

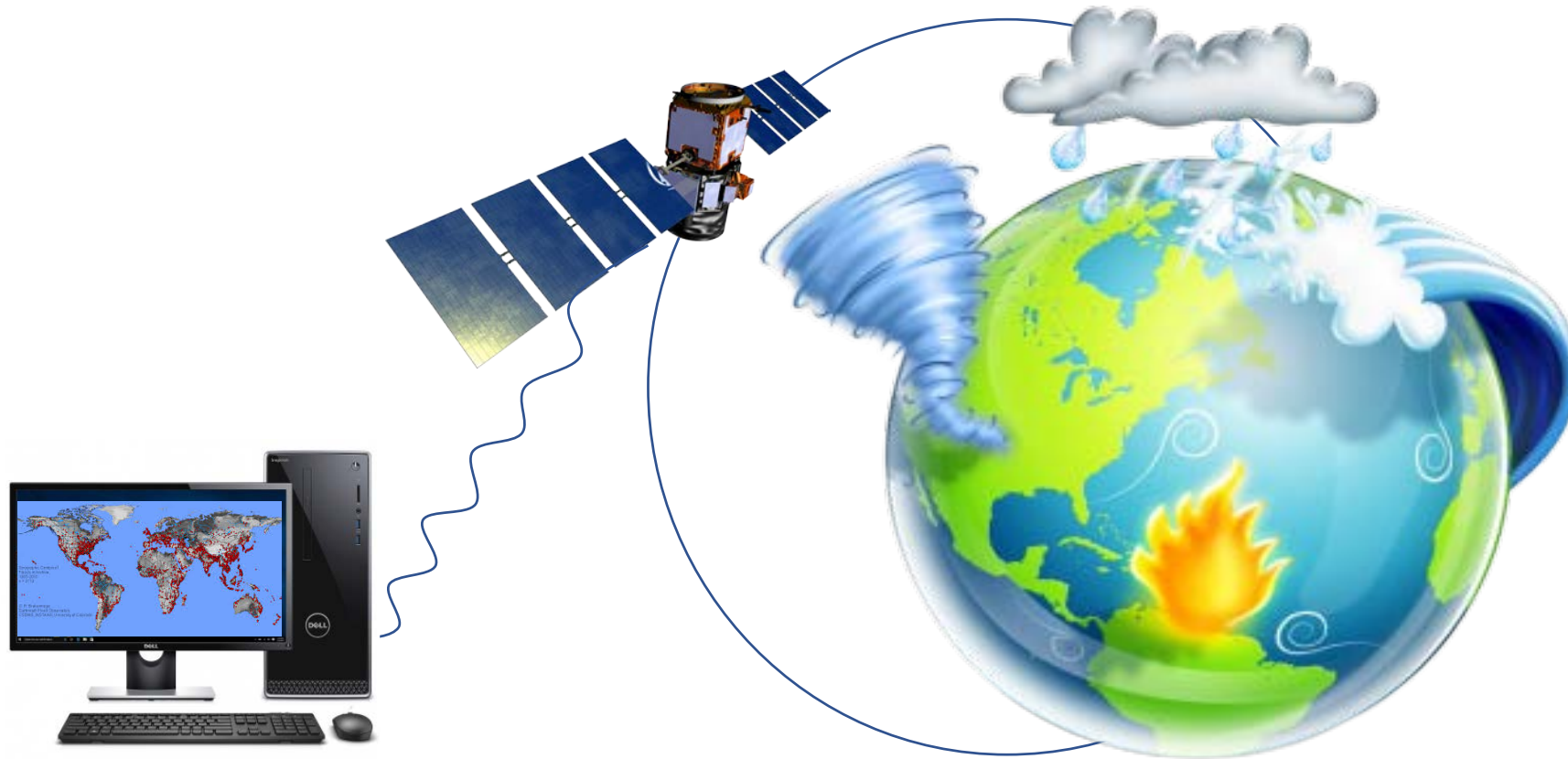


9th Annual UN-SPIDER Conference

Sep 12th | Beijing, China



Free, open source satellite imagery and software to support disaster risk reduction



