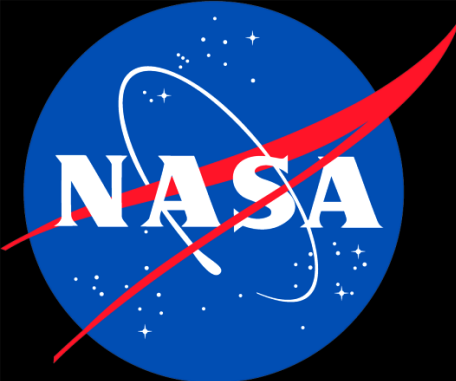
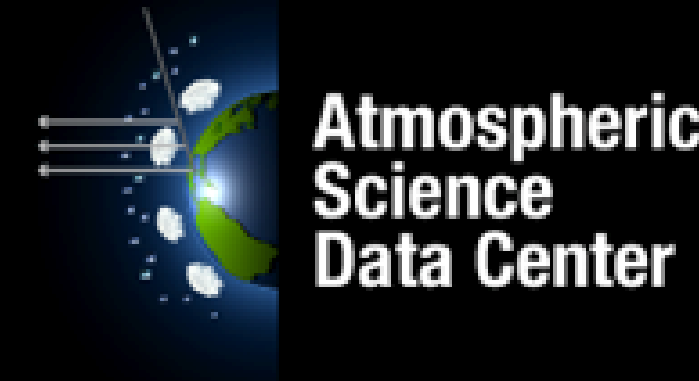




Atmospheric Science Data Center Tools and Services

Sarah Hafer-Martin^{1,2,3}, Matt Tisdale^{1,2}, and Renee Key^{1,2,3}

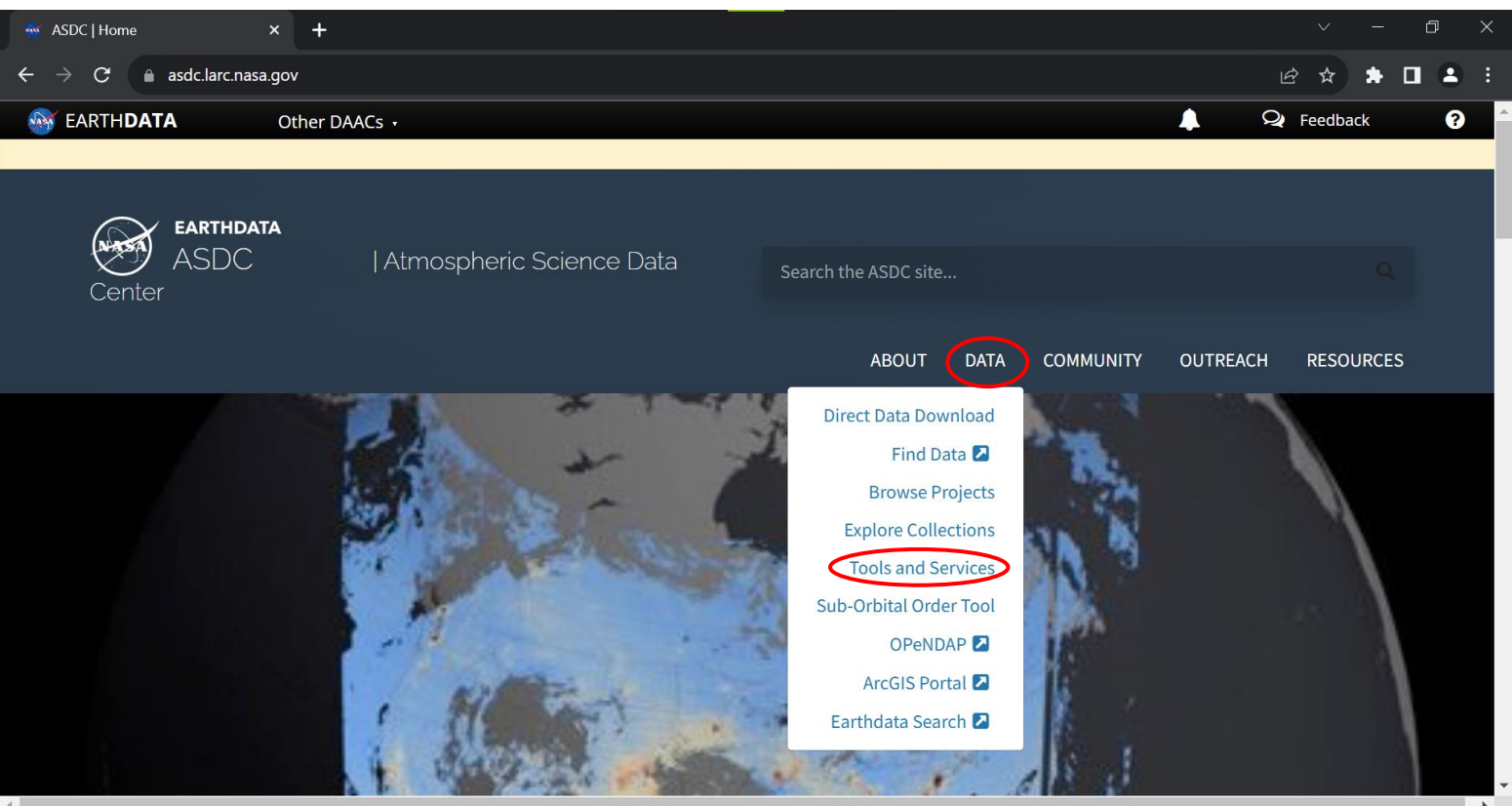
Atmospheric Science Data Center¹, NASA Langley Research Center² and ADNET Systems, Inc³



