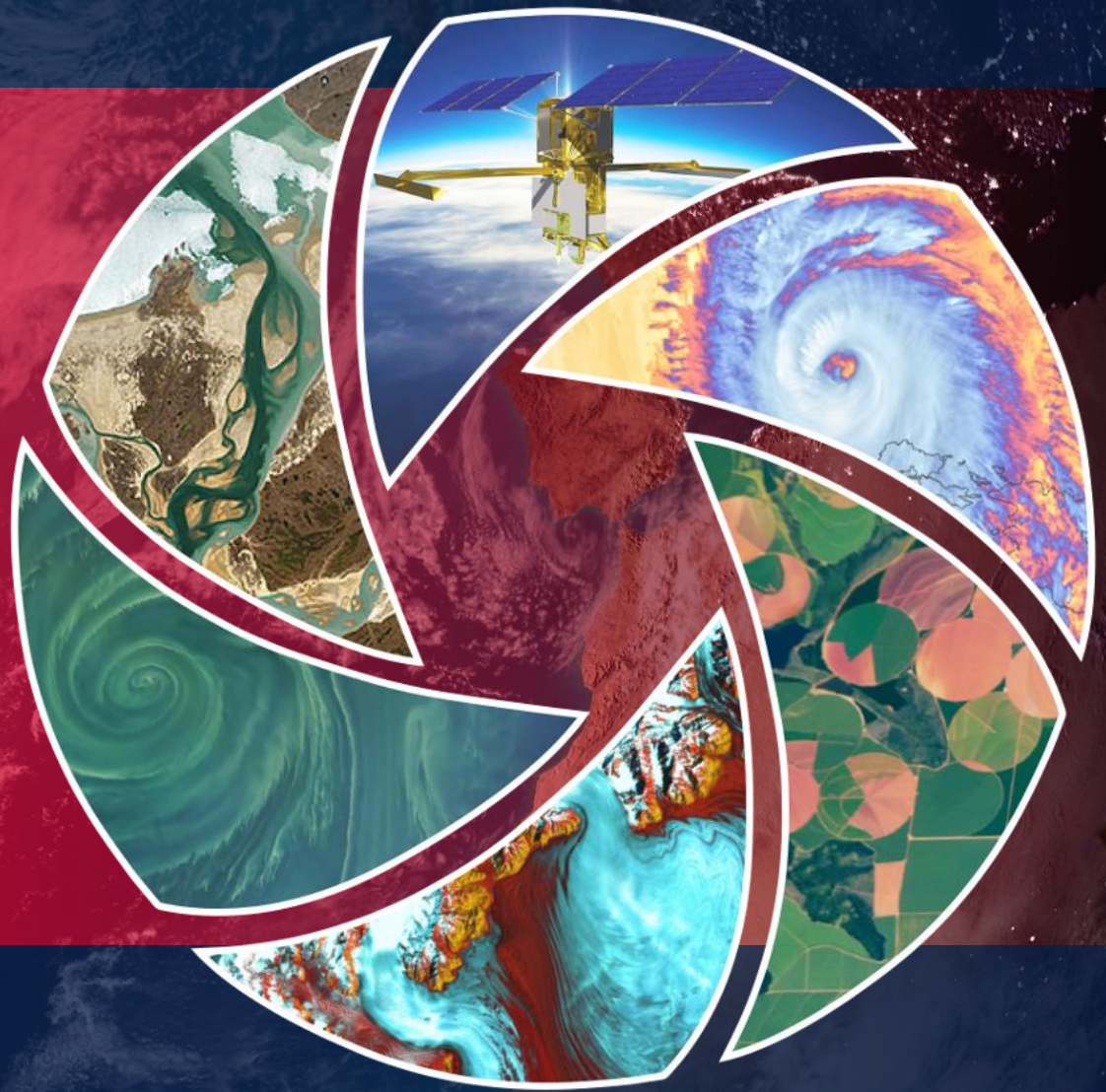
NASA Earth Science GIS Resources

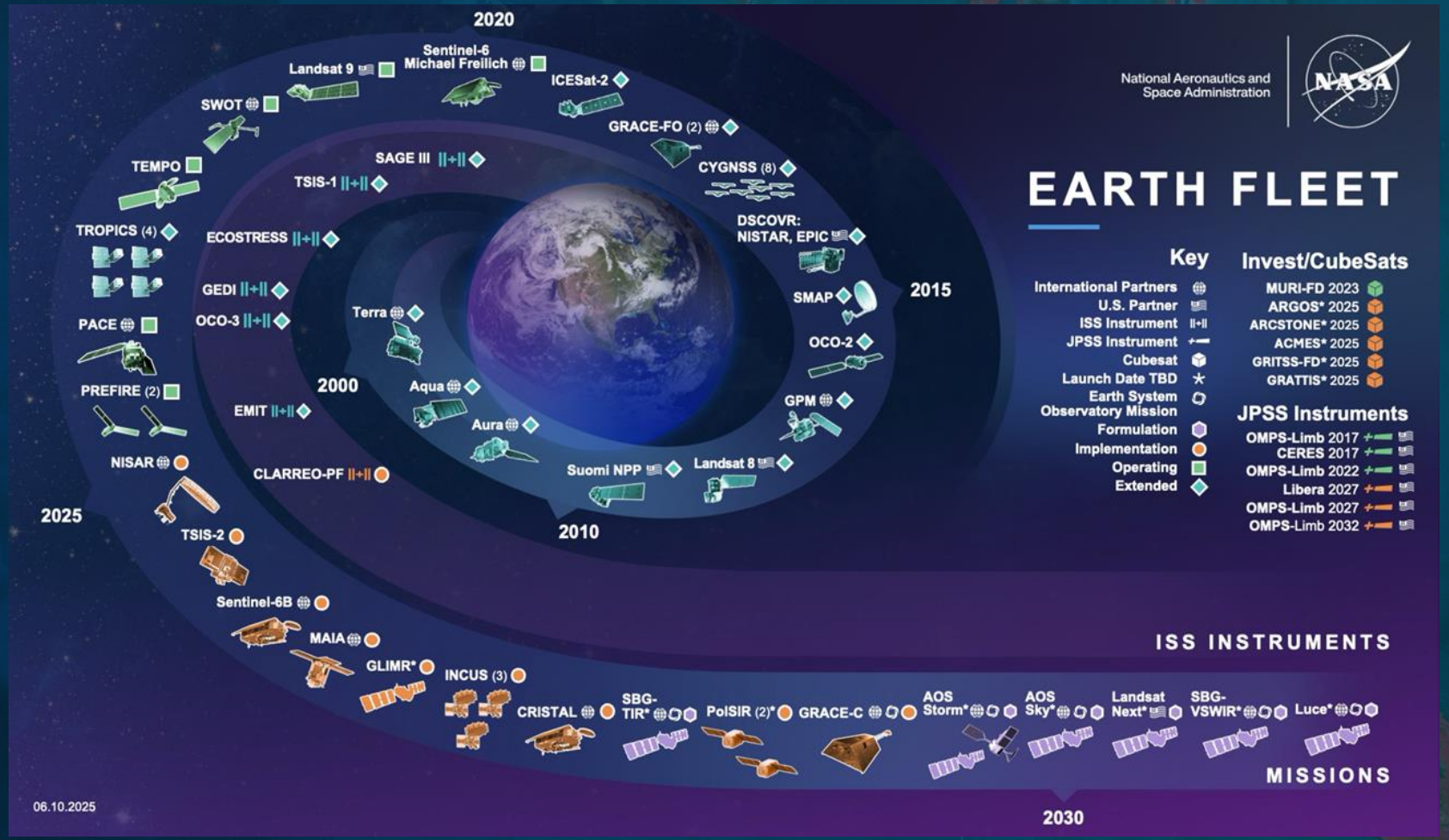
September 2025

North Carolina Local and Federal Government Committee Meeting



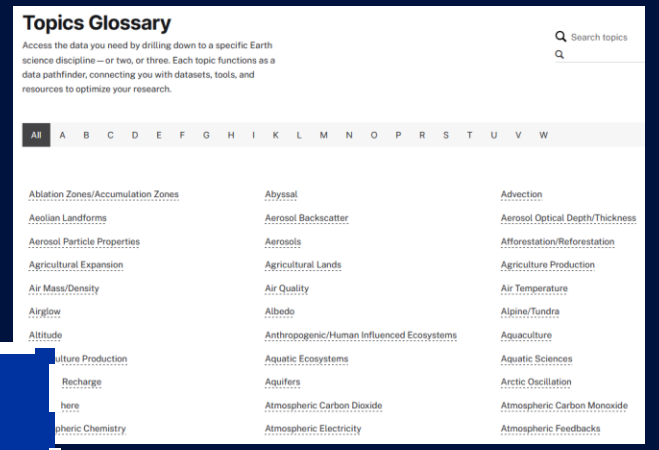
NASA… Earth Science?

Yes! Not only does NASA look out at the cosmos, we also look back at our Earth!



A NASA satellite took this photo!

(free and open) Data for any Earth Science Field!

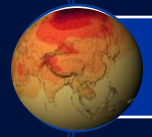


NASA has over **17,000 unique data products** = over **120 petabytes** of Earth science data!

Who are we and why are we here?

NASA Earth Science Division: providing decades of data to help in understanding our planet's interconnected systems, from a global scale down to minute processes.

NASA produces data that is free to access & use for everyone!



You can discover decades of data for anywhere in the world!

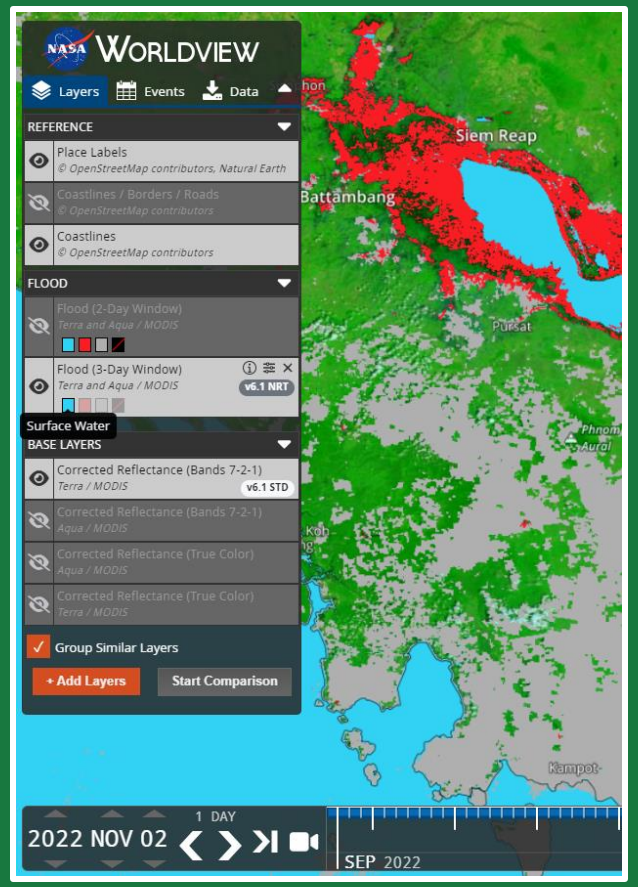
NASA offers tools & services for viewing, accessing, & interacting with data!

Our goal is to make our data more accessible to GIS users!

