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Satellites don't save
lives. Data does.

P i e r s S e l l e r s

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Program Overview

The ESDS program resides in the Earth Science Division of the Science Mission Directorate at NASA Headquarters and oversees the entire Earth science data life cycle, facilitating unrestricted access to the data that researchers, managers, and governments need to understand and protect our planet.

<https://earthdata.nasa.gov>



ESDS Operates One of the Largest Open Archives on the Planet

Earthdata

FY25

Highlights



End User Average
Distribution Volume
600 TB/Day



Total Archive
Volume In Cloud Only
116.2PB



End User Distribution
Files incl. From Cloud
7.8 Billion
(4.3B in Cloud)



Total Number of Files
Cataloged (On-Prem
and Cloud)
4.6 Billion



Average Archive
Growth
160 TB/Day*



Distinct Users of EOSDIS
Data & Services
28.6 Million



Total Archive
Volume Including
in Cloud (not inc
duplicate on-prem)
148.8 PB



Website Sessions
(Google Analytics)
14.9 Million



Unique Datasets
18,755



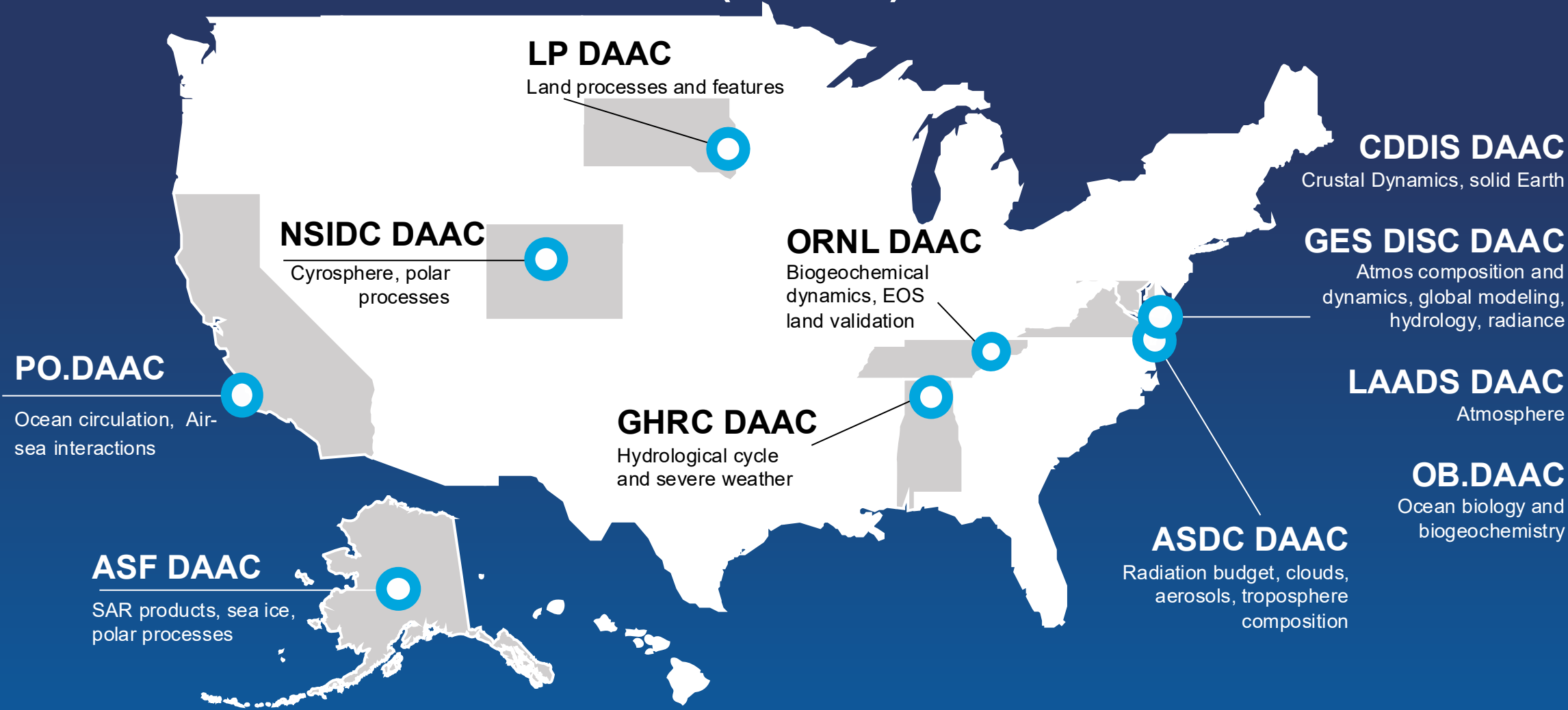
EOSDIS Customer
Satisfaction Index
Score (2024)
78

