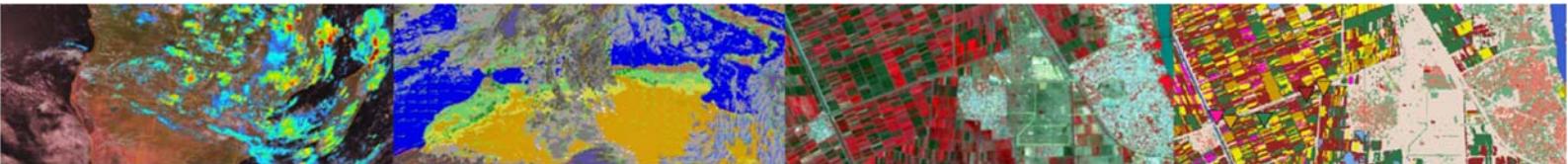


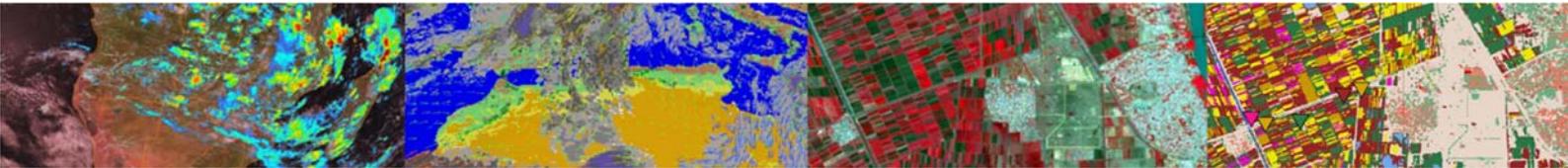
EUMETVIEW and use of data from the Data Tailor of EUMETSAT in ILWIS

Petra Budde, Ben Maathuis and Bas Retsios,
November 2021



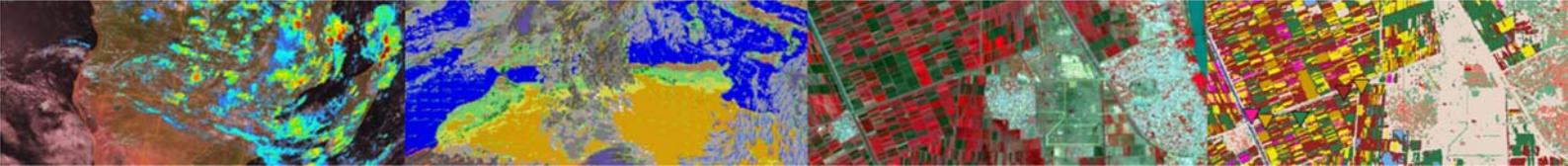
Abstract

This document describes how to quickly inspect data in EUMETView, manually download MSG (IODC) data through Eumetsat's Data Store and Data Tailor, retrieve the MSG (IODC) Cloud Mask data through Eumetsat's Data Store. Also how you can obtain Metop data (from a number of orbits) as TIFF through EUMETView and to connect to EUMETSAT through WMS in ILWIS and create (synchronized) animations of multiple layers.



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1. Use EUMETView to quickly inspect data

EumetView can be used to quickly inspect data.

We will see some MSG IODC data, MSG IODC Cloud Mask data and Metop data.

- **MSG** stands for **Meteosat Second Generation**,
- **IODC** stands for **Indian Ocean Data Coverage**, which is more suitable for your area.

The satellite which provides **MSG IODC data** is located at the equator at 41.5 degrees East (and stays there) and it scans the disk in view every 15 minutes (geostationary satellite at approximately 36000km away from the earth).

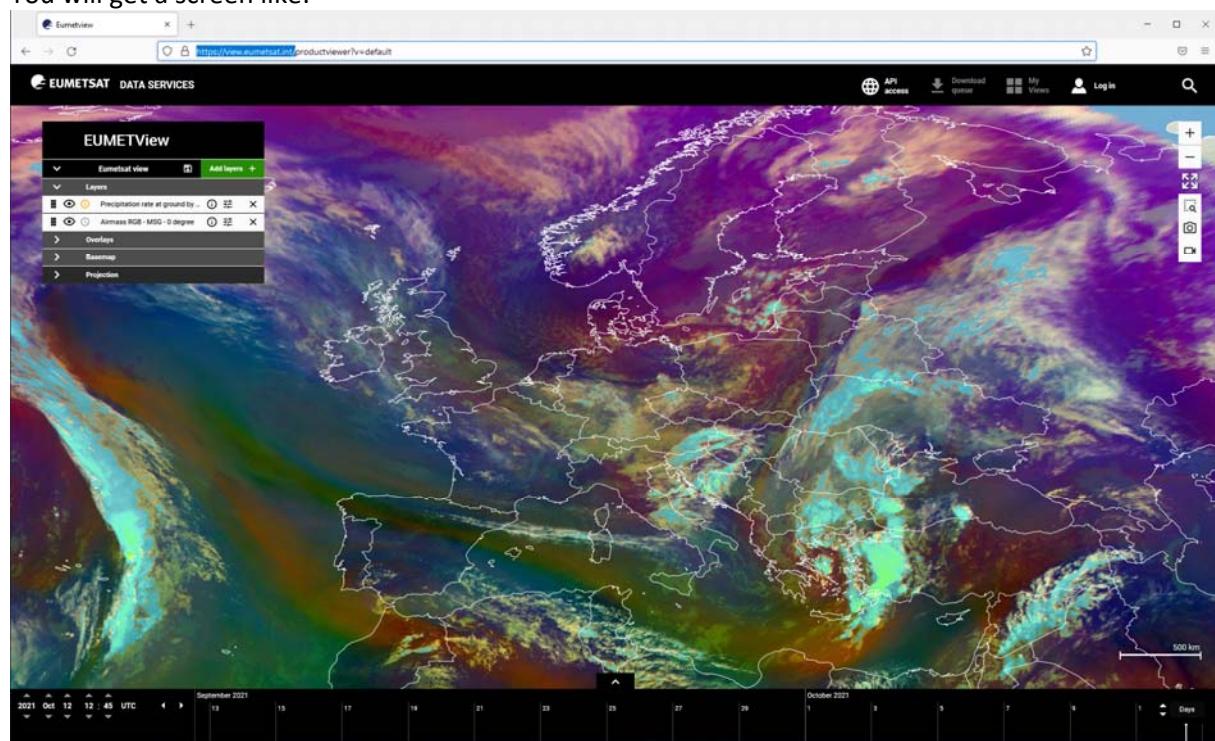
Metop consists of 3 (soon 2) satellites which circle the earth in a near-polar orbit every 100 minutes (polar orbiting in a low earth orbit at 817 km altitude)

Through EUMETVIEW, advanced users can also access the API (beyond current scope).

To start, go to

<https://view.eumetsat.int/>

You will get a screen like:



Navigate to your area around Azerbaijan (AZE), Kazakhstan (KAZ) and Turkmenistan (TKM).

You will see that there is no data to the east of Tajikistan, Afghanistan, Pakistan. This is because we are looking at an MSG image. The satellite which is providing MSG imagery is located at the equator at the 0 degrees meridian (Greenwich); this MSG satellite does not properly show your area.

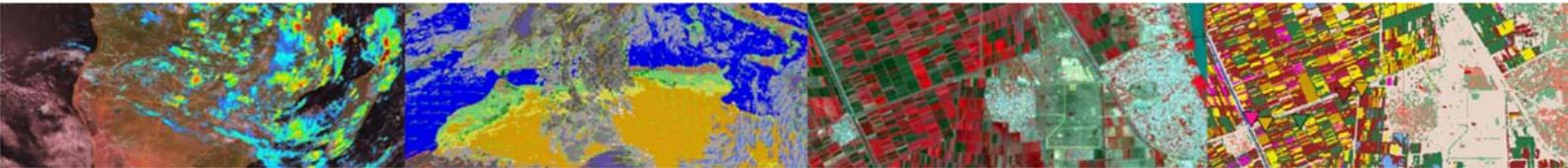
We will now display the **MSG IODC** data and then also add some **Metop** data.

First, remove the layers that are displayed by default.

(See some screenshots on the following 2 pages for some of the EUMETView options.)

Then add the following layers:

- MSG-IODC, Visualized products, Cloud Mask - MSG - Indian Ocean 41.5 degrees E
(and click Add to map)



- MSG-IODC, RGB Composites, Natural Colour RGB - MSG - Indian Ocean 41.5 degrees E
(and click Add to map)

The Cloud Mask picture should always display the full disk that is seen from the 41.5 degrees E position at the equator. The Cloud Mask picture shows (clear sky) Water, (clear sky) Land and Clouds.

If the MSG IODC color composite is not displaying nicely, try setting the time to UTC times like 07:00, 08:00, 09:00 or 10:00 in the lower left corner, or use the slider at the bottom. UTC times will be explained in a little while. The MSG image depicts the earth in natural colors and cold clouds are displayed in light blue.

We will now add a Metop layer.

Add:

- Metop-B, Channels, AVHRR IR10.8 6 orbits accumulated - Metop B

or

- Metop-C, Channels, AVHRR IR10.8 6 orbits accumulated - Metop C

Metop-B and Metop-C are similar satellites.

Try UTC 08:00 and various dates. Clouds are displayed. In fact you are looking at brightness temperatures.

When you have a good view of all 3 layers, zoom in quite a bit (anywhere, it does not matter). Then hide/show/hide/show the AVHRR layer.

You should see that the Metop AVHRR resolution is better than the MSG IODC resolution.

If you wish to read some background information on EumetView, you can go here:

<https://www.eumetsat.int/eumetview>

For the data that are available through EumetView, you can also quickly go through:

[Current EUMETView catalogue - EUMETView - Confluence \(atlassian.net\)](#)

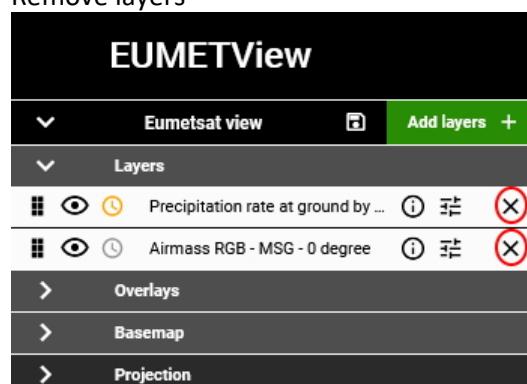
On that page, data is listed in three categories:

Meteosat, Metop, Copernicus Sentinel-3 (tabs on the page)

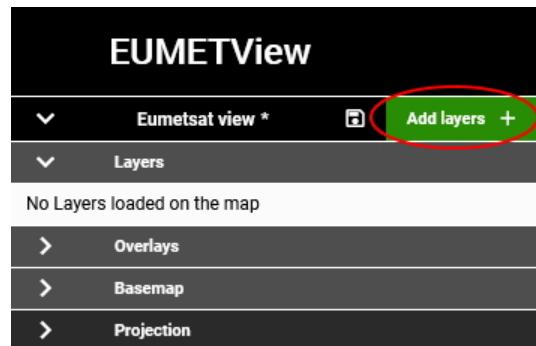
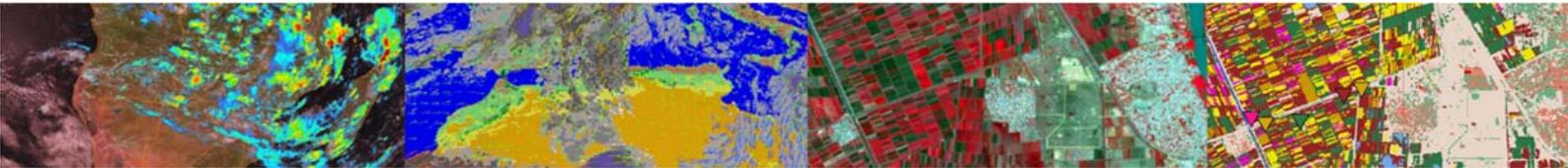
Background links for the data that we will inspect are given later in this document.

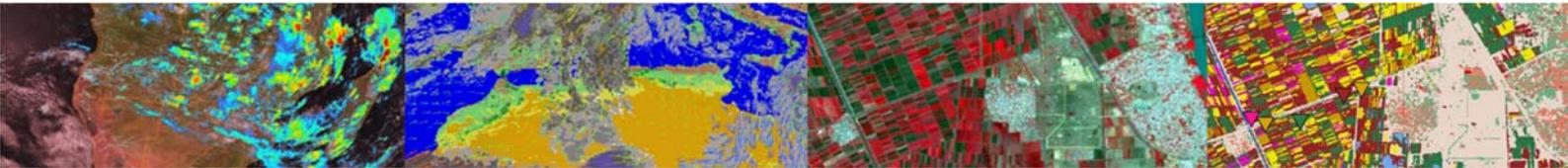
Eumetview screenshots

Remove layers



Add layers





Open MSG IODC RGB Natural Color

Search / Browse X

Search something like "MSG" or "Airmass"

Satellite Themes Grid View

Search / Satellite

MSG - 0 Degree

MSG - IODC

Channels

Visualized Products

RGB Composites

	Airmass RGB - MSG - Indian Ocean 41.5 degrees E The Airmass product is an RGB (Red, Green, Blue) composite based upon data from infrared and water vapour channels from the SEVIRI instrument. It is ...	GEO	WMS	Add to map +	i
	Convection RGB - MSG - Indian Ocean 41.5 degrees E The Convection RGB combines the brightness temperature difference (BTD) between the WV6.2 and WV7.3 channels (on red), the BTD between the IR3.9 and ...	GEO	WMS	Add to map +	i
	Day Microphysics RGB - MSG - Indian Ocean 41.5 degrees E The Day Microphysics RGB (Red, Green, Blue) was inherited from Rosenfeld and Lensky (1998): the VIS0.8 reflectance in red approximates the cloud optical depth ...	GEO	WMS	Add to map +	i
	Dust RGB - MSG - Indian Ocean 41.5 degrees E The Dust product is an RGB (Red, Green, Blue) composite based upon infrared channel data from the Meteosat Second Generation satellite. It is designed to ...	GEO	WMS	Add to map +	i
	European HRV RGB - MSG - Indian Ocean 41.5 degrees E The E-View product is an RGB (Red, Green, Blue) composite based upon data from the SEVIRI instrument. It is dedicated to detailed cloud monitoring of the ...	GEO	WMS	Add to map +	i
	Fog / Low Clouds RGB - MSG - Indian Ocean 41.5 degrees E The Fog / Low Clouds product is an RGB (Red, Green, Blue) composite based upon infrared channel data from the Meteosat Second Generation satellite. It is ...	GEO	WMS	Add to map +	i

Search / Browse X

Search something like "MSG" or "Airmass"

Satellite Themes Grid View

Search / Satellite

Fog / Low Clouds RGB - MSG - Indian Ocean 41.5 degrees E
The Fog / Low Clouds product is an RGB (Red, Green, Blue) composite based upon infrared channel data from the Meteosat Second Generation satellite. It is ...

Natural Colour Enhanced RGB - MSG - Indian Ocean 41.5 degrees E
The Natural Colour Enhanced product is an RGB which utilises three SEVIRI solar channels: NIR1.6, VIS0.8 and VIS0.6. It is similar to a Natural Colour RGB product, ...

Natural Colour RGB - MSG - Indian Ocean 41.5 degrees E
The Natural Colour RGB (Red, Green, Blue) makes use of three solar channels: NIR1.6, VIS0.8 and VIS0.6. In this colour scheme vegetation appears greenish ...

Snow RGB - MSG - Indian Ocean 41.5 degrees E
The main application of the Snow RGB (Red, Green, Blue) is the detection of fog / low clouds and snow during day-time. In this color scheme snow appears red ...

Tropical Airmass RGB - MSG - Indian Ocean 41.5 degrees E
The "Tropical Airmass" product is an RGB (Red, Green, Blue) composite derivative of the existing "Airmass RGB" visualisation. It is based upon data from infrared ...

Volcanic Ash RGB - MSG - Indian Ocean 41.5 degrees E
The Ash product is an RGB (Red, Green, Blue) composite based upon infrared channel data from the Meteosat Second Generation satellite. It is designed to ...

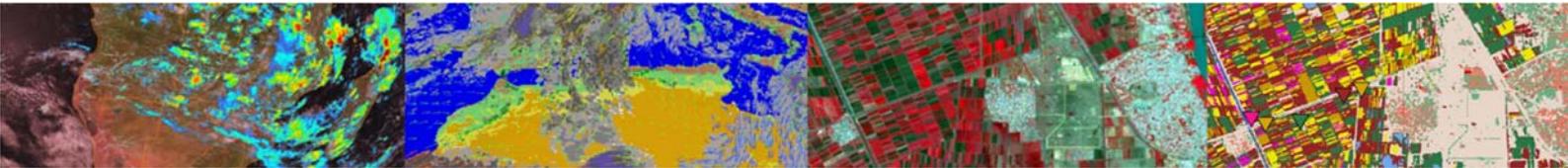
MSG - RSS

Metop A

Metop B

Metop C

Multi-mission



2. Create an account at Eumetsat

If you do not have an account at Eumetsat, first register yourself as following.

