

Searching & Obtaining Satellite Data

syams@ait.ac

Geoinformatics Center - AIT

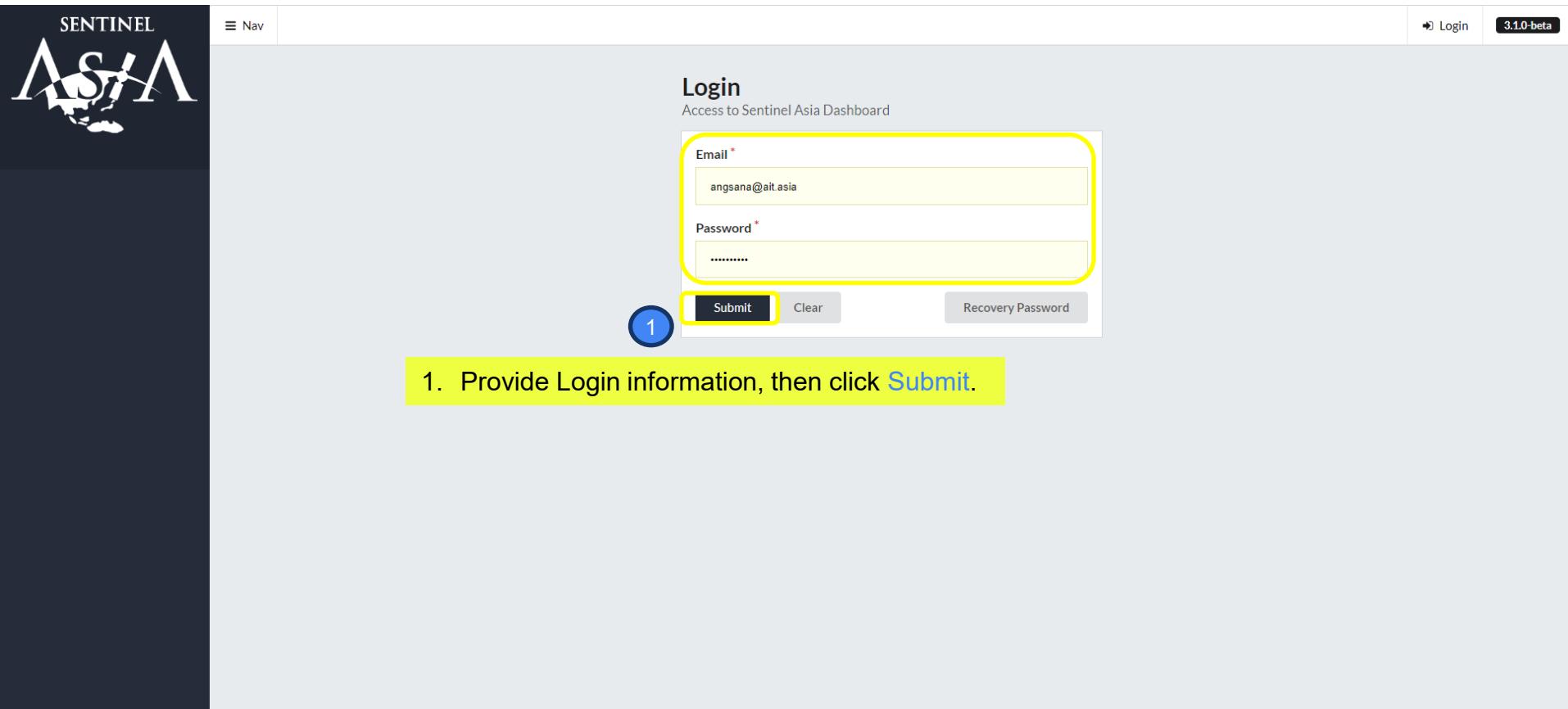
Overview

In this exercise, you will get familiar with some web portals providing free satellite images. In addition, you may also search for GIS data and other disaster-related information.

1. [Sentinel Asia Optemis](#)
2. [Copernicus Data Space Browser](#)
3. [ASF Data Search Vertex](#)
4. [Other sources](#)

1. Sentinel Asia Optemis

<https://optemis.sentinel-asia.org/dashboard/users/login>



SENTINEL
ASIA

☰ Nav

Login

Access to Sentinel Asia Dashboard

Email *

angsana@ait.asia

Password *

.....

Submit

Clear

Recovery Password

1

1. Provide Login information, then click **Submit**.

2. On the front page, you will see the Latest Emergency request. You can select the event that the data you want to download.

SENTINEL
ASIA

Nav Back to Homepage Asian Institute of Technology (AIT) Syams Nashrullah Member Logout 4.0.0

 Hi Syams Nashrullah, Welcome to Dashboard !
 You are already logged in. Your account will expire on 31 March 2026

Latest Emergency

List of 5 the latest requests

Request NO.	Country	Disaster	DPN	DAN	Activation Time	Status
20250612-Vietnam-Flood-Landslide-Storm-00584	 Vietnam	Flood, Landslide, Storm	11	62	2 days 06:42:57	Approved
20250608-Vietnam-Flood-Landslide-Storm-00583	 Vietnam	Flood, Landslide, Storm	11	62	5 days 07:45:06	Approved
20250525-India-Other-00582	 India	Other	11	62	18 days 21:58:05	Approved
20250525-Vietnam-Flood-Landslide-Storm-00581	 Vietnam	Flood, Landslide, Storm	11	62	19 days 06:30:09	Approved
20250518-Vietnam-Flood-Landslide-Storm-00580	 Vietnam	Flood, Landslide, Storm	10	62	25 days 05:51:13	Approved

Permissions

Allow Modules and Permissions

Modules	Read	Write	Edit	Delete
Constellation Parameter	✗	✗	✗	✗
SA Members	✗	✗	✗	✗
User Accounts	✗	✗	✗	✗
Emergency Request Management	✓	✗	✗	✗
DPN Management	✗	✗	✗	✗
DAN Management	✓	✓	✓	✓

Members

List of your organization members

No	Name	Email	Phone	Last Login
1	Angsana Chaksan	angsana@ait.asia	+66890406417	2025-05-23 02:50:08
2	Syams Nashrullah	syams@ait.asia	66652155537	2025-06-14 10:33:00
3	Thanaphol Boodchuang	thanaphol@ait.asia	0936724741	2025-05-30 02:50:16

3. You can also check the previous activation by clicking to [DAN Management](#) or [EOR Management](#).

SENTINEL ASIA

Dashboard

Overview

MANAGE

- EOR Management** (3)
- DAN Management**
- Summary**

ACCOUNT

- Change Password**

MAINTENANCE

- User Manual**

Contact & Report

Email

☰ Nav [Back to Homepage](#)

Asian Institute of Technology (AIT) [Syams Nashrullah](#) Member [Logout](#) 4.0.0

EMERGENCY REQUEST

EOR Management Datatables

Show 10 entries Search:

NO.	COUNTRY	REQUESTER	DISASTER	AREA OF INTEREST	CREATE AT	PERIOD	STATUS	ACTIONS
20240516-Turkmenistan-Flood-0054	Turkmenistan	Name: Ulan Abdybachaev Phone: 996706385927 Email: u.abdybachaev@caig.kg	Flood		2024-05-18 05:01:13 Ended	2024-05-16 17:00	Approved	
20240511-Indonesia-Flood-Landslide-0053	Indonesia	Name: Dr. Yenni Vetr Rita Phone: 6281386448212 Email: yenn004@brin.go.id	Flood, Landslide		2024-05-13 09:52:16 Ended	2024-05-11 14:00	Approved	
20240502-Indonesia-Flood-Landslide-0052	Indonesia	Name: Dr. Yenni Vetr Rita Phone: 6281386448212 Email: yenn004@brin.go.id	Flood, Landslide		2024-05-12 09:15:58 Ended	2024-05-02 17:00	Approved	
20240502-United Arab Emirates-Flood-Storm-0051	United Arab Emirates	Name: Alia Phone: 0097146071133 Email: alia.almekhyat@mbrsc.ae	Flood, Storm		2024-05-01 15:04:07 Ended	2024-05-02 22:00	Approved	

4. Click the [Download](#) button to download the data from the data provider. You may have to select from a list of available datasets.

