# ESA EO Data Access

# ESA PECS Training Course on Earth Observation in Slovakia

17th – 21th September 2018

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17/09/2018

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- ESA (ERS & ENVISAT and EEs ) and ESA TPM  Missions and data access
    - HERITAGE Missions (ENVISAT,ERS) and EEs
    - Visualization tool and Access to ESA and ESA TPM *16 slides*

- Access to Copernicus Sentinels Data (focusing on Copernicus hub)
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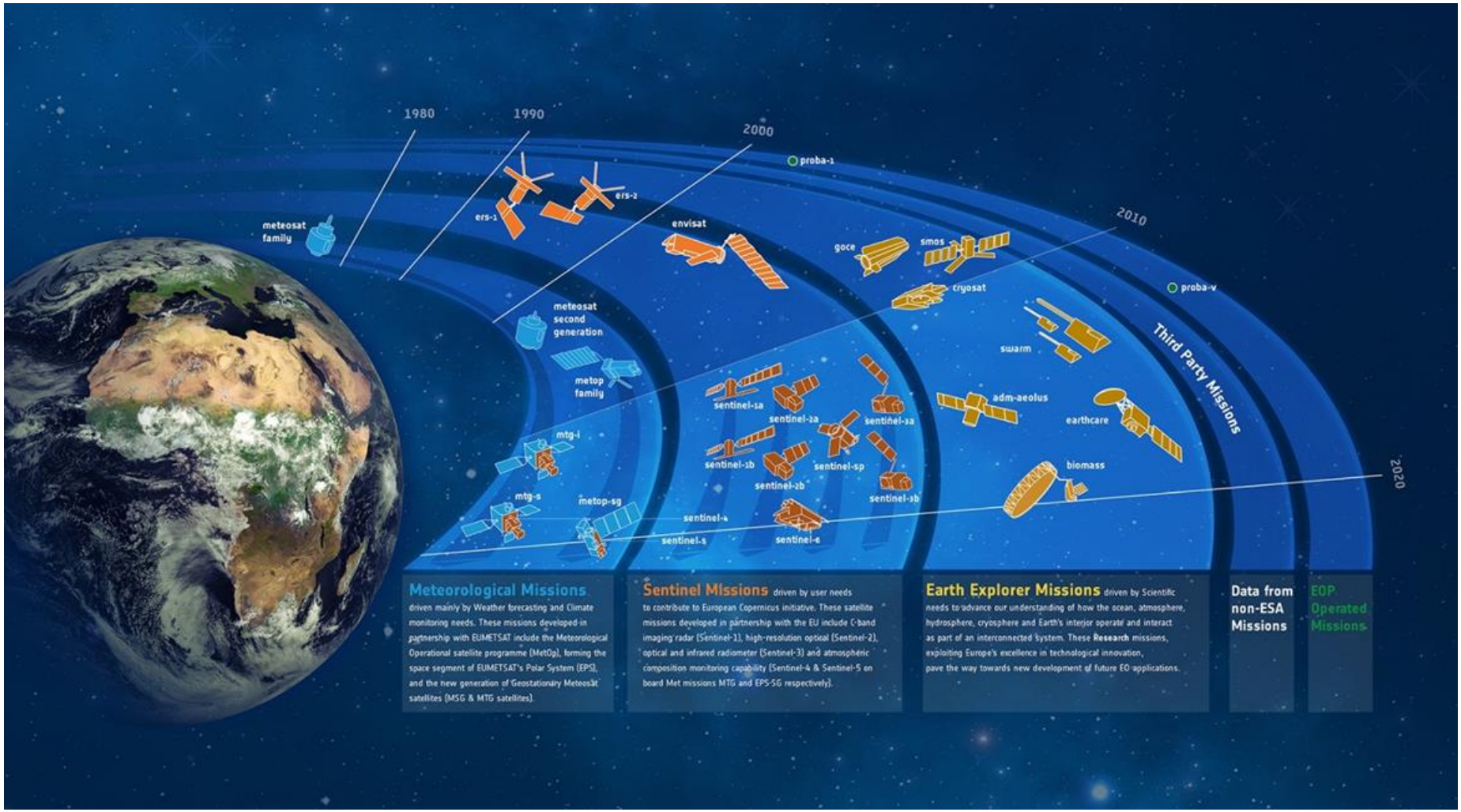
- RUS service introduction  3 slides
    - (small video)

# EARTH OBSERVATION AT ESA



# Heritage Mission: ERS

The European Remote Sensing satellite ERS-1, launched in 1991, carried a comprehensive payload including an imaging synthetic aperture radar, a radar altimeter and other powerful instruments to measure ocean surface temperature and winds at sea. ERS-2, which overlapped with ERS-1, was launched in 1995 with an additional sensor for atmospheric ozone research.

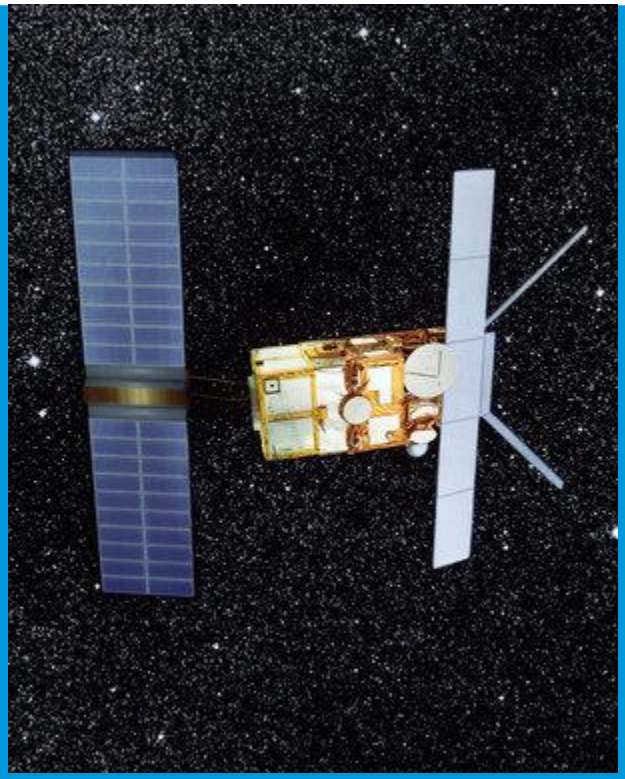
**Instruments:**

**Active Microwave Instrument (AMI)**
**The Active Microwave Instrument is the largest onboard system and combines the functions of a Synthetic Aperture Radar (SAR)**

**Radar Altimeter (RA)**
**This measures variations in the satellite's height above sea level and ice with an accuracy of a few centimetres and helps provide data to know the satellite's exact orbital position**
**AATSR (Advanced Along Track Scanning Radiometer)**

**Along-Track Scanning Radiometer (ATSR)**
**The ATSR consists of two instruments, an Imaging Infrared Radiometer (IIR) and a passive Microwave Sounder (MS).**

**Global Ozone Monitoring Experiment (GOME)**
**In the light of the increasing concern about atmospheric ozone levels, the GOME instrument was added to the ERS-2 payload.**
**GOMOS (Global Ozone Monitoring by Occultation of Stars)**



# Heritage Mission: ENVISAT

Envisat had 10 instruments to provide continuous observation and monitoring of Earth's land, atmosphere, oceans and ice caps  was the largest Earth observation spacecraft ever built.:

**Instruments:**

**ASAR (Advanced Synthetic Aperture Radar)**

**MERIS (Medium Resolution Imaging Spectrometer)**

**AATSR (Advanced Along Track Scanning Radiometer)**

**SCIAMACHY: an imaging spectrometer whose primary mission objective was to perform global measurements of trace gases in the troposphere and stratosphere.**

**RA-2 (Radar Altimeter): an instrument for determining the two-way delay of the radar echo from Earth's surface**

**GOMOS (Global Ozone Monitoring by Occultation of Stars)**

**MWR: a microwave radiometer**

**LRR (Laser Retro Reflector):**

# Earth Explorers overview (Scientific Missions) 1/2

**SMOS**

The Soil Moisture and Ocean Salinity (SMOS) mission, launched on 2 November 2009, is exploiting an innovative two-dimensional interferometer to acquire brightness temperature observations at L-band (1.4 GHz). These observations translate into information on the moisture held in soil and salinity in the surface layers of the oceans, which are needed to further our understanding of Earth's water cycle(in operation) .

**GOCE**

The Gravity field and steady-state Ocean Circulation Explorer (GOCE) was launched on 17 March 2009 and ended on 11 November 2013. GOCE provided high spatial resolution gravity-gradient data to improve global and regional models of Earth's gravity field and geoid.

**CryoSat**

CryoSat, launched on 8 April 2010, is measuring fluctuations in the thickness of ice on both land and sea determine how Earth's ice is changing. This information is leading to a better understanding of the relationship between ice and global climate. CryoSat carries an innovative SAR/interferometric radar altimeter. ( in operation)

# Earth Explorers overview (Scientific Missions) 2/2

**Swarm**

Swarm, launched on 22 November 2013, is providing the best-ever survey of the geomagnetic field and its temporal evolution. The geomagnetic models resulting from the mission will provide new insights into Earth's interior. This information will lead to a better understanding of atmospheric processes, and also have practical applications in areas such as space weather and radiation hazards. ( Still in operation)

**Aeolus**

The prime aim of the Atmospheric Dynamics Mission is to demonstrate measurements of vertical wind profiles from space. The mission employs a high-performance Doppler wind lidar based on direct-detection interferometric techniques. ADM-Aeolus was launched in August 2018 (now in commissioning phase) .

Coming soon : **EARTHCARE ,BIOMASS, FLEX**…full information on EEs at https://www.esa.int/Our_Activities/Observing_the_Earth/Earth_Explorers_an_overview

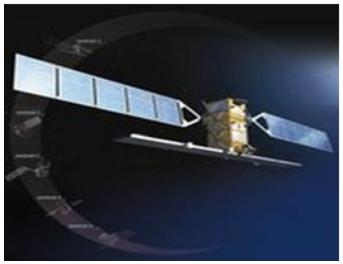
# Data Policy (1/2)

ERS and Envisat

Earth Explorers

**Revised ESA Earth Observation Data Policy ESA/PB-EO(2010)54**

- Free datasets (for all data available on Internet)
- Restrained datasets (L0)



Sentinels

**Copernicus (GMES ) Data Policy, Joint Principles for Sentinel Data Policy [ESA/PB-EO(2013)30, rev.1]**

- Free, full and open data policy

# Keep in mind that…

**EO-SSO registration needed**

**(for some TPMs EO-SSO + project proposal)**

**Copernicus hub self registration**

**No registration (from June 2018)**

# EO-SSO account Registration & Log in

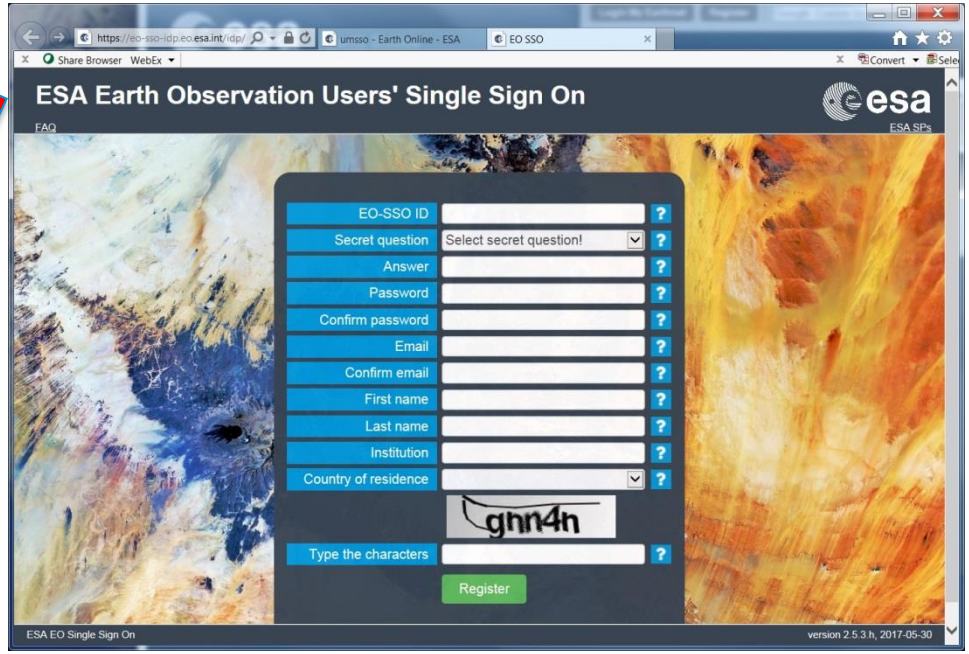
The EO-SSO account allows the PI to access to ***My Earthnet*** functionality.