Go to

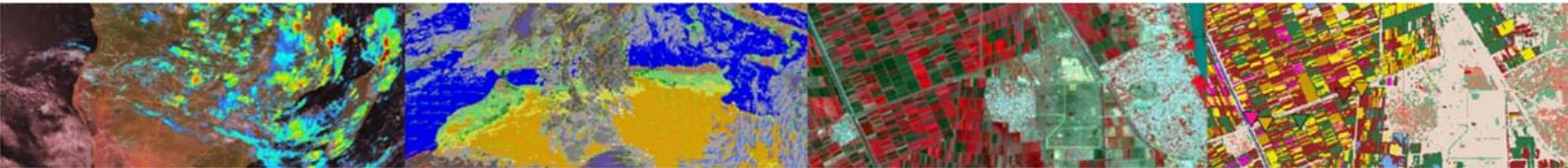
<https://eoportal.eumetsat.int> or

<https://eoportal.eumetsat.int/cas/login>

and click **NEW USER – CREATE NEW ACCOUNT** at the bottom

The screenshot shows the EUMETSAT Earth Observation Portal login page. At the top left is the EUMETSAT logo and the text "MONITORING WEATHER AND CLIMATE FROM SPACE". Below the logo is a banner with the text "EARTH OBSERVATION PORTAL - MY ACCOUNT" and a background image of a building. On the left, there is a vertical menu bar with "HOME" (selected), "LOGIN" (highlighted in blue), and "HELP". The main content area has a title "Authentication" and a welcome message: "Welcome to the Earth Observation Portal. To update your user profile, extend your data licences, or change your service subscriptions, please click [here](#). Please login to access your account." Below this is a "PLEASE LOGIN" section with instructions: "Please enter your user ID and password to login". It contains two input fields: "User Name: *" and "Password: *". Below the fields is a note: "Please note the fields marked with * are mandatory. The User Name is not case sensitive and is displayed in lower case." At the bottom of the login form are two buttons: "FORGOTTEN YOUR PASSWORD?" and "NEW USER - CREATE NEW ACCOUNT" (which is highlighted with a red border and a red arrow pointing to it). To the right of these buttons is a "LOGIN" button. At the very bottom of the page, there is a footer with links to "CONTACT US" and "TERMS OF USE", social media icons for Twitter, Facebook, YouTube, Instagram, and LinkedIn, and a "MEMBER STATES" section showing flags of various countries.

<https://eoportal.eumetsat.int/userMgmt/register.faces>



You will be directed to <https://eoportal.eumetsat.int/userMgmt/register.faces>
(see a picture of the registration form on the next page of this document)

Fill out the form according to truth:

- For the **User name** use at least 6 characters
- Think of a **password** and write it down (or remember it)
- For **Customer Organisation**: choose the correct category
- For **Data Usage**: Select **Personal/Educational/Research**
- Select the “I have read and accept the Terms and Conditions for Personal/Educational/Research.
- Read the **Terms and Conditions for Personal/Educational/Research**.
- Click **Next**.

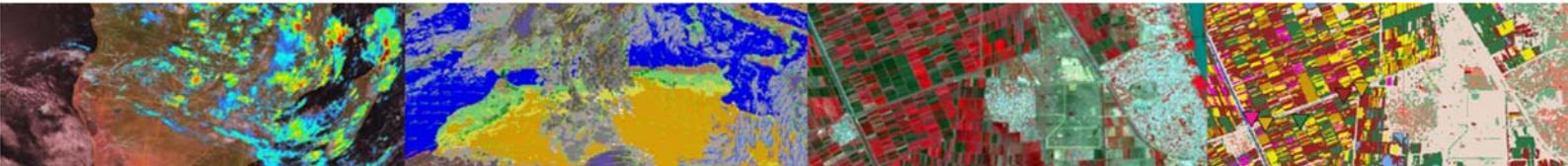
On the next page on your screen, you will see an overview of the details you have provided.
When everything is correct, click **Confirm**.

After that, you will see the following message on your screen:

“Registration successful

You will now receive an e-mail with a confirmation link to complete your registration process. Please follow the instructions in the e-mail in order to activate your account and be able to login.”

So, go to your email box, find the email Eumetsat has sent to you and
click the link in the email
so that your account is confirmed at Eumetsat.



EUMETSAT - EO Portal User Reg X EUMETSAT - EO Portal User Reg X +

https://eoportal.eumetsat.int/userMgmt/register.faces

EUMETSAT

MONITORING WEATHER AND CLIMATE FROM SPACE

EARTH OBSERVATION PORTAL - MY ACCOUNT

HOME HELP CANCEL

EUMETSAT EO Portal Account Creation

USER DETAILS

User Name: *

Password: *

Verify Password: *

First Name: *

Last Name: *

Organisation:

Country: * -- choose country --

E-mail: *

Customer Organisation: *

DATA USAGE *

Please indicate the category/categories which describes the usage you will make of the EUMETSAT Data. For more information see our [► Data Usage Definitions](#)

Personal/Educational/Research Member State NMHS - Official Duty Use ECMWF Manufacturer [► OTHER](#)

TERMS AND CONDITIONS

I have read and accept the [► Terms and Conditions](#) for Personal/Educational/Research.

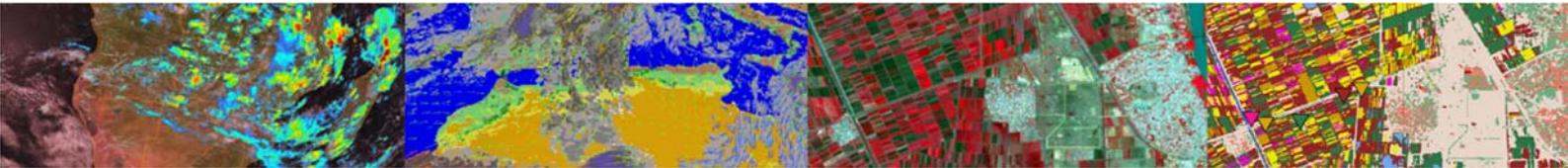
Please note the fields marked with * are mandatory.
* The category of micro, small and medium-sized enterprises (SMEs) is made up of enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million.

FOLLOW US ON

► CONTACT US [► TERMS OF USE](#)

MEMBER STATES

3.15



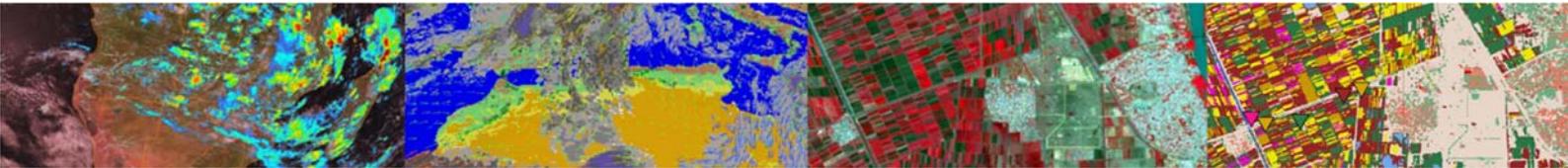
3. Login at Eumetsat

When your account is activated,
go to
<https://eoportal.eumetsat.int>
file out your **username** and **password**,
and click the **Login** button.

The screenshot shows a web browser window with the URL <https://eoportal.eumetsat.int>. The page title is "Authentication - EUMETSAT - EO X". The main header features the EUMETSAT logo and the tagline "MONITORING WEATHER AND CLIMATE FROM SPACE". Below this is a banner with the text "EARTH OBSERVATION PORTAL - MY ACCOUNT" and some background images of buildings and trees. On the left, a vertical menu bar includes links for "HOME", "LOGIN" (which is highlighted in blue), and "HELP". The central content area is titled "Authentication" and contains the following text:
Welcome to the Earth Observation Portal.
To update your user profile, extend your data licences, or change your service subscriptions, please click [here](#).
Please login to access your account.

A "PLEASE LOGIN" section follows, with the instruction "Please enter your user ID and password to login". It contains two input fields: "User Name:" with a red asterisk (*) and "Password:" also with a red asterisk (*). Below these fields is a note: "Please note the fields marked with * are mandatory. The User Name is not case sensitive and is displayed in lower case." At the bottom of this section are links for "FORGOTTEN YOUR PASSWORD?", "NEW USER - CREATE NEW ACCOUNT", and a large red-bordered "LOGIN" button. At the very bottom of the page, there are links for "CONTACT US" and "TERMS OF USE", social media icons for Twitter, Facebook, YouTube, and LinkedIn, and a "MEMBER STATES" section displaying flags of various countries.

Mind: The User Name on the login page is *not* case sensitive and is displayed in *lower case*.



Because in the following exercises we will use Eumetsat's Data Store and Data Tailor, Choose **Eumetsat Data Store**, on the page that appears after you have logged in.

The screenshot shows the EUMETSAT Earth Observation Portal interface. At the top, there is a navigation bar with the EUMETSAT logo and the text "MONITORING WEATHER AND CLIMATE FROM SPACE". Below this is a banner with the text "EARTH OBSERVATION PORTAL - MY ACCOUNT". On the left, a sidebar titled "MY DATA ACCESS [RSGLAB]" lists "MY PROFILE", "MY DATA LICENCES", "HELP", and "LOGOUT". The main content area is titled "My Data Access" and contains several service options:

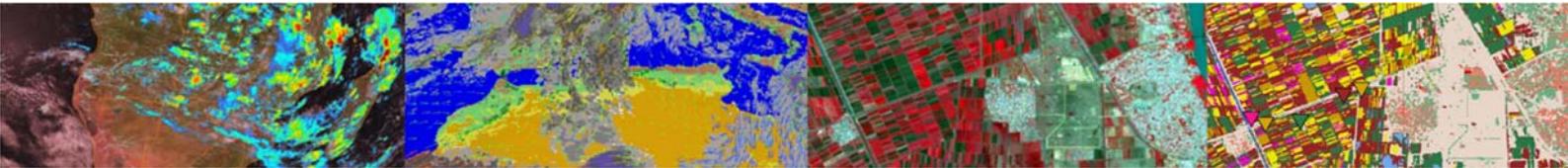
- EUMETSAT DATA STORE**: Single point of access to search and download products from a growing catalogue of EUMETSAT's meteorological, climate and ocean data through Web User Interface (WebUI) and Application Programming Interfaces (API). (Access)
- EUMETVIEW**: Online Map Service with functionalities for displaying visualizations and creating, animating and downloading maps from across the EUMETSAT product range. (Access)
- EUMETSAT DATA TAILOR**: Service for tailoring EUMETSAT data to user applications offering the capability to aggregate, filter layers, reproject, extract regions of interest, produce quick looks, and convert to popular and highly interoperable GIS formats. (Access)
- COPERNICUS ONLINE DATA ACCESS**: Download service via Internet for Copernicus data. Available data: Sentinel-3 data. (Access)
- EUMETSAT SFTP DATA ACCESS FOR COPERNICUS SENTINEL-6**: Download service via Internet for Copernicus Sentinel-6 data. (Access)
- EUMETCAST SATELLITE**: Access to near real-time data through DVB satellite with a guaranteed service level. Available data: Meteosat, Metop, Jason, Copernicus Sentinel-3 data and third party products. (Subscribe)
- EUMETCAST TERRESTRIAL DEMONSTRATION**: Access to near real-time data through terrestrial networks. Restricted to agencies only. Available data: Meteosat, Metop, Jason, Copernicus Sentinel-3 data and third party products. (Subscribe)
- DATA CENTRE**: Ordering and delivery service for data with latency of more than 3 hours, historical and long-term archive data. Available data: Meteosat, Metop, Jason and Copernicus Sentinel-3 data. (Access)
- DIRECT DISSEMINATION**: Metop Direct Readout Service. (Subscribe)

At the bottom of the main content area, there is a section titled "My subscriptions to operational service news".

Background information:

<https://www.eumetsat.int/eumetsat-data-store>

<https://www.eumetsat.int/data-tailor>



4. Download MSG data through Eumetsat's Data Store and Data Tailor

Meteosat data or imagery (MSG = Meteosat Second Generation) is available

- for the disk seen at 0 degrees at the equator (currently Meteosat-11 = MSG4) and
- for the disk seen at 41.5 degrees East at the equator (currently Meteosat-8 = MSG1).

For your countries, MSG1 is more suitable. This data of 41.5 degrees East is also called Indian Ocean Data Coverage (IODC).

More information <https://www.eumetsat.int/meteosat-second-generation>
(and/or <https://navigator.eumetsat.int/product/EO:EUM:DAT:MSG:HRSEVIRI-IODC>)

Login to Eumetsat's EOPortal and choose Data Store as described above.

On the first page of the Data Store you can search for data.

For this course, the easiest is to search for MSG1.

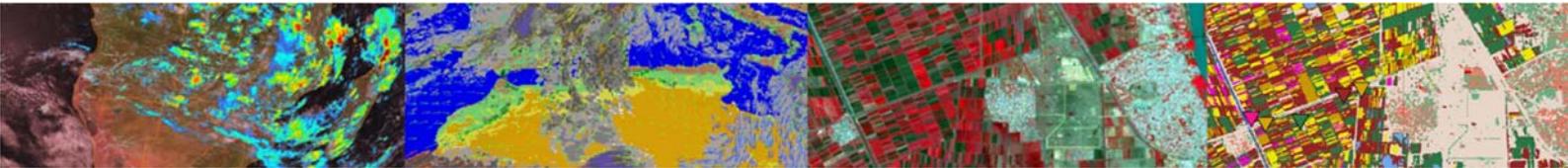
Type **MSG1** in the search bar and press Enter.

The screenshot shows a web browser window with the EUMETSAT Data Store interface. The search bar at the top has 'MSG1' typed into it. Below the search bar, there is a search result card for 'ASCAT Coastal Winds at 12.5 km Swath Grid - Metop'. The card features a thumbnail image of a coastal area with wind patterns, a brief description of the product, and a red 'Access Data' button. The overall layout is clean and professional, typical of a scientific data portal.

You will get 2 search results:

- High Rate SEVIRI 1.5 Image Data – MSG – Indian Ocean 41.5 degrees E, and
- Cloud Mask – MSG – Indian Ocean 41.5 degrees E

(see picture at next page)



EUMETSAT - EO Portal User Reg X EUMETSAT Data Store - Search X +

https://data.eumetsat.int/extended?query=MSG1

EUMETSAT DATA SERVICES

Data Access / Advanced search results

MSG1

We've found 2 results

High Rate SEVIRI Level 1.5 Image Data - MSG GEO - Indian Ocean 41.5 degrees E

Rectified (level 1.5) Meteosat SEVIRI image data. The data is transmitted as High Rate transmissions in 12 spectral channels. Level 1.5 image data corresponds to the geolocated and ...

learn more

Access Data

Cloud Mask - MSG - Indian Ocean 41.5 degrees E

The Cloud Mask product describes the scene type (either 'clear' or 'cloudy') on a pixel level. Each pixel is classified as one of the following four types: clear sky over water, ...

learn more

Access Data

Showing 2 of 2

PLATFORM: MSG (2)

SENSOR TYPE: Optical (2)

SENSOR: SEVIRI (2)

ACCESS: Download (2), View (1)

DATA POLICY: EUMETSAT Meteosat >3hr latency & Metop (1), EUMETSAT Meteosat <3hr latency (1), Free and unrestricted (1)

We will start with the High Rate SEVIRI MSG IODC data, so click that the **Access Data** button of that one.

EUMETSAT - EO Portal User Reg X EUMETSAT Data Store - Search X +

https://data.eumetsat.int/extended?query=MSG1

EUMETSAT DATA SERVICES

Data Access / Advanced search results

MSG1

We've found 2 results

High Rate SEVIRI Level 1.5 Image Data - MSG GEO - Indian Ocean 41.5 degrees E

Rectified (level 1.5) Meteosat SEVIRI image data. The data is transmitted as High Rate transmissions in 12 spectral channels. Level 1.5 image data corresponds to the geolocated and ...

learn more

Access Data

Cloud Mask - MSG - Indian Ocean 41.5 degrees E

The Cloud Mask product describes the scene type (either 'clear' or 'cloudy') on a pixel level. Each pixel is classified as one of the following four types: clear sky over water, ...

learn more

Access Data

Showing 2 of 2

PLATFORM: MSG (2)

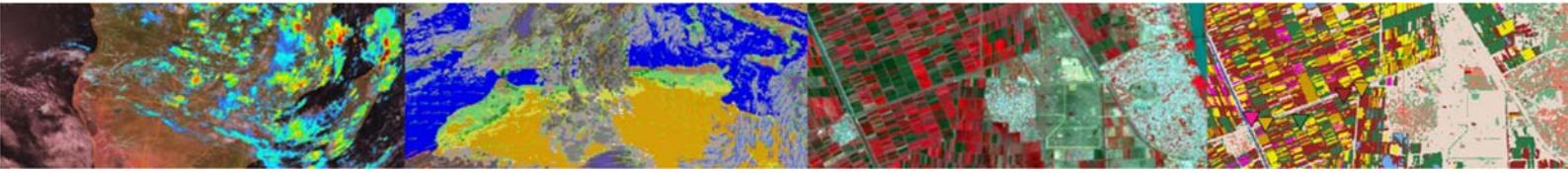
SENSOR TYPE: Optical (2)

SENSOR: SEVIRI (2)

ACCESS: Download (2), View (1)

DATA POLICY: EUMETSAT Meteosat >3hr latency & Metop (1), EUMETSAT Meteosat <3hr latency (1), Free and unrestricted (1)

You can see that the center of the example pictures is at 41.5E at the equator.
On the next screen, you can search for data on the left side. We will do that in a minute.
If you still see the word "Log in" at the top right of your screen, click that, and it should change to your user name.



The screenshot shows the EUMETSAT Data Store interface. At the top, there are four small thumbnail images of satellite data. Below them is a browser window with the URL <https://data.eumetsat.int/data/map/EO-EUM-DAT-MSG-HRSEVIRI-IODC#>. The main content area displays a world map with a large circular overlay highlighting the Indian Ocean region. On the left side of the map, there are two date/time selection boxes: one for '2021-10-04' and another for '2021-10-05'. Below these are 'Sort by' and 'Filters' dropdown menus. At the bottom left are 'Reset Filters' and 'Show Results' buttons.

