2017-10-16	Storm	Ireland	
EMSR248	Forest Fires in Castilla y León region,...	2017-07-29	Wildfire	Spain	
EMSR247	Forest fire in Borjomi area, Georgia	2017-09-22	Wildfire	Georgia	
EMSR246	Hurricane Maria in Dominica	2017-09-19	Storm	Dominica	
EMSR245	Hurricane Maria in Caribbean	2017-09-19	Storm	Saint Kitts and... British	

COPERNICUS Emergency Management Service

Emergency Management Service

Home | EMS - Mapping | EMS - Early Warning System

[EMSR249] Hurricane Ophelia in Ireland

**Copernicus Emergency Management Service - Mapping**

A service in support of European emergency response

# COPERNICUS EMERGENCY MANAGEMENT SERVICE: an introduction and some examples of use

Implemented by the European Commission as part of the Copernicus Programme

## Mapping

Worldwide mapping of a range of emergency situations from natural or man-made disasters

## Exposure mapping

The Copernicus EMS exposure mapping component provides highly accurate and continuously updated information on the presence of human settlements and population with the Global Human Settlement Layer (GHSL).



### Population grids

**Population grids** are effective datasets to assess the amount of resident population at fine spatial resolution. Population counts per grid cell quantify the amount of people exposed to hazards.



### Built-up surface

**Built-up surface** grids are essential information to map human settlements and their characteristics (like land use and density). The amount of built-up surface per grid cell is useful to estimate settlement typologies and is used as covariate for population disaggregation.





# COPERNICUS EMERGENCY MANAGEMENT SERVICE: an introduction and some examples of use

Implemented by the European Commission as part of the Copernicus Programme

## Mapping

Worldwide mapping of a range of emergency situations from natural or man-made disasters.

## Early Warning & Monitoring

Copernicus EMS Early Warning and Monitoring offers critical geospatial information at European and global level through continuous observations and forecasts for floods, droughts and forest fires.



### Floods

The **European Flood Awareness Systems (EFAS)** and **Global Flood Awareness Systems (GloFAS)** provide complementary flood forecast information to relevant stakeholders that support flood risk management at the national, regional and global level.



### Fires

The **European Forest Fire Information System (EFFIS)** monitors forest fire activity in near-real time. EFFIS supports wildfire management at the national and regional level for EU member states and across the Middle East and North Africa.





### Droughts

The **Drought Observatory (DO)** provides drought-relevant information and early-warnings for **Europe (EDO)** and **globally (GDO)**. The service publishes short analytical reports (Drought News) in anticipation of an imminent drought.



# COPERNICUS EMERGENCY MANAGEMENT SERVICE: an introduction and some examples of use




jrc-effis@ec.europa.eu Login to access admin area


  About ▾ Publications ▾ Apps ▾ Partners Contacts



## European Forest Fire Information System EFFIS

Implemented by the European Commission as part of the Copernicus Programme

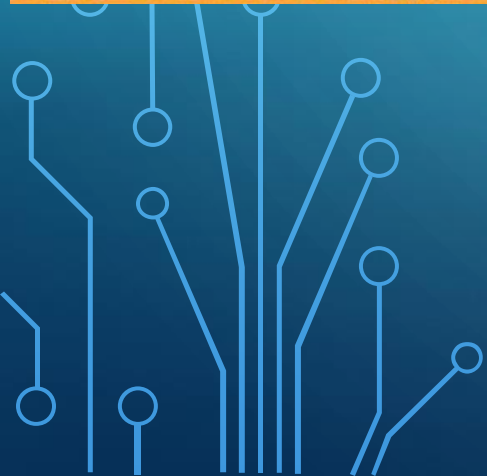
   **Emergency Management Service** [Home](#) [FAQ/Service Overview](#) [Access to EMS data](#)



### Wildfire

The EMS fire component supports the services in charge of the protection of forests against fires.

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# COPERNICUS EMERGENCY MANAGEMENT SERVICE: an introduction and some examples of use

**EFFIS - Current Situation Viewer** contains three modules namely:

- ✓ **Rapid Damage Assessment** provides two products:
  - a. **Burnt Areas**, in polygonal form with a minimum mapping unit of approximately 40 ha updated daily on a MODIS and VIIRS basis. Burnt areas also include the Fire severity layer at 250m resolution
  - b. **Active Fires**, in punctual form and updated 6 times a day based on MODIS (1km x 1km) and VIIRS (375m x 375m)
- ✓ **Fire Danger Forecast**, based on forecast models provided by ECMWF, MeteoFrance and German (DWD) Metreological Services, providing several indices related to fire danger forecast with a spatial resolution between 10km and 36km, updated daily

# COPERNICUS EMERGENCY MANAGEMENT SERVICE: an introduction and some examples of use

European Forest Fire Information System  
EFFIS

- Service Overview
- Who can use the service
- How to use the service
- Portfolio: Rapid Mapping
- Portfolio: Risk and Recovery
- Quality control
- User Guide

Welcome to EFFIS

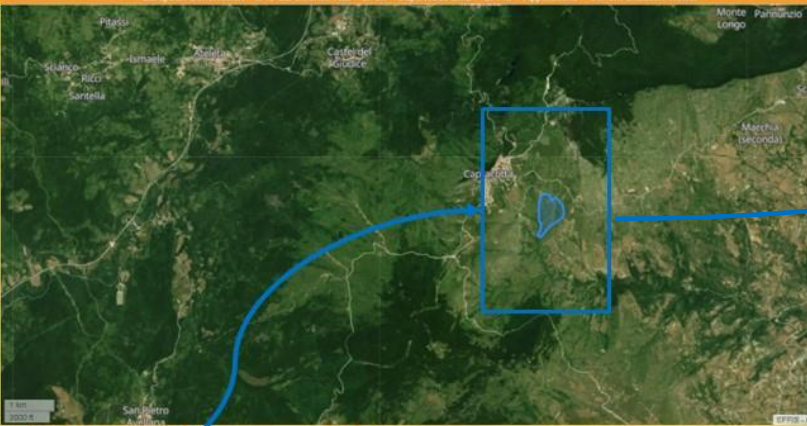
The European Forest Fire Information System (EFFIS) provides information on forest fires in the EU and neighboring countries and is updated regularly by the European Commission and the European Parliament with updated and reliable information.

### EFFIS applications

**Current Situation Viewer**

The most up to date information on the current fire season in Europe and in the Mediterranean area.

[Read more >](#)



**forecast**

Monthly forecast of temperature and rainfall anomalies that are expected to prevail over European and Mediterranean areas.

[Read more >](#)

**forecast**

Seasonal forecast of temperature and rainfall anomalies that are expected to prevail over European and Mediterranean areas.

[Read more >](#)

**Total EFFIS Coverage**

Mapped	162
Estimated	216

(Daily updated)  
RDA Disclaimer and layer info

**Copernicus Emergency Management Service - Mapping**

A service in support of European emergency response

**Latest Copernicus EMS - Mapping Activations**

Act. Code	Title	Act. Date	Type	Country
EHMS094	Hurricanes ETA and EOTL, Nicaragua	2021-05-06	Storm	Nicaragua
EHMS095	Flood in Hesse, Germany	2021-05-03	Flood	Germany
EHMS093	Rockfall risk analysis in Valle Granero, Spain	2021-04-22	Mass movement	Spain
EHMS099	La Soufriere volcano eruption in St. Vincent and the Grenadines	2021-04-09	Volcanic activity	St. Vincent and the Grenadines
EHMS088	Forest fire in Piedmont region, Italy	2021-04-08	Wildfire	Italy
EHMS087	Flood in Limousin, France	2021-04-04	Flood	France
EHMS092	Flood in Hainaut, Belgium	2021-03-29	Flood	Belgium
EHMS091	Avalanche danger in subalpine valleys, Austria	2021-03-26	Mass movement	Austria
EHMS086	Wildfire in Mexico	2021-03-25	Wildfire	Mexico
EHMS085	Fire in the refugee camps in Kohat, Pakistan	2021-03-23	Wildfire	Pakistan

Activation codes: EHMS = Rapid Mapping, EMON = Risk & Recovery Mapping

Copernicus Emergency Management Service (EMS) provides information for emergency response in relation to different types of disasters, including meteorological hazards, geophysical hazards, deliberate and accidental man-made disasters and other humanitarian disasters, as well as prevention, preparedness, response and recovery activities.

