



# Access to Copernicus Data

Overview and Introduction



Copernicus

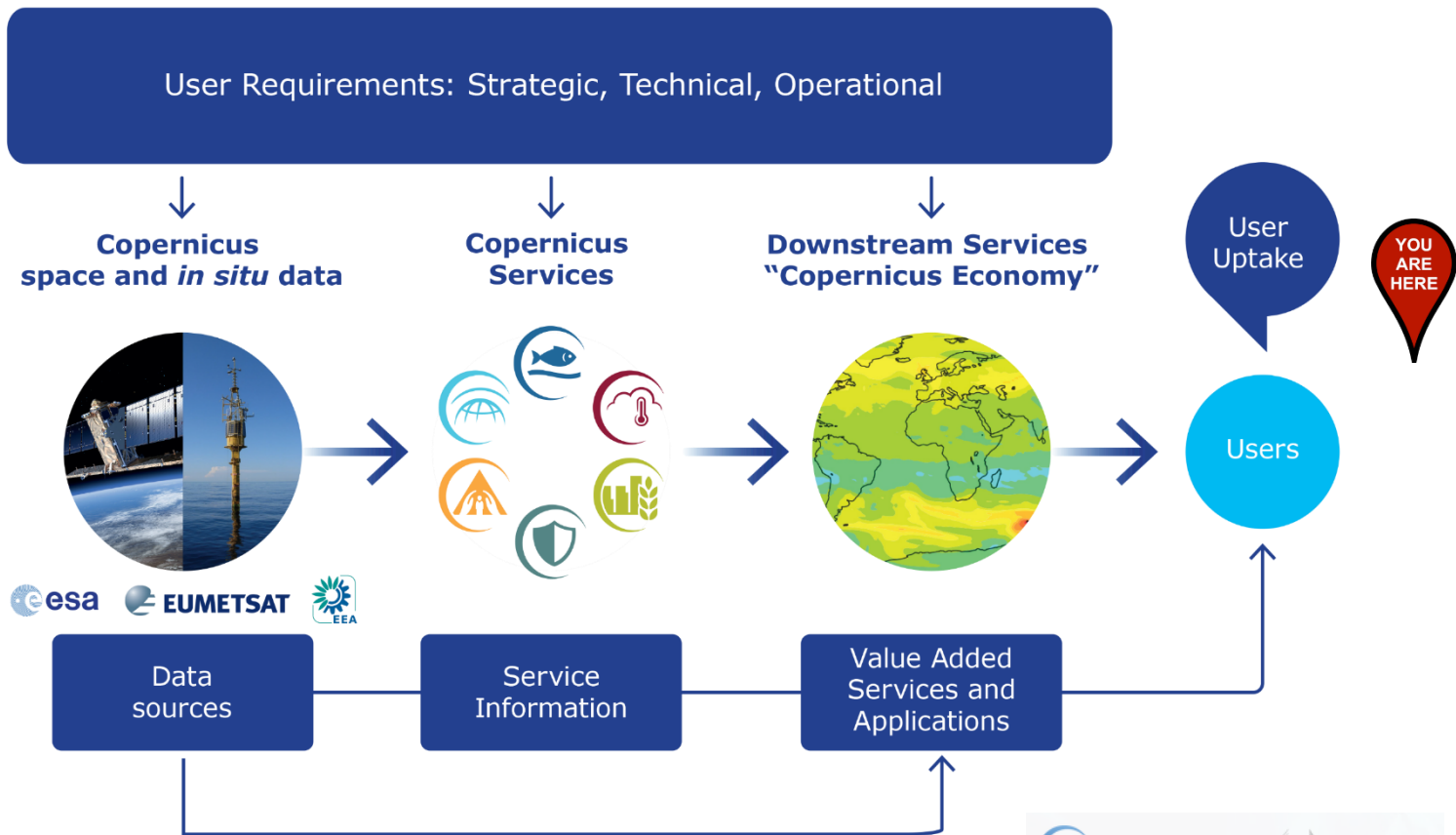
## C O P E R N I C U S   I N   B R I E F

