CoRdiNet
Data Access Webinar

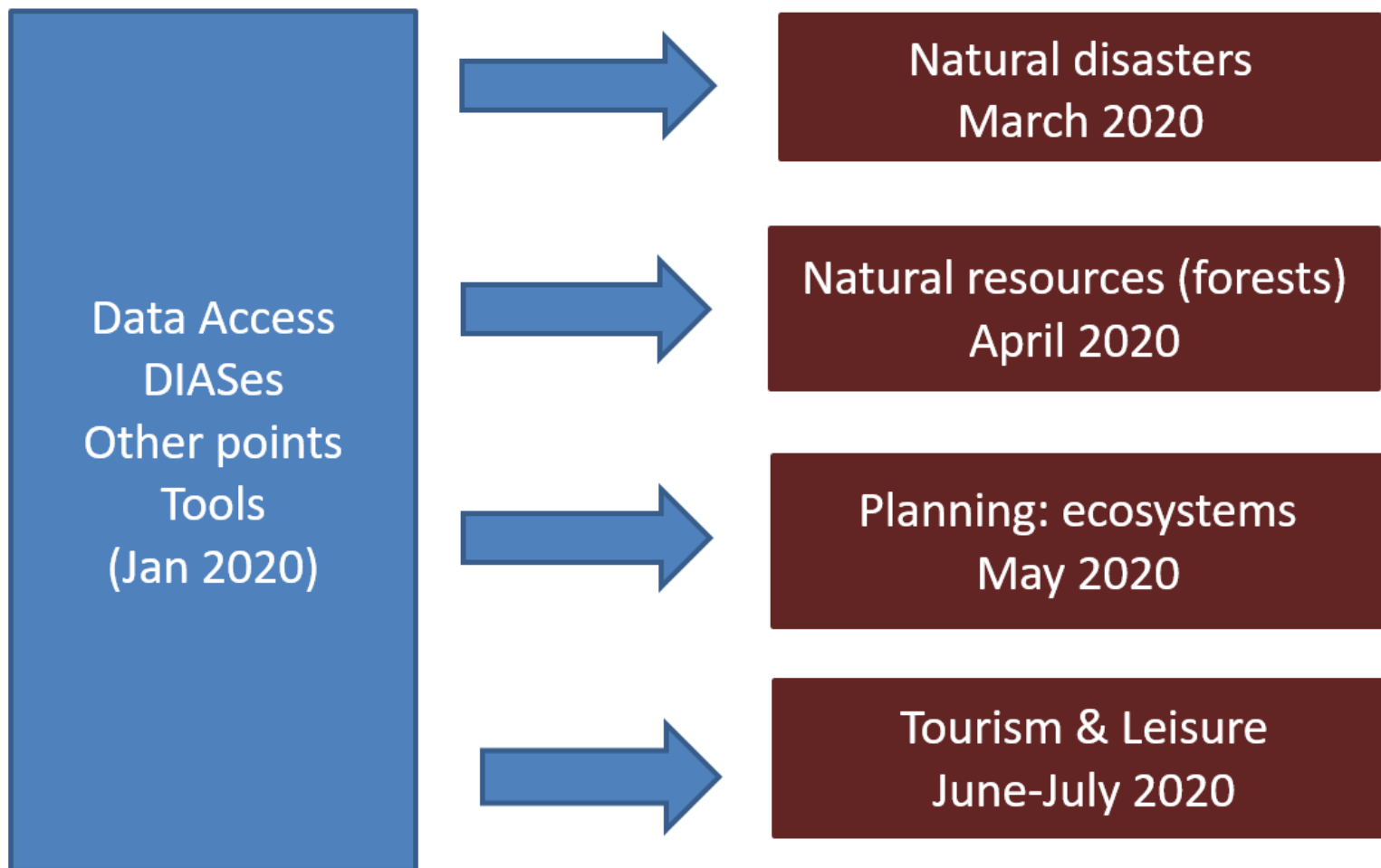Copernicus Relays for digitalisation spanning a Network

CoRdiNet

- Digitalization and new business solutions based on Copernicus

- Local expertise in the civil use of Earth observation close to the needs and offers of citizens, administration and businesses

- Calls for proposals and funding for projects that foster Copernicus user uptake

cordinet.net

Train the trainer webinars

Data Access
DIASes
Other points
Tools
(Jan 2020)

→ Natural disasters
March 2020

→ Natural resources (forests)
April 2020

→ Planning: ecosystems
May 2020

→ Tourism & Leisure
June-July 2020

Data Access

- What do we mean by data?

Satellite data

    Satellite Data distribution Hubs

    Sentinels

    Contributing missions

    Access to images in NRT

    Access to archives

Services: data and information

    Added value products

    Models

    Archives, Near Real Time and Forecasts products
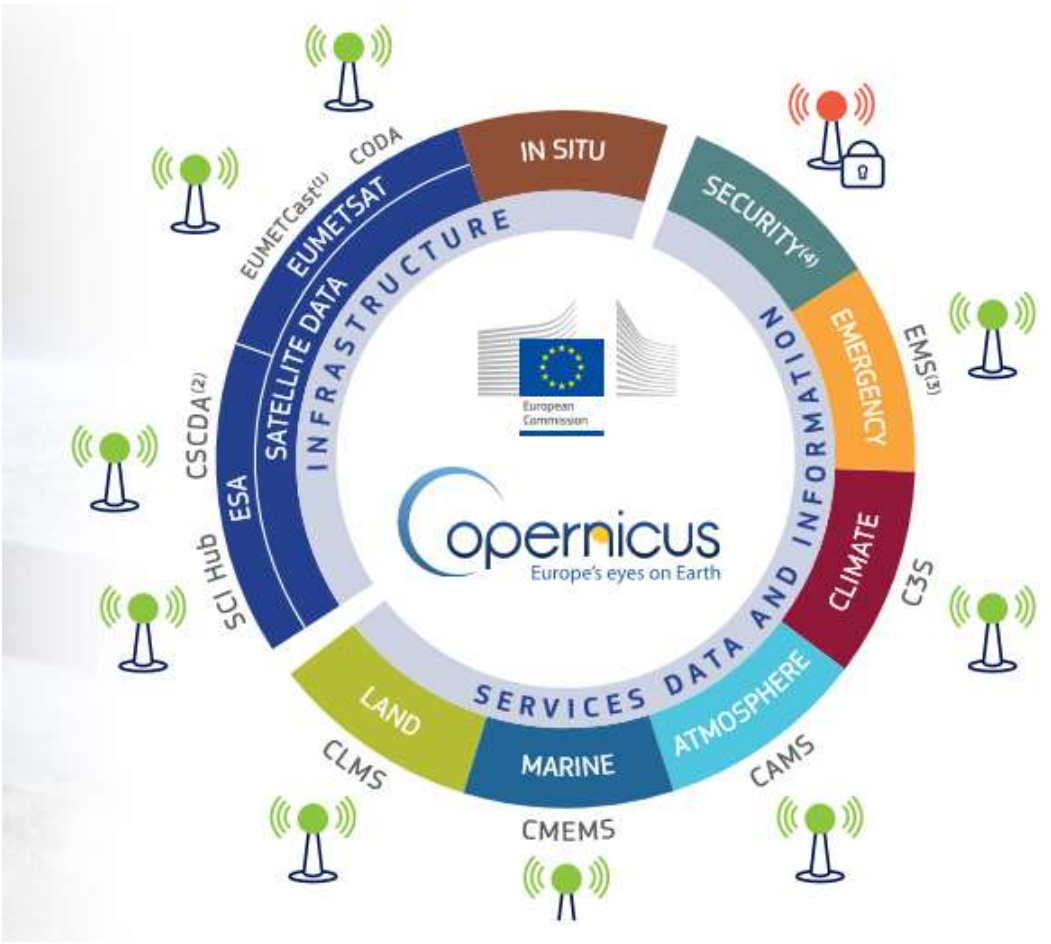
Data Access

Imagery

Data and processing

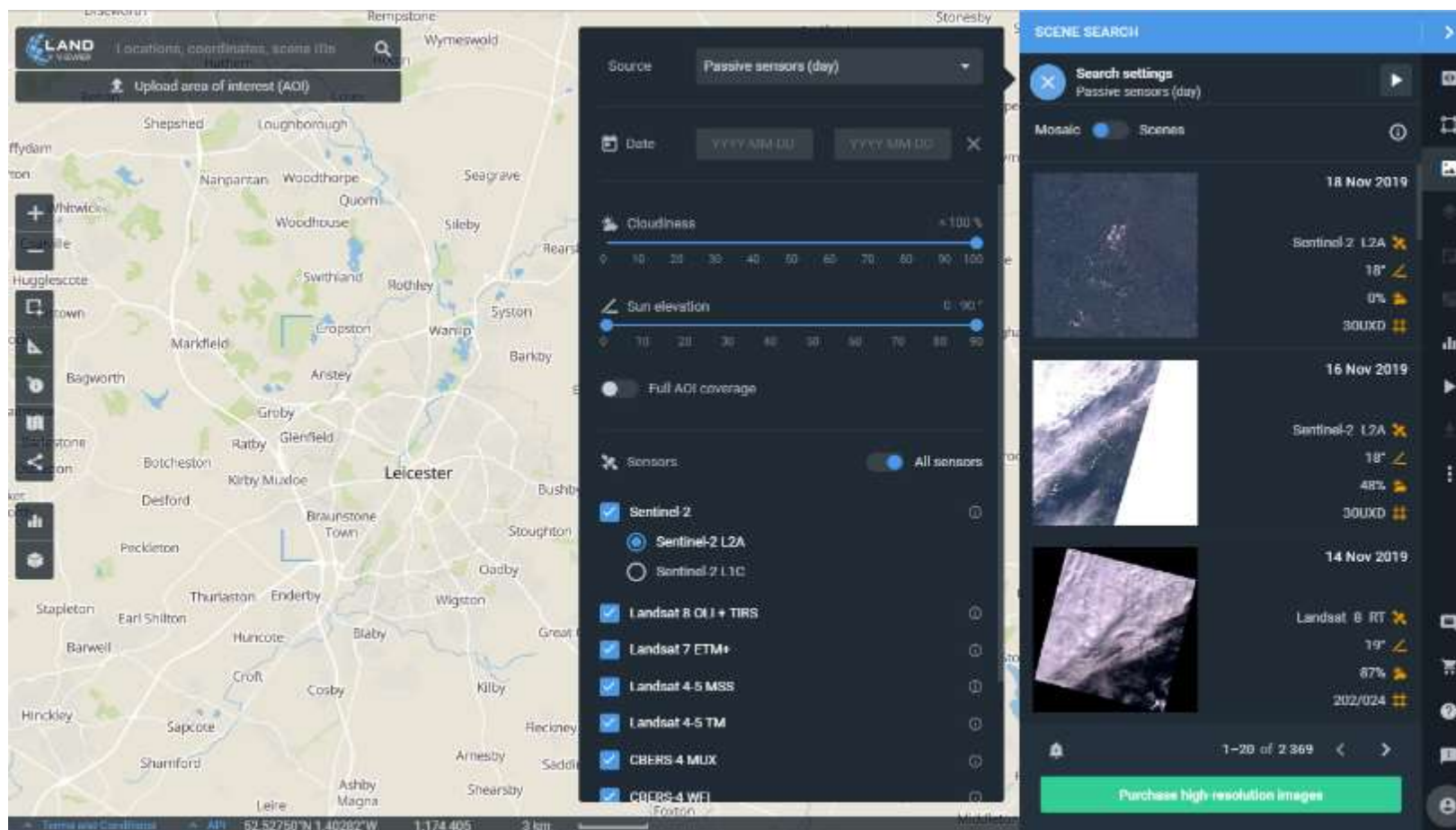**Services: data and information, forecasts…**

Data Access

✓**Imagery**

Data and processing

Services: data and information, forecasts...