Discovery & Access Methods

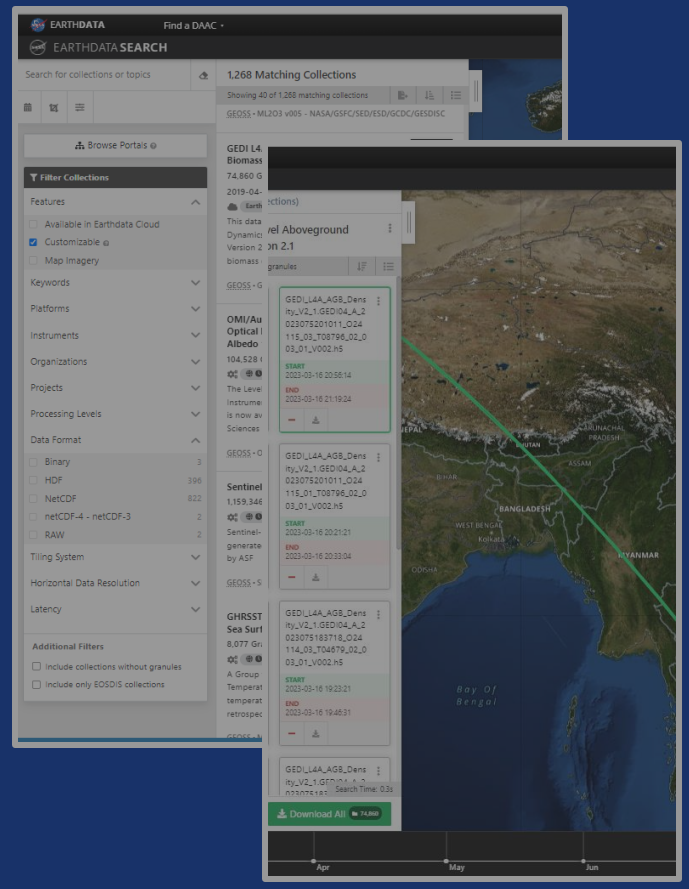
Worldview

visualize & browse imagery



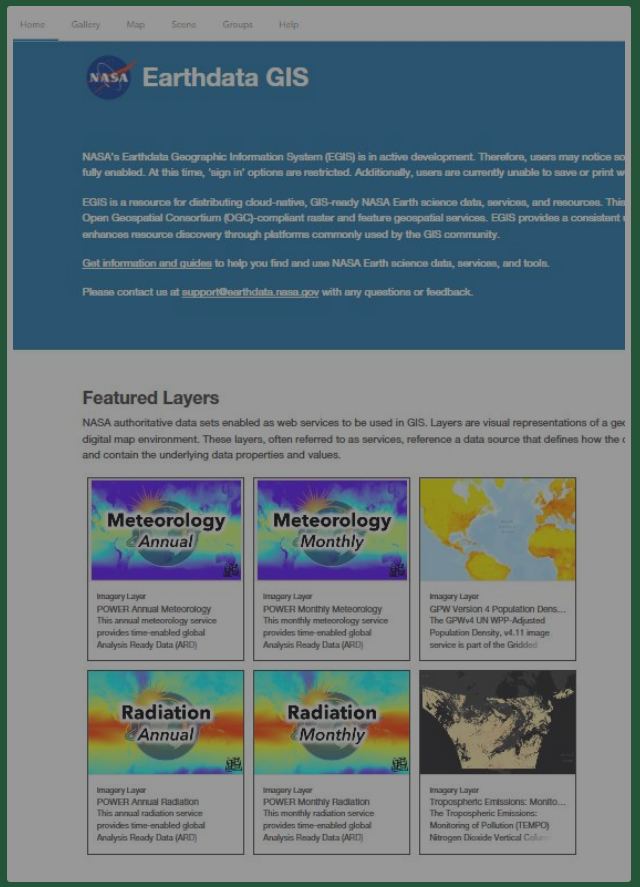
Earthdata Search

export & download data files

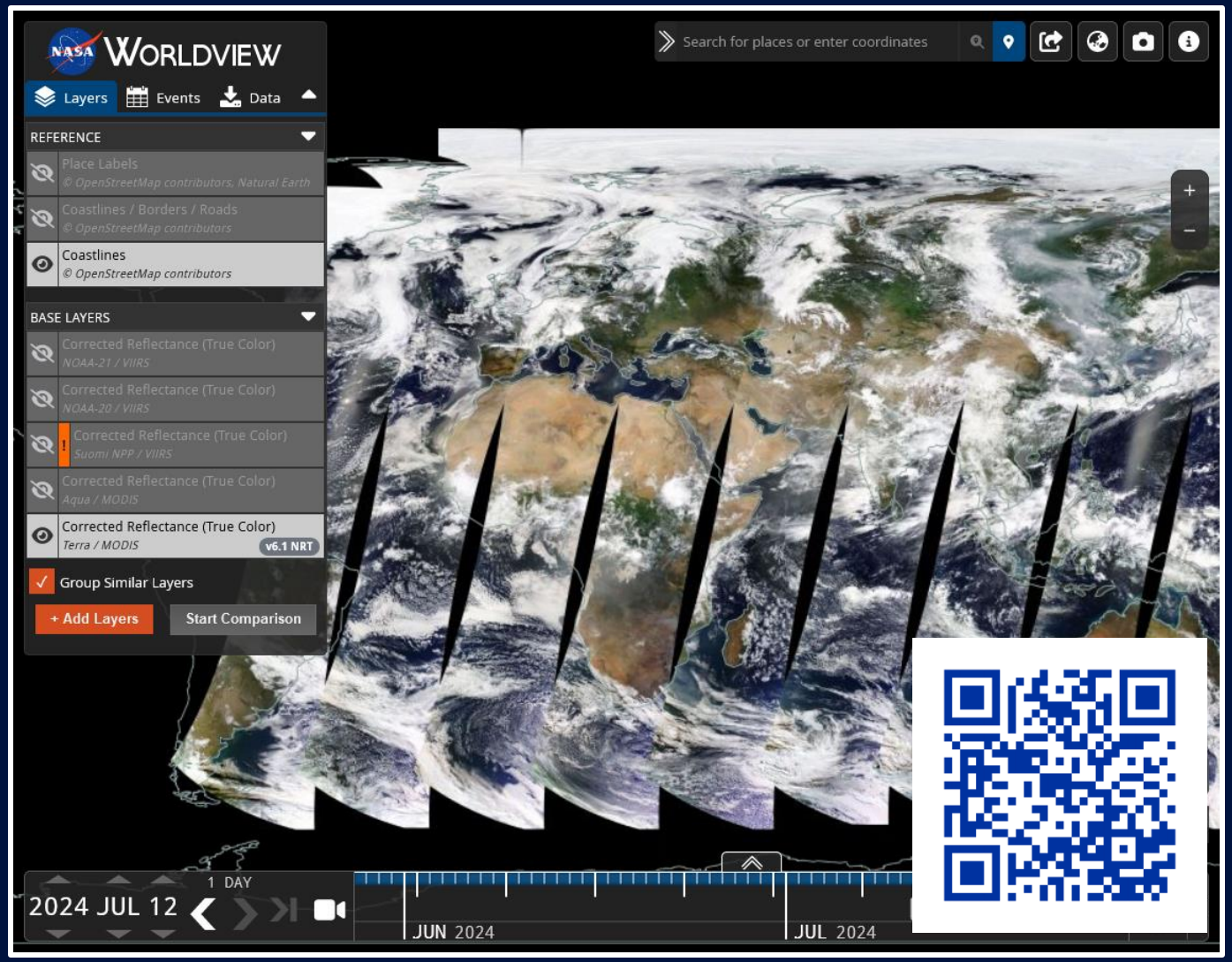


Earthdata GIS (EGIS)

GIS services, maps, & apps



Worldview: Discover Browse Imagery

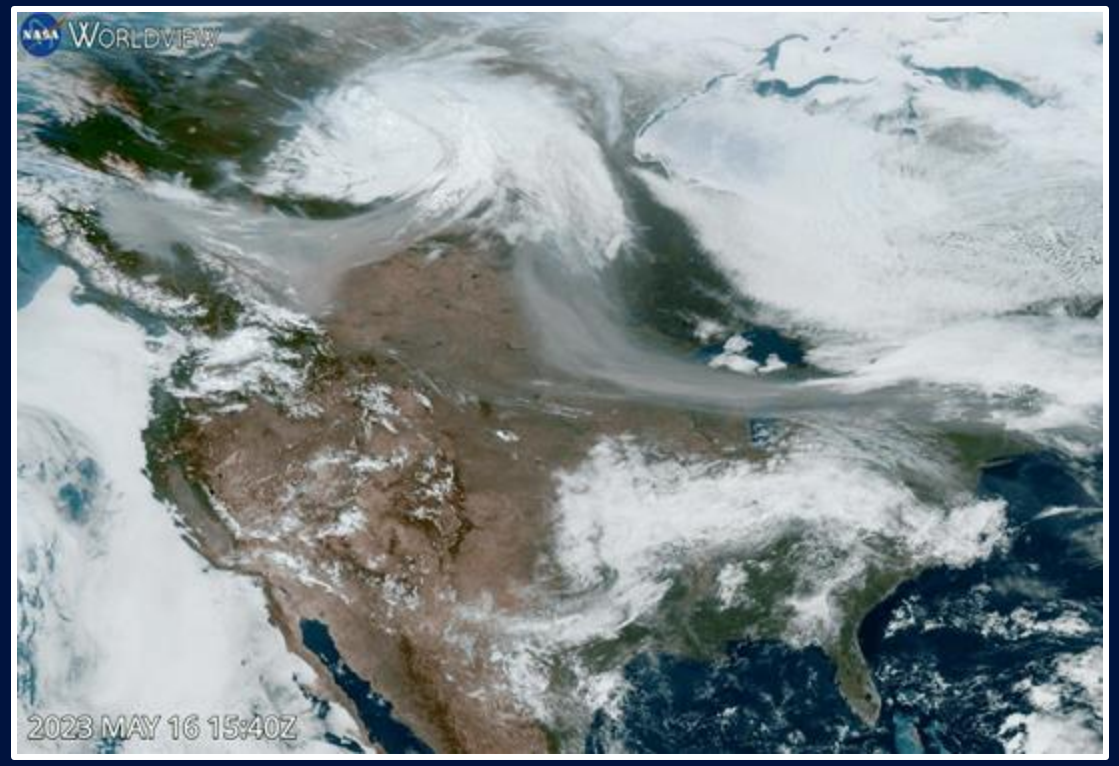


Interactively browse ~1,000 global, full-resolution satellite imagery layers, known as the Global Imagery Browse Services (GIBS)

Discover imagery within minutes to hours of it being acquired as well as imagery from the **past few decades**

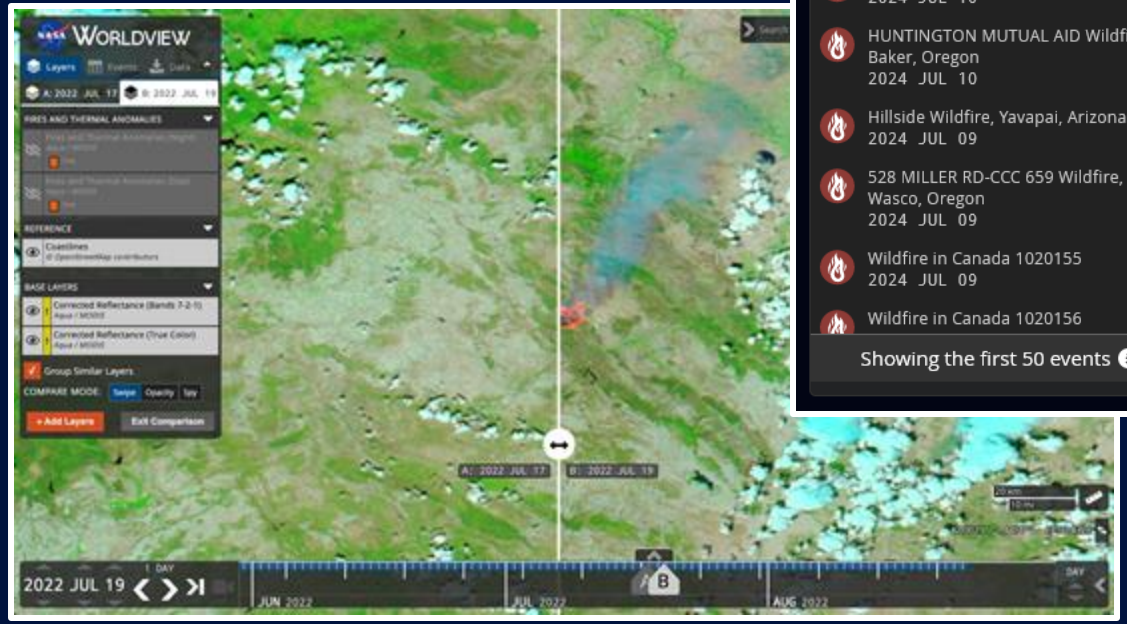
Catalog accessible via time-enabled OGC WMS end point