If you **do not** have an EO-SSO account, follow the registration procedure starting from: https://earth.esa.int/web/guest/home or https://earth.esa.int/web/guest/pi-community

**Step 1 – Click *'Register'* button at the top of the page**

**Step 2 - Fill in the registration form with your prospective account details**

https://eo-sso-idp.eo.esa.int/idp/umsso20/registration




**Step 3 – Click the *'Registration'* button once the form is completed**

Your new account will be generated, and you will shortly receive an automated email asking you to activate this account. Simply click on the link provided in the email, and your registration will be complete.

# Accessing ESA Missions (ERS & ENVISAT ,EEs and ESA TPMs )

https://earth.esa.int/web/guest/data-access/browse-data-products

EO-SSO account needed

https://earth.esa.int/web/guest/data-access/browse-data-products

esa Earth Online

Login My Earthnet | Register | Google Custom Search

Need Help? Contact here | European Space Agency

Missions | Earth Topics | Data Access | PI Community | Explore more...

You are here Home › Data Access › Browse Data Products

Follow | Share

Search Product by missions and earth topics and instruments | In all missions

**Filter by Earth Topics**

- Agriculture (34)
- Atmosphere (45)
- Land (84)
- Natural Disasters (49)
- Ocean and Coast (93)
- Snow and Ice (61)
- Solid Earth (45)

**Filter by Typologies**

- Atmospheric Data (15)
- Digital Surface Model (1)
- Gravimetry (31)
- Optical/Multi Spectral Radiometry

order by Name Ascending

Next

**AATSR Averaged Surface Temperature (AST) Product (ENVISAT.ATS.AR__2P)**
(4000) recent views

GET DATA

The Averaged Surface Temperature (AST) Product contains averaged geophysical data at two resolutions, and with respect to two different averaging schemes. Measurement data resolutions of 0.5 by 0.5 degrees and 10 by 10 arcmin with respect to a...

**Dataset available upon approval of a Fast Registration submission (2 days).**

**AATSR Gridded Brightness Temperature/Reflectance (ENVISAT.ATS.TOA_1P)**
(1543) recent views

GET DATA

The Gridded Brightness Temperature/Reflectance (GBTR) product contains top of atmosphere (TOA) brightness temperature (BT) values for the infra-red channels and reflectance values for the visible channels. Values for each channel and for the nadir and forward views...

**AATSR Gridded Surface Temperature (ENVISAT.ATS.NR__2P)**
(1916) recent views

GET DATA

The Gridded Surface Temperature (GST) Product is the Level 2 full resolution geophysical product. It contains a single measurement data set the content of which is switchable, that is to say, the content of each pixel field will depend on the surface type....

**AATSR L2P/L3U products (ENVISAT.UPA-L2P-/UPA-L3U)**

GET DATA

# ENVISAT & ERS 1/2 (A)SAR On-The-Fly (OTF) Processing

## Dataset Details

**Earth Topics (Applications)**

- Natural Disasters
  Earthquake/Volcano
- Solid Earth
  Tectonics/Seismic Activity

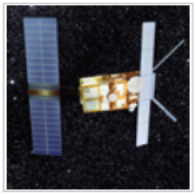
**Instrument type**

- Radar Imagery

**Instrument**

- SAR

**Mission**



**ERS**

**Operators:**
ESA

**Date of Launch:**
ERS-1 - 17 July 1991
ERS-2 - 21 April 1995

**Mission Status:**
ERS-1 ended on March 2000
and ERS-2 September 2011

**Orbit Height:**

### ERS-1/2 - SAR Level 1 Single Look Complex Image Product (SAR_IMS_1P)

GET DATA

ERS
(258) recent views

Last update: 10 April 2017

The SAR SLC product is a single look complex acquire
phase preserved, generated from raw SAR data using
for use in SAR quality assessment, calibration and inte
and interpolations are performed on the data. Absolute
product annotation.

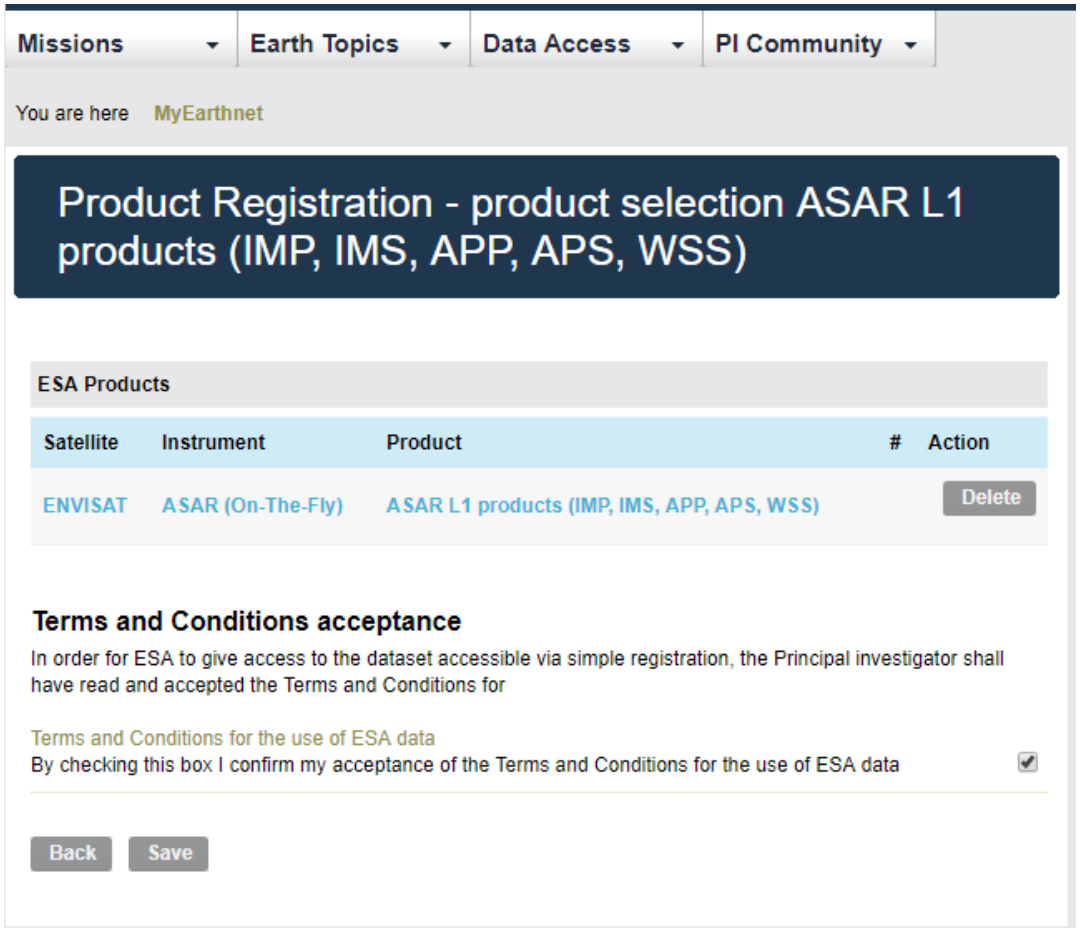
Data available immediately or after data request approval (for L0 because you need to justify with a data service request). PRI and SLC are quicker and level 0 takes longer…

| Product characteristics | |
|---|---|
| **Pixel size** | 8 m (range - across track) x 4 m (azimuth - along track – varying slightly depending on acquisition Pulse Repetition Frequency) |
| **Scene area** | 100 km (range) x at least 102.5 km (azimuth) |
| **Scene size** | 5000 samples (range) x at least 30000 lines (azimuth) |
| **Pixel depth** | 32 bits signed integer (16 bits I, 16 bits Q) |
| **Total product volume** | ~ 575 MB |
| **Projection** | Slant range |
| **Number of looks** | 1 |

### Data Set Specifications

| | |
|---|---|
| Spatial coverage: | 82 N, 82 S, 180 W, 180 E |
| Temporal coverage: | 27-07-1991 - 04-07-2011 |
| Current Processor Version: | PF-ERS / Envisat format |

# ENVISAT & ERS 1/2 (A)SAR On-The-Fly (OTF) Processing



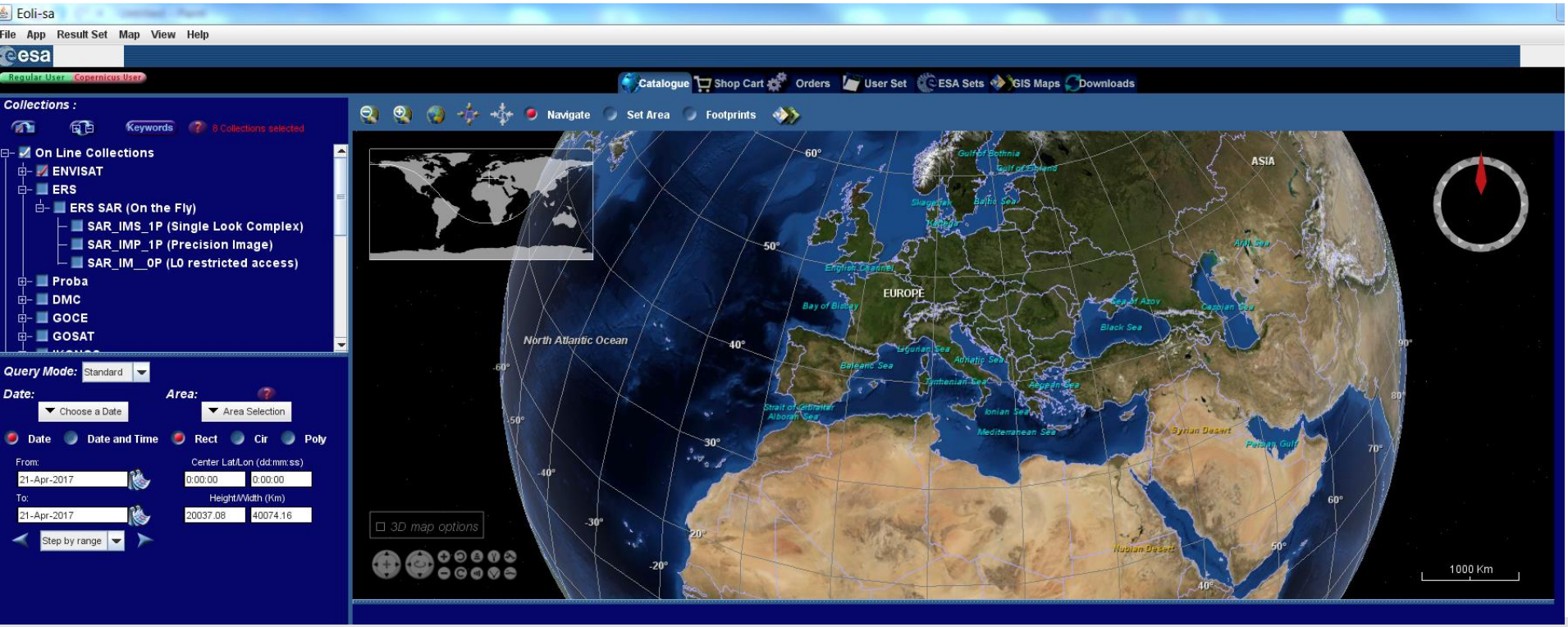

For help, refer to
ASAR-OTF-User Manual.pdf
&
ASAR-OTF-FAQ.pdf

# ERS & ENVISAT SAR and ASAR Data Download ( L1 and L0)

EO-SSO account needed
For L0 EO-SSO account and Data Service Request

- Registration\ log in
- Acceptance of terms and conditions
- Product download through EOLI-SA client

**some specific datasets (e.g RAW/L0) are available upon positive evaluation of the data service request



# DATA SERVICE REQUEST mainly for ERS & ENVISAT SAR and ASAR L0 Data Download

https://earth.esa.int/web/guest/pi-community/apply-for-data/service-request

esa Earth Online

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Need Help? Contact here | European Space Agency

Missions | Earth Topics | Data Access | PI Community | Explore more...

You are here Home › PI Community › Apply for Data › Service Request

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## Data Service Request

### Welcome to the submission area for a Data Service Request

Beyond the standard services for ESA (A)SAR data access which are available to any user, some specific services related to specific data or to specific level of performances are available. Such specific services can be granted by ESA, within technical, financial or legal constraints, to users who describe and justify their needs within a **Data Service Request**.
**Data Service Requests** can be submitted at any time, using the submission link below. ESA's reply to the request is usually provided within a couple of weeks

- Guidelines for the submission of a Data Service Request
- Terms and Conditions for the utilization of ESA data
- Submit a new Data Service Request

Standard services for data access (including ESA (A)SAR ) are provided after user self-registration
Please check the list of data systematically available via the Standard services.

Should you be interested in requesting Third Party Missions data, please visit our TPM webpage, to find all relevant information.

Information about accepted projects/service requests is retrievable here.