Organization	Area (Km ²)	Status				Remark	Shapefile	Data
		Acknowledge	Planned	Processed	Uploaded			
India Space Research Organization (ISRO)	0	✓	✓	✓	✓			4
Geo-Informatics and Space Technology Development Agency (GISTDA)	0							
Vietnamese Academy of Science and Technology (VAST)	0							
Korea Aerospace Research Institute (KARI)	0							
Japan Aerospace Exploration Agency (JAXA)	0	✓	✓	✓	✓			4
Secretariat	0							
Philippine Space Agency (PhilSA)	0							
Taiwan Space Agency (TASA)	0	✓	✓					
Centre for Remote Imaging, Sensing and Processing (CRISP)	0							
Mohammed Bin Rashid Space Centre (MBRSC)	0							

Storage Shapefile & Datafile

File Name	Size (MB)	Link	Date	Download
6459*15e-3e6b-47b-915c-3e...	2686.901901	20240810-Bhutan-Flood-Landslide-00533	2024-08-14 06:45:23	
6f03b6c-5601-4957-a16b-4c...	473.908305	20240810-Bhutan-Flood-Landslide-00533	2024-08-14 06:33:21	
ea00413b-2301-45d8-8399-4e...	2687.630008	20240810-Bhutan-Flood-Landslide-00533	2024-08-14 06:53:41	
5bf2944c-a033-4a6e-8a6e-f3...	474.828132	20240810-Bhutan-Flood-Landslide-00533	2024-08-15 13:36:30	
d151a1f-9605-41b-a3a9-ee...	2687.400687	20240810-Bhutan-Flood-Landslide-00533	2024-08-15 13:36:30	
4f032_20240815_08e148_88c...	0.00083	20240810-Bhutan-Flood-Landslide-00533	2024-08-14 08:28:38	

5. Check the Message Box to be informed of the available dataset.

SENTINEL ASIA
EMERGENCY OBSERVATION REQUEST (EOR) FORM (1/1)

Requester (your name and organization)

Your name	Ms. Sonam Lhamo
Your organization	National Center for Hydrology and Meteorology (NCHM)
Membership:	<input checked="" type="checkbox"/> JPT member <input type="checkbox"/> ADRC member
Your phone	97502328280
Your cellular	97517411353
Your fax	
Your E-mail	sonamlhamo@nchm.gov.bt

Message Box 5

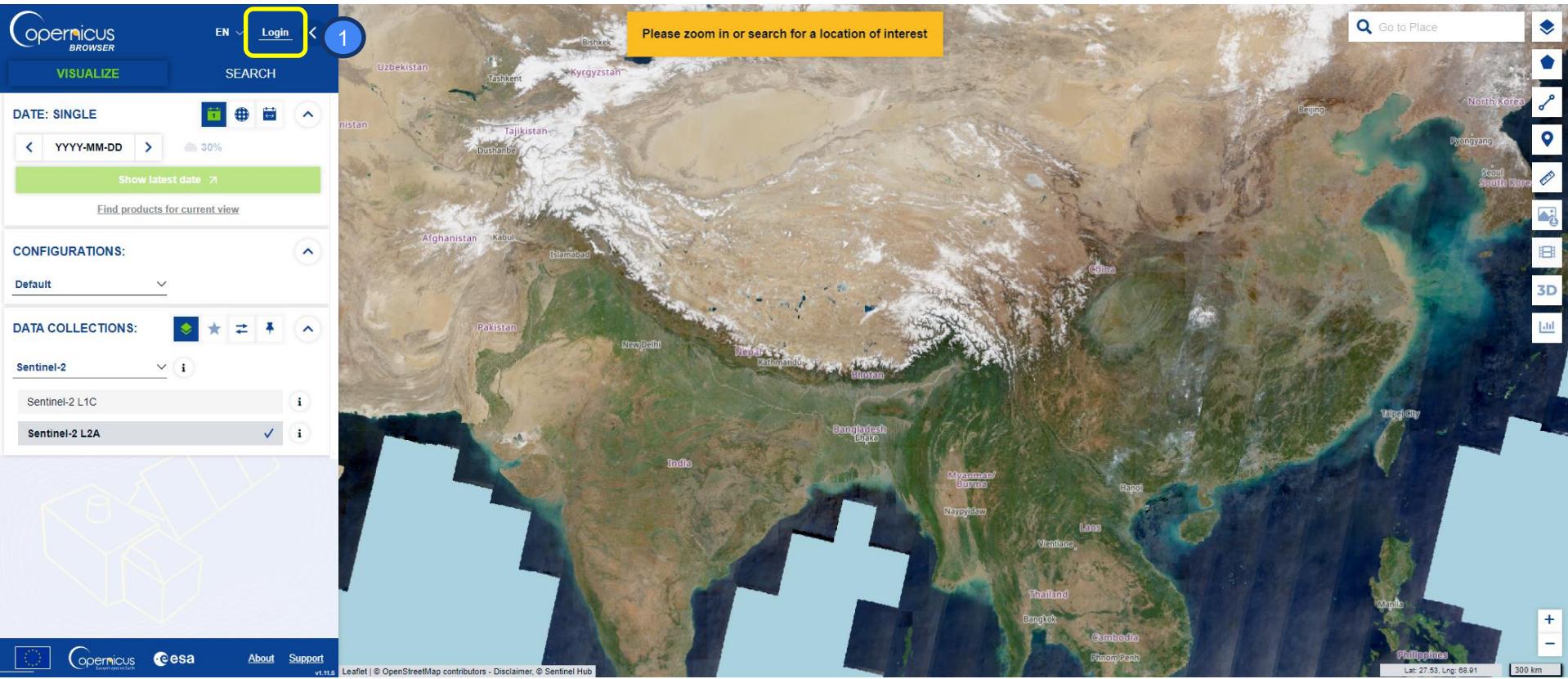
ML Ms. Sonam Lhamo 5 days ago
Cannot download any files.
Reply

MS Masami Sugiyura 5 days ago
No observation data has been uploaded yet.
Please wait.

2. Copernicus Data Space Browser

1. Click [Login](#) to access the Copernicus Browser.

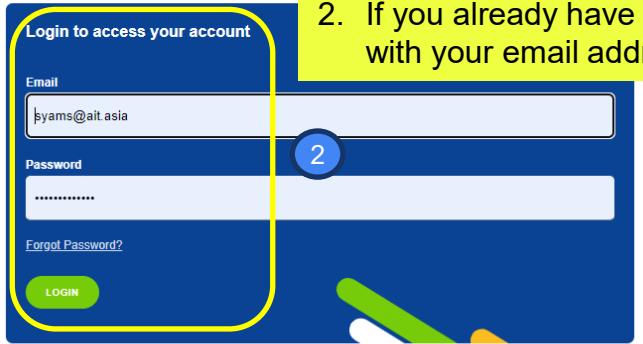
<https://browser.dataspace.copernicus.eu/>



The image shows the Copernicus Data Space Browser interface. On the left, there is a sidebar with various configuration options: 'DATE: SINGLE' (YYYY-MM-DD), 'SEARCH' (with a magnifying glass icon), 'CONFIGURATIONS' (set to 'Default'), and 'DATA COLLECTIONS' (set to 'Sentinel-2', with options for 'Sentinel-2 L1C' and 'Sentinel-2 L2A'). A yellow box highlights the 'Login' button in the top right of the sidebar, with a blue circle containing the number '1' to its right. The main area is a satellite map of South and Central Asia, showing countries like India, Pakistan, and China. A yellow bar at the top of the map area says 'Please zoom in or search for a location of interest'. On the right side of the map, there is a vertical toolbar with various icons for search, zoom, and data selection.



