



Access to Copernicus Data

Overview and Introduction



Copernicus

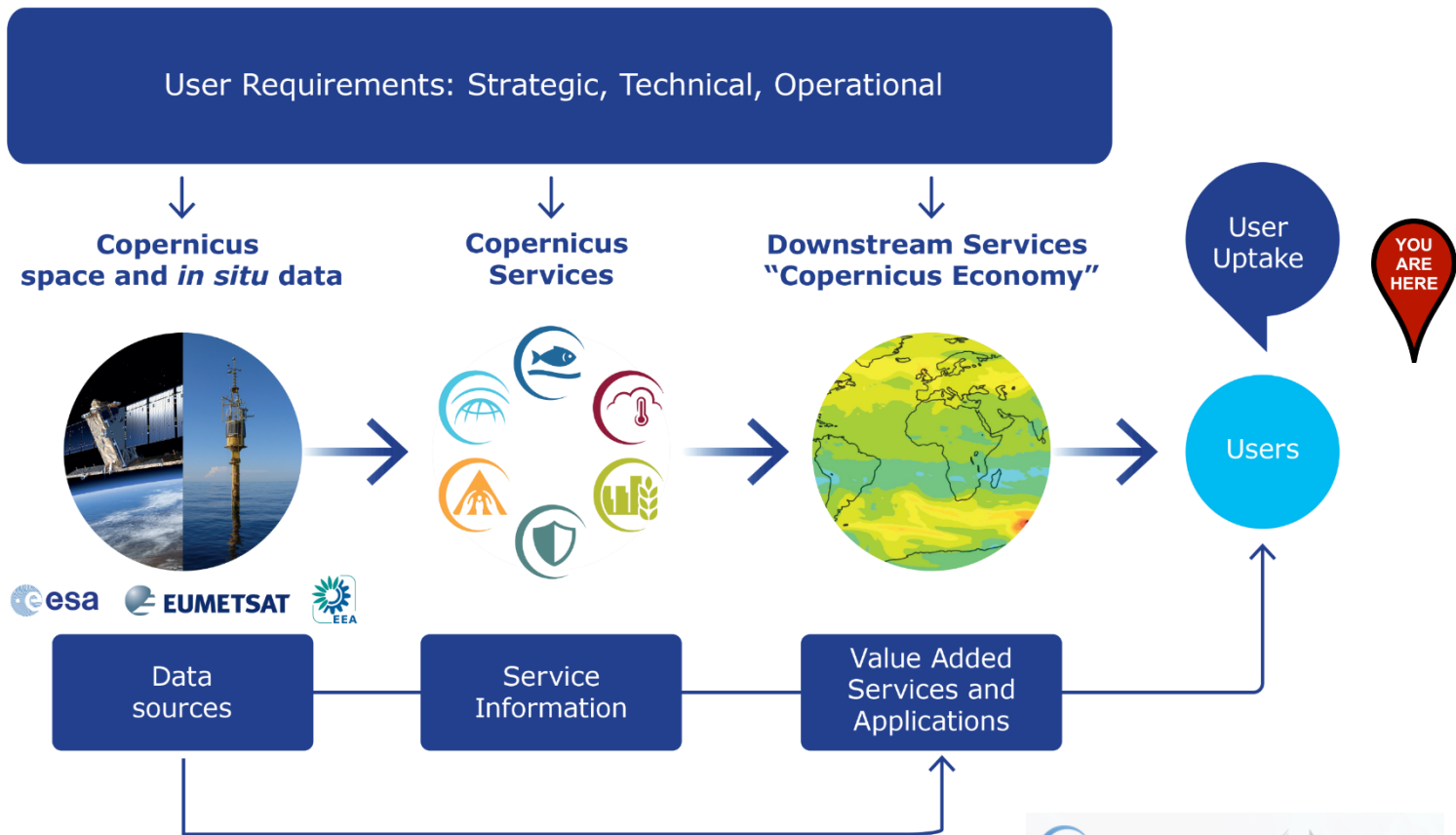
C O P E R N I C U S I N B R I E F

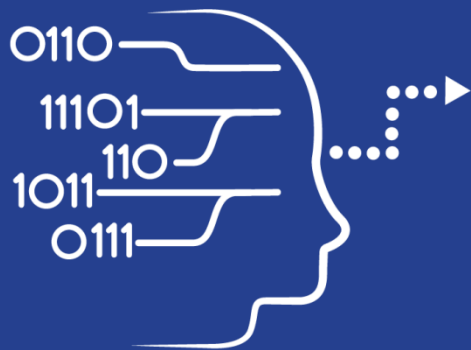
- **Copernicus, a flagship programme** of the European Union:
 - Monitors **the Earth**, its environment and ecosystems
 - Prepares for **crises, security risks** and **natural or man-made disasters**
 - Contributes to the **EU's role as a global soft power**
- Adopts a **full, free and open data policy**
- Is a tool for **economic development** and a driver for the **digital economy**