Imagery Land viewer

- Free-of-charge application
- Developed by EOS
  https://eos.com/
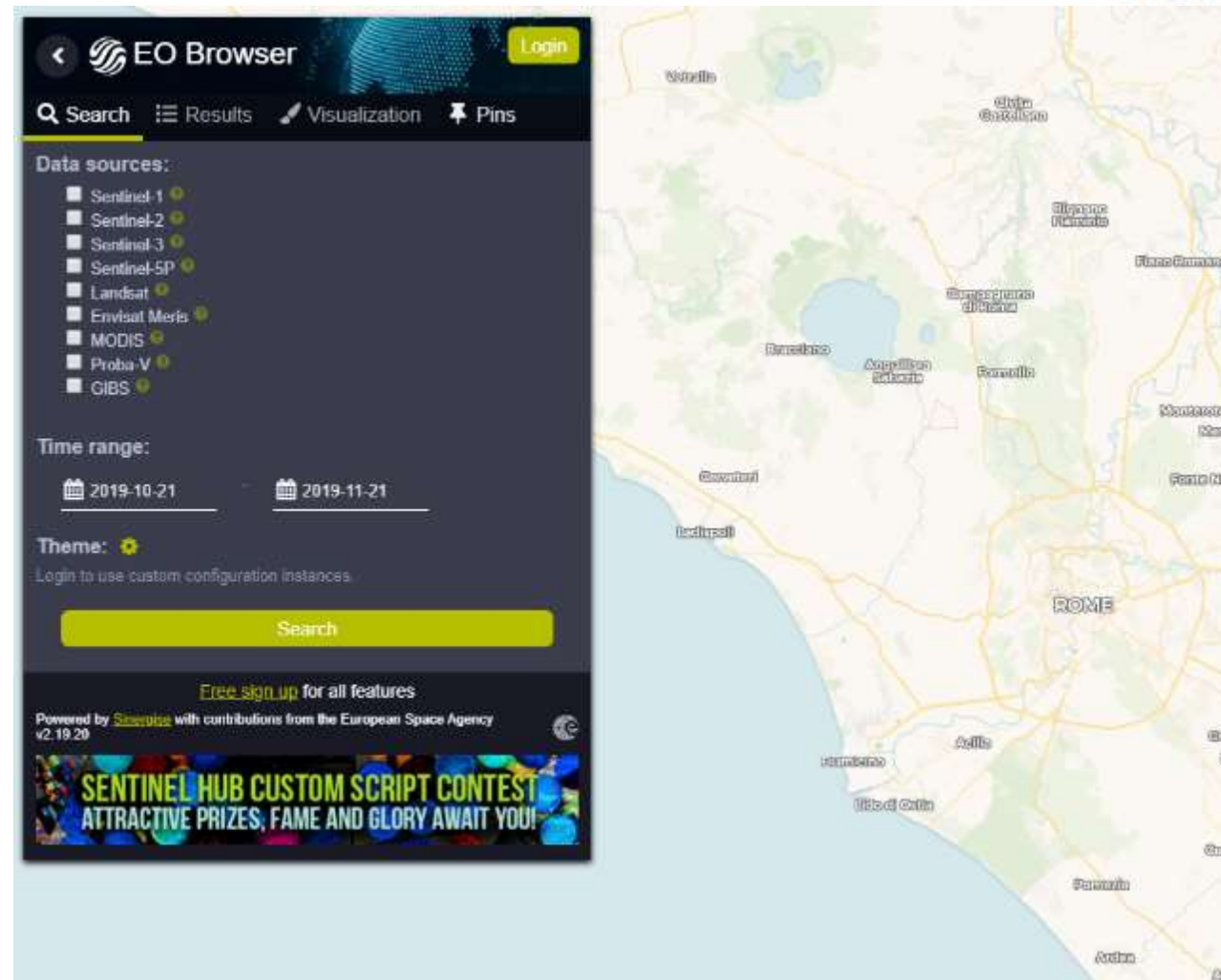- A complete archive of Sentinel data and other missions
- A choice of on-the-fly imagery analytics

https://eos.com/lv/

Imagery
EO Browser

- Free-of-charge application for non-commercial and media use
- Developed by Sinergise
- A complete archive of Sentinel data and other missions
- Comprehensive tutorial

