EOSDIS Update

Earth Science Data and Information System (ESDIS) Project

National Aeronautics and Space Administration

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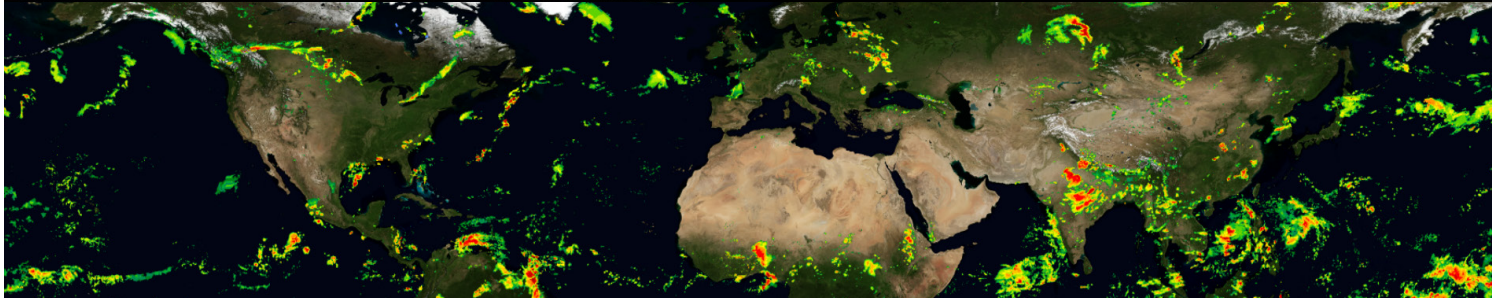
Aqua Turns 20

On May 4, 2002, at 2:55 am Pacific Time, a rocket carrying NASA's Aqua satellite—the second flagship satellite of the agency's Earth Observing System—launched into space from California's Vandenberg Air Force Base. It was the first step of a momentous Earth-observation voyage that has continued for more than two decades.

NASA's Aqua satellite, shown here in an artist's conception, is the second of three flagship satellites in NASA's Earth Observing System. It launched into space on May 4, 2002.

VIIRS Instruments Become More Essential As Terra and Aqua Drift from their Traditional Orbits

Recent maneuvers by NASA in February 2020 and March 2021 signal the eventual retirement of the agency's Terra and Aqua satellites, paving the way for the Visible Infrared Imaging Radiometer Suite (VIIRS) instruments aboard the joint NASA/NOAA Suomi National Polar-orbiting Partnership (Suomi-NPP) and NOAA-20 satellites to take the lead in providing critical Earth system observations.


The VIIRS on Suomi-NPP satellite acquired its first measurements on November 21, 2011. Credit: NASA/NPP Team at the Space Science and Engineering Center, University of Wisconsin–Madison.

## ORNL DAAC Releases GEDI Level 4B Dataset Offering Gridded Estimates of Aboveground Biomass Density

The newly released Global Ecosystem Dynamics Investigation (GEDI) mission Level 4B (L4B) Gridded Aboveground Biomass Density dataset at NASA's Oak Ridge National Laboratory Distributed Active Archive Center (ORNL DAAC) provides near-global estimates of aboveground biomass density a 1-kilometer resolution between 51.6° North and 51.6° South latitudes.
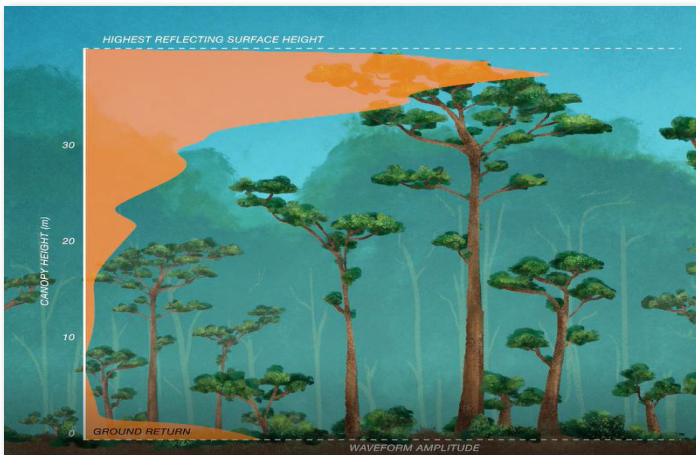
The sole GEDI observable is the lidar waveform and all the GEDI data products are derived from it. Lidar waveforms quantify the vertical distribution of vegetation by recording the amount of laser energy reflected by plant material (stems, branches, and leaves) at different heights above the ground. From these waveforms, four types of structure information can be extracted: surface topography, canopy height metrics, canopy cover metrics, and vertical structure metrics.

