Searching & Obtaining Satellite Data

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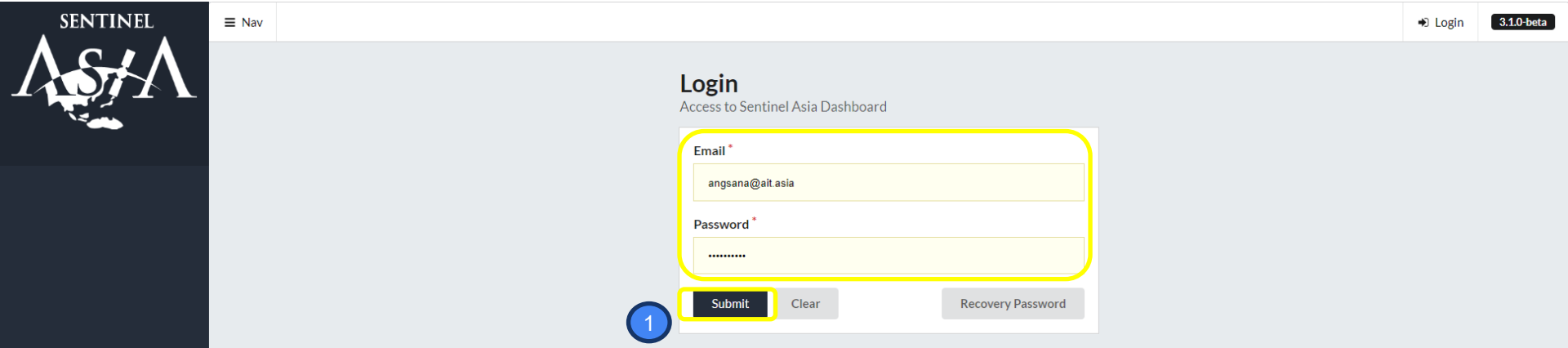
Overview