https://www.sentinel-hub.com/explore/eobrowser

Data Access

Imagery

Data and processing

Services: data and information, forecasts…

Data Access – satellite data

Copernicus Open Access Hub

https://scihub.copernicus.eu/

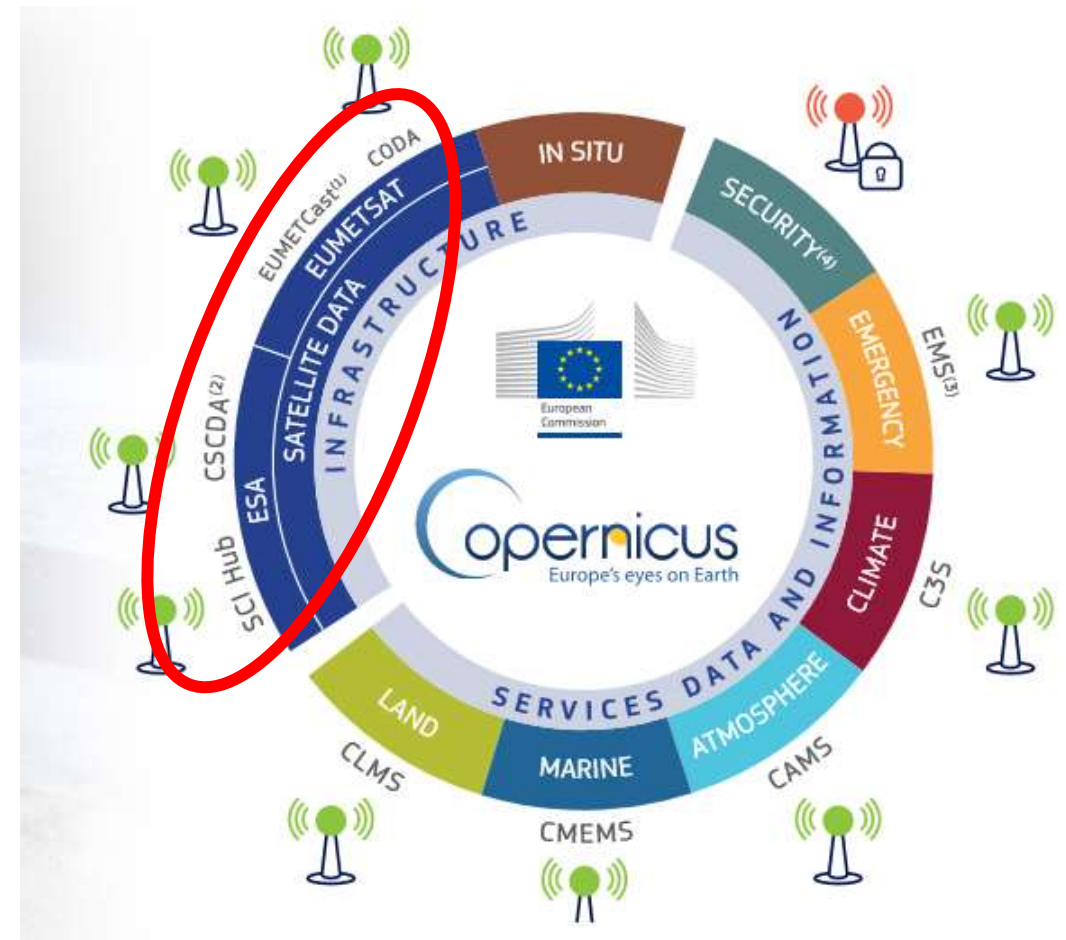CSC data access

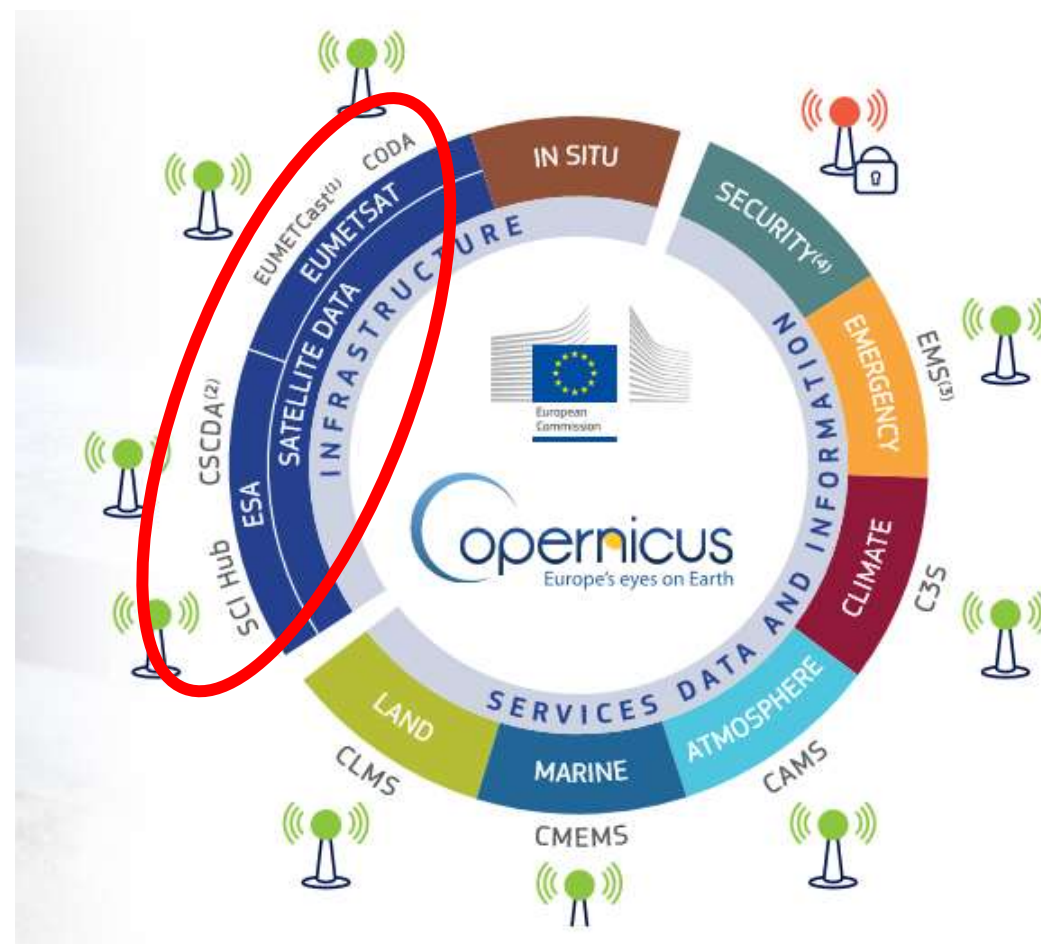https://spacedata.copernicus.eu/

EUMETSAT
COPERNICUS ONLINE DATA ACCESS
EUMETSAT DATA CENTRE

CORDINeT

- Registration required
- Anyone can register
- User Guide available
- Data sets with different access rights
- Environmental data
- Can be accessed with EO Portal account
- Data archives and online access
- Youtube Tutorials – how to access and to visualise Copernicus data

HORIZON 2020

Data Access – satellite data

Copernicus Open Access Hub

https://scihub.copernicus.eu/

CSC data access

https://spacedata.copernicus.eu/

EUMETSAT

COPERNICUS ONLINE DATA ACCESS

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Copernicus Open Access Portal
Image Capture

- **https://scihub.copernicus.eu/**   **Online user guide is available**

➢ The Sentinel-1 data offer for the Open Access Hub consists of:

- Level-0 and Level-1 user products for the following acquisition modes:

  - Strip Map (SM)

  - Interferometric Wide Swath (IW)

  - Extra Wide Swath (EW)

- Level-2 user products for the following acquisition modes:

  - Wave (WV)

  - Interferometric Wide Swath (IW)

  - Extra Wide Swath (EW)

➢ The Sentinel-2 data offer consists of Level-C and level-A user products

➢ The Sentinel-3 data offer consists Level-1 and Level-2 **Land** user products for the OLCI, SLSTR and SRAL instruments.
Please note that, being Sentinel-3 a joint ESA and EUMETSAT mission, L1 products and L2 **Marine** products are made available to users by EUMETSAT.

➢ The Sentinel-5P data offer for the Open Access Hub will consist of Level-1B and Level-2 user products for the TROPOMI instrument.

• The Open Access Hub maintains an online archive for **1 year** of data for immediate download. Older products are available to order from their Long Term Archive (LTA) on-line archive and can made be made available within 24 hours

• API available through the same website

IMAGE Capture

1: Register on the website

2. Search panel provides a
'full text search bar', *'advanced search options'*
and a *'map tool'*.

- The map tool provides a geographical search feature for defining an Area of Interest (AoI) either in the shape of a box or of a polygon.

- Users will be able to search on the Map Layer either in Navigation Mode or Area Mode: Click on this Icon to switch from one mode to the other.
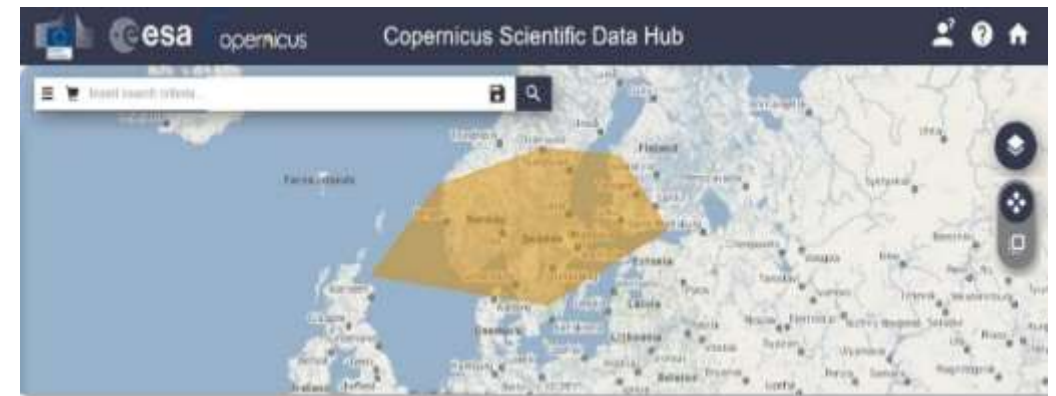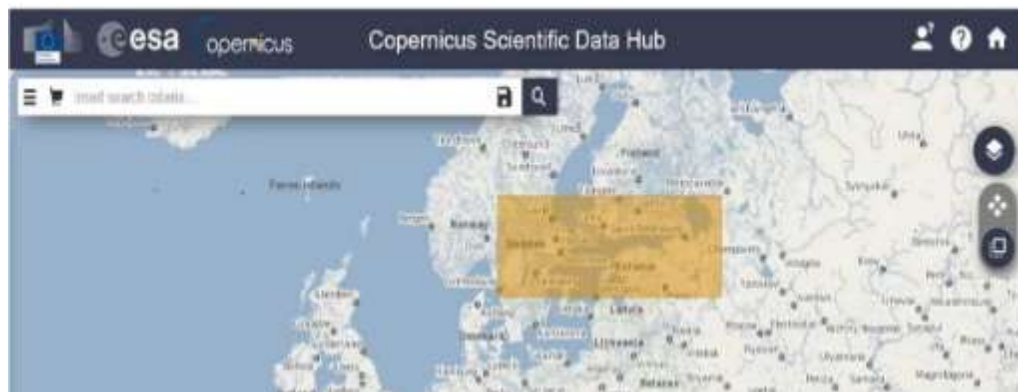
- Find and select your instrument and specify date range
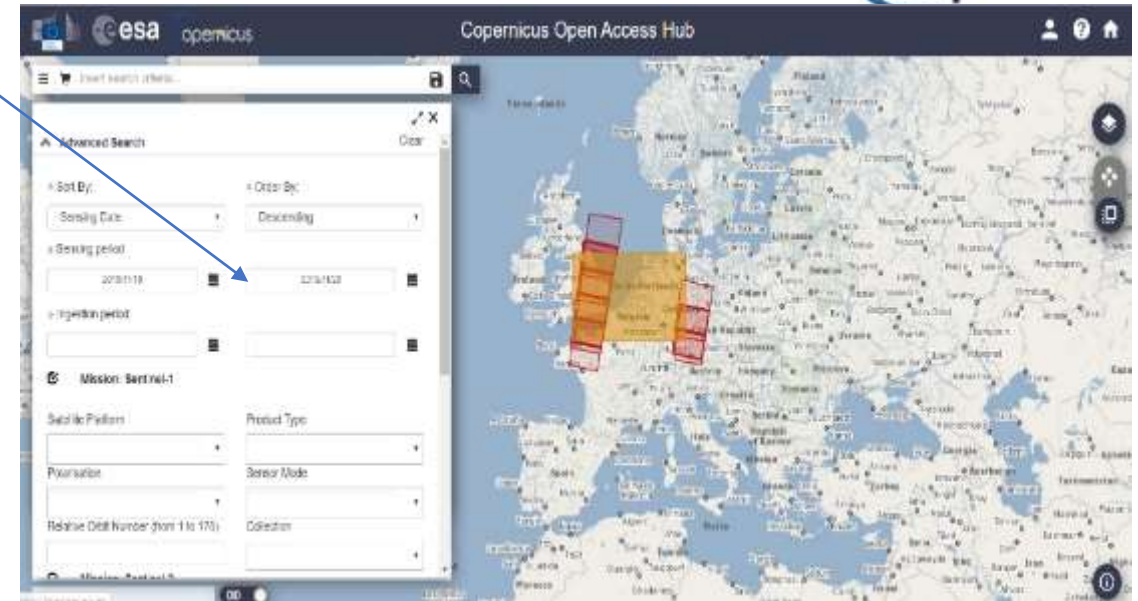
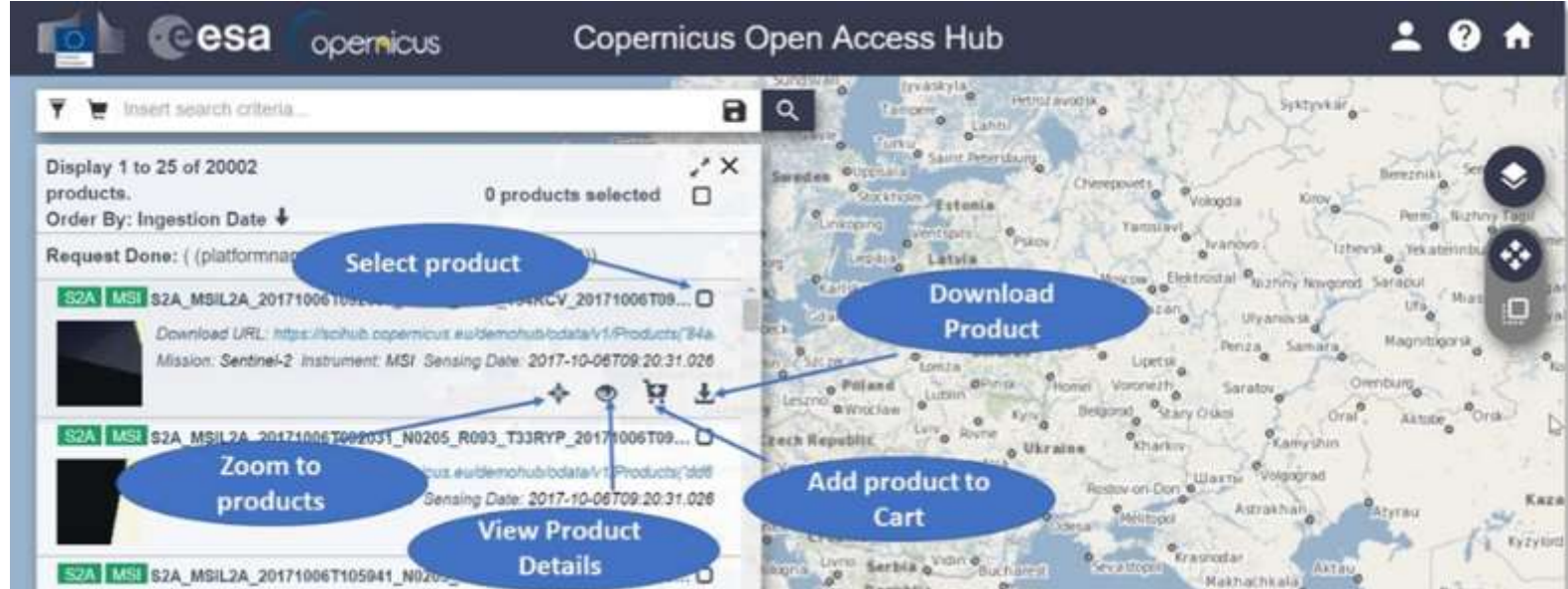- Search results – show no. of pages and products