Copernicus EMS consists of the Mapping Service and of the Early Warning System (EWS).

The Emergency Management Service - Mapping, which has been an operational activity since April 1st, 2012, is a fully operational service as defined in Article 5 to the Copernicus Regulation.

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Last update: 2022-05-12 17:21:31

**EMSR508: Forest fire in Piedmont region, Italy**

Event Time (UTC): 2021-04-07 08:00  
Event Time (LOC): 2021-04-07 06:00  
Event Type: Wildfire (Forest fire)  
Activation Time (UTC): 2021-04-08 11:02  
Activation Status: Closed  
Affected Countries/Territories: Italian Republic

**[EMSR508] Ponte Spocchia: Grading Product, version 2, release 1, RTP Map #02**

Published: 2021-04-22 09:48:02 (UTC)  
Product version: v2  
Status: Quality approved

**[EMSR508] Ponte Spocchia: Grading Product, version 2, release 1, RTP Map #01**

Published: 2021-04-22 09:48:02 (UTC)  
Product version: v2  
Status: Quality approved

**[EMSR508] Ponte Spocchia: Grading Product, version 1, release 1, Vector Package**

Published: 2021-04-13 17:01:32 (UTC)  
Product version: v1  
Status: Quality approved

**[EMSR508] Ponte Spocchia: FEP Product, version 1, release 1, RTP Map #01**

Published: 2021-04-08 18:01:08 (UTC)  
Product version: v1  
Status: Quality approved

**[EMSR508] Ponte Spocchia: FEP Product, version 1, release 1, Vector Package**

Published: 2021-04-08 18:00:58 (UTC)  
Product version: v1  
Status: Quality approved

# COPERNICUS EMERGENCY MANAGEMENT SERVICE: an introduction and some examples of use

European Forest Fire Information System  
**EFFIS**

European Commission  
COPERNICUS  
Emergency Management Service

European Commission > JRC EU Science Hub > DRM > Copernicus EMS > EFFIS > Applications > Current Situation Viewer

Welcome to EFFIS  
The European Forest Fire Information System (EFFIS) provides information on forest fires in the EU and neighboring countries and the Parliament with updated and reliable information.

**EFFIS applications**

- Current Situation Viewer**  
The most up to date information on the current fire season in Europe and in the Mediterranean area.  
[Read more >](#)
- forecast**  
Monthly forecast of temperature and rainfall anomalies that are expected to prevail over European and Mediterranean areas.  
[Read more >](#)
- forecast**  
Seasonal forecast of temperature and rainfall anomalies that are expected to prevail over European and Mediterranean areas.  
[Read more >](#)

**Total EFFIS Mapped**  
Estimated  
(Daily updated)  
RDA Disclaimer and layer info

Grading - Overview map 25

Cartographic information

Scale: 1:18000

Legend

Map information

Metadata data records (DTC)

Data sources

Disclaimer

Product version: 2.1  
Status: Quality approved

Vector package: 216

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Last update: 2022-05-12 17:21:15 hce

# COPERNICUS NUMBERS AND ASSOCIATED QUESTIONS

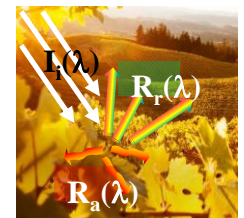
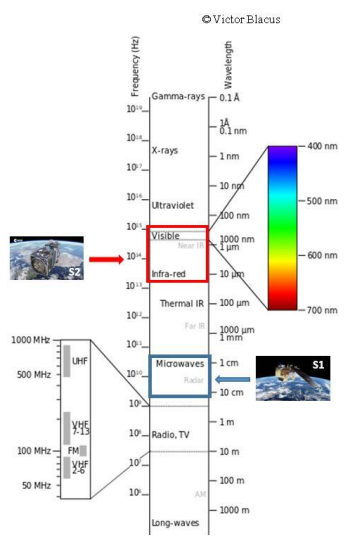
After this, albeit synthetic and brief, informative and illustrative path, an equally synthetic answer to the initially posed questions should be obvious and easily found:

... getting what Copernicus has made and continues to make available to be known and used by a generality of user Communities and in particular by its potential end-users, is not an easy task ! ...

# CRITICAL ELEMENTS FOR COPERNICUS DEPLOYMENT: need for information and basic knowledge

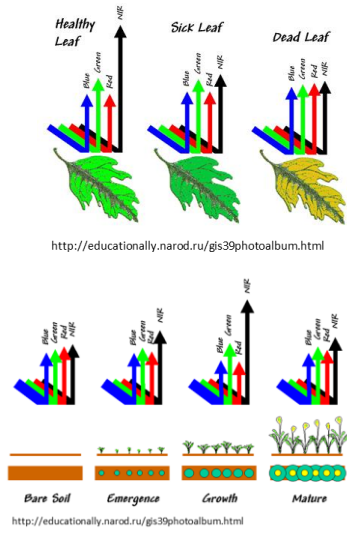
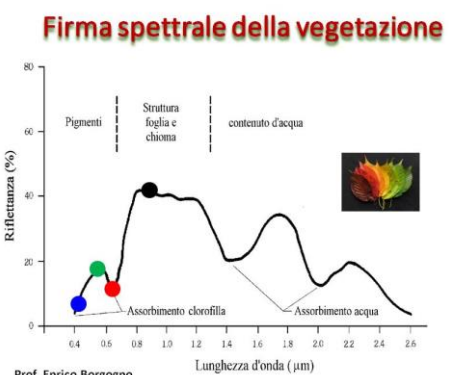
Indeed, the combination of the lack of activities aimed at raising awareness among users of the usefulness of what Copernicus has made available to them and the need to acquire a minimum of basic geomatics (remote sensing and geoinformation, in particular) and computer literacy in order to proactively access and benefit from it, has been the main obstacle to the widespread use, in particular, of the information produced by the Program

... know some principles of remote sensing related to the electromagnetic spectrum and what links its bands to synthetic indices representative of physical, chemical, and biological phenomena ...