Service
Users
**17
Million**

Data &
Web
Users
**11.6
Million**

***NISAR will add ~66TB/day**

Current Landscape Distributed Active Archive Centers (DAACs)



Goals & Priorities

- **Focus on Core Data Systems mission**
 - Quality and Efficiency
 - Technological Evolution
 - Community Support and Open Science
- **Emphasis on:**
 - Ground-breaking science products
 - Foundational data products used by many different parts of the enterprise from research and modeling to applications
 - Near Real Time (NRT) products
- Consolidation of DAACs from 11 independent locations to thematic science enabling teams
- Structure data systems to support AI/ML and processing innovation
- Coordination with other agencies to sustain and enhance data discovery and utility



Evolving Earth Science User Support

PO.DAAC Ocean circulation Air-sea interactions	OB.DAAC Ocean biology biogeochemistry	
NSIDC DAAC Cryosphere, polar processes	ASF DAAC SAR products, sea ice, polar processes	ORNL DAAC Biogeochemical dynamics, EOS land validation
LAADS DAAC Atmosphere	ASDC DAAC Radiation budget, clouds, aerosols, tropo. composition	GES DISC DAAC Atmos composition and dynamics, global modeling, hydrology, radiance
GHRC DAAC Hydrological cycle and severe weather	CDDIS DAAC Crustal dynamics, solid earth	LP DAAC Land processes and features



From: 11 Geographically-Distributed Full Stack Archives (DAACs)

To: Thematic Support Teams:
no anchoring physical team locations, best support regardless of geography

Centralized services:
Cloud-based ingest, archive, distribution, metrics, and cataloging

We are so much more than just data....

Explore Learning Resources

NASA's massive archive of Earth science data are free and open to any user for any purpose — but accessing, analyzing, visualizing, and applying these data requires a certain degree of knowledge about Earth observation data and how it is collected and optimized.

Check out our catalog of learning resources to better understand data basics, explore geographic information systems (GIS), and level up your skills in areas ranging from data in the cloud to using a representational state transfer (REST) interface.

A graphic featuring a dark blue background with a faint map of the United States. Overlaid on the map is a grid of binary code (0s and 1s) in a lighter blue color.

Data in Action →

Data in Action demonstrates Earth science data applications with interactive explanations as to how the work was accomplished.

A graphic showing a candlestick chart with orange and white bars, overlaid with a white line graph. The background is dark with a grid of dashed white lines.

Data Recipes →

Data Recipes are code-based instructions that help users accomplish a specific task, such as converting data into a specific format for analysis or visualization.

A graphic with a dark blue background showing snippets of C++ code in a light blue font.

```
unsigned int next1 = id<<1;
unsigned int next2 = (id<<1) +

if( next2 <= n1 /*&& ( p1[next1

if(p1[next1-1] >= p1[next2-

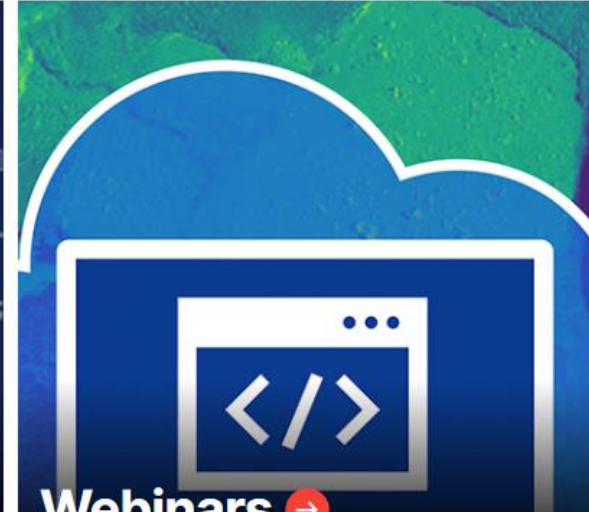
p1[id-1] = p1[next1-1];
n1 = next1-1;
this->HighPIE(next1);

} else {

p1[id-1] = p1[next2-1];
```