Copernicus

COPERNICUS IS DRIVEN BY THE USERS





User Uptake

Copernicus Data Access

- 10 European Access points
- Several national and private initiatives

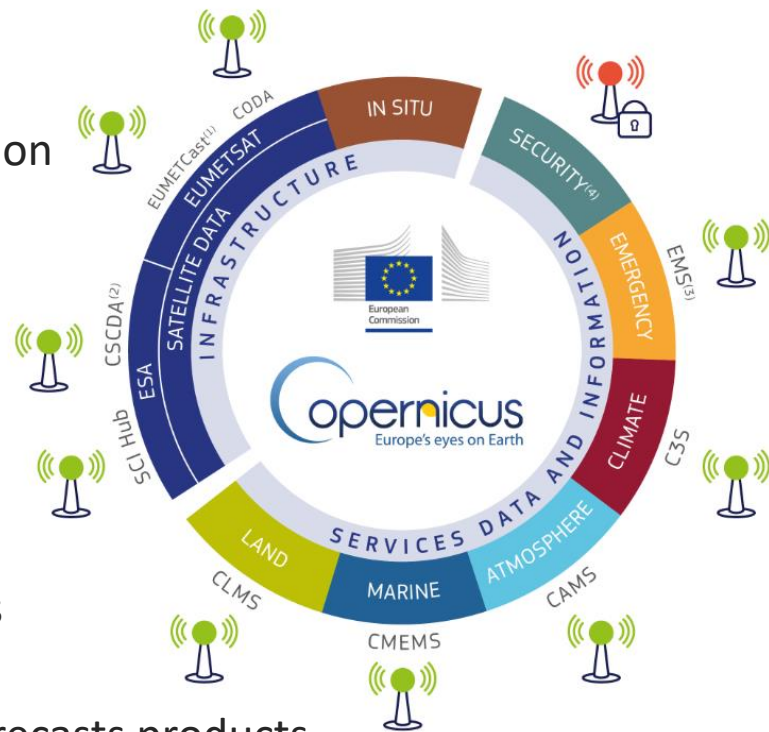




Data
Access

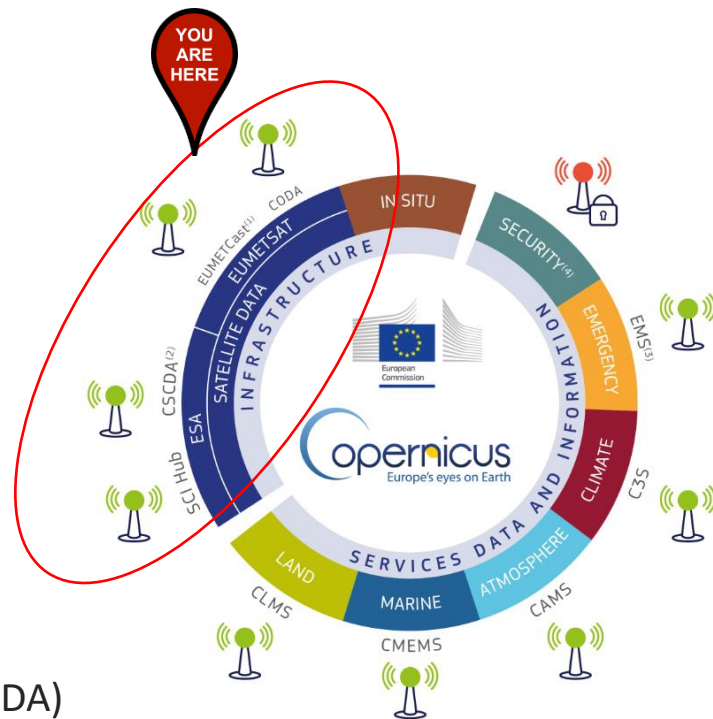
Copernicus Data Access Overview

- 10 European Data Access points:
 - 4 for Satellite Datas
 - 6 for Services Data and Information
- Satellite data =
 - Access to images in NRT
 - Access to archives
- Services Data and Information=
 - Added value products, indicators
 - Models
 - Archives, Near Real Time and Forecasts products