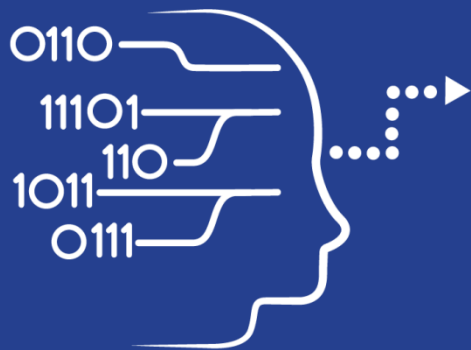
- **Copernicus, a flagship programme** of the European Union:
  - Monitors **the Earth**, its environment and ecosystems
  - Prepares for **crises, security risks** and **natural or man-made disasters**
  - Contributes to the **EU's role as a global soft power**
- Adopts a **full, free and open data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

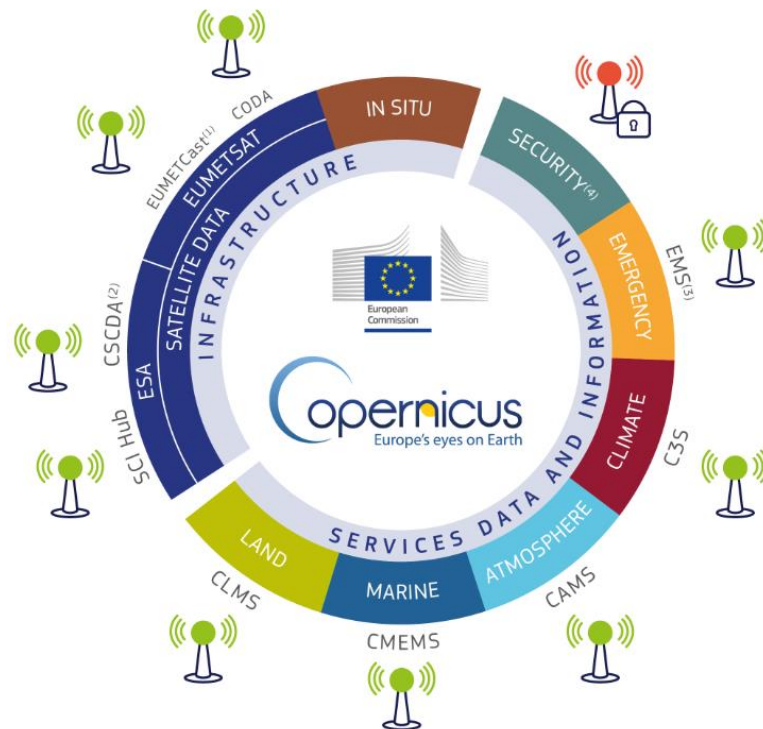




Data  
Access

# Copernicus Data Access Overview

- **10 European Data Access points:**
  - 4 for Satellite Data
  - 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

