



space solutions

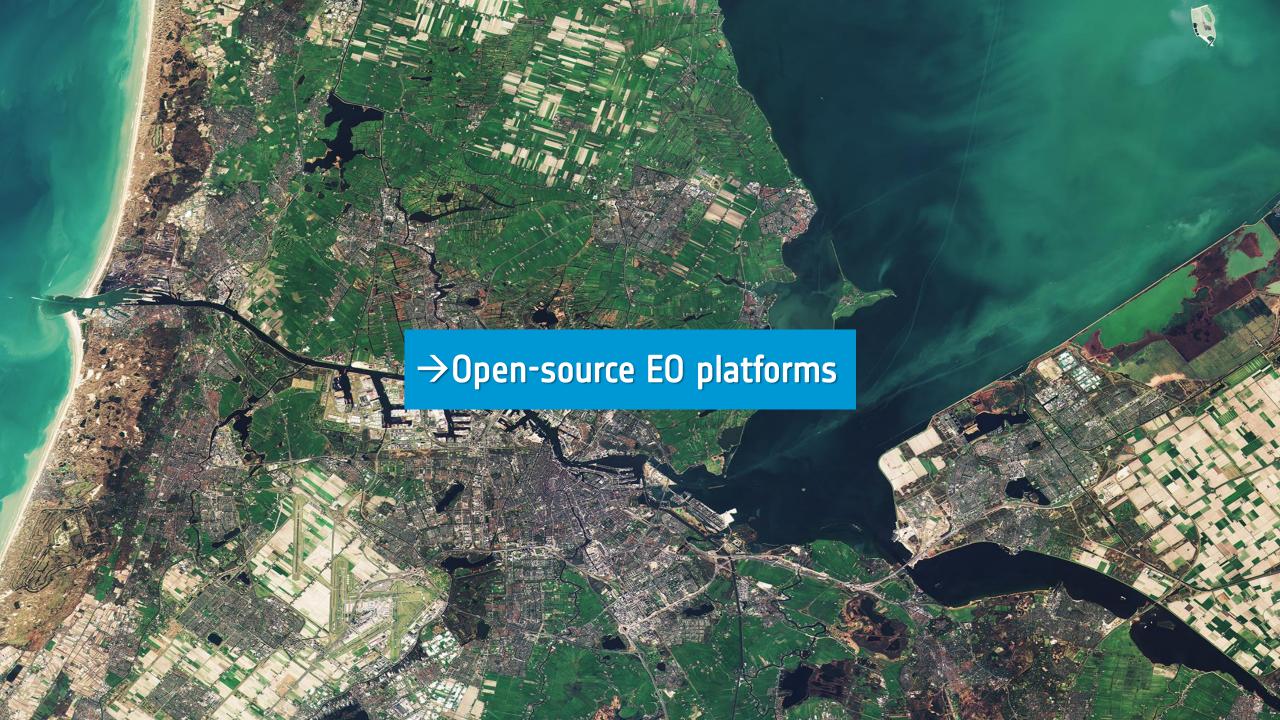


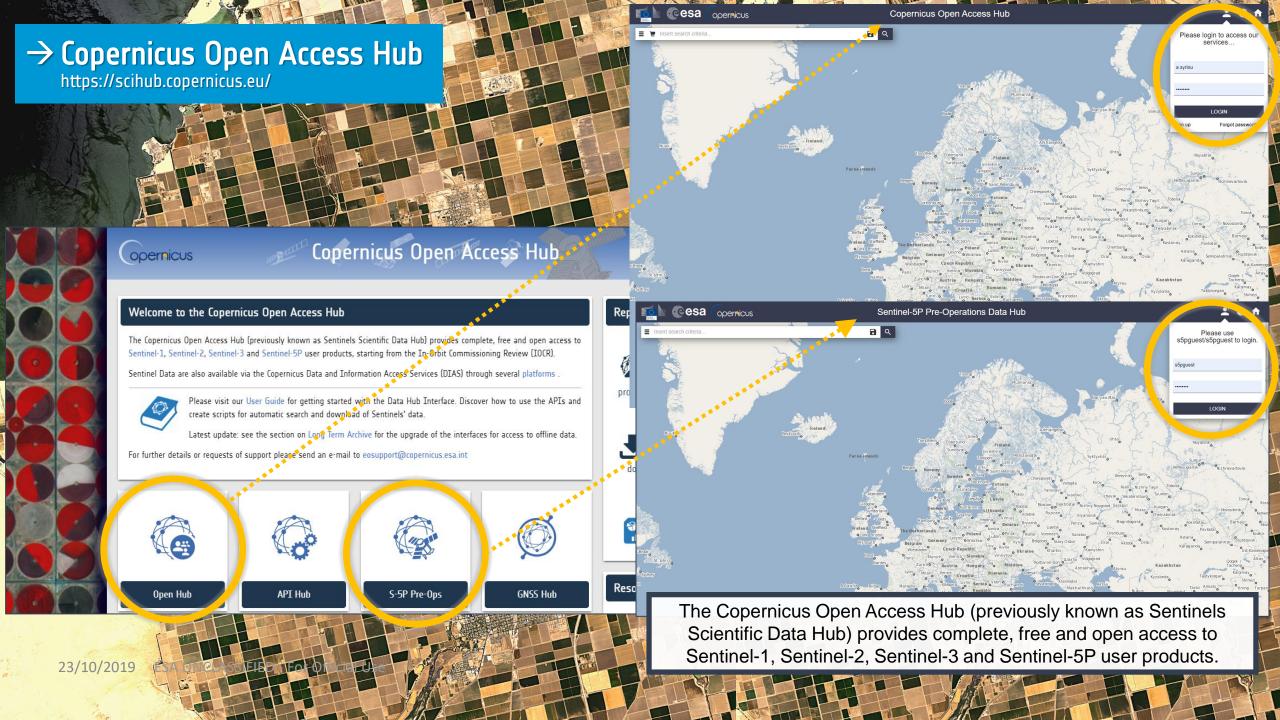
→ WHERE TO ACCESS

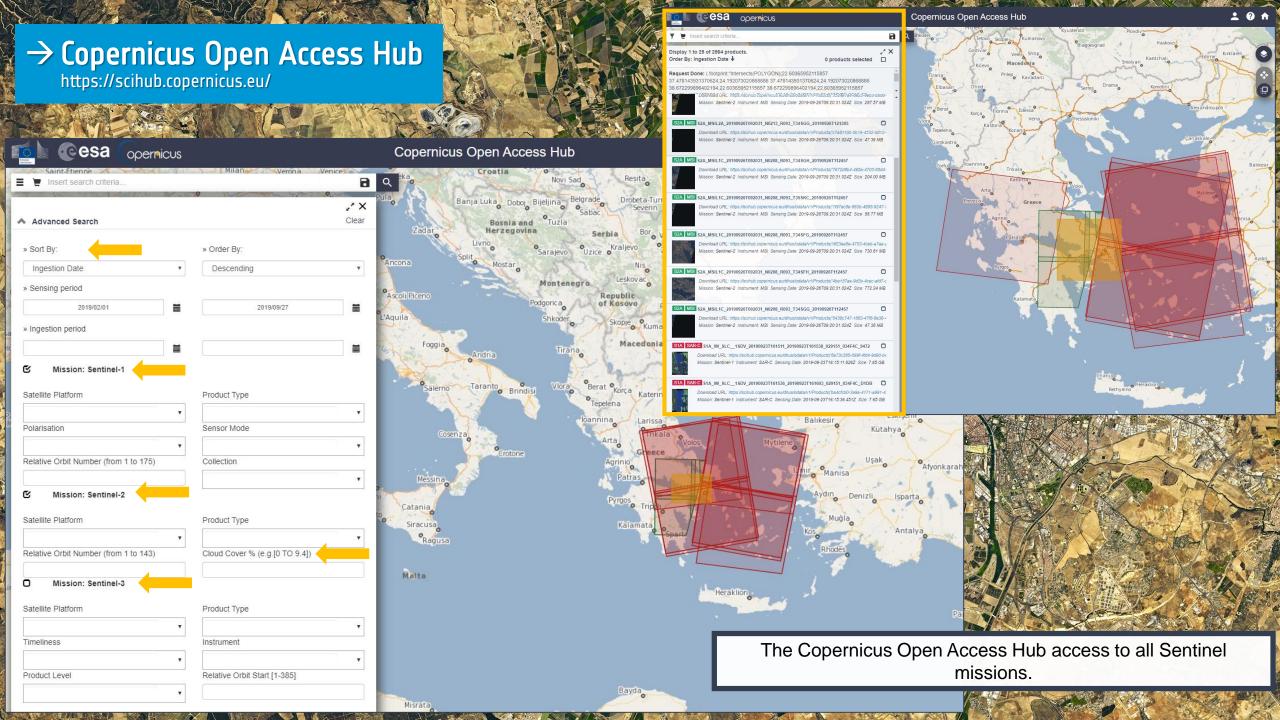
EARTH OBSERVATION DATA

Asimina Syriou

☑ Asimina.Syriou@esa.int



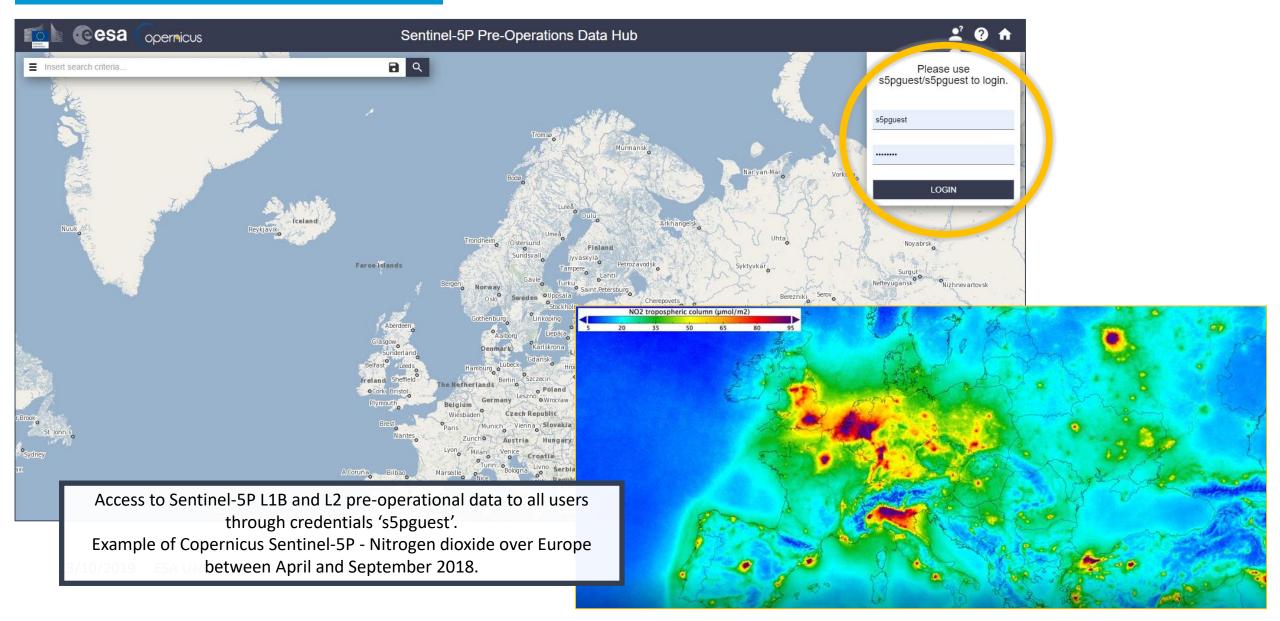




→ Copernicus Open Access Hub

https://scihub.copernicus.eu/





→ Earth System Data Lab (ESDL)

https://www.earthsystemdatalab.net/ https://www.youtube.com/watch?v=9L4-fq48Ev0









The Earth System Data Lab is a multi-variate data set of essential Earth System variables on a common grid and sharing a common data model.

The Earth System Data Lab (ESDL) seeks to be a service to the scientific community to greatly facilitate access and exploitation of multivariate data sets in Earth Sciences.