- 4 data access points:
- 2 managed by ESA:
 - Scientific Data Hub (SCI Hub)
 - Copernicus Space Component Data Access (CSCDA)
- 2 managed by EUMETSAT
 - EUMETCast
 - Copernicus Online Data Access (CODA)





Space
Component

SENTINEL SCIENTIFIC DATA ACCESS



FULL, FREE AND
OPEN

Search & Browse



- Sentinel data
- Graphical user interface

Discover & Visualise



- Visualise/analyse data
- Access info

Register



- Order
- Customise
- Helpdesk

Download



- Select and download
- One-off or by scripts

Compute



- Use data
- Integrate
- Merge

Join Up



- Get trained
- Get inspired
- Meet partners

Where

<https://scihub.copernicus.eu>



How

Two kinds of user interfaces:

- Graphic User Interface
- Application Programming Interfaces (API)

Two API Options:

- Open Data Protocol
- Open Search

Key Figures

15,243

users successfully
registered
in 2015

355,939

products
published

502 Tbytes

published

1,050

average number
of products
published per
day

6,900

average number
of products down-
loaded per
day

Each user

2 concurrent
downloads max and
500 Mbit/s

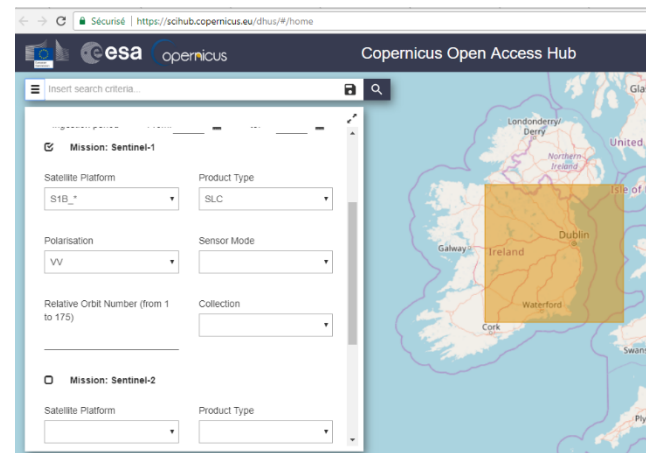
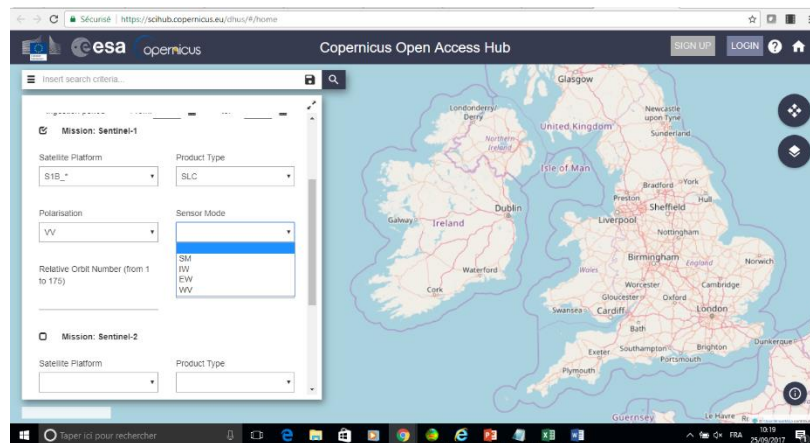
SCI-HUB IN PRACTICE (EXAMPLE)

Space
Component

FULL, FREE
AND OPEN

On <https://scihub.copernicus.eu/dhus/#/home>:

- Draw region of interest
- Click on the Menu button to the left. A popup opens where you can fill out your search parameters, and select the mission you need.
- Click the Search icon.