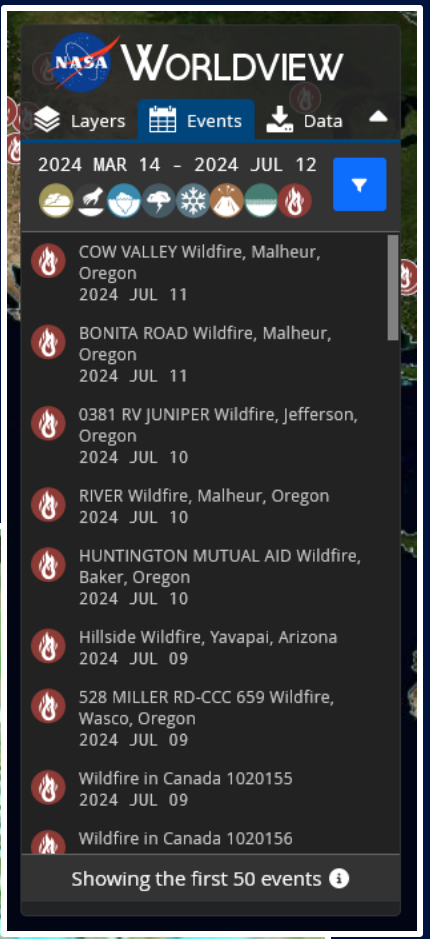
Worldview: Discover Browse Imagery



➡ **Events:** Users can explore a recent events

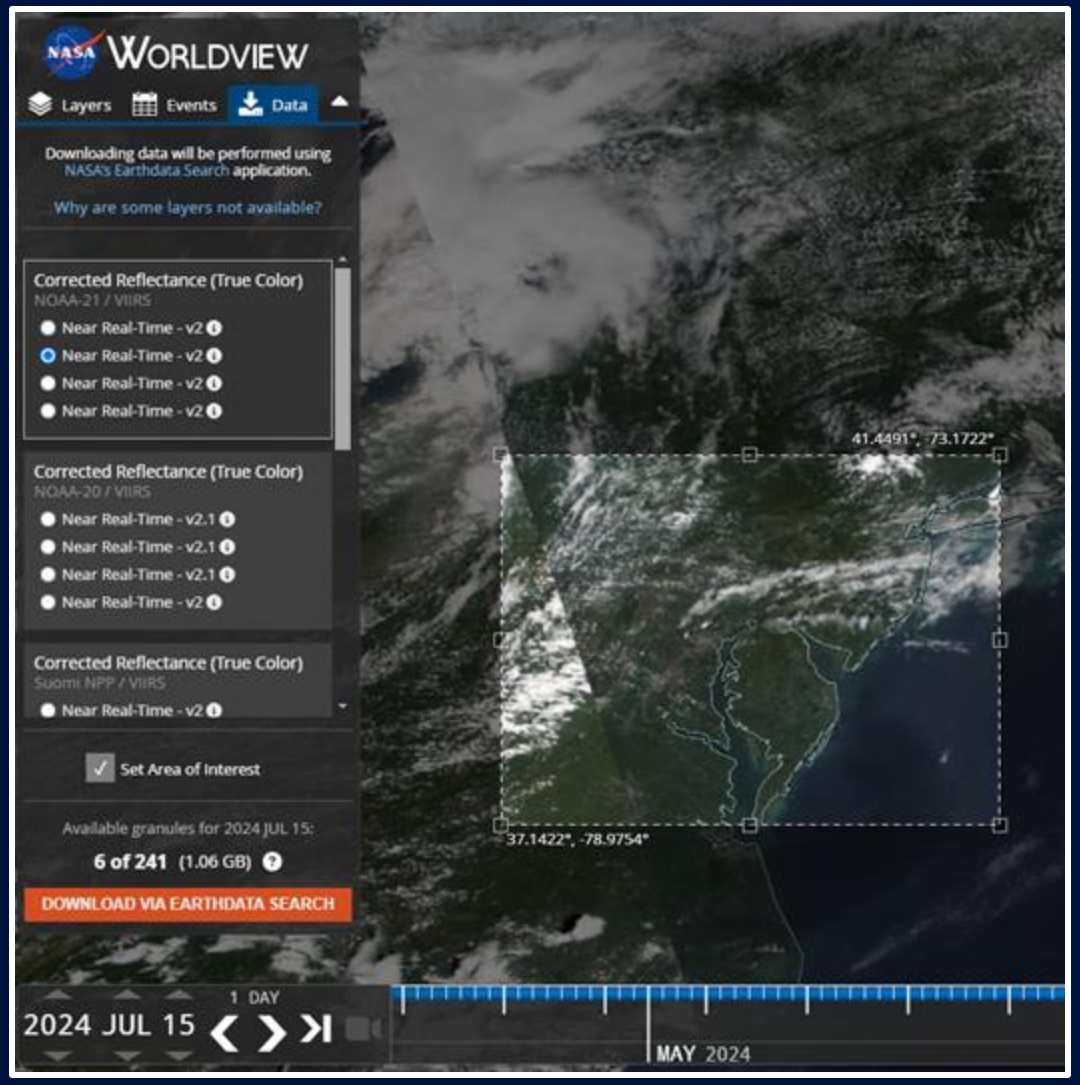
⬇ **Comparison:** Users can compare imagery side by side using a swipe tool.





⬆ **Animation:** Users can create animations & export to imagery as GIFs.

Worldview: Discover Browse Imagery



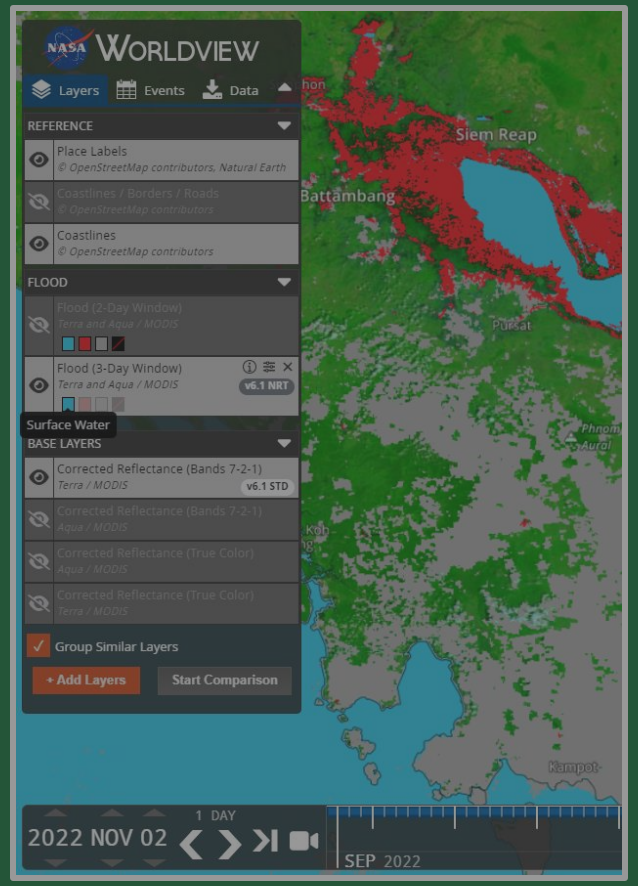
Data Access: Users can now link directly to the data visualized!