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

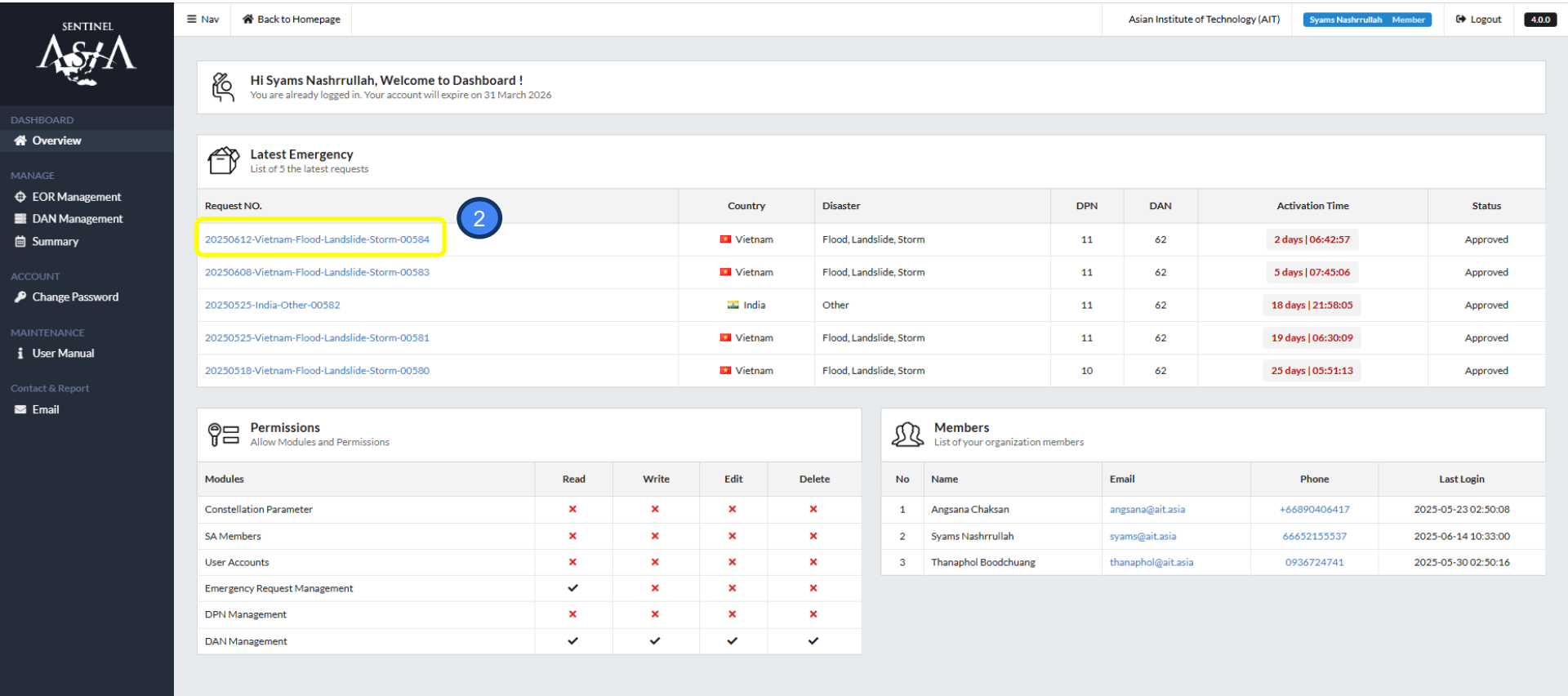
1. Sentinel Asia Optemis

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

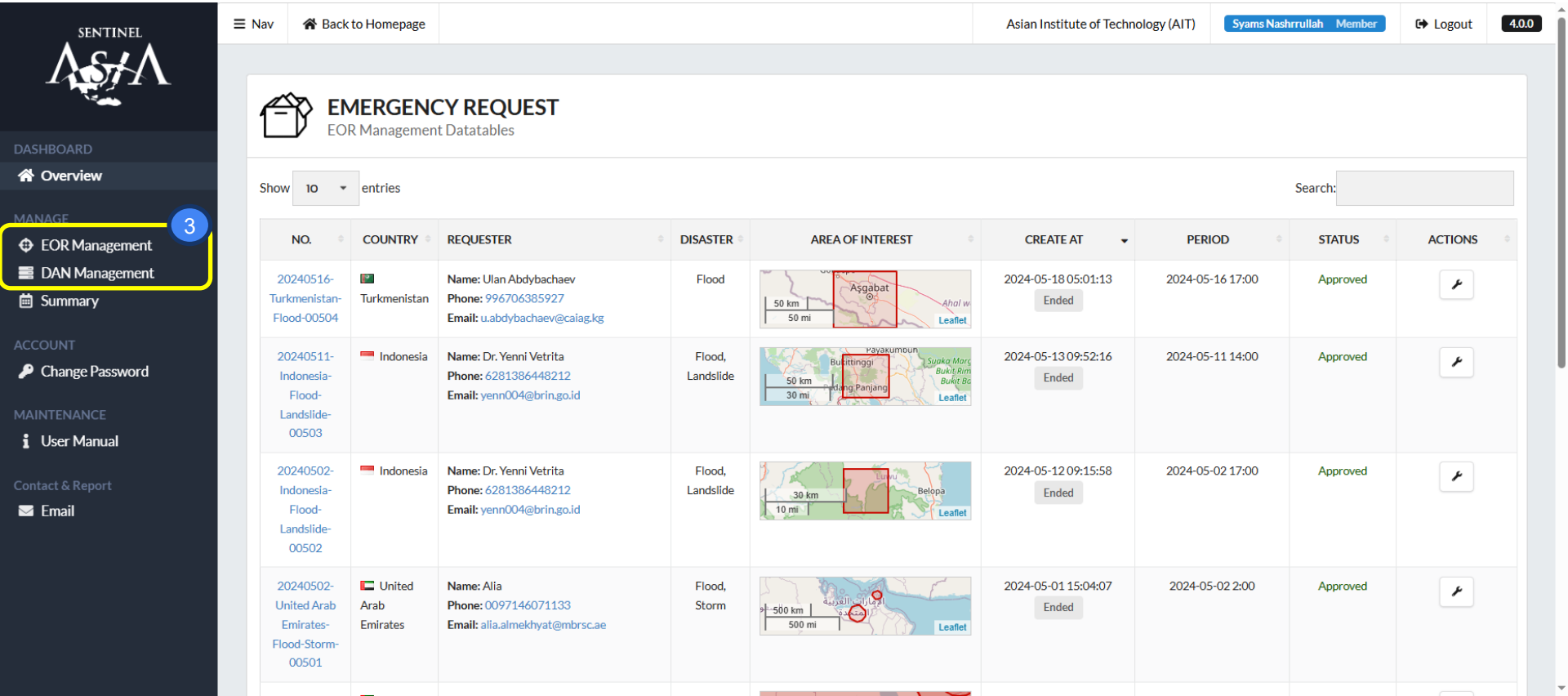


1. Provide Login information, then click Submit.

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

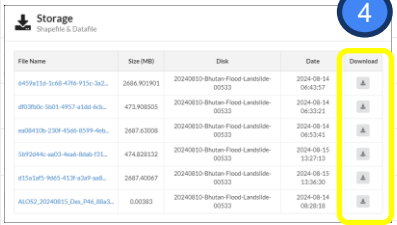


3. You can also check the previous activation by clicking to DAN Management or EOR Management.



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			
	Indian Space Research Organization (ISRO)	0	✓	✓	✓	✓			
	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	✓	✓	✓	✓			
	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							



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: ☑ JPT member ☐ ADRC member
Your phone	97502328280
Your cellular	97517411353
Your fax	
Your E-mail	sonamlhamo@nchm.gov.bt

Message Box 5

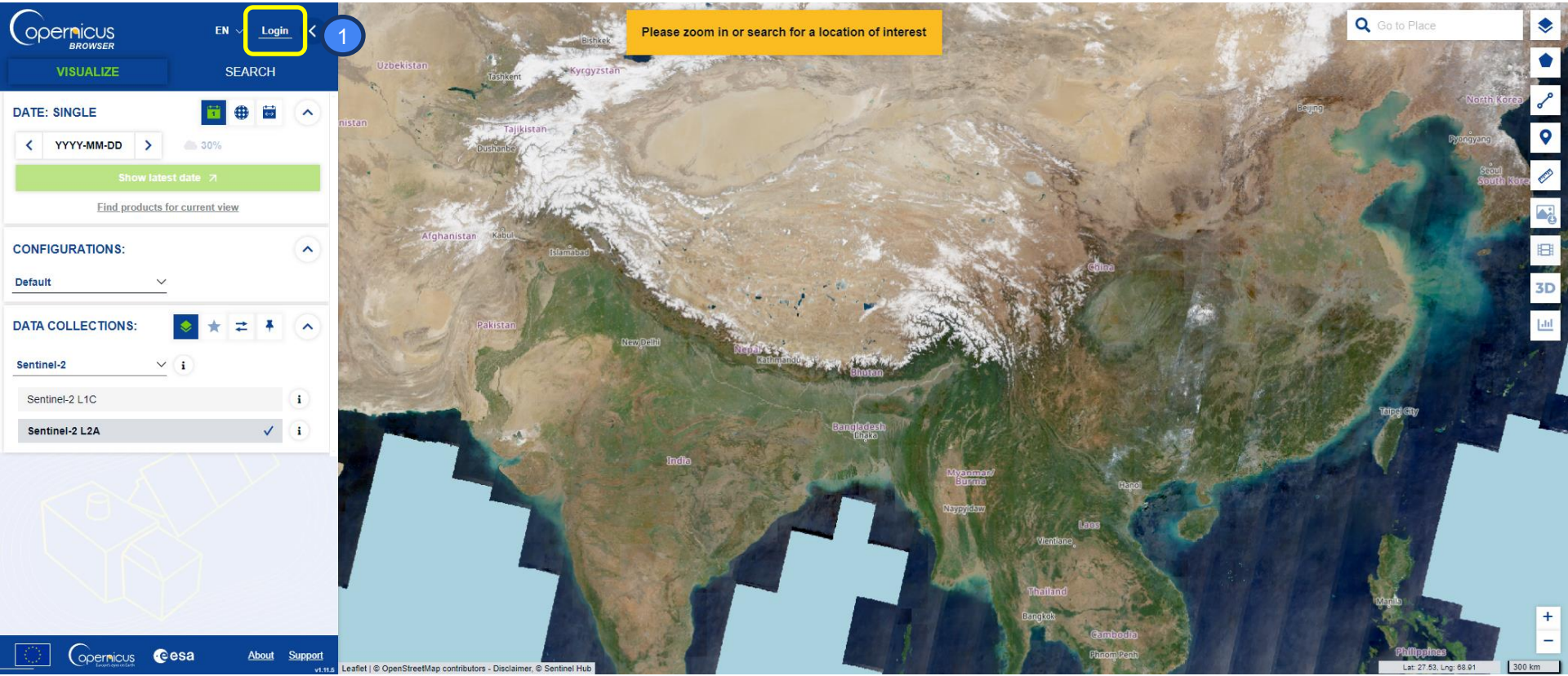
ML **Ms. Sonam Lhamo** 5 days ago
Cannot download any files.
Reply