2. If you already have an account, log in with your email address and password.



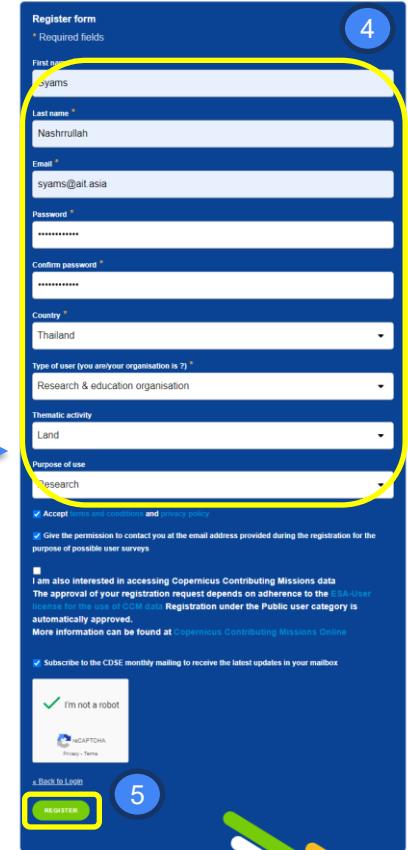
Register and create an account for free in 60 seconds

- Access a variety of Earth observation data
- Manage your personal settings
- Follow your credits and orders

3

REGISTER

3. If you don't have an account yet, please register first.



- Provide detailed information for your new account.
- Click **Register**.
- Check your email to complete registration

6. Define your Area of Interest (AOI) using the tools provided on the right side.

- Enter the name of the area to limit the search window
- You can define the AOI by drawing a point, line, or polygon.
- **Alternative:** You can upload a KML/KMZ, GPX, WKT (in EPSG:4326), or GEOJSON/JSON file to create the AOI.

6

Copernicus BROWSER EN Syams Nashrullah

VISUALISE **SEARCH**

SH DASHBOARD **WORKSPACE**

DATE: SINGLE

YYYY-MM-DD 30% Show latest date Find products for current view

CONFIGURATIONS:

Default

DATA COLLECTIONS:

Sentinel-2

Sentinel-2 L1C

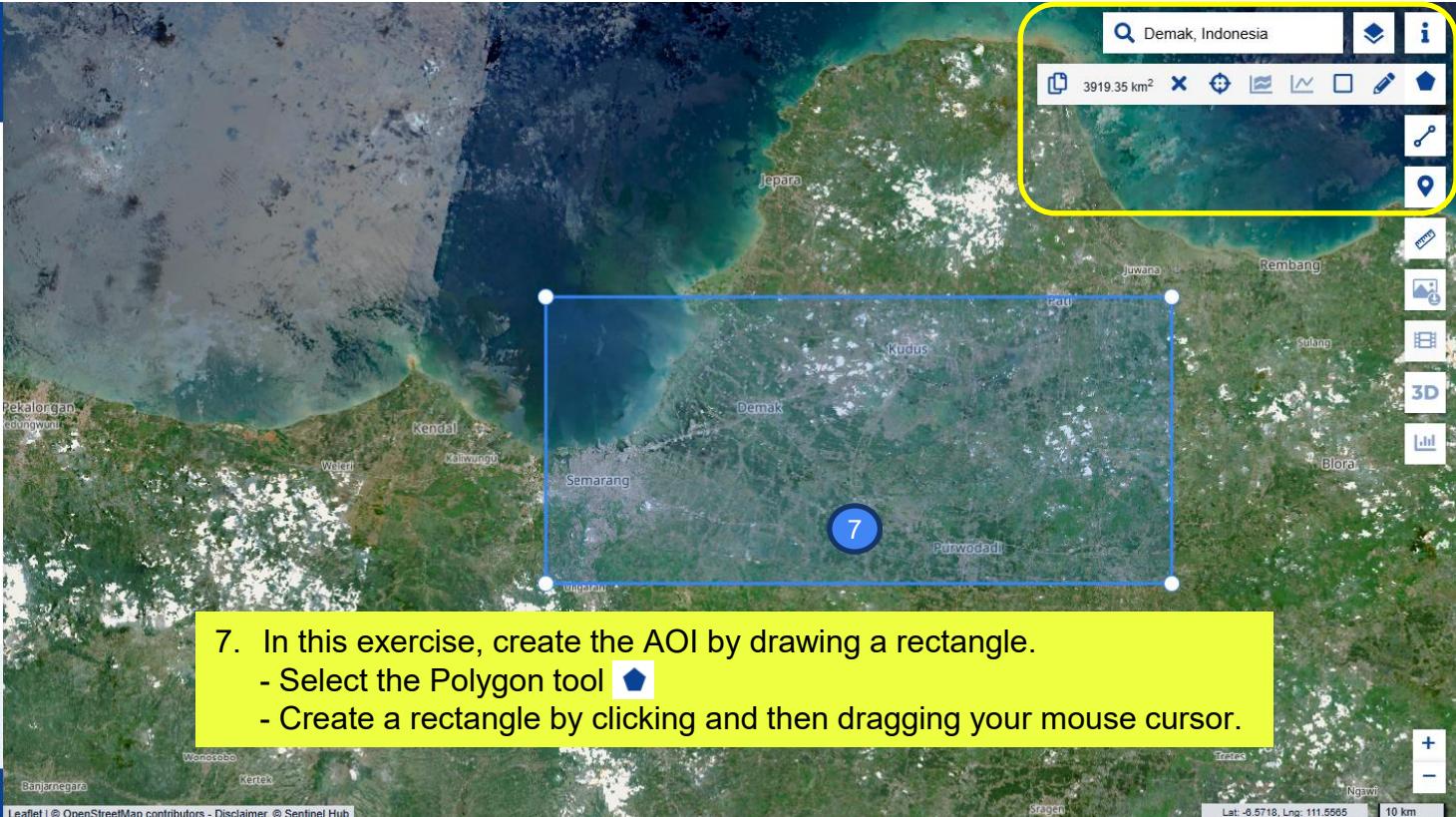
Sentinel-2 L2A

3D

10 km

Lat: -6.5718, Lng: 111.5565

17.2 Leaflet | © OpenStreetMap contributors - Disclaimer, © Sentinel Hub



Demak, Indonesia 3919.35 km²

3D

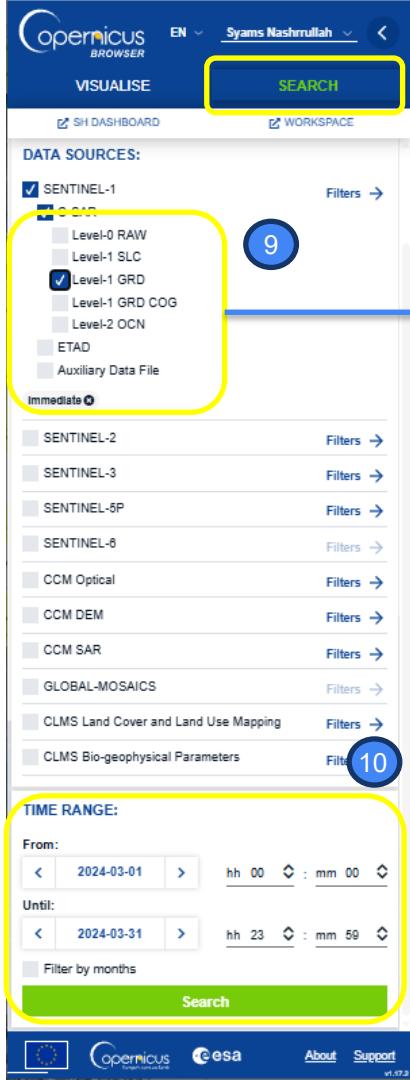
10 km

Lat: -6.5718, Lng: 111.5565

17

7. In this exercise, create the AOI by drawing a rectangle.

- Select the Polygon tool
- Create a rectangle by clicking and then dragging your mouse cursor.