Data access guides: ESA;TPM

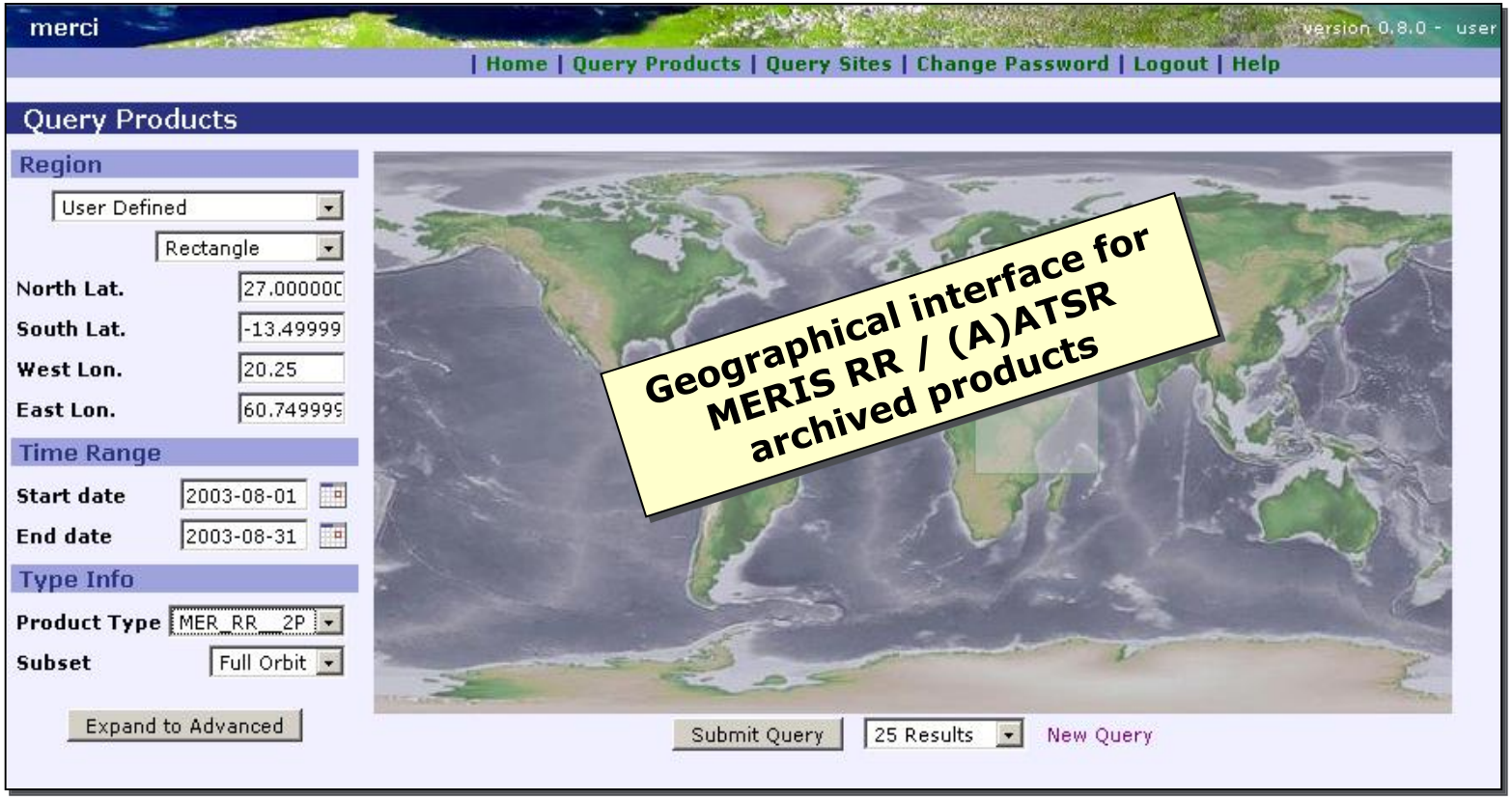
PI Community

- PI Community Home
- Results
- Search Results and Projects
- Apply for Data
  - Fast Registration
  - Full Proposal
  - Service Request
  - Campaigns
  - AO's
  - 3rd Party
- Toolboxes
- Training
- Events
- News
- MyEarthnet

# MERIS,AATSR - My Online Data (Free Dataset) Access Using your EO-SSO account on Merci

**Support to the access to the selected Online data, is provided by ESA EO Help & Order Desk.**
**https://merisfrs-merci-ds.eo.esa.int/merci/welcome.do**

EO-SSO account needed



# HEDAVI – the EO data visualisation tool for ESA EO Heritage Missions

http://hedavi.esa.int/

hedavi.esa.int

Galleries | Basic Finder | Expert Finder | Base Maps | Elevations | Menu

Search place, coordinates...

Mission: ERS | ENVISAT | LANDSAT

Instrument: ASAR | MERIS

Mode: APM | IMM | WSM

Years ago | Time interval

Start: 2002-11-15

Stop: 2012-04-08

Info | Search | Clear

Services

3D

ENVISAT/ASAR/APM 2005-08-22
ASA_APM_1PNPDK20050822_20(

ENVISAT/ASAR/APM 2005-08-15
ASA_APM_1PNPDK20050815_091

# Third Party Mission Data Access via ESA

EO-SSO account needed

Online D

https://ear
access/how
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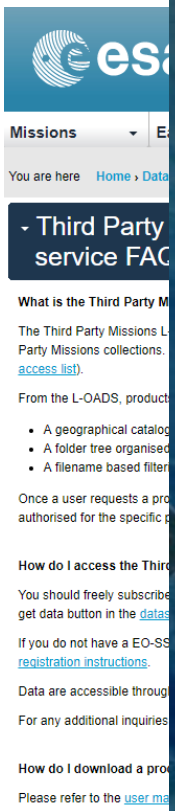
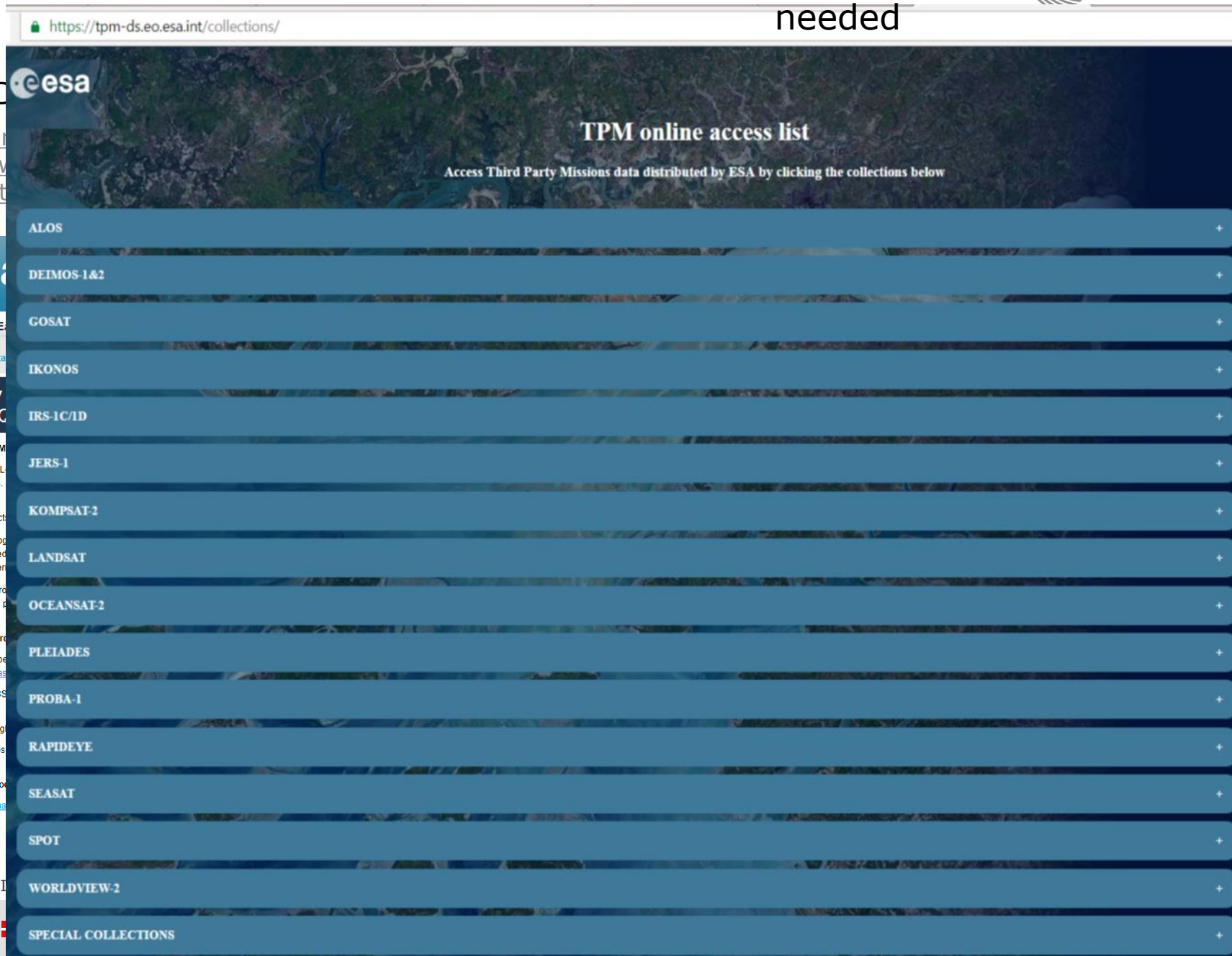
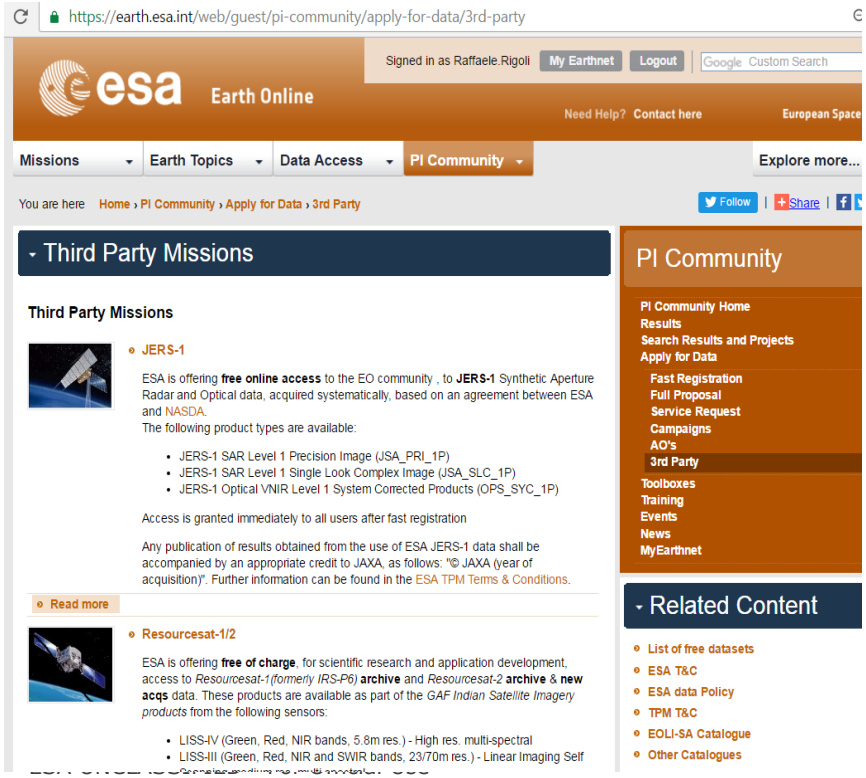