MSG data is available for every quarter of an hour, day and night.

You are about to select a date and a time for which you wish to receive data.

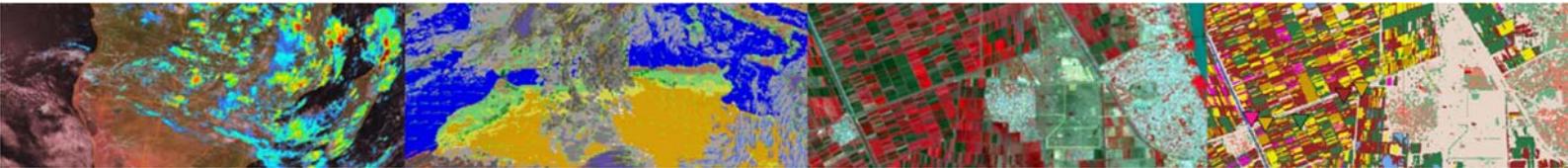
- A whole day of data is around 24 GB.
- A quarter of an hour of data is around 256 MB.
- Time is given in UTC time (if you don't know what is UTC, then look it up, e.g. type "time UTC azerbaijan" and/or "azerbaijan time UTC" in a browser). (or use your own country name).

In this example, we will download MSG data of 4 Oct 2021, for a quarter of an hour in daylight, say for the quarter of 12:00 – 12:14 local time in Turkmenistan.

Turkmenistan is UTC +5, this means that if we want files of 12:00 local time in Turkmenistan, we should look for files from 07:00 UTC to 07:14 UTC.

You can of course select a larger time period or multiple days if you like.

FYI: If you would receive MSG HRIT files via an antenna or dish, you will receive *compressed* imagery; a single day of MSG HRIT files received by dish is about 7.2 GB. The MSG HRIT files distributed via Data Store/Data Tailor are *uncompressed* and are therefore considerably larger: 24 GB for a whole day.



So, fill out the left pane:

Date: any date and time you like, or for this example

2021-10-04 07:00

2021-10-04 07:14

Sort by: Sensing time, Descending

Filters: MSG1, MSG15

Then click the "Show Results" button

The screenshot shows the EUMETSAT Data Store interface. On the left, there is a sidebar with the following information:

- High Rate SEVIRI Level 1.5 Image Data - MSG - Indian Ocean 41.5 degrees E**
- ID:** EO:EUM:DAT:MSG:HRSEVIRI-IODC
- Orbit:** GEO
- Data Policy:** EUMETSAT Meteosat <3hr latency, EUMETSAT Meteosat >3hr latency & Metop
- [learn more](#)

AVAILABLE TIME RANGE: 2017-02-01 - 2021-10-05

Two date ranges are selected with red boxes:

- 2021-10-04 < 07:00 >
- 2021-10-04 < 07:14 >

Sort by: Sensing time, Descending

Filters: MSG1, MSG15

Show Results (button)

The main area of the interface is a world map centered on the Indian Ocean. A large circular selection box covers most of the Indian Ocean and parts of Africa and Asia.

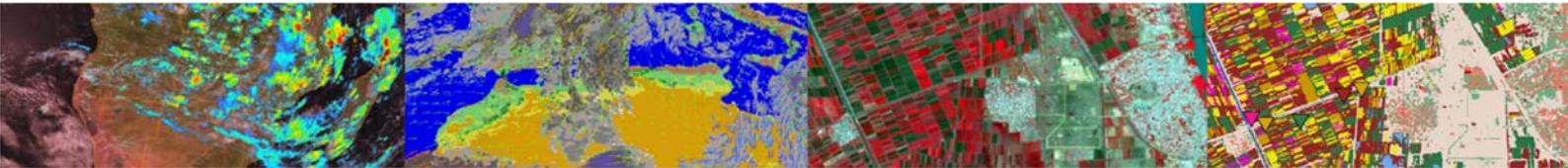
Because we selected 1 day and 1 quarter of an hour, we will get only 1 result.

You should add this result to your Cart:

1-1 of 1 products found

Select all in page **Add selected to Cart**

2021-10-04 (07:00) - 2021-10-04 (07:12) MSG1 185.61 MB



Then, open your Cart by clicking the Cart icon at the top of your browser.

EUMETSAT - EO Portal User Reg X EUMETSAT - Data Store +

https://data.eumetsat.int/data/map/EO:EUM:DAT:MSG:HRSEVIRI-IODC?start=2021-10-04T07:00:00.270Z&end=2021-10-04T07:14:00.270Z&facets=sat|MSG1:type|MSG15&eo:filter=

EUMETSAT DATA SERVICES

Data Access / High Rate SEVIRI Level 1.5 Image Data - MSG - Indian Ocean 41.5 degrees E

High Rate SEVIRI Level 1.5 Image Data - MSG - Indian Ocean 41.5 degrees E

ID: EO:EUM:DAT:MSG:HRSEVIRI-IODC
Orbit: GEO
Data Policy: EUMETSAT Meteosat <3hr latency, EUMETSAT Meteosat >3hr latency & Metop

learn more

AVAILABLE TIME RANGE: 2017-02-01 - 2021-10-05

2021-10-04 < 37:00 >

2021-10-04 < 37:14 >

Sort by: Sensing time Descending

Filters: MSG1, MSG15

Reset Filters Show Results

1-1 of 1 products found

Select all in page Add selected to Cart

2021-10-04 (07:00) - 2021-10-04 (07:12) MSG1 185.61 MB

Map view: Indian Ocean and Africa

Your cart:

EUMETSAT - EO Portal User Reg X EUMETSAT - Data Store +

https://data.eumetsat.int/data/map/EO:EUM:DAT:MSG:HRSEVIRI-IODC/cart

EUMETSAT DATA SERVICES

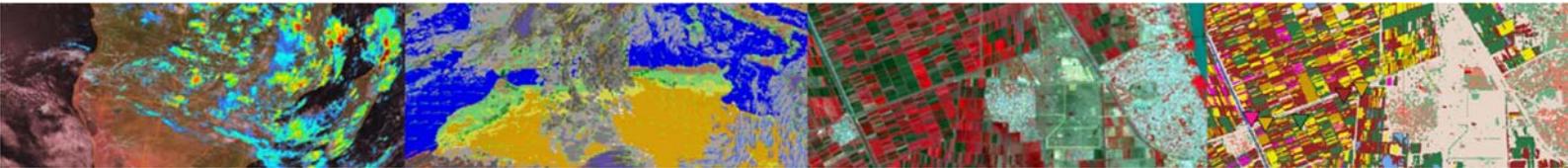
Data Access / High Rate SEVIRI Level 1.5 Image Data - MSG - Indian Ocean 41.5 degrees E

Cart (1 Items)

Return to Map view

Customize Cart Download Cart Remove Selected Clear Cart

Product Name	Satellite	Collection ID	Sensing Start (UTC)	Sensing Stop (UTC)	Download	Remove
MSG1-SEVI-MSG15-0100...	MSG1	EO:EUM:DAT:MSG:HRSEVIRI-IODC	2021-10-04 07:00	2021-10-04 07:12		



Check whether the date and time are correct of the data that you are about to download.
Then, select the data and click “Customize Cart” (at the left).

The screenshot shows a web browser window for the EUMETSAT Data Store. The URL is https://data.eumetsat.int/data/map/EO:EUM:DAT:MSG:HRSEVIRI-IODC/cart. The page title is "EUMETSAT DATA SERVICES". The main content area is titled "Cart (1 Items)". It contains a table with the following data:

<input checked="" type="checkbox"/> Product Name	Satellite	Collection ID	Sensing Start (UTC)	Sensing Stop (UTC)	Download	Remove
MSG1-SEVI-MSG15-0100...	MSG1	EO:EUM:DAT:MSG:HRSEVIRI-IODC	2021-10-04 07:00	2021-10-04 07:12		

At the top of the table, there are buttons for "Customize Cart" (highlighted with a red box), "Download Cart", "Remove Selected", and "Clear Cart". There are also navigation arrows and a "Return to Map view" link at the top right.

Explanation:

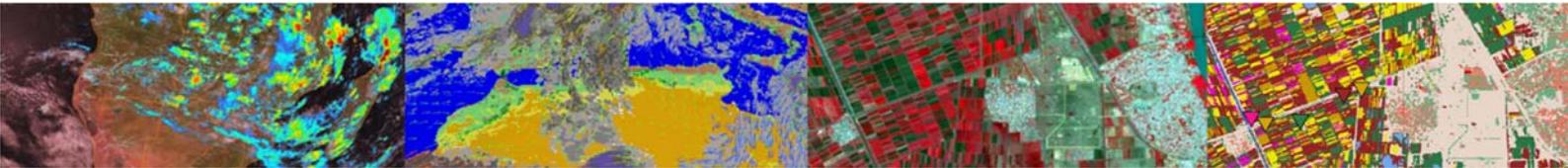
We wish to customize the format we get the files in.

If you were to download the Cart as it is, you would get MSG HRIT files as 1 single .nat file.

We want to get the MSG files as 114 files per quarter of an hour.

After you clicked Customize Cart,

- you will leave the Data Store, and
- you will enter the Data Tailor.



In the Data Tailor, you can specify:

- the product type and output format,
- which bands or channels you would like to receive, and
- ROI (Region of Interest) if you wish to receive a clipped area only.

To get the MSG-HRIT files as 114 files in a quarter of an hour, we will have to go through this process twice: first for all VIS, IR, WV channels at 3 km resolution and then for the HRV channel at 1 km resolution. When both packages (for this quarter of an hour, for this day) are received you will put them in the same folder. The goal is to have all files of a single day in a so-called dated folder structure where each folder contains data of one day. The folder structure should look like:

rootfolder\YYYY\MM\DD\your_files_of_this_day.

In our example, we will create a folder called:

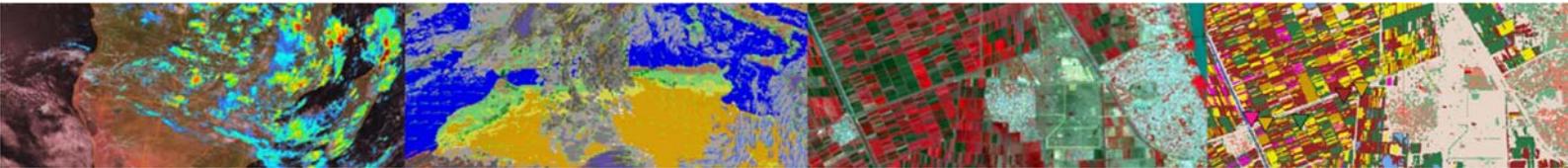
MSG_Rawdata\2021\10\04

where we will put both the VIS, IR, WV files AND the HRV files of this day.

To get the files for the VIS, IR, WV channels at 3 km:

- For Product type, choose **High Rate SEVIRI Level 1.5 Image Data – MSG**
- For Output format, choose **HRIT**

The screenshot shows the EUMETSAT Launchpad Data Tailor interface. The top navigation bar includes 'EUMETSAT - EO Portal User Reg...', 'EUMETSAT - Data Store', and 'Launchpad - EUMETSAT Data Tailor'. The main menu tabs are LAUNCHPAD, AGGREGATION, LAYER FILTER, REPROJECTION, ROI, QUICK LOOK, and OUTPUT OPTIONS. The 'Launchpad' tab is selected. In the 'Input products' section, there is a single item: 'MSG1-SEVI-MSG15-0100-NA-20211004071241.891000000Z-NA.zip'. The 'Aggregation' section has a 'Layer Filter' button circled in red. Other sections include 'Reprojection', 'ROI', 'Quick look', and 'Output Options'. The main view displays a satellite image of Earth with a white rectangular box indicating the Region of Interest. In the bottom right corner of the image, there is a 'SAVE AS...' button and a small circular icon with a play symbol.



Then, click **Layer Filter**:

The available layers are shown.

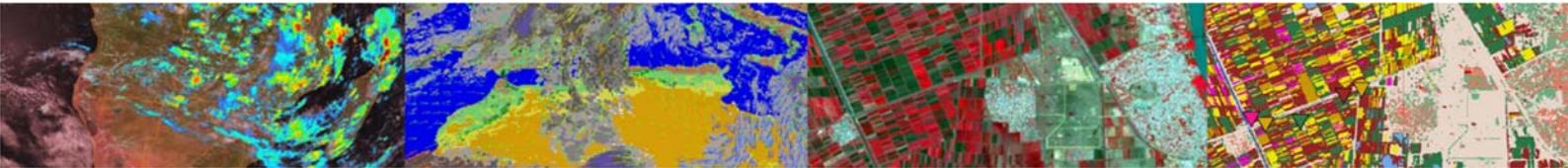
- Select **all available layers** and move them (with the > button) to the Selected Layers.
- Then **select the Selected Layers** again, to make sure they are really selected.

The screenshot illustrates the EUMETSAT Layer Filter interface. It shows two panels: 'Available' (left) and 'Selected' (right). In the 'Available' panel, five bands are listed with checkboxes: VIS0.6, IR12.0, IR13.4, VIS0.8, and NIR1.6. A red box highlights the right-pointing arrow button between the two panels. In the 'Selected' panel, the same five bands are listed with checked checkboxes. Below the panels are 'Save filter as...' and 'ADD ➤' buttons. The left sidebar includes 'Launchpad', 'Aggregation', 'Layer Filter' (which is the active tab), 'Reprojection', 'ROI', 'Quick look', and 'Output Options'. The bottom part of the interface shows a satellite image of Earth with a 'SAVE AS...' button and zoom controls.

Then, click **ROI**.

- Select **all segments**.

FYI: A disk image is built up from strips or segments from the South Pole to North Pole in 8 pieces. As



you can see, you can also use a shape file for clipping.

EUMETSAT - EO Portal User Reg X EUMETSAT - Data Store X ROI - EUMETSAT Data Tailor X +

https://tailor.eumetsat.int/roi

LAUNCHPAD AGGREGATION LAYER FILTER REPROJECTION ROI QUICK LOOK OUTPUT OPTIONS

EUMETSAT

Launchpad

Aggregation

Layer Filter

Reprojection

ROI

Configured ROI
No items

Configure ROI

By area (In decimal degree)

By sensing time

By shapefile [SELECT A FILE...](#)

By segment selection Select all... 1 4 7 2 5 8 3 6

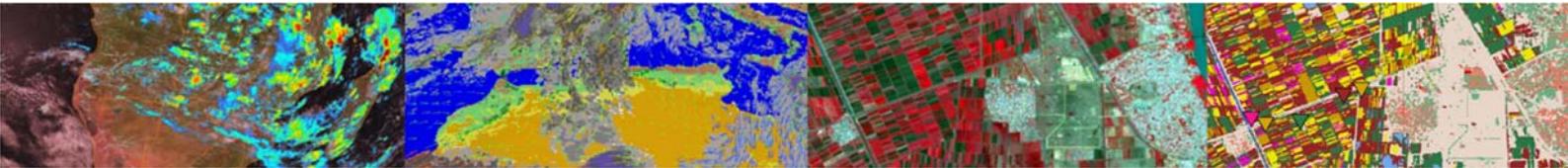
Save filter as [ADD ➔](#)

Quick look

Output Options (circled in red)

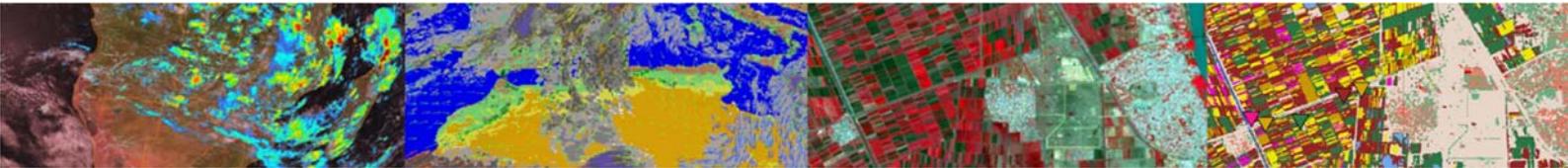
SAVE AS... [VIEW](#)

The screenshot shows the EUMETSAT Data Tailor interface. At the top, there are tabs for Launchpad, Aggregation, Layer Filter, Reprojection, ROI (which is selected), Quick Look, and Output Options. Below the tabs, there's a sidebar with links for Launchpad, Aggregation, Layer Filter, and Reprojection. The main area is titled 'ROI' and shows 'Configured ROI' with 'No items'. It has three configuration options: 'By area (In decimal degree)', 'By sensing time', and 'By shapefile' (with a 'SELECT A FILE...' button). The 'By segment selection' option is selected, with a checkbox labeled 'Select all...' checked. Below this are checkboxes for segments 1 through 8. At the bottom of the ROI section is a 'Save filter as' button with an 'ADD ➔' link. Below the ROI section is a 'Quick look' preview of satellite imagery, with a red circle highlighting the 'Output Options' button. At the very bottom right of the preview are 'SAVE AS...' and 'VIEW' buttons.



Then select **Output Options**, and select an compression type, e.g. zip.