The screenshot shows the Copernicus Browser interface. At the top, there are language and user profile dropdowns. Below that is a navigation bar with 'VISUALISE' and 'SEARCH' buttons, where 'SEARCH' is highlighted with a yellow box and a blue circle containing the number 8. The main area is titled 'DATA SOURCES' and lists various satellite datasets. A yellow box highlights the 'SENTINEL-1' section, which is expanded to show sub-options: 'Level-0 RAW', 'Level-1 SLC', 'Level-1 GRD', 'Level-1 GRD COG', 'Level-2 OCN', 'ETAD', and 'Auxiliary Data File'. A blue circle containing the number 9 is placed over the 'Level-1 GRD' option. A blue arrow points from this section to a detailed search interface on the right. The search interface is titled 'SENTINEL-1' and includes fields for 'SATELLITE PLATFORM' (S1A, S1B), 'ORBIT DIRECTION' (Ascending, Descending), 'RELATIVE ORBIT NUMBER' (1-175), 'ACQUISITION MODE' (SM, IW, EW, WV), 'BEAM ID' (Beam id), 'POLARISATION' (HH, VV, VV+VH, HH+HV), and 'PRODUCT AVAILABILITY' (Immediate, To order). It also features a 'RESET FILTERS' button. A blue circle containing the number 10 is placed over the 'RESET FILTERS' button. At the bottom, there is a 'TIME RANGE' section with 'From' and 'Until' date and time inputs, and a 'Search' button.

8. On the left side of the browser panel, click **Search**.

9. We will search for Sentinel-1 data.
 - Select **SENTINEL-1**
 - Select **Level-1 GRD**

Optional: You can provide a more detailed search by clicking the **Filters** button.

- Select the options for Satellite platform, Orbit direction, Relative orbit number, Acquisition mode, Beam ID, and Polarisation mode.

10. We will select the time range of data based on the Sentinel Asia activation for the observation of the Central Java flood.
 - Select the time range from **2024-03-01** to **2024-03-31**.
 - Click **Search**.

You may see several scenes of Sentinel-1 images that cover the AOI.

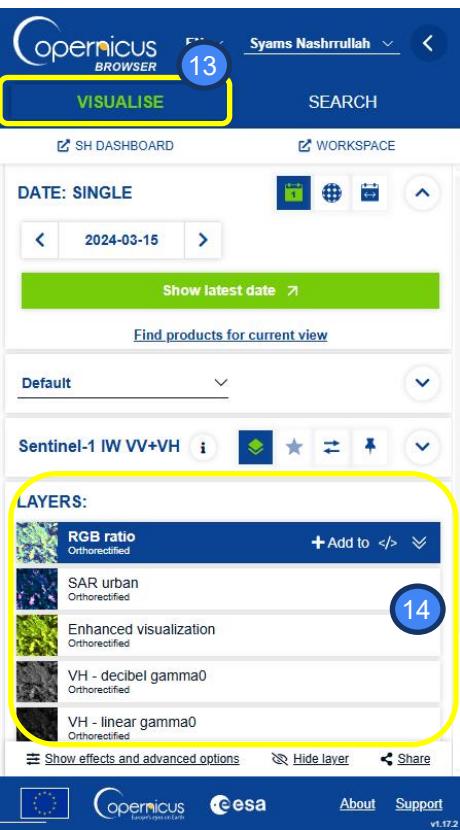
11. Click one of the scenes. The selected scene will be highlighted in green, and the corresponding satellite images will pop up in the **Results** window.
12. Download your selected scenes by clicking the  icon in the **Results** window.

The screenshot shows the Copernicus Browser interface. At the top, there are buttons for 'EN', 'Syams Nashrullah', and a search bar with 'Demak, Indonesia'. The main area features a satellite map of Demak, Indonesia, with a blue polygon highlighting a specific region. A results dialog box is open in the center, showing 'Showing 3 results' for Sentinel-1 SAR data. The results are as follows:

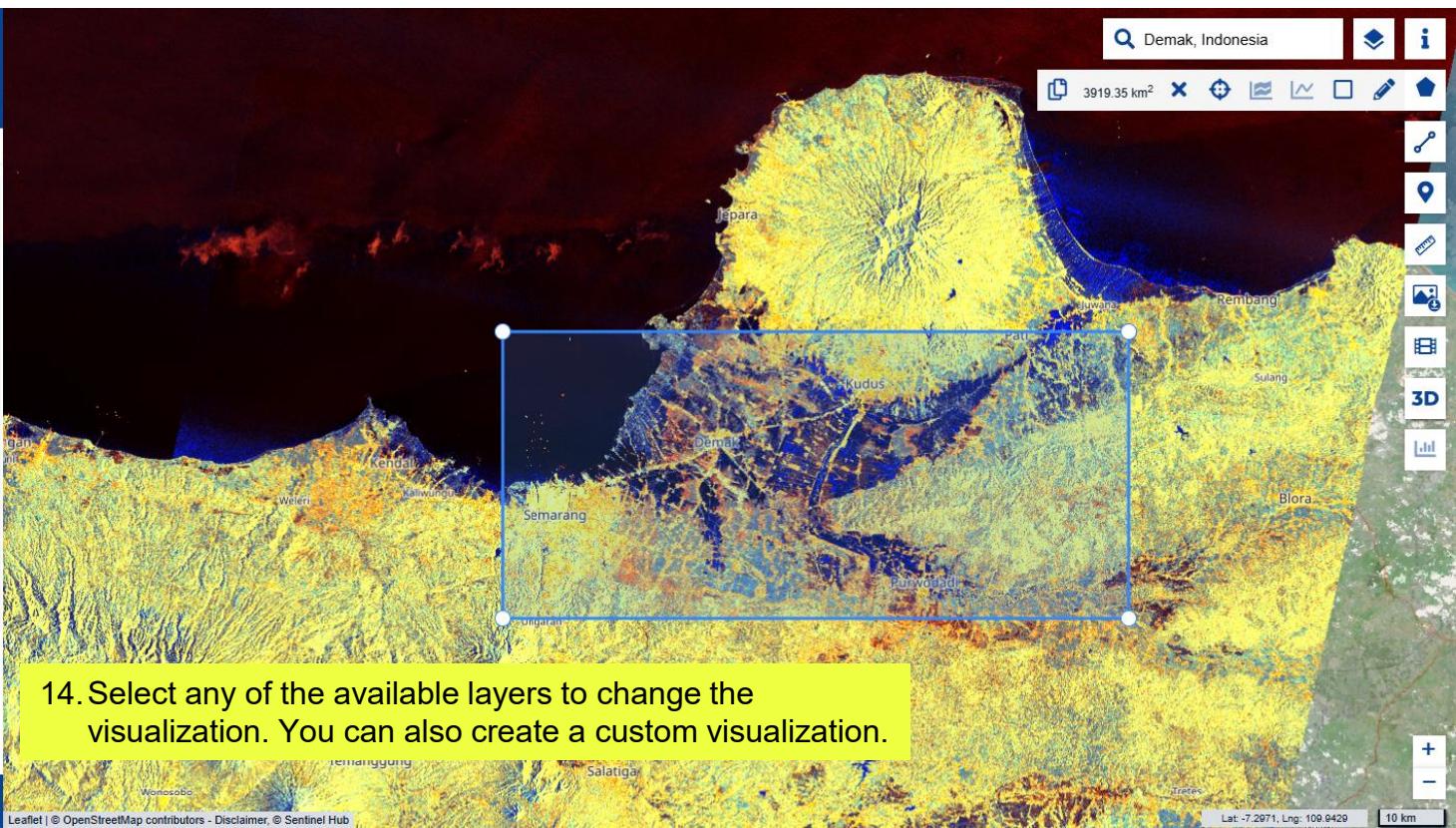
- S1A_IW_GRDH_1SDV_20240327T221739_20240327T221804_053173_067146_068A.SAFE
Mission: SENTINEL-1 Instrument: SAR Size: 1640MB
Sensing time: 2024-03-27T22:17:39.856426Z
- S1A_IW_GRDH_1SDV_20240315T221739_20240315T221804_052998_066A91_7AD8.SAFE
Mission: SENTINEL-1 Instrument: SAR Size: 1640MB
Sensing time: 2024-03-15T22:17:39.731582Z
- S1A_IW_GRDH_1SDV_20240303T221739_20240303T221804_052823_06648A_598B.SAFE
Mission: SENTINEL-1 Instrument: SAR Size: 1640MB
Sensing time: 2024-03-03T22:17:39.779202Z