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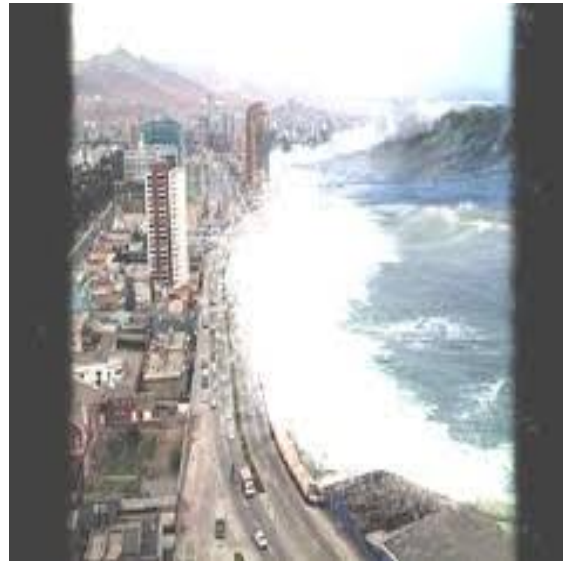
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- 1. Introduction**
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- 4. Conclusions**



1. Introduction





1. Introduction



First Responders in Space: How Satellites Save Lives During Natural Disasters

By Mackenzie Thompson February 02, 2019 Tech





2. Free Satellite Imagery Sources



	Free Sources	Website
1	USGS EARTH EXPLORER	https://earthexplorer.usgs.gov/
2	LANDVIEWER	https://eos.com/landviewer/
3	COPERNICUS OPEN ACCESS	https://scihub.copernicus.eu/dhus/
4	SENTINEL HUB	https://apps.sentinel-hub.com/
5	NASA EARTHDATA SEARCH	https://search.earthdata.nasa.gov/



2. Free Satellite Imagery Sources

2.1 USGS EARTH EXPLORER

USGS
science for a changing world

EarthExplorer - Home Page Expires In 1:58:09

Home Login Register RSS Feedback Help

Search Criteria Data Sets Additional Criteria Results

1. Enter Search Criteria
To narrow your search area: type in an address or place name, enter coordinates or click the map to define your search area (for advanced map tools, view the [help documentation](#)), and/or choose a date range.

Geocoder KML/Shapefile Upload

Select a Geocoding Method
Address/Place

Address/Place

Show Clear

Polygon Circle Predefined Area

Degree/Minute/Second Decimal

No coordinates selected.

Use Map Add Coordinate Clear Coordinates

Date Range Result Options

Search Criteria Summary (Show) Clear Search Criteria

- ☐ Longest record (More than 40 years)
- ☐ All Landsat missions, and a diversity of data from other NASA remote sensors (Terra and MODIS, ASTER, etc.).
- ☐ Collaboration with ISRO (Resourcesat-1 and 2), ESA (Sentinel-2).
- ☐ Some commercial high-resolution satellite data (IKONOS-2, OrbView-3, historical SPOT data).



2. Free Satellite Imagery Sources



2.2 LANDVIEWER

LAND VIEWER Locations, coordinates, scene IDs

Upload area of interest (AOI)

- ☐ Free global satellite images.
- ☐ Landsat 7-8, Sentinel-1 and 2, CBERS-4, MODIS, or Landsat 4-5 historical satellite imagery.
- ☐ SPOT 5-7, Kompsat-2, 3, 3A, SuperView-1.
- ☐ The best spatial resolution comes up to 40 cm per pixel.

SCENE SEARCH

Search settings
Passive sensors (day)

