Access to Copernicus Data

Overview and Introduction

Copernicus
Europe's eyes on Earth

Space

Copernicus EU
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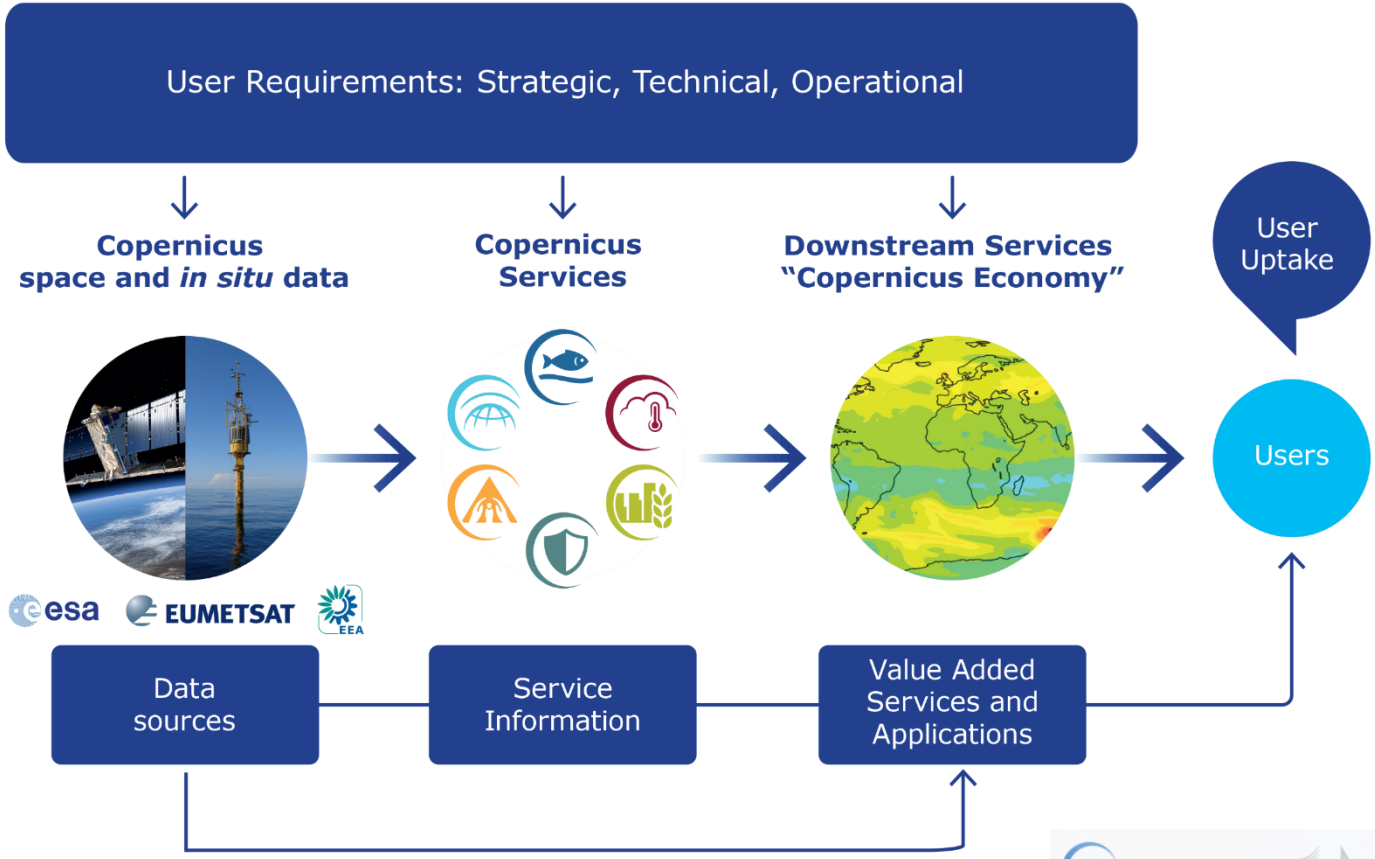
Copernicus EU
www.copernicus.eu