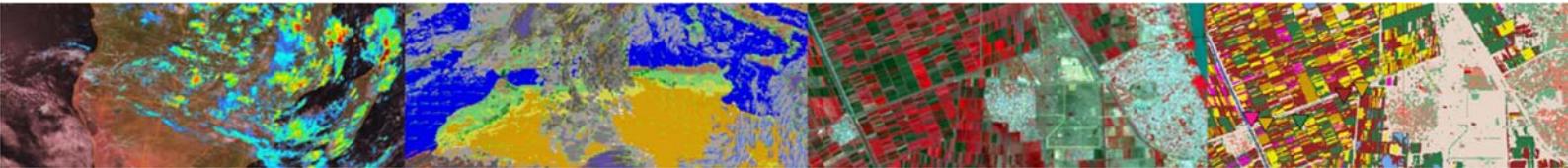
The screenshot shows the EUMETSAT Output Options interface. At the top, there are tabs for LAUNCHPAD, AGGREGATION, LAYER FILTER, REPROJECTION, ROI, QUICK LOOK, and OUTPUT OPTIONS. The OUTPUT OPTIONS tab is active. On the left, there are sections for Launchpad, Aggregation, Layer Filter, Reprojection, ROI, and Quick look, each with a dropdown menu. Below these is the Output Options section. Under Compression types, 'Zip' is selected and highlighted with a red box. Other options listed include Bzip2, Gzip, Internal compression (HDF5 or NetCDF4), SIP, Tar, and Zip again (which is also highlighted with a red box). To the right of the list is a satellite image of a coastal region with mountains and a city. A 'SAVE AS...' button is visible in the bottom right corner of the image area.



Finally to start processing,
Click the green **Run** button at the bottom right:

The screenshot shows the EUMETSAT Data Store interface. At the top, there are tabs for LAUNCHPAD, AGGREGATION, LAYER FILTER, REPROJECTION, ROI, QUICK LOOK, and OUTPUT OPTIONS. The OUTPUT OPTIONS tab is currently selected. Below this, there are sections for Launchpad, Aggregation, Layer Filter, Reprojection, ROI, and Quick look, each with a dropdown menu. The main area displays a satellite image of a coastal region with a mix of land and water. In the bottom right corner of the image area, there is a control panel with several buttons. One button is highlighted with a red arrow and labeled "Run process". Above this button, there is a "SAVE AS..." option. The compression type is set to "Zip".

(Optionally you can save the parameters you used, like saving a model or saving a blue print)



When your process is running, a process number (Customisation ID) appears and a log window.

The screenshot shows the EUMETSAT Launchpad interface. At the top, there are three tabs: 'EO Portal User Reg' (active), 'EUMETSAT - Data Store', and 'Launchpad - EUMETSAT Data'. Below the tabs, the main header includes 'LAUNCHPAD', 'AGGREGATION', 'LAYER FILTER', 'REPROJECTION', 'ROI', 'QUICK LOOK', and 'OUTPUT OPTIONS'. A sidebar on the left lists 'Input products', 'Aggregation', 'Layer Filter', 'Reprojection', 'ROI', 'Quick look', and 'Output Options'. The central area has sections for 'Product type' (set to 'High Rate SEVIRI Level 1.5 Image Data - MSG') and 'Output format' (set to 'HRIT'). A 'Configuration' section with a search bar is also present. The bottom half of the screen is divided into two main sections: 'Status' and 'Log'. The 'Status' section displays a table with one row:

Customisation ID	Size	Status	Progress/Time
1f665e13	553 bytes	Running	0%

The 'Log' section shows the following text:

```
2021-10-05 15:03:51 - PROCESSING.cgi[403] - INFO - Submitted process 1f665e13 - FUTURE: run_chain_async
```

At the bottom of the status table, it says '68 of 20.0GB 25%' and has a 'Delete selected' button. A small circular icon with a play/pause symbol is located in the top right corner of the main content area.

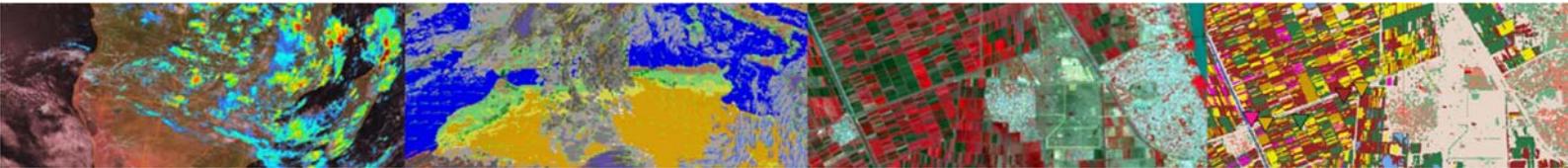
And after some 30 seconds, the process lists itself as "completed".

The screenshot shows the EUMETSAT Launchpad interface, identical to the previous one but with the processing job now completed. The 'Status' section table now shows:

Customisation ID	Size	Status	Progress/Time
1f665e13	190.8MB	Completed	32s

The 'Log' section shows the same log message as before. The bottom of the status table still shows '68 of 20.0GB 25%' and has a 'Delete selected' button. The circular icon in the top right corner is still present.

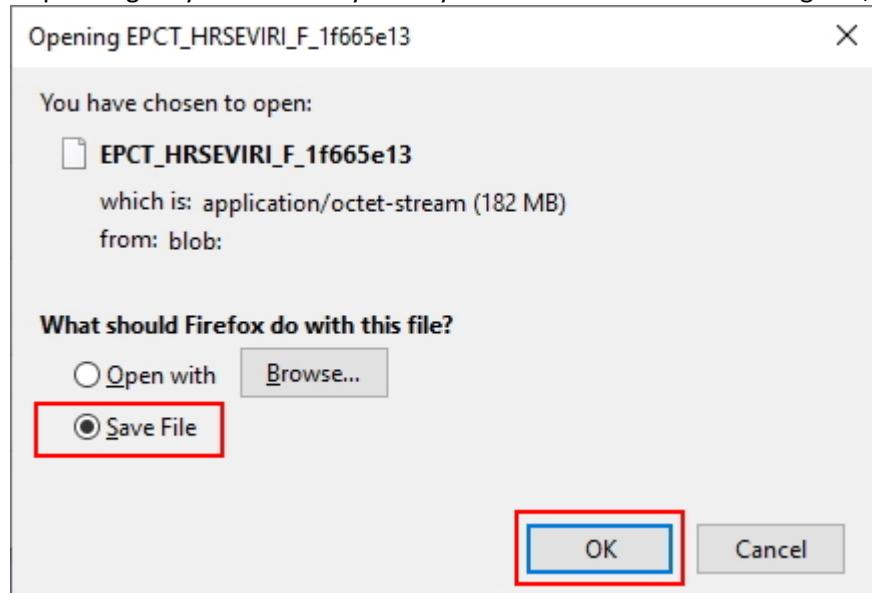
You can now download the file that has been created:
Click the small **Download** button



Status

<input type="checkbox"/> Customisation ID	Size	Status	Progress/Time
<input type="checkbox"/> 1f665e13	190.8MB	Completed	32s

Depending on your browser you may see a certain download dialog box, e.g. in FireFox:

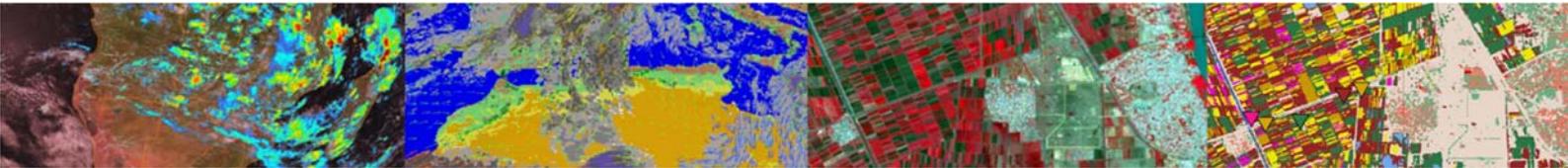


Make sure you save the file that has been created.

In this case, a file named EPCT_HRSEVIRI_F_1f665e13 is downloaded into the Downloads folder.

Check yourself whether a file with your process number has been downloaded.

Do NOT close the Data Tailor browser window yet...



Next, to get the files for the HRV channel at 1 km:

We will repeat the process above for the files of the HRV channel.

Still in the Data Tailor,

- For Product type, choose **High Rate SEVIRI Level 1.5 Image Data – MSG (HRV channel)**
- For Output format, choose **HRIT**

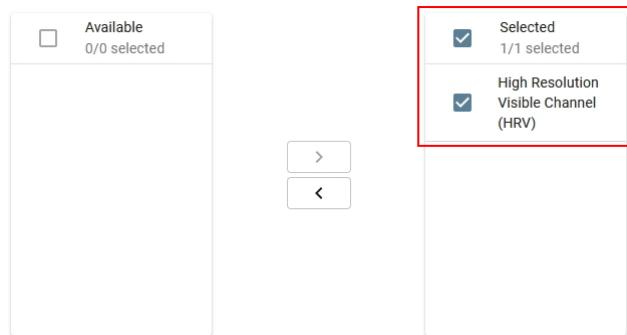
Launchpad

Product type
High Rate SEVIRI Level 1.5 Image Data - MSG (HRV channel) | Output format
HRIT |

Input products
MSG1-SEVI-MSG15-0100-NA-20211004071241.891000000Z-NA.zip

Then, open the **Layer Filter**:

- Select **all available layers** and move them (with the > button) to the Selected Layers.
- Then **select the Selected Layers** again, to make sure they are really selected.



Then, open **ROI**:

- Select all 24 segments

By segment selection Select all...

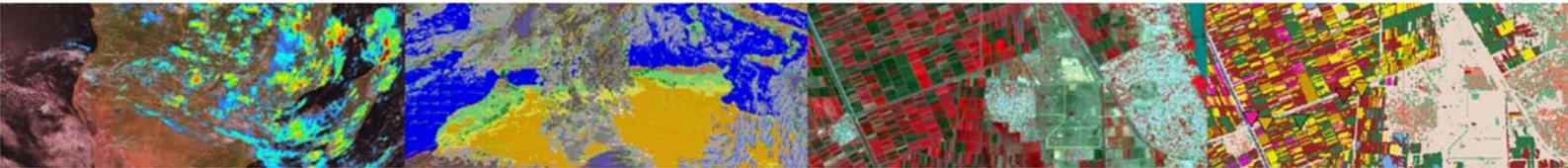
<input checked="" type="checkbox"/> 1	<input checked="" type="checkbox"/> 9	<input checked="" type="checkbox"/> 17
<input checked="" type="checkbox"/> 2	<input checked="" type="checkbox"/> 10	<input checked="" type="checkbox"/> 18
<input checked="" type="checkbox"/> 3	<input checked="" type="checkbox"/> 11	<input checked="" type="checkbox"/> 19
<input checked="" type="checkbox"/> 4	<input checked="" type="checkbox"/> 12	<input checked="" type="checkbox"/> 20
<input checked="" type="checkbox"/> 5	<input checked="" type="checkbox"/> 13	<input checked="" type="checkbox"/> 21
<input checked="" type="checkbox"/> 6	<input checked="" type="checkbox"/> 14	<input checked="" type="checkbox"/> 22
<input checked="" type="checkbox"/> 7	<input checked="" type="checkbox"/> 15	<input checked="" type="checkbox"/> 23
<input checked="" type="checkbox"/> 8	<input checked="" type="checkbox"/> 16	<input checked="" type="checkbox"/> 24

Then, select **Output Options**, and select an compression type, e.g. zip.

When ready, click the green **Run button** at the bottom right of your screen.



The process for the HRV files starts,



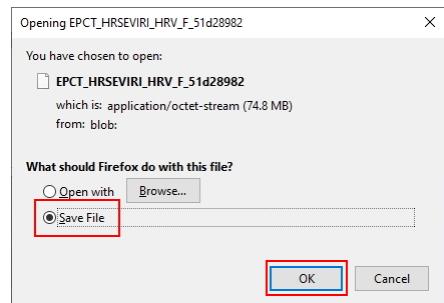
Status

Customisation ID	Size	Status	Progress/Time
51d28982	553 bytes	Running	0%
1f665e13	190.8MB	Completed	32s

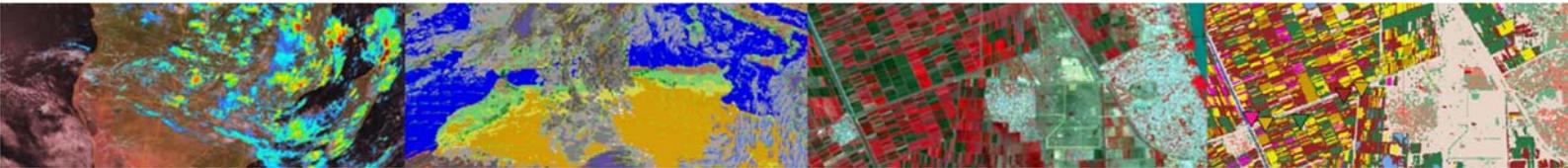
And if everything goes well, the process will complete after some 20 seconds,
And you can **download** your results.

Status

Customisation ID	Size	Status	Progress/Time
51d28982	78.5MB	Completed	19s
1f665e13	190.8MB	Completed	Download results 32s



Check yourself whether a file with your process number has been downloaded.



5. Copy, unpack/unzip, combine all files of a single day in a dated folder structure

Create a dated folder structure as following:

Some_root_folder\YYYY\MM\DD

Where, in case of the example above, data for 4th of Oct 2021:

Some_root_folder is e.g. MSG_IODC

YYYY is e.g. 2021

MM is e.g. 10

DD is e.g. 04

Thus the folder structure the looks like:

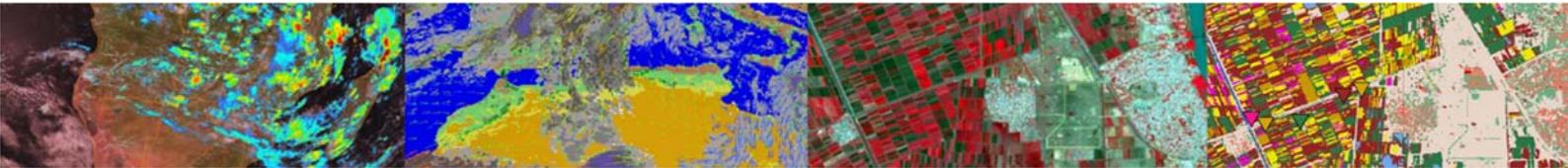
MSG_IODC\2021\10\04

Copy the 2 EPCT files of the 4th of October which you have downloaded, from the Downloads folder to its day folder created above.

Unpack or unzip both EPCT zip files.

The _PRO and _EPI files are available both in the VIS, IR and WV zip file as well as in the HRV zip file; you must have a PRO and an EPI file for each quarter of an hour.

When Windows is asking about overwriting or skipping PRO or EPI files, you can choose either; it does not matter.



For the 4th of October

you should now have a folder like: MSG_IODC\2021\10\04

in which you have a list of 114 files (if you delete the EPCT* zip files), like:

Name	Date modified	Type	Size
H-000-MSG1_-MSG1_____ -_____ -EPI_____-202110040700_-	2021-10-05 15:04	File	372 KB
H-000-MSG1_-MSG1_____ -_____ -PRO_____-202110040700_-	2021-10-05 15:04	File	416 KB
H-000-MSG1_-MSG1_____ -HRV_____-000001_-202110040700_-	2021-10-05 15:15	File	3,160 KB
H-000-MSG1_-MSG1_____ -HRV_____-000002_-202110040700_-	2021-10-05 15:15	File	3,160 KB
H-000-MSG1_-MSG1_____ -HRV_____-000003_-202110040700_-	2021-10-05 15:15	File	3,160 KB
H-000-MSG1_-MSG1_____ -HRV_____-000004_-202110040700_-	2021-10-05 15:15	File	3,160 KB
H-000-MSG1_-MSG1_____ -HRV_____-000005_-202110040700_-	2021-10-05 15:15	File	3,160 KB
H-000-MSG1_-MSG1_____ -HRV_____-000006_-202110040700_-	2021-10-05 15:15	File	3,160 KB
H-000-MSG1_-MSG1_____ -HRV_____-000007_-202110040700_-	2021-10-05 15:15	File	3,160 KB
H-000-MSG1_-MSG1_____ -HRV_____-000008_-202110040700_-	2021-10-05 15:15	File	3,160 KB
H-000-MSG1_-MSG1_____ -HRV_____-000009_-202110040700_-	2021-10-05 15:15	File	3,160 KB
H-000-MSG1_-MSG1_____ -HRV_____-000010_-202110040700_-	2021-10-05 15:15	File	3,160 KB
H-000-MSG1_-MSG1_____ -HRV_____-000011_-202110040700_-	2021-10-05 15:15	File	3,160 KB
H-000-MSG1_-MSG1_____ -HRV_____-000012_-202110040700_-	2021-10-05 15:15	File	3,160 KB
H-000-MSG1_-MSG1_____ -HRV_____-000013_-202110040700_-	2021-10-05 15:15	File	3,160 KB
H-000-MSG1_-MSG1_____ -HRV_____-000014_-202110040700_-	2021-10-05 15:15	File	3,160 KB
H-000-MSG1_-MSG1_____ -HRV_____-000015_-202110040700_-	2021-10-05 15:15	File	3,160 KB
H-000-MSG1_-MSG1_____ -HRV_____-000016_-202110040700_-	2021-10-05 15:15	File	3,160 KB
H-000-MSG1_-MSG1_____ -HRV_____-000017_-202110040700_-	2021-10-05 15:15	File	3,160 KB
H-000-MSG1_-MSG1_____ -HRV_____-000018_-202110040700_-	2021-10-05 15:15	File	3,160 KB
H-000-MSG1_-MSG1_____ -HRV_____-000019_-202110040700_-	2021-10-05 15:15	File	3,160 KB
H-000-MSG1_-MSG1_____ -HRV_____-000020_-202110040700_-	2021-10-05 15:15	File	3,160 KB
H-000-MSG1_-MSG1_____ -HRV_____-000021_-202110040700_-	2021-10-05 15:15	File	3,160 KB
H-000-MSG1_-MSG1_____ -HRV_____-000022_-202110040700_-	2021-10-05 15:15	File	3,160 KB
H-000-MSG1_-MSG1_____ -HRV_____-000023_-202110040700_-	2021-10-05 15:15	File	3,160 KB
H-000-MSG1_-MSG1_____ -HRV_____-000024_-202110040700_-	2021-10-05 15:15	File	3,160 KB
H-000-MSG1_-MSG1_____ -IR_016_____-000001_-202110040700_-	2021-10-05 15:04	File	2,109 KB
H-000-MSG1_-MSG1_____ -IR_016_____-000002_-202110040700_-	2021-10-05 15:04	File	2,109 KB
H-000-MSG1_-MSG1_____ -IR_016_____-000003_-202110040700_-	2021-10-05 15:04	File	2,109 KB
H-000-MSG1_-MSG1_____ -IR_016_____-000004_-202110040700_-	2021-10-05 15:04	File	2,109 KB
H-000-MSG1_-MSG1_____ -IR_016_____-000005_-202110040700_-	2021-10-05 15:04	File	2,109 KB
H-000-MSG1_-MSG1_____ -IR_016_____-000006_-202110040700_-	2021-10-05 15:04	File	2,109 KB
H-000-MSG1_-MSG1_____ -IR_016_____-000007_-202110040700_-	2021-10-05 15:04	File	2,109 KB
H-000-MSG1_-MSG1_____ -IR_016_____-000008_-202110040700_-	2021-10-05 15:04	File	2,109 KB

And more...