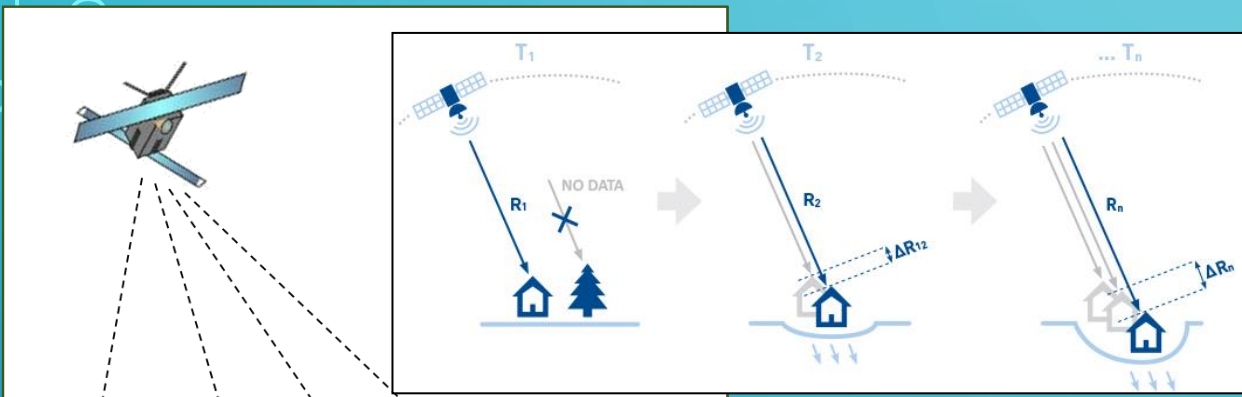
$$\rho_{\lambda} = \frac{R_r(\lambda)}{I_0(\lambda)} \quad \text{Riflettanza}$$

$$\alpha_{\lambda} = \frac{R_a(\lambda)}{I_0(\lambda)} \quad \text{Assorbanza}$$



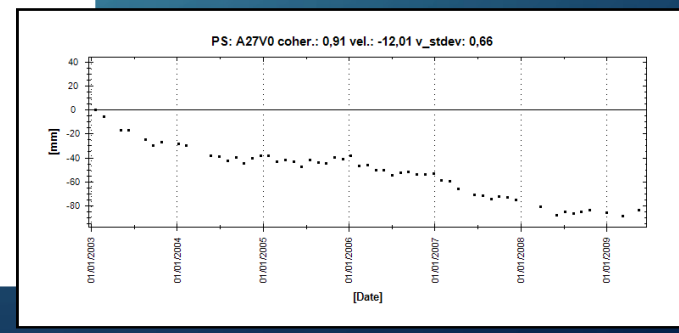
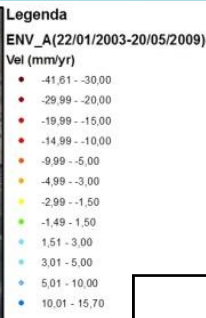
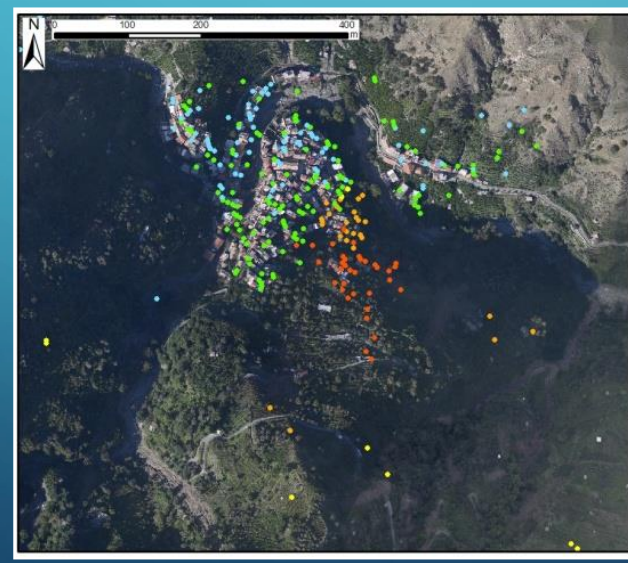
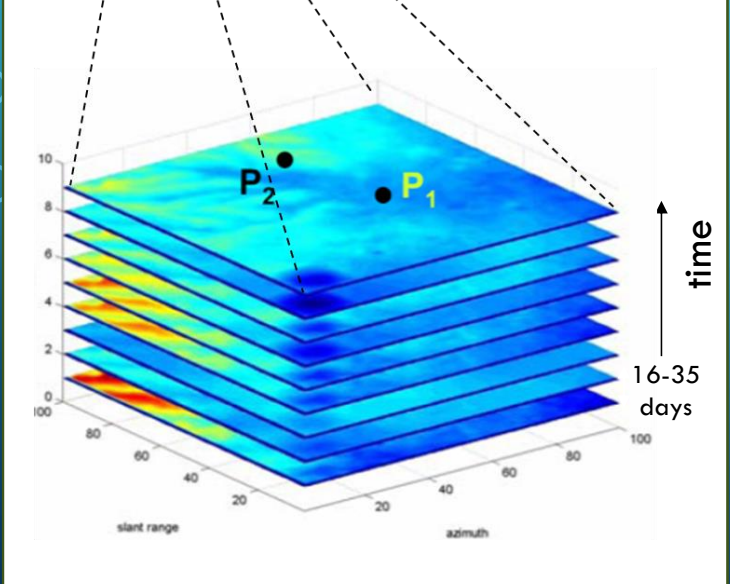
... know some fundamentals, frameworks and how to use Geoinformation platforms ...

# CRITICAL ELEMENTS FOR COPERNICUS DEPLOYMENT: need for information and basic knowledge



**LOS average displacement rate**

The Persistent Scatterer Interferometry, is based on the analysis and processing of long series of satellite SAR images (as those produced by Sentinel1). Through this processing, for individual, point-wise radar targets it is possible to retrieve, with millimetric accuracy, the velocity of deformation along the Line Of Sight (LOS) of the satellite and the relative time series of deformation.



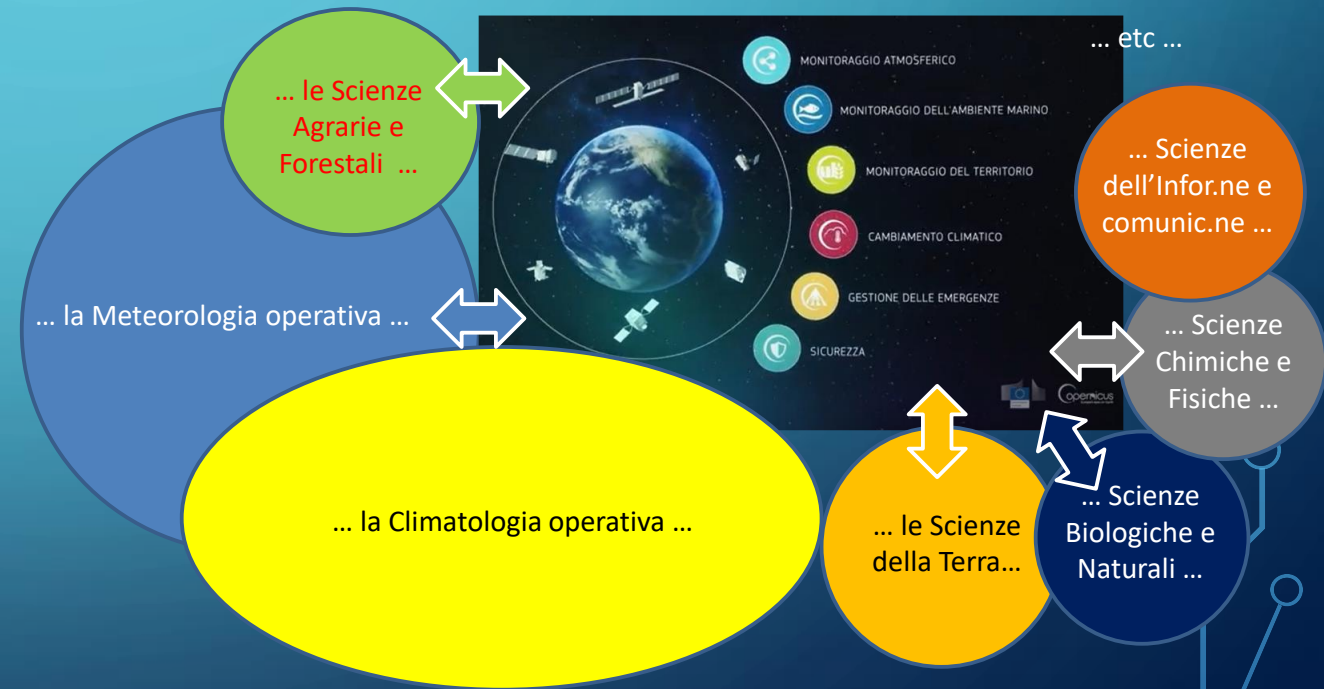
**Deformation time series**



# COPERNICUS: from the integrated Geomatics approach to the Earth Observation operational services

... Moreover, Copernicus, in order to produce or enhance what it makes available, requires an active and direct use of additional knowledge, information, and data produced by other operational activities and in other connected topics ...