Space
Component

SPACE COMPONENT DATA ACCESS (CSDA)



Differentiated
Access Levels*

Search & Browse



- HR/VHR images from 3rd Parties
- Global SAR coverage

Discover & Visualise



- Visualise/analyse data
- Access info

Register



- Order
- Customise
- Helpdesk

Download



- Select and download
- One-off or by scripts

Compute



- Use data
- Integrate
- Merge

Join Up



- Get trained
- Get inspired
- Meet partners

Where

Registration with
eosupport@Copernicus.esa.int



Access for Collaborative
Ground Segment

How

- Access restrictions: **EU Public authorities and institutions, EU Research projects, Copernicus Services**
- <https://spacedata.copernicus.eu/web/cscda/copernicus-users/access-rights>
- Order quota (for R&D and Copernicus services only)

Key Figures

**Worldwide
SAR coverage**
in High Resolution
(20m)

**24/7 satellite
availability**
for emergencies

**High
Resolution
(10-20m)**
of 39 European
States

**Very High
Resolution
(1-4m)**
of 39 European
States

*depending on user category



Space Component

**MOSTLY FREE
AND OPEN**

Discover & Visualise



- EUMETCast satellite service, EUMETCast Terrestrial
- Operational NRT data covering: Atmosphere, ocean, weather, land, climate
- More than 380 products

Get the Station



- One-stop-shop access service
- Standard PC
- DVB/DVB-S2 reception device
- EUMETCast client S/W and Key Unit (EKU)

Register



- View and edit profile
- Subscribe to services
- Register for notifications

Use Data



- Enhance operational environmental monitoring
- Sound decision making in several critical areas

Join Up



- 4500 stations globally
- Get trained inspired
- Meet partners

Where	How	Other info
<ul style="list-style-type: none">• All data listed on the EUMETSAT Product Navigator.• Register on EUMETSAT EO Portal (EOP)	<ul style="list-style-type: none">• Get the station , configure and receive stream of data• Client S/W and EKU installed on your PC decrypt/decode incoming data stream	<ul style="list-style-type: none">• Open data policy depending on the data.• Frequent user trainings organised by EUMETSAT



Space
Component







FULL, FREE AND
OPEN

- Brand new Copernicus Access Point
- No need for satellite dishes
- All Sentinel-3 marine and atmosphere products through a rolling buffer which at its maximum will span up to 12 months worth of data.
- 2 access modes:
 - The ftp provides access to a fixed set of global and regional marine and atmosphere data.
 - The user interface allows users to select their own area of interest from the global products.



Data
Access

Access to Services Data and Information

- 6 Thematic Copernicus Services:
- 5 are under Full, free and open access:
 - Land (CLMS) 
 - Marine (CMEMS) 
 - Atmosphere (CAMS) 
 - Climate (C3S) 
 - Emergency (EMS) 
- 1 has restricted access
 - Security 





Data
Access

COPERNICUS SERVICES

*Monitoring the State of the
Earth System Environment ...*



*... Six cross-cutting
Thematic Services*

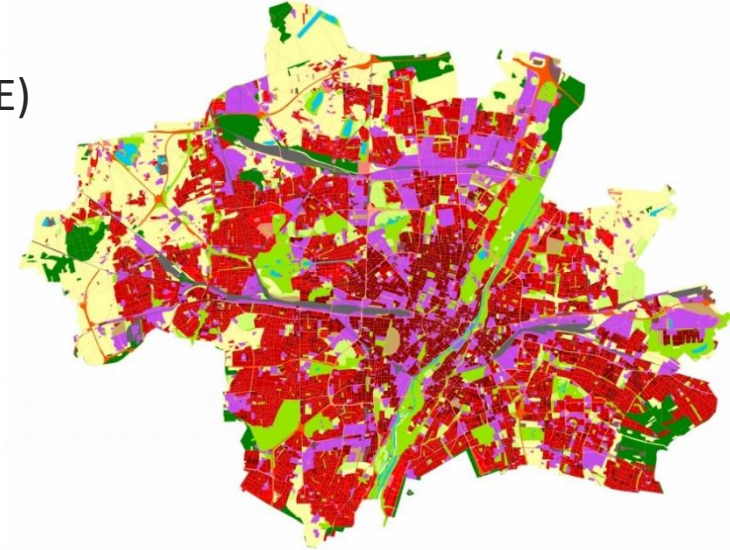


Land
Monitoring

FULL, FREE AND
OPEN

ACCESS TO CLMS

- What type of product is available ?
 - Land Use / Land Cover (CORINE)
 - Hydrology
 - Digital Elevation Model (DEM)
 - Urban Atlas
 - Natura 2000,
 - etc...
- URL :
<http://land.copernicus.eu/>