NASA's ESMO Project Plays a Large Role in Aqua's Two Decades in Orbit

Along with NASA engineers, NASA's Earth Science Mission Operations (ESMO) Project is credited with Aqua's remarkable longevity in space.
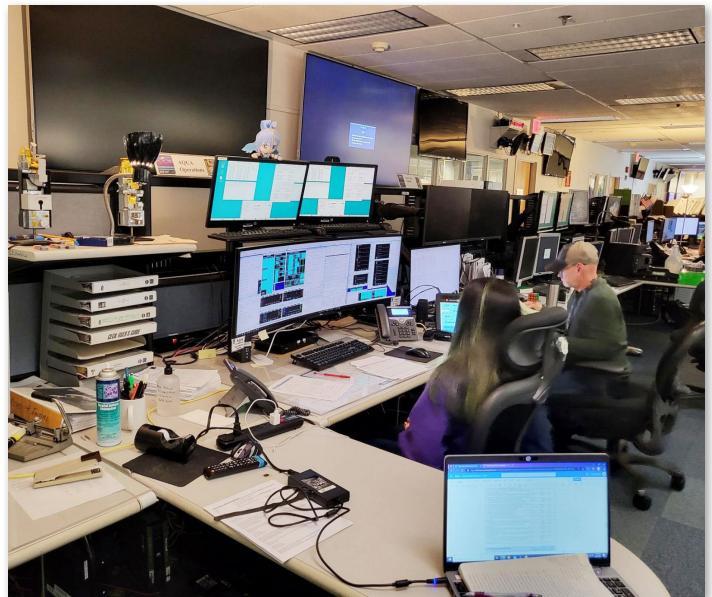
Members of ESMO's Flight Operations Team monitor the health and safety of the Aqua satellite, manage its Solid-State Recorder, perform data-capture activities, look for alarms, and ensure that daily information packets go up to the spacecraft. Credit: NASA ESMO

DATA CHATS & USER PROFILES

Data Chat: Justin Rice

"The most challenging part of new technologies is that they're new," says Justin L. Rice, Deputy Manager of NASA's Earth Science Data and Information System (ESDIS) Project and Science Systems Development Office. In this Data Chat, Rice discusses the challenges of new technologies and the Project's work with artificial intelligence, machine learning, and cloud computing.

Deputy Manager, NASA ESDIS Project, Science Systems Development Office

Data Chat: Chris Mishaga

In the Information Technology sector, change is constant. For ESDIS Information Systems Security Officer Christopher Mishaga, so is the need to protect the infrastructure and the integrity of NASA data.

ESDIS Information Systems Security Officer
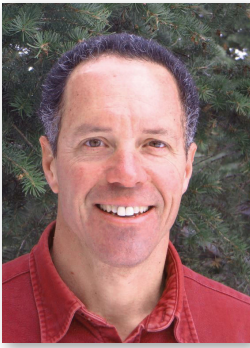
[User Profile: Dr. David Thoma](#)

Ecologist, Inventory and Monitoring Program, National Park Service

Data from NASA's Land Processes Distributed Active Archive Center (LP DAAC) help scientists like Dr. David Thoma investigate how natural resources in national parks are impacted by and responding to weather and climate change.

[User Profile: Dr. Kristin Poinar](#)

Assistant Professor, Department of Geology, University at Buffalo

Data from NASA's National Snow and Ice Data Center DAAC enable scientists like Dr. Kristin Poinar to develop the next generation of models for forecasting sea-level rise from melting glaciers and ice sheets.

[User Profile: Abigail Nastan](#)

*Systems Engineer, NASA Jet Propulsion Laboratory, California Institute of Technology*

NASA Jet Propulsion Laboratory Systems Engineer Abigail Nastan develops new ways of partnering with data users to maximize the benefits of NASA data.