... thus, for example, while Operational Climatology is part of Copernicus objectives and actions through the Climate Change Core Service, Operational Meteorology and other disciplinary areas and domains are separate, autonomous and independent, but still fully interacting and useful to Copernicus operational services, providing their needed specific knowledge, methods, products and services !!! ...



# THE COPERNICUS USER UPTAKE: The Relay and Academy European Networks

In order to address previously highlighted questions and to remedy shortcomings that had arisen, a structured process of informing and educating users on what Copernicus was producing and making freely available, including to the enterprise, was initiated by the

(84) In order to promote and facilitate the use of Earth observation data and technologies by national, regional or local authorities, SMEs, and scientists and researchers, dedicated networks for the distribution of Copernicus data, including national and regional bodies such as Copernicus Relays and Copernicus Academy, should be promoted through dissemination activities among users. (REGULATION (EU) 2021/696)

<p>Relays</p> <p>THE VOICE THE EYES THE EARS OF COPERNICUS ON LOCAL + REGIONAL LEVELS</p> <p>84 MEMBRI IN 33 PAESI</p>	<p>2018</p>	<p>Academy</p> <p>144 MEMBRI IN 42 PAESI</p>
--	-------------	--

Within this process, the EC has promoted the creation, starting up and development of the two European Networks of Copernicus Relays and Academies, aimed in different and complementary ways:

- ✓ the Relays, to inform, listen and assist locally both public administrations and enterprises
- ✓ the Academies, to inform, educate, train and coach end users, including potential ones

# THE COPERNICUS ACADEMY EUROPEAN NETWORK

The decision to establish a European Copernicus Academy Network is based on three key considerations:

- ✓ in almost all **User Uptake** measures, along with information, **training plays a significant role;**
- ✓ **Involving and training implementers and users, as well as future Copernicus designers, as soon as possible** with respect to the EO, GI and ICT principles, methods, tools and services is **the most effective and lasting way to achieve User Uptake objectives in the medium and long term;**
- ✓ only by **introducing innovative elements** in educational pathways and training and instructional processes will it be possible to promote **new professional profiles, and/or modify existing ones, to respond to emerging business and/or corporate processes connected with or affected by EO.**



Therefore, in addition to universities, polytechnics and other academic bodies, public and private entities, that have among their institutional tasks, or in their business mission, the implementation of educational and training activities, **are admitted to the European Network of Copernicus, Academy.**

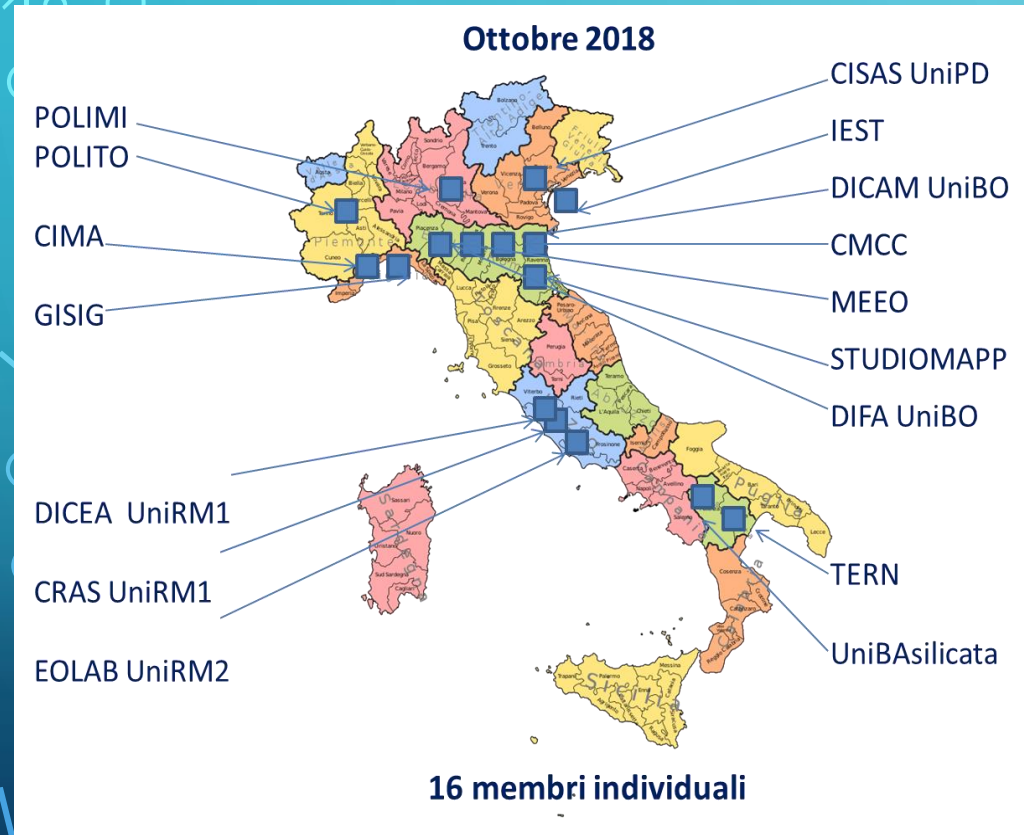
Such activities are aimed at students, teachers and researchers, as well as civil servants, professionals and entrepreneurs, namely potential Copernicus Users

# THE COPERNICUS ACADEMY EUROPEAN NETWORK

The **National Coordination** is responsible for:

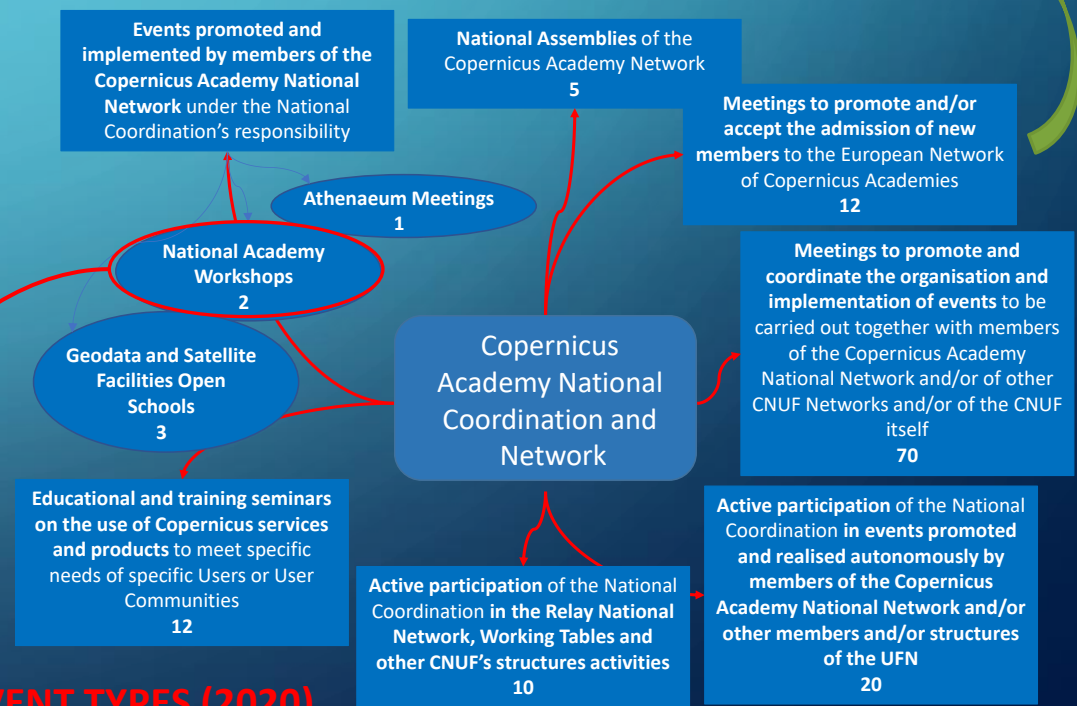
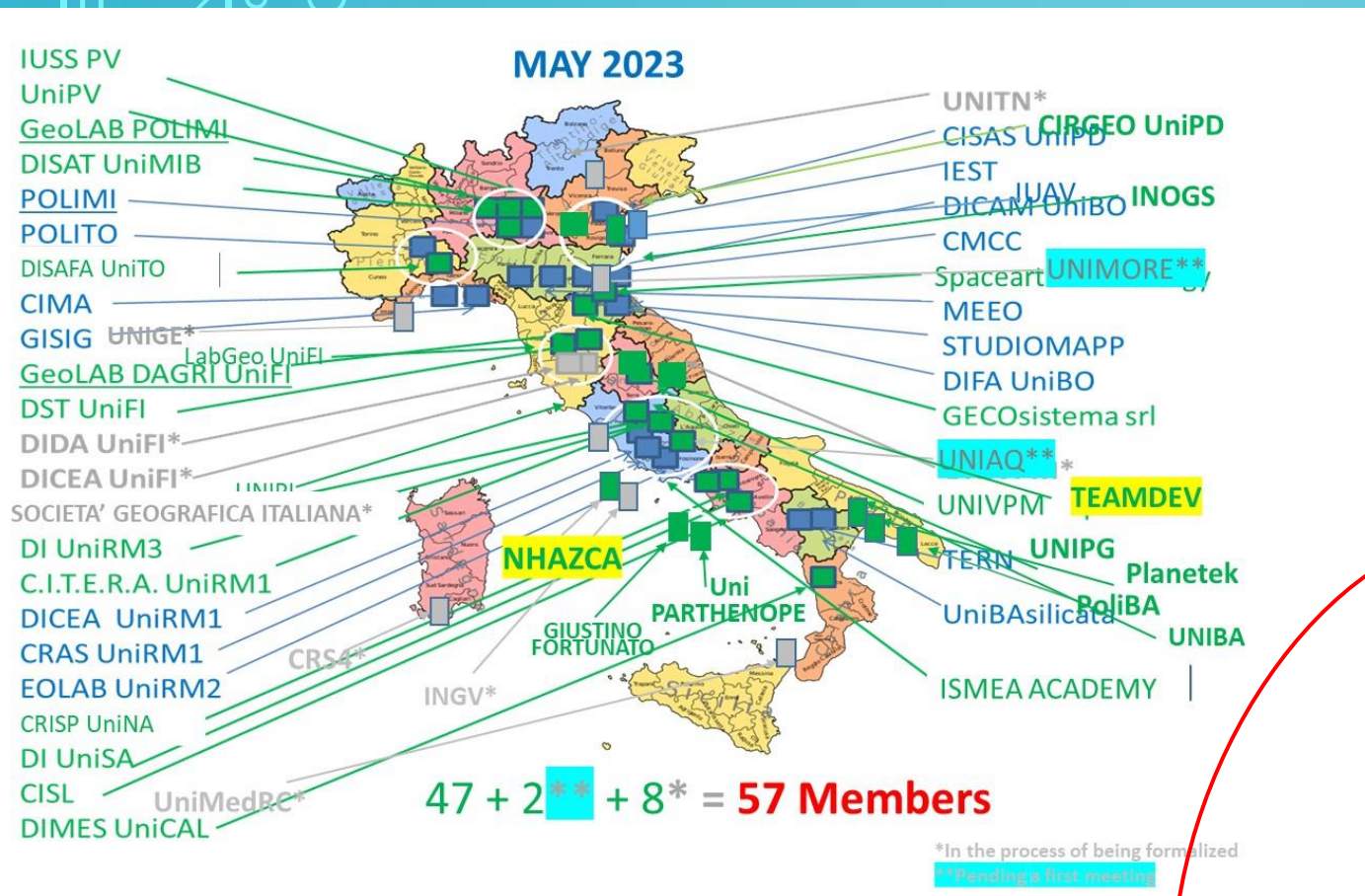
- ✓ **promoting and supporting in a synergistic and coordinated manner** the activities carried out by the national Copernicus Academies;
- ✓ **ensuring their collective representation and participation** in UFN activities;
- ✓ **ensuring relationships**, including operational ones, between the Copernicus Academy's own activities and those promoted within European Strategic Actions, such as the Green Deal, or national and/or other European Programs such as Erasmus+ and Horizon.

the **National Network**, like the European one, in addition to focusing on the introduction and utilization of what Copernicus makes available within the existing educational activities at each of the individual Academy members, **aims at the realization of events, new educational and training processes, even outside the official academic ones, according to shared formats.**



# THE COPERNICUS ACADEMY NATIONAL NETWORK: its growth and events

Overall, from 2018 to April 2022, it can be estimated that about 130 events, including massive ones, , attended by more than 1500 participants, were held within the National Network.



# THE COPERNICUS ACADEMY NATIONAL NETWORK: The Academy National Workshops

## The Academy National Workshop at the Politecnico di Torino on Copernicus Climate Change Service (C3S)

30th of May 2019

more than 170 participants



ECMWF



Academy National Workshops are promoted at and by a member of the network with the assistance of the Copernicus Academy National Coordination, with regard to a topic of excellence for that member and to the Copernicus Services contributing, also operationally, to that topic

Academy National Workshops are attended by the European Commission, the National Delegation and the Entrusted Entities responsible for these Services. The event is organised in two sessions: the first one is dedicated to some general Copernicus presentations, followed by others focused on these Services, while the second one is open to the participants to concretely experience the tools, products and information made available by the EE within the Service of their responsibility.