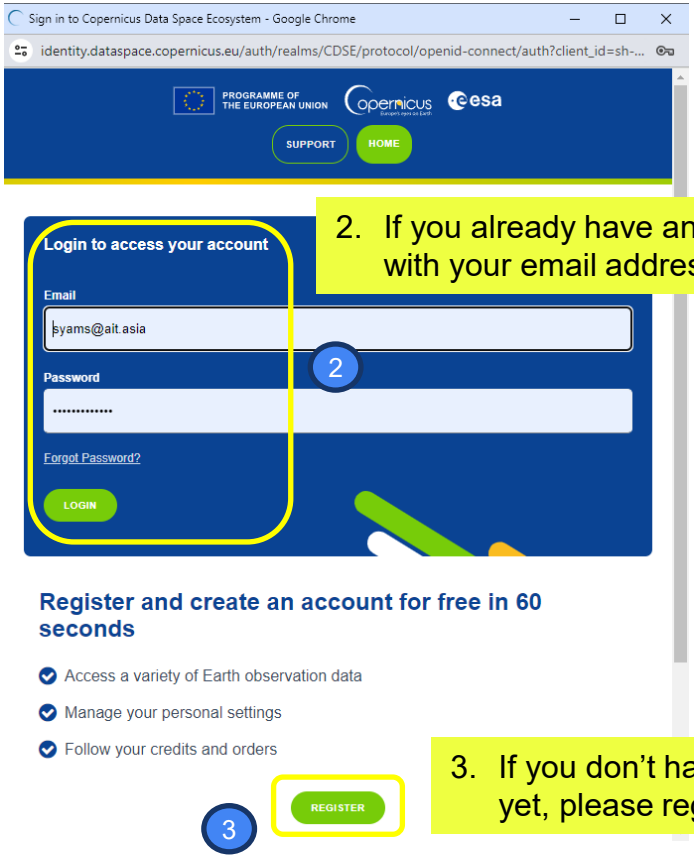
MS **Masami Sugiura** 5 days ago
No observation data has been uploaded yet.
Please wait.

2. Copernicus Data Space Browser

1. Click Login to access the Copernicus Browser.

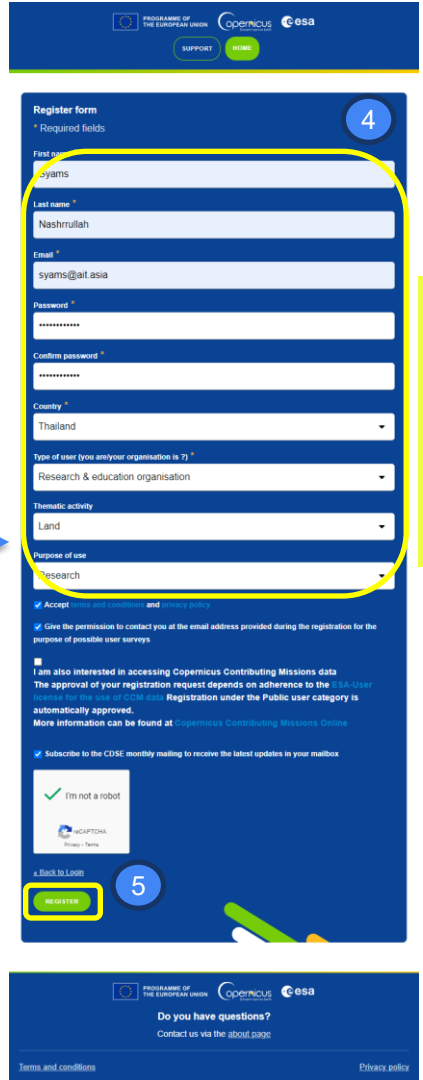
https://browser.dataspace.copernicus.eu/





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

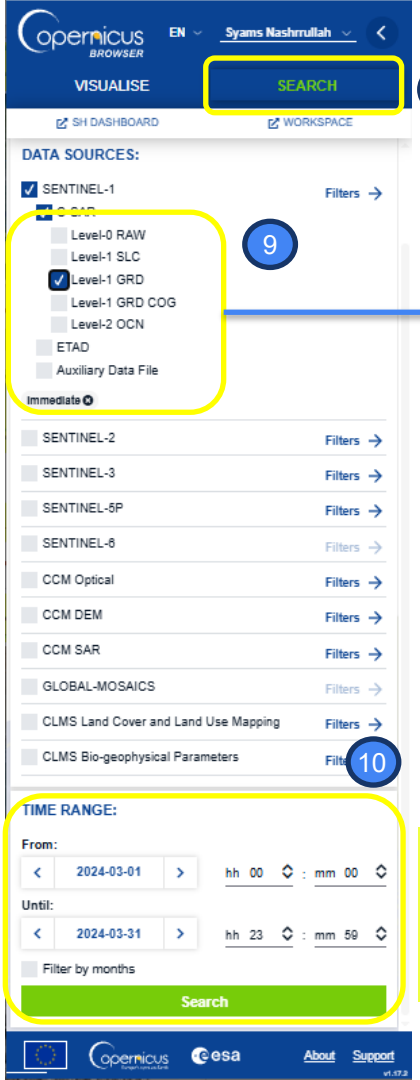
3. If you don't have an account yet, please register first.



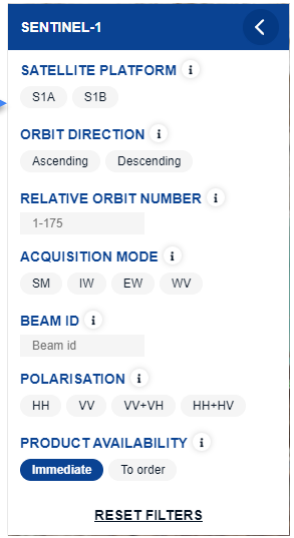
4. Provide detailed information for your new account.
5. Click Register.
6. Check your email to complete registration

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.

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.