RECENT WEBINARS & TUTORIALS

[Getting to Know the Prediction Of Worldwide Energy Resources (POWER) Project](#)

Date: March 26, 2022
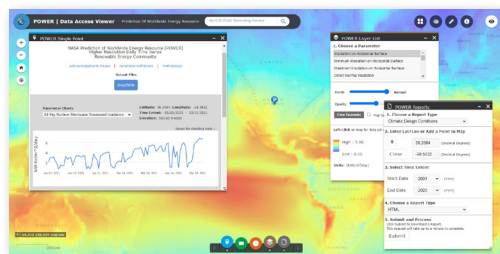
This webinar offers an introduction to NASA's Prediction Of Worldwide Energy Resources (**POWER**) Project, a component of NASA's Applied Sciences Program designed to improve the accessibility and utility of NASA Earth Observation (EO) data. It showcases POWER's data and web services, highlights the partnerships that facilitate the use of EO data, and provides POWER applications use case studies in the communities it supports.

[Learn How to View and Download Data from NASA's LAADS DAAC](#)

Date: April 27, 2022
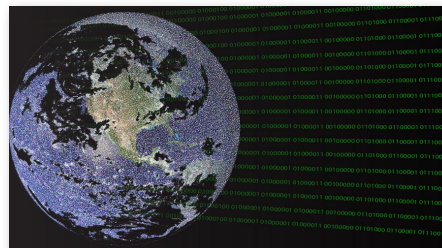
This webinar provides instruction on accessing and downloading Level-1 and atmospheric datasets from NASA's Level-1 and Atmosphere Archive & Distribution System Distributed Active Archive Center ([LAADS DAAC](#)) using the new View Data and existing Find Data tools. Subsetting, reprojection, and data output post-processing operations in the Find Data tool are presented.

Shifting the Paradigm: Discover, Access, and Process Data With Cloud-Based Services

Date: May 4, 2022
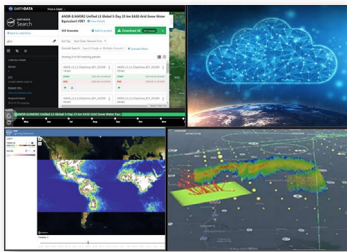


This webinar highlights four cloud-based user services at NASA's Global Hydrometeorology Resource Center (GHRC DAAC): Earthdata Pub, Bulk Downloader, Lightning Dashboard, and Field Campaign eXplorer (FCX), which facilitate how data get to the DAACs, improve data access for users, and improve data discovery, visualization, and analysis.

Advancing Science Capabilities with Data Harmonization: NASA's Harmonized Landsat Sentinel-2 Product

Date: May 19, 2022
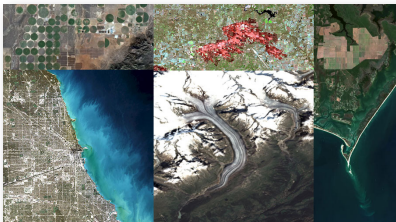
This webinar introduces users to Harmonized Landsat Sentinel-2 (HLS) data, services, and tools, and offers instruction on finding resources to work with HLS data; visualizing, searching for, and accessing HLS data through NASA Worldview and Earthdata Search; and using NASA's Fire Information for Resource Management System (FIRMS) tool to visualize HLS data to monitor fires and floods.

Workshop:
Remote Sensing with LP DAAC Data Assets and Cloud Processing

This webinar offers recordings from the joint NASA Land Processes Distributed Active Archive Center (LP DAAC) - University of California–Davis and University of California–Berkeley Agriculture and Natural Resources schools two-day workshop held in May. Topics include an introduction to the LP DAAC and its data (examples includes fire and agricultural applications), demonstrations of the LP DAAC website and NASA's Earthdata Search, the tools and services available from the LP DAAC, including a demonstration of AppEEARS, and Getting Started with the AppEEARS API: Submitting and Downloading an Area Request tutorial.

Part 1: Introduction to NASA's Remote Sensing Datasets and Tools

Part 2: Introduction to Cloud-based Remote Sensing Data Access and Processing with Python

Tutorials
How To Navigate the LAADS Online Archive by Science Domain

This tutorial shows users how to navigate NASA's Level-1 and Atmosphere Archive and Distribution System Distributed Active Archive Center (LAADS DAAC) online archive by science domain, which allows users to follow the taxonomic structure by selecting their discipline, product suite, individual product, year, and day-of-year.