COPERNICUS IN BRIEF

- **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 IS DRIVEN BY THE USERS



User Uptake

Copernicus Data Access

- 10 European Access points
- Several national and private initiatives

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Copernicus Data Access Overview

Data Access

- 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 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)

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SENTINEL SCIENTIFIC DATA ACCESS

Space Component

FULL, FREE AND OPEN

Search & Browse	Discover & Visualise	Register	Download	Compute	Join Up
• Sentinel data • Graphical user interface	• Visualise/ analyse data • Access info	• Order • Customise • Helpdesk	• Select and download • One-off or by scripts	• Use data • Integrate • Merge	• Get trained • Get inspired • Meet partners

Where

https://scihub.copernicus.eu

sentinel data hub

Scientific and Other Access

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

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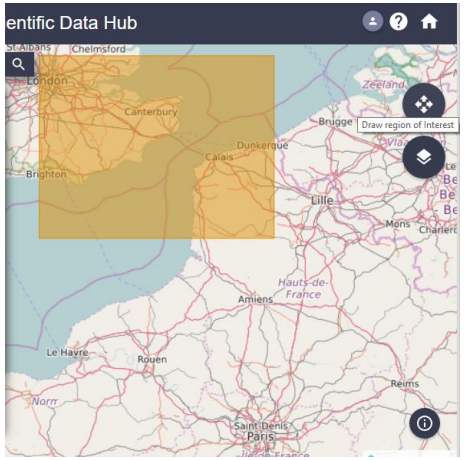
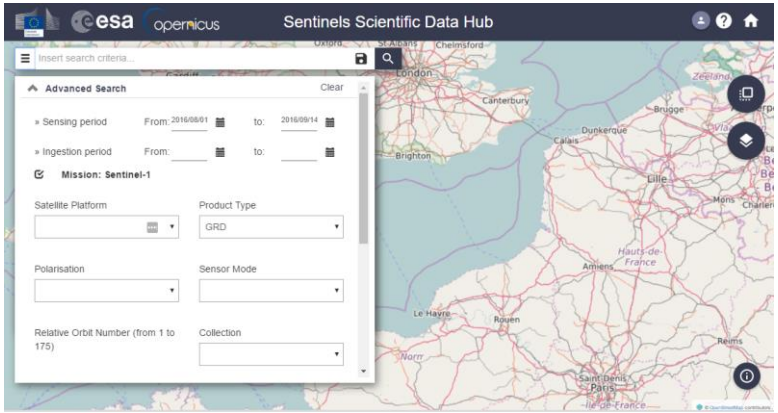
SCI-HUB IN PRACTICE (EXAMPLE)

Space Component

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.





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SPACE COMPONENT DATA ACCESS (CSCDA)

Space Component

RESTRICTED

Search & Browse	Discover & Visualise	Register	Download	Compute	Join Up
• HR/VHR images from 3rd Parties • Global SAR coverage	• Visualise/ analyse data • Access info	• Order • Customise • Helpdesk	• Select and download • One-off or by scripts	• Use data • Integrate • Merge	• Get trained • Get inspired • Meet partners

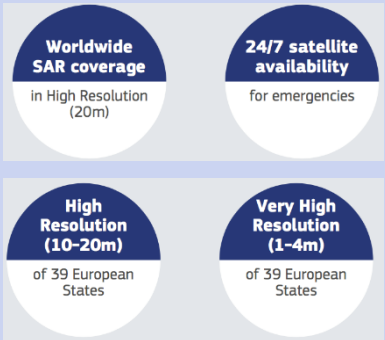
Where

Registration with 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



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EUMETCast

EUMETSAT

Space Com...