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

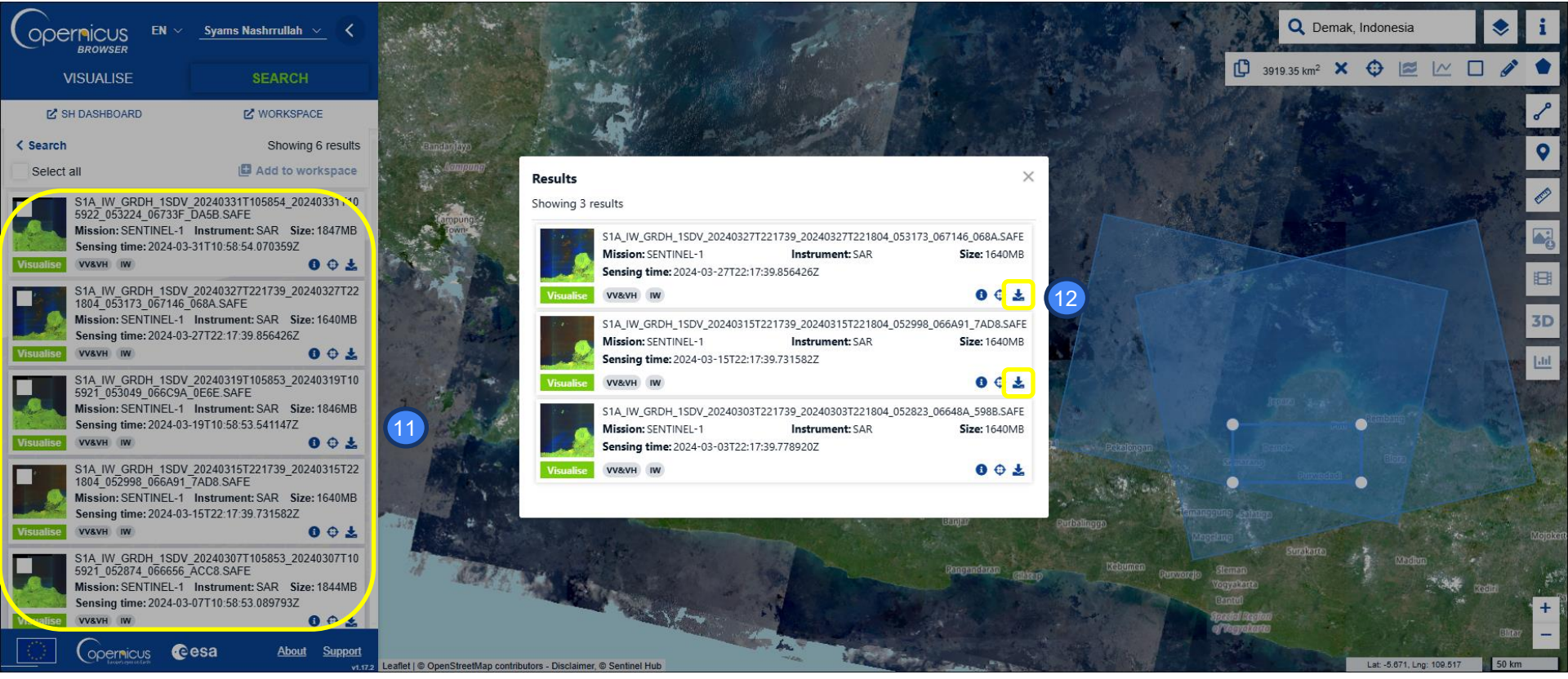
Optional: You can provide a more detailed search by clicking the Filters button.

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

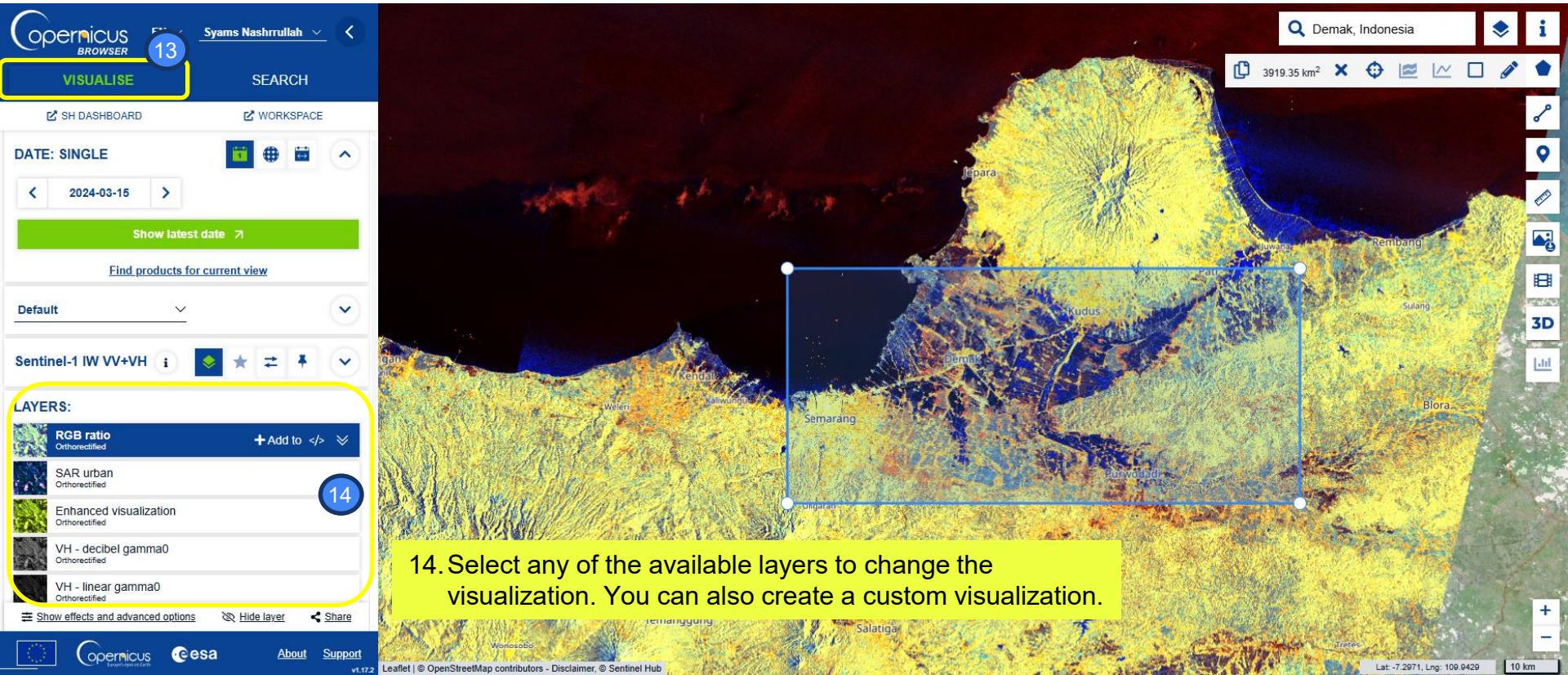
10. We will select the time range of data based on the Sentinel Asia activation for the observation of the Central Java flood.
    - Select the time range from **2024-03-01 to 2024-03-31**.
    - Click Search.

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.