Each result has a 'Visualise' button, a 'VV&H' button, an 'IW' button, and a download icon. A blue circle labeled '11' is on the map near the polygon, and a blue circle labeled '12' is on the map near the highlighted region. A yellow circle highlights the first result in the list. The bottom of the screen shows the Copernicus logo, the European Space Agency (esa) logo, and buttons for 'About' and 'Support'. The footer includes the Leaflet logo, a copyright notice for OpenStreetMap contributors, and a disclaimer.

13. To explore the data, you can click the [Visualize](#) button in any of the result image scenes.



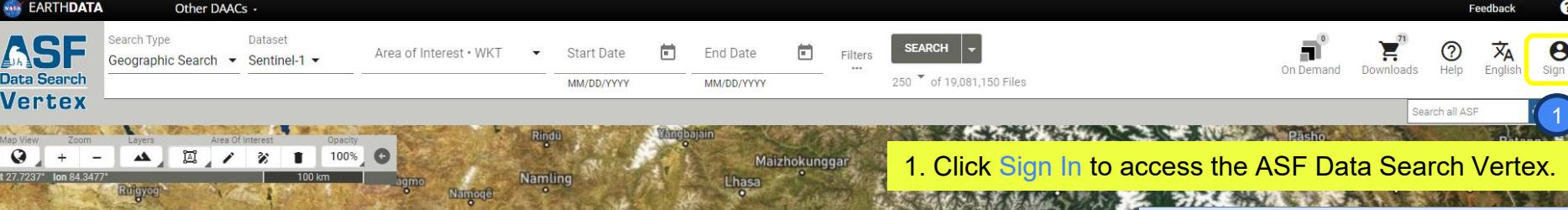
The screenshot shows the Copernicus Browser interface. At the top, there is a user profile for 'Syams Nashrullah'. Below the header, a yellow box highlights the 'VISUALISE' button, which is circled with the number 13. The interface includes a search bar, workspace, and date selection (2024-03-15). The 'DATE: SINGLE' dropdown is set to '2024-03-15'. The 'LAYER' section on the left is highlighted with a yellow box and the number 14, showing layers like 'RGB ratio Orthorectified', 'SAR urban Orthorectified', 'Enhanced visualization Orthorectified', 'VH - decibel gamma0 Orthorectified', and 'VH - linear gamma0 Orthorectified'. At the bottom, there are links for 'About' and 'Support'.



14. Select any of the available layers to change the visualization. You can also create a custom visualization.

3. ASF Data Search Vertex

<https://search.asf.alaska.edu/>



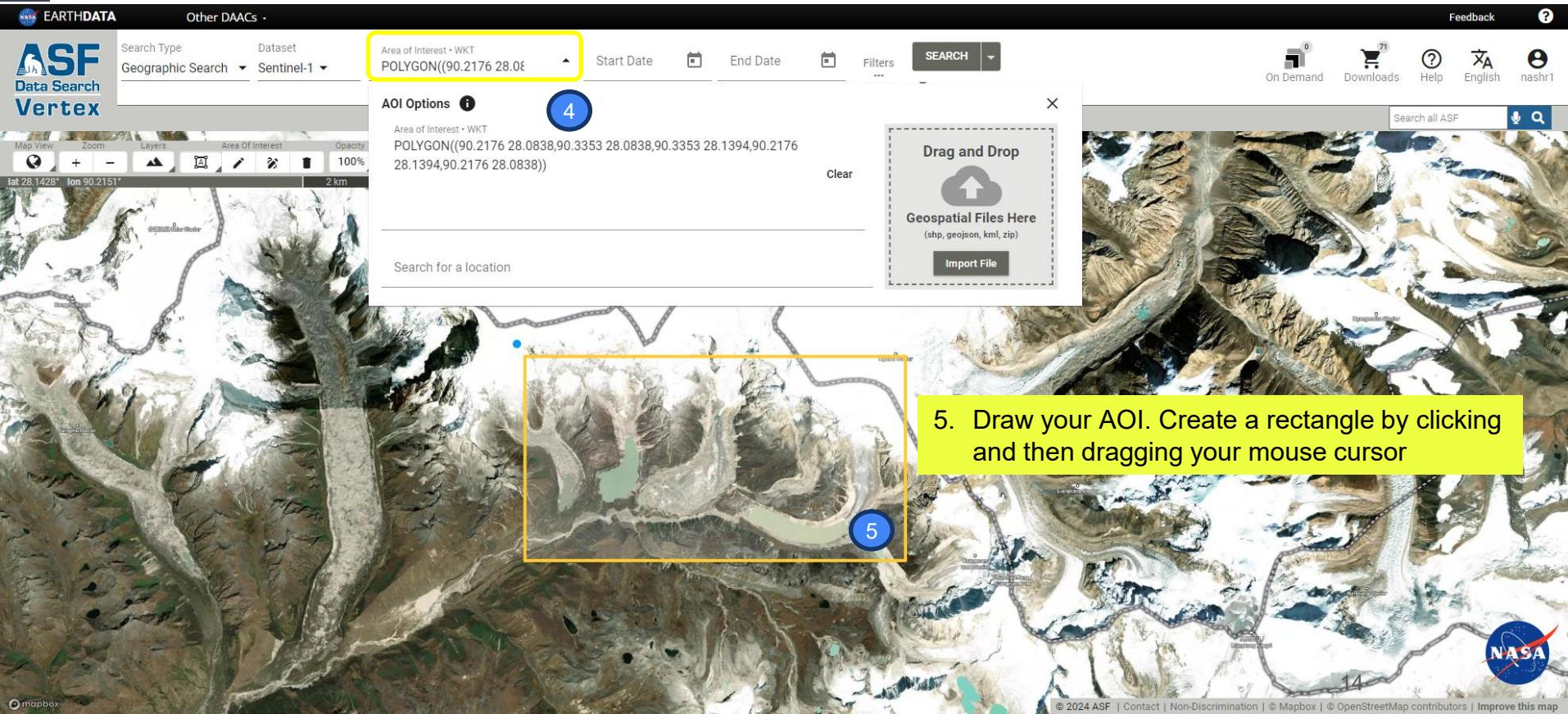
1. Click [Sign In](#) to access the ASF Data Search Vertex.