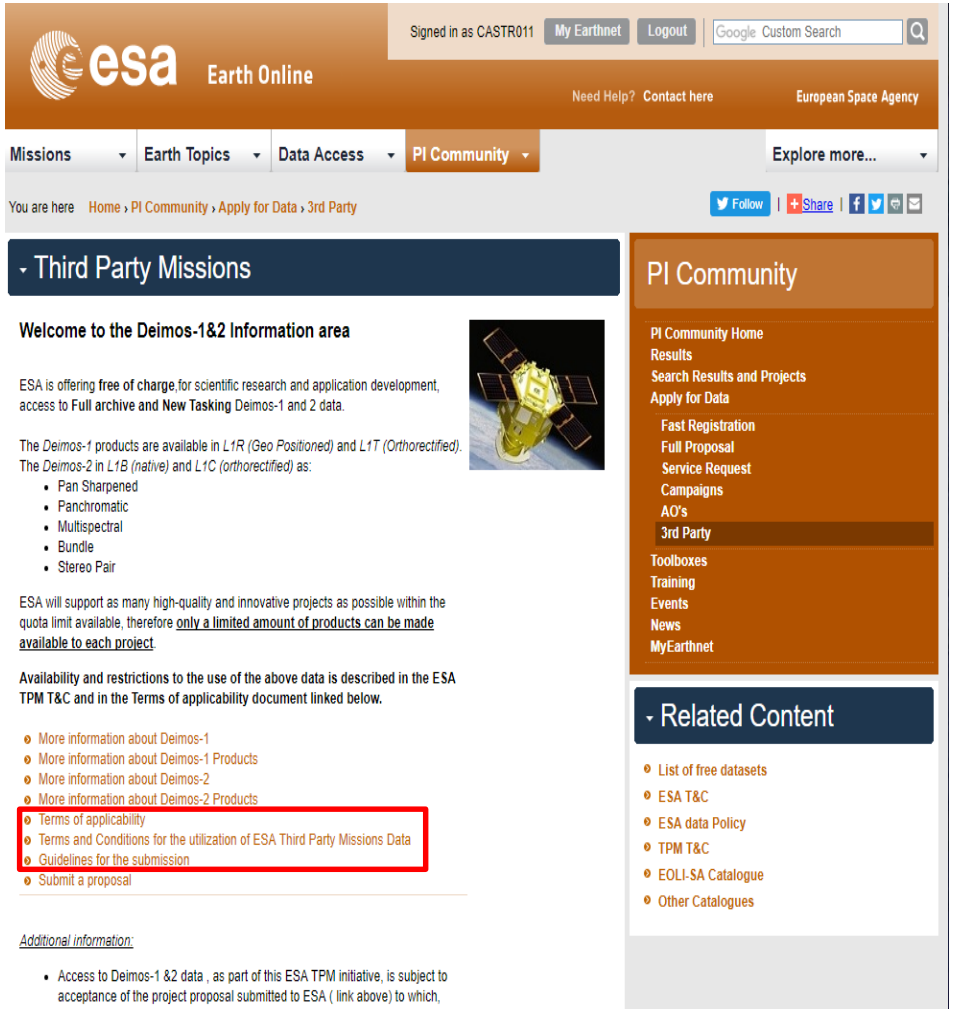
# Some specific TPM restricted access (available for free with a limited quota assigned to ESA): EO-SSO and Project proposal

In The PI Community website at : https://earth.esa.int/web/guest/pi-community/apply-for-data/3rd-party

You will find the list of all info areas for wach of the active TPM reporting access conditions and terms of applicability.For some of them only a limited quota can be assigned to each proposal




## Example DEIMOS access info page



# Project proposal for some specific TPM restricted

Some TPMs access is available for free **with a limited quota assigned** by ESA after project proposal evaluation ): register for EO-SSO and then submit a Project proposal

https://earth.esa.int/web/guest/pi-community/apply-for-data/full-proposal

esa Earth Online

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Missions | Earth Topics | Data Access | PI Community | Explore more...

You are here Home › PI Community › Apply for Data › Full Proposal

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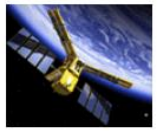
## Full Proposal

**Welcome to the submission area for Project proposal.**



Proposals submitted via this page will be reviewed and a product/programming quota will be assigned by ESA. ESA data are provided free of charge (no fees). ESA may however request the user to provide a contribution in case of requests for very large datasets. Specific restrictions to the use of data may apply for TPMs.
There are no deadlines for proposal submission.

Please note that after the implementation of the new ESA On-The-Fly data processing and download (OTF) service, access to **Envisat ASAR IM, AP, WS and ERS-1/2 SAR IM** modes is available under Fast registration. For more details see the news of December 15, 2016

- Guidelines for the submission of Project proposals
- Terms and Conditions for the utilization of ESA data
- Terms and conditions for the utilization of ESA Third Party Missions Data
- Submit a new Proposal
- Modify a Proposal

Should you require exclusively access to data systematically available on Internet, you can submit a Registration.

Should you be interested in requesting Third Party Missions data, please visit our TPM webpage, to find all relevant information.

Information about accepted projects is retrievable here.

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  - Campaigns
  - AO's
  - 3rd Party
- Toolboxes
- Training
- Events
- News
- MyEarthnet

## Related Content

- List of free datasets
- ESA T&C
- ESA data Policy
- TPM T&C
- EOLI-SA Catalogue
- Other Catalogues

# ESA and ESA TPM data access mechanisms to resume:

EO-SSO registration (prerequisite)

Earth Explorers/ no registration – direct download

Simple fast registration (browse data/add product/T&C acceptance) **for almost all data ESA (ENVISAT ERS and ESA TPM),immediate**

Data service request (title and summary/explanation tba) for (A)SAR L0 and no standard request (e.g.full mission data),few days

Project Full Proposal (~ sp (C

Announcement of opportunities Project proposal in response to specific ESA announcement of opportunity

# ESA Announcement of Opportunities :

EO-SSO registration (prerequisite)

ESA issues research announcements at regular intervals (e.g. for new Missions or specific agreement with other Agencies) Open opportunities for Researchers . Also in this case a project proposal is needed under a pre defined scheme and to submit it you need EO-SSO account. Full list of current Calls is available at:

https://earth.esa.int/web/guest/pi-community/apply-for-data/ao-s

## Open Opportunities for Researchers

- **Aeolus Cal/Val**

ESA is pleased to announce the reopening of the Announcement of Opportunity (AO) call for the Aeolus Mission.

- **S5PVT**

Within the framework of its Copernicus missions, ESA is pleased to announce the Sentinel-5 Precursor Calibration and Validation Team Call.

- **OSEO**

The Open Science Earth Observation (OSEO) call offers to scientists the opportunity to exploit at no cost a full archive of optical EO data for science, applications and technological innovation, by offering services which exploit state of the art ICT.

- **S3VT**

The S3VT call is open to relevant and interested groups and individuals worldwide; group responses are particularly welcome.

- **G-POD**

ESA is offering all scientists with the possibility to perform bulk processing exploiting the large ESA Earth-observation archive together with ESA available GRID computing and dynamic storage resources.

# Copernicus (Sentinels) Data Policy

## Copernicus Data Policy for Sentinels Missions

- The Copernicus data policy is adopted via a Delegated Regulation
- This policy promotes the access, use and sharing of Copernicus information and data on a full, free and open basis
- One of the main objectives is to support downstream segment and research, technology and innovation communities
- The European research institutes will be able to make the best use of these data to create innovative applications and services

**Sentinel Data Policy = full and open access to Sentinel data to all users**

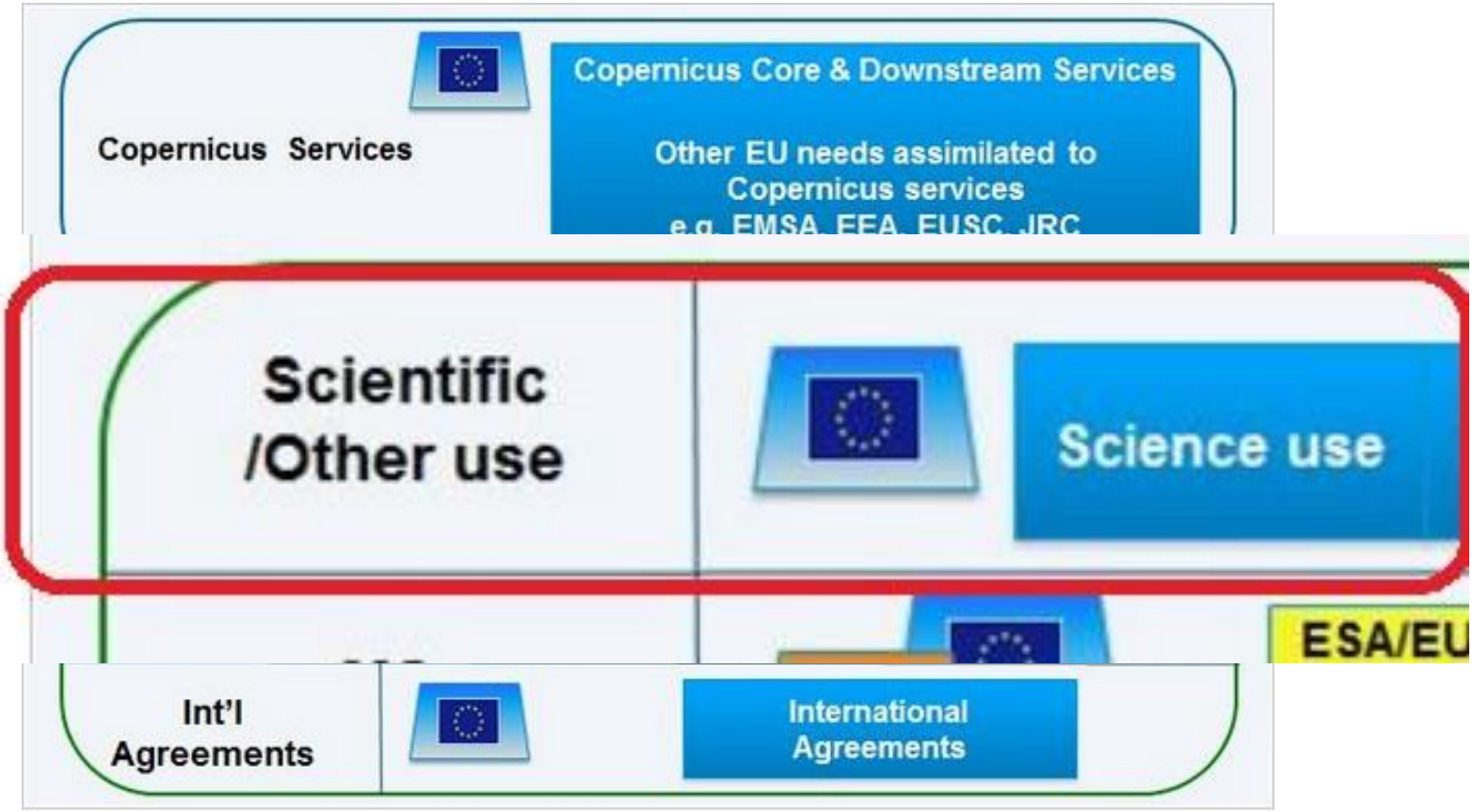
**In practical terms**

- Anybody can (has the right to) access acquired Sentinel data
- Licenses for the Sentinel data are free of charge
- Online access with users registration including acceptation of T&C*

**TERMS AND CONDITIONS FOR THE USE AND DISTRIBUTION OF SENTINEL DATA available online on the Sentinel website (https://sentinel.esa.int/documents/247904/690755/Sentinel_Data_Legal_Notice)*

# Sentinel data access : use typologies and the corresponding services/data access (overview)

**The following use typologies are defined for access to Sentinel data:**




**Register for use by Copernicus services via CSCDA→http://copernicusdata.esa.int/web/gsc/user-tools-guidelines**

**Register for Other/Scientific use via Sentinel-1 Scientific Data hub->https://scihub.copernicus.eu/**

# Sentinel data access for Scientific users- (Copernicus open Hub)

**The free, full and open data policy adopted for the Copernicus programme foresees access available to all users for the Sentinel data products, via a simple registration.**

**Users can register and download Sentinel-1 -2 data from the online Sentinel Data Hub (https://scihub.copernicus.eu/dhus/#/home)**

**Sentinel-3A Pre-operational Hub : pre-operational access point for all users to Sentinel-3 L1 and L2 Land data. Login credentials are *s3guest:s3guest* . (https://scihub.copernicus.eu/s3/#/home)**

**Sentinel-5P Pre-operational Hub : pre-operational access point for all users to Sentinel-5P L1B and L2 data. Login credentials are *s5pguest:s5pguest* (https://s5phub.copernicus.eu/dhus/#/home)**

**Anyone can register online via self-registration. The self-registration process is automatic and immediate. Registration grants access rights for searching and downloading Sentinels products. Sentinel-1 and Sentinel-2 and 3 (coming soon Sentinel-5P) products are available at no cost for anybody. The data available through the Data Hub is governed by the Terms and Conditions of the use and distribution of Sentinel data, which the User is deemed to have accepted by using the Sentinel data.**