Tutorials →

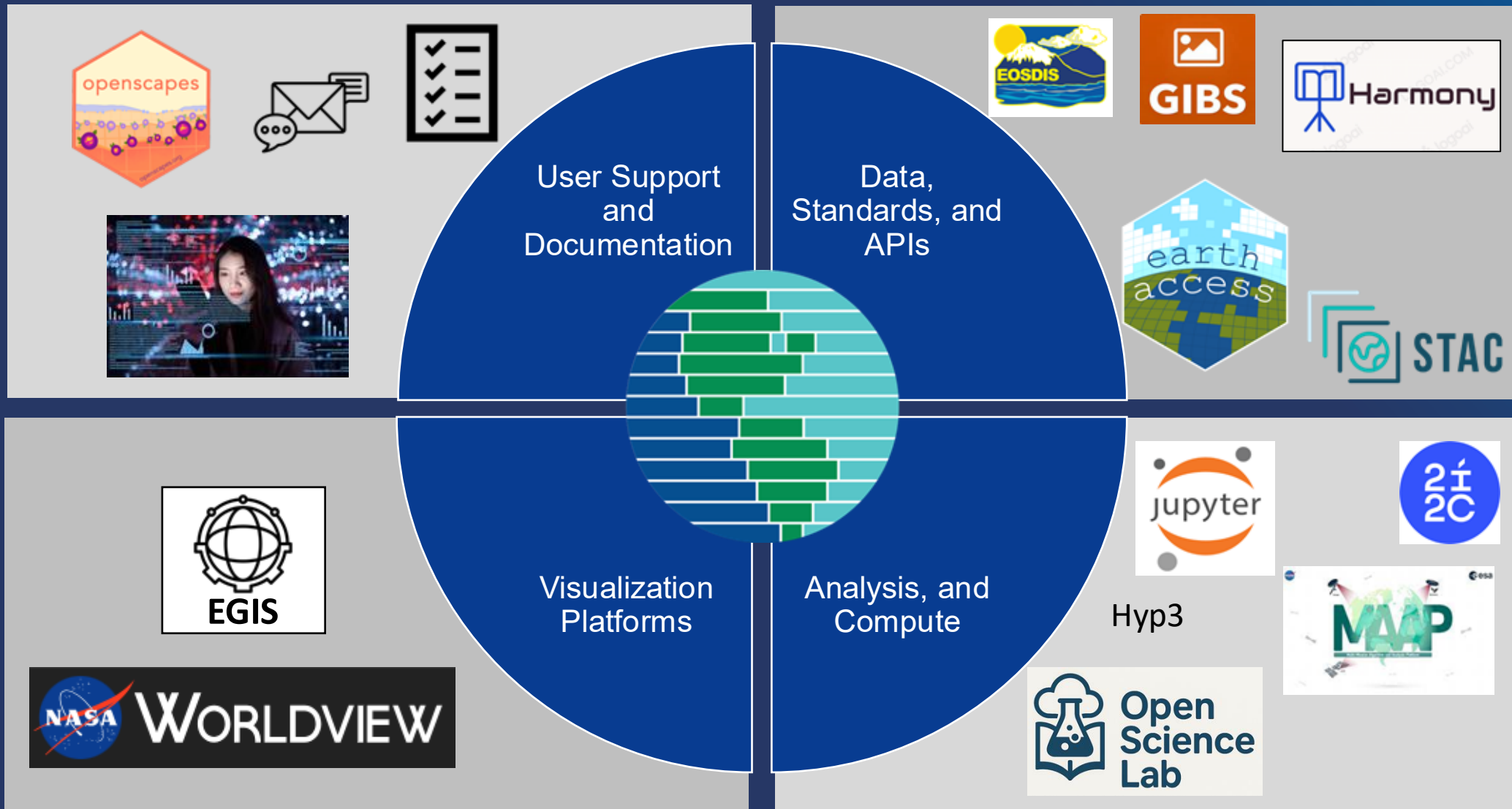
Tutorials are step by step “how to” content that cover a broad range of tasks, from data discovery to application.