FULL, FREE AND OPEN
But you must get the station and pay a yearly fee

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
• All data listed on the **EUMETSAT Product Navigator.** • **Register on EUMETSAT EO Portal (EOP)**	• Get the station , configure and receive stream of data • Client S/W and EKU installed on your PC decrypt/decode incoming data stream	• Open data policy depending on the data. • Frequent user trainings organised by EUMETSAT

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Copernicus Online Data Access

EUMETSAT

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 is 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.
- Work in Progress (URL to come next month)

Access to Services Data and Information

Data Access

- 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

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COPERNICUS SERVICES

Data Access

Monitoring the State of the Earth System Environment …

… Six cross-cutting Thematic Services

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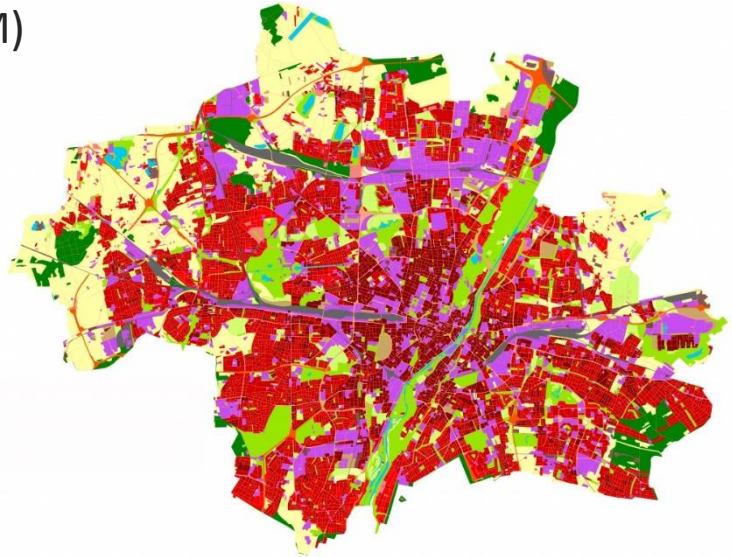
ACCESS TO CLMS

Land Monitoring

FULL, FREE AND OPEN

- What type of product is available ?
  - Land Use / Land Cover (CORINE)
  - Hydrology
  - Digital Elevation Model (DEM)
  - Urban Atlas
  - Natura 2000,
  - etc…



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ACCESS TO CLMS

Land Monitoring

FULL, FREE AND OPEN

BIO-GEOPHYSICAL PRODUCTS: VEGETATION, WATER, ENERGY

LU/LC & LU/LC CHANGE, FORESTS, GRASSLANDS, WETLANDS, WATER BODIES

URBAN ATLAS, NATURA 2000

Global

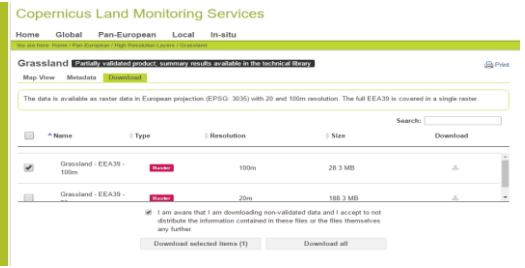
http://land.copernicus.vgt.vito.be/PDF/portal/Application.html#Home

- Register or log in
- Select portal with desired parameters
- Indicate time frame and area of interest
- Download the selected result

Pan-European

http://land.copernicus.eu/pan-european

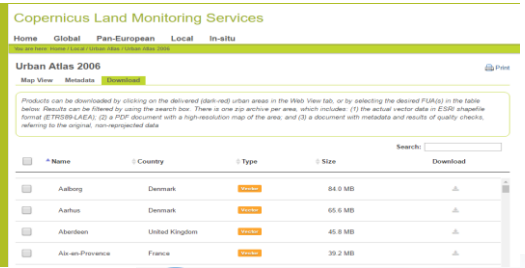
- Select the desired portal
- Switch to Download tab
- Select the desired dataset
- Agree and download the selected result



Local

http://land.copernicus.eu/local

- Select the desired portal
- Switch to Download tab
- Select the desired dataset
- Agree and download the selected result



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ACCESS TO CMEMS

Marine Monitoring

FULL, FREE AND OPEN

- 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 a observations (Satellite or in situ)