See granules available and estimated size before being directed to download

Discovery & Access Methods

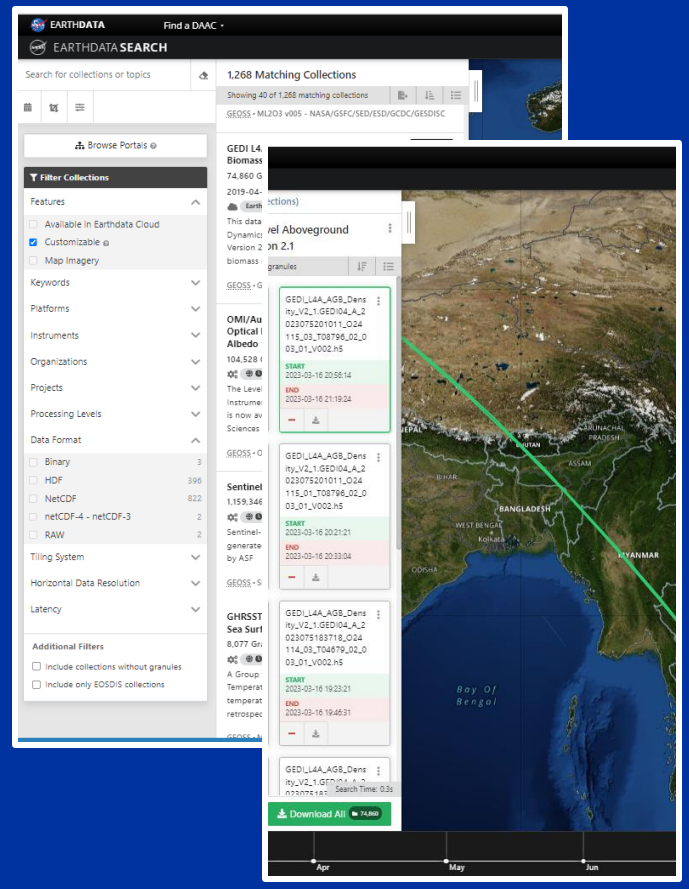
Worldview

visualize & browse imagery



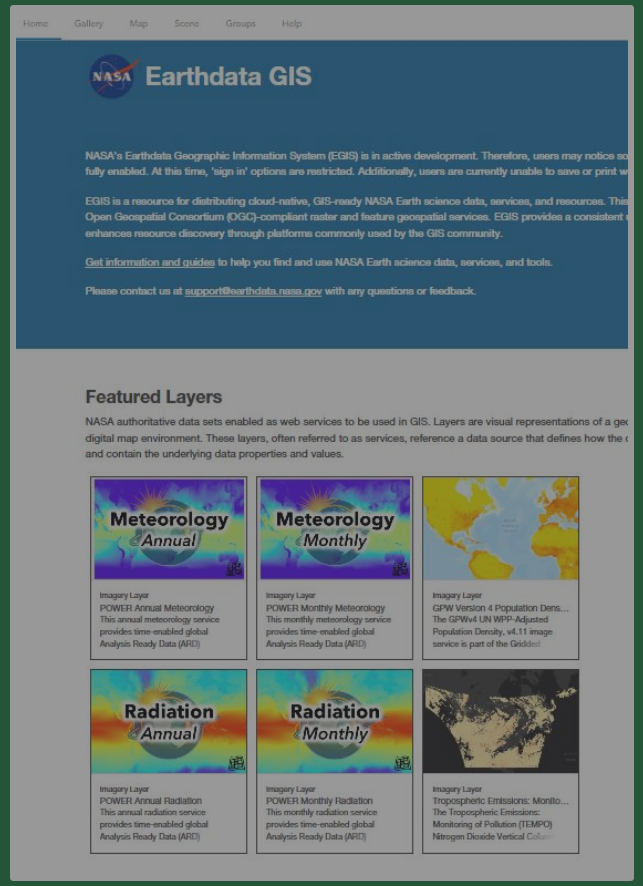
Earthdata Search

export & download data files



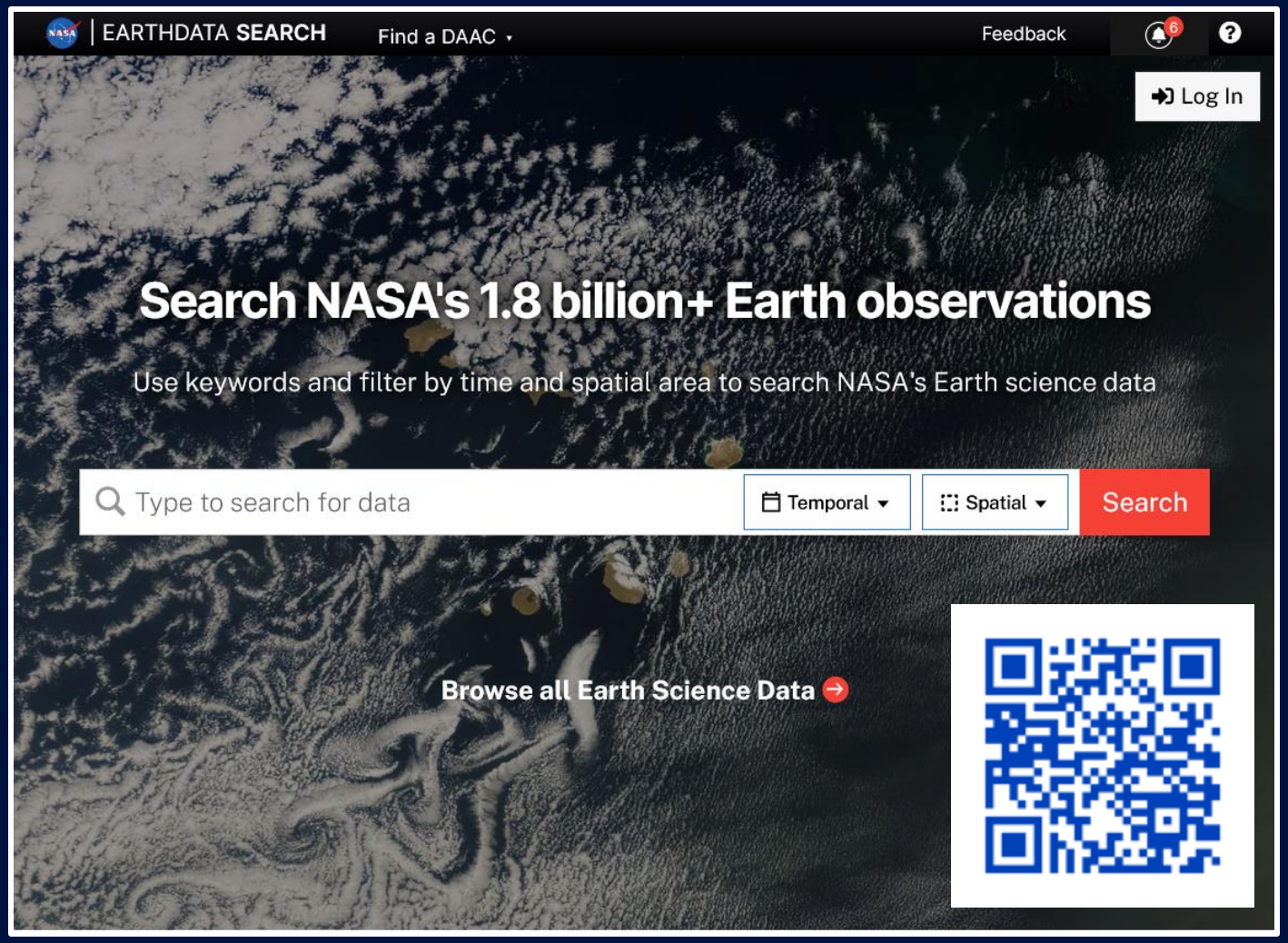
Earthdata GIS (EGIS)

GIS services, maps, & apps



Earthdata Search: Download Data

link to a video tutorial, link to a "How To" guide

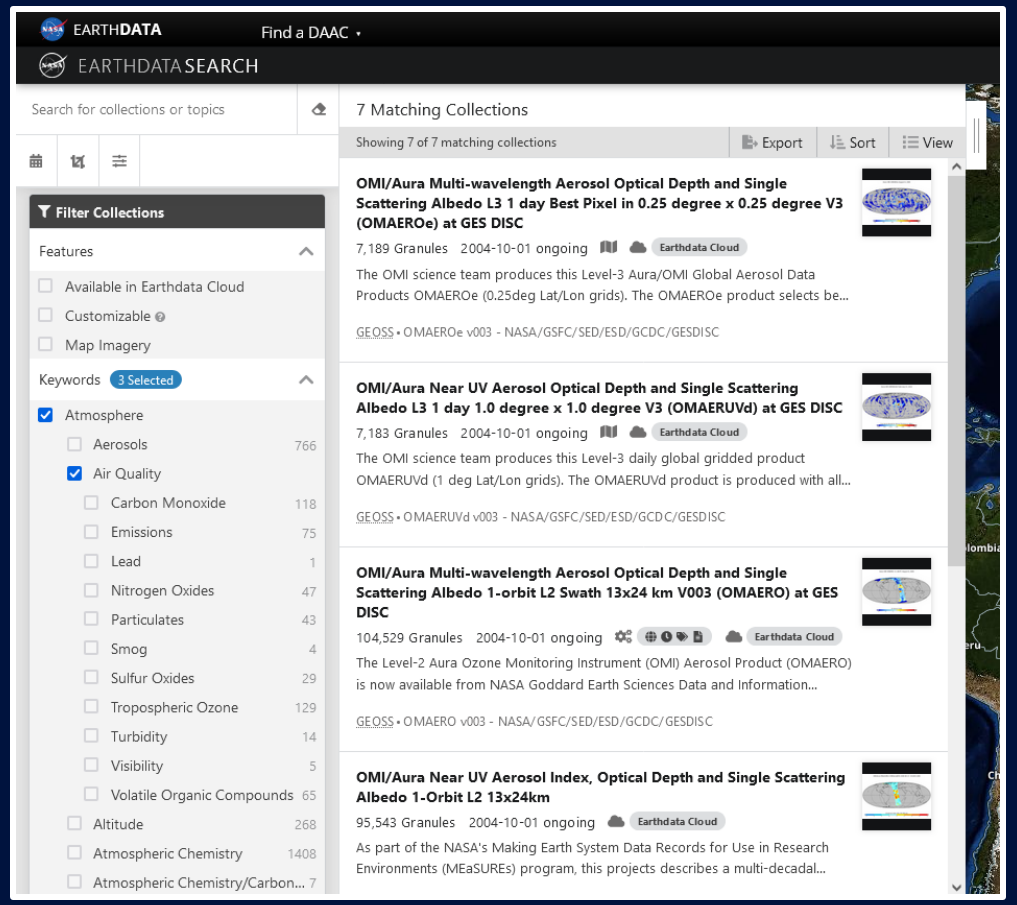


Earthdata Search provides **discovery, filtering, visualization, & access** to all of NASA's Earth Science data.

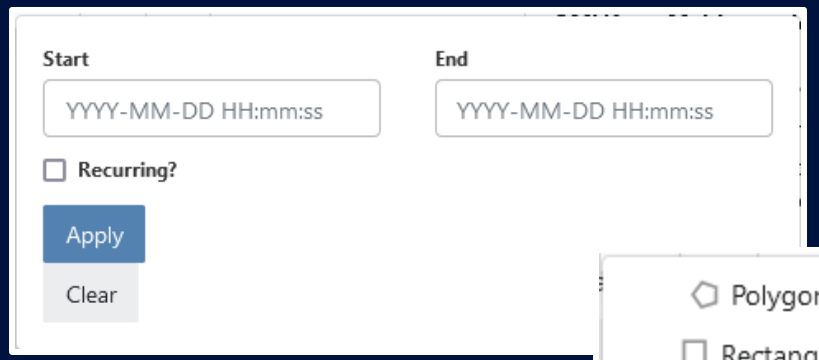
This includes **more than 11,000** data collections.

Over 1,245 collections are now **customizable**

Earthdata Search: Download Data



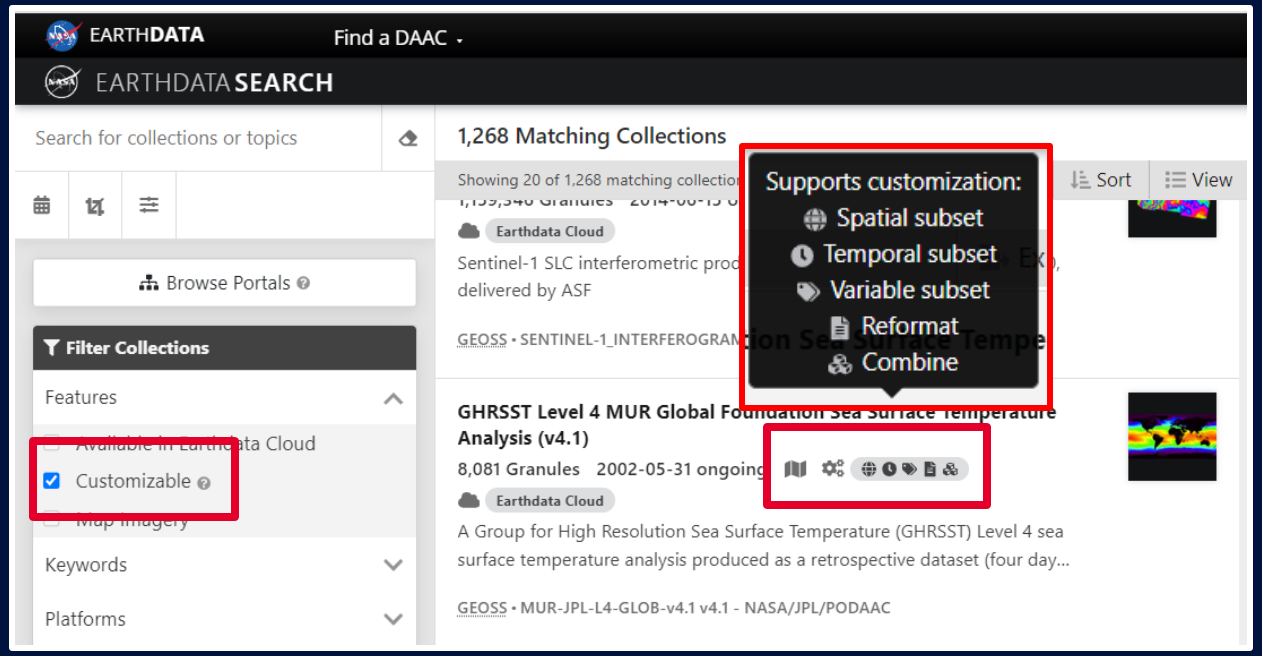
The platform offers free-text search & filtering by science area (keyword), platform, and/or instrument.

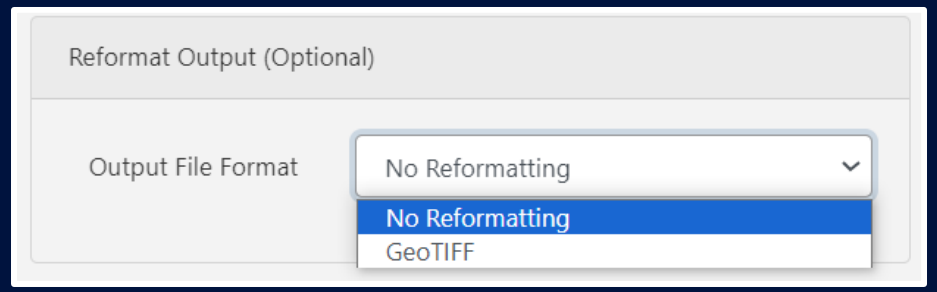


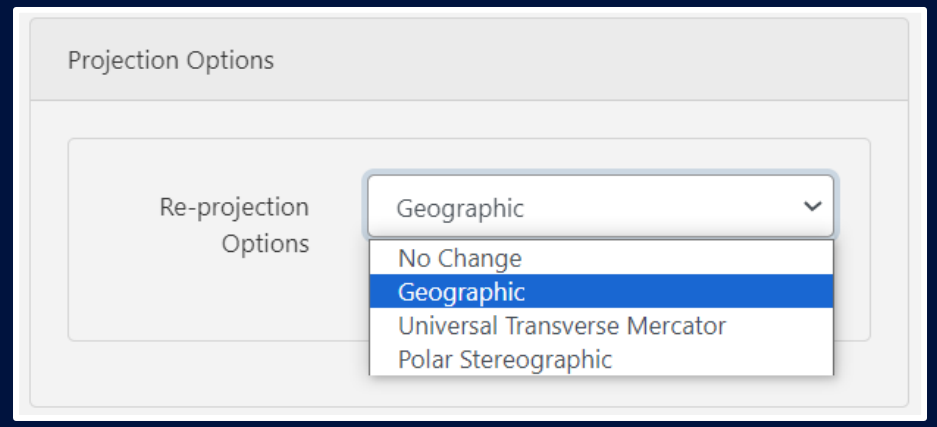
Filter by date/time & spatial region

Display of search results on a map to preview images (browse)