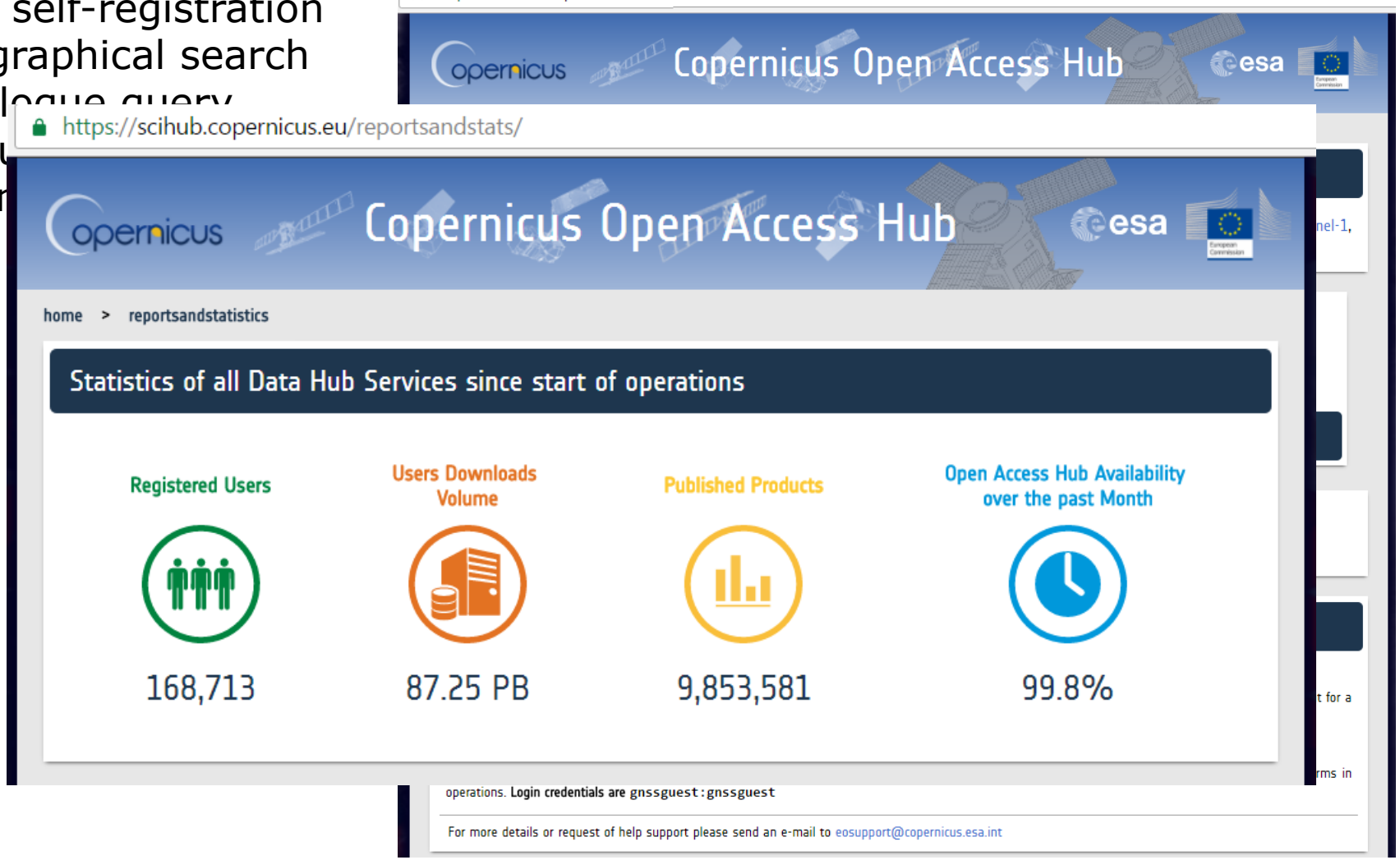


**More technical https://scihub.copernicus.eu/userguide/**

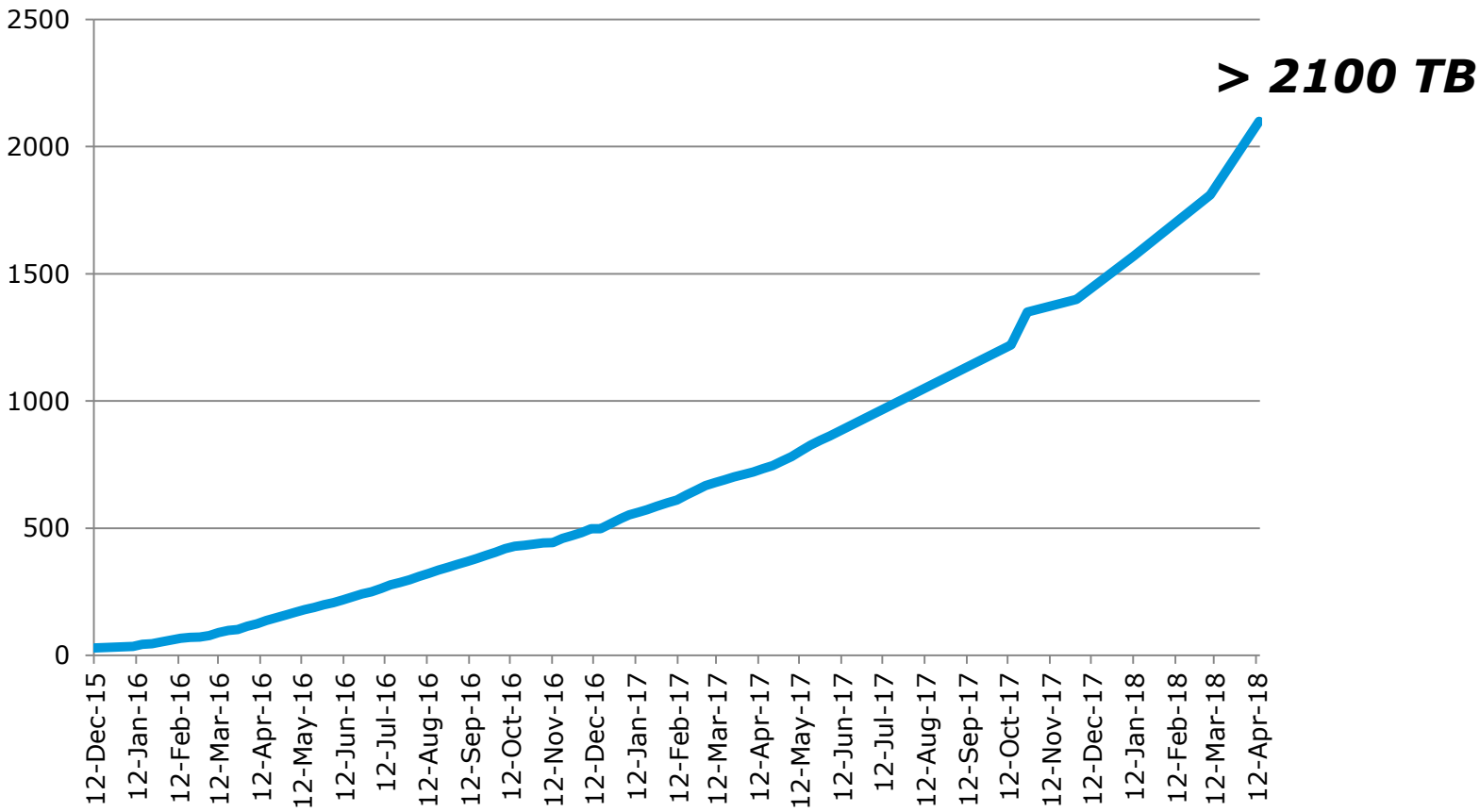
# Copernicus Open Access Hub: Sentinels

- User self-registration
- Geographical search
- Catalogue query
- Produ
- Down

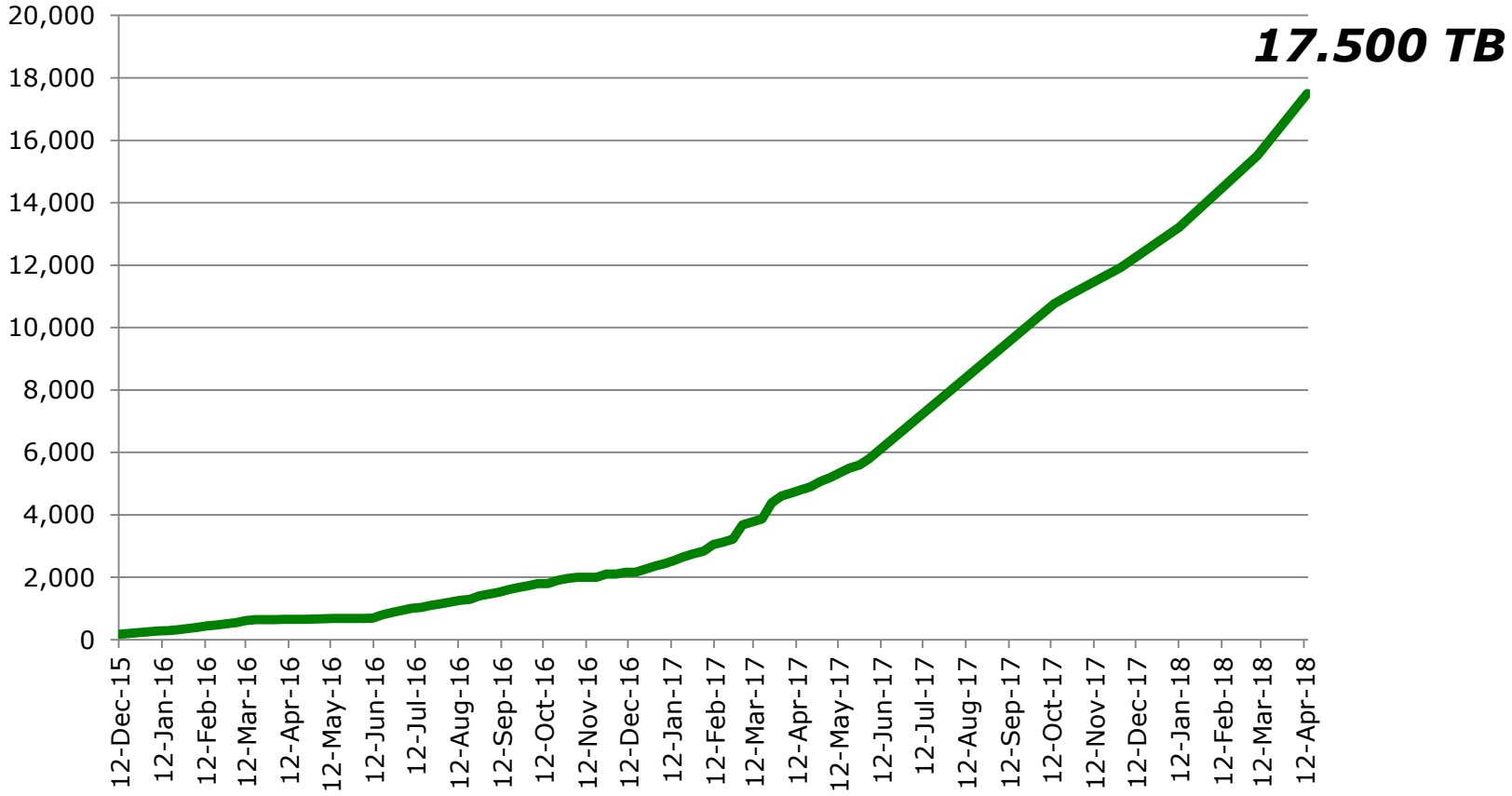
https://scihub.copernicus.eu/



# Available products (TB)



# Downloaded products (TB)



# Copernicus (Sentinel) Open Access Hub (1/5)

## S1/S2 and S3 data are available to all users via Sentinel data hub(s)…

https://scihub.copernicus.eu

Copernicus Open Access Hub

Welcome to the Copernicus Op

The Copernicus Open Access Hub (previous … nd open access to Sentinel-1, Sentinel-2 and Sentinel-3 user products, st

Open Hub | API | GNSS Hub

User Guide | Reports & Stats

Open Hub

Access Points

*Open Access Hub* : access point for all Sentinel missions with access to the interactive graphical user interface.
*API Hub* : access point for API users with no graphical interface. All API users regularly downloading the latest data are encouraged to use this access point for a better performance.
*Sentinel-3A Pre-operational Hub* : pre-operational access point for all users to Sentinel-3 L1 and L2 Land data. **Login credentials are** `s3guest:s3guest` .
*Sentinel-5P Pre-operational Hub* : pre-operational access point for all users to Sentinel-5P L1B and L2 data. **Login credentials are** `s5pguest:s5pguest`
*Sentinels GNSS Rinex Pre-operational Hub* : pre-operational access point for all users to the GNSS L1b products in Rinex format of all the Sentinel platforms in operations. **Login credentials are** `gnssguest:gnssguest`

For more details or request of help support please send an e-mail to eosupport@copernicus.esa.int

### user guide

https://scihub.copernicus.eu/userguide/

Sentinels Scientific Data Hub

home > scihuburguide

Overview
1 Self Registration
2 Graphical User Interface
3 Full Text Search
4 Advanced Search
5 APIs And Batch Scripting

Overview

The Sentinels Scientific Data Hub provides complete, free and open access to Sentinel-1 and Sentinel-2 user products.

**Sentinel-1 Data Offer**

The Sentinel-1 data offer for the Scientific Data 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-1 acquisitions zones with the related mode and polarisation are defined on a cyclic (12 days) basis in the observation scenarios.
The Sentinel-1 ground segment production baseline is described in the production scenario.