You can also save your search so it is quicker to load if you ever need it again at a later date.

3. Download Product

The following options are available for each product displayed in the search list:

- Select product
- Zoom to product
- View Product Details
- Add product to Cart
- Download Product

The Open Access Hub provides a **Cart** that can contain a number of products.
The **Cart** can be opened either by the *Full Text Bar* or from the *User Profile Icon*

Click on user profile to get to the cart

To perform a single download click on the Download button icon associated to each product
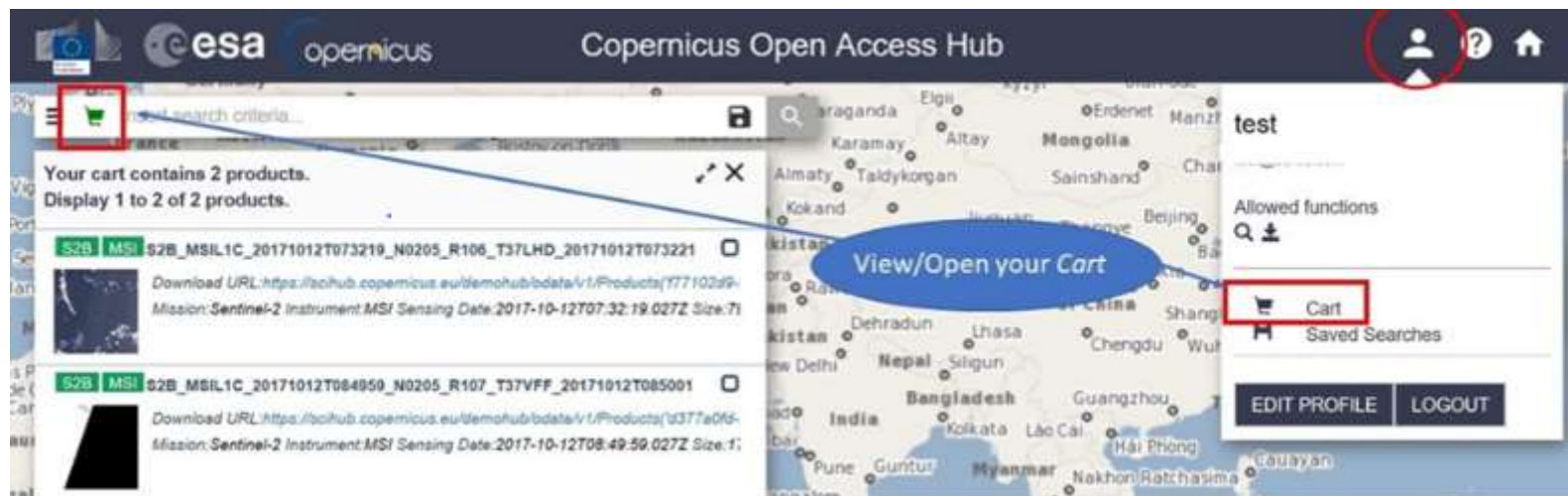
You can add up to 100 files/images to the 'cart' and download them all at the end in one go using a third party download manager tool, e.g. https://en.wikipedia.org/wiki/Comparison_of_download_managers

Data Access

Imagery

✓ **Data and processing**

Services: data and information, forecasts…

Data Access and Processing
Research & User Support for Sentinel Core products

rus-copernicus.eu

- Training sessions, workshops, webinars
- Access to expert support teams

Recorded webinars

e.g. Air Quality monitoring with Sentinel-5P (link)

Data Access and Processing
5 DIASes – Data Access and Information Services

- Access to all Copernicus data and information collocated with computing resources

- Big Data analytics without the need to download the data and information

- Data fusion with non-EO data and information

Data Access and Processing
5 DIASes

- 5 competitive platforms
- All provide access to Copernicus Sentinel data, as well as to the information products from Copernicus' six operational services, together with cloud-based tools (open source and/or on a pay-per-use basis)

THE DIAS & WHERE TO REACH THEM

CREODIAS
WWW.CREODIAS.EU

mundi
WEB SERVICES
WWW.MUNDIWEBSERVICES.COM

°ONDA
WWW.ONDA-DIAS.EU

sobloo
WWW.SOBLOO.EU
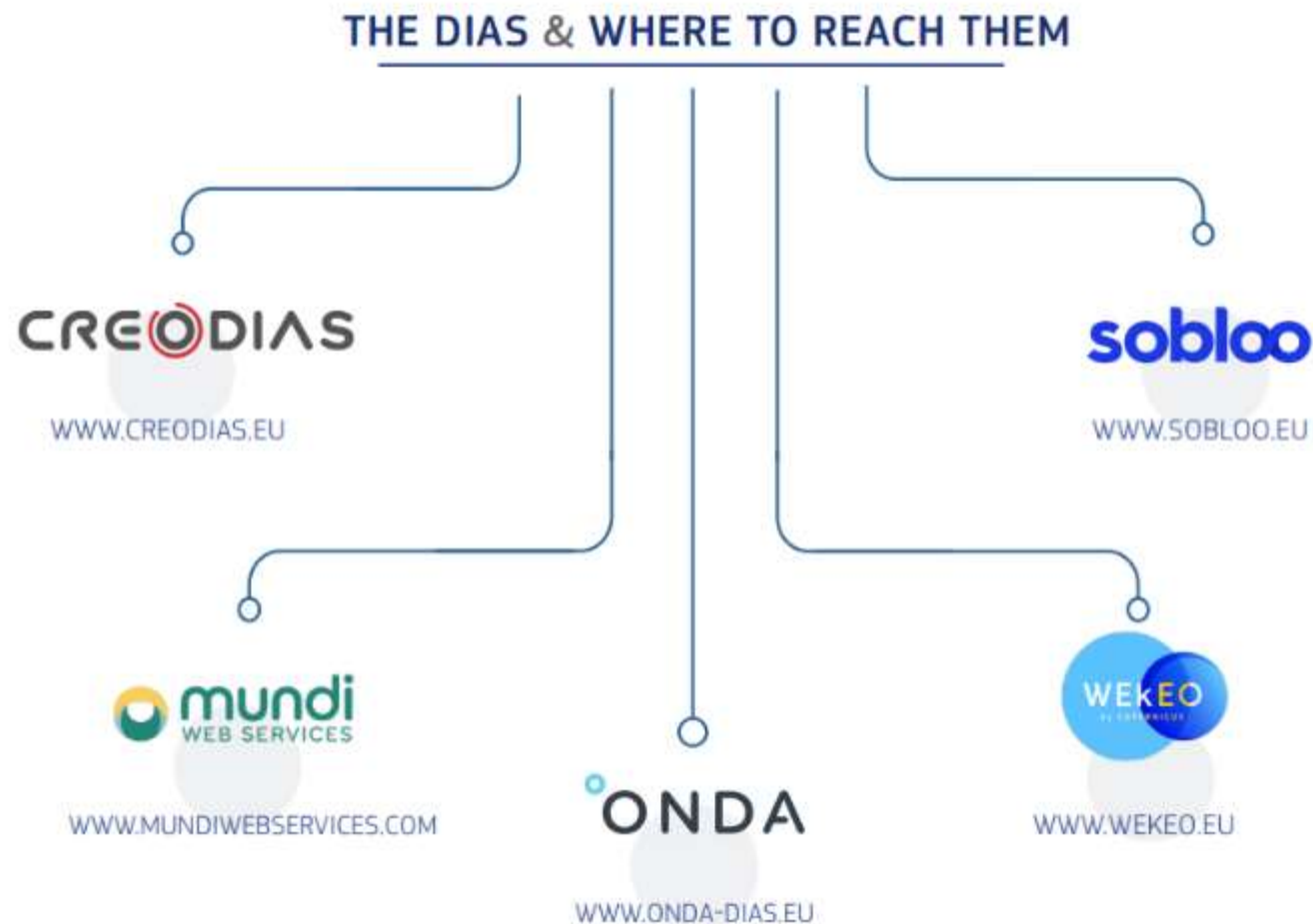
WEkEO
WWW.WEKEO.EU

Data Access and Processing
5 DIASes - WEKEO

We've found 88 results

Water quality indicator for European rivers   ✕

Make this an extended search

Preview · Download Data

The **Water** Bodies or WB product detects the areas covered by inland **water** across the globe, providing the maximum and the minimum extent of the **water** surface as well as the seasonal dynamics. The area of **water** bodies is identified as an Essential Climate Variable (ECV) by the Global Climate Observing System (GCOS).

Water quality indicator for European rivers

Preview · Download Data

Water quality indicators for European rivers. **Water** quality indicators: Phosphorous concentrations and loads, nitrogen concentrations and loads, **water** temperatures Available **water** quality indicators are: Phosphorous concentrations (catchment) Phosphorous loads (catchment) Nitrogen concentrations ...