Introduction

The Atmospheric Science Data Center (ASDC) located at NASA Langley Research Center, is one of 12 Distributed Active Archive Centers (DAACs), part of NASA's Earth Observing System Data and Information System (EOSDIS). The ASDC processes, archives, documents, and distributes atmospheric data, with the goal of being a leading provider for atmospheric science data, tools, and services. The ASDC offers enhanced search and subsetting capabilities for many of our missions. All of the ASDC's tools and services offered can be located on the ASDC website under Data, Tools and Services.

<https://asdc.larc.nasa.gov/>



List of Tools and Services Accessible on the ASDC Website

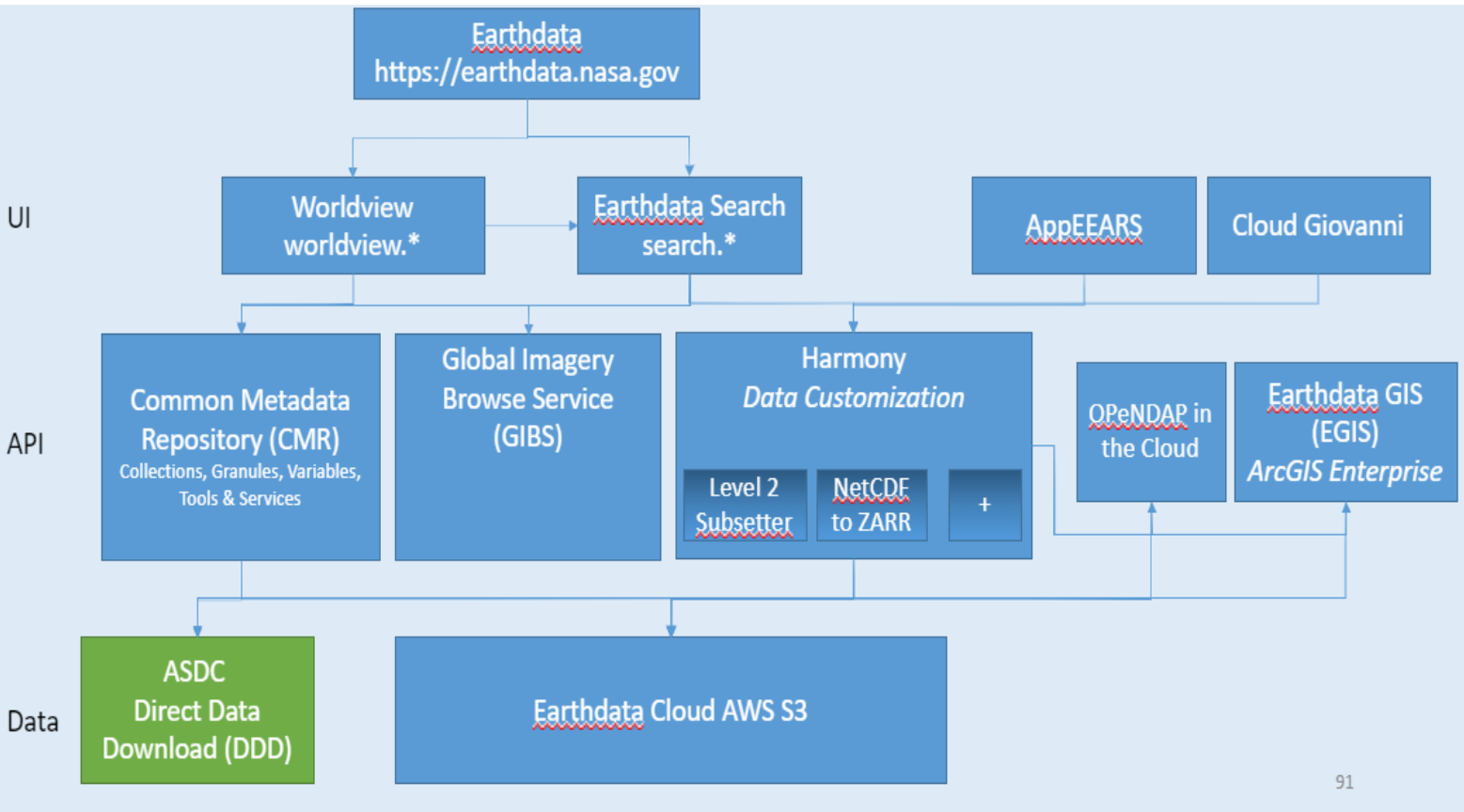
<https://asdc.larc.nasa.gov/tools-and-services>