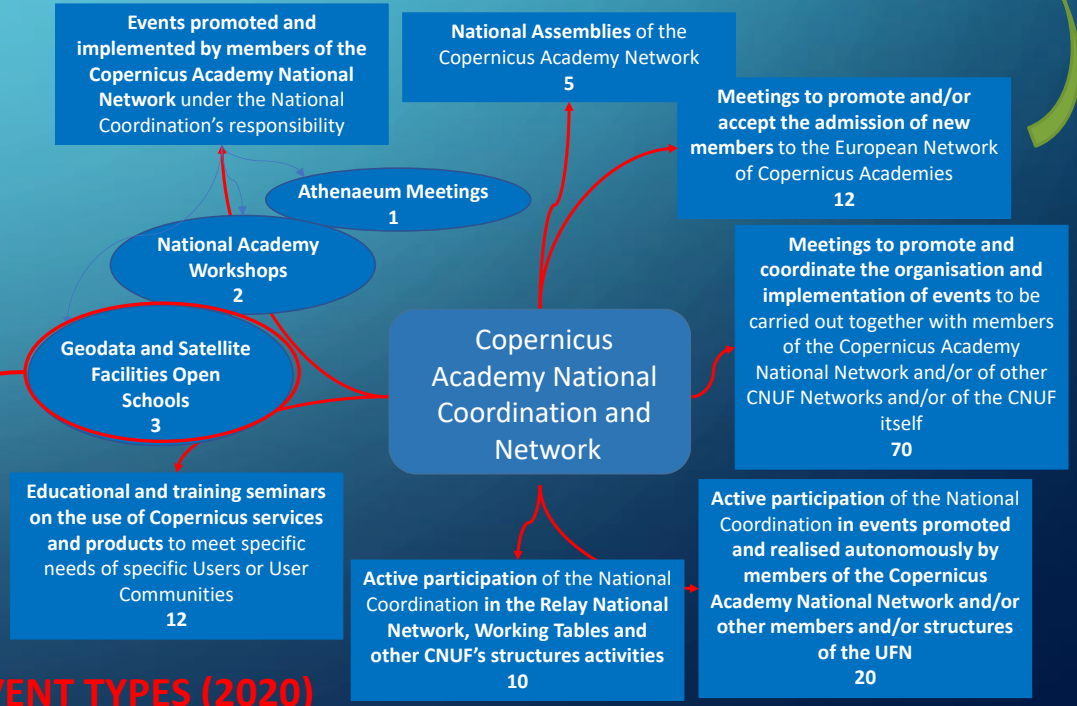
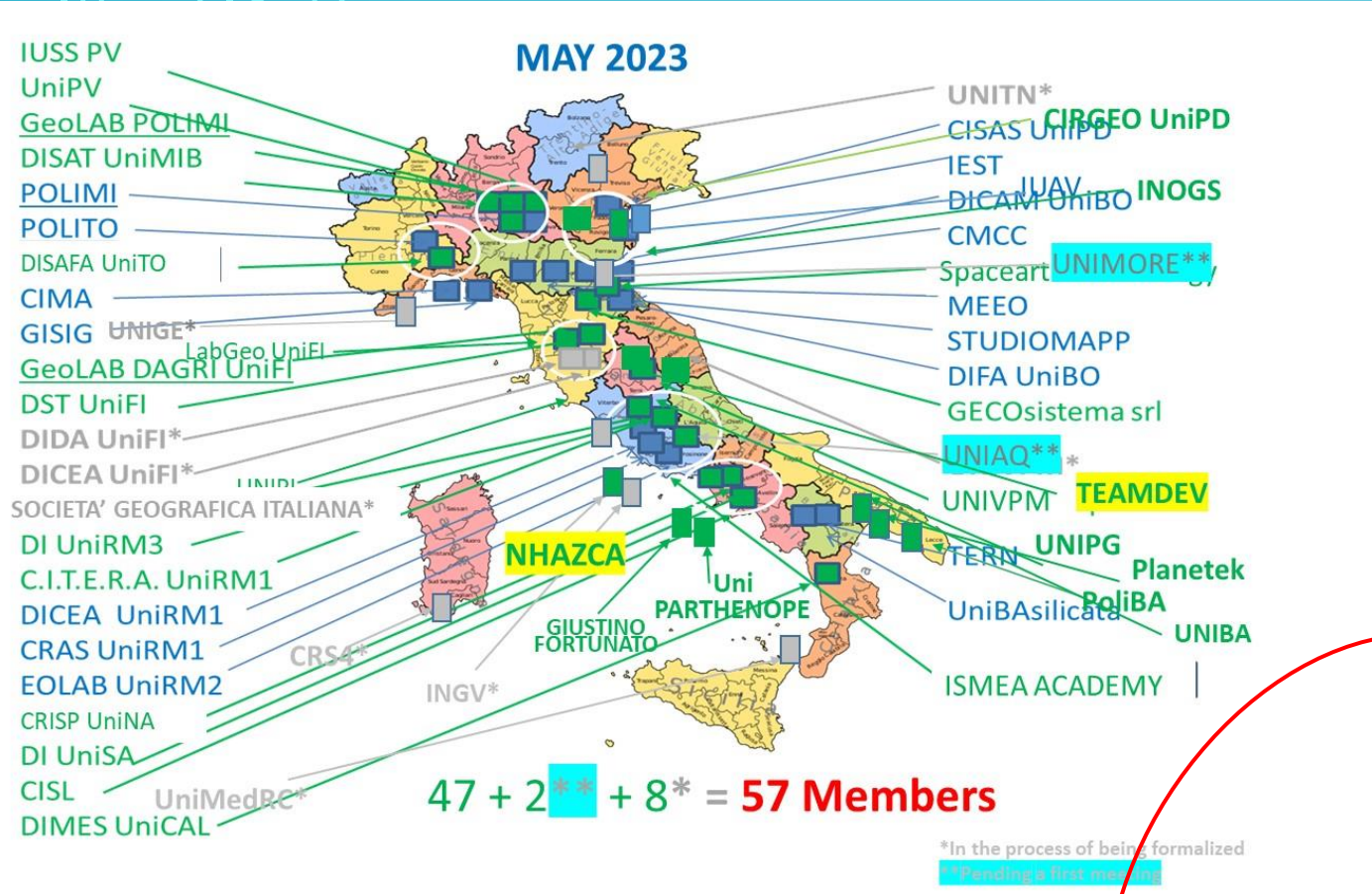
## Copernicus and the Smart Management of Urban Areas

18<sup>th</sup> and 19<sup>th</sup> of November 2020  
... more than 200 participants ...

ECMWF & JRC

# THE COPERNICUS ACADEMY NATIONAL NETWORK: its growth and events

Overall, from 2018 to April 2022, it can be estimated that about 130 events, including massive ones, , attended by more than 1500 participants, were held within the National Network.



## EVENT TYPES (2020)

# THE COPERNICUS ACADEMY NATIONAL NETWORK: the Copernicus GeoData and Satellite Facilities Open Schools

They are proposed and organised with the support of the locally present member of the Copernicus Academy;

They are addressed to a generality of subjects such as professionals, university and technical institute students, operators and public officials, as well as the various "stakeholders" of the territory;

They are shared and participated in by the various local communities of users and interests;

They involve companies providing OT, GGI and ICT services, competent in and using the products of or participating in Copernicus activities;

They are focused on a specific theme and the programme of activities is decided within a local Promotion Committee;

They are organised in three activity phases: preliminary, operational/training and conclusive/propositional for the near future;



## **GeoData and Satellite Facilities Open Schools 2021 in Perugia**

**Organised with the support of Agriculus S.r.l., Arpa Umbria, the University of Perugia and ISMEA**

**Focused on the specific theme of Agriculture 4.0 and Environmental and Business Sustainability.**

**Delivered remotely, as well as to the local user community, to over 200 participants in total**

**The enterprises eGeos, Planetek, Agriculus and BlueLife participated in the event**

## **GeoData and Satellite Facilities Open School 2019 in Asti**

**Organised with the cooperation of the University of Turin and the support of local administrations, AGEA and ARPA Piemonte, as well as the companies eGeos, Planetek and Agriculus**

**Focused on the specific topic of Viticulture 4.0 and management of the Unesco site "Langhe Roero e Monferrato".**

**Delivered in presence to 25 participants expressed by the local user community**  
**The enterprises eGeos, Planetek and Agriculus participated in the event**



# THE COPERNICUS ACADEMY NATIONAL NETWORK: the Copernicus GeoData and Satellite Facilities Open Schools

They are proposed and organised with the support of the local Copernicus Academy member and the representatives of local public authorities and agency, but they are also shared with and participated in by the various local user communities;

They may be addressed either to a generality of users such as professionals, university and technical institute students, operators, public officials and stakeholders, or to a specific category/group of users, but all of them have to be related to the targeted territory ;

They involve private providers of OT, GGI and ICT services, competent in and using the products of or participating in Copernicus activities;

They are focused on a specific theme and the programme of activities which is decided by a local Promotion Committee;

They are organised in three activity phases: preliminary, operational/training and conclusive/propositional for the near future.



