Empowering Hazard and Disaster Informatics: Data Services at NASA GES DISC in the Earth System Observatory Era

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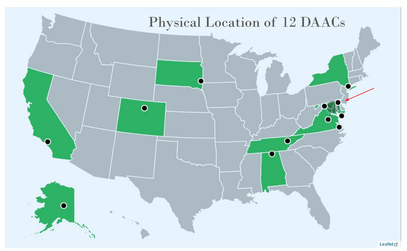
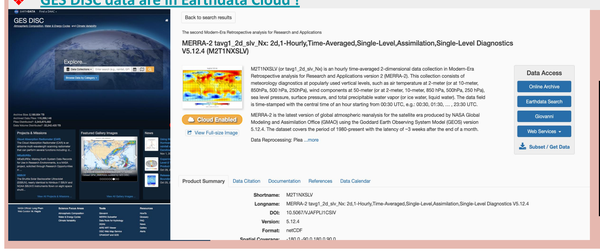
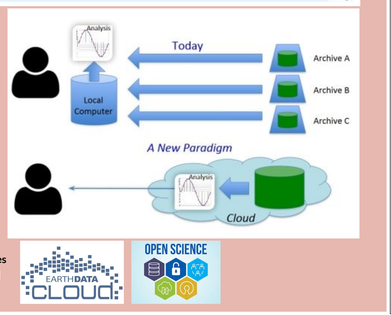
Who we are?

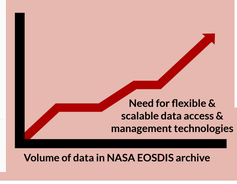
We are the [Goddard Earth Sciences Data and Information Services Center (GES DISC)](), one of the 12 **NASA Distributed Active Archive Centers (DAACs)** that manages, archives and distributes data as part of NASA's Earth Observation Systems Data and Information System (EOSDIS). We provide the support for the **archive and distribution** of the data from a range of **satellite observations, models, ground measurements, and field campaigns**.

- **Archives** total volume > 3.4 Petabytes consisting of >150 million data files covering >3000 public and restricted collections.
- **Multi**-disciplinary data holdings include observations and model data of:
  - **atmospheric composition**
  - **water/energy cycles**
  - **climate variability**
- **Through** various available tools and services, the GES DISC provides users with multi-sensor and model visual comparisons and data access for a number of projects spanning several disciplines.
- **Data are free and open to public**
- **GES DISC data are in Earthdata Cloud !**

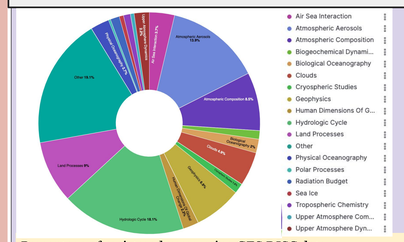




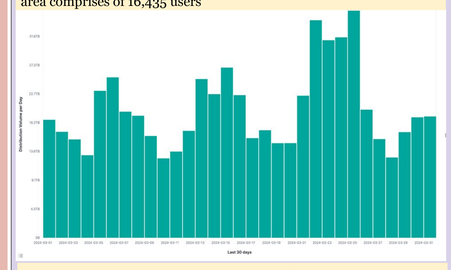




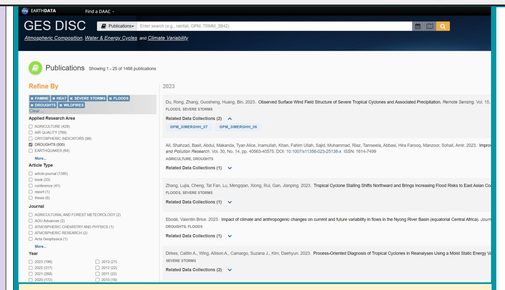
Data Distribution and Usage



Percentage of registered users using GES DISC data by study area from April 16, 2023 to April 16, 2024. The top 20 study area comprises of 16,435 users

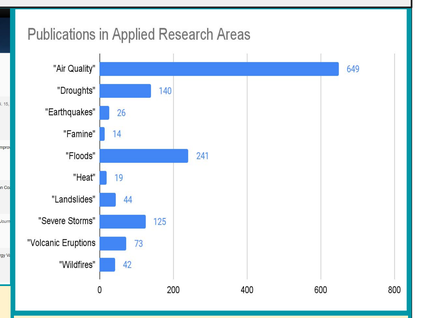


Data Distribution by Volume



GES DISC maintains EOSDIS citation library, collecting article citations citing EOSDIS dataset DOIs. The GES DISC Publications Web Interface provides direct linkage between publications and datasets and allows Applied Research Area publications browsing.