Earthdata Search: Download Data





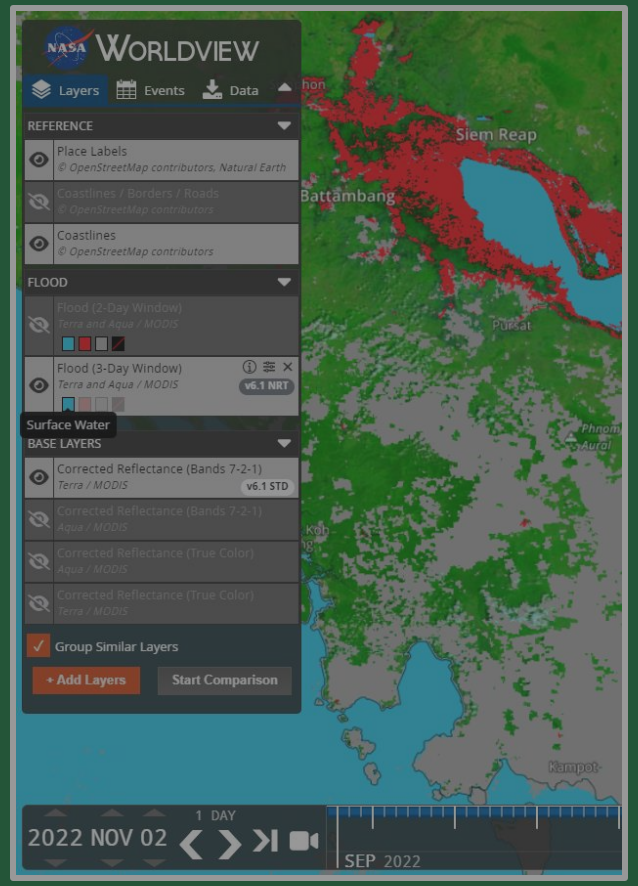


Customization: temporal, spatial, and variable subsetting

Discovery & Access Methods

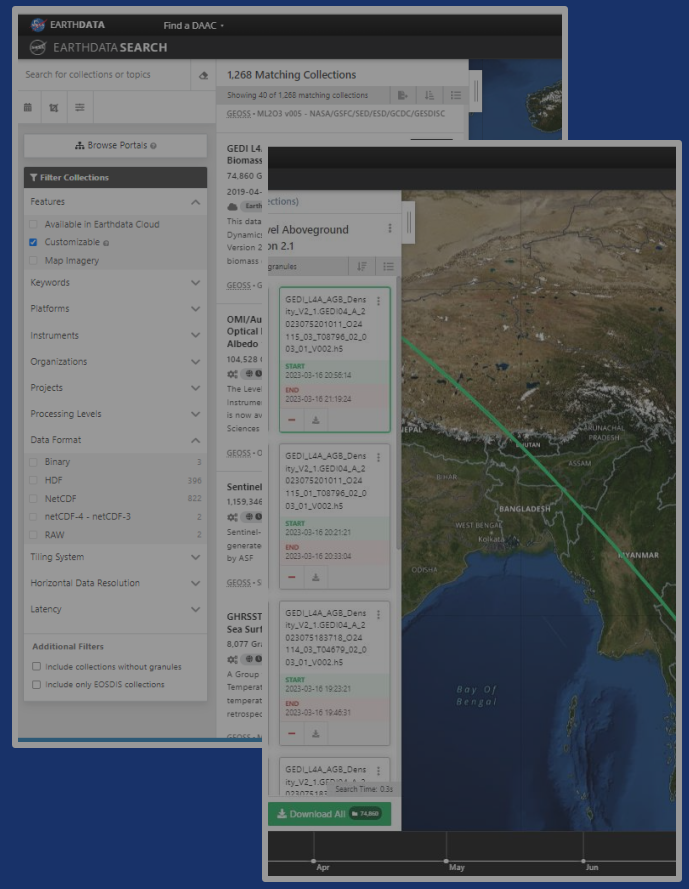
Worldview

visualize & browse imagery



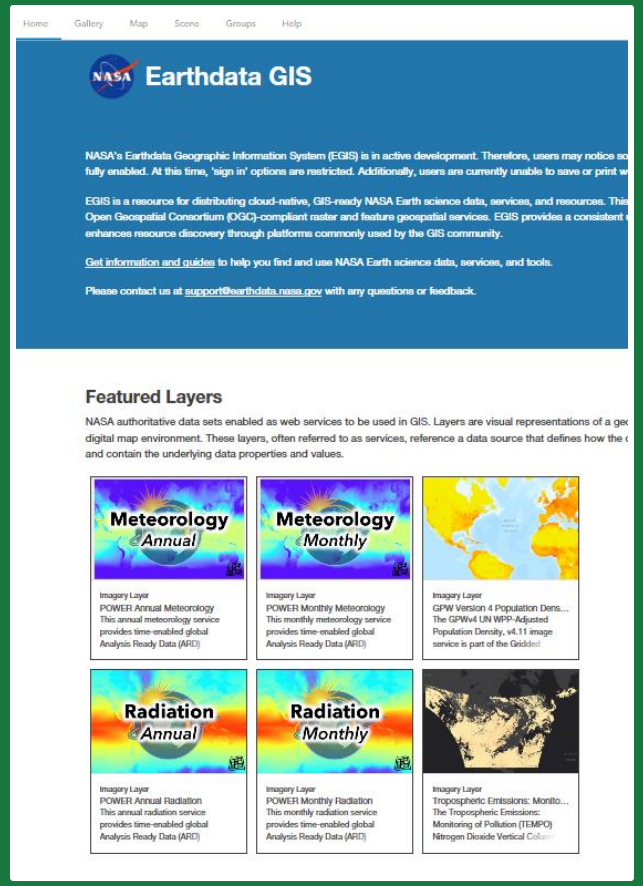
Earthdata Search

export & download data files

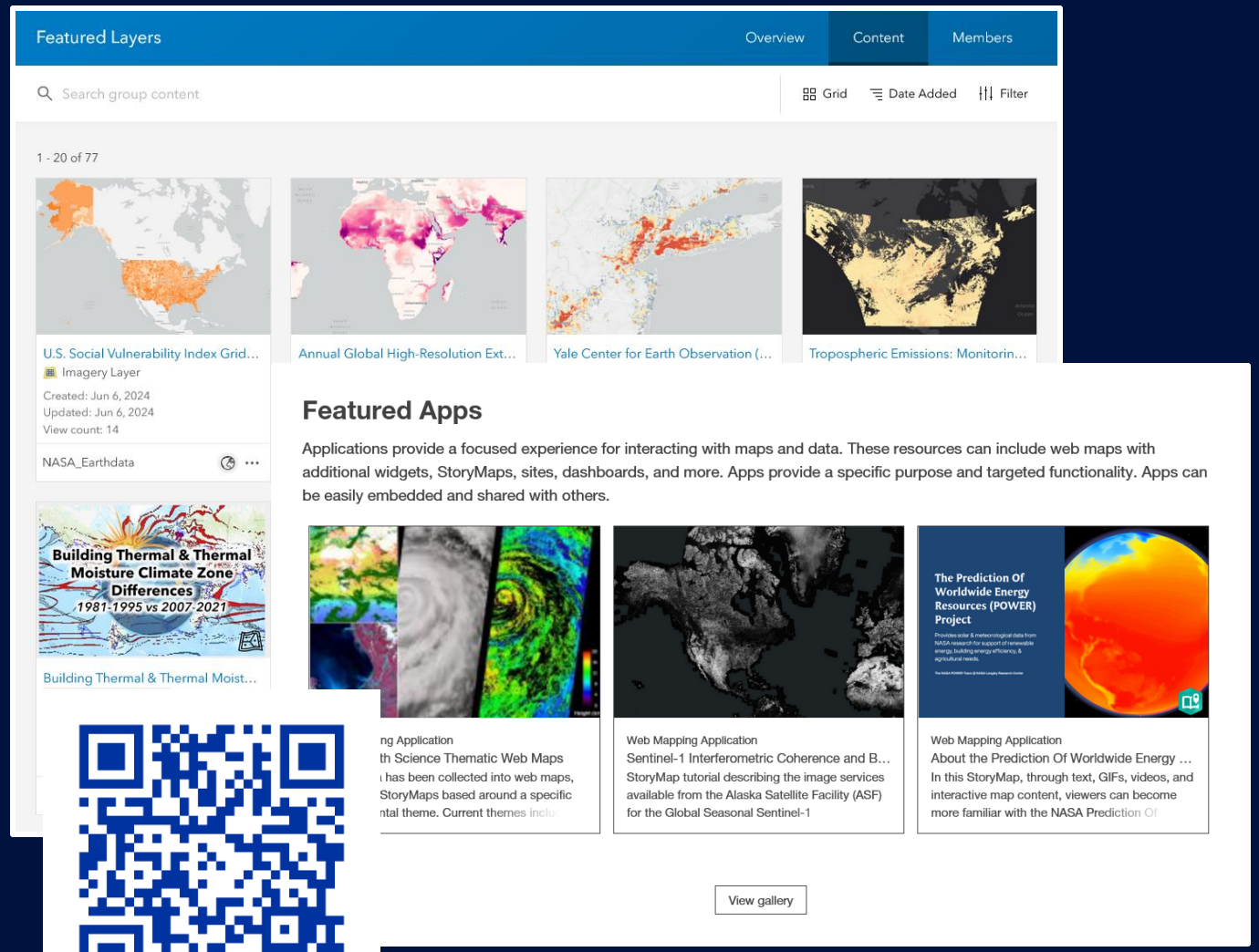


Earthdata GIS (EGIS)

GIS services, maps, & apps

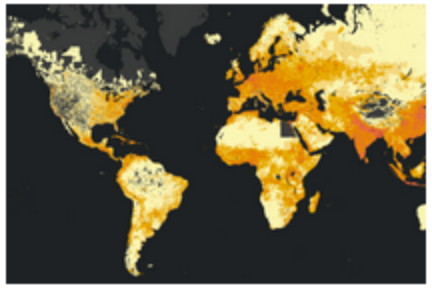


Earthdata GIS: GIS Services, Maps, & Apps



Earthdata GIS is a resource for distributing cloud-native, GIS-ready NASA Earth Science data, services, & resources. These include ArcGIS & Open Geospatial Consortium (OGC)-compliant raster & feature geospatial services.

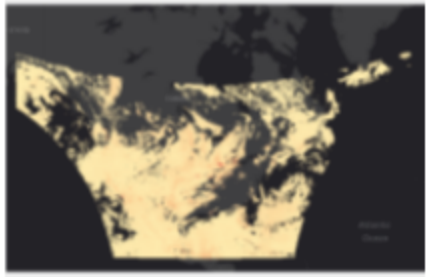
175 image & 25 feature services offered!



Gridded Population of the World, Version 4 (GPW…

Image Service By NASA_Earthdata

Gridded Population of the World, Version 4 (GPW Population Density, Revision 11. Published on: 2018-12-31T00:00:00.000Z. Created by Center fo Earth Science Information Network - CIESIN - Colu University. Published by NASA Socioeconomic Da Applications Center (SEDAC)....



TEMPO Nitrogen Dioxide (NO2) Tropospheric Ver…

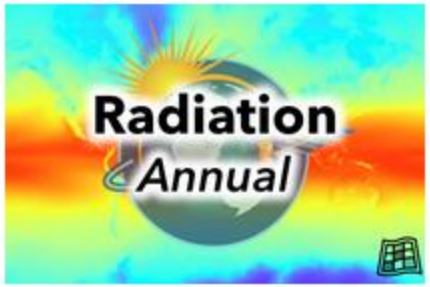
Image Service By NASA_Earthdata

The Tropospheric Emissions: Monitoring of Pollution (TEMPO) Nitrogen Dioxide Vertical Column Troposphere Provisional layer provides information on the amount of nitrogen dioxide in the troposphere, available as approximately one-hour scans for daylight hours over North America, from August 2023 to...

Early IMERG Precipitation Rate (GPM_3IMERGHHE…

Image Service By NASA_Earthdata

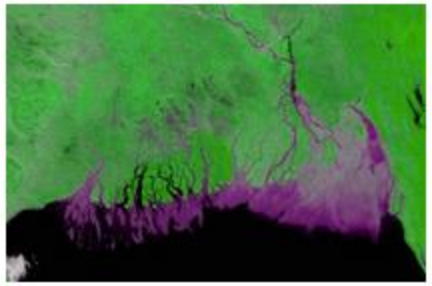
Image service for IMERG Early Run data product, precipitation rate in mm/hr at 30-minute intervals time. Information on map configuration, color bar available in the Description.



POWER Annual Radiation

Image Service By bmacpher_NASA

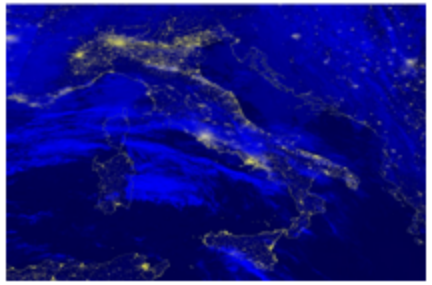
This annual radiation service provides time-enabled global Analysis Ready Data (ARD) parameters from 1984 to 2023 for the NASA Prediction Of Worldwide Energy Resource (POWER) Project's communities.