A graphic featuring a stylized white cloud shape on a blue background. Inside the cloud is a white icon of a computer monitor displaying code symbols (</>).

Webinars →

Webinars are video seminars and workshops featuring experts in various disciplines who share their knowledge in a particular subject area, from data in the cloud to specific data tools.

Earthdata Capabilities





Earth Science Data Systems

Your Gateway to
NASA Earthdata

Near real-time, Global Visualization for Rapid Earth Insight and Decision-making

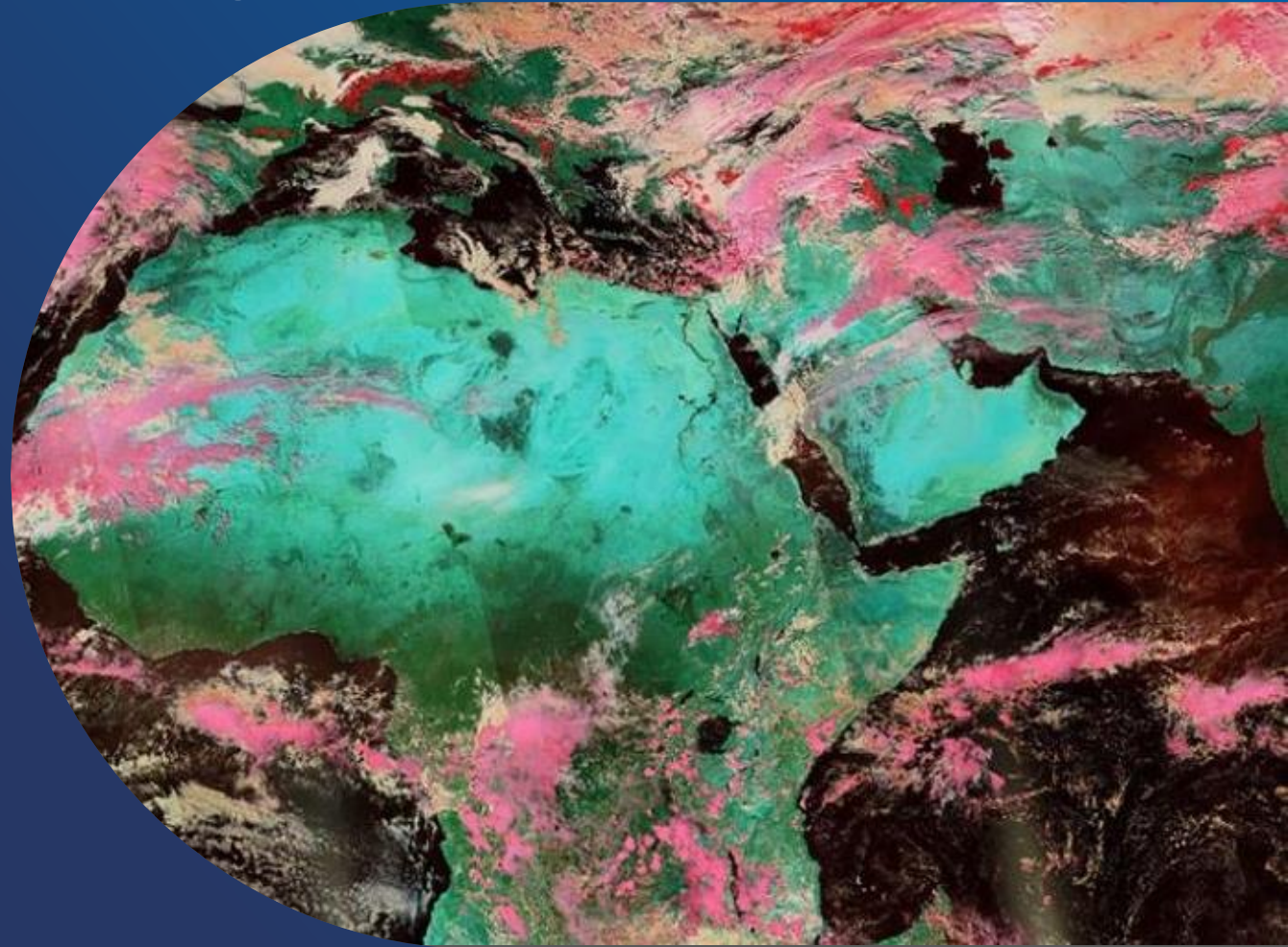
Worldview

earthdata.nasa.gov/data/tools/worldview

NASA Worldview is an interactive, web-based visualization tool for exploring global satellite imagery.

- Provides access to 1,000+ Earth science imagery layers, many available within hours of observation.