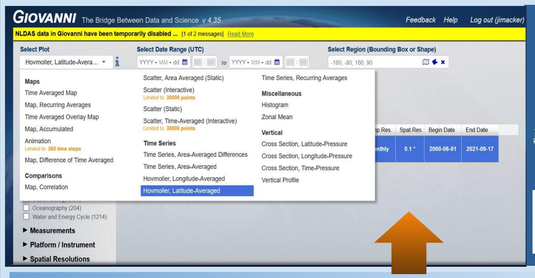
- 19,351 citations of published articles citing over 3,000 of EOSDIS dataset DOIs
- 2,777 citations of published articles citing GES DISC datasets
- Additional 6,688 citations mentioning GES DISC datasets by their ShortName, collected by GoogleScholar and OpenAlex using automated keyword search.

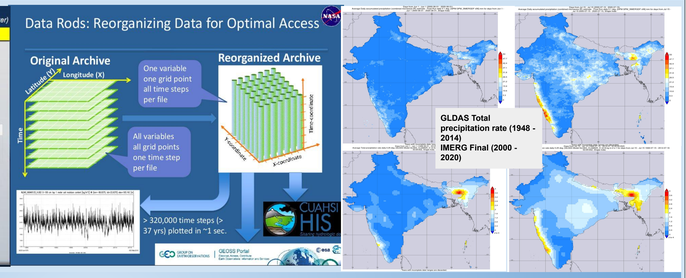


Number of Publications that cite GES DISC datasets categorized by Applied Research Area (in progress).

Data and Services/Tools

We provide services to enable easy access to datasets. We tailor our services to meet the needs of users with varying levels of expertise.





Giovanni

- Enables visualization, analysis, and assessment of NASA Earth science data sets without downloading data and software
- Time series graph (single or area averaged), time average maps, accumulation, plots etc
- Variable based search

Welcome!

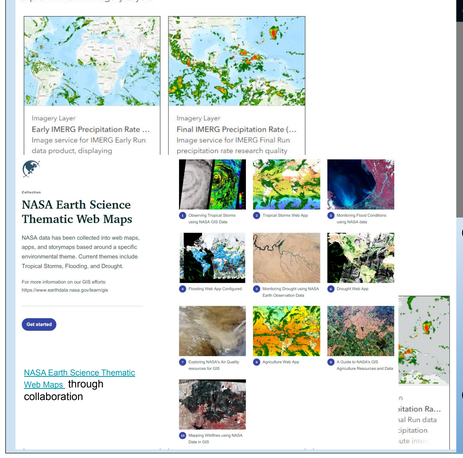
Welcome to the Goddard Earth Science Data and Information Services Center (GES DISC) GIS home p
gallery or content tabs or follow the links below directly to the services and web maps we provide.

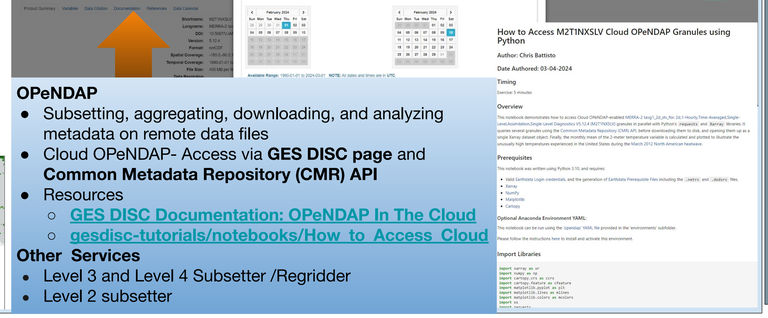
GIS Image Service : GES DISC ArcGIS Enterprise

- IMERG Early and Final Image services
  - Access to a large amount of data without the user needing to store and process the data
  - Quickly open, view, and analyze data
  - Temporal Span- June 1, 2000-Present
- Story maps from Earthdata GIS NASA Earth Science Thematic Web Maps
  - Drought, Monitoring Flood,Tropical Storms, Water Levels in Reservoir

Featured Layers

Explore NASA's Imagery Layers





OPeNDAP

- Subsetting, aggregating, downloading, and analyzing metadata on remote data files
- Cloud OPeNDAP- Access via **GES DISC page** and **Common Metadata Repository (CMR) API**
- Resources
  - GES DISC Documentation: OPeNDAP In The Cloud
  - gesdisc-tutorials/notebooks/How_to_Access_Cloud

Other Services

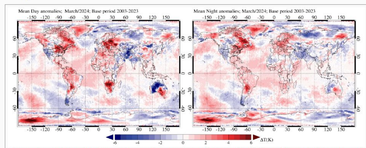
- Level 3 and Level 4 Subsetter /Regridder
- Level 2 subsetter

Enabling Science

We provide science articles, data in actions on current and past extreme events.