**Sentinel-2 Data Offer**

The Sentinel-2 data offer for the Scientific Data Hub will consist of Level-1C user products.

**The Data Hub Archive**

The Scientific data Hub maintains an archive of all the products for download via HTTP.

**Free and Open data access**

Anyone can register online via self-registration. The self-registration process is automatic and immediate. Registration

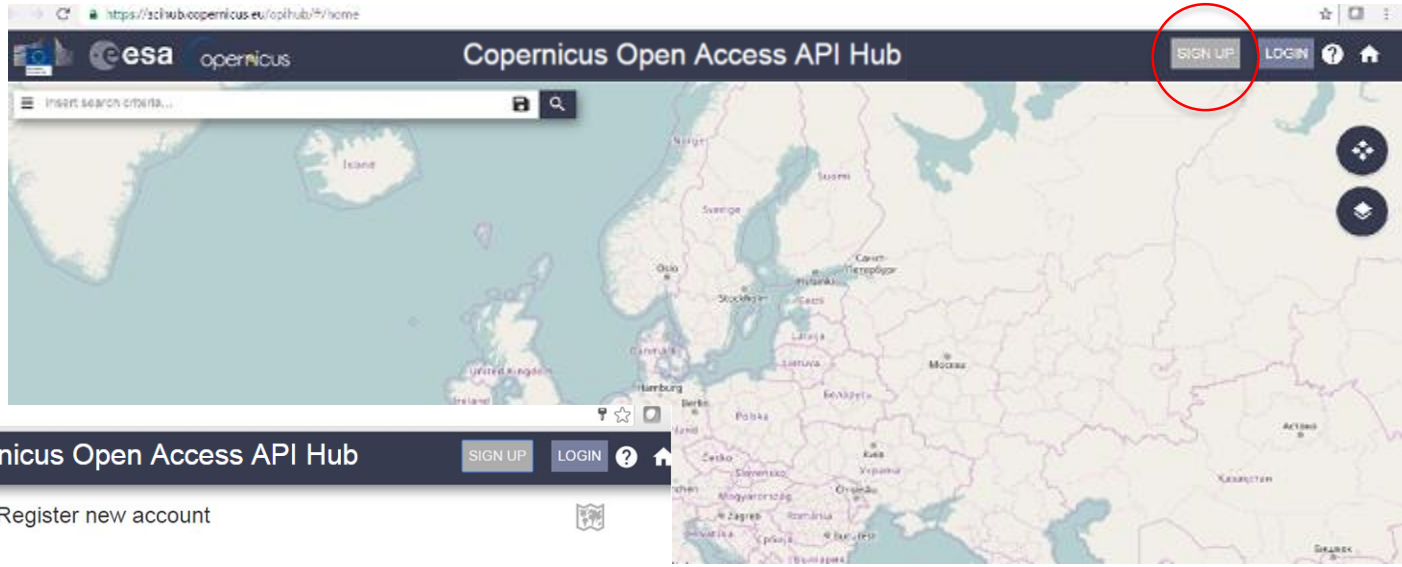
**We will focus on the Open hub!**

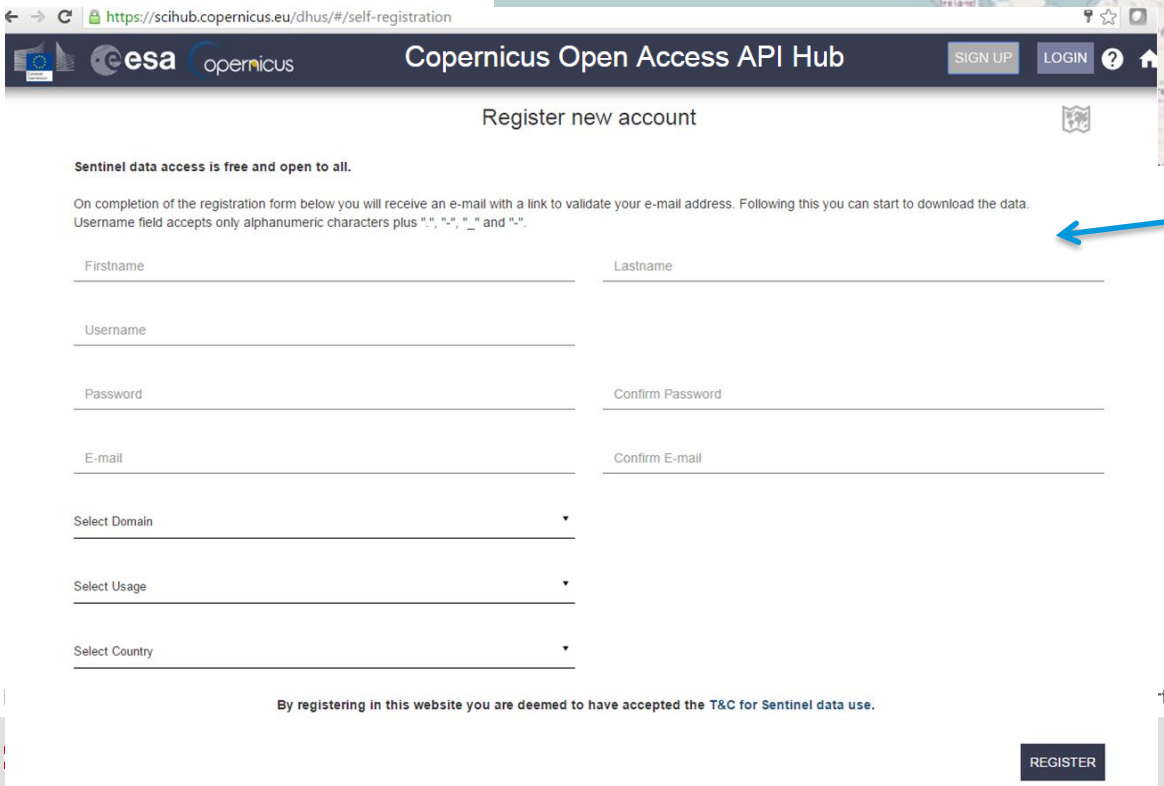


“Access points” description (red circled) …Click on “Open HUB”

# Copernicus Open Access Hub overview and registration (2/5)

**1) If you are already registered log in to start using the Sentinel Hub geographic interface to browse and download Sentinel data, <u>if you are a new user</u> click on the circled red link "SIGN UP" to complete registration**



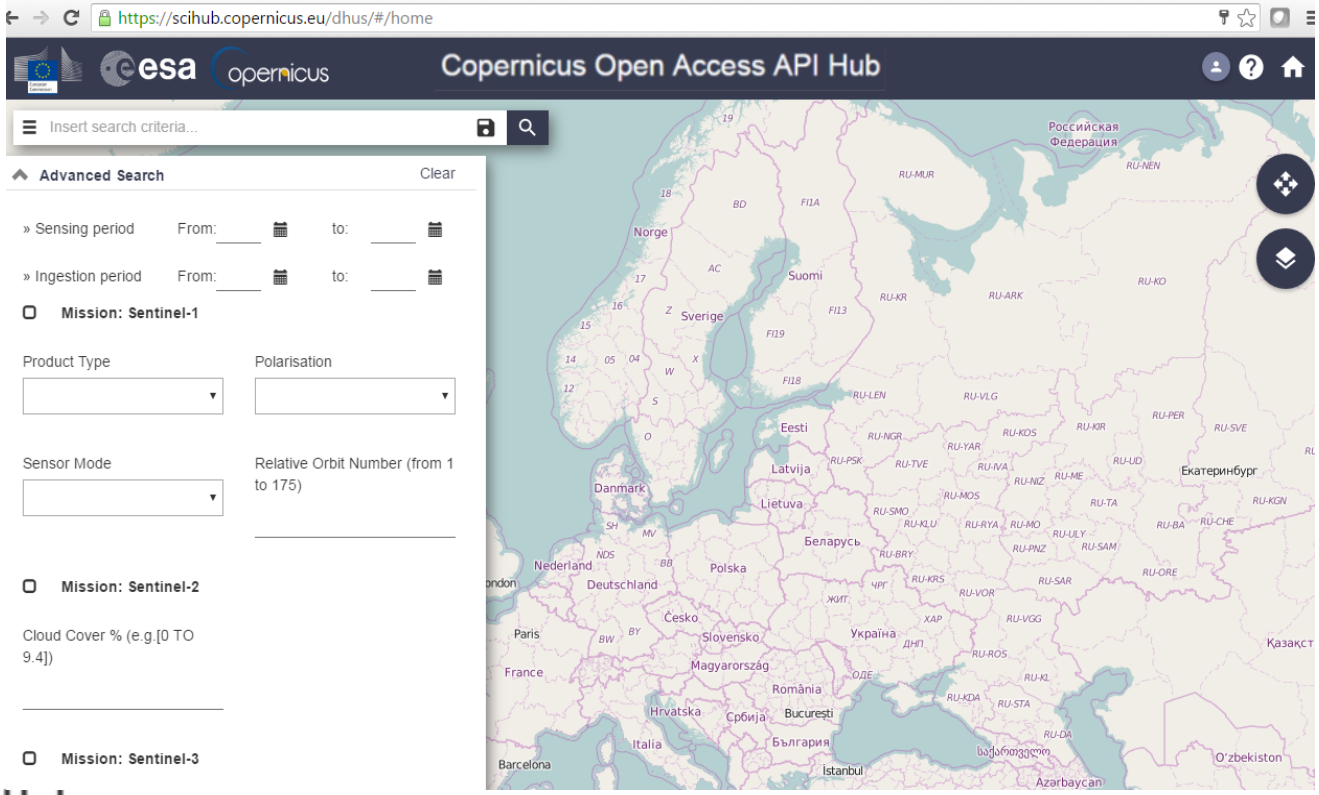

**2) fill this form to start registration procedure (username and e-mail address should be provided in lower case only ) then you will receive a mail with a link to validate your mail address. Finally an administrator will be able to let you access to the Sentinel Data Hub.**
**<u>Please note that by registering in this website you are deemed to have accepted the T&C for Sentinel data use.</u>(<u>https://sentinel.esa.int/documents/247904/690755/Sentinel_Data_Terms_and_Conditions</u>)**

# Copernicus Open Access Data Hub (3/5)

**Once completed registration you can log in and use the "Advanced search" criteria , start use Sentinel hub interface to search and download sentinels data .**

**Search criteria available:**

- **Draw region of interest**
- **Full text search**
- **Advanced search (prod, type,acqu.dates..)**



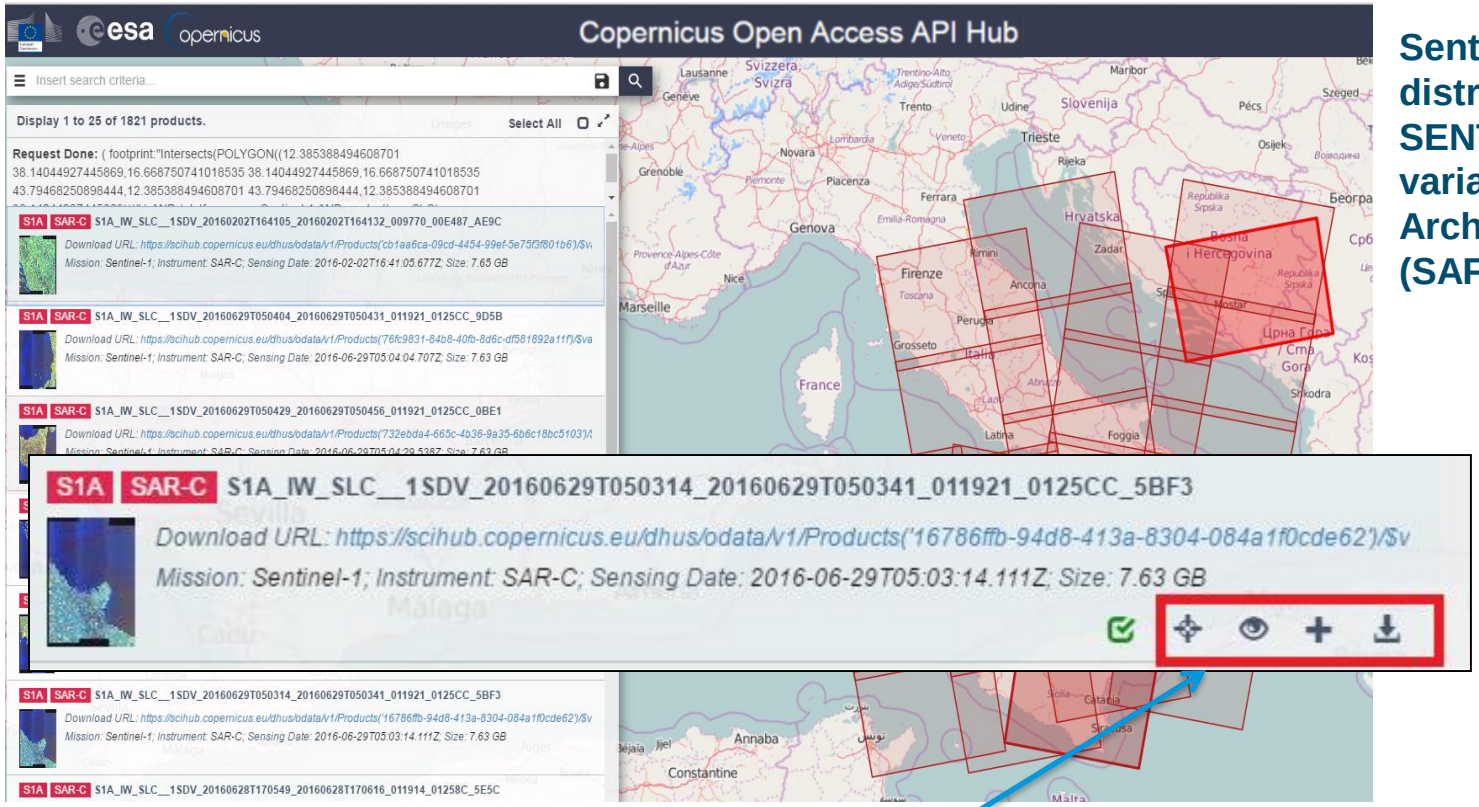

## Sentinels Scientific Data Hub

The Sentinels Scientific Data Hub is a web based system designed to provide EO data users with distributed mirror archives and bulk dissemination capabilities for the Sentinels products.