## ISMEA Copernicus Open Schools 2022 in Campania

Promoted by ISMEA as part of the National Rural Network and organised with the support of the Campania Region, ARPA Campania, the University of Naples "Federico II" and CREA

Focused on the specific theme of Earth Observation applied to the management of the carbon cycle and the irrigation resource within an agricultural district.

Delivered from remote to over 50 participants, including agricultural consultants and professionals

The enterprises Airespace and Planetek participated in the event

## ISMEA Copernicus Open Schools 2022 in Veneto

Promoted by ISMEA within the framework of the National Rural Network and organised with the support of the Veneto Region, the Veneto Agriculture Agency, Arpa Veneto, the University of Padua and CREA

Focused on the specific theme of risk management in agriculture

Delivered in presence, by invitation, to over 40 Consultants and Professionals in Agriculture

The enterprise Planetek participated in the event

# THE COPERNICUS ACADEMY NATIONAL NETWORK: the Copernicus GeoData and Satellite Facilities Open Schools

The Copernicus Opens Schools also certify, beyond the training credits awarded for example by the professional orders, the training course followed by the participants, noting its effectiveness through tools such as a **specific contest** between them and a **questionnaire** designed for this purpose.



Finally, by 2025 a further six Open Schools, already financed under the FPCUP WP2020, will be implemented in the fields of agriculture, aquaculture and urban and coastal management

Copernicus Geodata and Satellite Facilities Open School 2021

**"Copernicus, l'Agricoltura 4.0 e la sostenibilità ambientale e d'impresa"**

25 • 26 • 27 maggio 2021



**ATTESTATO DI FREQUENZA**

A richiesta dell'interessato SI ATTESTA che xxxxxxxxx ha frequentato il corso: **Copernicus Open School "Copernicus, l'Agricoltura 4.0 e la sostenibilità ambientale e d'impresa"**, svoltosi *on line*, nei giorni 25, 26 e 27 maggio 2021, per **totali 24,4 ore**.

Gli organizzatori del corso



Data, 2 giugno 2021

Corso organizzato con il Patrocinio di

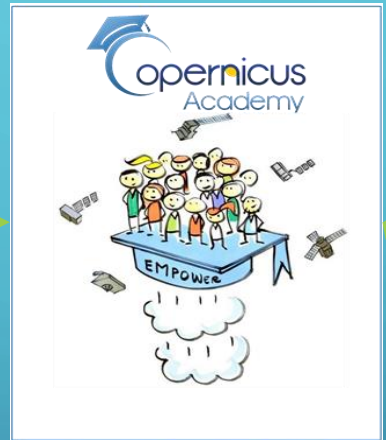


# THE COPERNICUS ACADEMY NATIONAL NETWORK: its evolution from "individual" to "collective" events

## Position Paper:

The provision of training tools for the rapid qualification of professional profiles, related to the integrated use of OT, GGI and ICT methods and tools, advanced and necessary for the implementation of the innovative actions envisaged by the PNRR

Promotion, development of "collective" tools and actions



## Italian Consortium for Copernicus Academy:

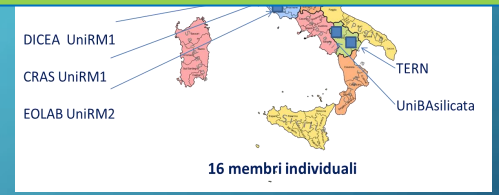
To promote and disseminate the culture, knowledge of the fundamentals and use of advanced and innovative OT, GGI and ICT technologies, methods and tools related primarily to the European Copernicus Program and in particular within and for the purposes of its Copernicus Academy

"Aggregated" participation in calls for FPCUP WPs and other European educational and training programs.

N°	Type	Attività	Titolo	Paese	Prat. - anno	Periodo attività	Totale	EU contribution	Interventore
1	*	POI	Interventi di ricerca e sviluppo per la promozione del territorio e la valorizzazione del patrimonio culturale e paesaggistico	GRPA	IT	2022 - 2023	135.000,00	84%	133.400,00 €
1	*	POI	Dissemination, understanding and exploring (DUE) through Training (DUE-DIT)	GRPA	IT	2022 - 2023	25.000,00	84%	21.000,00 €
1	*	POI	Equipaggiamento di piattaforme satellitari e sensori di bordo	GRPA	SGI	2022 - 2023	188.100,00	84%	158.000,00 €
2	*	POI	CMS - Copernicus Applications for Professional Surveys	UNIRMA	IT	2022 - 2023	200.000,00	84%	168.000,00 €
2	*	POI	FARAC - Federated Application Engineering for Copernicus	UNIRMA	IT	2022 - 2023	180.000,00	84%	151.200,00 €



## Development of the National Network



## Promotion and implementation of "individual" events within the National Network

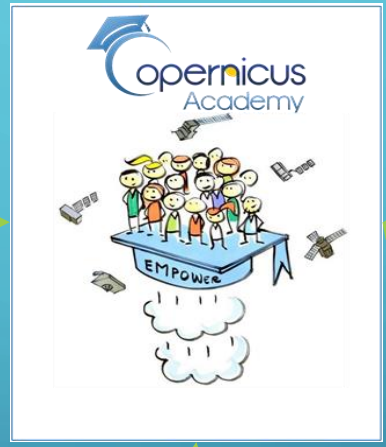


# THE COPERNICUS ACADEMY NATIONAL NETWORK: its evolution from "individual" to "collective" events

## Position Paper:

The provision of training tools for the rapid qualification of professional profiles, related to the integrated use of OT, GGI and ICT methods and tools, advanced and necessary for the implementation of the innovative actions envisaged by the PNRR

Promotion, development of "collective" tools and actions



## Italian Consortium for Copernicus Academy:

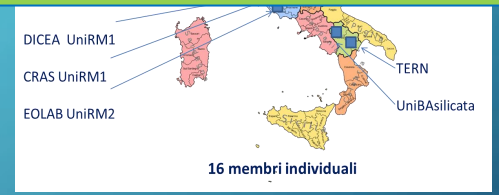
To promote and disseminate the culture, knowledge of the fundamentals and use of advanced and innovative OT, GGI and ICT technologies, methods and tools related primarily to the European Copernicus Program and in particular within and for the purposes of its Copernicus Academy

"Aggregated" participation in calls for FPCUP WPs and other European educational and training programs.

ID	Type	Activity	Partner	Start date	End date	Total	EU contribution	Intervention	
1	*	PhD scholarship on Climate Change and Sustainable Development	GFPA	2022-01-01	2022-12-31	135.000,00	84%	2 borse di studio per PhD in air quality e climate change	
1	*	Dissemination, understanding and exploring GSI through Training (DAG-DIT)	GFPA	2022-01-01	2022-12-31	35.000,00	84%	Una agenzia scuola superiore e profumery/PHD master in ricerca in GSI per realizzare i progetti Copernicus. Progetti didattici all'interno dei copernicus e a copernicus wg	
1	*	Equipaggiamento di piattaforme satellitari e IoT per la raccolta dati	GFPA	2022-01-01	2022-12-31	188.100,00	84%	210.000,00	
2	*	CMS - Copernicus Applications for Professional Surveys	UNIRNA	2022-01-01	2022-12-31	240.000,00	84%	158.840,00	Convegno governativo nell'ambito di Copernicus, lavoro di ricerca e sviluppo per la gestione del territorio, sviluppo di nuovi prodotti Copernicus. Lavoro di ricerca e sviluppo per la gestione del territorio, sviluppo di nuovi prodotti Copernicus. Lavoro di ricerca e sviluppo per la gestione del territorio, sviluppo di nuovi prodotti Copernicus.
2	*	FARAC - Federated Application Engineering for Copernicus	UNIRNA	2022-01-01	2022-12-31	240.000,00	84%	171.200,00	Elaborazione di software per la gestione del territorio, sviluppo di nuovi prodotti Copernicus. Lavoro di ricerca e sviluppo per la gestione del territorio, sviluppo di nuovi prodotti Copernicus.
						205.000,00	84%		
						233.480,00	84%		
						189.000,00	84%		



## Development of the National Network



## Promotion and implementation of "individual" events within the National Network





# POSITION PAPER:

the role of the **National Copernicus Academy Network** in developing training pathways for the implementation of the **National Recovery and Resilience Plan (NRRP)**



the National Recovery and Resilience Plan (NRRP) manifests in a large part of its missions, as well as many other strategic programs promoted by the EU, the usefulness and necessity of the integrated use of EO, GGI and ICT methods and tools to produce high value-added, public utility and/or market information through particularly innovative infrastructure and operational services.