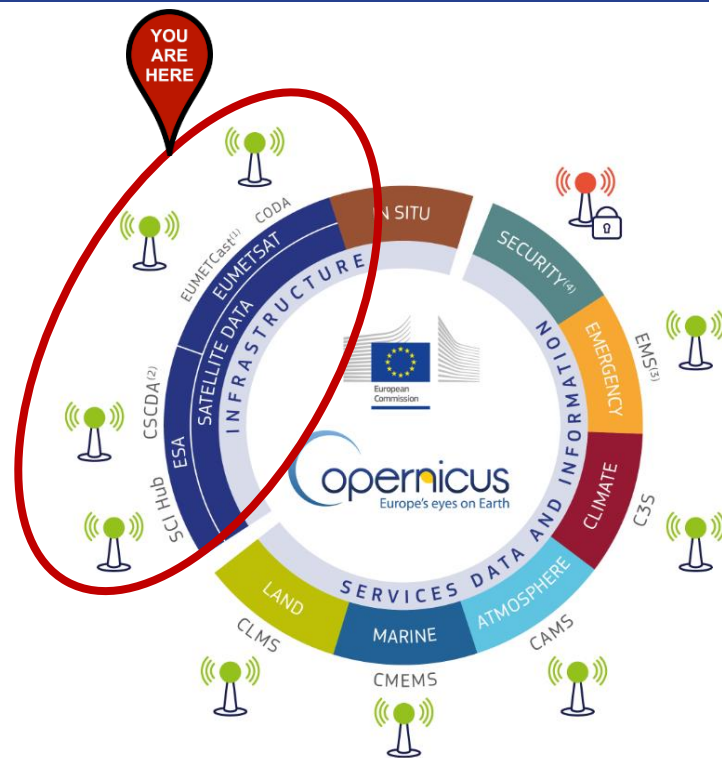




# Access to Satellite Data

Space  
Component

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





Space  
Component

**FULL, FREE AND  
OPEN**

# COPERNICUS OPEN ACCESS HUB



## 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



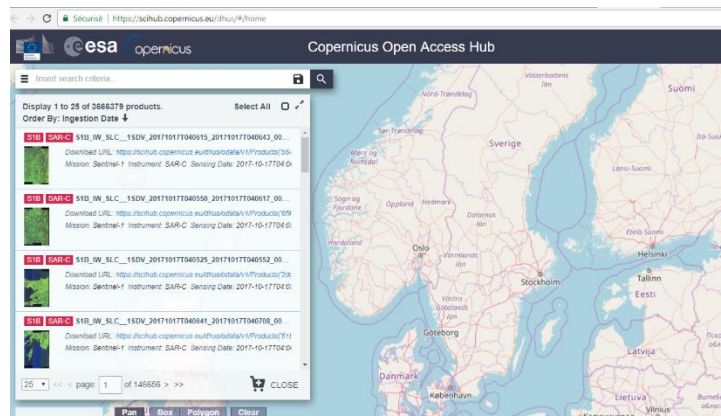
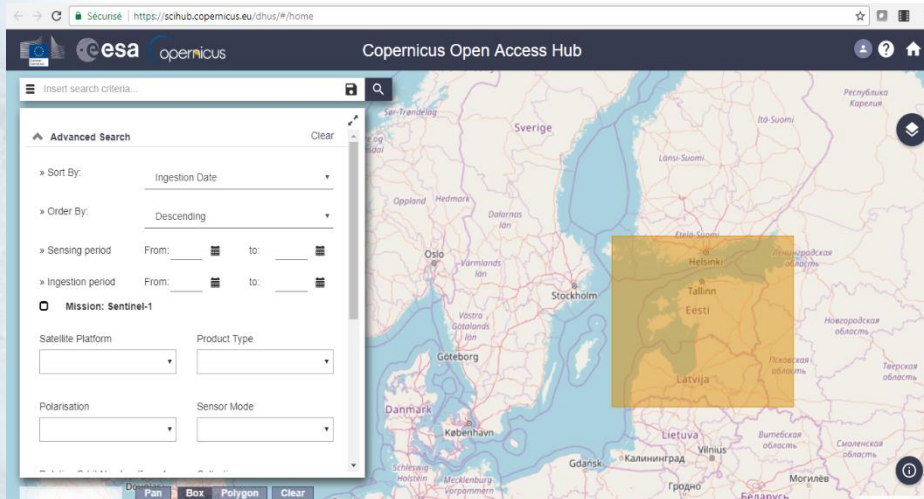
Space  
Component

FULL, FREE  
AND OPEN

# IN PRACTICE (EXAMPLE)

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.
- Direct downloads or via APIs.