How to Use NASA's Fire Information for Resource Management System (FIRMS)

This tutorial introduces users to the basic and advanced features of NASA's Fire Information for Resource Management System (FIRMS) and offers instruction on viewing satellite observations of active fires and hotspots on an interactive map, navigating between the basic and advanced modes, learning what a satellite-derived fire detection means for those on the ground, and adding data imagery layers to see fires and smoke plumes.

How to Navigate NASA's LAADS Online Archive Using a Tree-Based Method
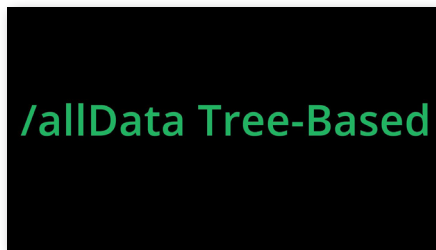
This tutorial shows users how to navigate NASA's Level-1 and Atmosphere Archive and Distribution System Distributed Active Archive Center (LAADS DAAC) online archive by science domain, which allows users to follow the taxonomic structure by selecting their discipline, product suite, individual product, year, and day-of-year.
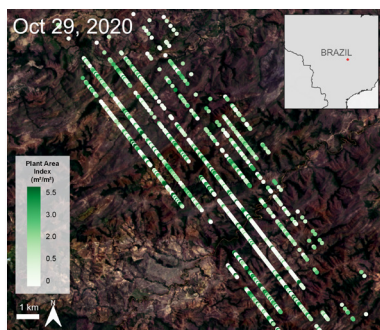
Tutorials on GEDI Science Data Products
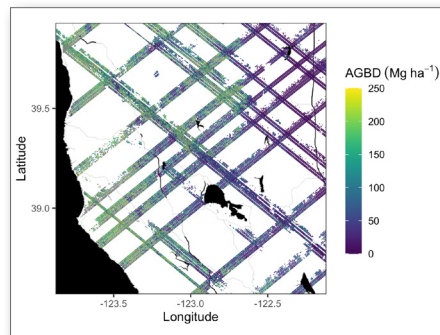
These Jupyter Notebook tutorials demonstrate how to discover, access and use Global Ecosystem Dynamics Investigation (GEDI) mission science data products archived at the NASA's Oak Ridge National Laboratory DAAC (ORNL DAAC).


Data-in-Action

Highlights from the Literature: January to March 2022

GEDI Level 2B Plant Area Index southwest of Chapada dos Veadeiros National Park, Brazil, on October 29, 2020, the last day in the study period of Liete and others (2022) with Harmonized Landsat Sentinel-2 (HLS) Sentinel-2 Multi-spectral Instrument Surface Reflectance as a basemap. The HLS tile location is shown in red on the inset map.

Data products distributed by the Land Processes Distributed Active Archive Center (LP DAAC) are used in many Earth Science applications, including modeling, detecting changes to the landscape, and assessing ecosystem variables, to name a few. This feature highlights three such applications, published between January and March 2022.

Precipitation Data Provides a Detailed View of Extraordinary Rainfall Event in Australia
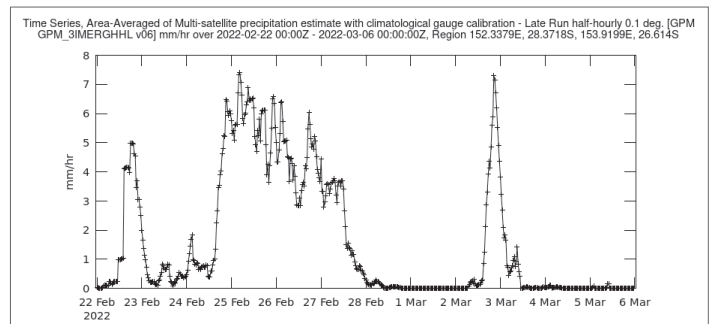
Giovanni time-series plot of IMERG Late Run rainfall data, February 22 - March 6, 2022, for the Brisbane region.

In late February 2022, parts of eastern Australia received an extraordinary volume of rainfall over a short period of days. This Data-in-Action article summarizes the cause of this heavy rain and examines the rainfall over space and time.