Water quantity indicators for European catchments

Preview · Download Data

Water quantity indicators for European catchments. This dataset contains data related to flood recurrences, flow duration curve, river flow, snow **water** equivalent, soil **water** content, runoff and wetness. The datasets was developed as part of a proof of concept contract. The indicators were co-designed with a set of user representatives to simplify the climate-change ...

10 daily **Water** Bodies over Africa 1km; Continente
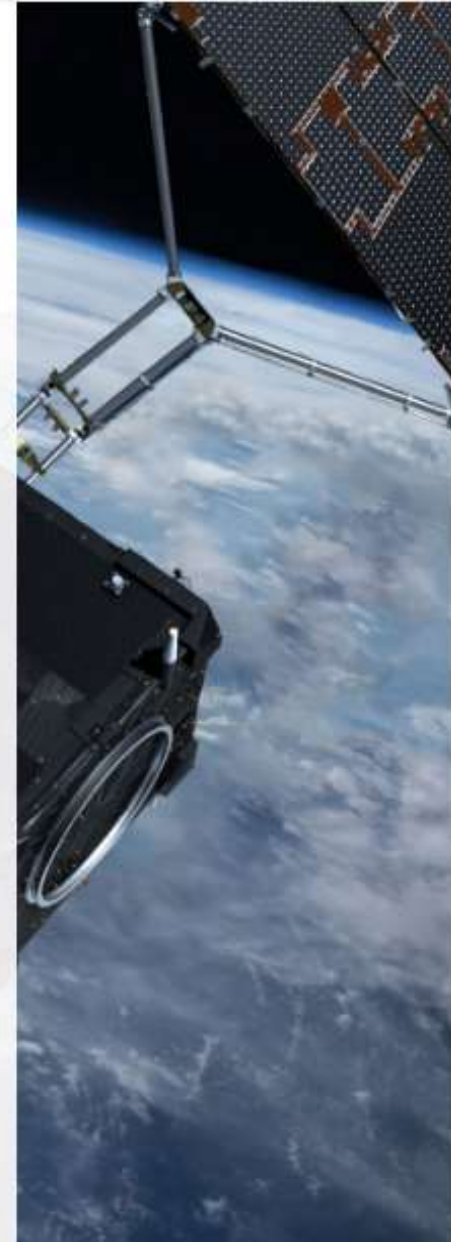
Data Access and Processing
5 DIASes - ONDA

www.onda-dias.eu

ONDA is a platform
enabling users to host data
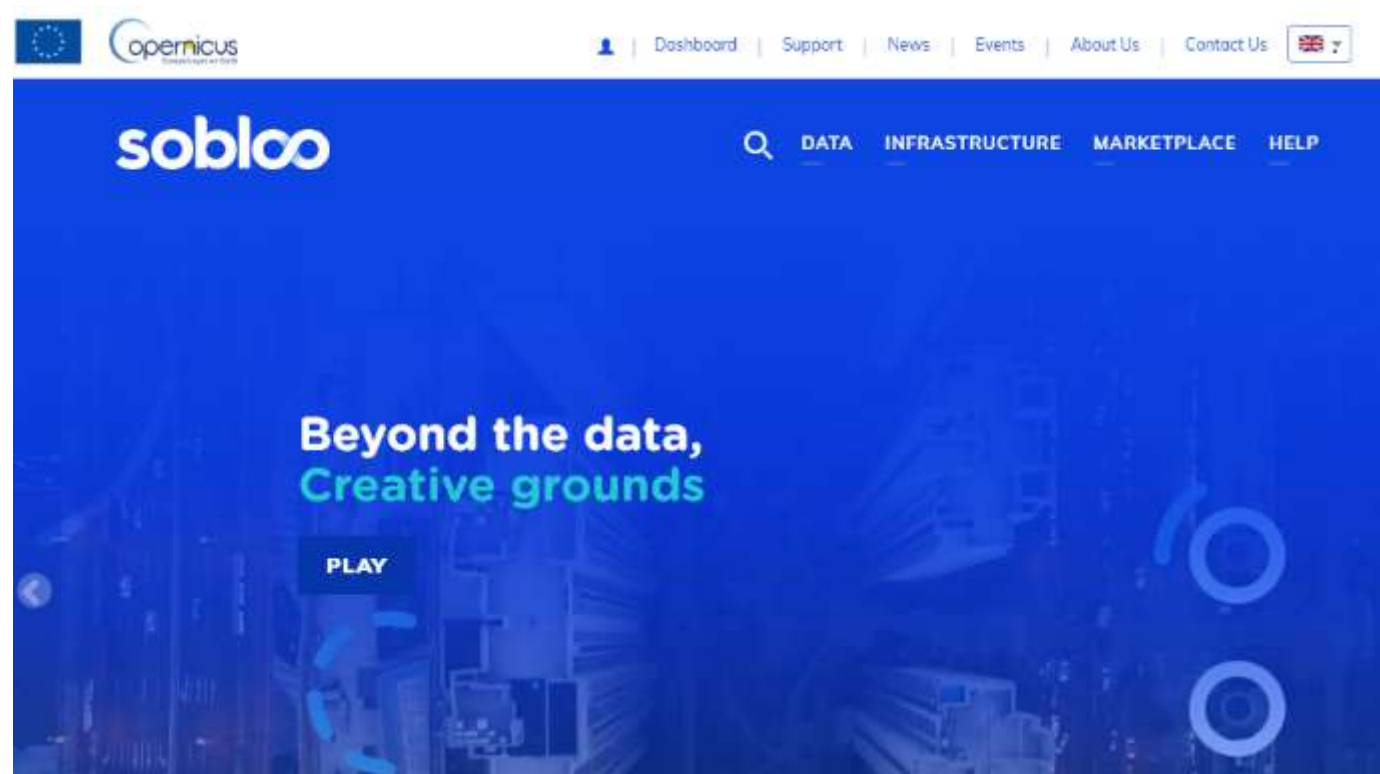and to build their
applications in the Cloud.

Data Access and Processing
5 DIASes - SOBLOO
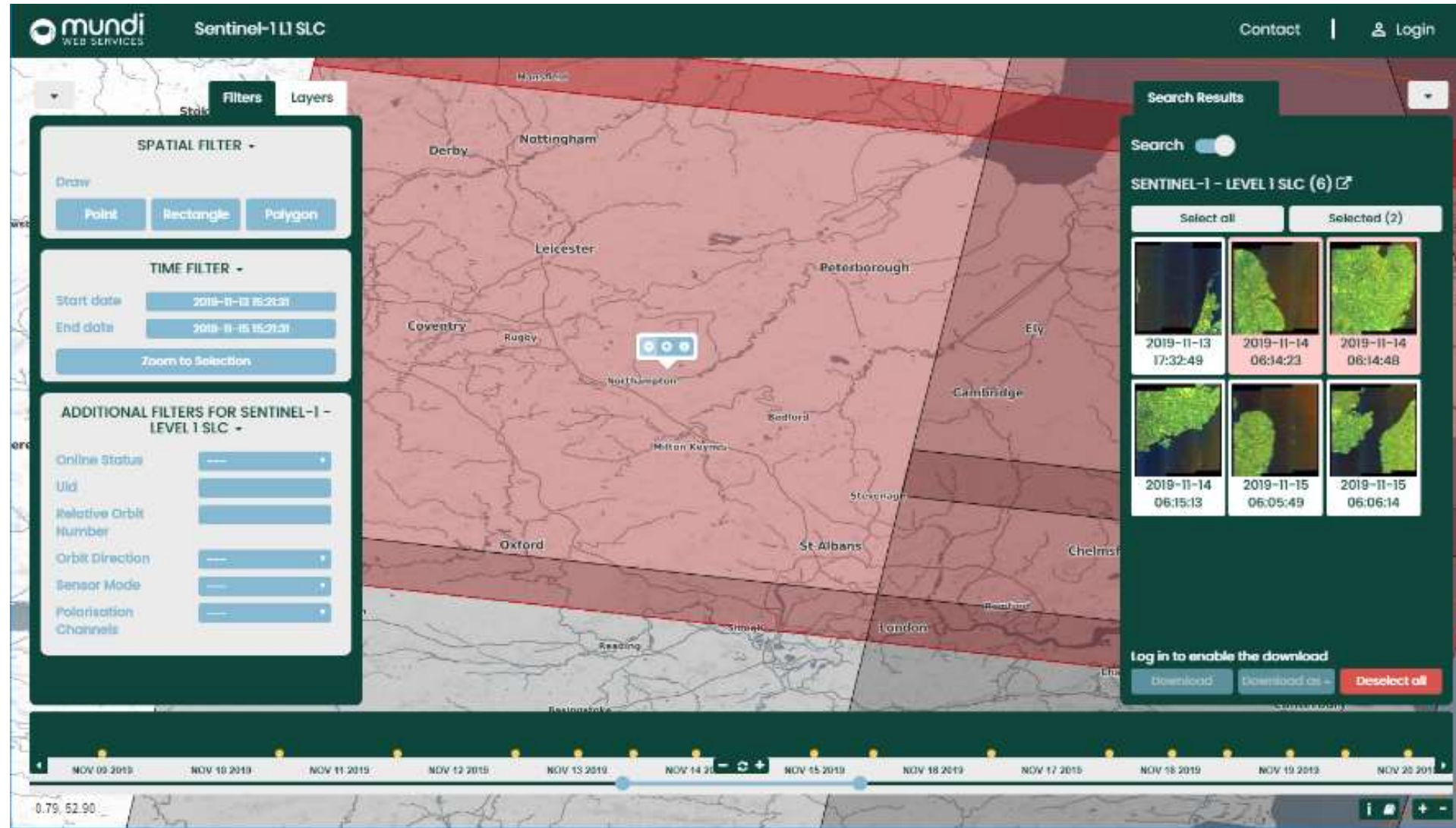
www.sobloo.eu

From raw satellite imagery or data collections to value-added information.

A large selection of information and tools that can help you make informed decisions and develop new services.