2. If you already have Earthdata account, sign in with your username and password.

3. If not, please register first.

4. Define your Area of Interest (AOI).

- You can define the AOI by drawing a point, line, or polygon.
- **Alternative:** You can upload a .shp, .geojson, .kml, or .zip file to create the AOI.



Area of Interest - WKT
POLYGON((90.2176 28.08...

AOI Options 4

Area of Interest - WKT
POLYGON((90.2176 28.0838,90.3353 28.0838,90.3353 28.1394,90.2176 28.1394,90.2176 28.0838))

Drag and Drop
Geospatial Files Here
(shp, geojson, kml, zip)
Import File

5

5. Draw your AOI. Create a rectangle by clicking and then dragging your mouse cursor

6. Select the satellite data.

- ASF Vertex offers several options for satellite data, including Sentinel-1, ALOS PALSAR, ALOS AVNIR-2, and more.

ASF Data Search Vertex

EARTHDATA Other DAACs

Search Type **Geographic Search** **More Info**

Sentinel-1  **2014 to Present** **ESA**

Sentinel-1 includes twin satellites that each carry C-band synthetic aperture radar (SAR), together providing all-weather, day-and-night imagery of Earth's surface.

S1 Bursts  **(beta)** **2014 to Present** **ESA**

Sentinel-1 BURST products are the individual radar pulse responses that make up the 3 sub-swaths of every Sentinel-1 SLC product.

More Info

OPERA-S1  **2014 to Present** **OPERA-JPL**

Sentinel-1 RTC backscatter products providing near-global coverage, as well as Sentinel-1 CSLC products covering North America.

More Info

ALOS PALSAR  **2006 to 2011** **JAXA/METI**

PALSAR was developed to contribute to the fields of mapping, precise regional land-coverage observation, disaster monitoring, and resource surveying.

More Info

ALOS AVNIR-2  **2006 to 2011** **JAXA**

Advanced Visible and Near-Infrared Radiometer (AVNIR)-2 images have removed distortions caused by the sensor and terrain. This allows the overlay of

More Info

SIR-C **(beta)**  **1994** **NASA**

The instrument was flown aboard two of the space shuttle Endeavour's missions. The instrument monitored and assessed large-scale environmental processes.

More Info

Map View Zoom Layers Area Of Interest
Lat 28.1993° Lon 90.1764°

6

End Date **Filters** **SEARCH** **... of 7,272 Files**

On Demand **Downloads** **Help** **English** **nashr1**

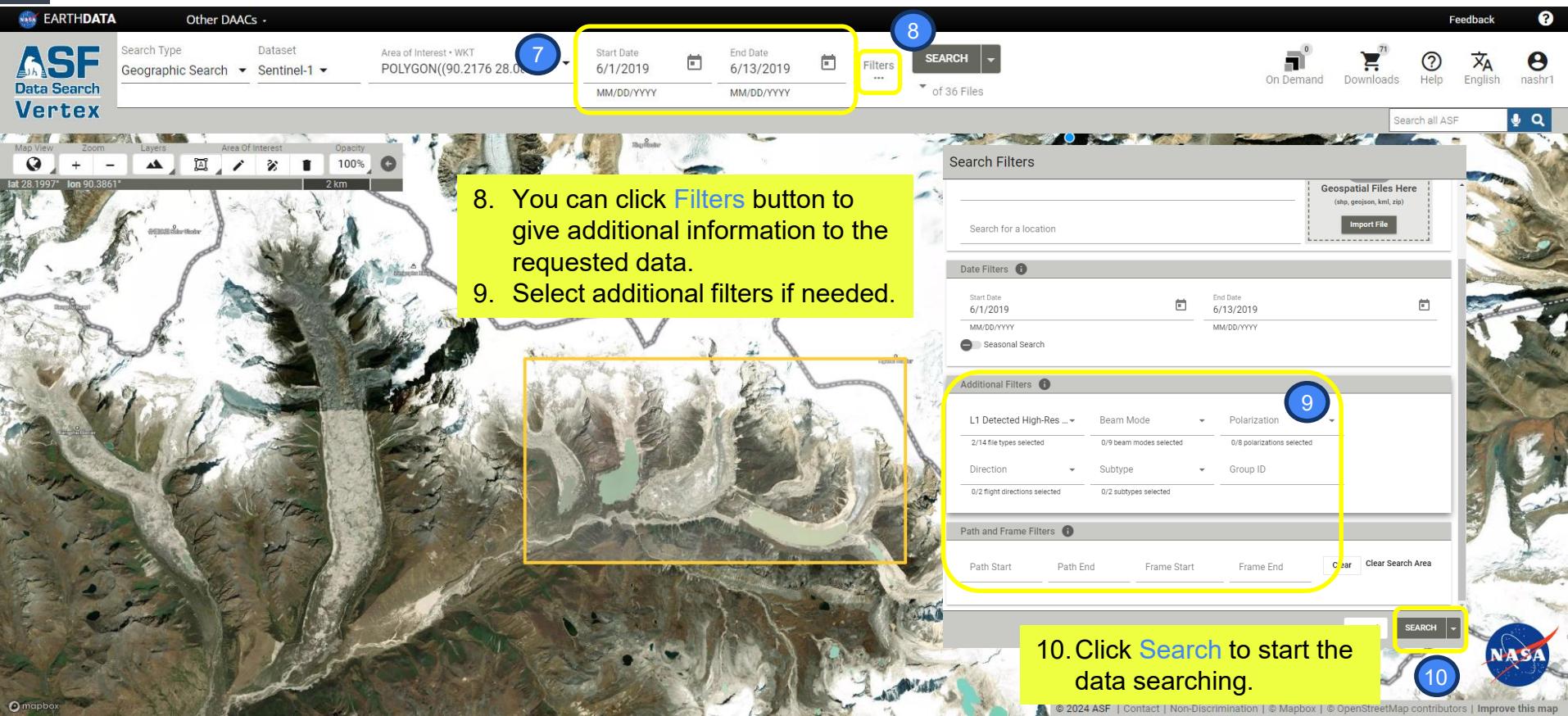
Search all ASF **More Info**



NASA

© 2024 ASF | Contact | Non-Discrimination | © Mapbox | © OpenStreetMap contributors | Improve this map

