





Open Satellite Data – Copernicus & Sentinel data –


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Copernicus
Europe's eyes on Earth



Copernicus

C o p e r n i c u s o v e r v i e w

- **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**



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Building blocks – Sentinel satellites

SENTINEL-1

2 sats in orbit

- 4-40m resolution, 3 day revisit at equator, Polar-orbiting, all-weather, day-and-night radar imaging

SENTINEL-2

1 Sat in Orbit

- 10-60m resolution, 5 days revisit time, Polar-orbiting, multispectral optical, high-res imaging

SENTINEL-3

1 Sat in Orbit

- 300-1200m resolution, <2 days revisit, Optical and altimeter mission, monitoring sea and land

SENTINEL-4

1st Launch in 2020

- 8km resolution, 60 min revisit time, Payload for atmosphere chemistry monitoring on MTG-S

SENTINEL-5p

Launch by end 2016

- 7-68km resolution, 1 day revisit, Mission to reduce data gaps between Envisat, and S-5

SENTINEL-5

1st Launch in 2021

- 7.5-50km resolution, 1 day revisit, Payload for atmosphere chemistry monitoring on MetOp2ndGen

SENTINEL-6

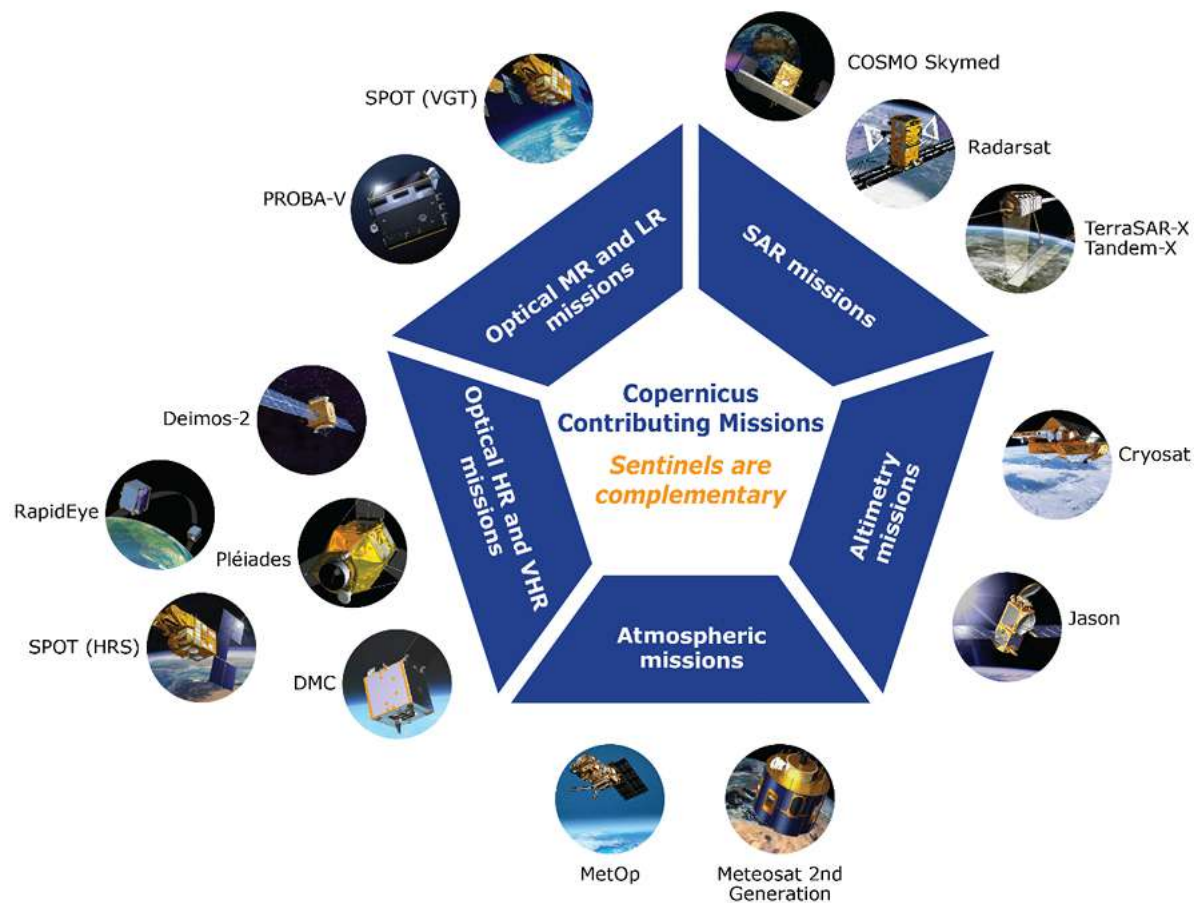
1st Launch in 2020

- 10 day revisit time, Radar altimeter to measure sea-surface height globally



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Building blocks – contributing missions