**Terms of Sentinels Scientific Data Hub portal and Data supply conditions**

Full details on Sentinels at: https://sentinel.esa.int/

# Copernicus Open Access Hub (4/5)



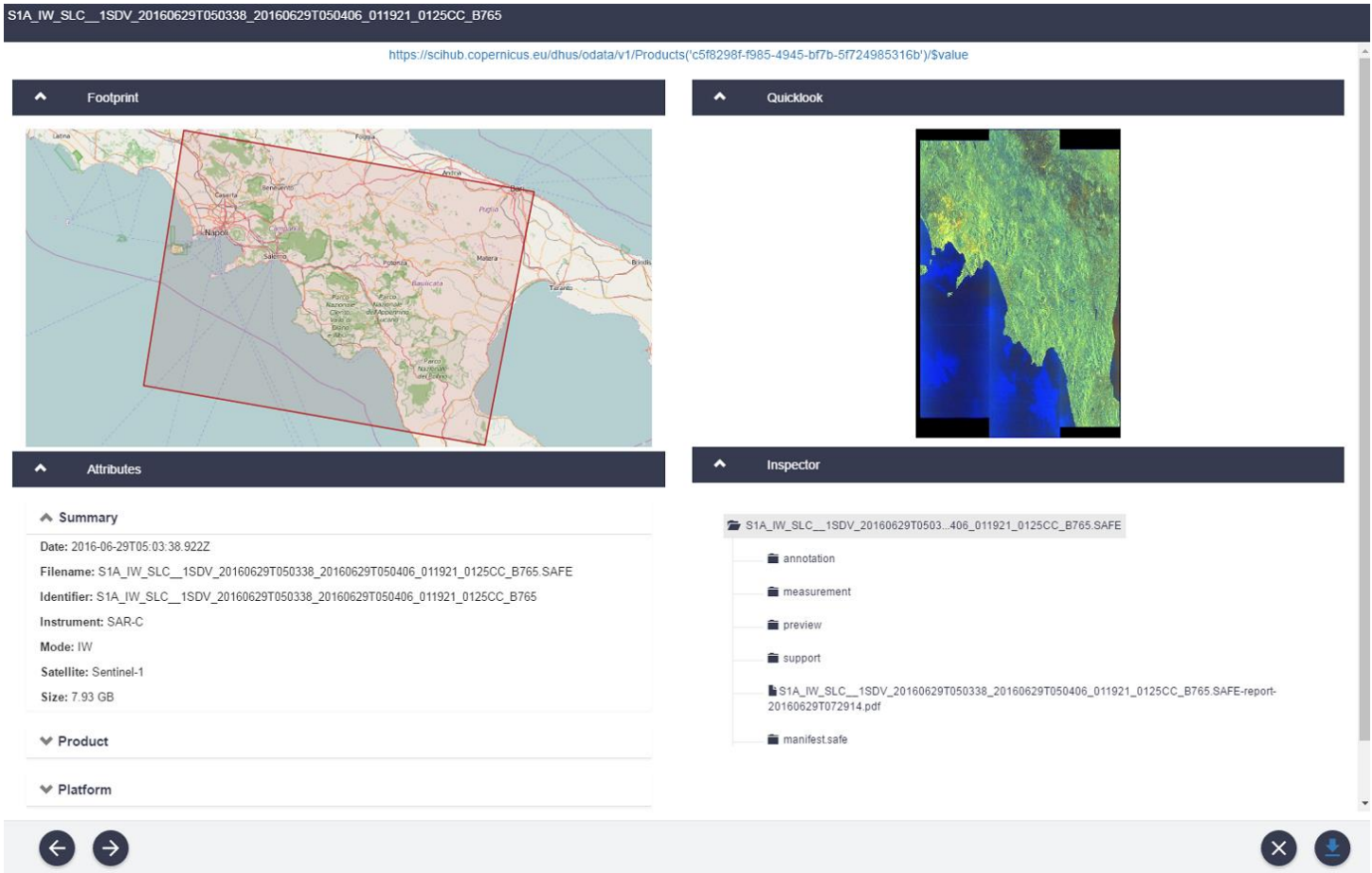

**Sentinels data are distributed using a SENTINEL-specific variation of the Standard Archive Format for Europe (SAFE) format**

**Select product of you interest and use the icons to ( the circled red icons) :Zoom in the map, view product details * , move it in the 'Cart', "Download product"**

**Click and download, shopping cart, batch download. <u>A maximum of 2 concurrent downloads per user is allowed in order to ensure a download capacity for all users.</u>**

# Copernicus Open Access Hub (5/5)

*** View product details is an online inspection of the searched products by browsing and pre-viewing the product metadata and measurements without downloading it. A preview panel displays information on the product contents and structure.**



# API Hub : access point for API users with no graphical interface

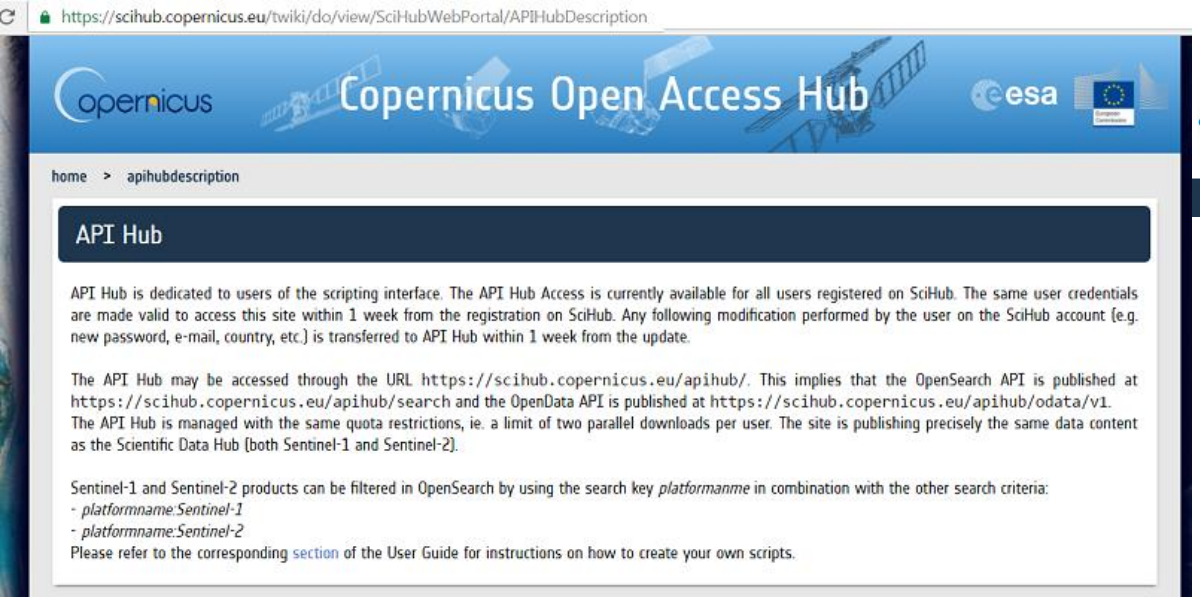
**APIs And Batch Scripting.** The Data Hub exposes two dedicated Application Program Interfaces (API) for browsing and accessing the EO data stored in the rolling archive. The APIs are:

Open Data Protocol (OData)

Open Search (Solr)

The OData interface is a data access protocol built on core protocols like HTTP and commonly accepted methodologies like REST that can be handled by a large set of client tools as simple as common web browsers, download-managers or computer programs such as **cURL** or **Wget** .

OpenSearch is a set of technologies that allow publishing of search results in a standard and accessible format. OpenSearch is RESTful technology and complementary to the OData. In fact, OpenSearch can be used to complementary serve as the query aspect of OData, which provides a way to access identified or located results and download them.



**Sentinel-3 Pre-operational Hub** : pre-operational access point for all users to Sentinel-3 data. Login credentials are s3guest:s3guest .

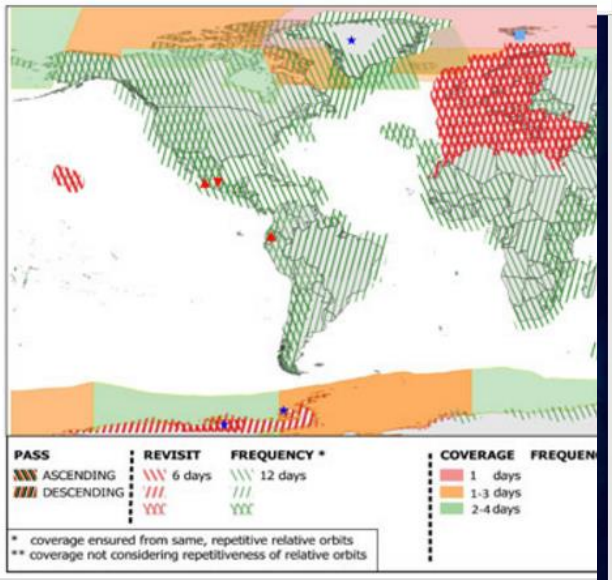
**API Hub** : access point for API users with no graphical interface. All API users regularly downloading the atest data are encouraged to use this access point for a better performance.

# SENTINEL ONLINE WEBSITE

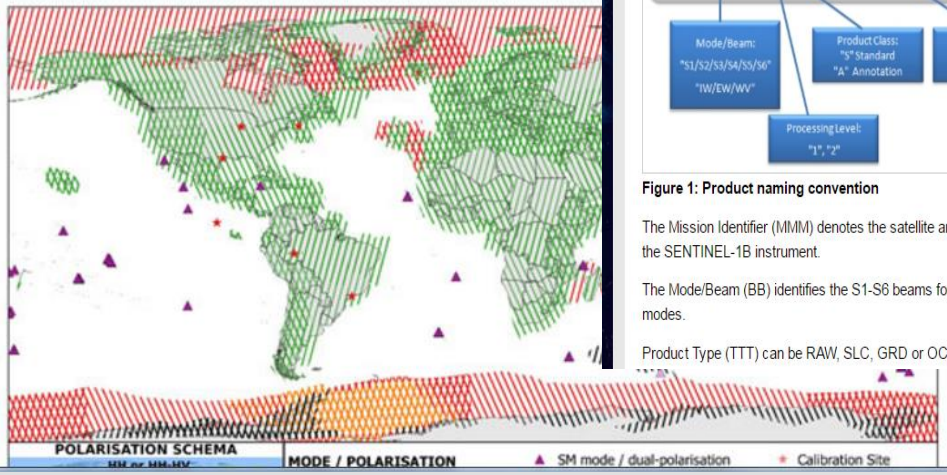
https://sentinel.esa.int/web/sentinel/missions/sentinel-1/observation-scenario

## Sentinel-1 Constellation Observation Scenario: Revisit & Coverage Frequency

sentinel-1




## Sentinel-1 Constellation Observation Scenar Mode - Polarisation - Observation Geomet




https://sentinel.esa.int/web/sentinel/user-guides/sentinel-1-sar/naming-conventions

esa Sentinel Online

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Google Custom Search

Missions | User Guides | Technical Guides | Thematic Areas | Data Access | Toolboxes

You are here Home › User Guides › Sentinel-1 SAR › Naming Conventions

Share

## Naming Conventions

The top-level SENTINEL-1 product folder name is composed of upper-case alphanumeric characters separated by an underscore (_).