7. Define the observation date.
- Start Date and End Date.



7. Define the observation date.
- Start Date and End Date.

8. You can click **Filters** button to give additional information to the requested data.

9. Select additional filters if needed.

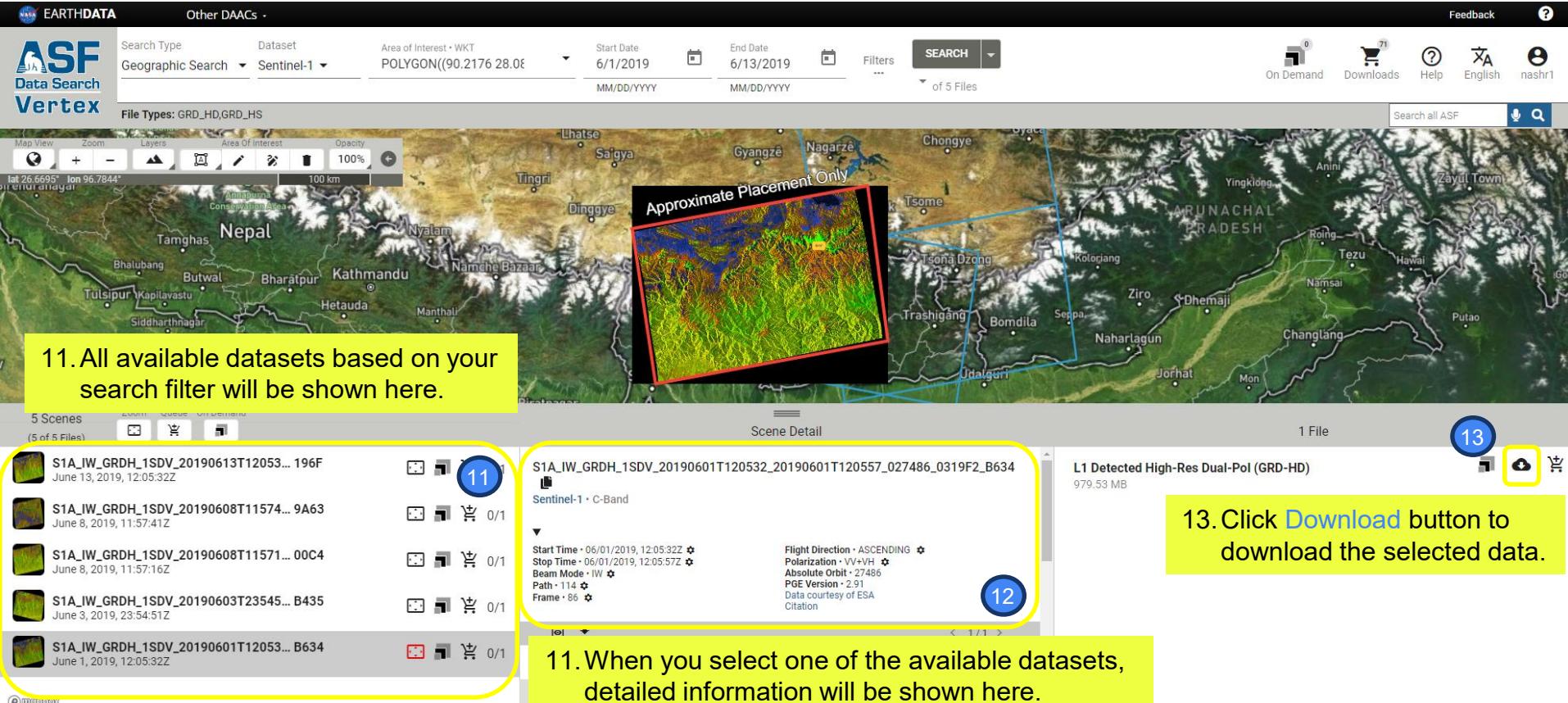
10. Click **Search** to start the data searching.

11. All available datasets based on your search filter will be shown here.

11. When you select one of the available datasets, detailed information will be shown here.

12. Detailed information about the selected dataset.

13. Click Download button to download the selected data.



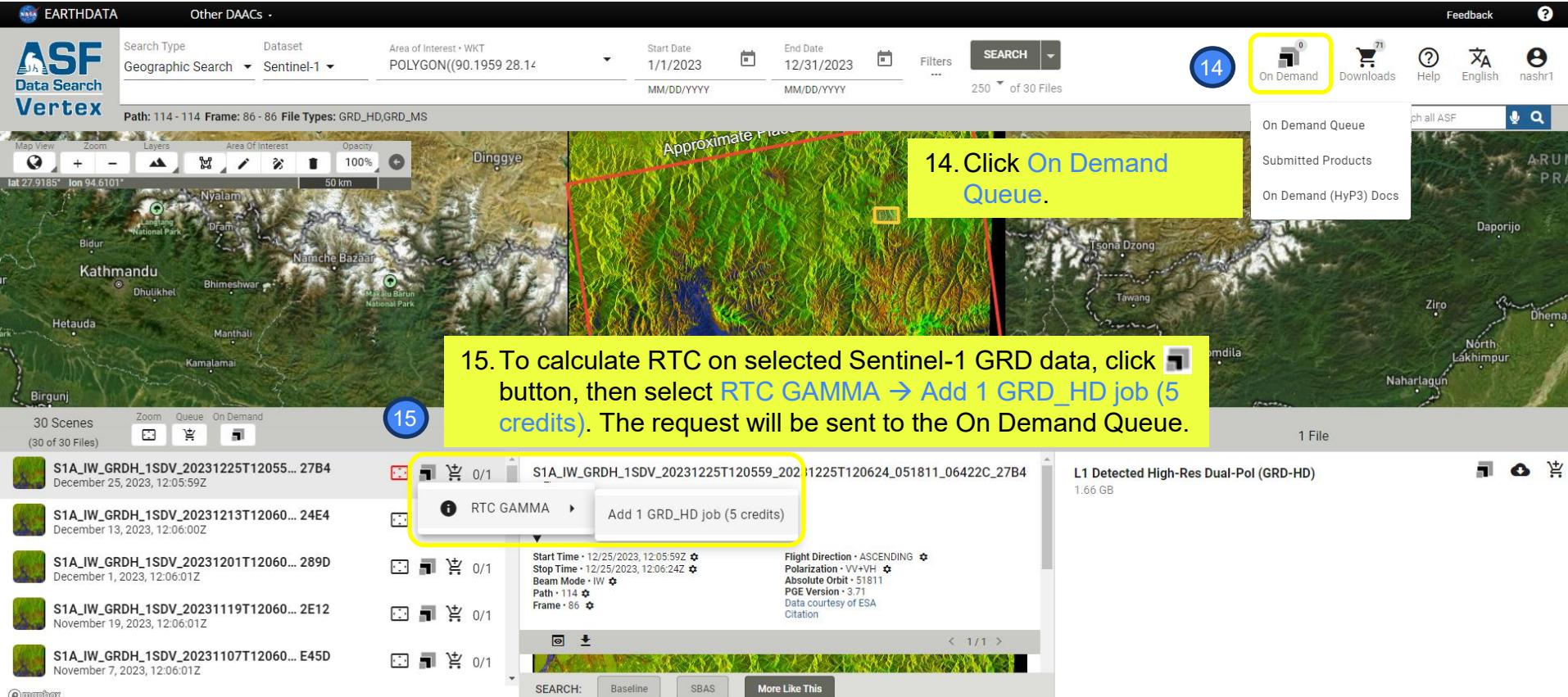
The screenshot shows the ASF Data Search interface. At the top, there are search filters for 'Search Type' (Geographic Search), 'Dataset' (Sentinel-1), 'Area of Interest' (POLYGON((90.2176 28.08, ...))), 'Start Date' (6/1/2019), 'End Date' (6/13/2019), and a 'SEARCH' button. Below the map, there are sections for '5 Scenes' (5 files) and '1 File'. The '5 Scenes' section lists five datasets with icons and download buttons. The '1 File' section shows a detailed view of one dataset: 'S1A_IW_GRDH_1SDV_20190601T120532_20190601T120557_027486_0319F2_B634' (Sentinel-1 • C-Band). The detailed view includes a map of the region, a red box indicating the scene, and a list of parameters: Start Time (06/01/2019, 12:05:32Z), Stop Time (06/01/2019, 12:05:57Z), Flight Direction (ASCENDING), Polarization (VV+VH), Absolute Orbit (27486), Beam Mode (IW), Path (114), Frame (86), PGE Version (2.91), Data courtesy of ESA, and Citation. A 'Scene Detail' button is also present.

Other than downloading the satellite data, ASF Vertex also provides on-demand services such as:

- Radiometric Terrain Correction (RTC) for a single Sentinel-1 GRD data.
- Interferometric SAR (InSAR) for Sentinel-1 SLC data pair.
- autoRIFT for Sentinel-1 SLC data pair.