☐ Show scenes only

07 Sep 2019
Sentinel-2 L2A
55°
2%
14SNG

07 Sep 2019
Landsat 7 RT
52°
8%
029/034

07 Sep 2019

1-20 of 3 333

Purchase high-resolution images

<https://eos.com/landviewer/> 37.92145°N 98.25005°W 1:227 329 5 km



2. Free Satellite Imagery Sources



2.3 COPERNICUS OPEN ACCESS HUB

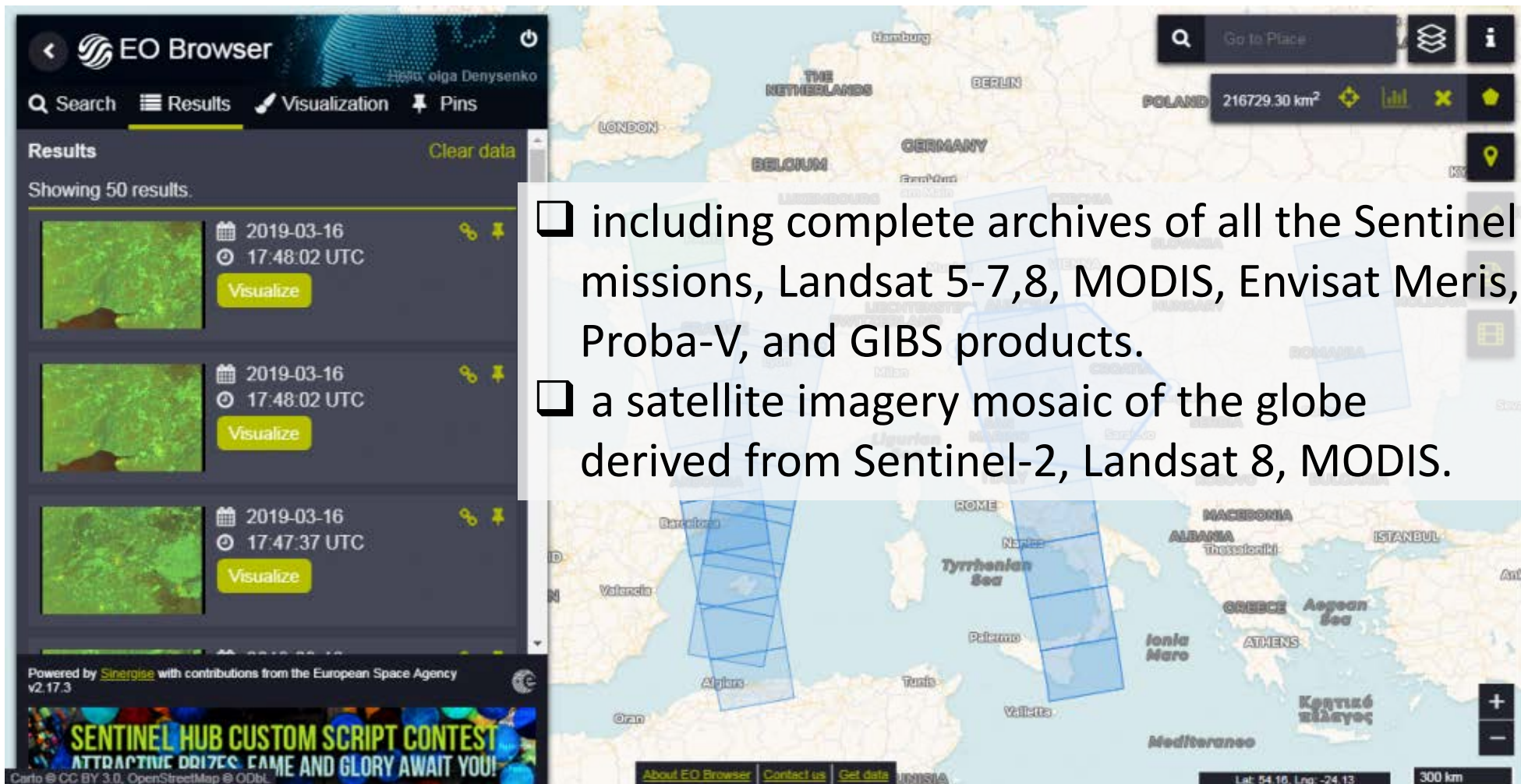
The screenshot displays the Copernicus Open Access Hub interface. The top navigation bar includes the ESA and Copernicus logos, the title 'Copernicus Open Access Hub', and user icons. A search bar is present with the placeholder text 'Insert search criteria...'. On the left, an 'Advanced Search' panel is open, featuring various filters: 'Sort By' (Ingestion Date), 'Order By' (Descending), 'Sensing period' and 'Ingestion period' (date range selectors), 'Mission: Sentinel-1' (selected), 'Satellite Platform', 'Product Type', 'Polarisation', 'Sensor Mode', 'Relative Orbit Number (from 1 to 175)', and 'Collection'. The background shows a map of Europe and North Africa with city labels. A semi-transparent text box on the right contains the following information:

- ☐ The latest free satellite images from all Sentinels
- ☐ Radar imagery from Sentinel-1, optical multispectral Sentinel-2 imagery, Sentinel-3 land products for environmental monitoring, and atmosphere and air quality data from Sentinel-5P.