Land
Monitoring

FULL, FREE AND
OPEN

ACCESS TO CLMS

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

- Register or log in
- Select portal with desired parameters
- Download the selected result



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

- Select the desired portal
- Select the desired dataset
- Agree and download the selected result



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

- Select the desired portal,
- Select the desired dataset
- Agree and download the selected result



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

- Select the desired portal,
- Select the desired dataset
- Agree and download the selected result





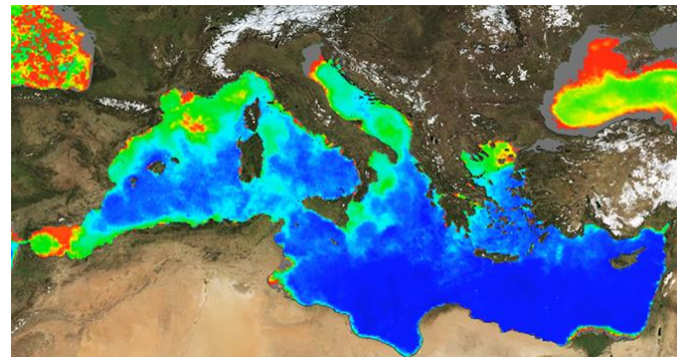
Marine
Monitoring

FULL, FREE AND
OPEN

ACCESS TO CMEMS

• What type of product is available ?

- 140 products
- Key physical and biogeochemical ocean parameters (currents, temperature, chlorophyll ...)
- Global ocean and 6 European regional seas
- Analysis, forecast and long time series
- Models and observations (Satellite or in situ)
- In 2017 waves will be added





Marine
Monitoring

FULL, FREE AND
OPEN

ACCESS TO CMEMS

<http://marine.copernicus.eu/>

- Register or log in
- Select a sea or ocean



- Select additional parameters
- Press “Add to Cart” under the desired dataset



View or Download the dataset



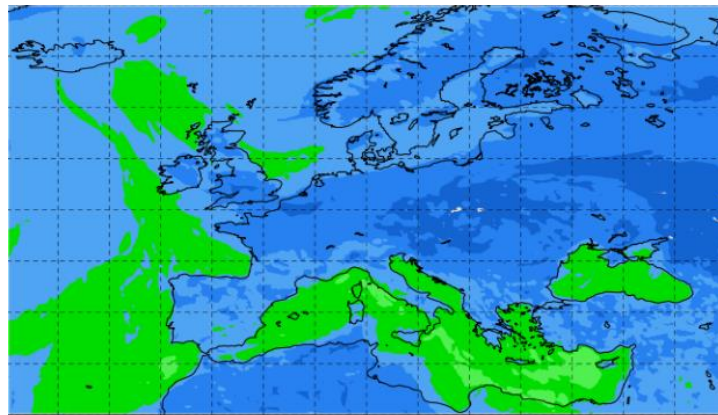


Atmosphere
Monitoring

FULL, FREE AND
OPEN

ACCESS TO CAMS

- CAMS provide information on air quality and on the atmosphere composition.
- CAMS answers the following questions:
 - What will the air we breathe be like tomorrow?
 - Where are the best places for my solar farm? What is the yield I can expect?





Atmosphere
Monitoring

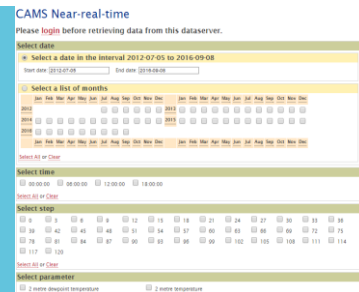
FULL, FREE AND
OPEN

ACCESS TO CAMS

<http://atmosphere.copernicus.eu/>
Catalogue → Enter

Select parameters.
Click Data Download.

Log in to ECMWF server.
Select parameters and time frame.
Download result.