- Enables users to browse, compare, and download imagery, for both rapid analysis & historical studies.
- Supports time-critical applications such as wildfire monitoring, air quality tracking, and disaster response.
- Includes tools to track natural events (e.g., storms, fires, volcanoes) and visualize changes over time.
- Powered by NASA's Global Imagery Browse Services (GIBS) for fast, scalable data access and integration.

Bottom line: Worldview provides near real-time, global visualization of Earth system processes, enabling rapid insight and decision-making from satellite data.



Scalable Compute for Collaboration in the Cloud

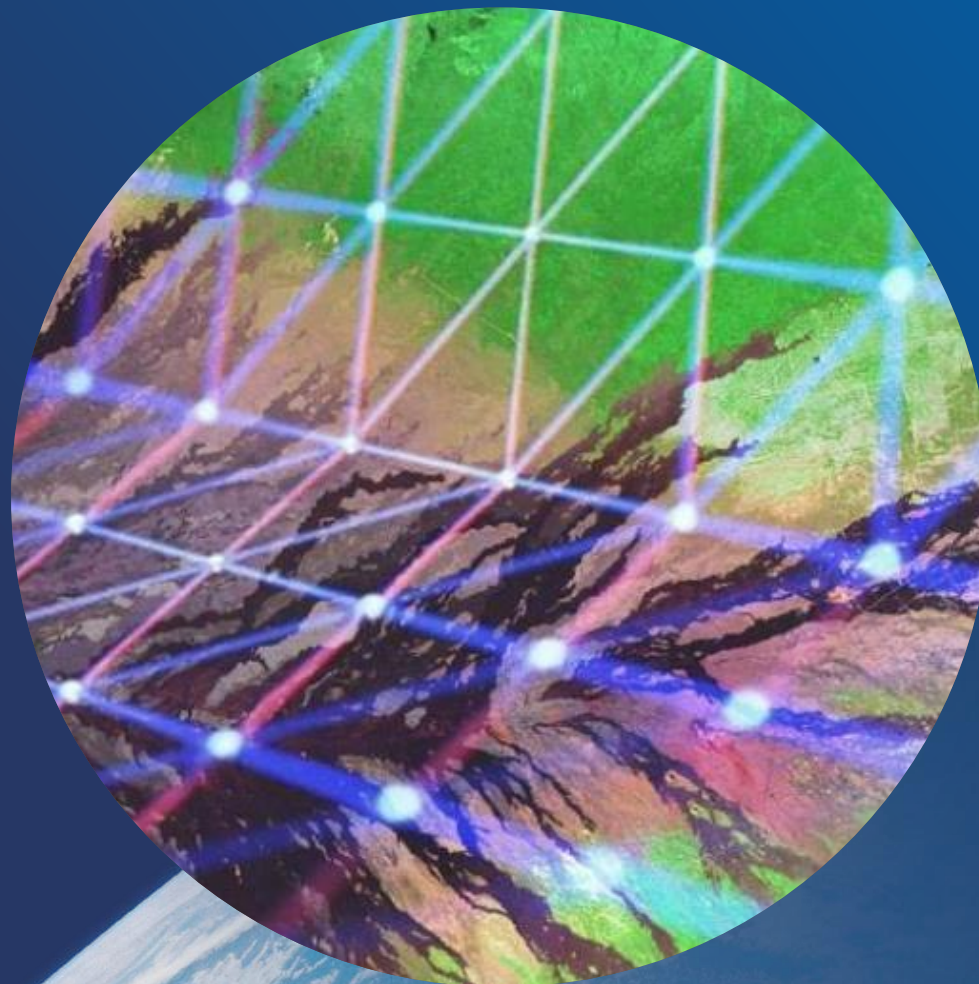
Multi-mission Algorithm and Analysis Platform