Space  
Component

# SPACE COMPONENT DATA ACCESS (CSCDA)



Differentiated  
Access Levels\*

## Search & Browse



- HR/VHR images from 3<sup>rd</sup> 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](mailto:eosupport@Copernicus.esa.int)



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



Space  
Component

FULL, FREE AND  
OPEN

# Copernicus Online Data Access









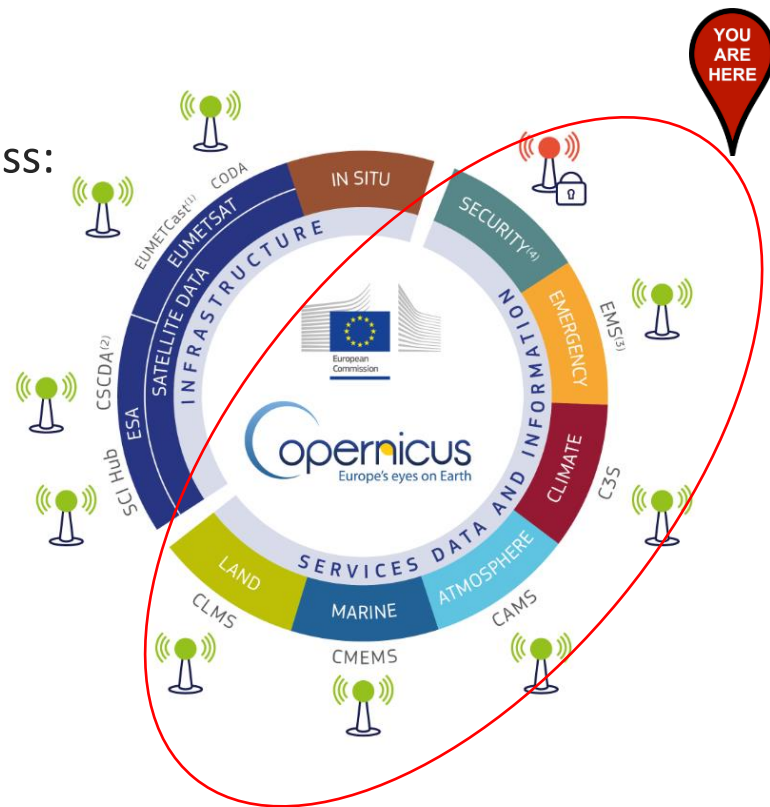
- Brand new Copernicus Access Point
- No need for satellite dishes
- All **Sentinel-3 marine** and **atmosphere** products through a rolling buffer which at its maximum will span up to 12 months worth of data.
- **2 access modes:**
  - The ftp provides access to a fixed set of global and regional marine 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*

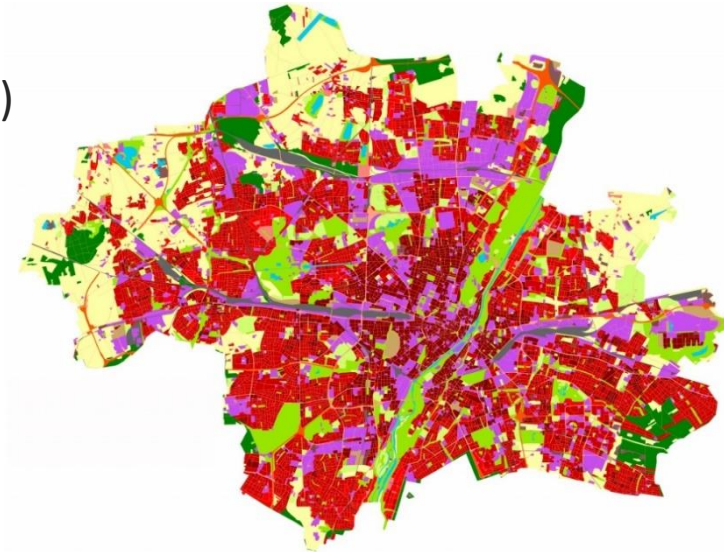


Land  
Monitoring

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

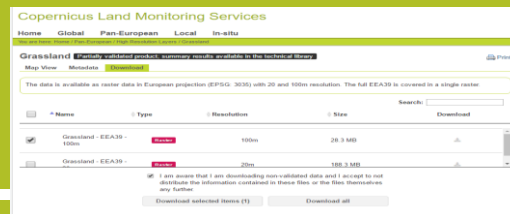
## Global <http://land.copernicus.vgt.vito.be/PDF/portal/Application.html#Home>