Data Access and Processing
5 DIASes - MUNDI

Data Access and Processing
5 DIASes - CREODIAS

Data Access and Processing
5 DIASes - CREODIAS

Creodias Browser

- Browse
- Visualise
- Download (without registration)

CREODIAS BROWSER

SEARCH | RESULTS | **VISUALIZATION** | MY PINS | INSPIRE SEARCH | SEMANTIC SEARCH

Satellite: SENTINEL-2 L1C **L2A**

Date: 📅 2019-11-18

Custom
Create custom rendering

Sentinel 2 - True color
Based on bands 4,3,2

Sentinel 2 - False color
Based on bands 8,4,3

Sentinel 2 - NDVI
Based on combination of bands (B8 - B4)/(B8 + B4)

Sentinel 2 - SWIR
Based on bands 12,8A,4

Sentinel 2 - NDWI
Based on combination of bands (B3 - B8)/(B3 + B8)

🖼 **Download image**

CRE⊙DIAS

powered by CLOUDFERRO

POWERED BY
SENTINEL Hub

Copernicus

Search places

Preston

ISLE OF MAN

MANCH

LIVERPOOL

Bangor

Chester

Swansea

CARDIFF
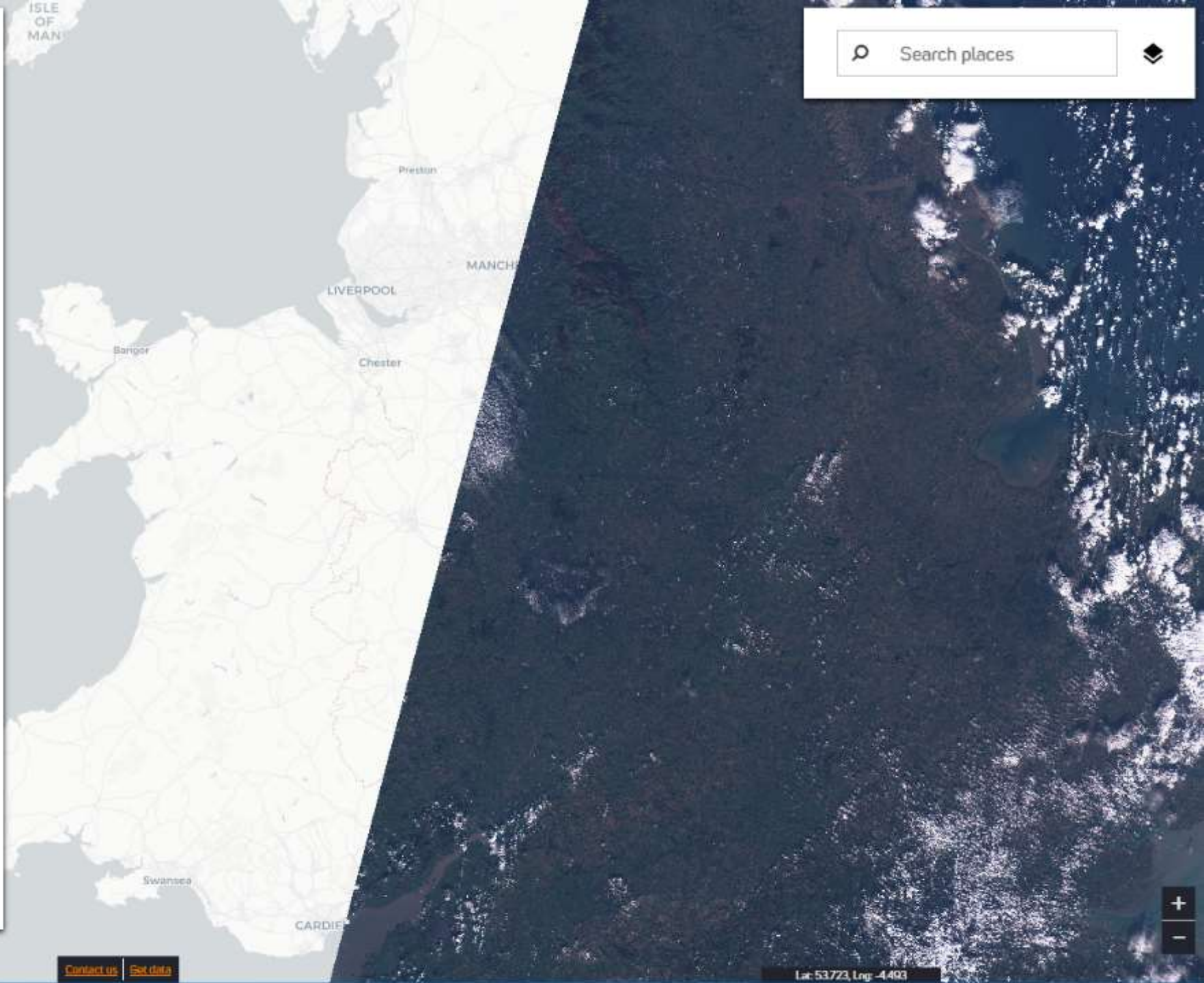
30 km

Contact us | Get data

Lat: 53.723, Lng: -4.493

Data access and processing
Other platforms

ESA thematic exploitation platforms

- [Coastal](#)
- [Forestry](#)
- [Geohazards](#)
- [Hydrology](#)
- [Polar](#)
- [Urban](#)
- [Food security](#)

…

https://tep.eo.esa.int/

Data access and processing
Other platforms
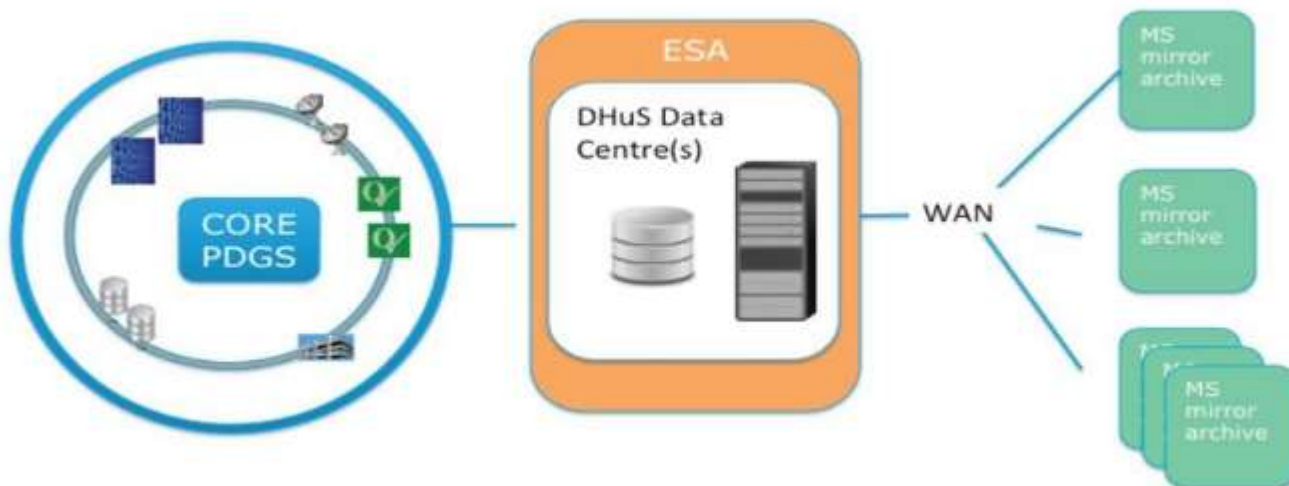
Collaborative ground segments are connected with ESA's core ground segment through a dedicated hub (DHuS) over a fast network (WAN), which gives near real time access to core products. Collaborative ground segments can establish mirror archives to secure fast data access for national end-users to both new and historical image datasets (figure from ESA, 2013).
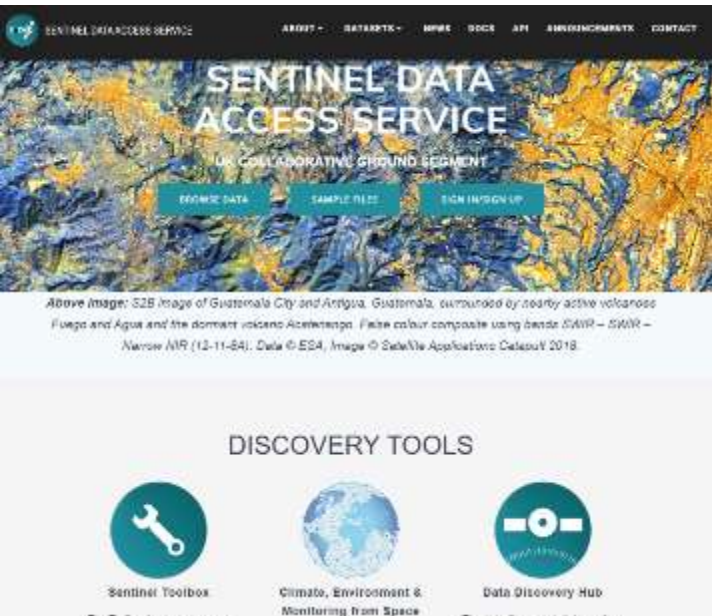
Sentinel Data Access Service

https://sedas.satapps.org/

http://www.jasmin.ac.uk/

https://peps.cnes.fr/rocket/#/home

https://www.theia-land.fr/en/products/

https://sentinels.space.noa.gr/
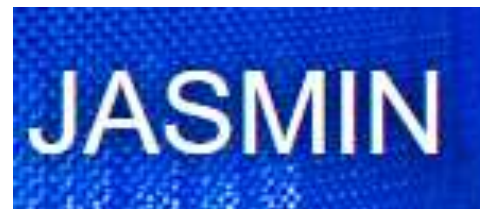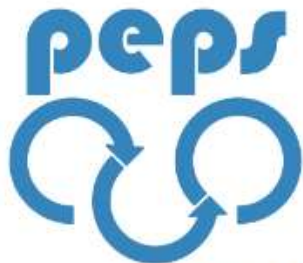
Data access and processing Amazon & Google Earth

- **Amazon Simple Storage Service (Amazon S3)** is a service providing object storage through a web service interface. Access to Sentinel data is free, full and open for the broad community. New Sentinel data are added regularly, usually within few hours after they are available on Copernicus OpenHub. The service is managed by Sinergise.
  https://registry.opendata.aws/sentinel-2/
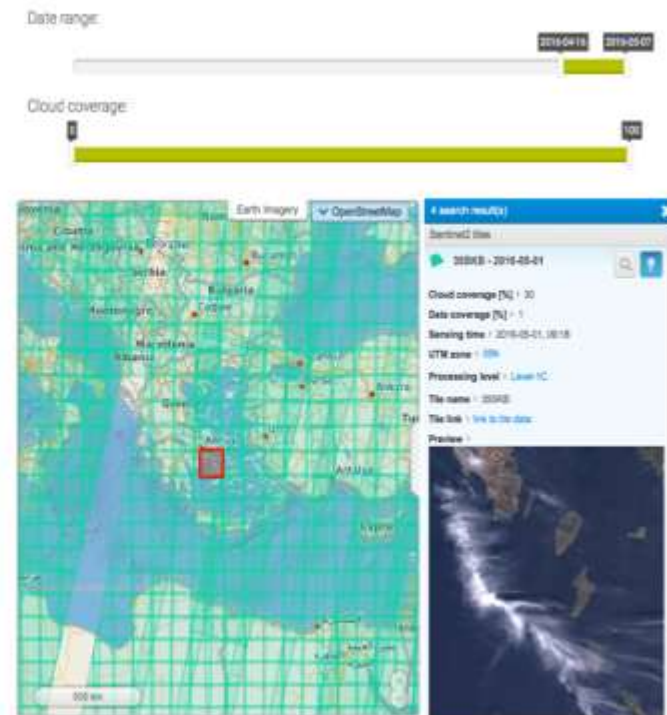
Data access and processing Amazon & Google Earth