Vegetation - Surface Reflectance (MODIS

Image Service By NASA_Earthdata

This daily visualization represents a "false color" b combination (1-2-1) of data continuously collecte MODIS instrument on the Terra satellite and is use identifying vegetation changes, drought, and floo



Black Marble Nighttime Blue/Yellow Composite (V…

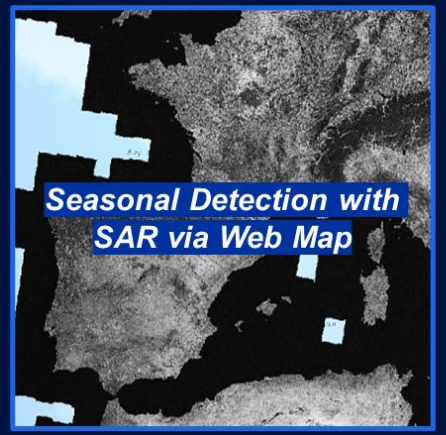
Image Service By NASA_Earthdata

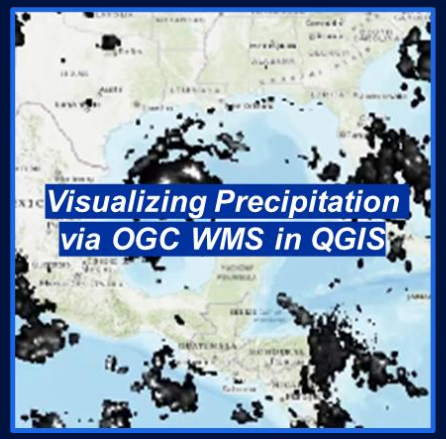
This visualization represents a "false color" band combination (DNB-DNB-M15) of data continuously collected by the VIIRS instrument on the Suomi-NPP satellite and is useful for identifying and monitoring changes in nighttime lights from cities, fires, boats, and other phenomena.

Earthdata GIS: GIS Services, Maps, & Apps

EGIS grants users access to NASA Earthdata through open science tools **via OGC compliant services, common web APIs, & Native SDKs**.

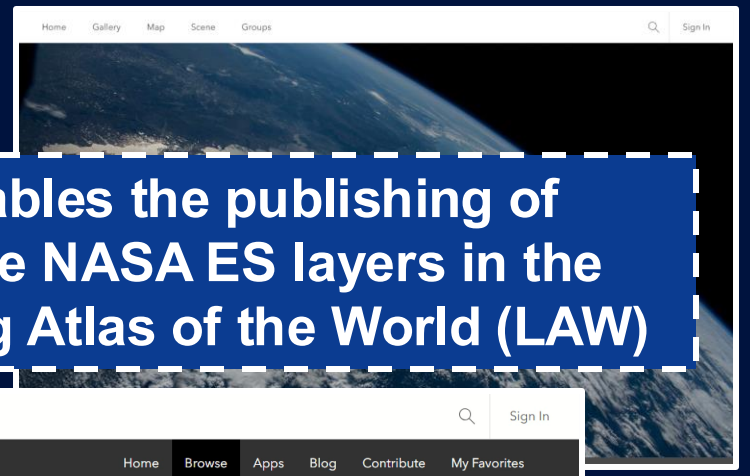
Analysis Ready Data as a Service – Use Cases:



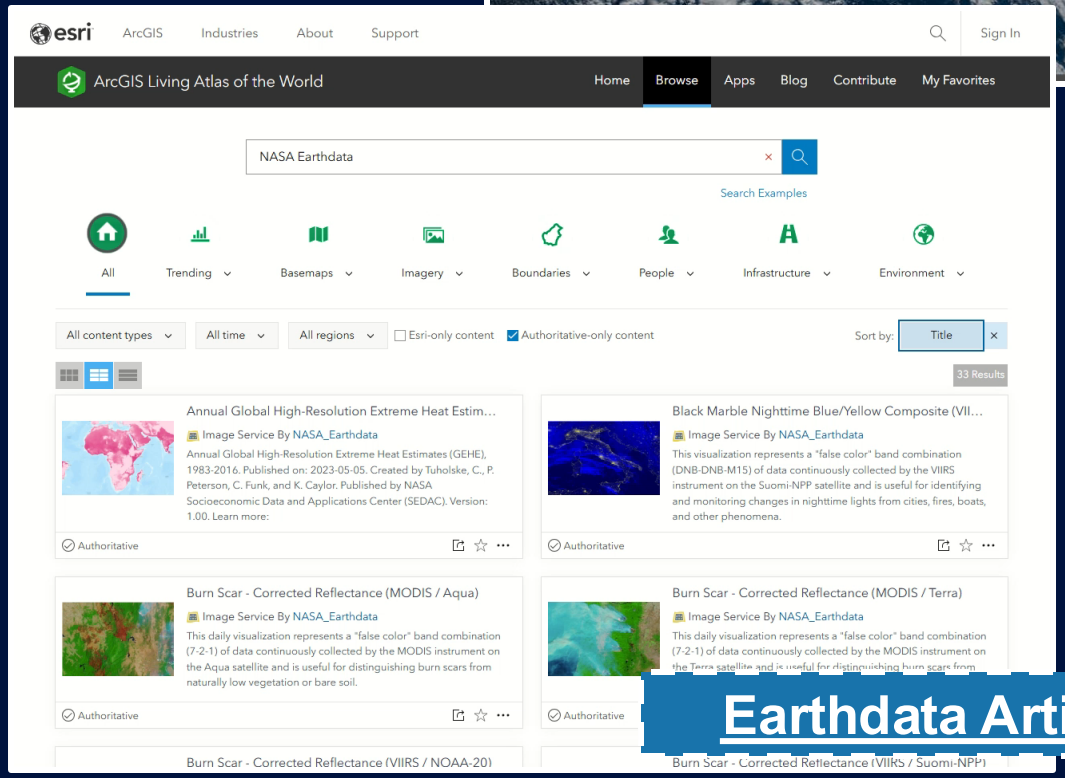


Enabling GIS at NASA: Earthdata GIS

A NASA-Managed ArcGIS Enterprise…



…that enables the publishing of authoritative NASA ES layers in the ArcGIS Living Atlas of the World (LAW)



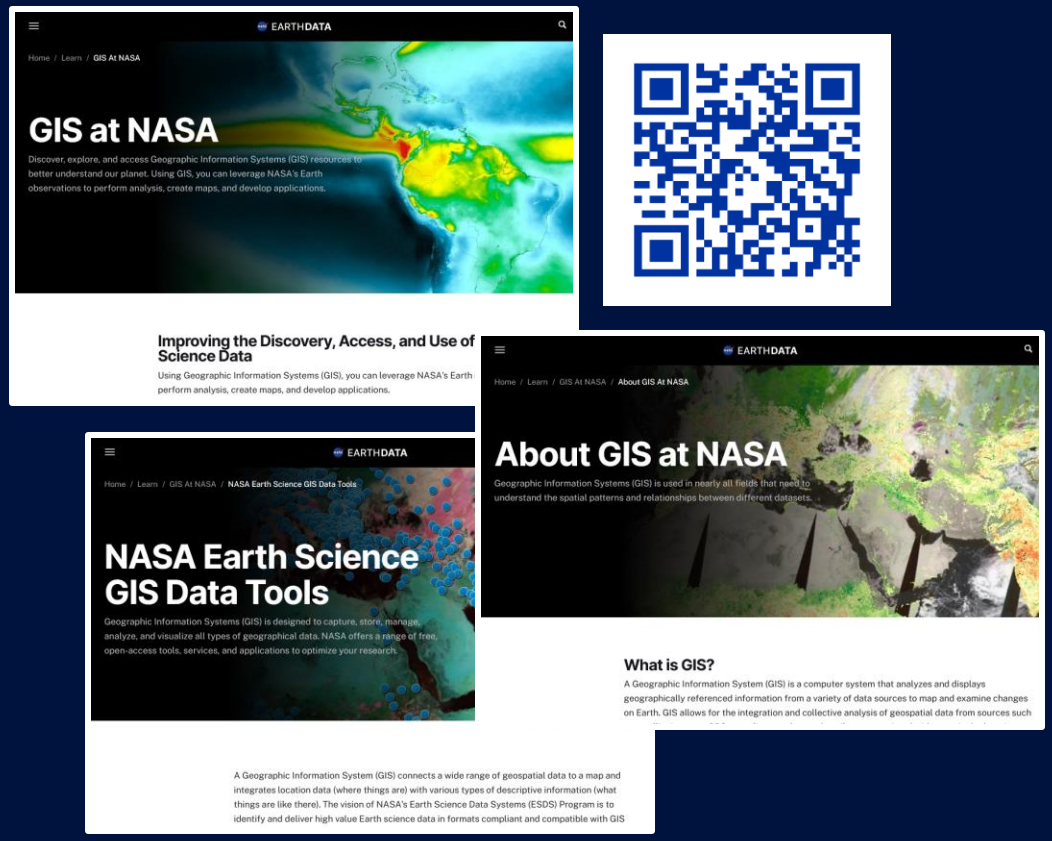
Earthdata Article

Resources

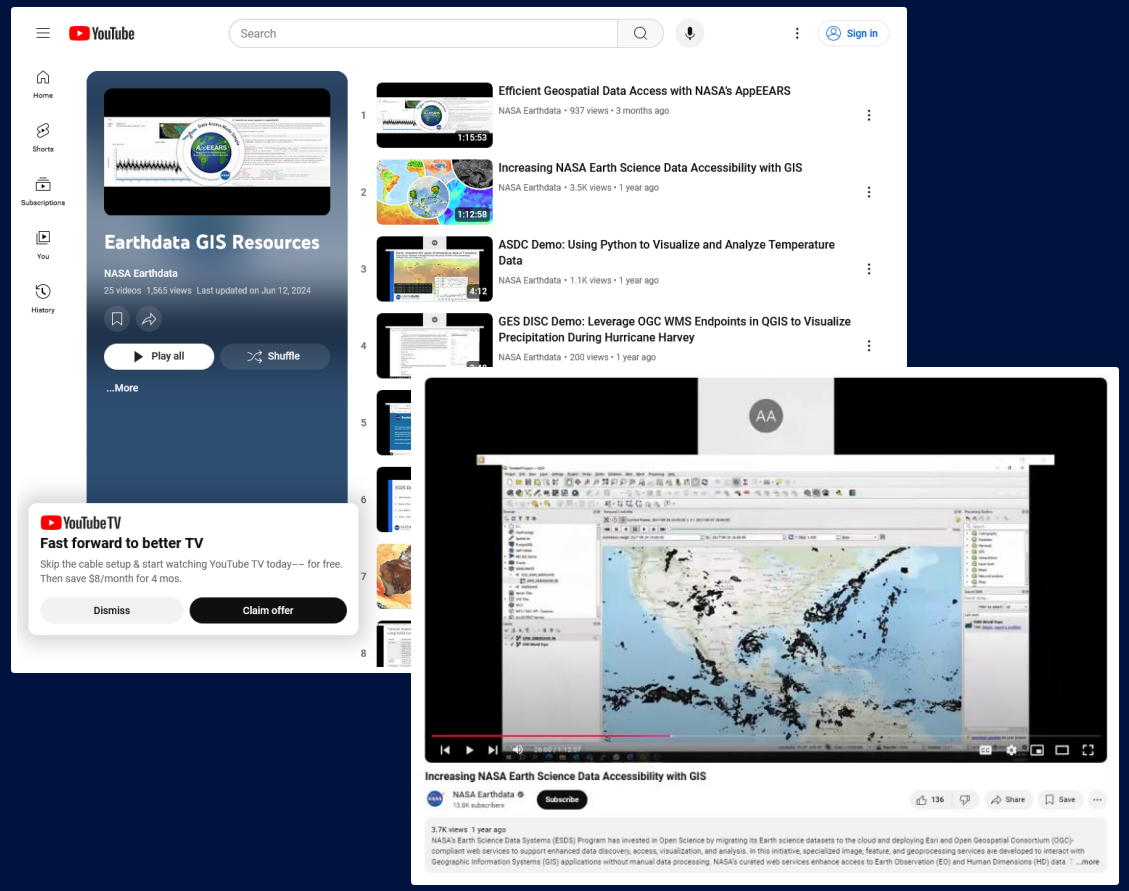
How can you start your NASA Earth Science data journey?