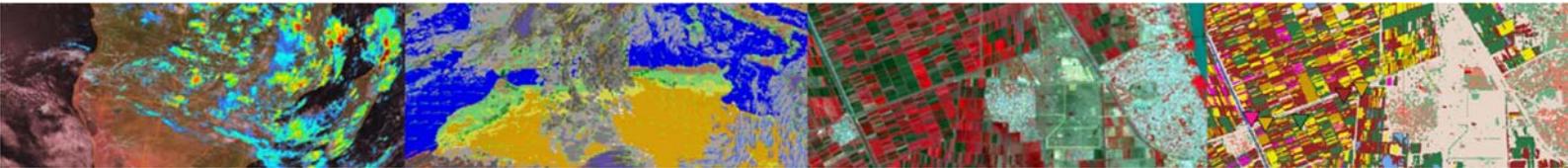
Pay attention that the date (20211004) is in the file names as well as the time of the UTC cycle (0700).

When you also download files for e.g. 5th of October 2021, you should add a 05 folder, so that the path or that folder reads:

MSG_IODC\2021\10\05

Etc.

Extra: Decide to download some other MSG1/MSG_IODC files for one or more dates or times, and make sure you place them correctly in a dated folder structure.



6. Download MSG Cloud Mask data through Eumetsat's Data Store

We will now select and download MSG1 **Cloud Mask** data.

If you have logged out of Eumetsat's Data Store,

you can login again by going to

<https://data.eumetsat.int>

and login using the Log in link at the top right.

Type **MSG1** in the Search bar to search for MSG-1 imagery, or if you like, you can also search for **CLM**.

In either case:

See **Cloud Mask - MSG - Indian Ocean 41.5 degrees E**

And click the **Access Data** button.

Select the Cloud Mask of **5th of October 2021, 07:00**.

In this case it does not matter if you download the file directly or put the file in your cart.

- If you downloaded directly, you are done.
- If you added the file to your cart, open your cart, select the MSG1-SEVI-MSGCLMK product, see that the Customize Cart button remains grayed-out, so download the file.

You can find some screenshots on the next page.

Check your Downloads folder to find the MSGCLMK zip file for the date and time you specified.

MSG1-SEVI-MSGCLMK-0100-0100-20211004070000.000000000Z-NA.zip

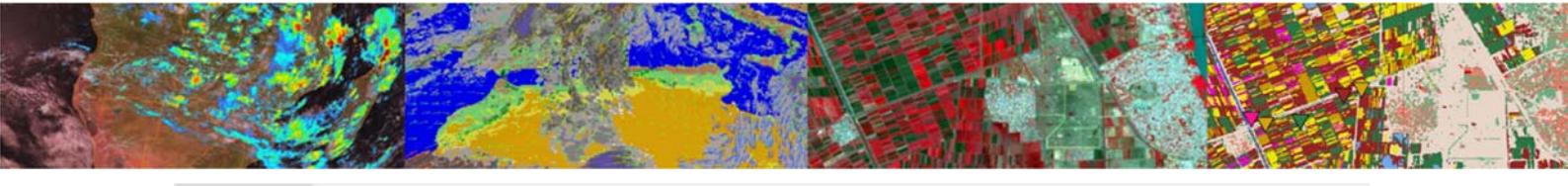
Copy this file to a folder named like

\MPEF_IODC\

Unzip the file in this same folder.

The path where the data file is now available should look like:

Drive:\folder\MPEF_IODC\MSG1-SEVI-MSGCLMK-0100-0100-20211004070000.000000000Z-NA.grb



EUMETSAT - Data Store

Data Access / Advanced search results / Cloud Mask - MSG - Indian Ocean 41.5 degrees E

Cloud Mask - MSG - Indian Ocean 41.5 degrees E

ID: EO:EUM:DAT:MSG:CLM:IODC
Orbit: GEO
Data Policy: Free and unrestricted
[learn more](#)

AVAILABLE TIME RANGE: 2017-02-01 - 2021-10-13

2021-10-04 (07:00) - 2021-10-04 (07:00)

2021-10-04 (07:00) - 2021-10-04 (07:14)

Sort by: Sensing time (Descending)

Filters: Mission / Satellite, Product Type

Reset Filters Show Results

1-1 of 1 products found

Select all in page Add selected to Cart

2021-10-04 (07:00) - 2021-10-04 (07:00) MSG1 0.51 MB

1-1 of 1 products found

Select all in page Add selected to Cart

2021-10-04 (07:00) - 2021-10-04 (07:00) MSG1 0.51 MB

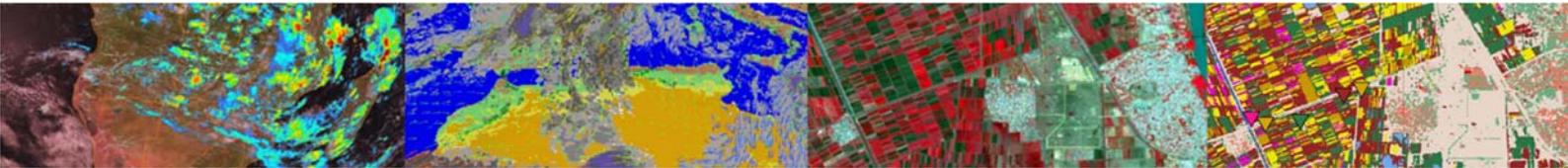
EUMETSAT - Data Store

Data Access / Advanced search results / Cloud Mask - MSG - Indian Ocean 41.5 degrees E

Cart (2 Items)

Customize Cart Download Cart Remove Selected Clear Cart

Product Name	Satellite	Collection ID	Sensing Start (UTC)	Sensing Stop (UTC)	Download	Remove
MSG1-SEVI-MSG15-0100-NA...	MSG1	EO:EUM:DAT:MSG:HRSEVIRI:IODC	2021-10-04 07:00	2021-10-04 07:12		
MSG1-SEVI-MSGCLMK-0100-0...	MSG1	EO:EUM:DAT:MSG:CLM:IODC	2021-10-04 07:00	2021-10-04 07:00		



7. Download Metop data through Eumetsat's EumetView

There are 3 (soon 2) Metop satellites circling the earth.

You should keep in mind that Metop file names M01, M02, M03 are NOT referring to Metop-A, Metop-B, Metop-C.

The connection is as following:

Satellite name	Satellite ID in file names
Metop-A	M02
Metop-B	M01
Metop-C	M03

With a reception station you will be able to receive Metop data directly and import it with the ILWIS GeonetCast toolbox.

With Eumetsat's Data Store, you cannot tailor the Metop data so a suitable format or area.

We will therefore download Metop as a TIF file from Eumetsat's EumetView.

Go to:

<https://view.eumetsat.int/>

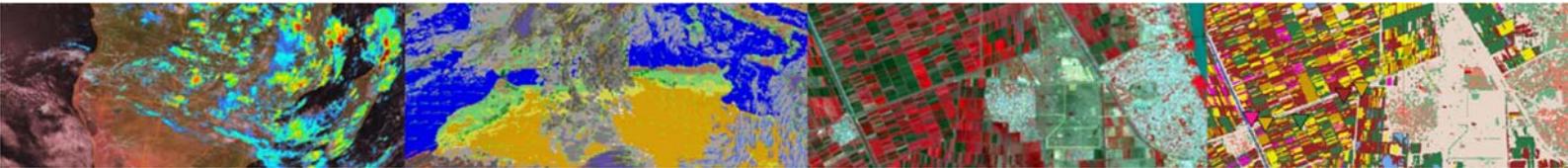
and login.

Remove the 2 default layers and:

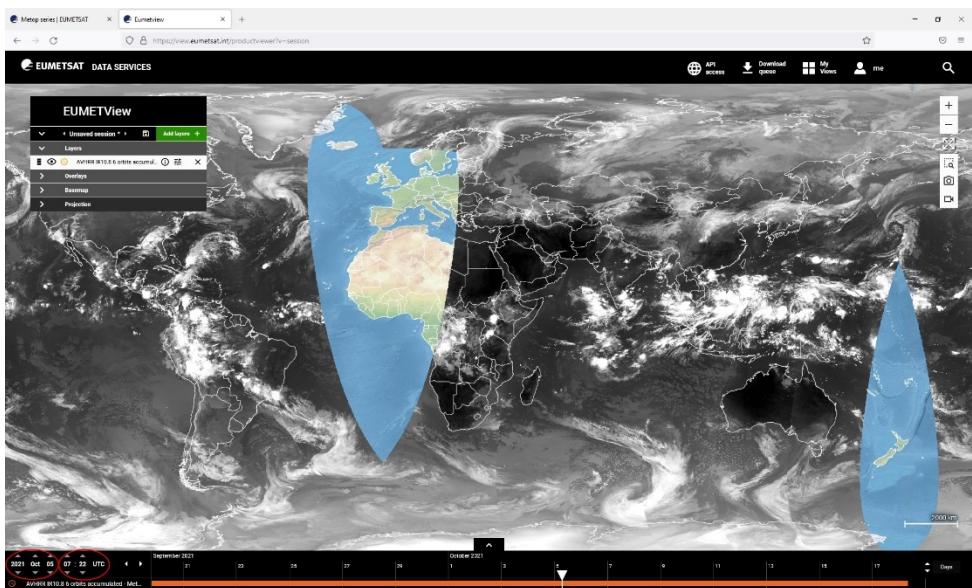
- Add Metop C, Channels, AVHRR IR10.8 6 orbits accumulated - Metop C

The screenshot shows the EUMETView interface with a search result for 'Metop C'. The 'Channels' layer is selected and highlighted with a red circle. A tooltip for the layer indicates it is 'AVHRR IR10.8 6 orbits accumulated - Metop C'. The map shows a global view with various landmasses and oceans.

In this type of data, 6 orbits (of about 100 minutes each) of Metop are combined, this then covers almost the entire earth.



- Use the Date and Time at the bottom left to navigate to 5 October 2021, 07:22



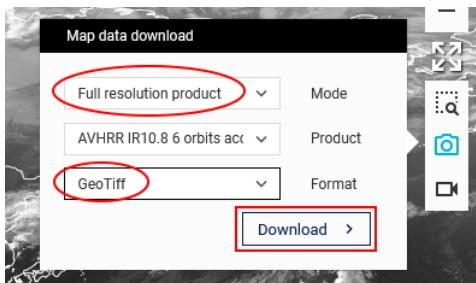
Make sure you have a good coverage of your area.

When you zoom in, you can see edges of the orbits...

- Click the Camera icon at the left

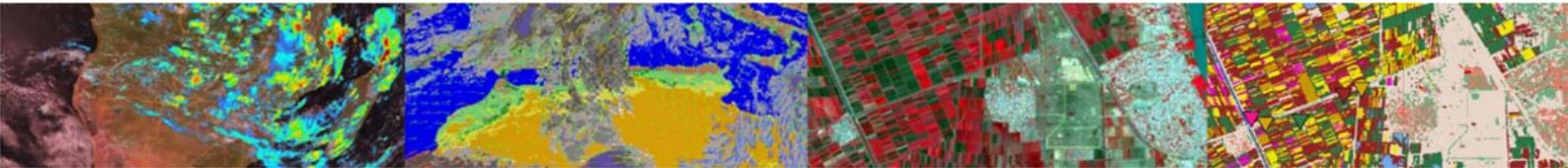


- Configure the download as:
 - Full resolution product
 - GeoTiff

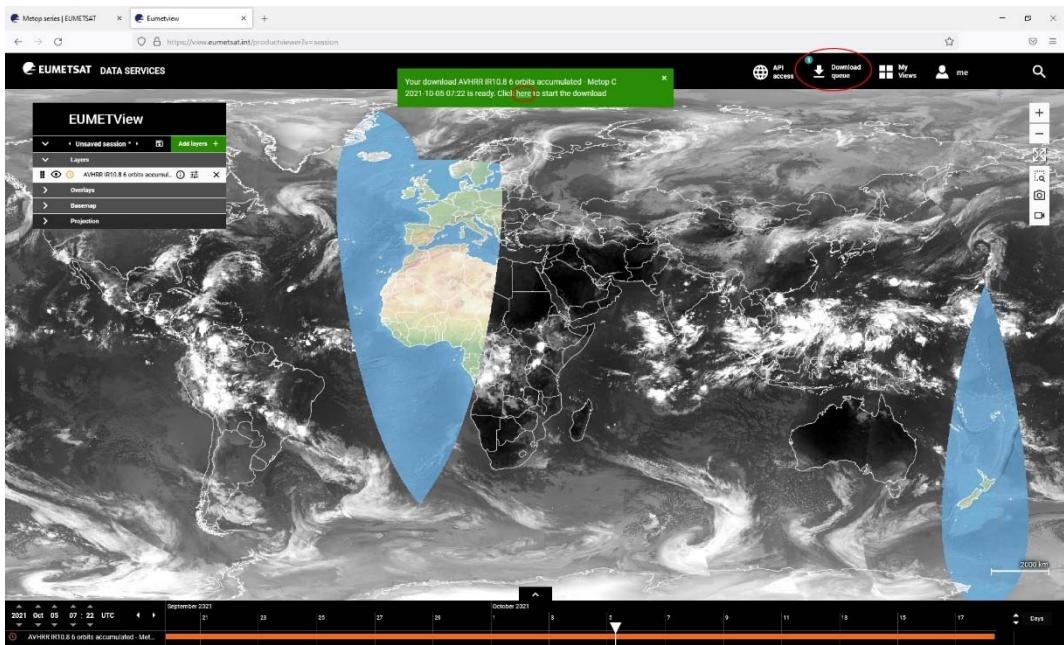


Then click the Download button

- You may get a message in your screen that you will be notified when your file is ready for download.

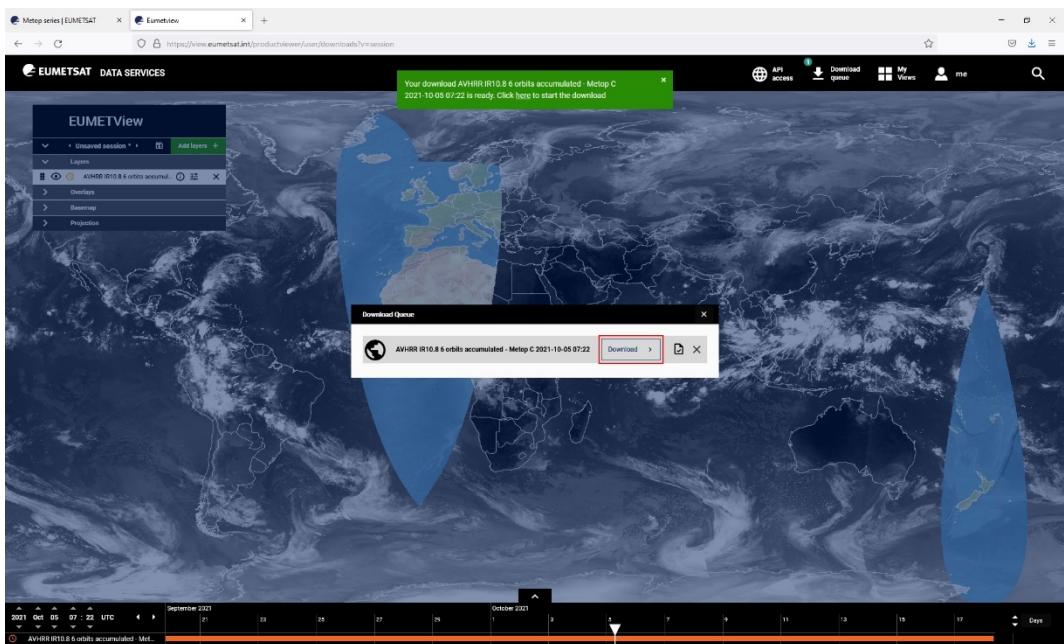


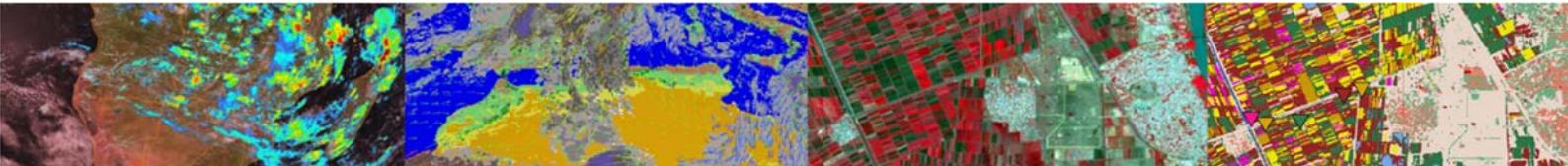
- Start downloading by clicking the word “here” in the green message,



or

- Click the Download queue button, and then the Download button.