- **Sentinel-5P Level 2 - AWS**

- This data set consists of observations from the Sentinel-5 Precursor (Sentinel-5P) satellite of the European Commission's Copernicus Earth Observation Programme. Sentinel-5P is a polar orbiting satellite that completes 14 orbits of the Earth a day. It carries the TROPOspheric Monitoring Instrument (TROPOMI) which is a spectrometer that senses ultraviolet (UV), visible (VIS), near (NIR) and short wave infrared (SWIR) to monitor ozone, methane, formaldehyde, aerosol, carbon monoxide, nitrogen dioxide and sulphur dioxide in the atmosphere. The satellite was launched in October 2017 and entered routine operational phase in March 2019. Data is available from July 2018 onwards. Updated daily.

- Managed by Meteorological Environmental Earth Observation company

  https://registry.opendata.aws/sentinel5p/

Resources on AWS

Description
Sentinel-5p Near Real Time Data (NRTI). NetCDF format.

Resource type
S3 Bucket

Amazon Resource Name (ARN)
arn:aws:s3:::meeo-s5p/NRTI/

AWS Region
eu-central-1

Data access and processing Amazon & Google Earth

- **Google Earth Engine** is the most advanced cloud-based geospatial processing platform in Google infrastructure for planetary-scale environmental data analysis. Access to Sentinel data and others is free, full and open.
https://earthengine.google.com/
https://developers.google.com/earth-engine/datasets/catalog/sentinel/
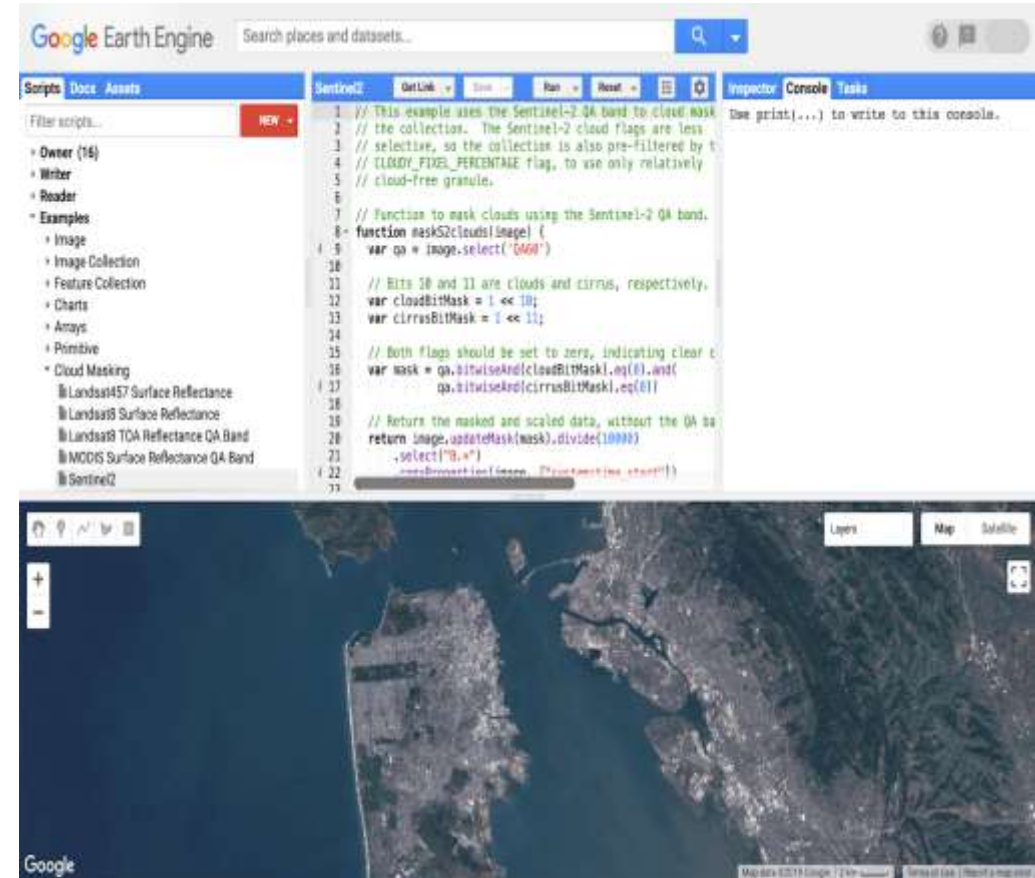
Data Access

Imagery

Data and processing

✓**Services: data and information, forecasts…**

Data Access – Information and services

Access to Copernicus Services Data

- 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 (Beta version)