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



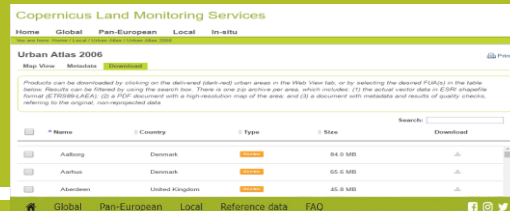
## Pan-European <http://land.copernicus.eu/pan-european>

- 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

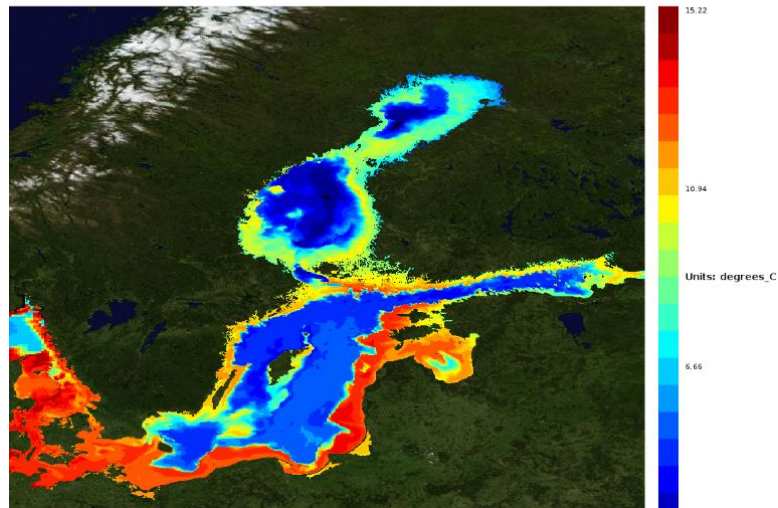
FULL, FREE AND  
OPEN

## 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)
- From 2017 **waves products** are available also.

CMEMS V3 HBM model fields (hourly)  
sea water potential temperature at sea floor  
Date: 2017-10-17 08:00 UTC