2. Free Satellite Imagery Sources

2.4 SENTINEL HUB



EO Browser

Search Results Visualization Pins

Results

Showing 50 results.

2019-03-16 17:48:02 UTC Visualize

2019-03-16 17:48:02 UTC Visualize

2019-03-16 17:47:37 UTC Visualize

Powered by [Sinergise](#) with contributions from the European Space Agency v2.17.3

SENTINEL HUB CUSTOM SCRIPT CONTEST ATTRACTIVE PRIZES, CAME AND GLORY AWAIT YOU!

Carto © CC BY 3.0, OpenStreetMap © ODbL

Go to Place

POLAND 216729.30 km²

Map showing Europe and the Mediterranean Sea.

Map showing the Mediterranean Sea and surrounding regions.

Lat: 54.16, Long: -24.13 300 km

- ☐ including complete archives of all the Sentinel missions, Landsat 5-7,8, MODIS, Envisat Meris, Proba-V, and GIBS products.
- ☐ a satellite imagery mosaic of the globe derived from Sentinel-2, Landsat 8, MODIS.



2. Free Satellite Imagery Sources



2.5 NASA EARTHDATA SEARCH

❑ “Platforms” tab is impressive: Aqua and Terra, ENVISAT, GOES, NOAA satellites, METEOSAT, Landsat and much more free GIS data.



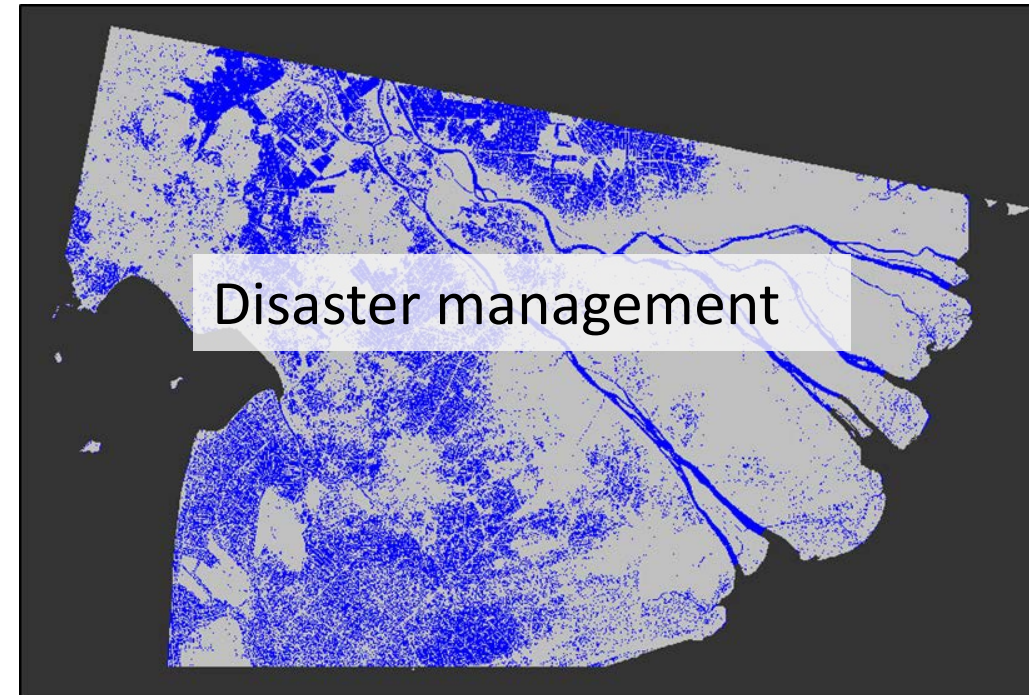
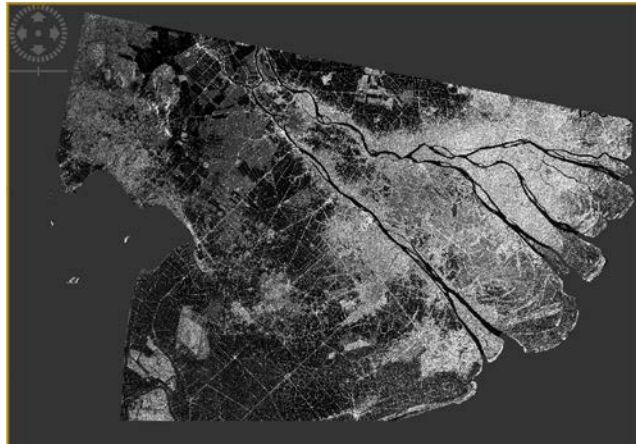
3. Open Source Software