User Guides and Source Code

 \odot

For the Earth System Data Lab, we provide dedicated user guides for the APIs in Python and Julia. They provide a complete API reference, some examples for usage, and background information on the ESDL. In addition, the source code of the ESDL can be accessed through the github repository.







Access the documentation of the ESDL Python API at

Access the documentation of the ESDL Julia API at

Visit the ESDL github repository at

//cablab.readthedocs.io/en/latest/!

//esa-esdl.github.io/ESDL.jl/latest !

//github.com/esa-esdl!

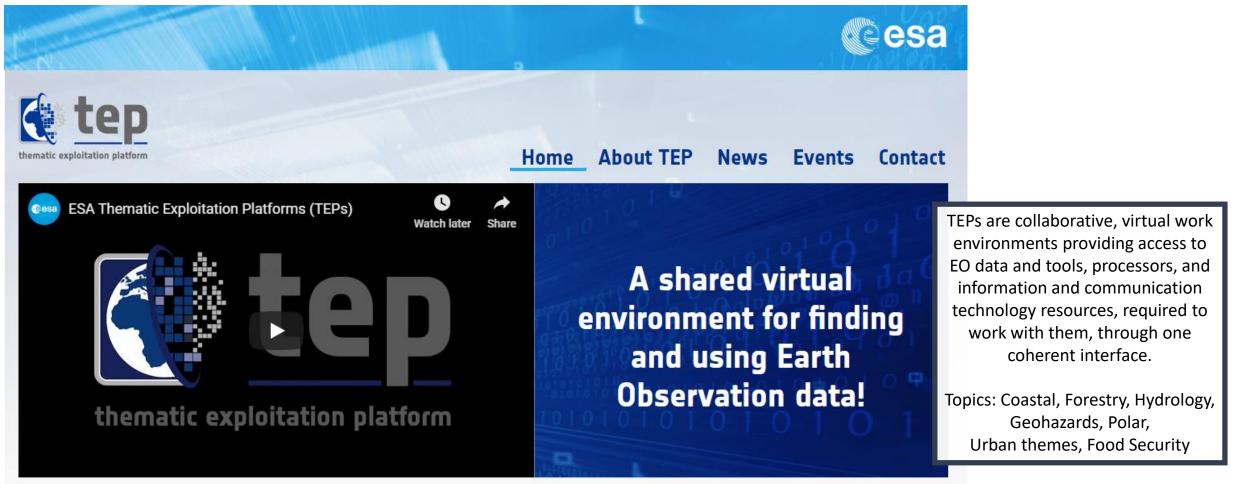
Explore the interactions between ocean, land, and atmosphere – now also in the ESDL web viewer!