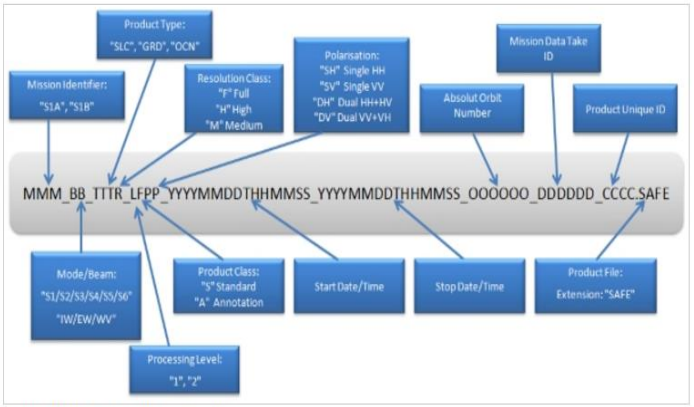



**Figure 1: Product naming convention**

The Mission Identifier (MMM) denotes the satellite and will be either S1A for the SENTINEL-1A instrument or S1B for the SENTINEL-1B instrument.

The Mode/Beam (BB) identifies the S1-S6 beams for SM products and IW, EW and WV for products from the respective modes.

Product Type (TTT) can be RAW, SLC, GRD or OCN.

### User Guides

- User Guides Home
- Sentinel-1 SAR
  - Overview
  - Applications
  - Acquisition Modes
  - Product Types and Processing Levels
  - Resolutions
  - Revisit and Coverage
  - Naming Conventions
  - Data Formats
  - Products and Algorithms
  - Cal/Val
  - Definitions
  - S1-SAR Document Library
- Sentinel-2 MSI
- Sentinel-3 OLCI
- Sentinel-3 SLSTR
- Sentinel-3 Synergy
- Sentinel-3 Altimetry
- Sentinel-5P TROPOMI
- Document Library

### Key Resources

- Tools

d us on Facebook
llow us on Twitter

# OTHER DATA HUB RESOURCE LIST (1/3)

| Initiative Name | Provider | Website, Target User Group, Rolling Size |
|---|---|---|
| Copernicus Open Access Hub | ESA | • URL: scihub.copernicus.eu<br>• All<br>• No rolling |
| Collaborative Data Hub | ESA | • URL: colhub.copernicus.eu<br>• Authorized mirror sites<br>• 30 days |
| Copernicus Services Hub | ESA | • URL: cophub.copernicus.eu<br>• Copernicus Services<br>• No rolling |
| International Hub | ESA | • URL: inthub.copernicus.eu<br>• Copernicus International Agreements<br>• 30 days |
| Copernicus Online Data Access | EUMETSAT | • URL: coda.eumetsat.int<br>• All<br>• 12 months |

# OTHER DATA HUB RESOURCE LIST (1/2)

| Initiative Name | Website |
|---|---|
| Australia National Mirror | copernicus.gov.au |
| Austria National Mirror | data.sentinel.zamg.ac.at/#/home |
| Finland National Mirror | finhub.nsdc.fmi.fi/#/home |
| France National Mirror | peps.cnes.fr/rocket/#/home |
| Germany National Mirror | code-de.org |
| Greece National Mirror | sentinels.space.noa.gr |

| Initiative Name | Website |
|---|---|
| Italy National Mirror | collaborative.mt.asi.it/#/home |
| Portugal National Mirror | ipsentinel.ipma.pt/dhus/#/home |
| Norway National Mirror | collaborative.mt.asi.it/#/home |
| UK National Mirror | sedas.satapps.org |
| Sweden National Mirror | swea.rymdstyrelsen.se/portal |

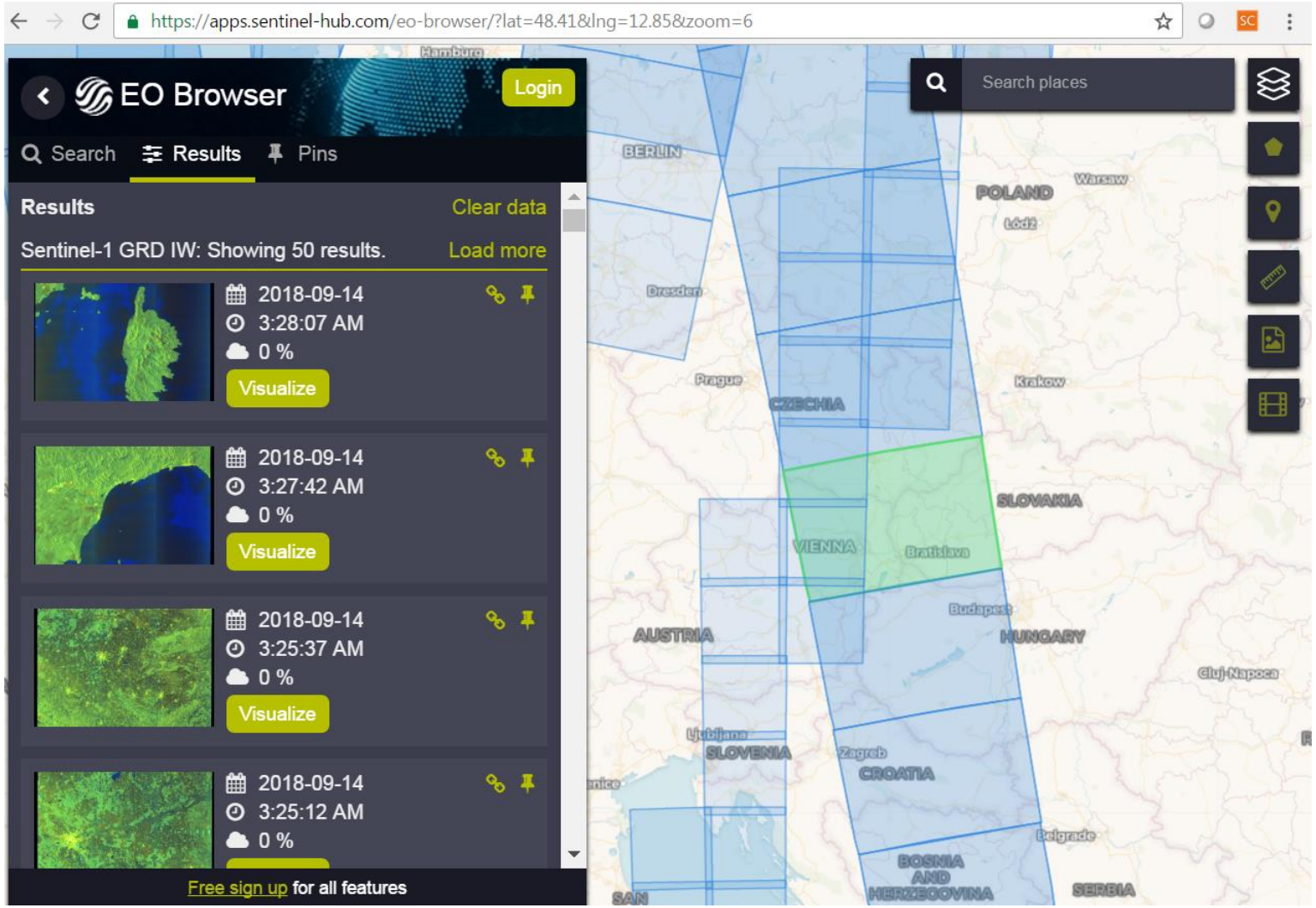
http://copernicus.eu/sites/default/files/Data_Access/Data_Access_PDF/Factsheet_Data_Access_National_Private_Initiatives.pdf

# OTHER DATA ACCESS PUBLIC INITIATIVE (1/2)

| Initiative Name | Provider | Website and Target User Group |
|---|---|---|
| CloudEO | CloudEO | • URL: cloudeo-ag.com<br>• Users, developers and providers of geo data/ geo services; software developers |
| Geopedia platform | Synergise | • URL: geopedia.world<br>• Users of geo data/ geo services |
| Geostorm platform | CS-SI | • URL: geostorm.eu<br>• Users and developers of geo data/ geo services |
| Google Earth Engine | Google | • URL: earthengine.google.com<br>• Scientists, researchers and developers |
| Planet platform | Planet | • URL: planet.com/products/platform/<br>• Users and developers of geo data/ geo services |
| Sentinel on AWS | Amazon | • URL: sentinel-pds.s3-website.eu-central-1.amazonaws.com<br>• Developers, private/public downstream players |

# SENTINEL DATA HUB (EO BROWSER)

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



# EEs DATA ACCESS Keep in mind from June…

## Earth Observation data distribution services improvement

ESA has started a process to improve the Earth Observation data distribution services, aiming at facilitating access to data and information for the end users, initially by shortening the access path and reviewing authentication and authorisation processes.

This improvement concern first the **Earth Explorers** GOCE, CryoSat, Swarm and SMOS data access through the setting-up of a simplified procedure **leading the users straight to the product repository** without affecting the current data retrieval method itself.

GOCE:http://eo-virtual-archive1.esa.int/Index.html

SMOS:https://smos-ds-02.eo.esa.int/oads/access/

SWARM:https://swarm-diss.eo.esa.int/

CRYOSAT:http://science-pds.cryosat.esa.int/

# EEs virtual archive example (data access without registration): GOCE

eo-virtual-archive1.esa.int/Index.html

## ESA GOCE Virtual Archive

- Home
- GOCE Gravity Models
- Full Gravity Gradients and GRIDS
- GOCE Level 1b products
- GOCE Level 2 products
- GOCE Commissioning products
- GOCE De-orbiting data
- Thermospheric Data
- VTGoce Data
- Changelog

### Available Global GOCE Gravity Models

| Product | Description |
|---|---|
| EGM_GOC_2 | GOCE Gravity solution. Solutions are available up to Third Generation, with three different processing techniques: direct numerical solution, time-wise and space-wise solutions. |
| EGM_GVC_2 | Variance/covariance matrices associated to the Gravity solutions. Available only through the Virtual Online Archive. |
| EGM_GCF_2 | Gravity Coefficients (ICGEM format) |

### Available L1b and L2 GOCE single Products

| Instrument | Level | Product | Description |
|---|---|---|---|
| EGG | L1b | EGG_NOM_1b | Nominal Gradiometer Instrument data |
| | L2 | EGG_NOM_2 | Calibrated and corrected gravity gradients in the gradiometer reference frame |
| | | EGG_TRF_2 | Calibrated and corrected gravity gradients in the terrestrial reference frame |
| | | EGG_QLK_2i | Gradiometer error Power Spectral Density estimated from Quick-Look gravity solutions |
| SST | L1b | SST_NOM_1b | Nominal SSTI Instrument (GPS) data |
| | | SST_RIN_1b | Nominal SSTI Instrument (GPS) data in RINEX format |

# RUS – Research and User Support (1/3)

## RUS - Research and User Support

- a service offering support, guidance and tools to help users get the best out of Copernicus Sentinel data
- **Open to you:** freely available for first-time data users to specialist users such as researchers, scientists, trainers, decision-makers, public authorities and general public
- **Expertise:** support team with strong experience in Earth observation applications and Sentinel sensors to help users tap into and exploit Sentinel data resources

# RUS – Research and User Support (2/3)

- **Hardware Configuration of the Virtual Machine (VM)**
  - From 2 to 32 processing cores with 15-240 GB of RAM
  - Disk space from 500GB to 30TB
- **EO Data availability**
  - Sentinel-1/2/3 (via DataHub)
  - CCM (for authorised users)
- **Processing environment**
  - Sentinel-1/2/3 Toolboxes
  - Other tools: Orfeo Toolbox, QGIS, Sen2Cor, Sen2Three, SMOS Toolbox, NEST, BRAT Toolbox
  - GDAL library, NCO, NETCDF, OpenJPG, Image Magick, Rugged library
- **Development environment**
  - Eclipse, GCC, Cmake, Maven, Git, R,
  - Eclipse Mars plugins

# RUS – Research and User Support (3/3)

- Virtual Platform **open and available** to public users (since 25/09/2017)
  - RUS Web portal: Over 10,000 visits
  - RUS Virtual platform: 270 users (university and research ~60%)
- **Communication:** ~1200 followers on **Twitter**
  - http://rus.copernicus.eu
  - https://twitter.com/RUS_Copernicus
  - https://www.youtube.com/channel/UCB01WjameYMvL7-XfI8vRIA/videos

**@RUS_Copernicus**

RUS video service presentation:
https://www.youtube.com/watch?v=OEAhrDdG9Lc

# SNAP Toolbox & STEP forum

SNAP is free available for download at http://step.esa.int/main/download/
the current version 6.0 will be mainly used in the practical session of this course and is already installed on your RUS VM

# The Sentinel ESA APP

Thank you!

Any Questions?