- **ARCIS**: Provides visualization and data access for ASDC data products.
- **ASDC CALIPSO Subsetter**: Provides search and subset capabilities for CALIPSO Level 1, and select Level 2 Lidar data. Search and subset by date, time, parameter and geolocation - including ESRI-defined regions
- **ASDC CERES Subsetter**: Provides search and subset capabilities for CERES Level 2 SSF and FLASHFlux data. Search and subset by date, time, parameter, and geolocation.
- **ASDC MOPITT Subsetter**: Provides search and subset capabilities for MOPITT Level 2 data.
- **ASDC TES Subsetter**: Provides search and subset capabilities for TES Level 2 global survey standard data. Search and subset by date, time, parameter and geolocation (including ESRI-defined regions).
- **CERES Subset/ Visualization Tool**: Provides the ability to subset, visually browse, and download CERES Level 3 and select Level 2 data products.
- **Direct Data Download**: Provides the ability to access and download all publicly available data collections via https
- **Earthdata Forum**: An interactive forum that EOSDIS users can use to post questions and review answers
- **Earthdata Search**: Browse and access NASA earth science data.
- **Explore Collections**: Explore all of our publicly available data.
- **MERLIN**: provides a streamlined, intuitive data accessibility platform, to enable the comparison of an arbitrary number of fire plumes in various domains so users can generate key visualization graphics of a multitude of fire plume properties and to allow flexible cross-referencing with outside data sets.
- **MISR Browse Tool**: allows easy access to images from the MISR instrument. The browse images are ellipsoid color images for each camera and are available at two different resolutions. The default resolution is 4.4km. The image is enlarged to a 2.2km resolution by selecting "Full Size" on the controls menu in the upper left corner of the Browse Tool. The MISR red, green and blue bands are used to create the color image, which has been intentionally clipped and gamma-stretched to make cloud, ocean and land features visible.
- **MISR Level 3 Data Browser**: Visualization of select parameters available in the MISR Level 3 global data products are provided. The Level 3 products are derived from averaging select Level 1 and Level 2 parameters over daily, monthly, seasonal and annual time periods. Level 3 data contain a range of Level 1 and Level 2 versions.
- **MISR Orbit Tool**: Interactive interface for converting dates to MISR Orbit number and Orbit numbers to dates.
- **MISR Order and Customization Tool**: Provides users with ability to select and order MISR data by date, time, and geolocation. Features include: Multiple consecutive and non-consecutive path and orbit searches Sorting search results by date, path, orbit, camera, and file version Subsetting by parameter, block, and spatial coordinates Additional latitude and longitude layers, and unpacking and unscaling applicable fields.
- **MISR Paths/Blocks Intersecting a Lat/Lon Box**: Interactive interface for obtaining MISR paths based on latitude and longitude.
- **MISR Production History Reports**: Web site that displays MISR product production history
- **Model-Derived Global Aerosol Climatology for MISR Analysis ("Clim-Likely" Data Set)**: Multi-angle Imaging SpectroRadiometer (MISR) monthly, global 1° x 1° "Clim-Likely" aerosol climatology, derived from 'typical-year' aerosol transport model results are available for individual 1° x 1° boxes or as global monthly files. Provides monthly values for the clim-likely dataset based on lat/lon coordinates.
- **OPeNDAP (new instance with ANGE and ECS data)**: Provides platform independent subsetting services for all available ASDC products.
- **Prediction Of Worldwide Energy Resources**: Solar and meteorological data sets from NASA research for support of renewable energy, building energy efficiency and agricultural needs.
- **Sub-Orbital Order Tool (SOOT) Power User Interface**: SOOT supports data discovery for users within the sub-orbital community. The tool aims to promote sub-orbital research and analysis within the Earth science disciplines of radiation budget, clouds, aerosols, and tropospheric composition.
- **TES Archive Reports**: Web site that displays status of archival of TES products.
- **TOLNet**: TOLNet - (Tropospheric Ozone Lidar Network) Established in 2012 to provide high spatio-temporal profiles of tropospheric ozone to (1) better understand physical processes driving the ozone budget in various meteorological and environmental conditions and (2) validate the tropospheric ozone measurements of spaceborne missions.