→ ESA Thematic Exploitation Platforms (TEPs)

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

















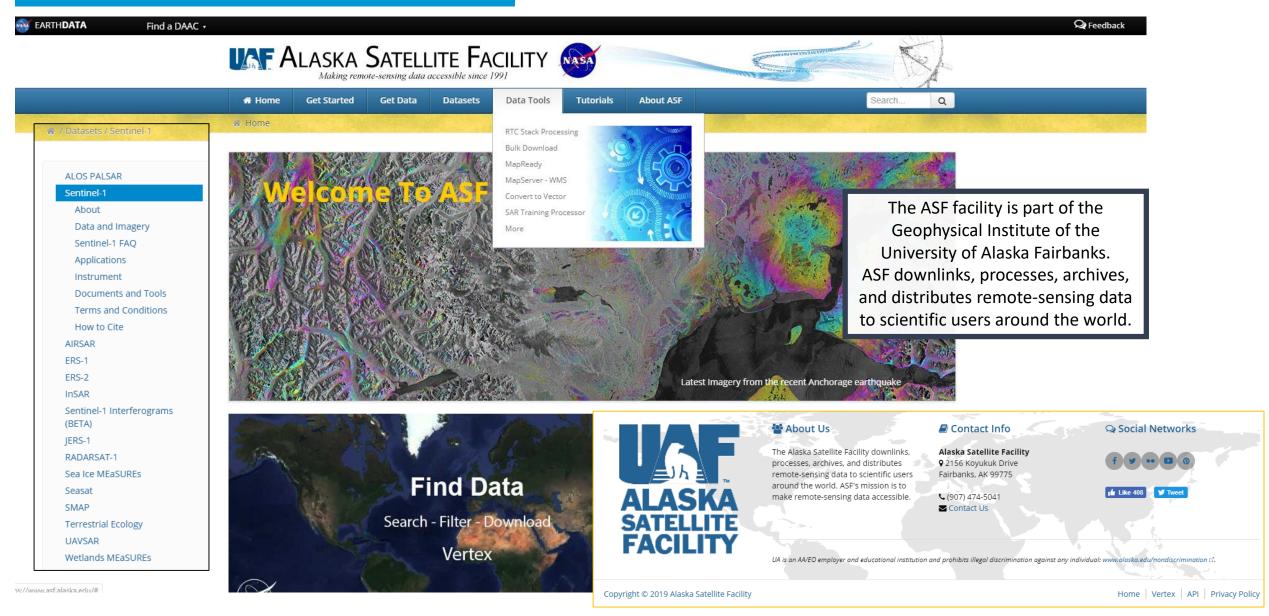




→ Alaska Satellite Facility (ASF)

https://www.asf.alaska.edu/ https://www.asf.alaska.edu/asf-tutorials/data-recipes/





→ Sentinel Data Access Service

https://geobrowser.satapps.org/



Copernicus (Sentinel-1, Sentinel-2), NovaSAR-1, SSGP.

S.D. SEARCH FOR DATA | POLYGON | MAY 01, 2016 - JUN 08, 2016 | RUN SEARCH | RUN SEA



Found 6 products matching your query





☞ SENTINEL DATA ACCESS SERVICE

Toolbox

I am text block. Click edit button to change this text. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut elit tellus, luctus nec ullamcorper mattis, pulvinar dapibus leo.

READ MORE



Climate, Environment & Monitoring from Space

I am text block. Click edit button to change this text. Lorem ipsum dolor sit amet, consecteur adipiscing elit. Ut elit tellus, luctus nec ullamcorper mattis, pulvinar dapibus Ieo.

READ MORE



Discovery Hub

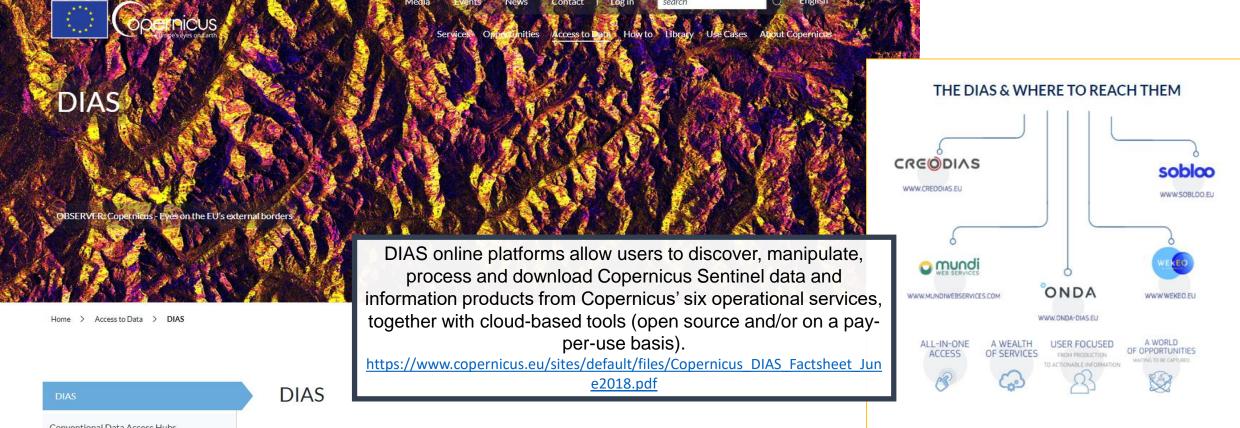
I am text block. Click edit button to change this text. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut elit tellus, luctus nec ullamcorper mattis, pulvinar dapibus Ieo.

READ MORE

→ DIAS - Copernicus Data & Information Access Services

https://www.copernicus.eu/en/access-data/dias





Conventional Data Access Hubs

To facilitate and standardise access to data, the European Commission has funded the deployment of five cloud-based platforms providing centralised access to Copernicus data and information, as well as to processing tools. These platforms are known as the DIAS, or Data and Information Access Services.

The five DIAS online platforms allow users to discover, manipulate, process and download Copernicus data and information. All DIAS platforms 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).

Each of the five competitive platforms also provides access to additional commercial satellite or non-space data sets as well as premium offers in terms of support or priority. Thanks to a single access point for the entire Copernicus data and information, DIAS allows the users to develop and host their own applications in the cloud, while removing the need to download bulky files from several access points and process them

→ Copernicus Global Land Service

https://land.copernicus.eu/global/

Copernicus Global Land Service Providing bio-geophysical products of global land surface



Home Products Use cases **Product Access** Viewing Get Support Energy Water Cryosphere **Hot Spots** Groundbased

Home

The Copernicus Global Land Service (CGLS) is a component of the Land Monitoring Core Service (LMCS) of Copernicus, the European flagship programme on Earth Observation. The Global Land Service systematically produces a series of qualified bio-geophysical products on the status and evolution of the land surface, at global scale and at mid to low spatial resolution, complemented by the constitution of long term time series. The products are used to monitor the vegetation, the water cycle, the energy budget and the terrestrial cryosphere.

Read more

In the picture

15 degrees warmer than

average

Drought surveillance

in Sri Lanka by CGIAR's IWMI 94 TB

downloaded in 2nd quarter 2019

5000th

user registered for online access

Latest news

Lake Ice Extent version 1.1 available

Tue, 24 Sep 2019

LSWT custom ordering available 7hu, 19 Sep 2019

Custom ordering re-enabled for Cryosphere

Custom ordering temporarily unavailable for Cryosphere products Thu, 12 Sep 2019

LSWT custom ordering temporarily unavailable

Read more



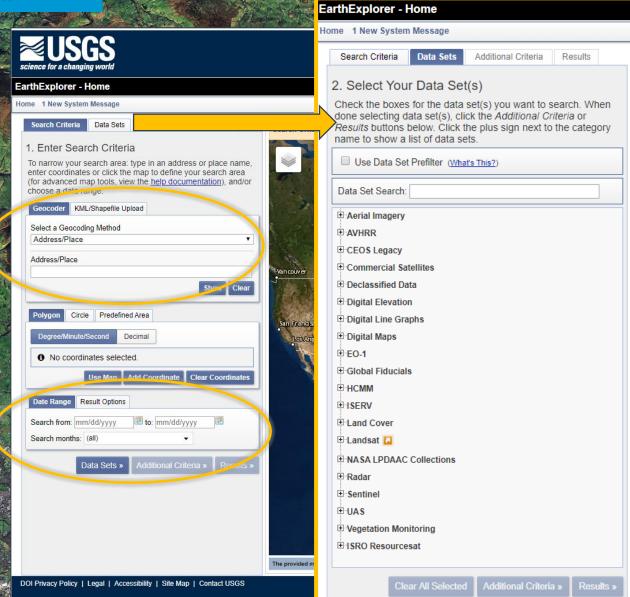








U.S. Geological Survey - search catalogue of satellite and aerial imagery.