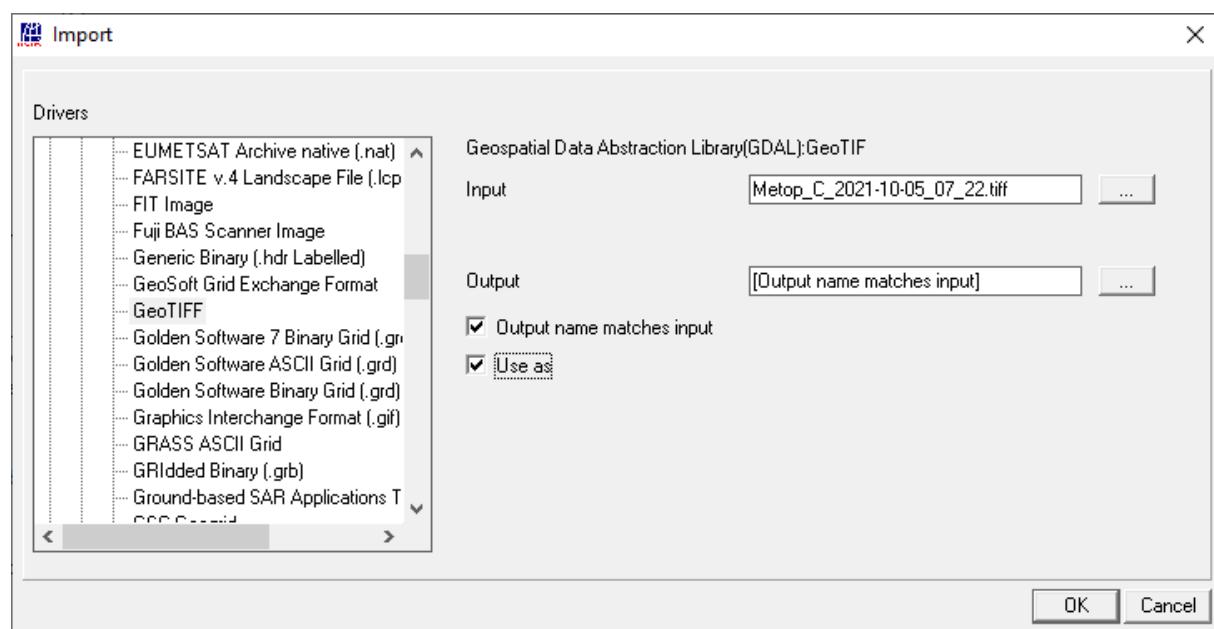


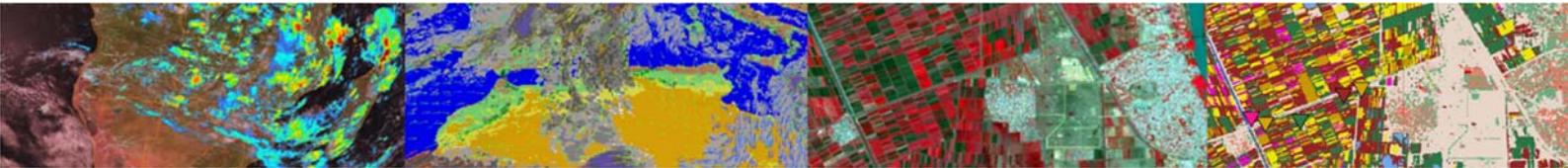
- Go to your Downloads folder, and find a file named AVHRR_IR10.8_6_orbits_accumulated_-_Metop_C_2021-10-05_07_22.zip
- Copy this file to a Metop-tmp folder and unzip the zip file
A tiff file will appear with an unreadable name
(e.g. 8bfa31d1-29ca-444e-add0-a42fc885b194.tif)
- Rename the file to the date and time you selected,
So that the filename reads something like Metop_C_2021-10-05_07_22.tif
Where 20211005 is the date of the downloaded Metop data
And 0722 is the time of the downloaded Metop data.

- Copy the tiff file Metop_C_2021-10-05_07_22.tif to a METOP folder

In ILWIS, import the TIFF file using:

- File, Import, GDAL, Raster, GeoTIFF, and
- UseAs to import the tiff files.





8. Connect to Eumetsat through WMS

WMS is the abbreviation of Web Map Service.

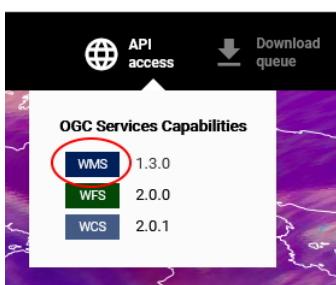
The idea is that by entering a connection string you can reach data (in this case a map) that is stored elsewhere. You will fetch the data directly through your internet connection. The fetched data will then be displayed on your screen.

For more information on web services, go for instance to OGC

- <https://www.ogc.org/docs/is>
- Click on the tab: Standard Architecture Diagram

Also Eumetsat offers this connection service.

- Open EUMETView at <https://view.eumetsat.int>
- At the top click **API Access**, then click the **WMS** button:



- After a little while some XML text is shown in your browser.
- Copy the entire string that appears in the address bar of your browser.

It should read something like:

<https://view.eumetsat.int/geoserver/wms?service=WMS&version=1.3.0&request=GetCapabilities>

- Paste this string into Notepad

Then edit the string

From:

<https://view.eumetsat.int/geoserver/wms?service=WMS&version=1.3.0&request=GetCapabilities>

To:

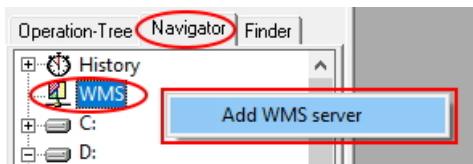
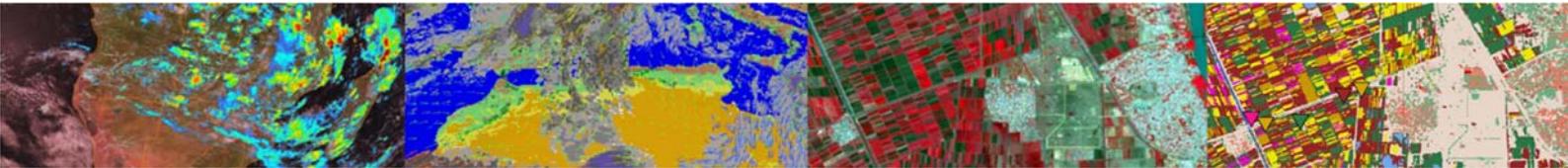
<https://view.eumetsat.int/geoserver/wms?service=WMS&version=1.0.0&request=GetCapabilities>

Thus, you should change the part that reads 1.3.0 to 1.0.0.

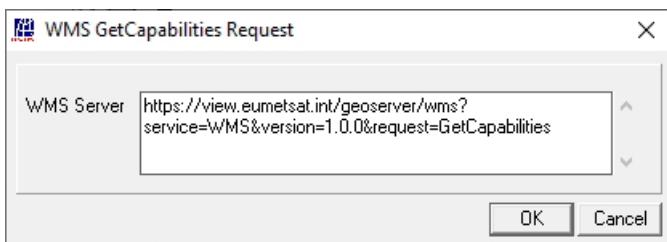
Copy the string

<https://view.eumetsat.int/geoserver/wms?service=WMS&version=1.0.0&request=GetCapabilities>

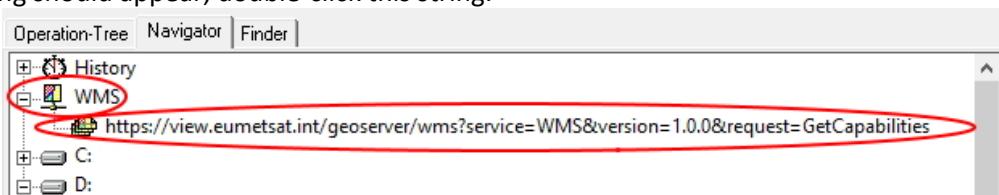
- Open ILWIS, go to the Navigator tab,
- Right-click WMS and choose Add WMS server



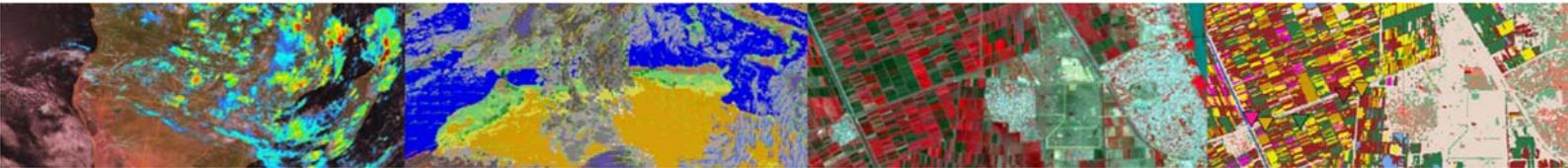
- Paste the string in the dialog box. Take care that the version reads 1.0.0



- Click OK in the dialog box. In your current Catalog nothing seems to happen, that is correct.
- In the Navigator tab, Open the WMS entry,
The string should appear, double-click this string.



Now, a new ILWIS WMSCollection Catalog “ew_eumetsat_int” will be opened, at first it is empty. The Progress Manager will start Filling the WMSCollection Catalog, and, after a minute or 2, you will see all layers in this WMSCollection Catalog that CAN be retrieved from EumetSat using WMS.



The Catalog of your ILWIS working folder now contains a Collection called “ew.eumetsat.int”, and another Catalog is opened called WMSCatalog “ew_eumetsat_int” which lists all possible layers.

To fetch a few maps to see if it really works, open e.g. :

- msg_iode_ir108
- msg_iode_mpe

When the maps are fetched from Eumetsat, they are displayed.

Now we will show those 2 maps in 1 map window:

- close both map windows and open both layers together in 1 map window.

In Layer Management, you can see that you cannot easily change bands or manipulate colors... This is because when we are using WMS: we are fetching a **picture** from Eumetsat, not actual data.

You must assume that you are retrieving the latest images from Eumetsat (more on this below).

If you close the map windows and reopen the layers, you will get again the latest ‘imagery’. Sometimes it seems as if you are getting parts of 2 images, straight lines between images may appear...

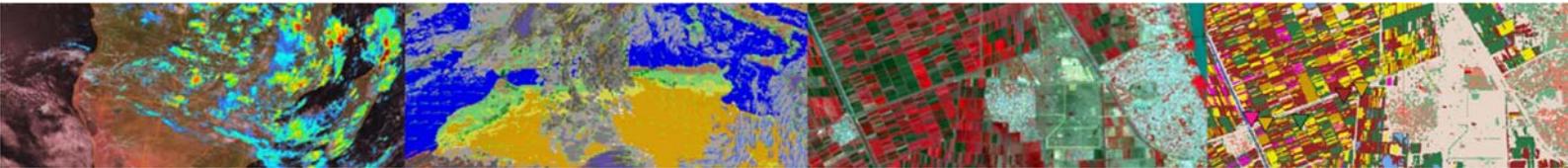
Also if you zoom in or out, you will fetch new tiles from Eumetsat, it may take a little time before the images/pictures are redrawn.

You may also add the country boundaries (base map) layer to the map window and zoom in to your area.

As you may notice, it is a bit unclear which timestamps are exactly displayed.

For a better understanding of what could be fetched from Eumetsat, look through the layers/maps listed in your WMS Catalog:

msg_fes	the normal 15 min MSG images centered at 0E
msg_rss	MSG Rapid Scanning Service, 5 min MSG images centered at 0E
msg_iode	MSG IODC images centered at 41.5E (Indian Ocean Data Coverage)
eps	Eumetsat Polar Satellite = Metop images where eps_m02 is Metop-A, eps_m01 is Metop-B, and eps_m03 is Metop-C
copernicus_sentinel	Sentinel-3 images
osm	Open Street Map
mumi	multi-mission imagery
(suffix) *_nrt	near-realtime; these images cannot be displayed



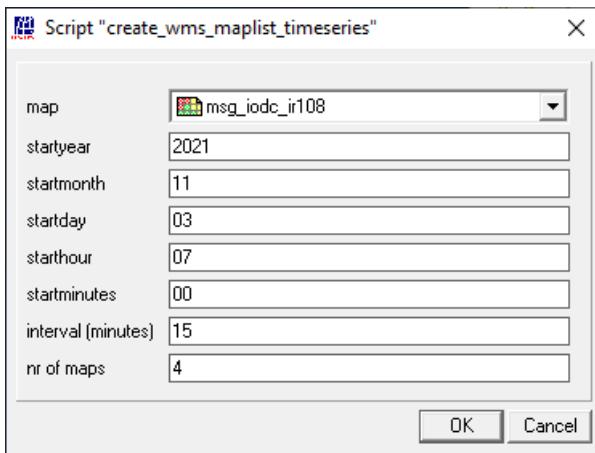
9. Time series and animations in ILWIS

Next, we will create an animation of **msg_iodec_ir108** of 4 timesteps and add an animation of 4 timesteps of **msg_iodec_mpe**. We will specify for which month, day and hour we want to create the animation. Mind: time is in UTC.

- Close your map windows and go back to the Catalog of your working folder.
- Find the script “create_wms_maplist_timeseries”.
- Open the script, then press the Run Script button .

A dialog box appears in which you should fill out all parameters that are needed by the script.

E.g.

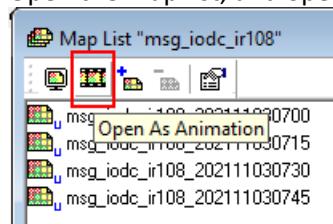


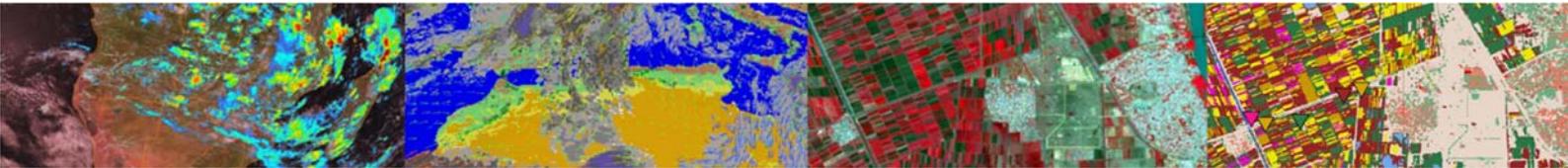
As an example we've used for **msg_iodec_ir108** the following parameters: 3rd of November 2021, start time 07:00 UTC, 15 min time interval, 4 timesteps.

You can use your own parameters if you like, but write down what you were doing.

When you have entered the parameters, click OK, the script will run. You will now see a maplist called **msg_iodec_ir108**.

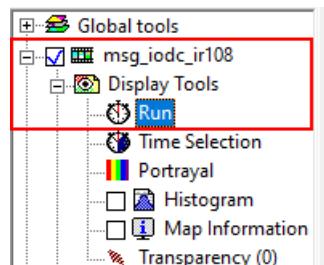
Open the map list, and open it as an animation in a map window.



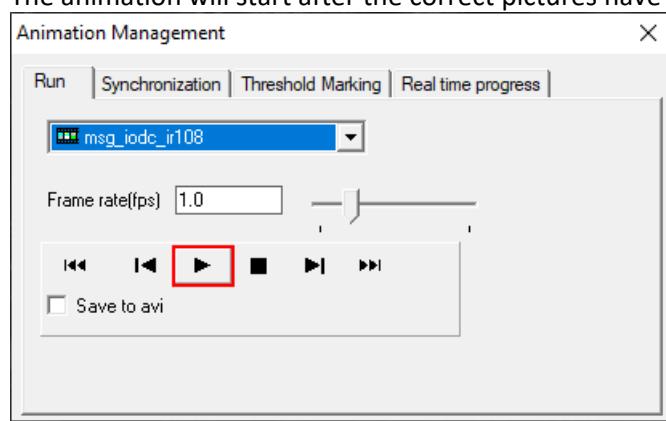


To start playing the animation: in Layer Management,

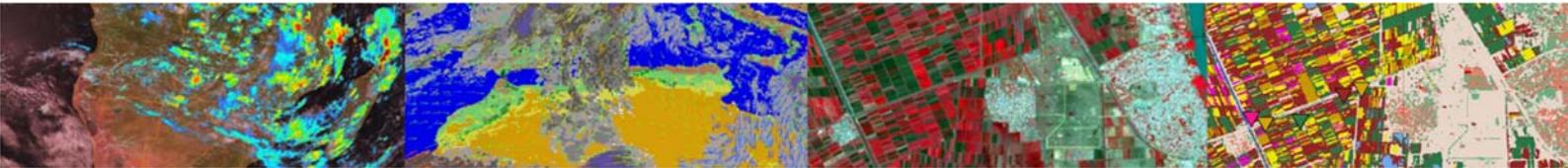
- expand the msg_iodec_ir108 animation,
- expand the Display Tools
- double-click Run



The Animation Management dialog box will appear, click the Play button and exercise some patience.
The animation will start after the correct pictures have been fetched from Eumetsat.