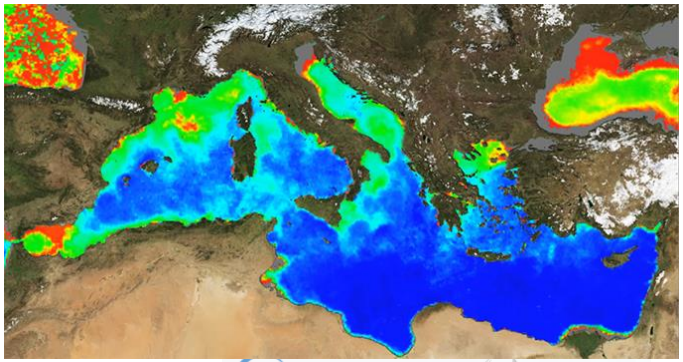
CMEMS products support **Marine Safety**, any safe activities at sea

CMEMS products support **Marine Resources**, protection and the sustainable management of living

CMEMS products support **Coastal areas**, wate pollution c predict coa temper physical im and mar

CMEMS products support the **EU and national Meteo services**, as physical parameters of the ocean's surface are used in atmospheric models, and changes in sea ice extent, concentration and volume are signals to detect global warming for instance

ill be added



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ACCESS TO CMEMS

Marine Monitoring

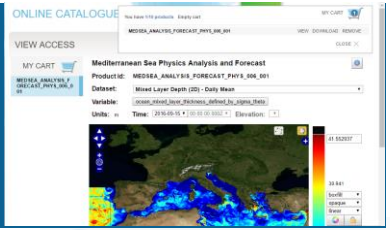
FULL, FREE AND OPEN

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



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Atmosphere Monitoring

ACCESS TO CAMS

FULL, FREE AND OPEN

- 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?

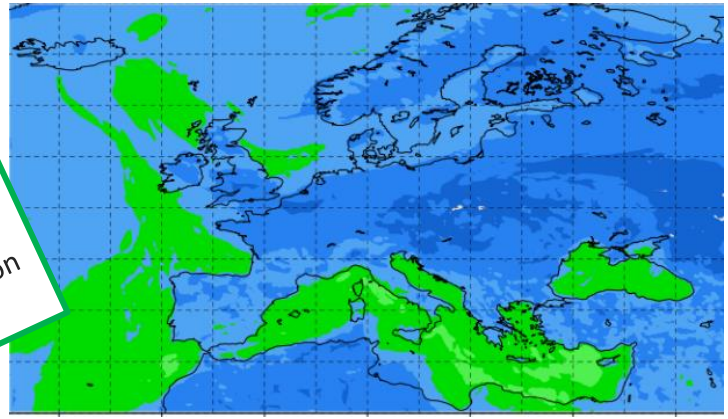
CAMS products support the **Air Quality**, a comprehensive global

CAMS products **monitor the global CO_2**

CAMS products maintain and update the his **stratospheric forecasts of strat** up to 5 days ahea day forecasts of **U** into account the clouds, and a

CAMS products provide **Global and direct irradiances** for Europe, Africa, the Middle East and Asia providing the solar energy industry, the electrici renewal insti accura radiati

CAMS products **compiles emission inventories** , estimates net fluxes of CO_2, N_2O and CH_4 at the Earth's surface , estimates emissions of aerosols, chemical species, and greenhouse gases from wild fires on a daily basis



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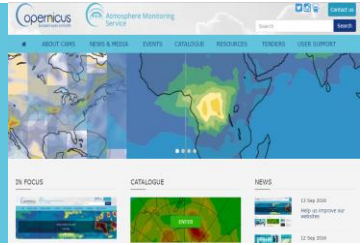
ACCESS TO CAMS

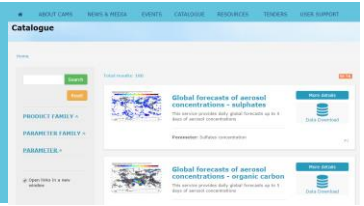
Atmosphere Monitoring

FULL, FREE AND OPEN

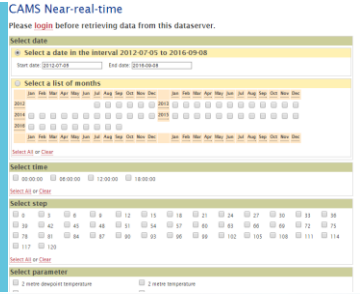
http://atmosphere.copernicus.eu/
Catalogue → Enter



Select parameters.
Click Data Download.