U.S. Department of the Interior | DOI Inspector General | White House | E-gov | No Fear Act | FOIA



→ SNAP (Sentinel Application Platform) software

http://step.esa.int/main/download/snap-download/



Sen2Cor

SMOS Toolbox

PolSARpro

Download

Community

Useful Links

Proba-V Toolbox

Sen2Cor is a processor for Sentinel-2 Level 2A product generation and formatting; it performs the atmospheric-, terrain and cirrus correction of Top-Of- Atmosphere Level 1C input data. Sen2Cor creates Bottom-Of-Atmosphere, optionally terrain- and cirrus corrected reflectance images; additional, Aerosol Optical Thickness-, Water Vapor-, Scene Classification Maps and Quality Indicators for cloud and snow probabilities. Its output product format is equivalent to the Level 1C User Product: JPEG 2000 images, three different resolutions, 60, 20 and 10 m.

Sen2Cor installation pack

Two different versions of

SNAP is an open source common architecture for ESA toolboxes ideal for the exploitation of Earth observation data.

Sen2Cor v2.8 is the latest releat current (14.5) and previous (14.2 Sen2Cor_v2.8 release contains n

Sen2Cor v2.5.5 is the previous Sentinel-2 L1C data generated w and not reprocessed by ESA. Sen2Cor is a processor for Sentinel-2 Level 2A product generation and formatting; it performs the atmospheric, terrain and cirrus correction of Top-Of- Atmosphere Level 1C input data.

step

science toolbox exploitation platform



Search

ESA STEP TOOLBOXES DOWNLOAD GALLERY DOCUMENTATION COMMUNITY THIRD PARTY PLUGINS

SNAP
Sentinel 1 Toolbox
Sentinel 2 Toolbox
Sentinel-3 Toolbox
SMOS Toolbox
Proba-V Toolbox
PolSARpro
Download

Community

Useful Links

Home > Download > SNAP Download

SNAP Download

Here you can download the latest installers for SNAP and the Sentinel Toolboxes.

Data provision is available to all users via the Sentinel Data Hub

Current Version

The current version is 7.0.0 (22.07.2019 13:30 UTC)

For detailed information about changes made for this release please have a look at the release notes of the different projects: <u>SNAP</u>, <u>S1TBX</u>, <u>S2TBX</u>, <u>S3TBX</u>, <u>SMOS Box</u>, <u>PROBA-V Toolbox</u>

We offer three different installers for your convenience. Choose the one from the following table which suits your needs. During the installation process, each toolbox can be excluded from the installation. Toolboxes which are not initially installed via the installer can be later downloaded and installed using the plugin manager. Please note that SNAP and the individual Sentinel Toolboxes also support numerous sensors other than Sentinel.

	Windows 64-Bit	Windows 32-Bit	Mac OS X	Unix 64-bit
Sentinel Toolboxes	These installers contain the Sentinel-1, Sentinel-2, Sentinel-3 Toolboxes			
	Download	Download	Download	Download
SMOS Toolbox	These installer contains only the SMOS Toolbox. Download also the Format Conversion Tool (Earth Explorer to NetCDF) and the user manual.			
	Download	Download	Download	Download
All Toolboxes	These installers contain the Sentinel-1, Sentinel-2, Sentinel-3 Toolboxes, SMOS and PROBA-V Toolbox			
	Download	Download	Download	<u>Download</u>

If you later decide to install an additional toolbox to your installation you can follow this step-by-step guide.

We are happy to **get your feedback** on the software installation procedure, functionalities, encountered issues, etc on the <u>Forum</u>. You may also watch the <u>Blog</u> to be informed about SNAP news such as new software releases or interesting events.

Release Notes

SNAP, S1TBX, S2TBX, S3TBX, SMOS Box, PROBA-V Toolbox



2018



Mapping Urban Areas from Space (MUAS 2018)



EO Open Science 2018



8th Advanced Land Training Course

2017



EO Open Science 2017



7th Advanced Land Training Course



ESA POLinSAR 2017 Workshop





Abo

Overview

Install

Application

Resources

Ne

Contact

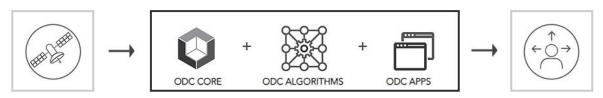


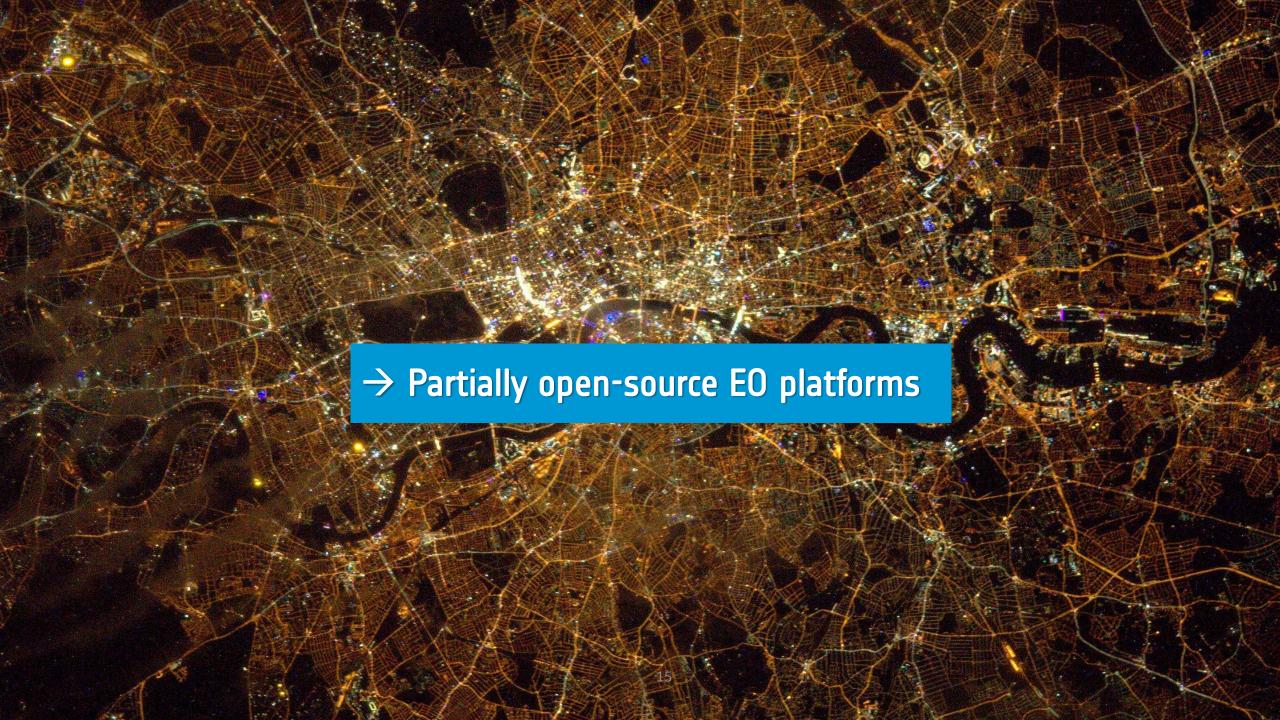
Open Data Cube

The Open Data Cube (ODC) is an Open Source Geospatial Data Management and Analysis Software project that helps you harness the power of Satellite data. At its core, the ODC is a set of Python libraries and PostgreSQL database that helps you work with geospatial raster data. See our GitHub repository here>>.