Earthdata Ecosystem

Earthdata is an extremely useful tool that provides users with its own tools and services. These services are separate from internal ASDC and other DAAC services. Both sets of tools are important but are accessed differently. Below is a flow chart of the Earthdata Ecosystem and how tools and services are accessed.

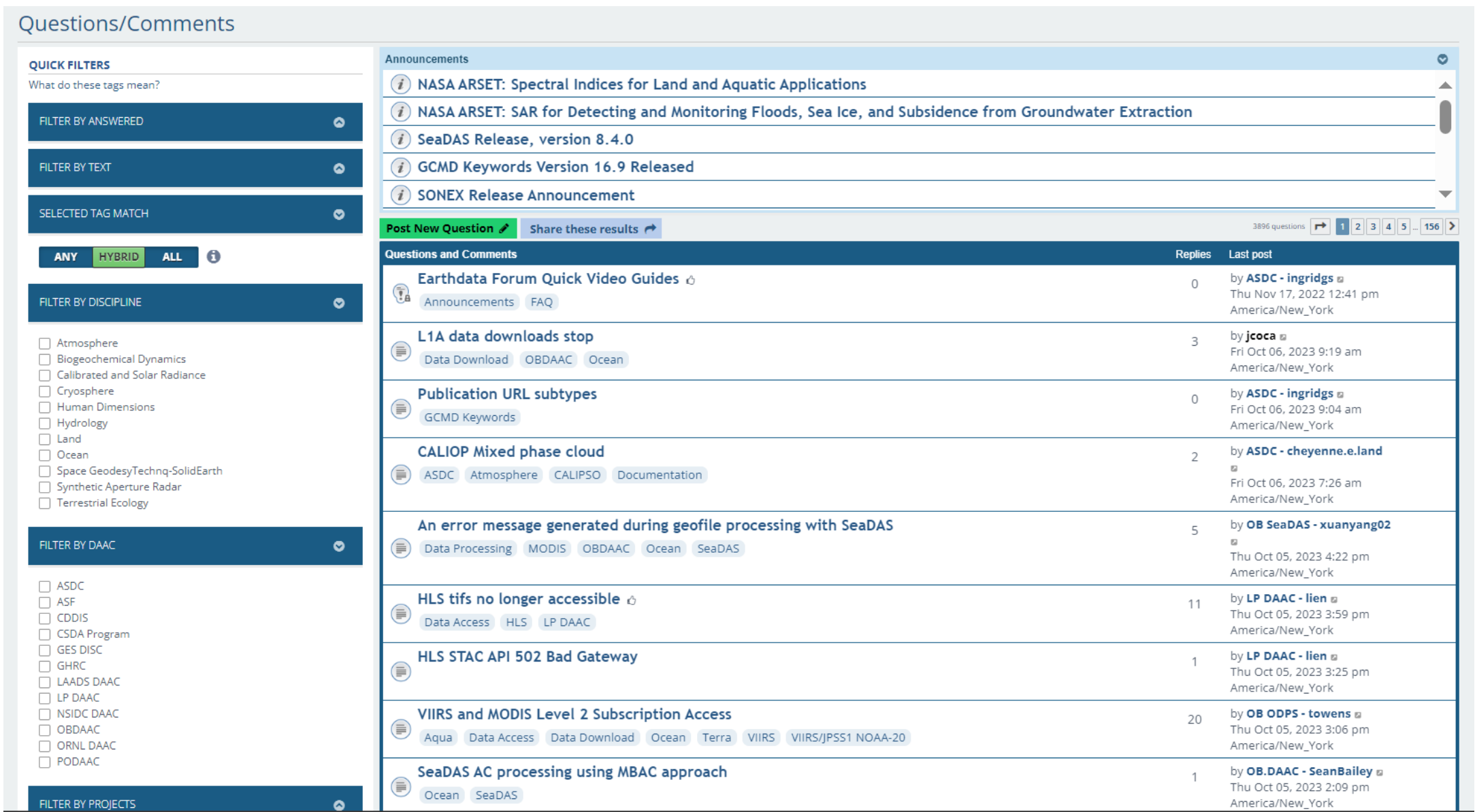
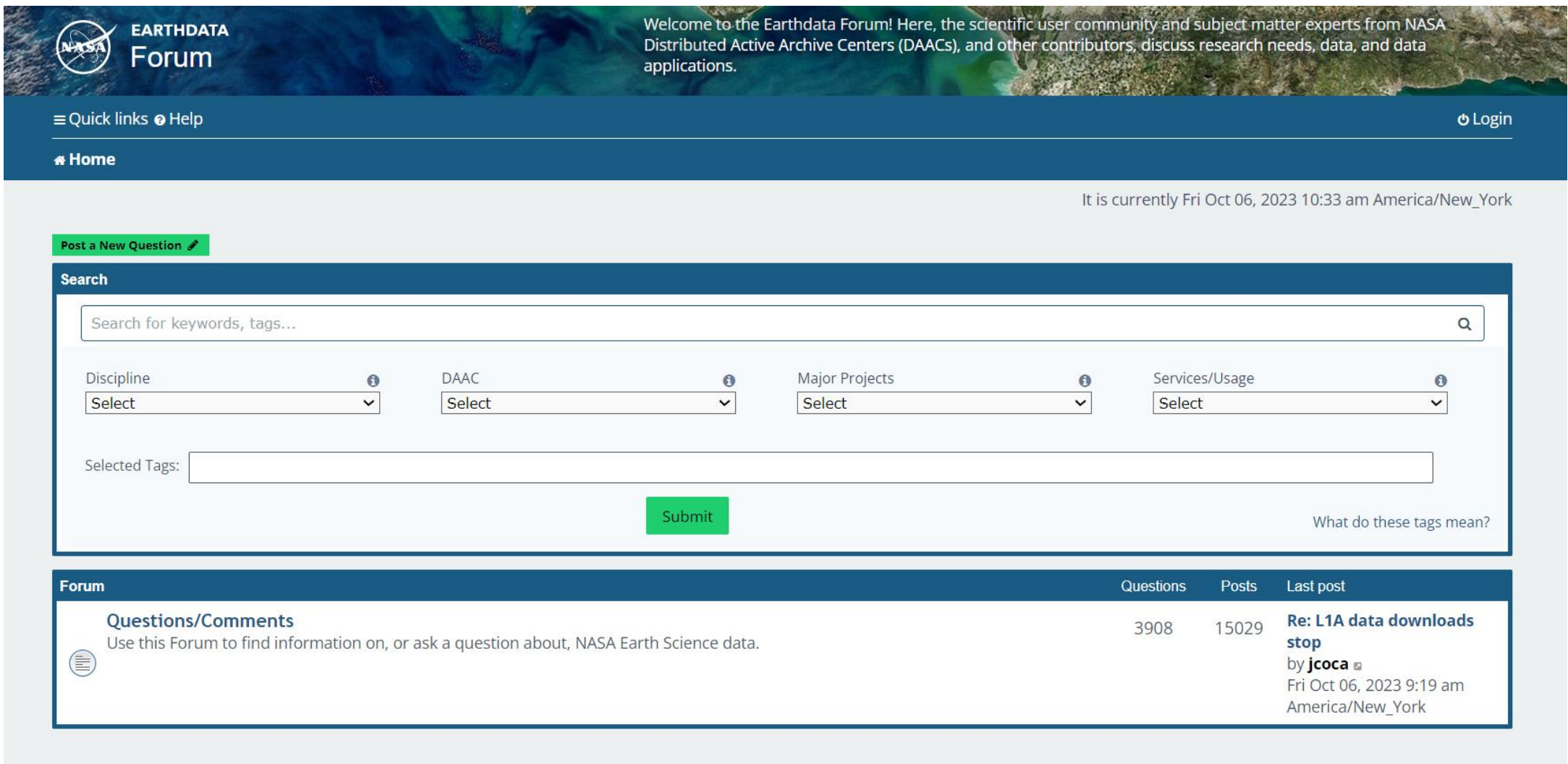