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



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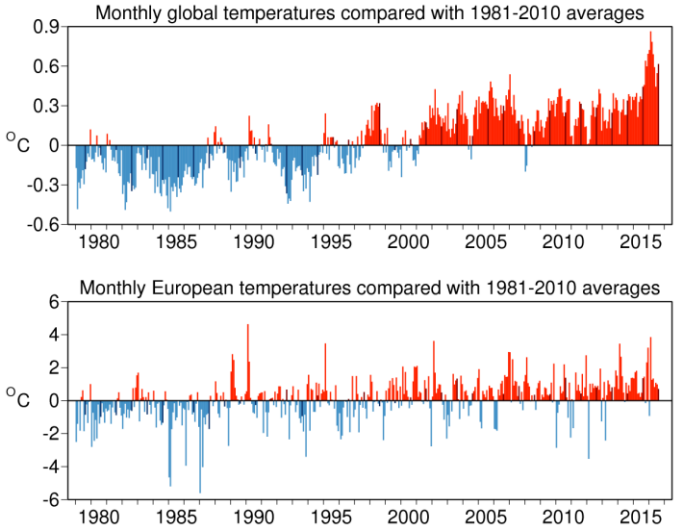
ACCESS TO C3S

Climate Change

FULL, FREE AND OPEN

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



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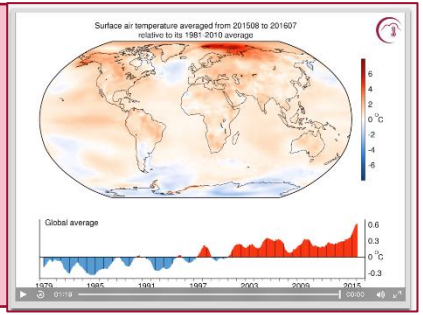
ACCESS TO C3S

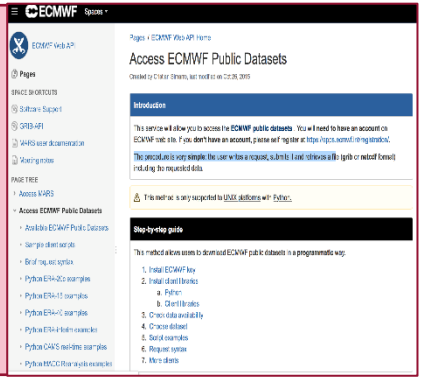
Climate Change

FULL, FREE AND OPEN

- 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



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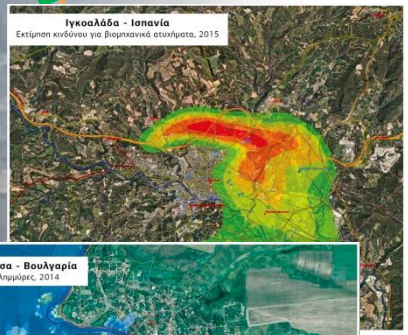
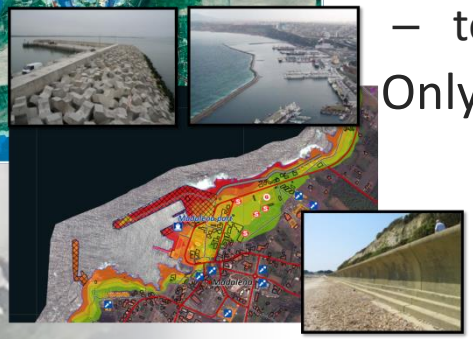
ACCESS TO EMS