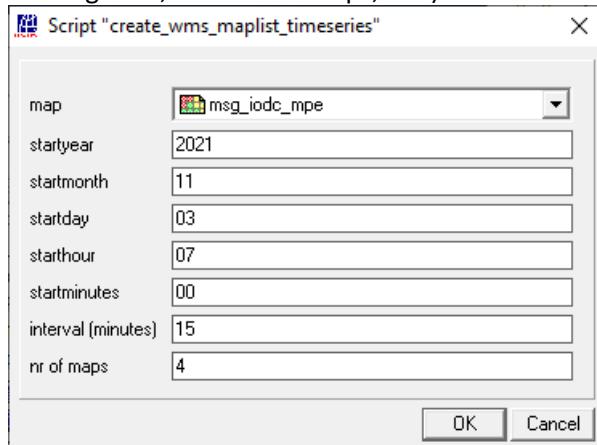
You can close the Animation Management dialog box.



Now you will do the same (create an animation) for msg_iodec_mpe.

- Open script “create_wms_maplist_timeseries”,
- Press the Run button.

For msg_iodec_mpe, you should use similar parameters as you used for msg_iodec_ir108 (same day, same starting time, same nr of maps, etc.).



In this example we used: 3rd of November 2021, start time 07:00 UTC, 15 min time interval, 4 timesteps.

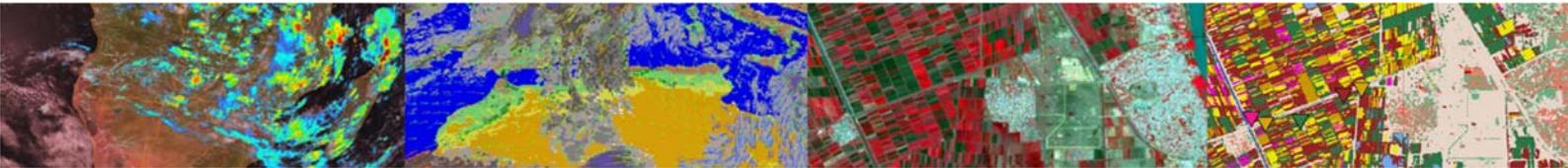
Mind: If you used different parameters for msg_iodec_ir108, then use those same parameters now for msg_iodec_mpe.

Create the animation and let it run in a map window.

If the animation does not move in your map window:

then, in Layer Management,

- expand the msg_iodec_mpe animation,
- expand the Display Tools,
- double-click Run,
- and in the Animation Management dialog box, click the Play button.



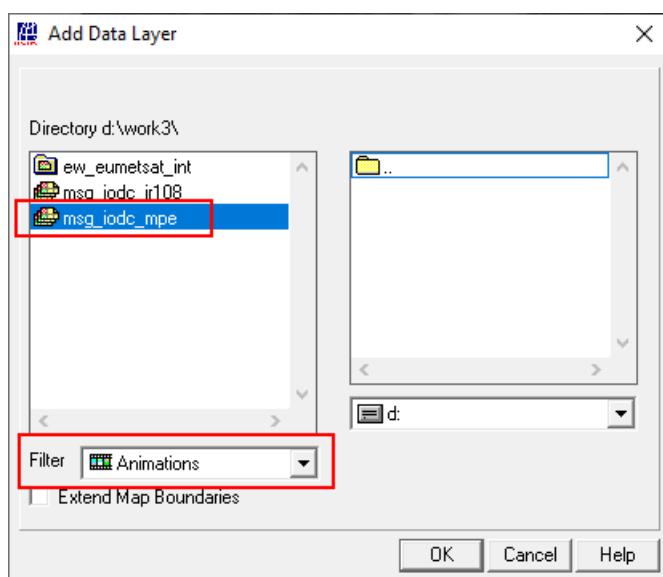
Next, you will display both animations in a single map window.

Open map list msg_iodec_ir108 in a map window, and run the animation.

Maybe also add the country boundaries base map.

To add another animation:

- Click the Add Layer button,
- And in the Data Layer dialog box:
 - filter on Animations
 - then select map list msg_iodec_mpe.



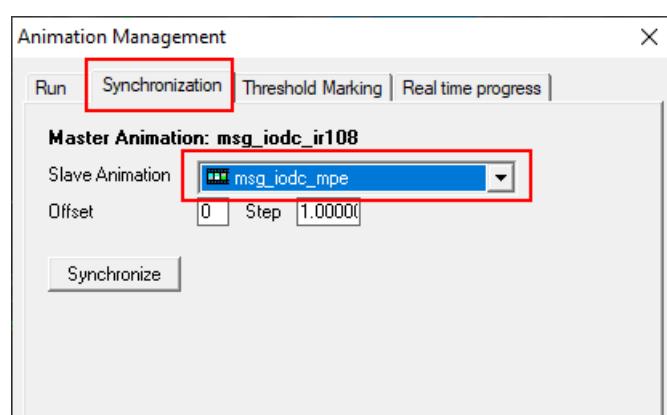
Zoom in to your area.

Start to run the msg_iodec_mpe animation as well.

At the top of your map window, it may read index: 1 and index: 3 (or similar). This means that the 4 time steps of our example are not displayed at the same time.

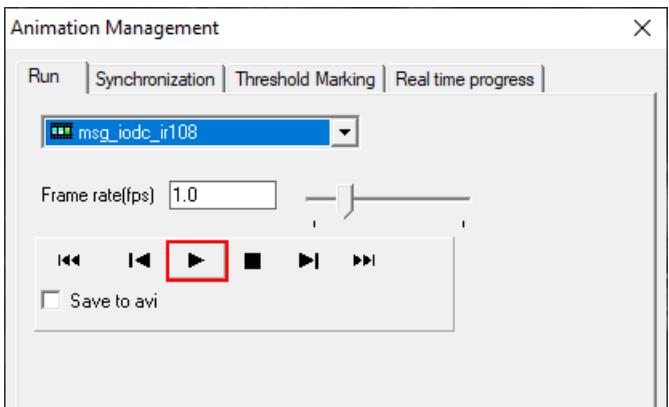
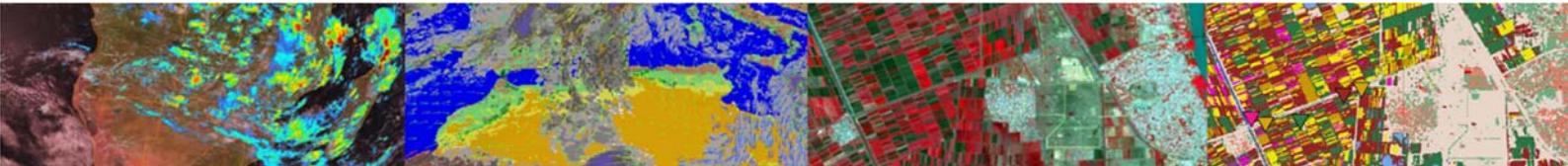
To synchronize both animations:

- Open the Animation Management dialog box of the msg_iodec_ir108 map list,
- Temporarily pause this animation
- go to the Synchronization tab (see picture below) and
- for the Slave Animation, select the msg_iodec_mpe animation, and
- click the Synchronize button.

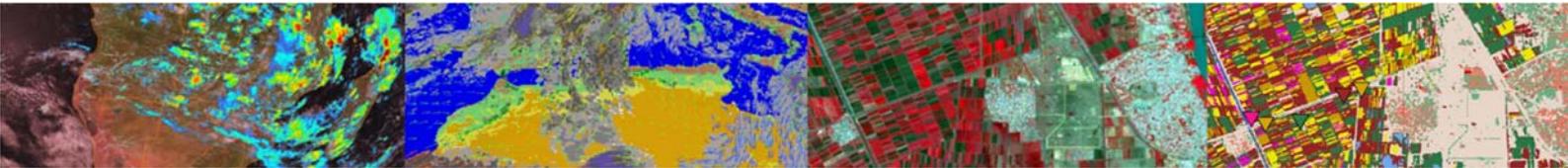


Now, at the top of your map window, both index values should have the same value.

Then go back to the Run tab and click the Play button again.



After a short while both animations should be displaying in sync.



10. Animations with correct date and time stamps in ILWIS

You may have noticed that in the ILWIS map window displaying the animations, the date and time stamps of the 4 example maps in our map lists (msg_iodec_ir108 and msg_iodec_mpe) were indicated only as index: 1, index: 2, index: 3 and index 4.

In fact, we know we displayed the maps of 3rd of November 2021, of 07:00, 07:15, 07:30 and 07:45.

We can make the map window reflect and display this **by adding an attribute table to both map lists**. In a column in the attribute table will then add columns for the correct date and time.

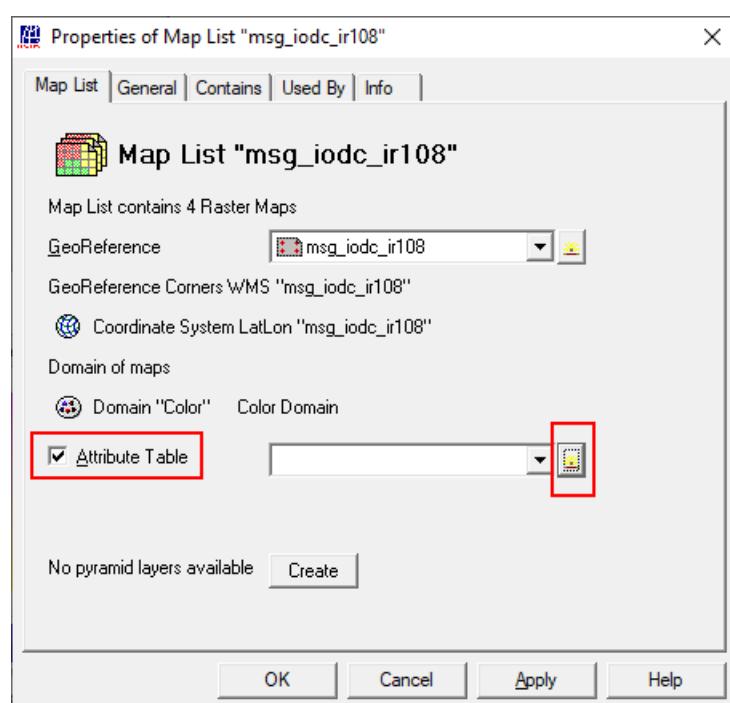
Go to the catalog where your map lists msg_iodec_ir108 and msg_iodec_mpe are located.

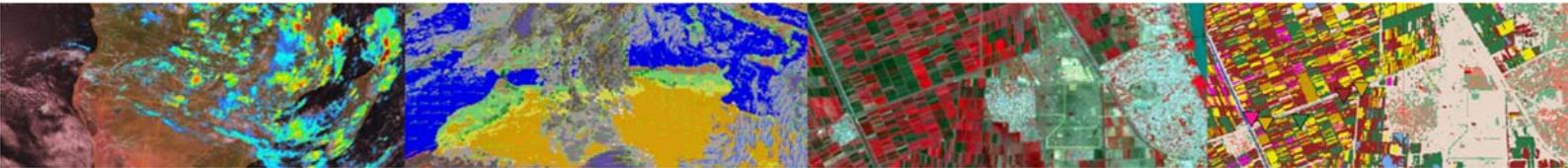
First, we will create an attribute table for maplist msg_iodec_ir108. Once it is created, we can also use this attribute table for the other maplist, as the values (dates and times) are exactly the same for both map lists.

- Right-click maplist msg_iodec_ir108 in the Catalog and choose Properties.

The Properties dialog box for this map lists will appear.

- Select the check box Attribute Table and then click the small Create button  right after the drop-down list box.

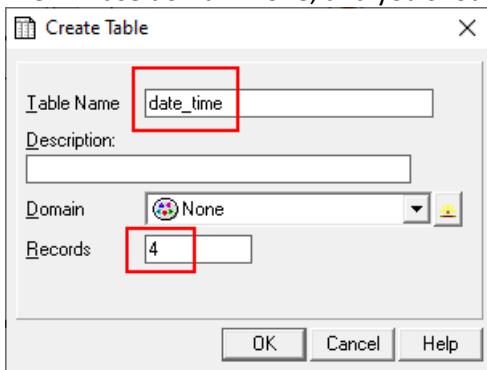




- The Create Attribute table dialog box appears.

As we have 4 maps in map list msg_iadc_ir108,
we just need to create a table with 4 records.

We will use domain None, and you should give the table a logical name, e.g. "date_time".



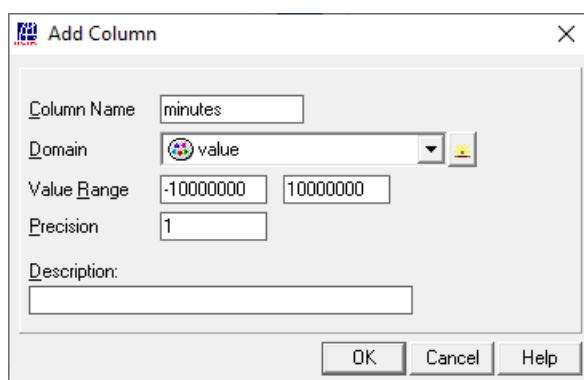
The goal is to create a column called DateTimeStamp which will contain the date and the times of the 4 maps in the map list. The outcome should look similar to:

	DateTimeStamp
1	2021-11-03 07:00
2	2021-11-03 07:15
3	2021-11-03 07:30
4	2021-11-03 07:45

As most of this strings are fixed, 1) we will only create a column for minutes (00, 15, 30, 45) and then 2)
use a dialog box in the table window to create the full strings.

Step 1:

- Create a column, by selecting Add Column from the Columns menu in the table.
- Name this column "minutes", set the Precision to 1 (as we are counting in whole minutes), and click OK.



- In the table, you can now manually type values in the "minutes" column: 0, 15, 30, 45

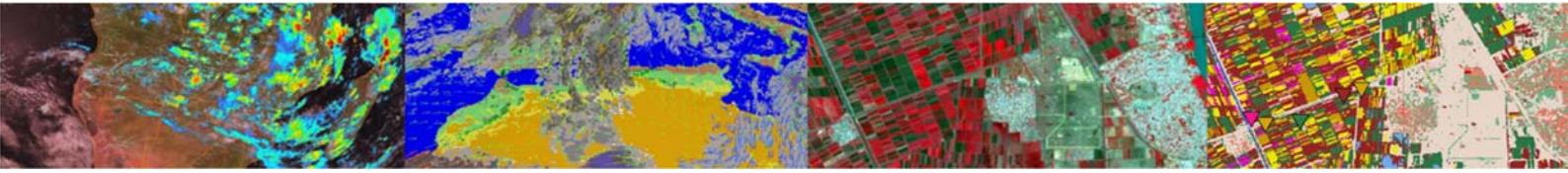


Table "date_time" - ILWIS

File Edit Columns Records View Help

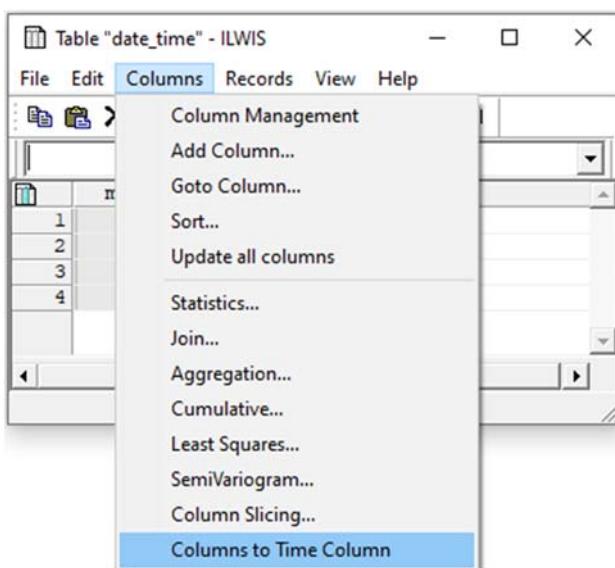
minutes

1	0
2	15
3	30
4	45

Show record 1 in record view

Step 2:

- From the Columns menu in the table, select Columns To Time Column



- The Create Time Columns dialog box appears.
- In this dialog box (see picture below),
fill out year, month, day exactly as the contents of your map list;
in our example: 2021, 11, 3

fill out the hour;

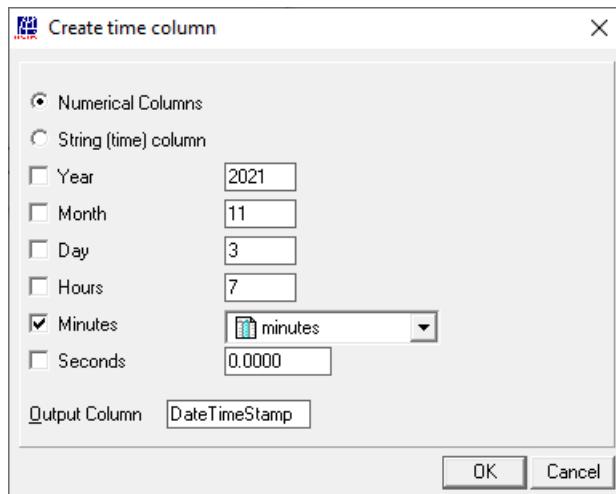
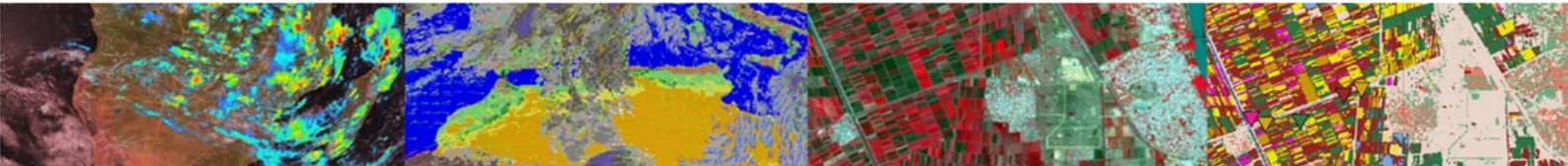
in our example: 7

for the minutes:

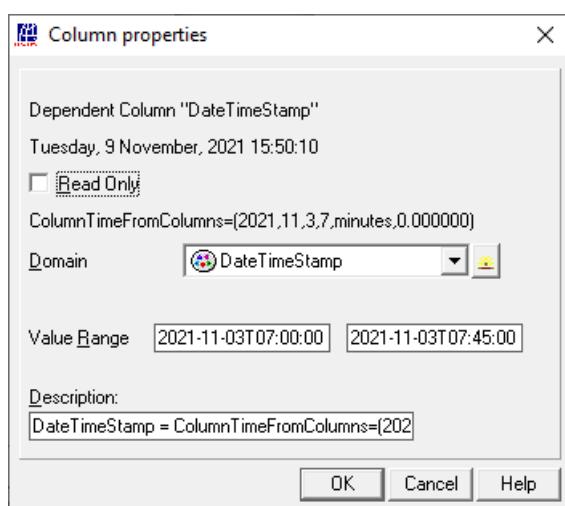
select the check box and then
select the "minutes" column of Step 1.