The ODC seeks to increase the value and impact of global Earth observation satellite data by providing an open and freely accessible exploitation architecture. The ODC project seeks to foster a community to develop, sustain, and grow the technology and the breadth and depth of its applications for societal benefit.

ODC ECOSYSTEM GEOSPATIAL DATA MANAGEMENT & ANALYSIS SOFTWARE

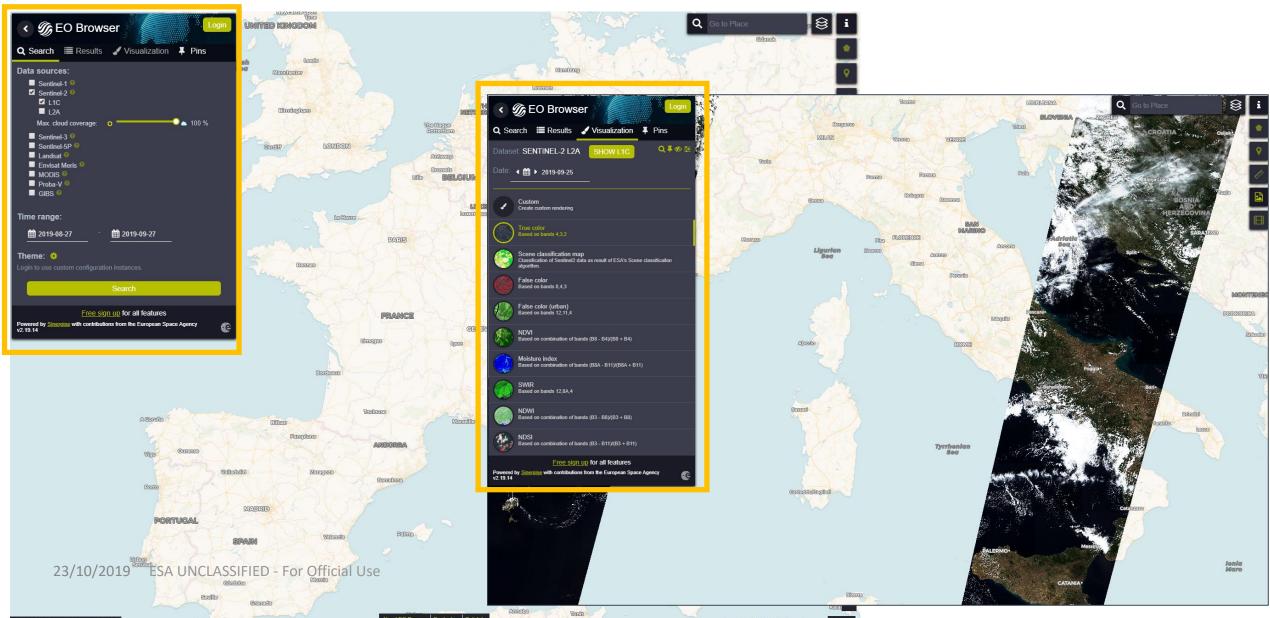




→ EO Browser - SENTINEL Hub

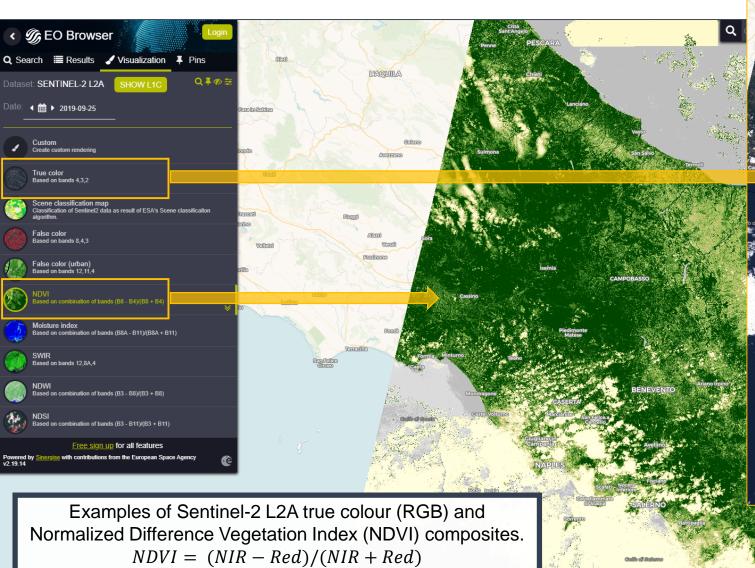
https://apps.sentinel-hub.com/eo-browser/