https://earthdata.nasa.gov/learn/gis

Resources: Earthdata GIS Pages



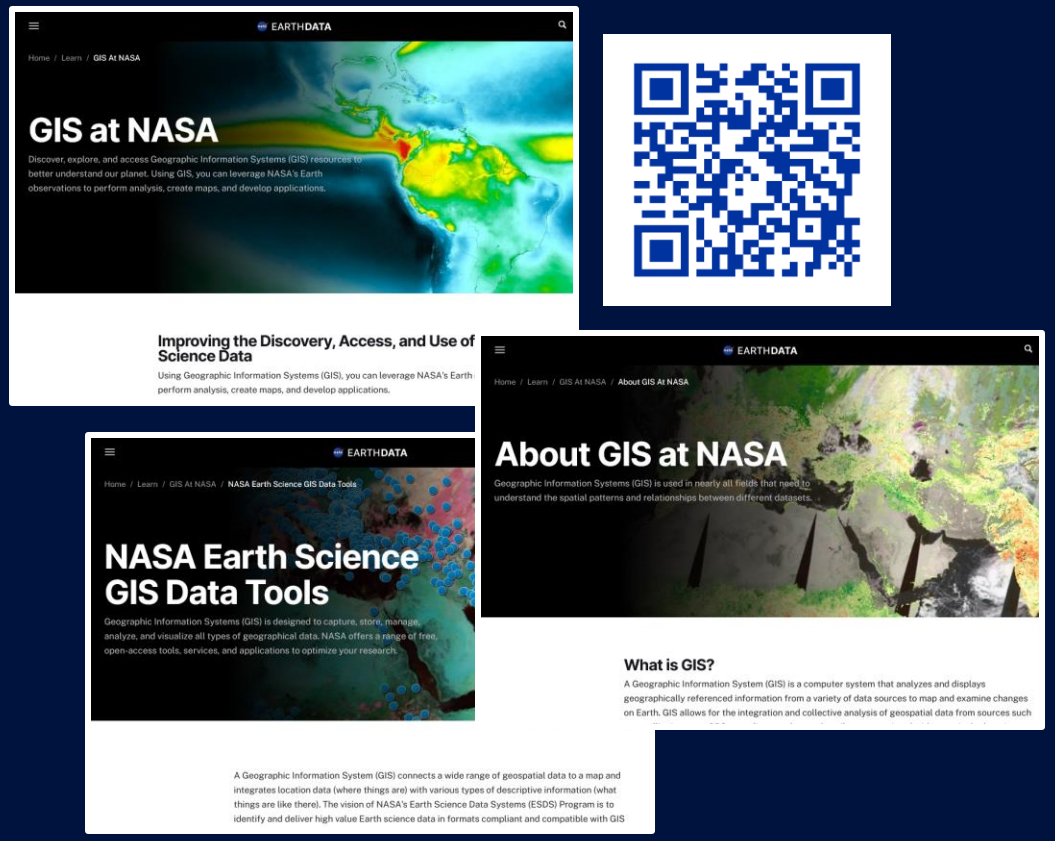
The Earthdata [GIS Playlist](#) has videos specific to the GIS-minded users.

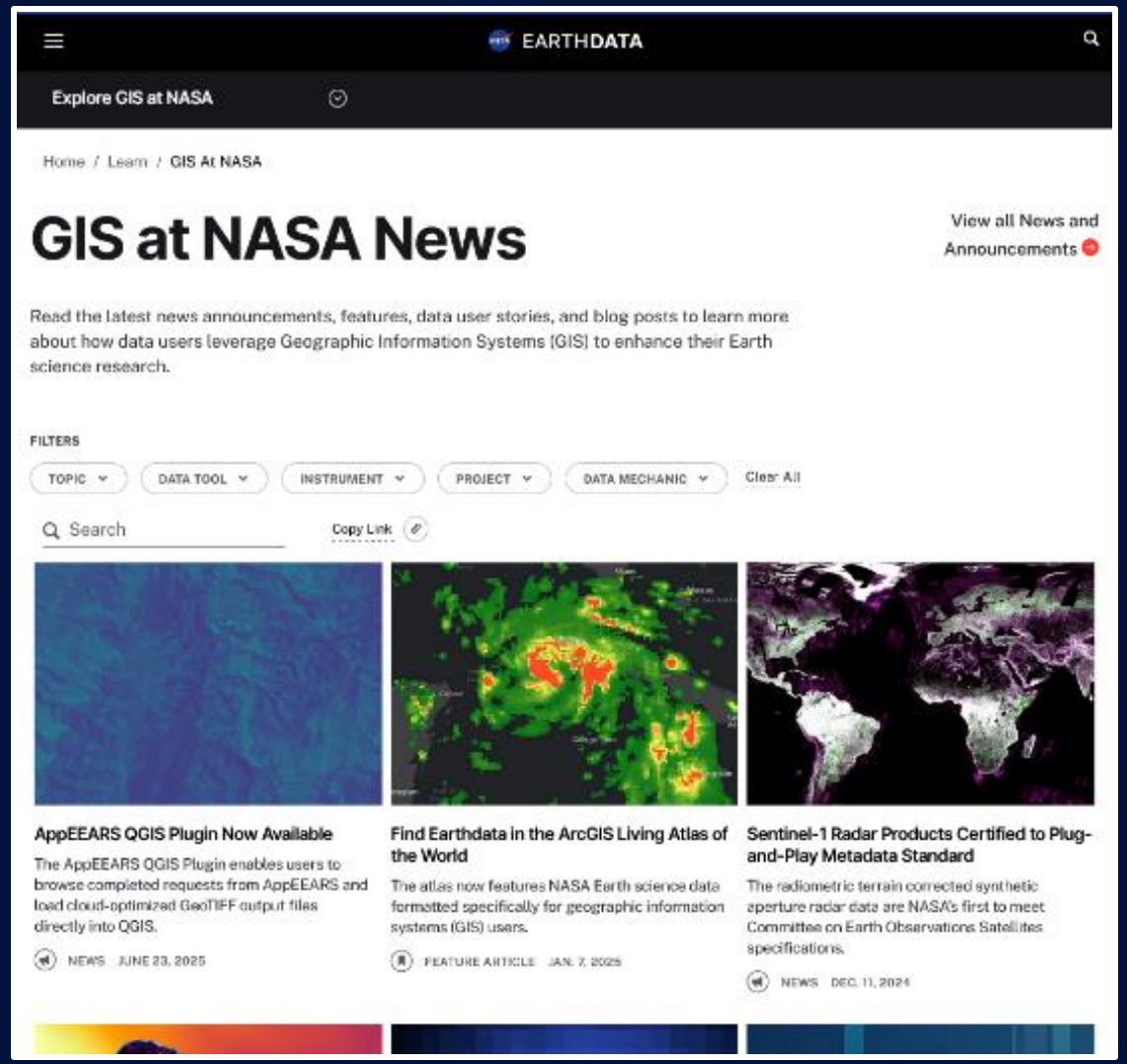


The Earthdata GIS Webpages contain & link to many helpful learning resources as well as info about various **GIS data, tools, & services at NASA**!

https://earthdata.nasa.gov/learn/gis

Resources: Earthdata GIS Pages





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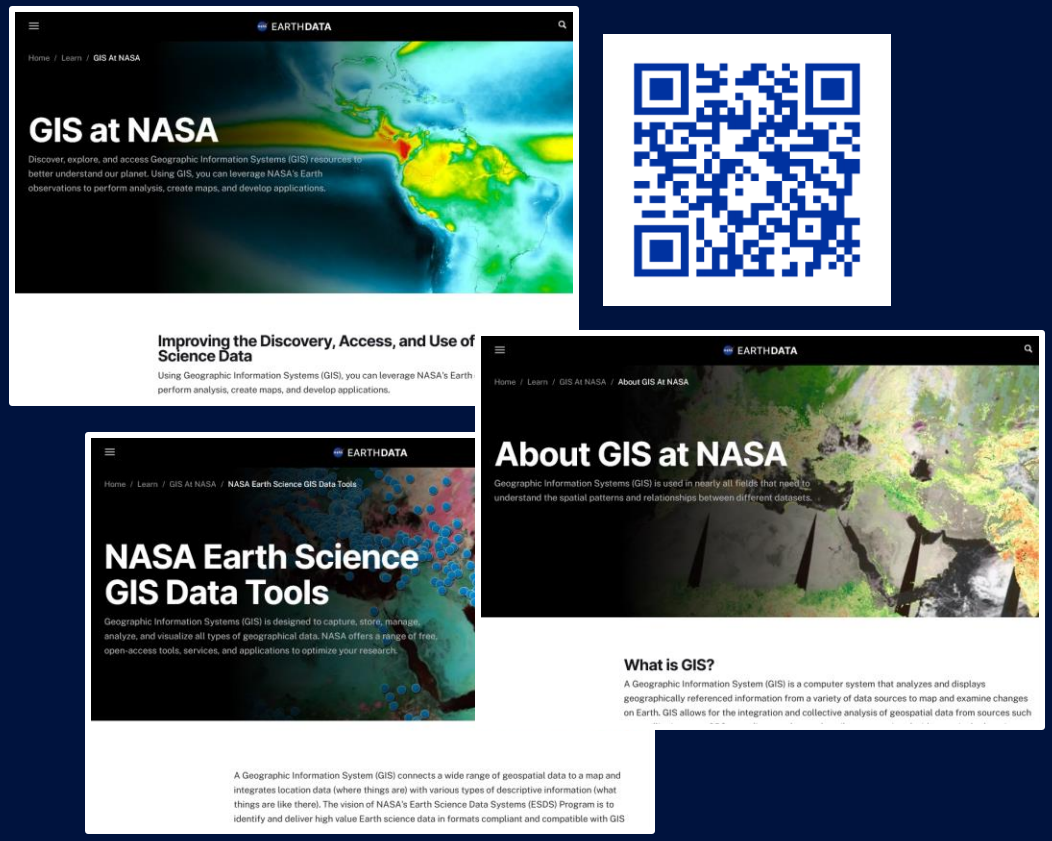

downloading.

Earthdata GIS

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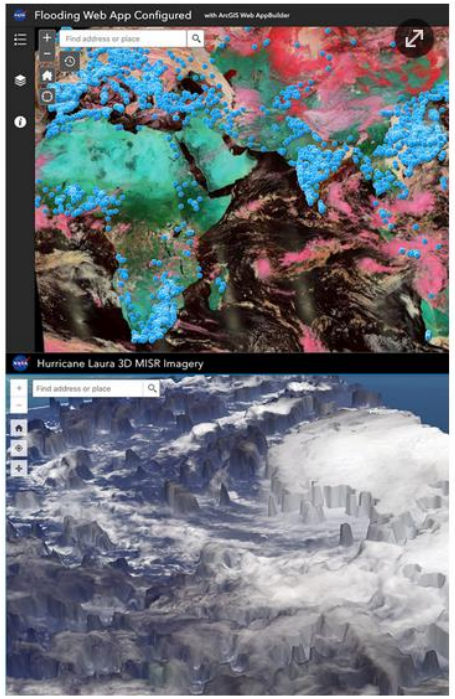
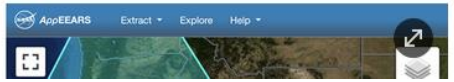
Furthermore, within NASA's homepage on ArcGIS Online (AGOL), you can explore a diverse range of data, layers, and maps, ready to be integrated into your next project or study. NASA Earth Science is continuously working increase the number of NASA layers available in the ArcGIS Living Atlas of the World (LAW). The LAW is an ever evolving and growing collection of ready-to-use geographic information from around the globe, tailored to be easy to use within a variety of GIS applications.