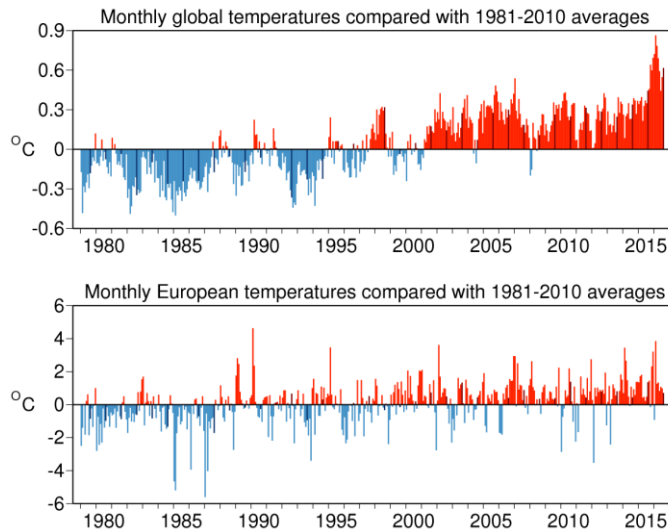


Climate
Change

FULL, FREE AND
OPEN

ACCESS TO C3S

- C3S= Copernicus Climate Change Service
- Under construction with Sectoral Information System (Insurance, Water, Energy, etc.) and specific portals and indicators
- Some datasets already available.



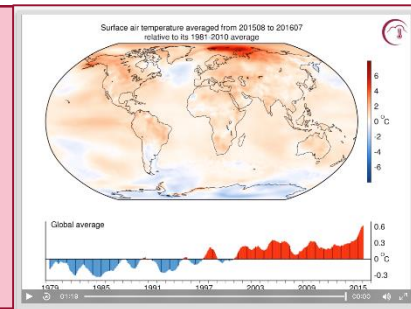


Climate
Change

FULL, FREE AND
OPEN

ACCESS TO C3S

- Visit <https://climate.copernicus.eu> and select data of interest
- Can access data via C3S or on ECMWF website at <http://apps.ecmwf.int/datasets/data/interim-full-daily/>



- To access the **ECMWF public datasets**. You will **need to have an account** on ECMWF web site
- If you **don't have an account**, please self register at <https://apps.ecmwf.int/registration/>
- Very **simple**: the user writes a request, submits it and retrieves a file





FREE AND OPEN

- EMS answers to :
 - floods,
 - tsunami,
 - earthquake,
 - landslides,
 - fires,
 - severe storms,
 - humanitarian crisis,
 - volcanic eruptions,
 - technological disaster
- Only authorized users can trigger the service
- But everybody can assess maps!

European Commission

COPERNICUS

Emergency Management Service

Copernicus EMS » Copernicus Emergency Management Service

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

LATEST NEWS - 2017-10-15 | [EMSR249] Hurricane Ophelia in Ireland

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

Copernicus Emergency Management Service - Mapping

A service in support of European emergency response

Map showing the United Kingdom, Ireland, and surrounding regions, with a blue icon labeled EMSR249 indicating a location in Ireland.



FREE AND OPEN

<http://emergency.copernicus.eu/>

- Under Rapid Mapping, click on List of Activations
- Search by Activation Status, Event Type, Date or Country
- Click on the event of interest.
- Download the available maps.

- Under Risk and Recovery, click on List of Activations
- Search by Activation Status, Event Type, Date or Country
- Click on the event of interest
- Download the available maps

The screenshot shows the Copernicus Emergency Management Service (EMS) website. The main heading is 'List of EMS Rapid Mapping Activations'. Below this, there are search filters for 'Activation Status' (set to 'All'), 'Event Type' (set to 'Drought'), 'Event Date (UTC)' (start and end dates set to '10-17-2017'), and 'Affected Countries' (set to 'Algeria'). A table of activations is displayed with columns: Act. Code, Title, Event Date, Type, Country/Terr., and Feed. The table lists several events, including 'Forest fire Portugal', 'Hurricane Ophelia in Ireland', 'Forest fire in Castilla y León region', 'Forest fire in Bergeles area, Georgia', 'Hurricane Maria in Dominica', and 'Hurricane Maria in Caribbean'.

Act. Code	Title	Event Date	Type	Country/Terr.	Feed
EHMSR250	Forest fire Portugal	2017-10-16	Wildfire	Portugal	
EHMSR249	Hurricane Ophelia in Ireland	2017-10-16	Storm	Ireland	
EHMSR248	Forest fire in Castilla y León region	2017-07-29	Wildfire	Spain	
EHMSR247	Forest fire in Bergeles area, Georgia	2017-09-22	Wildfire	Georgia	
EHMSR246	Hurricane Maria in Dominica	2017-09-19	Storm	Dominica	
EHMSR245	Hurricane Maria in Caribbean	2017-09-19	Storm	Saint Kitts and Nevis, British Virgin Islands	

[EHMSR249] Hurricane Ophelia in Ireland

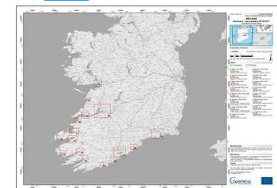
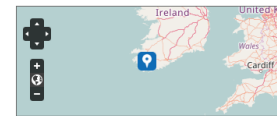
EHMSR249: Hurricane Ophelia in Ireland

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.