Biryani dish



3. Open Source Software





3. Open Source Software



1. THE SENTINEL TOOLBOX



2. QGIS



3. SAGA GIS



3. Open Source Software



3.1 THE SENTINEL TOOLBOX – SNAP



The Sentinel Toolbox consists of 3 separate applications:

- ☐ Sentinel-1 Toolbox (SAR applications)
 - ☐ Sentinel-2 Toolbox (High resolution optical applications)
 - ☐ Sentinel-3 Toolbox (High resolution optical applications)
- ✓ New release of SNAP 7.0 is available

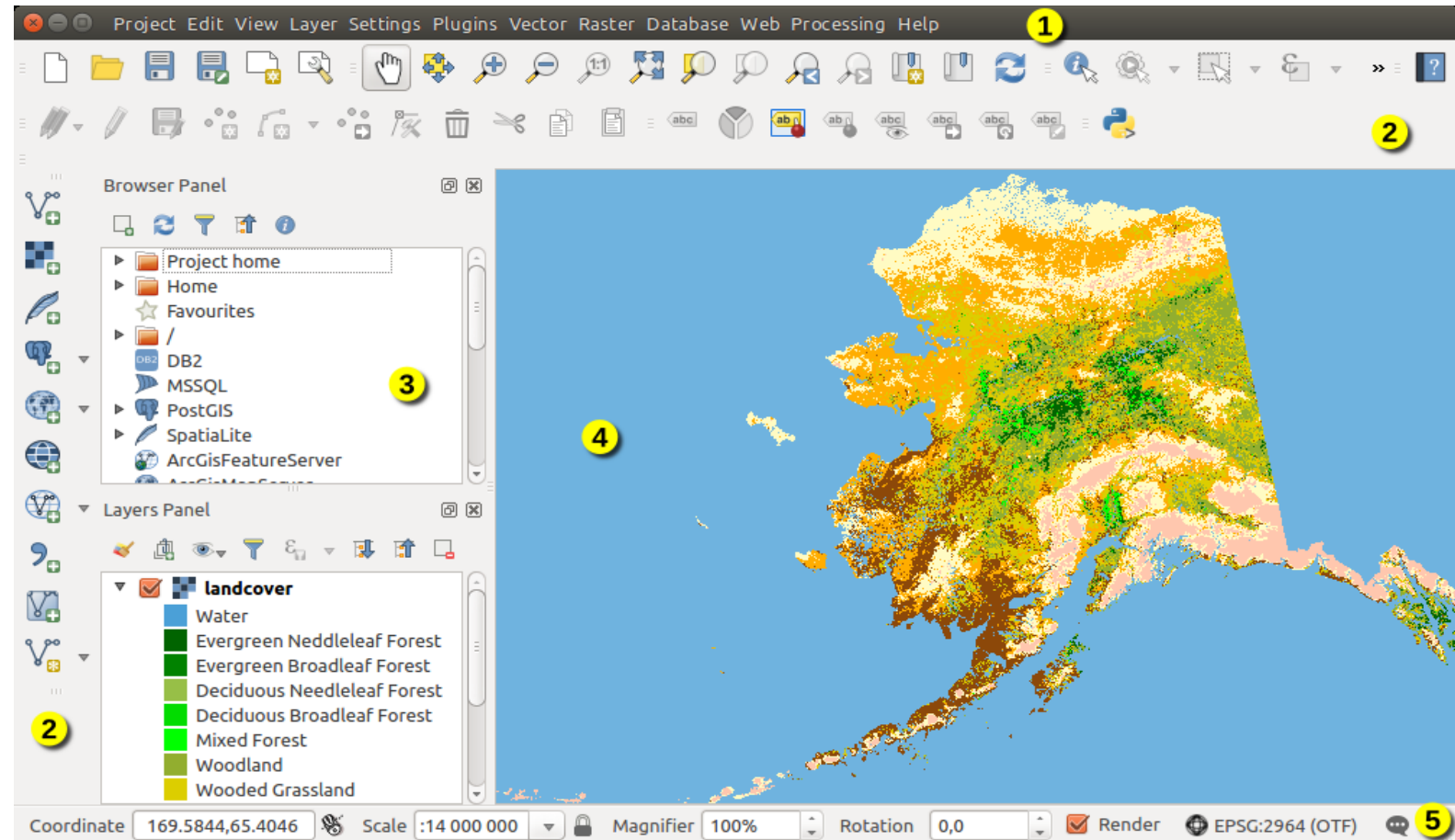


3. Open Source Software



3.2 QGIS