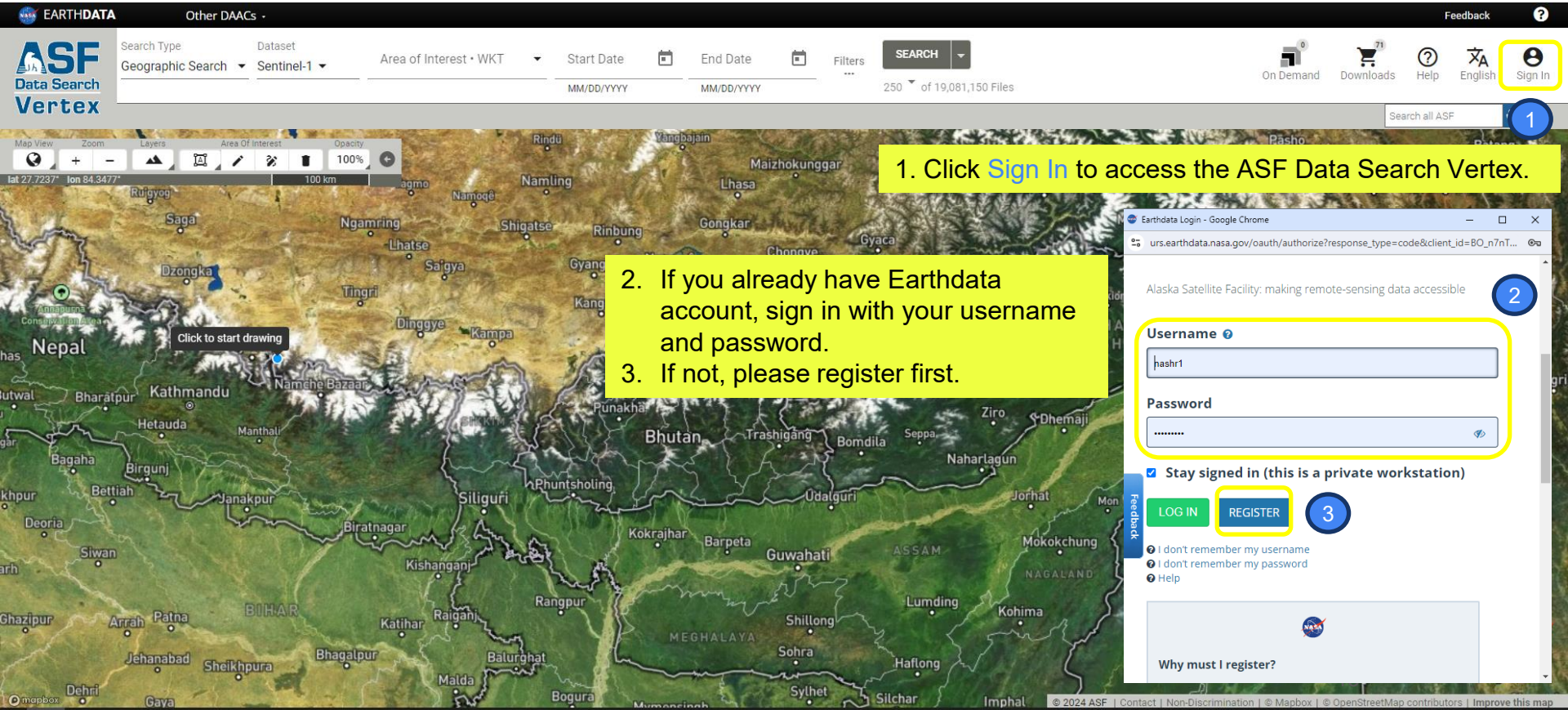
13. To explore the data, you can click the Visualize button in any of the result image scenes.



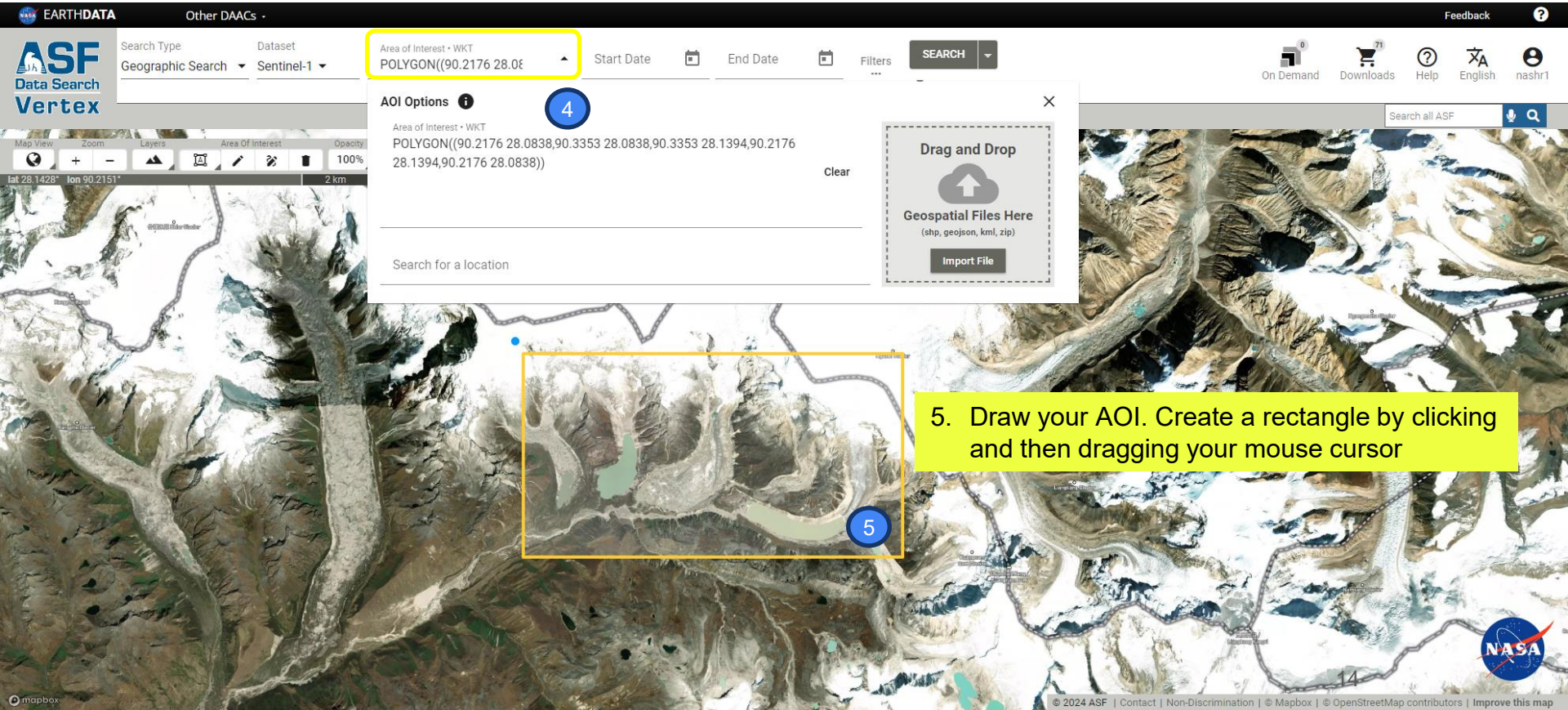
14. Select any of the available layers to change the visualization. You can also create a custom visualization.