Security

Access to Security Service

The Copernicus service for Security applications aims to support European Union policies by providing information in response to Europe's security challenges. It improves crisis prevention, preparedness and response in three key areas:

- Border surveillance;
- Maritime surveillance;
- Support to EU External Action.

Its access is strictly restricted to authorised users



User Uptake

Copernicus Access to Data

National and private Initiatives





Data
Access

OTHER DATA ACCESS PUBLIC INITIATIVES

National Initiatives- Collaborative Ground Segment

Initiative Name	Initiative Leader	Website and Target User Group
THEIA Land Data Centre	CEA, Cerema, IRSTEA, IRD, CNRS, INRA, IGN, Meteo France, CIRAD, ONERA	<ul style="list-style-type: none">• URL: theia-land.fr• Scientific communities and public authorities
CATAPULT Satellite Applications and CEDA	UK Space Agency	<ul style="list-style-type: none">• URL: sa.catapult.org.uk• Scientific communities, public authorities, private industry players
ESA Thematic Exploitation Platforms	ESA	<ul style="list-style-type: none">• URL: tep.eo.esa.int• All user types
Platform for Exploiting Products from Sentinels (PEPS1)	CNES	<ul style="list-style-type: none">• URL: peps.cnes.fr• Scientific communities and public authorities

Last news:

The 13th October 2017, ESA and Enterprise Ireland have signed an agreement that gives Ireland access to data from the Copernicus Sentinel satellites and helps Ireland to exploit these data to benefit their country. Ireland is the 13th state to sign the Copernicus Space Component Collaborative Arrangement.



Data
Access

OTHER DATA ACCESS PRIVATE INITIATIVES

Private Initiatives

Initiative Name	Initiative Leader	Website and Target User Group
CLOUDEO	CloudEO	<ul style="list-style-type: none">• URL: cloudeo-ag.com• Users and developers of geo services, providers of geo data, services, applications and tools
Earth Observation Data Centre (EODC) for water resources monitoring	Vienna University of Technology Department of Geodesy and Geo-info	<ul style="list-style-type: none">• URL: eodc.eu• Regional public authorities and private users
GEOPEdia platform	Sinergise	<ul style="list-style-type: none">• URL: geopedia.world• National, regional public authorities and private users
GEOSTORM platform	CS-SI	<ul style="list-style-type: none">• URL: geostorm.eu• Regional authorities and private users
Sentinel-2 on AWS	Amazon	<ul style="list-style-type: none">• URL: sentinel-pds.s3-website.eu-central-1.amazonaws.com• Developers, private/public downstream players
Google Earth Engine	Google	<ul style="list-style-type: none">• URL: earthengine.google.com• Regional authorities and private users

* The European Commission does not endorse any particular commercial solution



Data
Access

P e r s p e c t i v e s : t h e D I A S p l a t f o r m s

- Imminent launch of a **Data Access and Information Service**
- Intention to procure parallel services from three suppliers:
 - **5 platforms** to provide equal access to the basic data and services
 - **Run by 2 entrusted entities:** EUMETSAT (1 platform) and ESA (4 platforms)
- Overall **ensuring that Copernicus data is easily accessible and used!**





Data
Access

RUS: A NEW EXPERT SERVICE FOR SENTINEL USERS

- **RUS: Research and User Support for Sentinel Core Products**
- **Goal:** Foster the use of Sentinel Core products by providing several types of support to the Sentinel data users for free.
- **Project founded by EC and managed by ESA.**





The project is funded by EC, managed by ESA
and operated by CSSI and its partners.



00:00,00





Data
Access

RUS: A NEW EXPERT SERVICE FOR SENTINEL USERS

<https://rus-copernicus.eu/portal/>



**Non
Commercial
activities**



Students, Trainers
Researchers
Decision-makers
R&D development

Free access



Powerful computing
environment with
scalable VMs & full
support

**Scientific
Support**



Support from experts
in geospatial
data processing

Process



Process large
Sentinel datasets
possible for any
user

Training



Face-to-face
sessions &
webinars
for all users