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B u i l d i n g b l o c k s – i n s i t u - s e n s o r s

- Airborne, seaborne and fixed measuring stations
- Validation
- Calibration
- Adding value





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Building blocks - Services

- Atmosphere
- Marine
- Land
- Climate
- Emergency
- Security



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Access to data and products

- Space component (Raw data)
- Data products
- Services
- Virtual and Cloud Services

FINHUB

- <http://nsdc.fmi.fi/>



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Access to data and products - Links

- <https://sentinel.esa.int/web/sentinel/sentinel-data-access>
- <https://scihub.copernicus.eu/>
- <https://tep.eo.esa.int/>
- 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>



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Data access – Sneak Peak



Sentinels Scientific Data Hub

Insert search criteria...



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S2A MSI

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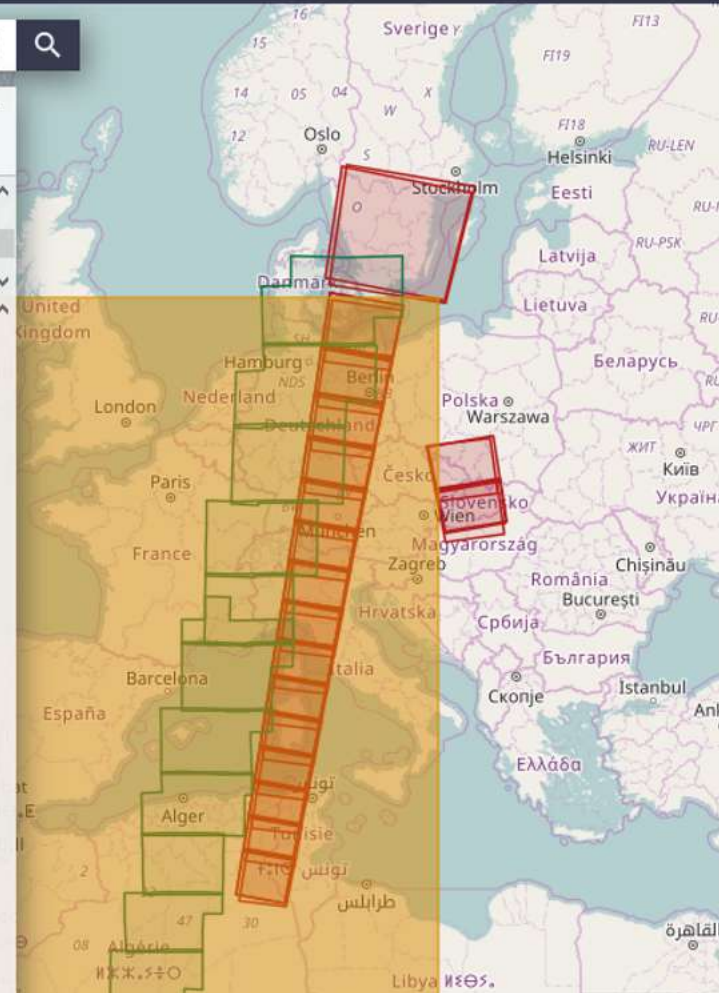
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S e r v i c e s - S n e a k p e a k

Marine Monitoring

- 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



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Private Initiatives

- Google Earth Engine
<http://earthengine.google.com>
- Sentinel-2 on AWS
<http://sentinel-pds.s3-website.eu-central1.amazonaws.com>
- CLOUDEO
<http://cloudeo-ag.com>



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User uptake strategy

Promote the uptake of Copernicus data and services

- **Ensure Access (data hubs)**
- **Boost Innovation (funding, facilitating innovation, bring together users & developers)**
- **Increase Awareness and use (events, trainings)**



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For your inspiration

- [The IceCream Team – the Mission to Save Glaciers Worldwide](#)
- [AI Computer Vision Startup TerraLoupe Raises Million Funding](#)
- [Game-Changing Ground Motion Surveys for Environmental Safety and Security](#)
- [A winery's cognitive irrigation optimization solution increases yields and uses water more efficiently](#)