AppEEARS

The Application for Extracting and Exploring

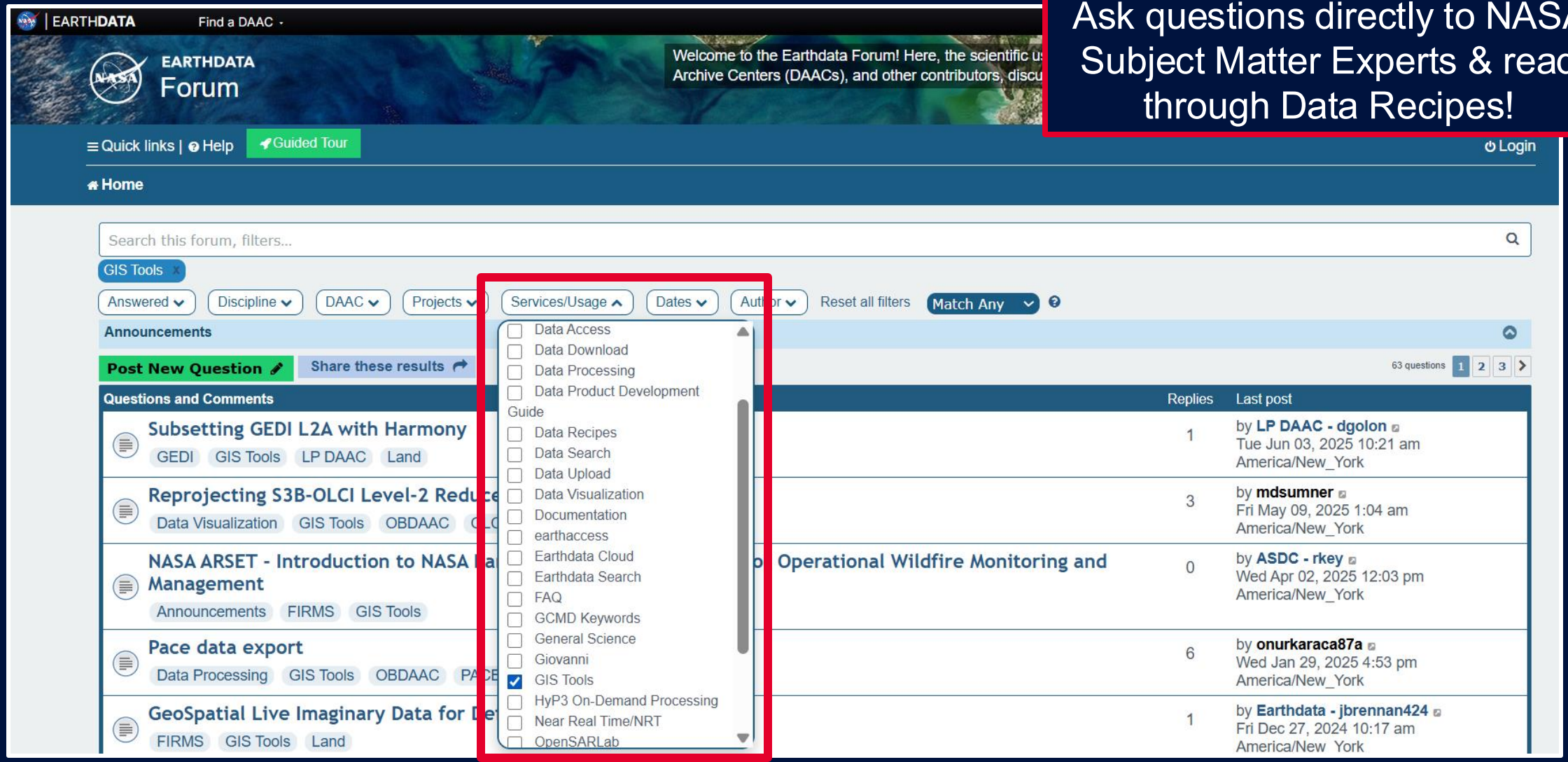


The Earthdata GIS Webpages contain & link to many helpful learning resources as well as info about various **GIS data, tools, & services at NASA**!

https://forum.earthdata.nasa.gov/

Resources: Earthdata Forum

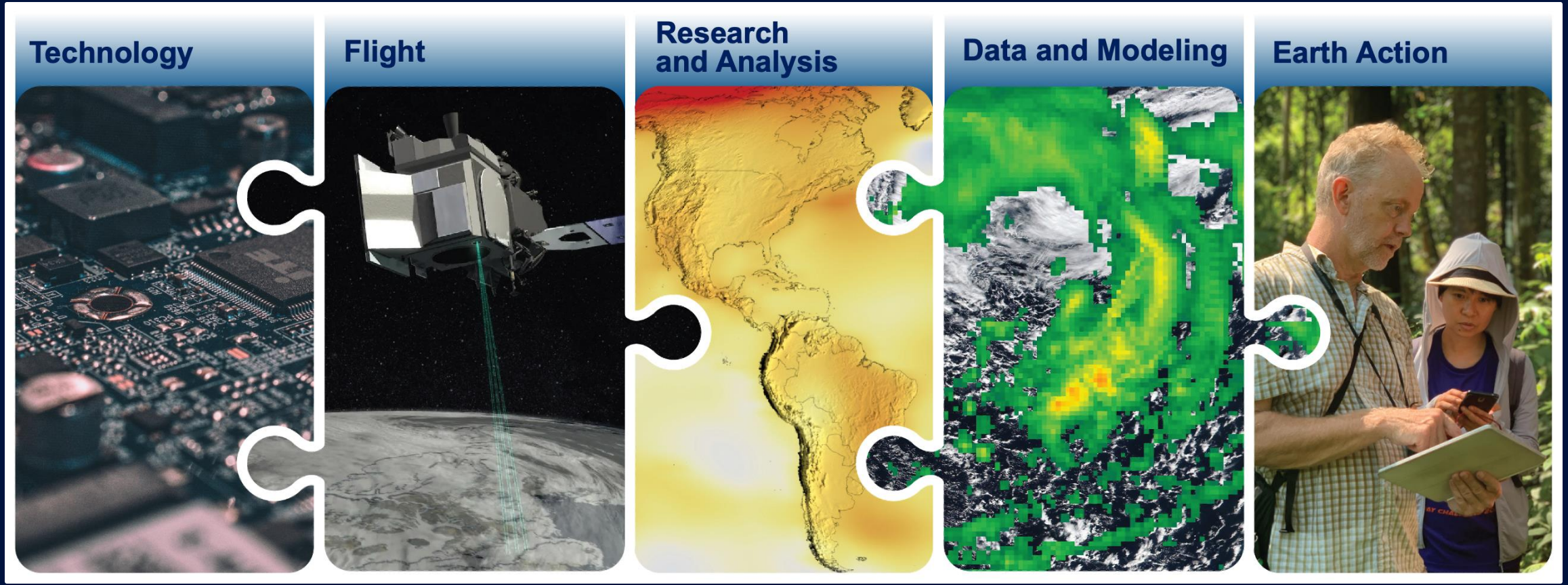
Ask questions directly to NASA Subject Matter Experts & read through Data Recipes!



Earth Action

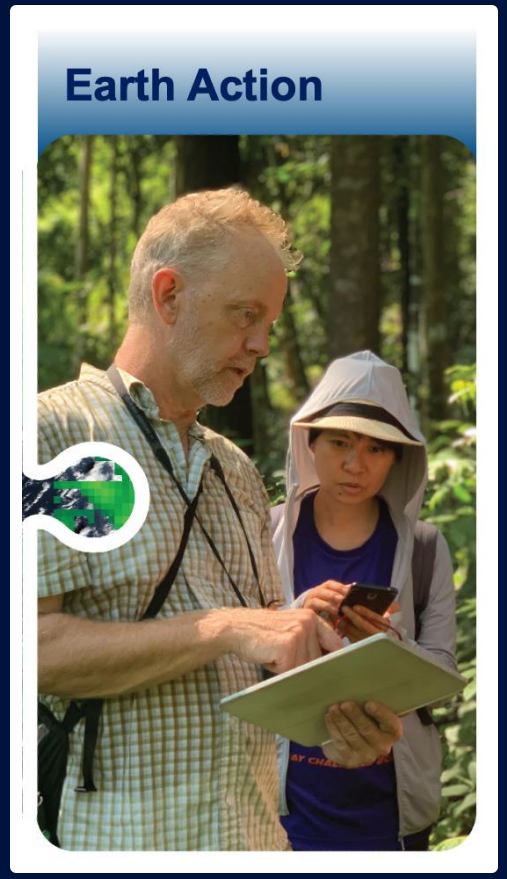
Supporting your Data Journey

Resources: Earth Action



Resources: Earth Action

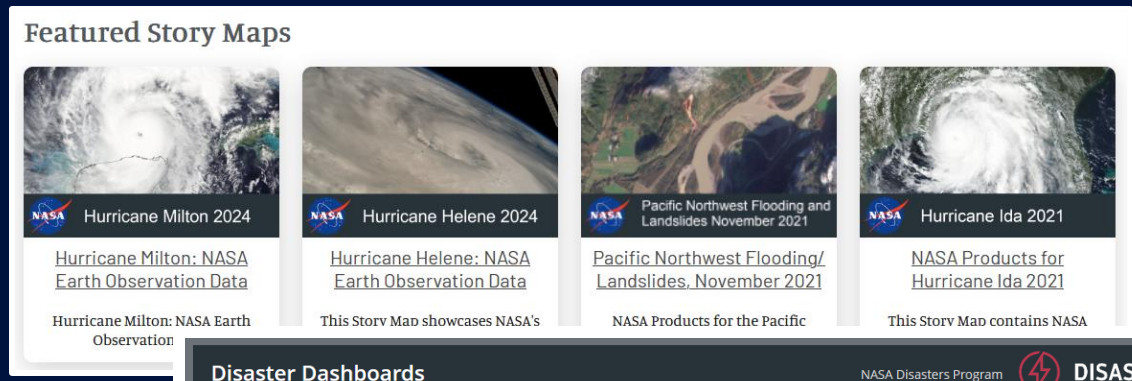
To foster the usage of NASA's observation & modeling data, NASA's Earth Action Program supports interaction & partnerships within US government, international agencies, large/small businesses & the general public to inform specific applications & decisions in these key areas:

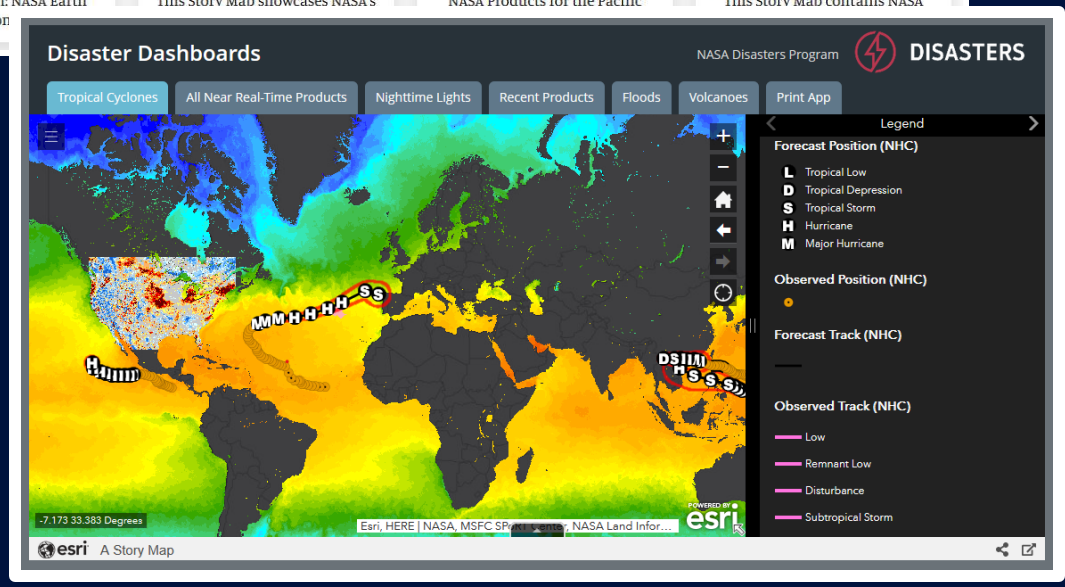


- Earth Mission Engagement
- Wildland Fires
- Climate & Resilience
- Energy & Infrastructure
- Ecological Conservation
- Agriculture
- Disasters
- Water Resources
- Health & Air Quality

Resources: Earth Action - Disasters

The NASA Disasters Program advances science and builds tools to help communities make informed decisions for disaster planning. They develop free and accessible resources that use Earth Observations to reveal how natural hazards interact with vulnerability, exposure, and coping capacity in a changing climate.





Have any questions?

We look forward to engaging with you in the future!