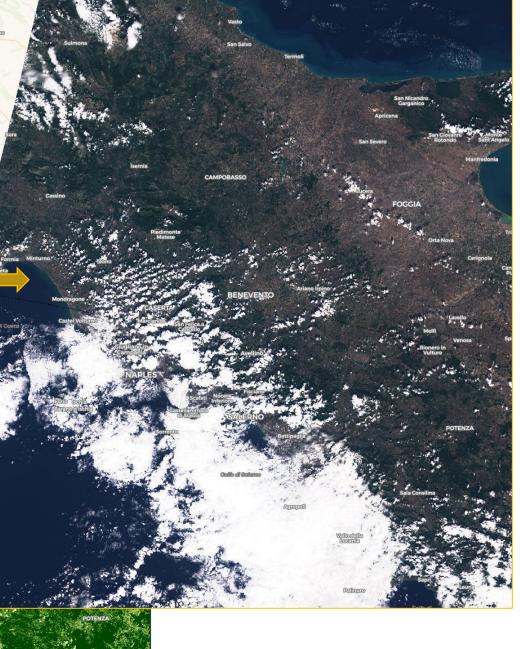




→ EO Browser | SENTINEL Hub

https://apps.sentinel-hub.com/eo-browser/

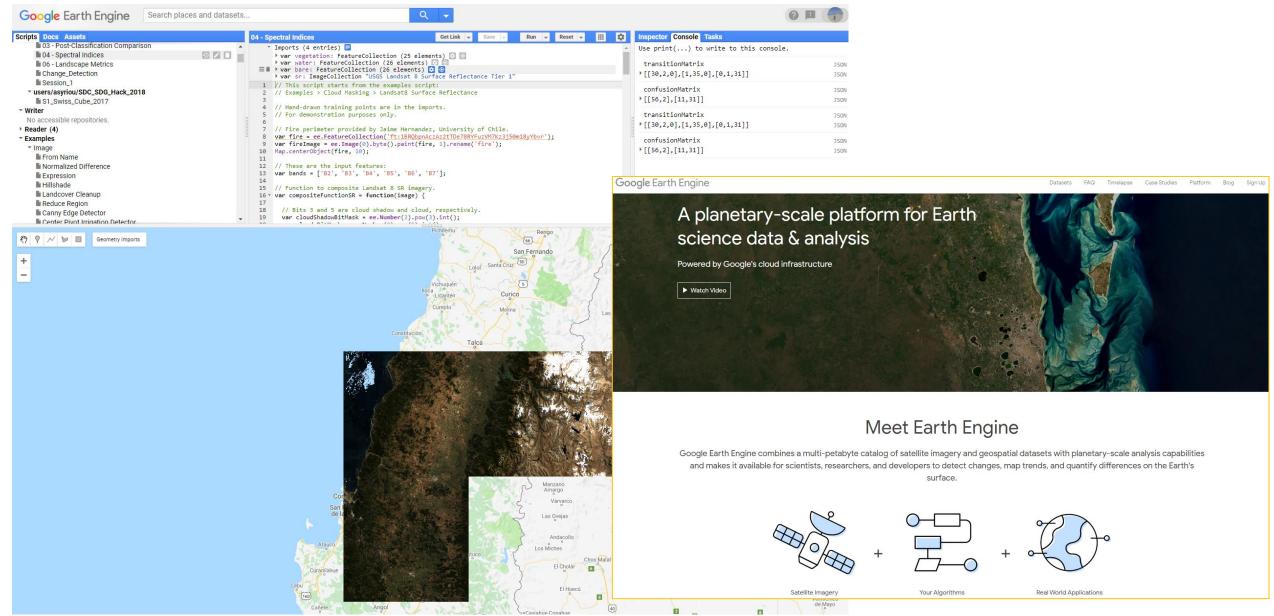




→ Google Earth Engine

https://earthengine.google.com/platform/

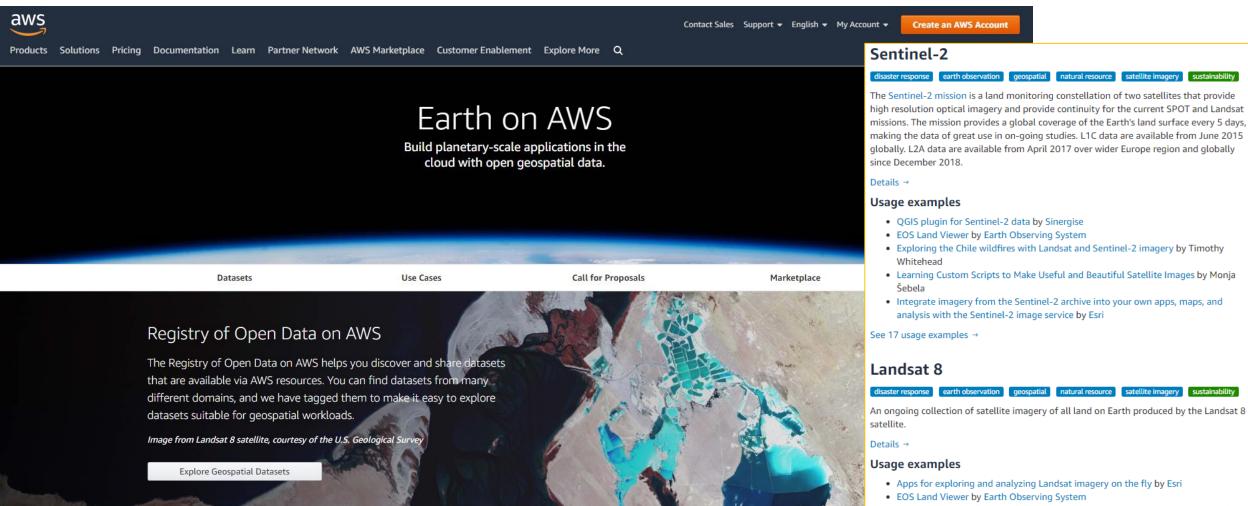




→ Earth on AWS

https://aws.amazon.com/earth/





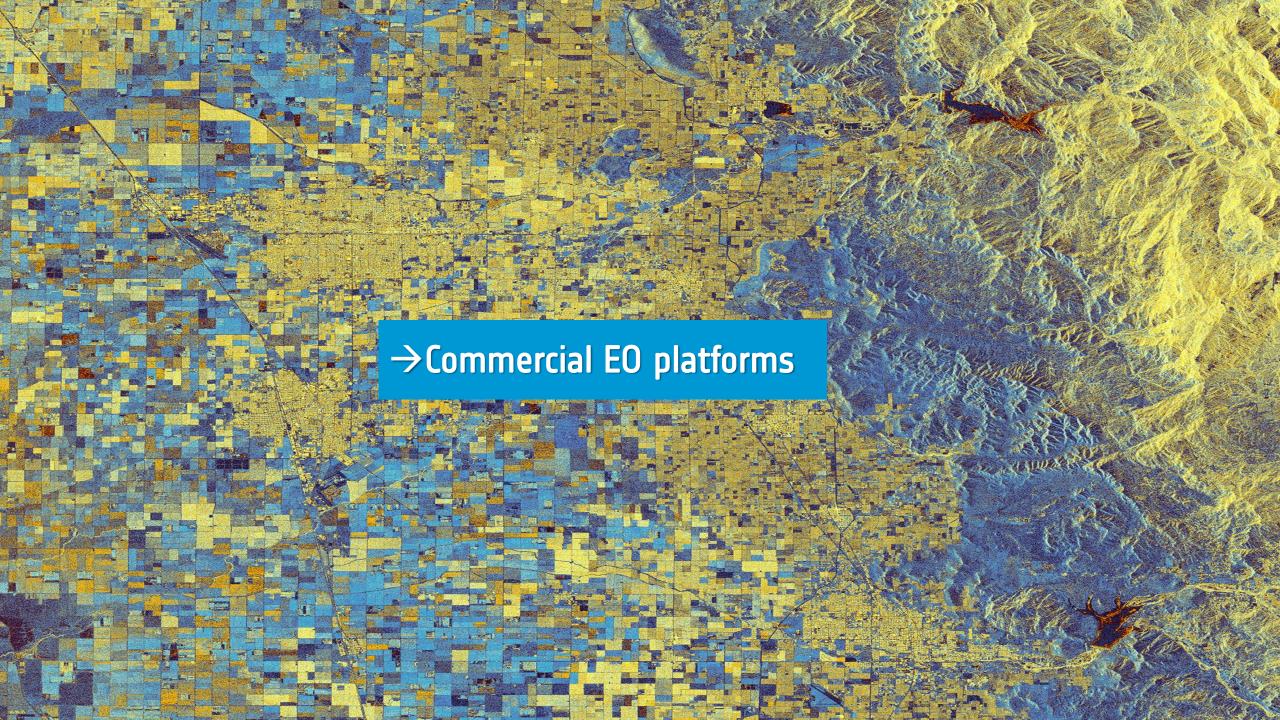
Use Cases

Below you will find both videos and articles explaining how Earth Observation data on AWS can be used in your startup, enterprise, or research institution.