Earthdata Forum

The Earthdata Forum is a place where end users can ask question and discuss research needs, data, and data applications with the scientific end-user community and subject matter experts from NASA DAACs.

Earthdata Forum Landing Page

- Can post a new question
- Search current forum content
- Visit Questions/Comment section (see below)



Filter by Discipline

11 Participating DAACs
(12th DAAC is in the onboarding process)

- Other Representatives
- GCMD
 - GIS
 - FIRMS
 - LANCE

Subsetters

Subsetters allow you to subset your data by date, time, parameter and geolocations so you only have to download what you need instead of the entire granule. This results in much smaller file sizes and in most cases easier data to work with. The ASDC offers subsetting capabilities for CALIPSO, CERES, MOPITT, and TES. TEMPO subsetting capabilities will also be available once TEMPO data is publicly available.

Introduction

The CALIPSO Search and Subsetting web application enables a more sophisticated approach to selecting and ordering CALIPSO lidar data by date, time and geolocation.

We highly encourage that you send us your feedback using the URL at the bottom of the page; every bit of feedback will allow us to address issues and add enhancements in future releases.

This web application is a collaborative effort of the CALIPSO and ASDC Data Management Teams.

Minimum Requirements

- EOSDIS Earthdata Login account
- JavaScript enabled
- CSS enabled
- HTML cookies enabled

Supported Web Browsers

This web application was developed and optimized for modern HTML4/JavaScript/CSS-enabled web browsers. The following browsers are known to work with this web application:

- Safari 3+
- Chrome 9+
- Firefox 3.6+
- Note: Due to an issue with earlier versions, the calendar date selection may not work properly for Firefox 20 or earlier. For full functionality, please upgrade to Firefox 21.
- Opera 9.6+
- IE8+ 4.0+
- OmniWeb 5

Other HTML4 browsers with JavaScript and CSS may work, but cannot be guaranteed at this time. Please check this web site for future updates on improvements and revisions.

Account Login Required

Access to the application web site requires that users login with an [EOSDIS Earthdata Login](#) account. Please contact [ASDC User Services](#) (support-asdc@earthdata.nasa.gov) if you need assistance.

Conclusion

- Tools and services for data products are available on both Earthdata and through DAACs
- The ASDC offers many tools and services for our specific data products that are not located on Earthdata Search, such as data visualization, subsetting, and advanced search capabilities
- The ASDC offers advanced subsetting capabilities for many of our satellite data products
- Subsetting allows for the user to download smaller files with only the information they need
- The Earthdata Forum is a place where end users can ask questions and discuss research needs, data, and data applications with the scientific end-user community and subject matter experts from NASA DAACs.