FULL, FREE AND OPEN

Data access – Information and services Land service

- https://land.copernicus.eu/
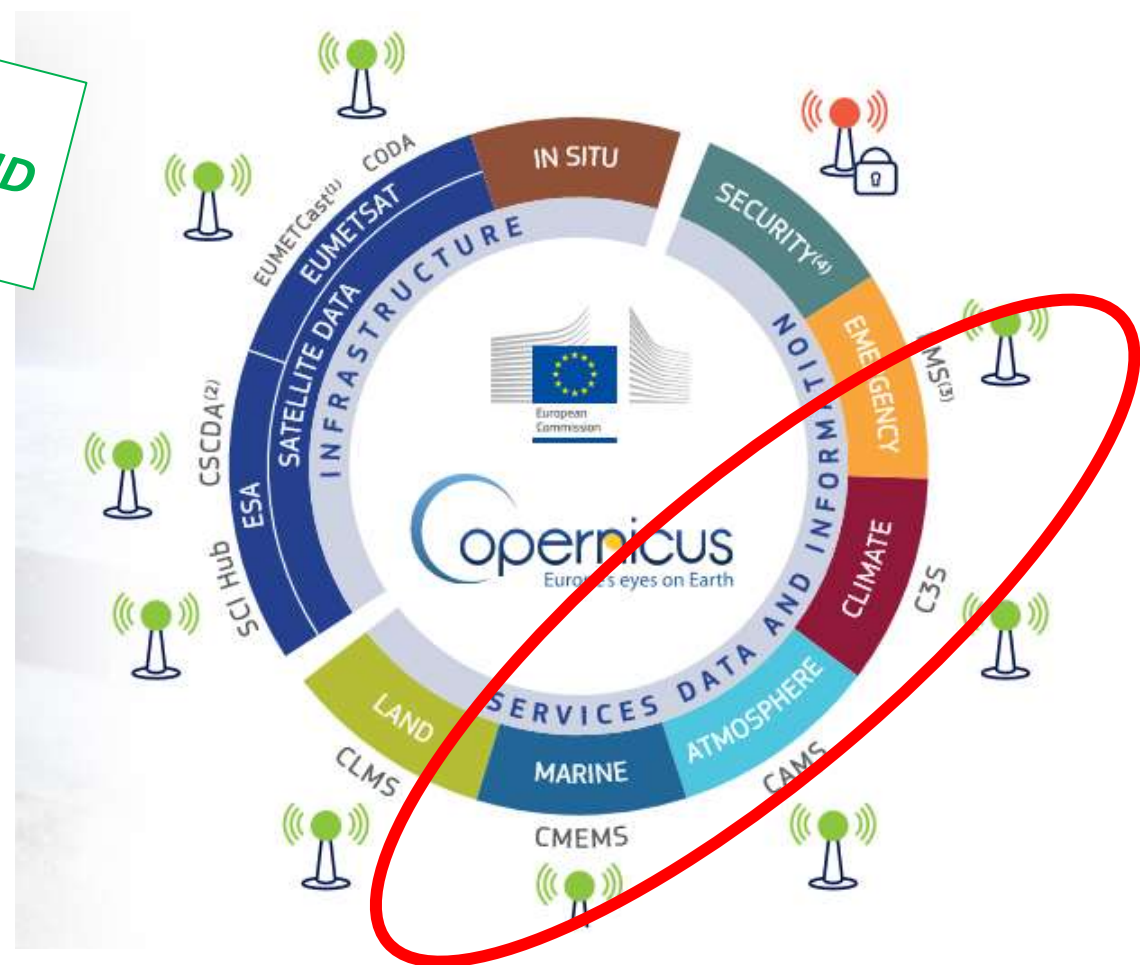
Global

Pan-European

Local

Imagery and reference data

Data access – Information and services
Land service

Local

Tree cover density - 2015

Data access – Information and services Atmosphere Monitoring service
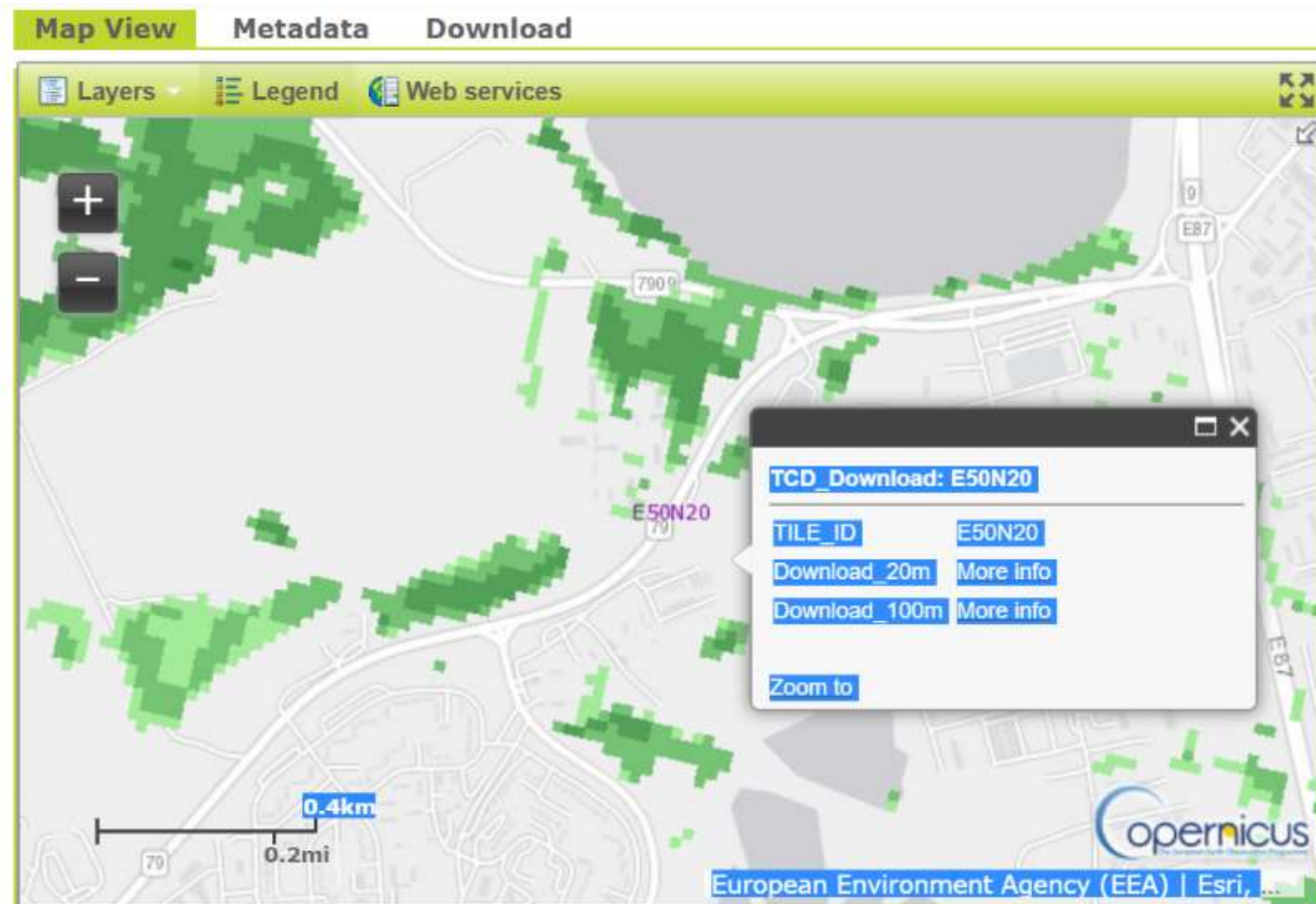
- https://atmosphere.copernicus.eu/

- Using satellite data and ground-based observations with forecast models

- Provide consistent information on the atmosphere
  - Air quality information
  - Air composition, ozone layer and UV radiation, etc..

Data access – Information and services Marine Environemnt Montoring service

https://marine.copernicus.eu/
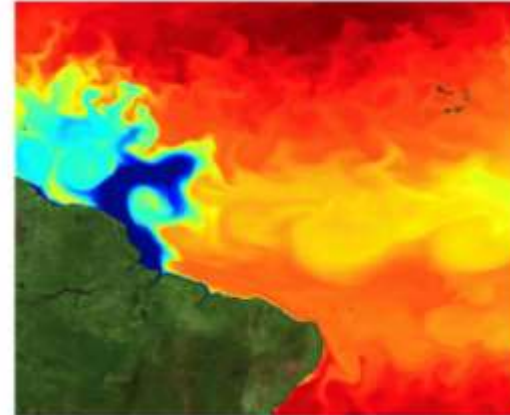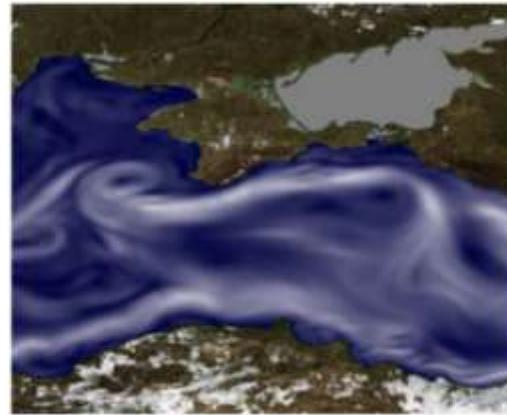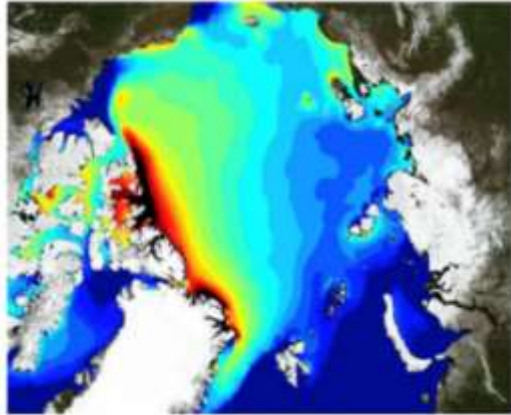
Examples of products

- Relies on data from various satellites as well as numerical models, but also on *in situ* monitoring networks

Data access – Information and services Energency Management service

https://emergency.copernicus.eu/

- Providing information for emergency response in relation to different types of disasters
  - European and Global flood awareness system
  - European Forest Fire Information system
  - Drought observatory

- Standardised products: first estimate product, delineation products, grading products, etc.
- Rapid mapping

Data access – Information and services Climate change service (C3S)

https://climate.copernicus.eu/

- Climate bulletins and data sets
  - Monthly summaries for surface air temperature, sea ice maps, hydrological variables..
  - Observations, Essential Climate Variables, Seasonal forecasts, climate projections
- Climate Data Store

In conclusion...

... **and they are all evolving and new arriving..**

Imagery

EO Browser, Land viewer, ...

Open Access portal

Data from different instruments and processing

DIASes

ESA platforms

National Mirror sites

Google Earth and Amazon

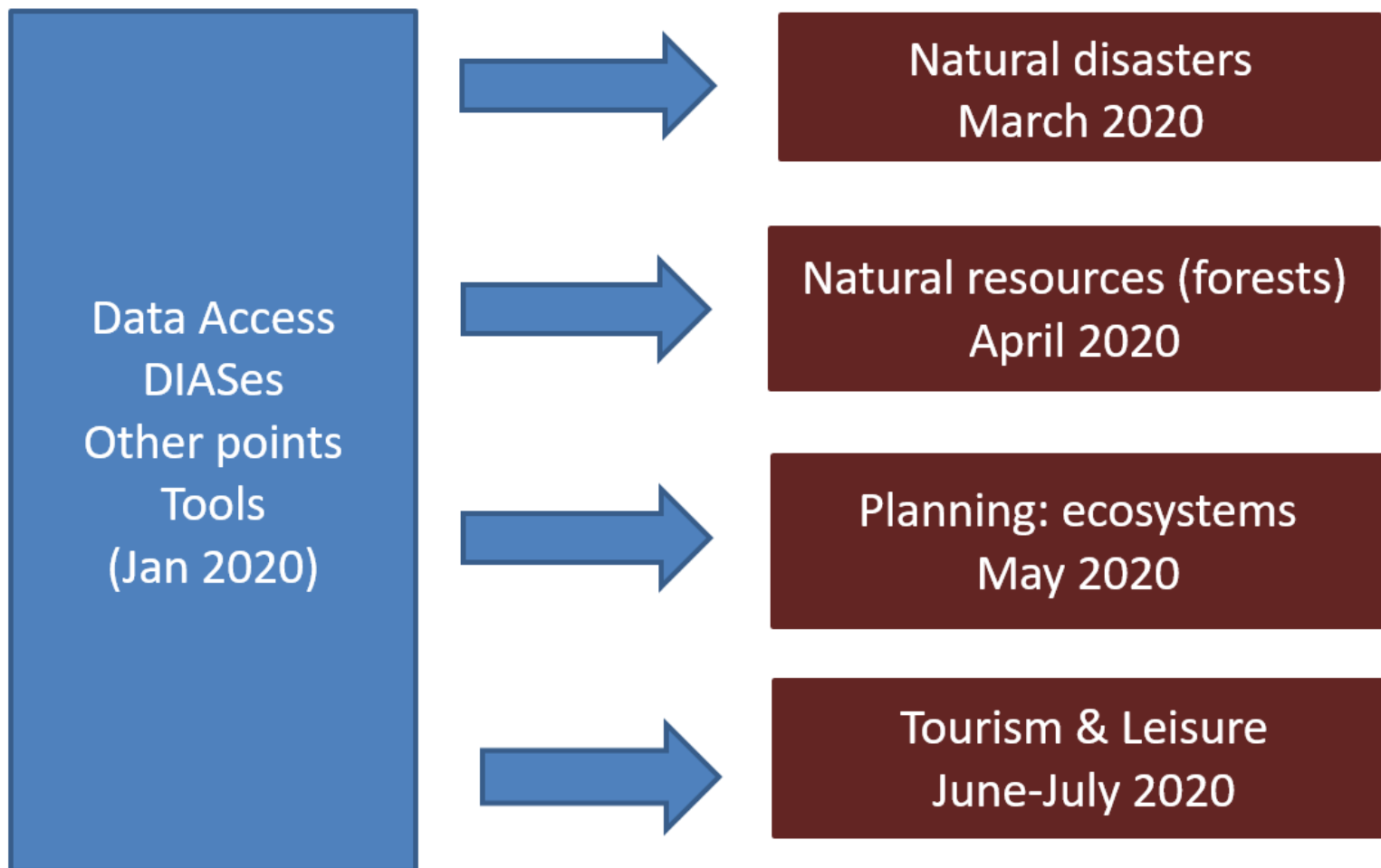**Services: data and information, forecasts...**

Copernicus services

Questions

- Which access points your users tend to use?
- Which features they find most useful?
- What is it that they want to know about data access?
- Would you like to share your experience in one of our future webinars?

https://www.surveymonkey.co.uk/r/J5XVWHG

Train the trainer webinars

Data Access
DIASes
Other points
Tools
(Jan 2020)

→ Natural disasters
March 2020

→ Natural resources (forests)
April 2020

→ Planning: ecosystems
May 2020

→ Tourism & Leisure
June-July 2020

Thank you!

Svetlana Zolotikova

sz63@Leicester.ac.uk

https://www.surveymonkey.co.uk/r/J5XVWHG