earthdata.nasa.gov/about/maap

MAAP is a joint NASA-ESA cloud-based platform that integrates data, algorithms, and computing resources to support collaborative Earth science research. MAAP is designed to:

- Address challenges of massive, varied datasets from satellite, airborne, and field measurements across missions.
- Enables users to discover, process, visualize, and analyze data at scale in a shared, cloud-native environment.
- Promote open science through open data access, open-source tools, and collaborative algorithm development.
- Support interoperability and data harmonization across international missions (e.g., GEDI, EarthCARE, NISAR).
- Provide tools and workflows for repeatable, shareable science with co-located data and computing resources.

Bottom line: MAAP accelerates scientific discovery by enabling global collaboration and scalable analysis of complex Earth observation data in the cloud.



Practical, Collaborative Resources to Earthdata in the Cloud

Earthdata Cloud Cookbook

nasa-openscapes.github.io/earthdata-cloud-cookbook

The Earthdata Cloud Cookbook is an open-source, learning-focused resource developed by NASA Openscapes to support researchers working with Earthdata in the cloud.

- Provides a curated collection of tutorials, workflows, and examples for discovering and analyzing NASA Earth data.
- Designed for self-paced learning, with practical “how-to” guides and use cases across missions and data centers.
- Emphasizes cloud-native workflows, with data, tools, and compute co-located to improve efficiency and scalability.
- Supports common tools and languages (Python, R, Jupyter), promoting reusable, shareable code & methods.
- Developed as a community-driven, continuously evolving resource, with feedback from training workshops & users.



Bottom line: The Cookbook accelerates adoption of cloud-based Earth science by providing practical, collaborative guidance for working with NASA data at scale.