14. Click On Demand Queue.

15. To calculate RTC on selected Sentinel-1 GRD data, click  button, then select **RTC GAMMA → **Add 1 GRD_HD job (5 credits)**. The request will be sent to the On Demand Queue.**



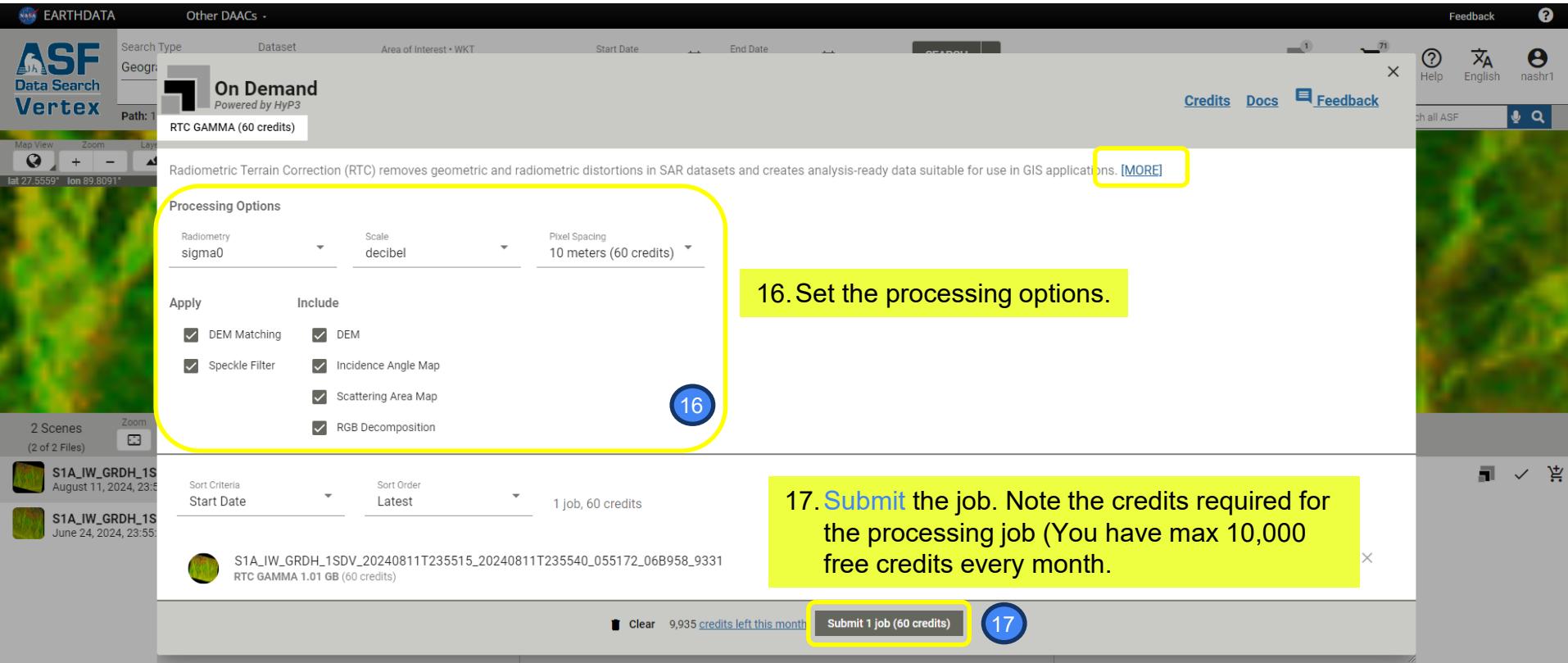
The screenshot shows the ASF Vertex interface with the following details:

- Top Bar:** EARTHDATA, Other DAACs, Feedback, Help, English, nashri.
- Search Bar:** Search Type (Geographic Search), Dataset (Sentinel-1), Area of Interest (WKT: POLYGON((90.1959 28.14, ...)), Start Date (1/1/2023), End Date (12/31/2023), Filters, SEARCH, 14 items in the On Demand Queue.
- Map View:** Shows a 3D terrain map of the Himalayan region. A red polygon highlights an area labeled "Approximate Frame". A yellow box with the text "14. Click On Demand Queue." is overlaid on the map.
- On Demand Queue:** A sidebar on the right shows the "On Demand Queue" with 14 items, "Submitted Products", and "On Demand (HyP3) Docs".
- Product List:** A list of Sentinel-1 GRD data products:
 - S1A_IW_GRDH_1SDV_20231225T120559_20231225T120624_051811_06422C_27B4 (December 25, 2023, 12:05:59Z)
 - S1A_IW_GRDH_1SDV_20231213T120601_20231213T120601_051811_06422C_24E4 (December 13, 2023, 12:06:02Z)
 - S1A_IW_GRDH_1SDV_20231201T120601_20231201T120601_051811_06422C_289D (December 1, 2023, 12:06:01Z)
 - S1A_IW_GRDH_1SDV_20231119T120601_20231119T120601_051811_06422C_2E12 (November 19, 2023, 12:06:01Z)
 - S1A_IW_GRDH_1SDV_20231107T120601_20231107T120601_051811_06422C_E45D (November 7, 2023, 12:06:01Z)
- Product Detail:** A detailed view of the first product (S1A_IW_GRDH_1SDV_20231225T120559_20231225T120624_051811_06422C_27B4) showing RTC GAMMA options and job details.
- Bottom Bar:** SEARCH, Baseline, SBAS, More Like This, mapbox logo.

ASF's Sentinel-1 On-Demand RTC products are generated using GAMMA Software. Click [MORE] to get detailed information on the processing options and workflows.

16. Set the processing options.

17. Submit the job. Note the credits required for the processing job (You have max 10,000 free credits every month.)



The screenshot shows the ASF Data Search interface for the On Demand service. The 'Processing Options' section is highlighted with a yellow box and a blue number 16. It includes dropdowns for Radiometry (sigma0), Scale (decibel), and Pixel Spacing (10 meters, 60 credits). Below are checkboxes for DEM Matching, Speckle Filter, and three additional options (DEM, Incidence Angle Map, Scattering Area Map, RGB Decomposition) which are all checked. The 'Apply' and 'Include' buttons are also visible. The 'Sort Criteria' and 'Sort Order' dropdowns are set to 'Start Date' and 'Latest' respectively. At the bottom, a job summary shows '1 job, 60 credits' and a button to 'Submit 1 job (60 credits)'. A yellow box highlights this button with a blue number 17. A yellow bar at the top of the page contains the text 'ASF's Sentinel-1 On-Demand RTC products are generated using GAMMA Software. Click [MORE] to get detailed information on the processing options and workflows.'

4. Other Data Sources

Satellite data sources

- Copernicus Data Space Browser: <https://browser.dataspace.copernicus.eu/>
- ASF Data Search Vertex: <https://search.asf.alaska.edu/>
- NASA's Earth Data: <https://search.earthdata.nasa.gov/search>
- USGS's Earth Explorer: <https://earthexplorer.usgs.gov/>
- Google Earth Engine: <https://earthengine.google.com/>
- SentinelHub: <https://apps.sentinel-hub.com/ eo-browser/>

GIS data sources

- OpenStreetMap: <https://download.geofabrik.de/>
- Humanitarian Data Exchange (HDX): <https://data.humdata.org/>
- DEM: <https://opentopography.org/>
- WorldPop: <https://www.worldpop.org/>
- Land Cover: <https://livingatlas.arcgis.com/landcover/>
- Building Footprints: <https://sites.research.google/gr/open-buildings/>
- Global Administrative Areas (GADM): <http://www.gadm.org/country>

Disaster maps

- Sentinel Asia: <https://sentinel-asia.org/>
- International Disaster Charter: <https://disasterscharter.org/>

THANK YOU

Geoinformatics Center, Asian Institute of Technology