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



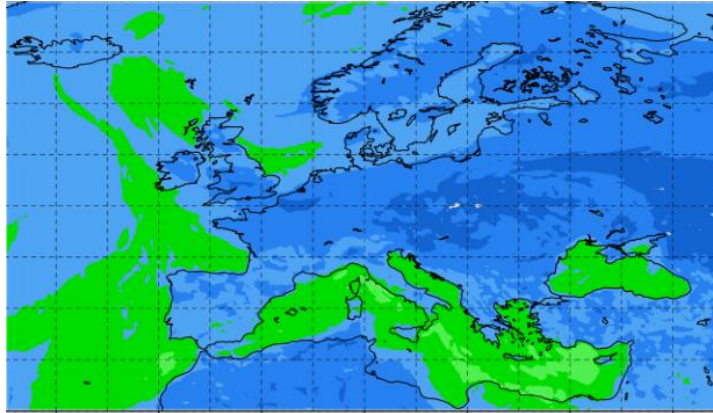


Atmosphere  
Monitoring

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

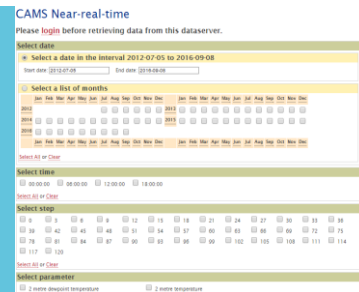
FULL, FREE AND  
OPEN

# 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.



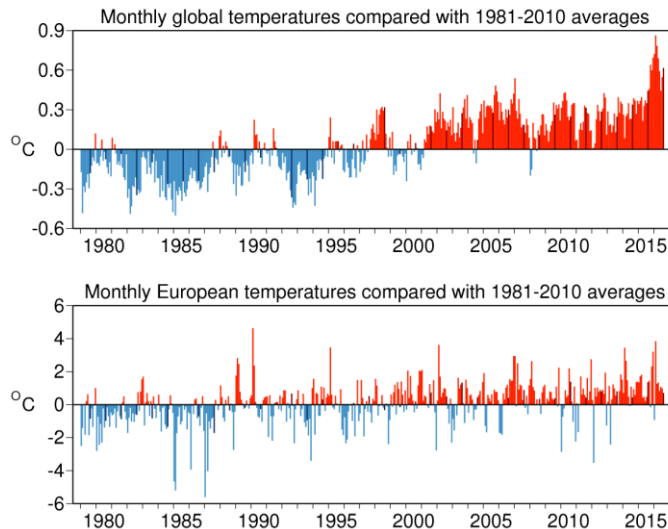


Climate  
Change

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.





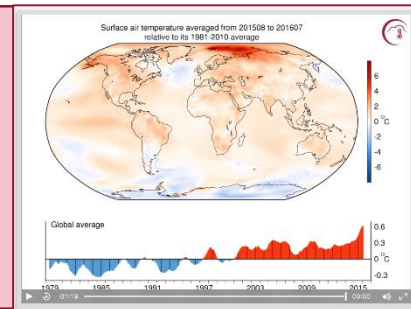


Climate  
Change

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





- 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 access maps!





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

**COPERNICUS**  
Emergency Management Service

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

**Latest News - 2016-09-12 | [EMSR180] Fires on Thassos Island**

**EMS - MAPPING**

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

**RAPID MAPPING**

- List of Activations
- Map of Activations
- GeoRSS Feed

**RISK AND RECOVERY**

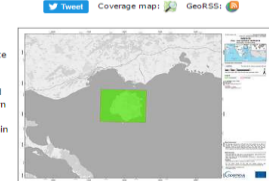
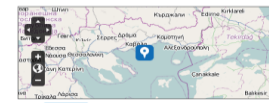
- List of Activations

**List of EMS Rapid Mapping Activations**

Act. Code	Title	Event Date	Type	Country	Feed
EMSR180	Fires on Thassos Island	2016-09-10	Forest fire, wild fire	Greece	[Feed]
EMSR177	Earthquake in Central Italy	2016-08-24	Earthquake	Italy	[Feed]
EMSR176	Flood in Louisiana	2016-08-12	Flood	United States	[Feed]
EMSR175	Forest Fire in Madeira Island	2016-08-08	Forest fire, wild fire	Portugal	[Feed]
EMSR174	Flood in Skopje	2016-08-07	Flood	Macedonia	[Feed]
EMSR173	Forest Fire in La Palma Island	2016-08-03	Forest fire, wild fire	Spain	[Feed]
EMSR172	Seismic activity in Breve Island	2016-08-01	Earthquake	Cape Verde	[Feed]
EMSR171	Forest Fires in Sardinia	2016-07-04	Forest fire, wild fire	Italy	[Feed]

**EMSR180: Fires on Thassos Island**

**Event Time (UTC):** 2016-09-10 07:00  
**Event Time (LOC):** 2016-09-10 10:00  
**Event Type:** Forest fire, wild fire  
**Activation Time (UTC):** 2016-09-12 14:36  
**Reference maps produced:** 0  
**Delineation maps produced:** 3  
**Gridding maps produced:** 0  
**Activation Status:** Open  
**Affected Countries:**  
 [Greece] Hellenic Republic  
**Area Descriptor:** Island of Thassos, Greece  
**Authorized User:**  
 Greece (General secretariat for Civil protection - Directorate for Emergency Planning and Response)  
**Activation Reason:**  
 On Saturday 10-09-2016 morning, four fires that started on the island of Thassos (NE Greece) and continue to burn for a third day. The fires were probably caused by strong lightning activity in the island that was not followed by rain (Dry storm). Villages have been evacuated.  
**Requested Product:** Delineation and monitoring



**EMSR180 - Activation Extent Map**  
 Release: 031 - Version: v3 - Delivered: 2016-09-14 09:06  
 View as: EMSR180-AEH-3PG • EMSR180-AEH-KMZ • EMSR180-AEH