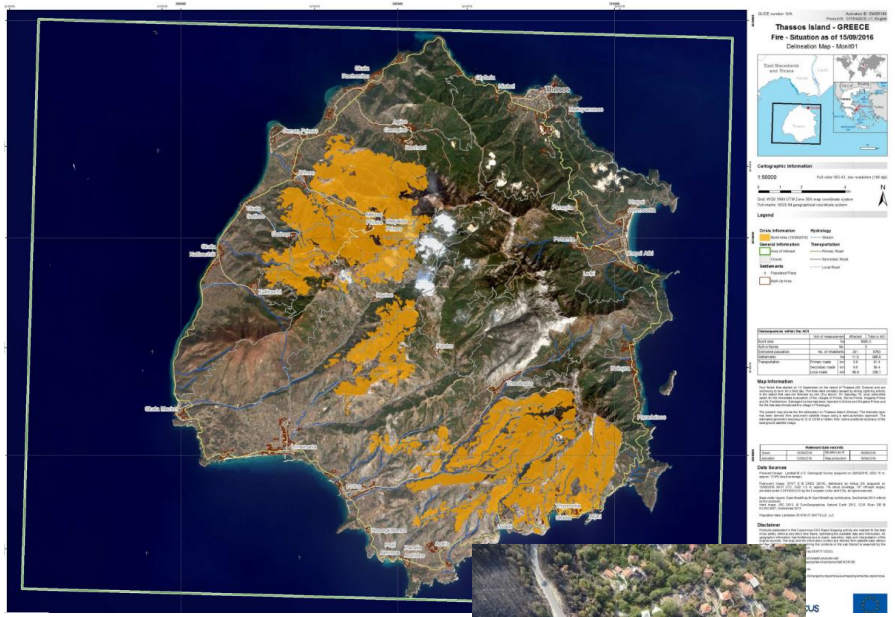
Emergency Management

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 access maps!

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EMS Registration process

Emergency Management

- Emergency Management Service: http://emergency.copernicus.eu/

- Implemented by EC
- Data Policy: Depend on profile

- **Authorised Users** may trigger the service: National Focal Points (NFPs) in EU Member States and in countries participating in the European Civil Protection Mechanism as well as EC Services (DGs) and the Situation Room of the EEAS.

- **Associated Users** must coordinate with and go through the Authorised Users in order to trigger the service. Associated Users include local, regional and other public entities; International Governmental Organisations (e.g. UN agencies, World Bank), and National & International Non-Governmental Organisations; entities and institutions within the EEAS sphere such as EU Delegations, the INTCEN, the EU Satellite Centre.

- **General Public Users** are not authorised to trigger the service, but can be informed of an activation request through the web portal. Activations, for which sensitivity restrictions apply, are excluded.

ACCESS TO EMS

Emergency Management

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

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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.

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User Uptake

Copernicus Access to Data

National and private Initiatives

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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	• URL: theia-land.fr • Scientific communities and public authorities
NOA Hellenic National Sentinel Data Mirror Site	NOA, IAASARS	• URL: sentinels.space.noa.fr • Scientific communities, public authorities, private industry players
CATAPULT Satellite Applications and CEDA	UK Space Agency	• URL: sa.catapult.org.uk • Scientific communities, public authorities, private industry players
ESA Thematic Exploitation Platforms	ESA	• URL: tep.eo.esa.int • All user types
Platform for Exploiting Products from Sentinels (PEPS1)	CNES	• URL: peps.cnes.fr • Scientific communities and public authorities

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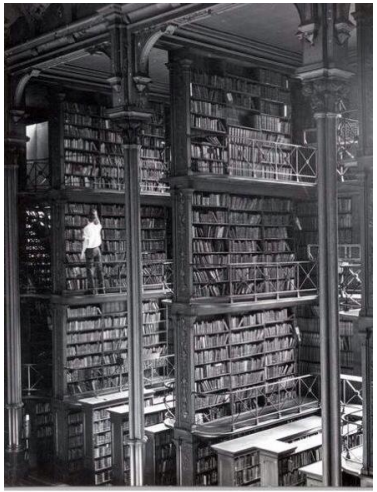
OTHER DATA ACCESS PRIVATE INITIATIVES

Private Initiatives

Initiative Name	Initiative Leader	Website and Target User Group
CLOUDEO	CloudEO	• 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	• URL: eodc.eu • Regional public authorities and private users
GEOPEDIA platform	Sinergise	• URL: geopedia.world • National, regional public authorities and private users
GEOSTORM platform	CS-SI	• URL: geostorm.eu • Regional authorities and private users
Sentinel-2 on AWS	Amazon	• URL: sentinel-pds.s3-website.eu-central-1.amazonaws.com • Developers, private/public downstream players
Google Earth Engine	Google	• URL: earthengine.google.com • Regional authorities and private users

Perspectives

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