However, such an idea, which underpins Copernicus, for a long time, has run up against the problem of the availability of personnel, properly educated and trained, both in the public administrations and in the private enterprises, as well as adequate in numbers; this is a primary difficulty to be overcome in order to effectively implement the activities and achieve the planned objectives, given also the substantial investment made available for this purpose by European funds.

the National Network of Copernicus Academies has put forward a proposal for training tools aimed at the rapid qualification of professional profiles, based on a unified vision and joint approach and aimed at resolving, in timeframes compatible with those dictated by the PNRR, this unavailability.



# POSITION PAPER:

the role of the **National Copernicus Academy Network** in developing training pathways for the implementation of the **National Recovery and Resilience Plan (NRRP)**



**Methodology used to pursue this general objective:**



**A SURVEY AMONG THE MEMBERS OF THE NATIONAL NETWORK** to know and assess which educational and training activities on OT, GGI and ICT exist at each of them and if what is produced by Copernicus, is used in these activities.



**DEFINITION** on the basis of the results of the previous **SURVEY** of a **UNIFIED ENSEMBLE OF EDUCATIONAL AND TRAINING ACTIVITIES**, shared and delivered jointly by the members of the Copernicus Academy National Network that, as far as possible, uses the **EDUCATIONAL ACTIVITIES ALREADY AVAILABLE**, delivered and adapted to:

- ✓ **continue be proposed individually and/or in combination with others, as a part of an already existing educational pathway, able to meet the purposes of the Position Paper;**
- ✓ **be functionally and operationally combined to obtain new educational formats, formally recognizable at the national level.**



# POSITION PAPER:

the role of the **National Copernicus Academy Network** in developing training pathways for the implementation of the **National Recovery and Resilience Plan (NRRP)**



The current educational offer of Copernicus Academy members will be "reorganized " and " integrated " for the implementation purposes of the NRRP:

## for the very short term:

Direct use of the **available educational offer**, harmonised and, as far as necessary and possible, supplemented through professionalising education and training activities also at a sub-regional scale, such as the **Copernicus GeoData and Satellite Facilities Open School**

## for the short term:

Relying on the **available educational offer**, organisation and implementation of a 'homogeneously qualifying' **second-level national annual Master** for the integrated use of EO, GGI and ICT methods, tools and products, also through what is made available by Copernicus

## for the medium term:

the design, organisation and implementation of a **new national three years PhD** in the subjects of EO, GGI and and ICT with a focus on the integration and the integrated use of their components for the development of applications, methods and tools leading to the potential implementation of operational services.



# POSITION PAPER:

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the design, organisation and implementation of a **new national three years PhD** in the subjects of EO, GGI and and ICT with a focus on the integration and the integrated use of their components for the development of applications, methods and tools leading to the potential implementation of operational services.



# POSITION PAPER:

## The National Doctorate in Earth Observation (DNOT)



SAPIENZA  
UNIVERSITÀ DI ROMA

Dottorato di ricerca nazionale in Osservazione della Terra

### Goal

- Training of **professionals with:**
  - **integrated competences** on EO, GGI e ICT
  - **specific competences** on management, administration and law
- able to:
  - **scout potential users** and collect **their needs**
  - **promote existing and design new EO services** to satisfy users needs
  - **increase user competences**

for PA, companies e and research ecosystem benefits

### Starting point

The conception, design and promotion of the National PhD within the Network started already in May 2021, together with the preparation of the Position Paper

### S-W-O

- Very good competences **in EO, GGI, ICT at national level**
- **Remarkable funds from PNRR** (EO, GGI, ICT key topics in 3 missions)
- Lack of a proper coordination, **needed to guarantee a structured and homogeneous training**
- Copernicus Academy network, **active at EU and national level since 2016 and 2018 respectively**

# POSITION PAPER: The National Doctorate in Earth Observation (DNOT)



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## Partners

## Organization - Numbers

- Partners  
**18 Universities, 2 Public Research Institutes, 4 Public Administrations  
1 Public Foundations, 3 Private Companies**
- Coordination  
**Sapienza University of Rome, in cooperation with Coordinamento nazionale della Copernicus Academy**
- Scholarships  
**45 scholarships on specific topics, selected by all the Partners  
36 scholarships assigned (24 Italian, 12 foreign PhD students)**
- MUR accreditation
- Kickoff: **01.11.2022 – End: 31.10.2025**
- PhD title: **awarded by Sapienza in agreement with all the Partners**

UniBAS	UniPV	ASI
UniBO	UnivPM	CREA
UniBZ	UniROMA2	ISMEA
UniCA	UniROMA3	ISPRA
UniFI	UniTO	DPC
UniGE	Polito	OGS
UniMORE	IUAV	Fondazione CIMA
UniNA	IUSS-PV	Agricolus srl
UniCampania		Planetek srl
UniPD		Teamdev srl

## Partner roles in training courses and other activities

- **University:** **methodological courses**
- **Public Research Institutes:** **courses on specific topics**
- **Companies, Foundations, PA:** **courses on specific know-how**
- **All Partners:** **promotion of international exchanges, primarily (but not only) in the Copernicus Academy European network**

# FIRST SET OF CONCLUSIONS

## ... one cannot:

- ✓ say he knows Copernicus if he thinks it is only represented by its space Component;
- ✓ make useful and effective use of all that Copernicus makes available if he does not understand and know the role that Geomatics and its components, such as Remote Sensing, Geoinformation and advanced Informatics, play within it
- ✓ speak of Earth Observation operational Services if the Geomatics approach present in Copernicus is not integrated with the cognitive and methodological contributions, as well as products and services, made available by other thematic disciplines and operational areas;

## ... therefore, the National Network of the Copernicus Academies:

- ✓ believes that it is necessary to carry on the informative, educational and training actions on Copernicus, deep and widespread among users, both existing and potential, not in a sectorial way, but as an innovative and advanced example of an integrated system for the design and implementation of operational Earth Observation services.

# SECOND SET OF CONCLUSIONS

## ... moreover, the National Network of the Copernicus Academies:

- ✓ aims to make coordinated use of the educational activities already in place and available in the Country, also optimising the use of the human and financial resources already committed and/or made available through National and European Strategic Programmes
- ✓ makes available a complex of competences that are not only didactic but also research and operational, unitary, broad and also administratively already coordinated
- ✓ believes in Copernicus and asks to be allowed to participate in a long-term strategy to strengthen strategic sectors such as Earth Observation and Space, promoting aggregative, informative educational and training processes designed, in Italy and in Europe, to grow scientific knowledge, technical skills, operational services and enterprises, but, above all, to grow users, namely their awareness and ability to use what is produced and made available, as well as to qualify their future needs and demand for knowledge, tools and services.



Bernardo De Bernardinis and Maria Vittoria Castellani  
Copernicus Academy National Coordination

[bdb.posta@gmail.com](mailto:bdb.posta@gmail.com)

[maria.castellani@isprambiente.it](mailto:maria.castellani@isprambiente.it)

**Thanks**

*Todi, Italy, 21 August 2023*