3. ASF Data Search Vertex

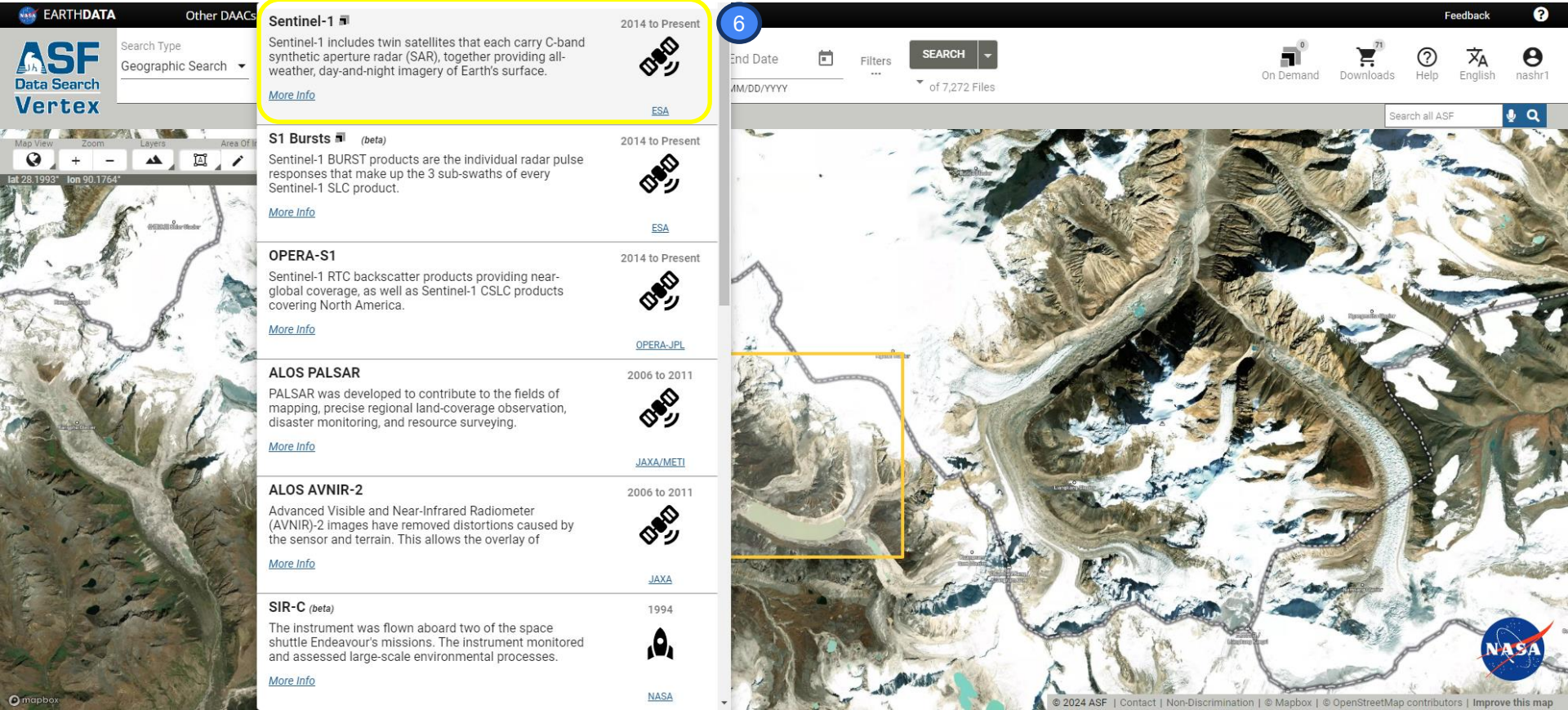
https://search.asf.alaska.edu/



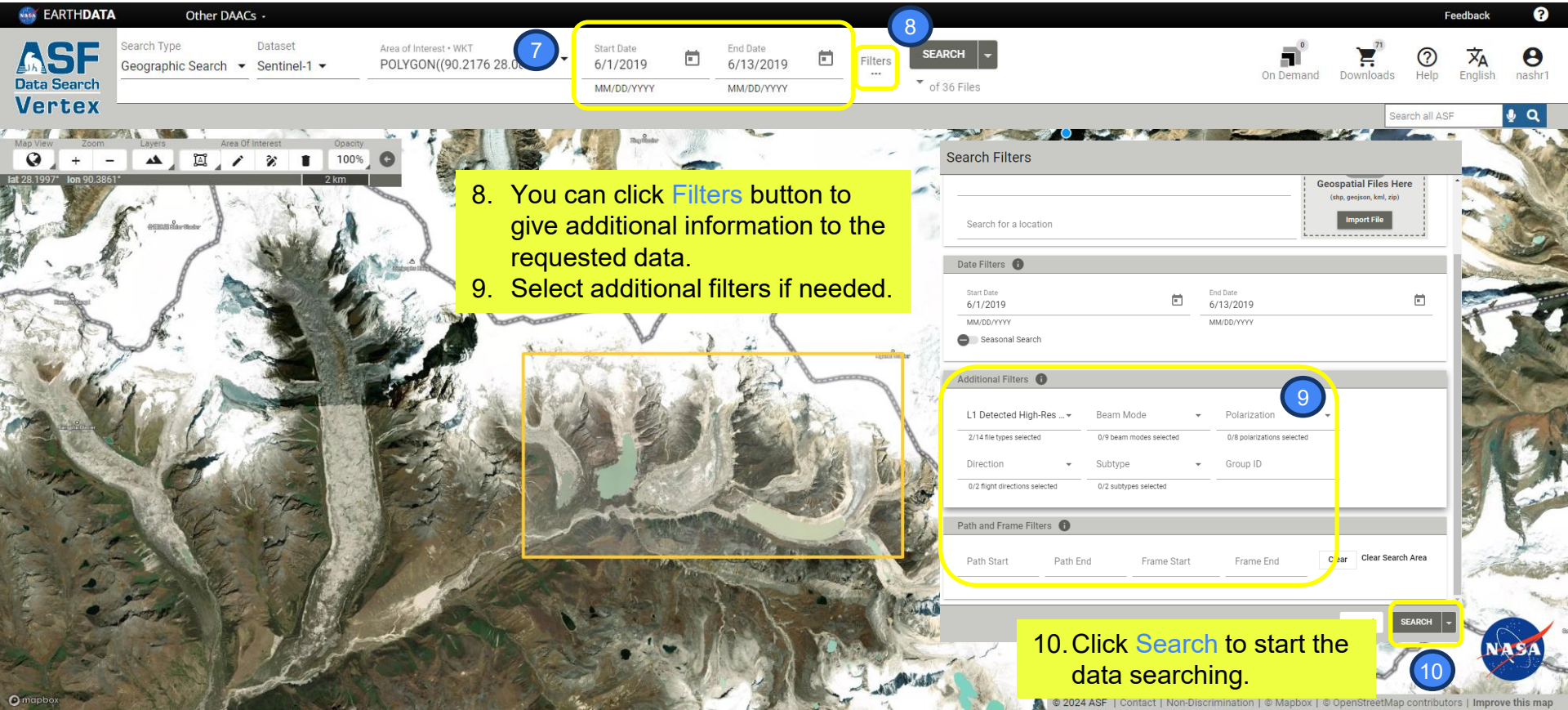
4. Define your Area of Interest (AOI).
   - You can define the AOI by drawing a point, line, or polygon.
   - **Alternative**: You can upload a .shp, .geojson, .kml, or .zip file to create the AOI.