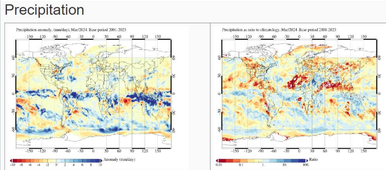
Monthly assessment of anomalies and extremes in global surface air temperatures and precipitation

Temperatures



The most recent global surface air temperature anomalies that pass the 95% confidence test, based on the total number of days measured and the variance of data, in the base period for the indicated month. White areas are where there isn't sufficient confidence to assert there is an anomaly. Anomalies expressed in Kelvin should be approximately doubled to convert them to Fahrenheit. The base period of AIRS observations starts in October 2002, the first full month of good quality AIRS data.

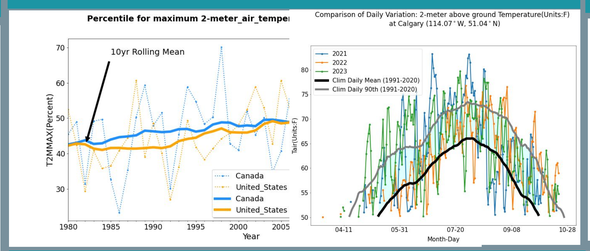
Precipitation



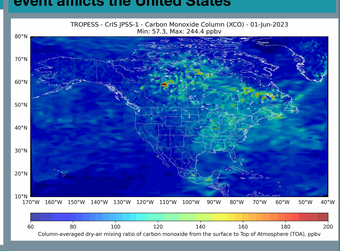
Global precipitation anomalies for the month, expressed as departures from the climatological mean of the base period, as indicated in the figure titles.

Global precipitation anomalies for the month, expressed as a percentage of the climatological mean of the base period.

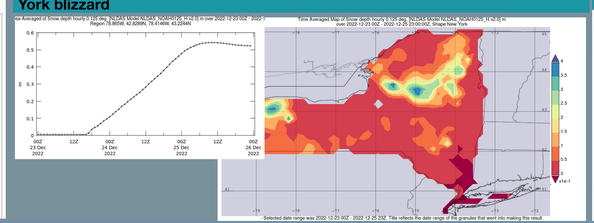
Rising Heat Waves in North America in the Past 40 Years



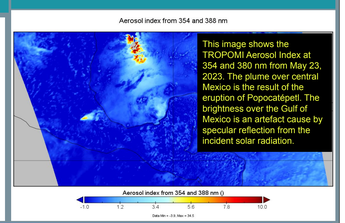
June 2023 Canada wildfire air pollution event afflicts the United States



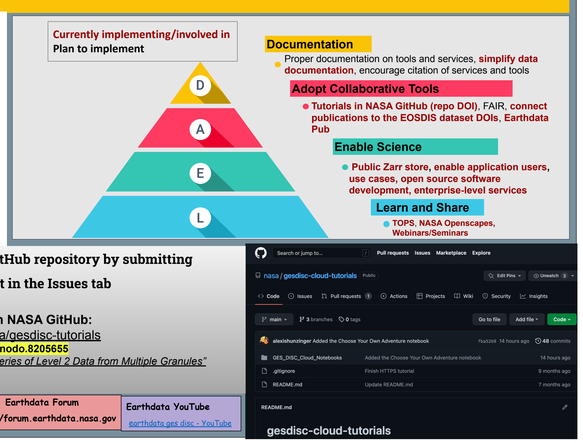
Examining NASA remote-sensing and model data for the December 2022 New York blizzard



Eruption of Popocatépetl, volcano



We provide user resources to enable open science- How-To guides, Jupyter Notebook, GitHub Collaboration.



Contribute to our GitHub repository by submitting suggestions/content in the Issues tab

GES DISC tutorials in NASA GitHub:
https://github.com/nasa/gesdisc-tutorials
https://doi.org/10.5281/zenodo.8205655
Example: "Plotting a time series of Level 2 Data from Multiple Granules"

GES DISC Help Desk
gsfc-dl-help-disc@mail.nasa.gov

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