QGIS is one of the most powerful free & open source GIS software packages.



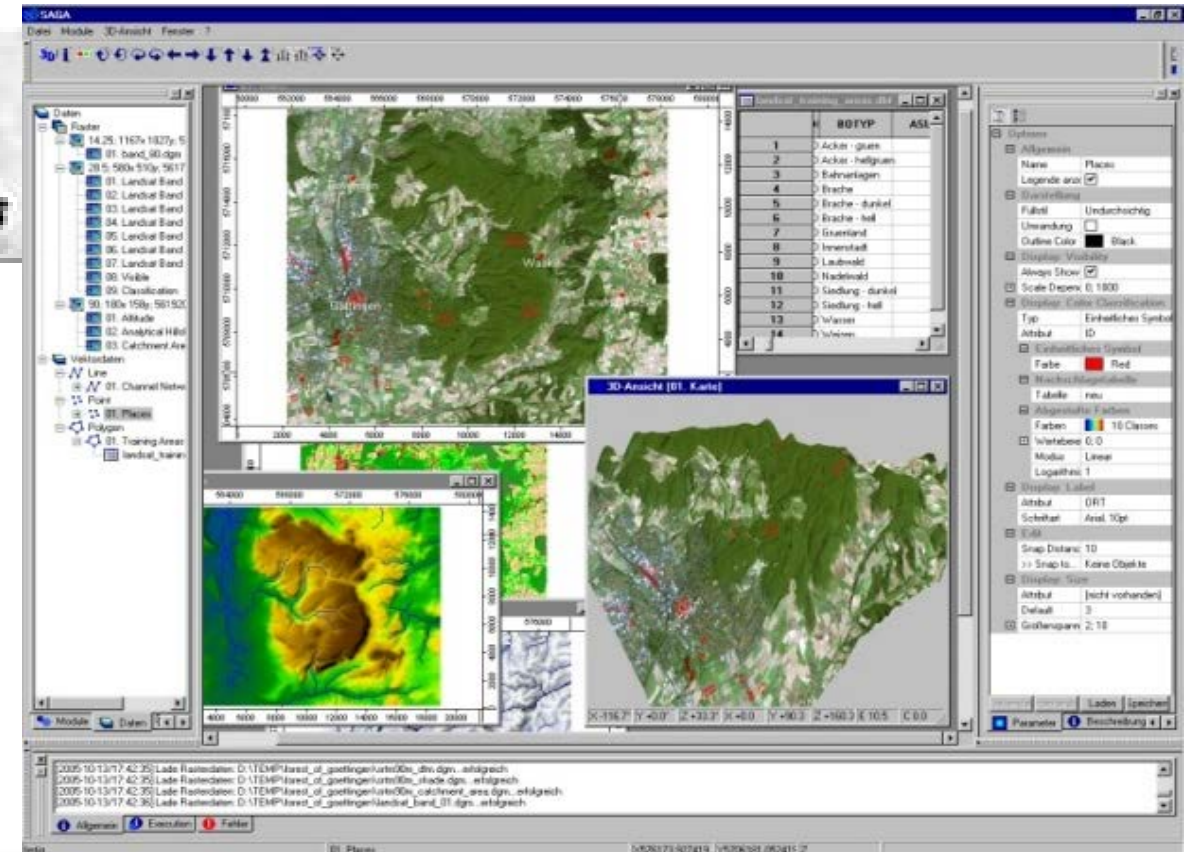


3. Open Source Software



3.3 SAGA GIS

SAGA GIS is ideal for most remote sensing needs





4. Conclusions



- ✓ Satellites have an essential capacity in DRR.
- ✓ Top 5 free and open satellite imagery sources: USGS Earth Explorer; Landviewer; Copernicus Open Access; Sentinel Hub; Nasa Earthdata Search.
- ✓ Choosing the right type of satellite images is very important.
- ✓ Top 3 open source software for image processing: THE SENTINEL TOOLBOX; QGIS; SAGA GIS