The Sentinel-2 mission is a land monitoring constellation of two satellites that provide high resolution optical imagery and provide continuity for the current SPOT and Landsat missions. The mission provides a global coverage of the Earth's land surface every 5 days, making the data of great use in on-going studies. L1C data are available from June 2015 globally. L2A data are available from April 2017 over wider Europe region and globally

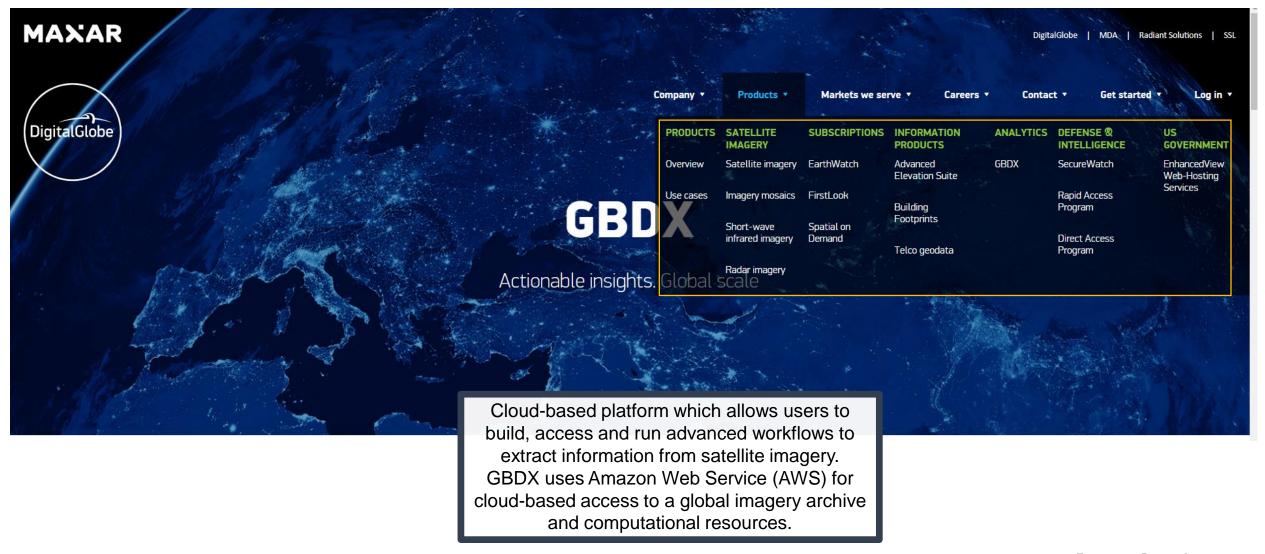
- Integrate imagery from the full Landsat archive into your own apps, maps, and analysis with Landsat image services by Esri
- . Using Vector tiles and AWS Lambda, we can build a really simple API to get Landsat and Sentinel images by Remote Pixel
- · Sentinel Playground for Landsat by Sinergise

See 14 usage examples →



https://www.digitalglobe.com/products/gbdx

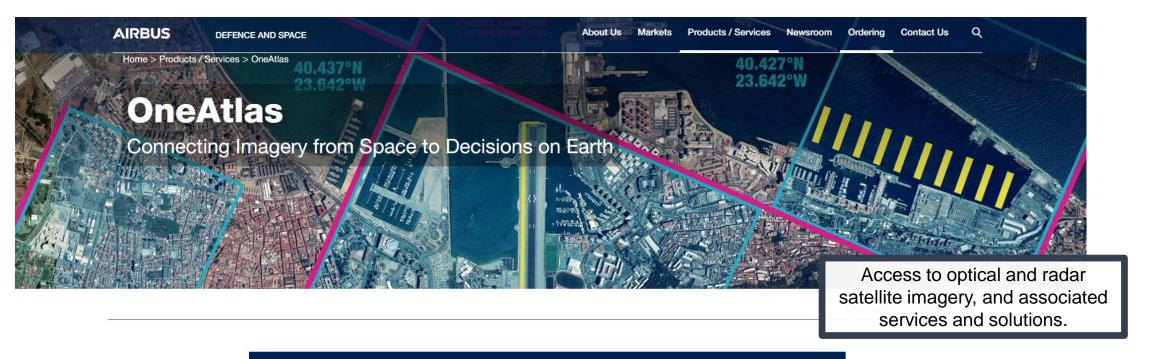




→ OneAtlas

https://www.intelligence-airbusds.com/oneatlas/





OneAtlas is a unique collaborative environment to easily access premium imagery, perform largescale image processing, extract industry specific insights and benefit from Airbus assets to
develop your solutions.

The OneAtlas Services include:

Living Library

Mobile

Basemap

WorldDEM Streaming

Change Detection

Earth Monitor

Verde

Starling

Ocean Finder

Refinery Scanner

→ Planet Platform

https://www.planet.com/products/platform/





INTEGRATED AND BUILT FOR SCALE

Planet's fully-automated, cloud-based imagery platform downloads, processes, and manages 5+ terabytes of data every day. Built for speed and affordability, our platform enables customers to build tools, ingest data, and run analytics at scale.

Planet's cloud-based imagery platform gives access to PlanetScope, RapidEye and SkySAT

Fully-automated imagery processing

Planet's imagery pipeline corrects for a variety of factors and delivers analysis-ready data, without costly post-processing or manual intervention.

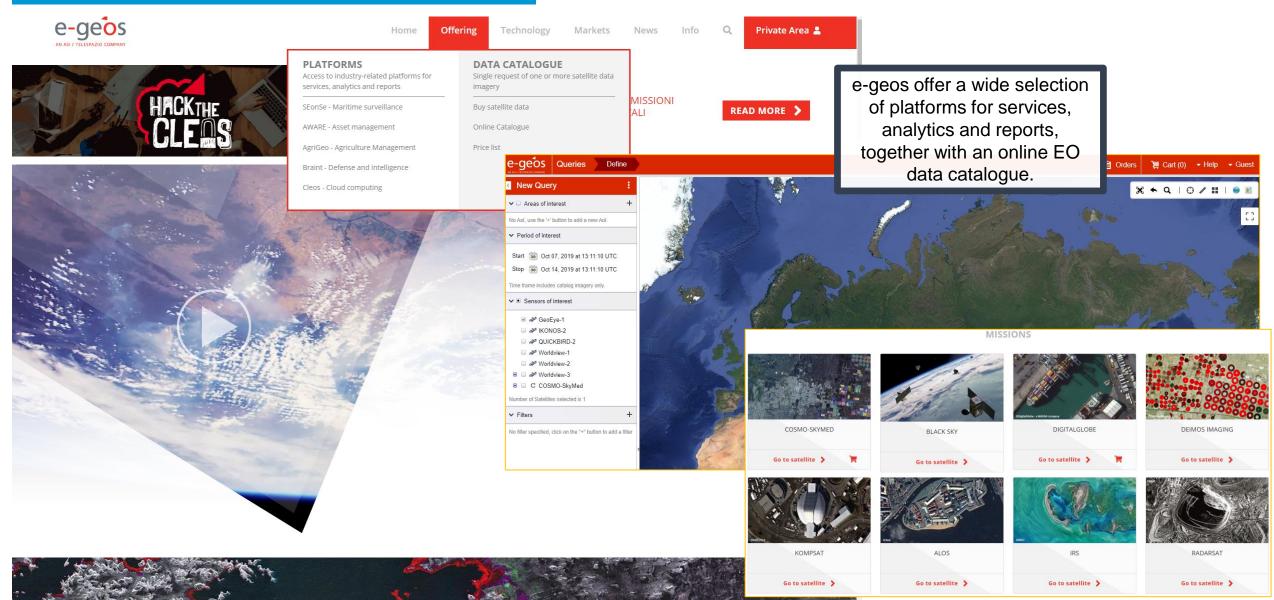
- Orthorectification removes collection geometry, pointing error, and terrain variability distortions
- Radiometric corrections correct for sensor artifacts and transformation to at-sensor radiance
- Top- and bottom-of-atmosphere corrections reduce spectral inconsistency across time and location





→ e-geos https://www.e-geos.it/





→ Descartes Labs

https://www.descarteslabs.com/





Platform >

Solutions

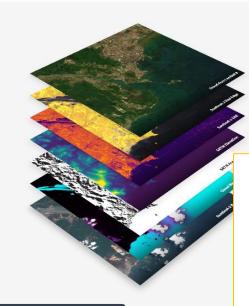
Demos N

Company \

Contact Sales

A data refinery, built to understand our planet

Instant access to science-ready imagery and intelligence from multiple data sources.