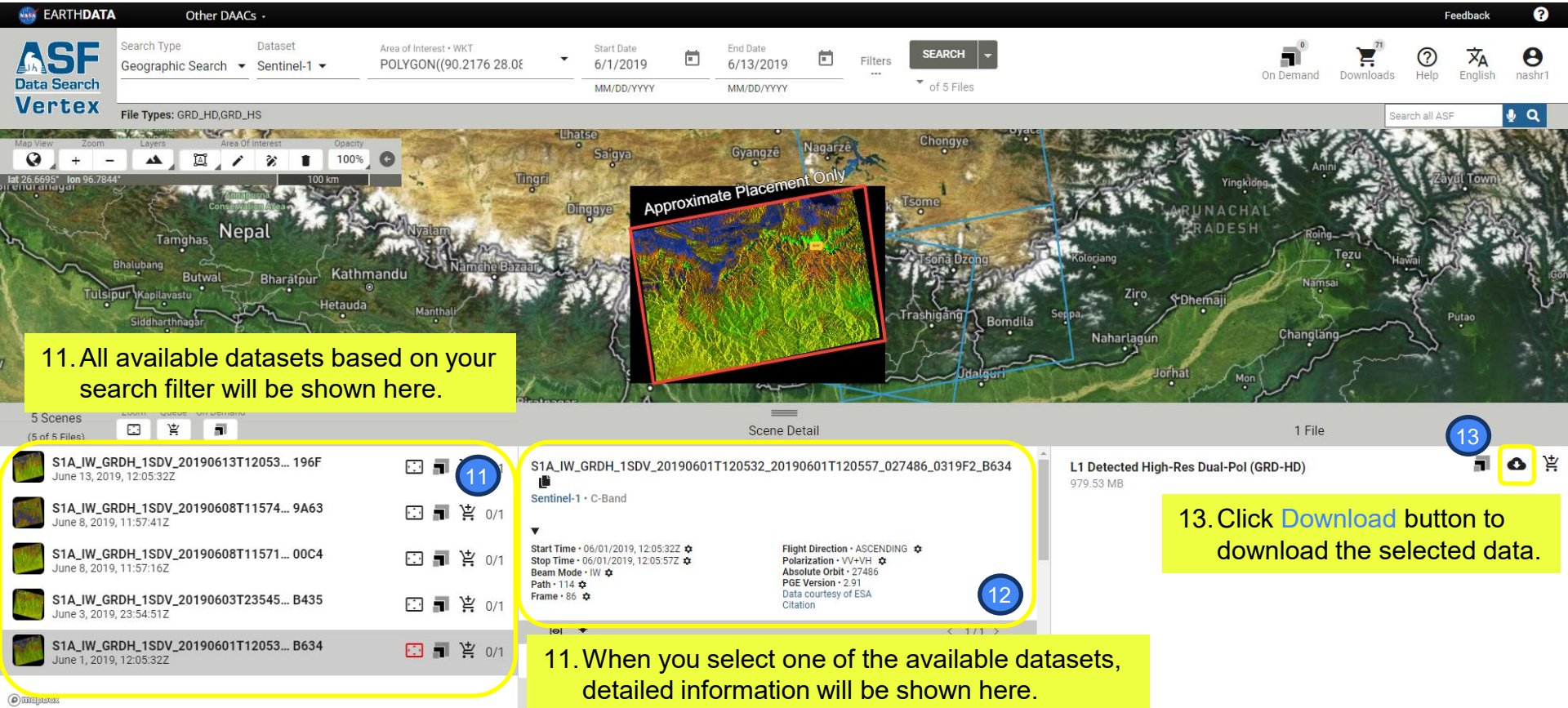


6. Select the satellite data.
   - ASF Vertex offers several options for satellite data, including Sentinel-1, ALOS PALSAR, ALOS AVNIR-2, and more.



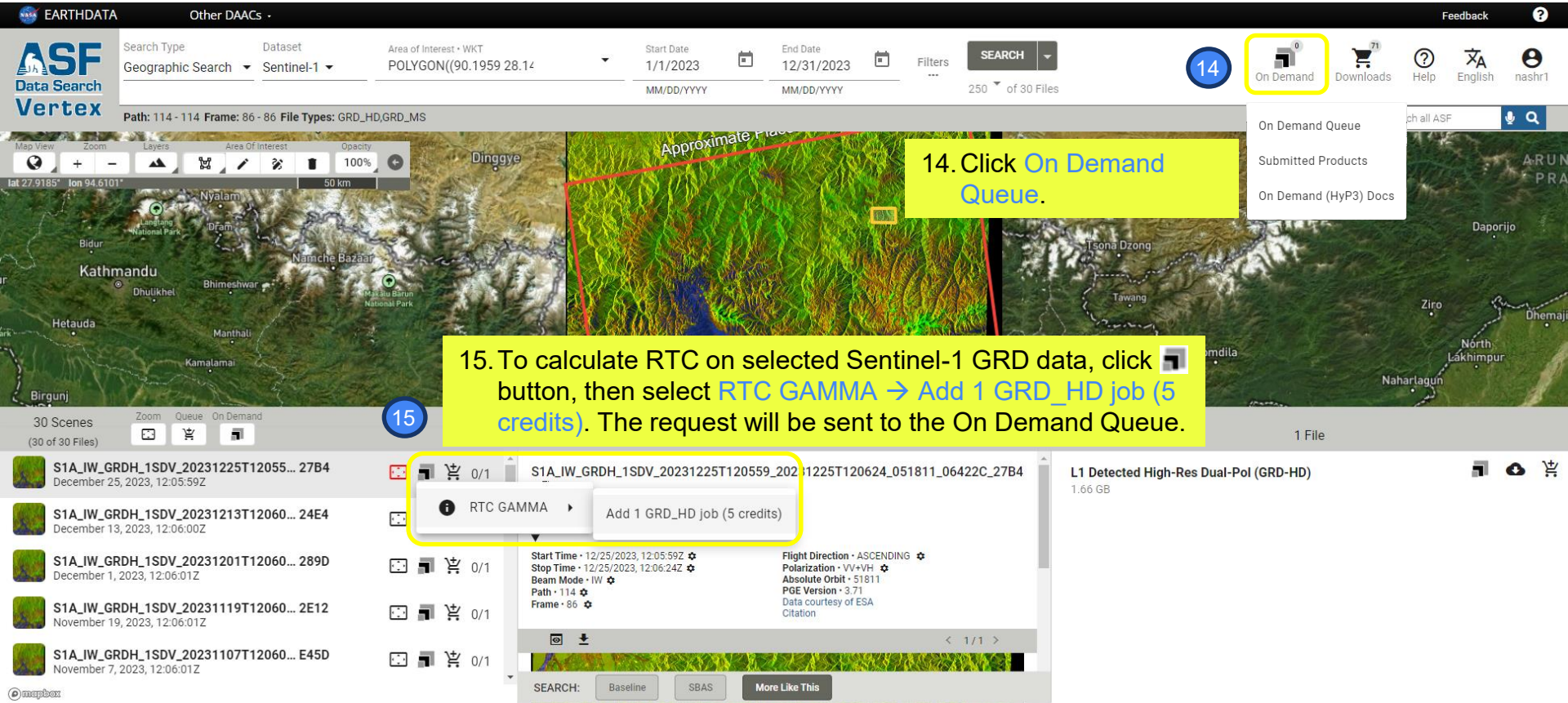
7. Define the observation date.
   - Start Date and End Date.