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Thank you

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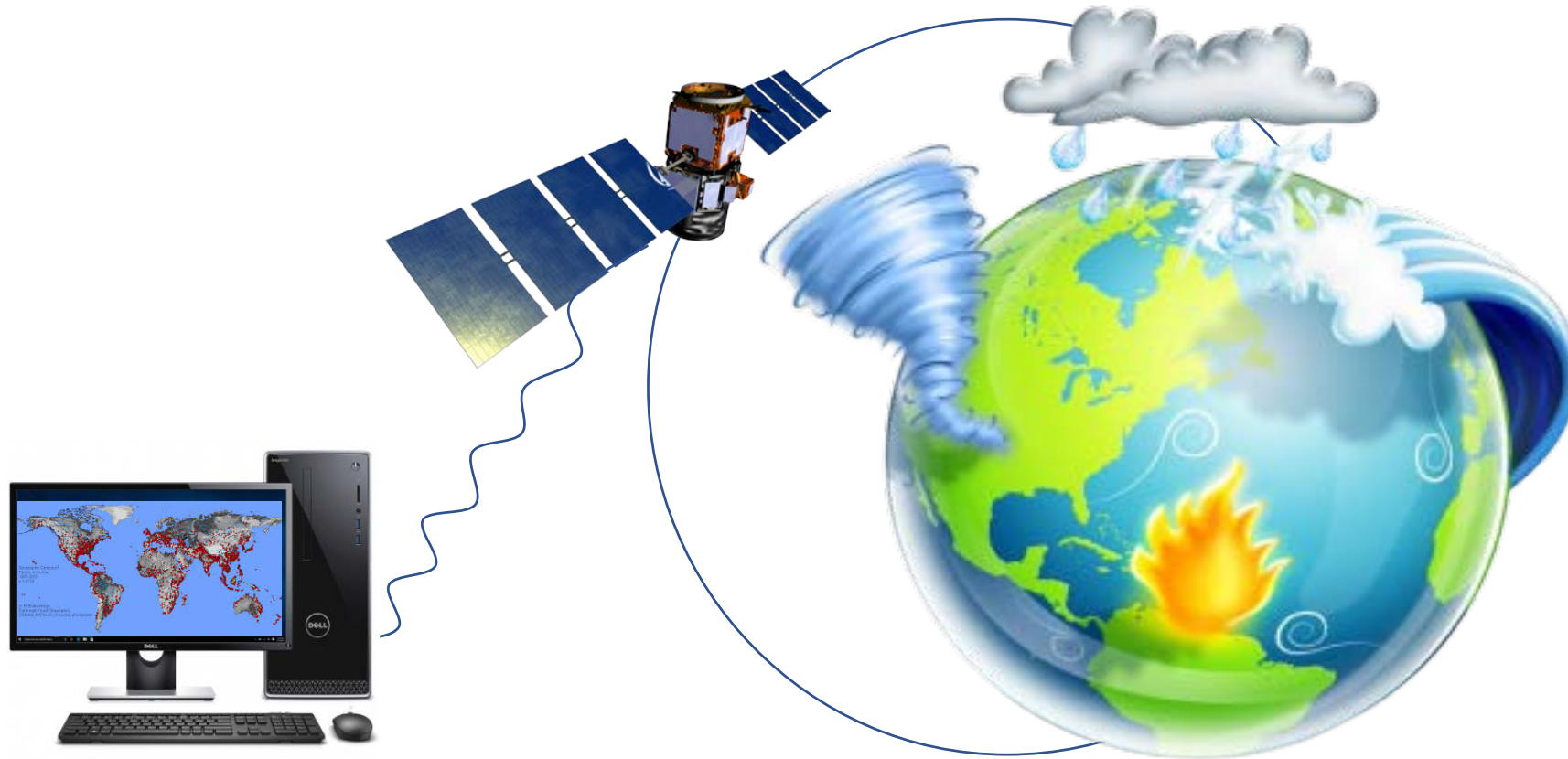


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