References

1. <https://www.earthdata.nasa.gov/eosdis/daacs>
2. <https://asdc.larc.nasa.gov/>
3. <https://asdc.larc.nasa.gov/tools-and-services>
4. <https://forum.earthdata.nasa.gov/>
5. <https://forum.earthdata.nasa.gov/ext/asdc/asdc/files/userguide.pdf>
6. <https://forum.earthdata.nasa.gov/viewtopic.php?t=7&t=1298%60%20+%20getSID%20+%20%60#p280>

TEMPO Services coming April 2024: subsetting, Earthdata Search, OPeNDAP links, imagery in Worldview



Tips for Posting Good Questions on the Earthdata Forum

- Note that this information is not required – providing it enhances our ability to assist you, and may reduce the time required to resolve your query. The specific **URL** (Web address) for the page or data set you were attempting to access
- The **date and time** you accessed the site
- The general **type of research** you are conducting
- The name of the **data product, data set, or data variable** you were searching for
- The **access method** you are using (browser, wget)
 - If browser, the **web browser** and is it configured to accept cookies
 - If wget, the **wget version** ('wget -V')
 - If curl, the **curl version** ('curl -V')
- The **platform** you are using (mac, PC, linux) and operating system and the current version name and number
- The **application** you were using (Giovanni, WMS, OPeNDAP, etc.)
- Any significant **error messages** seen in your session
- **(PLEASE DO NOT INCLUDE PASSWORDS)**

<https://forum.earthdata.nasa.gov/viewtopic.php?t=4400>

User guide info

The Earthdata Forum has put together a user guide to help Earthdata Forum Users to navigate through the site and demonstrate example user processes

- The user guide includes information on the following:
- Landing Page
 - General User Interface
 - The User Control Panel
 - How to Post a New Question
 - How to Search
 - Version Control Table

<https://forum.earthdata.nasa.gov/ext/asdc/asdc/files/userguide.pdf>



Tags

Tags are used by this site to help identify questions related to common Earthdata topics. This helps our users easily find information related to their area of research.

NASA Earth Science Disciplines

- **Atmosphere**: This discipline includes both the dynamic processes in the atmosphere related to air temperature, evaporation, condensation, winds, and precipitation; and the chemical constituents of the atmosphere, including major species such as carbon dioxide (CO₂), ozone (O₃), and water vapor (H₂O); minor or anthropogenic constituents such as carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), or formaldehyde (HCHO); and atmospheric aerosols, including dust and soot.
- **Cryosphere**: The cryosphere encompasses the frozen parts of Earth, including glaciers and ice sheets, sea ice, and any other frozen body of water. The cryosphere plays a critical role in regulating climate and sea levels.
- **Human Dimensions**: The human dimensions discipline includes ways humans interact with the environment and how these interactions impact Earth's systems. It also explores the vulnerability of human communities to natural disasters and hazards.
- **Land**: The land surface discipline includes research into areas such as shrinking forests, warming land, and eroding soils. NASA data provide key information on land surface parameters and the ecological state of our planet.
- **Ocean**: The ocean covers more than 70% of Earth's surface and contains 97% of the planet's water. This vast, critical reservoir supports a diversity of life and helps regulate Earth's climate.
- **Calibrated and Solar Radiance**: This discipline incorporates some of the most basic electromagnetic spectrum variables that can be measured by satellite instruments, including shortwave and longwave IR fluxes, reflection, absorption, scattering, and albedo. Measurements of the total irradiance coming from the Sun to the Earth system are also available.
- **Synthetic Aperture Radar (SAR)**: Synthetic Aperture Radar (SAR) is a type of active data collection where a sensor produces its own energy and then records the amount of that energy reflected back after interacting with the Earth.
- **Space Geodesy Techniques and Solid Earth**: Geodesy is the science of the Earth's shape, gravity, and rotation, including their evolution in time. A number of different techniques are used to observe the geodetic properties of the Earth including the space-geodetic techniques of Global Navigation Satellite Systems (GNSS). Solid Earth processes occurring deep within Earth constantly shaping landforms. Although originating from below the surface, these processes can be analyzed from the ground, air, or space-based measurements.
- **Hydrology**: This discipline is concerned with water on the Earth's surface, in the soil, and underground. The data variables in hydrology include surface and subsurface runoff, groundwater and groundwater storage, evaporation, evapotranspiration, and soil moisture. Related geographical variables are watershed extent, storage capacity, and topography
- **Biogeochemical Dynamics**: This discipline studies the complex interactions between biological, geological, and chemical processes that occur in nature, particularly how these interactions change over time.
- **Terrestrial Ecology**: This discipline studies land-based ecosystems, their populations and communities of plants, animals, and microbes, their interactions with the atmosphere and with the hydrosphere, and their role in the cycling of energy, water, and the major biogeochemical elements such as carbon and nitrogen.