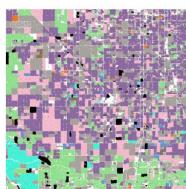
The Descartes Labs Platform - collects data daily from public and commercial sources, cleans it, calibrates it, and stores it in an easy-to-access catalogue, ready for scientific analysis.

Detecting Construction Starts



Using synthetic aperture radar (SAR), we developed a proprietary model that can identify new construction starts on the ground on a monthly basis, regardless of weather conditions. This model enables a real-time look at changes and trends impacting infrastructure growth.

tarts Crop Classification in California

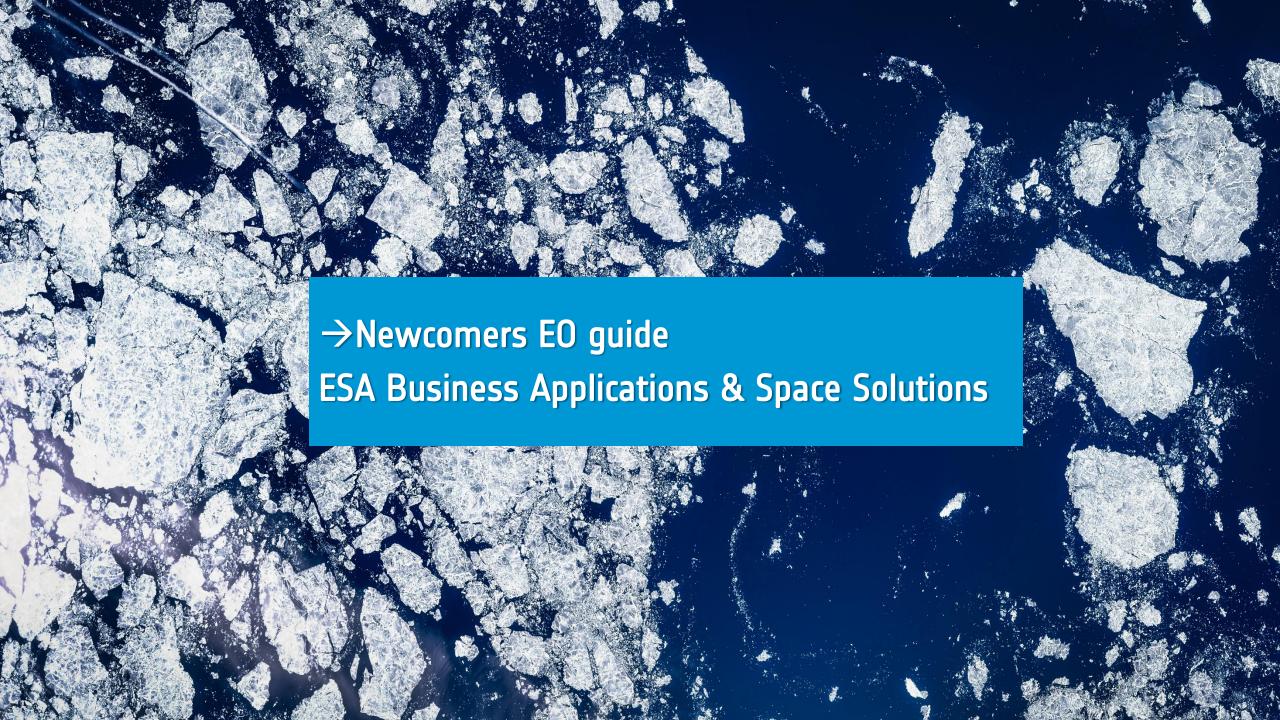


Leveraging our database of industry leading high-resolution imagery, we built a model that first identifies field boundaries and then classifies which crops are growing within each field. With this optimized approach, field teams spend less time surveying ground data and more time focusing on business growth opportunities.

Wind Turbine Detection



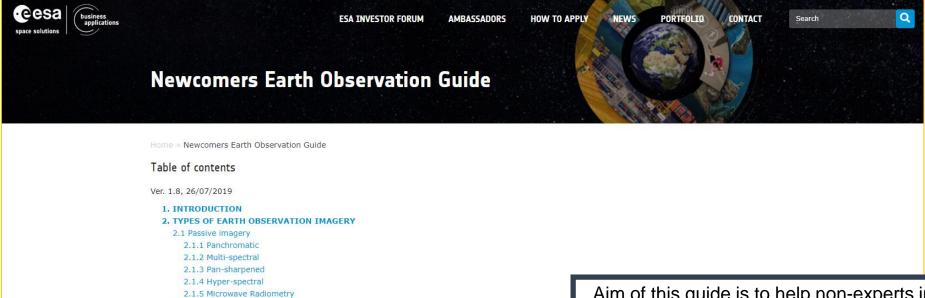
Using high-resolution Airbus imagery, we built a computer vision model that can quickly identify all physical wind turbine assets worldwide in just a few hours. This solution automates analysis that would take a fleet of human analysts several months to complete.



→ Newcomers EO guide

https://business.esa.int/newcomers-earth-observation-guide





Aim of this guide is to help non-experts in providing a starting point in the decision process for selecting an appropriate Earth observation (EO) solution.

(Prepared by: Tony Sephton, ESA/ TIA-AIG)

2.6 Data Processing
3.PARAMETERS RELATED TO EO IMAGERY
3.1 Spatial Resolution
3.2 Scene size
3.3 Revisit time
3.4 Other image quality-related parameters
3.5 Accessibility of EO Products
4.LIST OF REMOTE SENSING SATELLITE SYSTEMS
5.PRICING POLICY
6.HOW TO ACCESS DATA

2.2 Active imagery

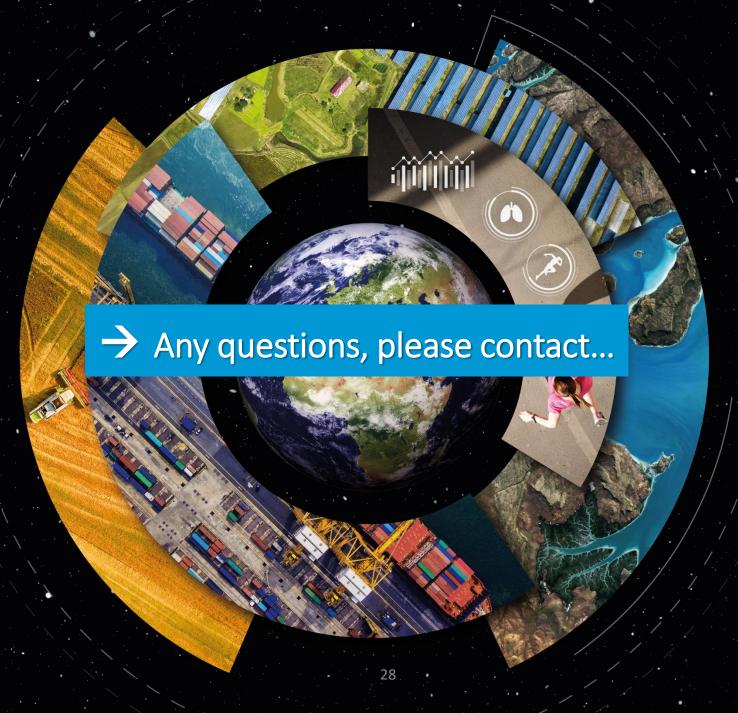
2.2.3 Radar Altimetry 2.2.4 GNSS-R

2.2.5 Radar Scatterometry2.3 Atmospheric Chemistry2.4 Gravity field measurements

2.2.2 Lidar

2.5 3D Models

2.2.1 Synthetic Aperture Radar





Asimina Syriou

@MinaSyriou

https://business.esa.int/