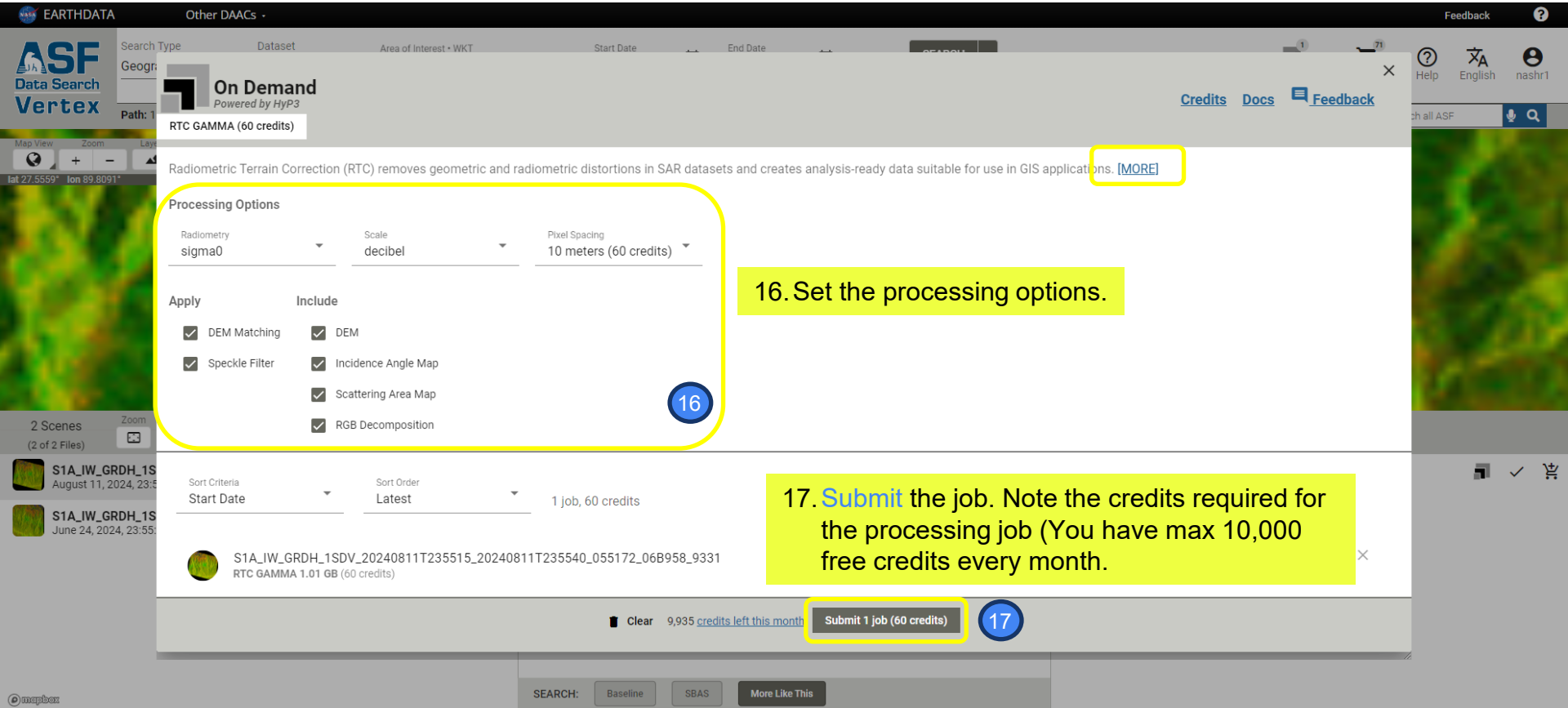

EARTHDATA
Other DAACs
Feedback
ASF Data Search Vertex
Search Type
Geographic Search
Dataset
Sentinel-1
Area of Interest • WKT
POLYGON((90.2176 28.0
Start Date
6/1/2019
MM/DD/YYYY
End Date
6/13/2019
MM/DD/YYYY
Filters
SEARCH
of 5 Files
On Demand
Downloads
Help
English
nashr1
File Types: GRD_HD,GRD_HS
Search all ASF
Approximate Placement Only
Nepal
Tamghas
Bhalubang
Butwal
Bharatpur
Kathmandu
Tulsipur
Kapilavastu
Hetauda
Siddharthnagar
Manthali
Namche Bazaar
Tingri
Dingye
Gyangzê
Nagarzê
Chongye
Tsome
Tsona Dzong
Trashigang
Bomdila
Seppa
Ziro
Dhemaji
Naharlagun
Kolorjang
Roing
Tezu
Hawai
Namsai
Changlang
Putao
Yingkiong
Anini
Zayul Town
Udalguri
Jorhat
Mon
11. All available datasets based on your search filter will be shown here.
5 Scenes
(5 of 5 Files)
Scene Detail
1 File
S1A_IW_GRDH_1SDV_20190613T12053... 196F
June 13, 2019, 12:05:32Z
S1A_IW_GRDH_1SDV_20190608T11574... 9A63
June 8, 2019, 11:57:41Z
S1A_IW_GRDH_1SDV_20190608T11571... 00C4
June 8, 2019, 11:57:16Z
S1A_IW_GRDH_1SDV_20190603T23545... B435
June 3, 2019, 23:54:51Z
S1A_IW_GRDH_1SDV_20190601T12053... B634
June 1, 2019, 12:05:32Z
11
S1A_IW_GRDH_1SDV_20190601T120532_20190601T120557_027486_0319F2_B634
Sentinel-1 • C-Band
Start Time • 06/01/2019, 12:05:32Z
Stop Time • 06/01/2019, 12:05:57Z
Beam Mode • IW
Path • 114
Frame • 86
Flight Direction • ASCENDING
Polarization • VV+VH
Absolute Orbit • 27486
PGE Version • 2.91
Data courtesy of ESA
Citation
12
L1 Detected High-Res Dual-Pol (GRD-HD)
979.53 MB
13
11. When you select one of the available datasets, detailed information will be shown here.
13. Click Download button to download the selected data.

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.



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