Name the output column for instance "DateTimeStamp".

Then click OK.

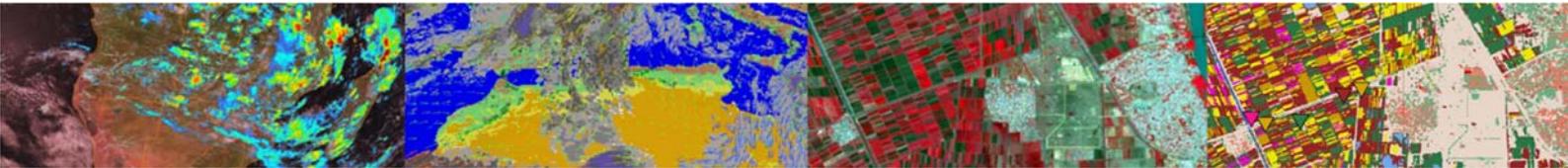


- The Columns Properties dialog box appears in which you can already see a value range resembling dates and times, click OK.



- New column DateTimeStamp will now appear in your table; inspect whether the values in the DateTimeStamp column reflect the date(s) and time(s) of the maps in your map list.

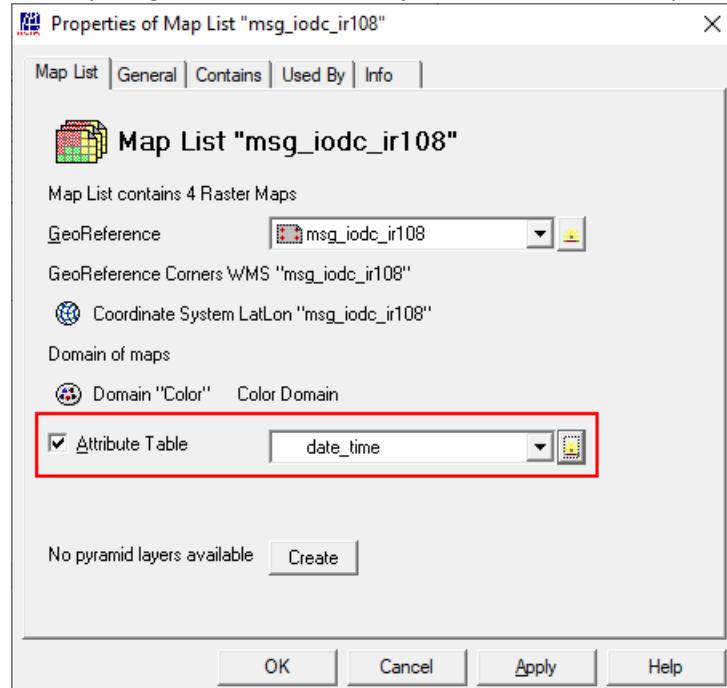
Table "date_time" - ILWIS		
File Edit Columns Records View Help		
DateTimeStamp = ColumnTimeFromColumns(2021,11,3,7,minutes,0.000000)		
1	minutes	DateTimeStamp
1	0	2021-11-03T07:00:00
2	15	2021-11-03T07:15:00
3	30	2021-11-03T07:30:00
4	45	2021-11-03T07:45:00



To use this table as an attribute table to both map lists:

Close the table that you have created,

If everything is OK, the table has just been added to map list msg_iopc_ir108.



Click OK.

Go back to your Catalog, open the Properties of map list msg_iopc_mpe.

And add the same attribute table "date_time" to this map list.

- Right-click map list msg_iopc_mpe, and choose Properties.
- Select the Attribute check box and select table "date_time".
- Click OK.

Final display of animations

Now we will redisplay both animations (msg_iopc_ir108 and msg_iopc_mpe), both showing the DateTimeStamp at the top of the map window.

And we will add country boundaries and Open Street Map as a background layer.

Open map list msg_iopc_ir108 as an animation. You can right-click this map list in the Catalog and select Open As Animation from the menu.

Add the maplist msg_iopc_mpe as an animation.

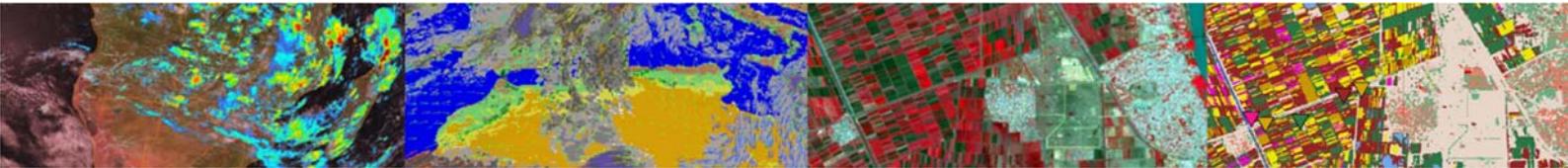
Add the Basemaps: Country Boundaries and OpenStreetMap

- In Layer Management, drag OpenStreetMap to the bottom.

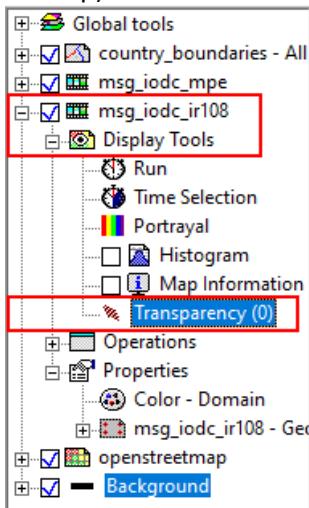
The order of the maps should be:

country_boundaries,
msg_iopc_mpe,
msg_iopc_ir108,
OpenStreetMap.

- Maybe zoom in already, now that the animations are not playing yet.
- In Layer Management: expand msg_iopc_ir108, then expand Display Tools and look for Transparency.



Double-click Transparency and set it to between 35% and 50% (so that you can see some of the openstreetmap).



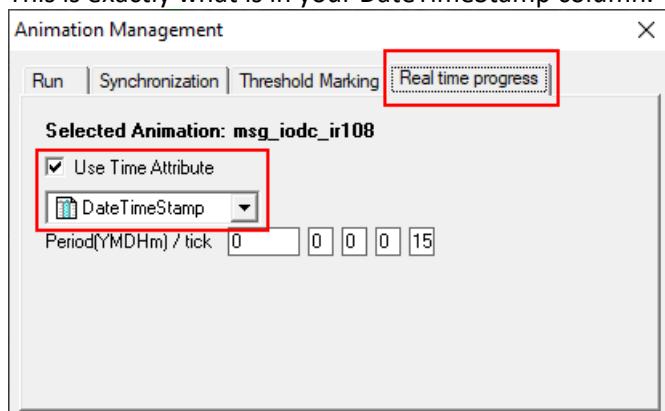
- Note that for both map lists, it is displayed “index 1” at the top of the map window.
- In Layer Management, for map list msg_iopc_ir108, double-click the Run item (as before) so that the Animation Management dialog box appears.

In the Animation Management dialog box (picture below):

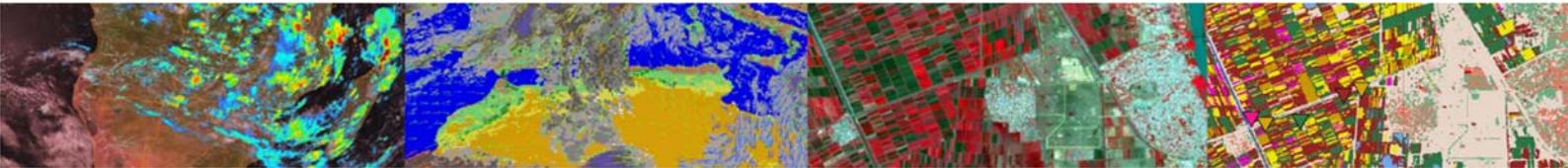
- Go to the Real time progress tab,
select the “Use Time Attribute” checkbox.
(As the attribute table “date_time” has been linked to this map list, it will automatically look in that table).
See that column DateTimeStamp has been selected. This is correct.

When done, you can close the Animation Management box for msg_iopc_ir108. The map window will now display at the top for msg_iopc_ir108:
“index 1: 2021-11-03T07:00:00”

This is exactly what is in your DateTimeStamp column.



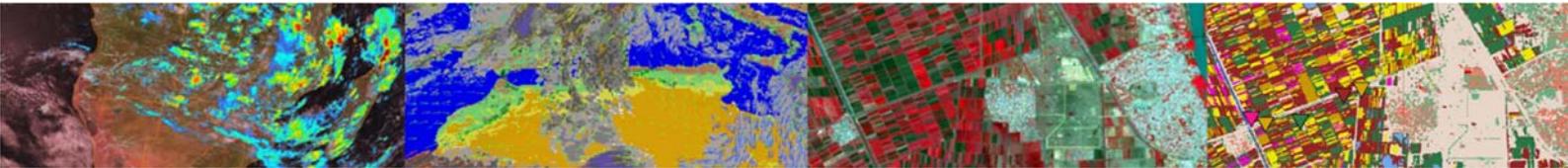
- Open Animation Management for map list msg_iopc_mpe, and also here, choose to use the attribute table with column DateTimeStamp.



The map window will then display at the top for both map lists:

“index 1: 2021-11-03T07:00:00”

- Open Animation Management for map list msg_iode_ir108 again,
 - On the Synchronization tab, set the Synchronization to msg_iode_mpe
 - On the Run tab, click the Play button.
- Both map lists / animations should start playing now. Have a little patience.
- At the top of the map window, you can see dates and times of the maps in the animations:
“index 1: 2021-11-03T07:00:00”
“index 2: 2021-11-03T07:15:00”
“index 3: 2021-11-03T07:30:00”
“index 4: 2021-11-03T07:45:00”



11. Background information

To find the exact date and time of the image you have fetched from Eumetsat, you can go to your working folder in File Explorer and **open the .mpr** of your layers with Notepad or Notepad++ or similar. For example:

- In File Explorer, go to open your working folder
- Open msg_iopc_ir108_yourdateyourtime.mpr in Notepad or Notepad++ or similar
- Inspect the line GetMap
- It should list the date and the time of the file that was fetched from Eumetsat
GetMap=https://view.eumetsat.int/geoserver/wms?SERVICE=WMS&TIME=2021-11-03T07:00:00.000Z&

To get more information on layers that can be fetched from Eumetsat through WMS, you can also inspect the GetCapabilites document in a web browser.

For instance copy and paste (or click) one of the following links and open the file:

- the original WMS string we used to create the WMSCollection:

<https://view.eumetsat.int/geoserver/wms?service=WMS&version=1.0.0&request=GetCapabilities>

- the WMS string found in msg_iopc_ir108.mpr:

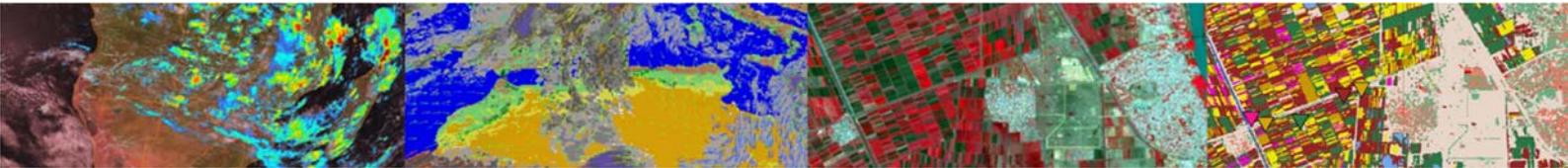
<https://view.eumetsat.int/geoserver/wms?service=WMS&TIME=2021-11-03T07:00:00.000Z&version=1.0.0&request=GetCapabilities>

A **getcapabilities_1.3.0.xml** document will be downloaded to your computer. You can open it in a browser or with Notepad++ or similar.

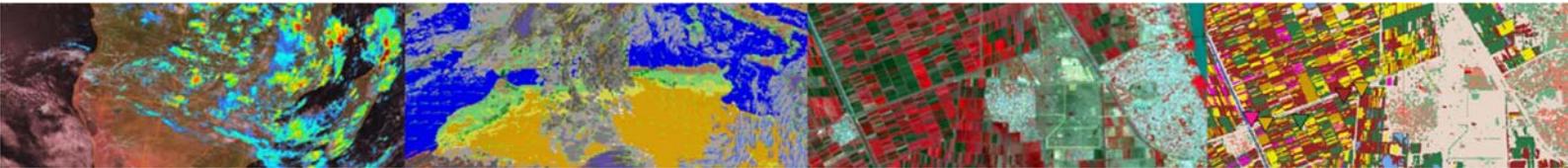
- In the xml file, search for instance for layer “msg_iopc_ir108” (use for instance Ctrl+F to search in the text in your browser or in your editor). Go through some of the properties of this layer.

It may look like:

```
<Layer queryable="1" opaque="0">
    <Name>msg_iopc_ir108</Name>
    <Title>High Rate SEVIRI IR10.8 μm Image &gt; 3hr - MSG - Indian Ocean 41.5 degrees E</Title>
    <Abstract>Rectified (level 1.5) Meteosat SEVIRI image data. The data is transmitted as High Rate transmissions in 12 spectral channels. Level 1.5 image data corresponds to the geolocated and radiometrically pre-processed image data, ready for further processing, e.g. the extraction of meteorological products. Any spacecraft specific effects have been removed, and in particular, linearisation and equalisation of the image radiometry has been performed for all SEVIRI channels. The on-board blackbody data has been processed. Both radiometric and geometric quality control information is included. Images are made available with different timeliness according to the latency: quarter-hourly images with a latency of more than 3 hours and hourly images if latency is less than 3 hours (for a total of 87 images per day). To enhance the perception for areas which are on the night side of the Earth a different mapping with increased contrast is applied for IR3.9 product. The greyscale mapping is based on the EBBT which allows to map the ranges 200 K to 300 K for the night and 250 K to 330 K for the day.</Abstract>
    <KeywordList>
        <Keyword>msg_iopc_ir108</Keyword>
        <Keyword>WCS</Keyword>
        <Keyword>ImageMosaic</Keyword>
    </KeywordList>
    <SRS>EPSG:4326</SRS>
    <LatLonBoundingBox minx="-35.5" miny="-77.0" maxx="118.5" maxy="77.0"/>
    <BoundingBox SRS="EPSG:4326" minx="-35.5" miny="-77.0" maxx="118.5" maxy="77.0"/>
    <Dimension name="time" units="ISO8601"/>
    <Extent name="time" default="2021-11-09T08:45:00Z" nearestValue="1">2020-08-01T00:00:00.000Z/2021-11-09T08:45:00.000Z/PT15M</Extent>
```



```
<Style>
  <Name>raster</Name>
  <Title>A simple default style</Title>
  <Abstract>A sample style for rasters</Abstract>
  <LegendURL width="20" height="20">
    <Format>image/png</Format>
    <OnlineResource xmlns:xlink="http://www.w3.org/1999/xlink"
      xlink:type="simple"
      xlink:href="https://view.eumetsat.int/geoserver/wms?request=GetLegendGraphic&format=image%2Fpng&width=20&height=20&layer=msg_iodec%3Air108"/>
  </LegendURL>
</Style>
</Layer>
```



12. Tools

To determine proper time stamps / overpass of the Metop satellites, you can use:

wxtrack - <https://www.satsignal.eu/software/wxtrack.htm>

Download and unzip the software

(<https://www.satsignal.eu/software/wxtrack.htm#DownloadWXtrack>)

and download and install the required DLLs/Runtime Library Bundle

(<https://www.satsignal.eu/software/runtime.html#LibraryBundle>)

To determine proper time stamps / overpass of the Metop satellites, you can also have a look at:

https://www.ssec.wisc.edu/datacenter/polar_orbit_tracks/

https://www.ssec.wisc.edu/datacenter/polar_orbit_tracks/data/METOP-B/

https://www.ssec.wisc.edu/datacenter/polar_orbit_tracks/data/METOP-C/

Disclaimer

If the Eumetsat Data Store and Data Tailor are not working as you would expect, please check:

<https://eumetsatspace.atlassian.net/wiki/spaces/EUM/pages/475856897/Service+status>

<https://uns.eumetsat.int/>