Filter by map type: **ALL** • DELINEATION



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"><li>• URL: <a href="http://theia-land.fr">theia-land.fr</a></li><li>• Scientific communities and public authorities</li></ul>
NOA Hellenic National Sentinel Data Mirror Site	NOA, IAASARS	<ul style="list-style-type: none"><li>• URL: <a href="http://sentinels.space.noa.gr">sentinels.space.noa.gr</a></li><li>• Scientific communities, public authorities, private industry players</li></ul>
CATAPULT Satellite Applications and CEDA	UK Space Agency	<ul style="list-style-type: none"><li>• URL: <a href="http://sa.catapult.org.uk">sa.catapult.org.uk</a></li><li>• Scientific communities, public authorities, private industry players</li></ul>
ESA Thematic Exploitation Platforms	ESA	<ul style="list-style-type: none"><li>• URL: <a href="http://tep.eo.esa.int">tep.eo.esa.int</a></li><li>• All user types</li></ul>
Platform for Exploiting Products from Sentinels (PEPS1)	CNES	<ul style="list-style-type: none"><li>• URL: <a href="http://peps.cnes.fr">peps.cnes.fr</a></li><li>• Scientific communities and public authorities</li></ul>



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"><li>• URL: <a href="http://cloudeo-ag.com">cloudeo-ag.com</a></li><li>• Users and developers of geo services, providers of geo data, services, applications and tools</li></ul>
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"><li>• URL: <a href="http://eodc.eu">eodc.eu</a></li><li>• Regional public authorities and private users</li></ul>
GEOPEdia platform	Sinergise	<ul style="list-style-type: none"><li>• URL: <a href="http://geopedia.world">geopedia.world</a></li><li>• National, regional public authorities and private users</li></ul>
GEOSTORM platform	CS-SI	<ul style="list-style-type: none"><li>• URL: <a href="http://geostorm.eu">geostorm.eu</a></li><li>• Regional authorities and private users</li></ul>
Sentinel-2 on AWS	Amazon	<ul style="list-style-type: none"><li>• URL: <a href="http://sentinel-pds.s3-website.eu-central-1.amazonaws.com">sentinel-pds.s3-website.eu-central-1.amazonaws.com</a></li><li>• Developers, private/public downstream players</li></ul>
Google Earth Engine	Google	<ul style="list-style-type: none"><li>• URL: <a href="http://earthengine.google.com">earthengine.google.com</a></li><li>• Regional authorities and private users</li></ul>

\* 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!**



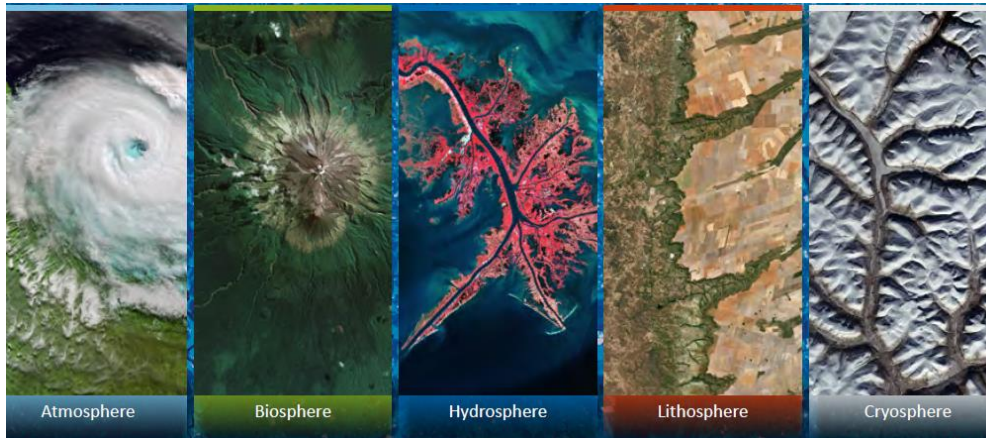




Data  
Access

# 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 funded by EC and managed by ESA.**







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