Streamlined Geospatial Analysis Directly to Users

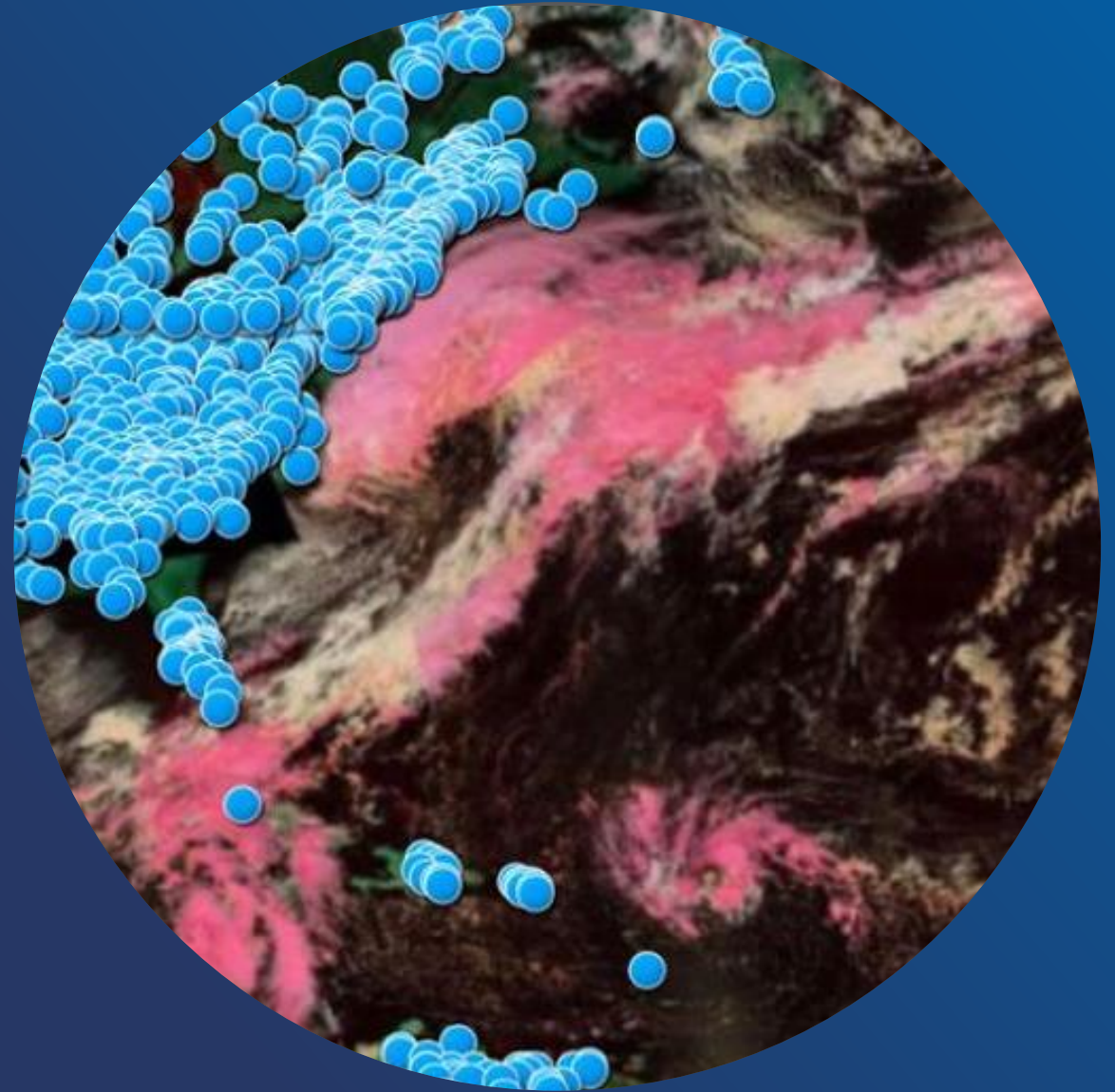
Earthdata GIS

earthdata.nasa.gov/data/tools/earthdata-gis

Earthdata GIS provides cloud-native, GIS-ready NASA Earth science data and services for mapping and spatial analysis.

- Includes ArcGIS Image Services and OGC-compliant services to store, process, & share geospatial datasets.
- Enables on-demand processing and dynamic mosaicking, reducing the need for local data handling.
- Users can query, subset, and analyze data by area of interest, supporting targeted scientific workflows.
- Supports advanced raster analytics and image processing (e.g., reprojection, clipping, classification).
- Accessible through common tools (e.g., QGIS) and standard APIs (REST, WMS, WCS) for flexible integration.

Bottom line: Earthdata GIS streamlines geospatial analysis by bringing scalable data, processing, and visualization capabilities directly into users' GIS environments.



Data Management Guidance For ESD-funded Researchers

Open Science Data Management Plans

earthdata.nasa.gov/engage/data-management-guidance

All funded projects must include an OSDMP detailing how data, software, and results will be managed, preserved, and shared:

- Supporting data must be available at publication with all useful data made public by the end of the project
- Data should be archived in trusted repositories to ensure long-term access, discoverability, and stewardship.
- Data should leverage open formats, robust metadata, persistent identifiers (DOIs), and no-cost public access.

Bottom line: Standardized, open, and well-documented data management enables reproducibility, accelerates discovery, and broadens the impact of NASA Earth science.

Community-offered Data Products

Formerly known as “Data Accession” requests

[Submit Data](#) to ESDS (on pause)

NASA [Science Information Policy](#)
(SPD-41a, [FAQs](#)) outlines alternate
compliant places to [share your data](#)



Get started at earthdata.nasa.gov

See which Data Tool Is Right for You:
earthdata.nasa.gov/data/tools/which-data-tool-right-for-you

Post questions and engage with the Earthdata Community:
forum.earthdata.nasa.gov/

Track our Data Alerts and Outages:
earthdata.nasa.gov/data/alerts-outages





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science.nasa.gov/earth