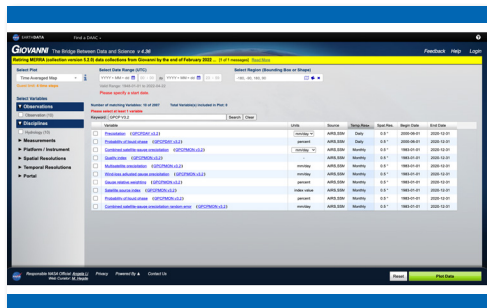## Global Surface Temperatures and Precipitation Assessments
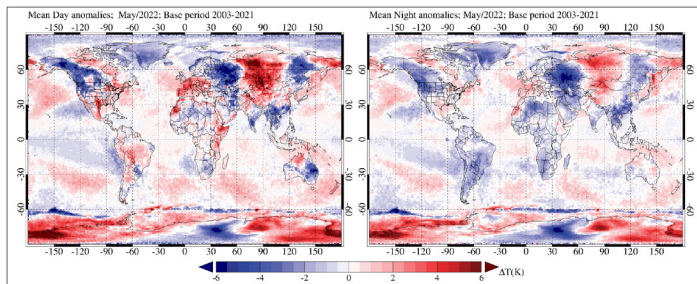
Monthly assessment of anomalies and extremes in global surface air temperatures and precipitation.

March 2022   **April 2022**   **May 2022**

Using Giovanni to Characterize the Global Precipitation Climatology Project (GPCP) Monthly Dataset

As a climate data record, the Global Precipitation Climatology Project (GPCP) products are well known to the worldwide user community. More than 1,000 research papers citing these data have been published in refereed scientific journals. Now, the GPCP's newly released daily and monthly products have been added to Giovanni, an easy-to-use online visualization and analysis tool developed by NASA's Goddard Earth Sciences Data and Information Services Center (GES DISC).

Sentinel-1 Images Reveal Changes to Earth's Surface
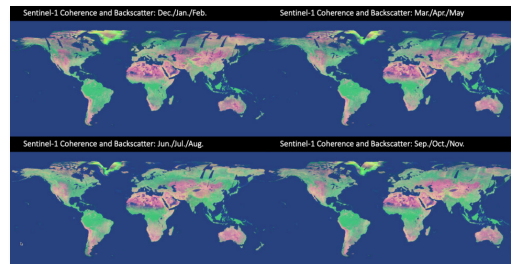
A false-color representation of the new Sentinel-1 dataset depicts median seasonal backscatter of two SAR bands in red and green, and the global interferometric coherence measure in blue. Land dominated by vegetation (forests and seasonally active agricultural areas) appears green and deserts and permanent scatterers such as urban areas appear red and yellow. Seasonally shifting agricultural boundaries and phenologically wet regions are visible by comparing changes between images. (Earth Big Data 2021, contains modified Copernicus Data 2019-2020, processed by ESA.)

The Alaska Satellite Facility Distributed Active Archive Center (ASF DAAC) is hosting a new, first-of-its-kind dataset: a spatial representation of multi-seasonal, global interferometric repeat-pass coherence and backscatter signatures created with data from the European Space Agency's Copernicus program Sentinel-1 satellites. Coverage includes all landmasses and ice sheets between 82 degrees north and 78 degrees south for one-year – Dec 2019-Dec 2020. Over 205,000 Sentinel-1 synthetic aperture radar (SAR) scenes were used to provide a view of the Earth in unprecedented detail, providing a way of observing the changes that occur on the surface of our planet throughout the year. The dataset was developed by a team of scientists and engineers at Earth Big Data, LLC; Gamma Remote Sensing AG; NASA's Jet Propulsion Laboratory (JPL); University of Houston; and NASA Goddard Space Flight Center. Download the data at the ASF DAAC.

New EOSDIS Datasets and Tools

The following webpages offer access to and descriptions of the newest datasets added to the EOSDIS collection during March, April, and May of 2022. For older datasets, visit the links on the page archived by year and month.

EOSDIS New Datasets: May 2022

EOSDIS New Datasets: April 2022

EOSDIS New Datasets: March 2022

LEARNING RESOURCES

Health and Air Quality Backgrounder
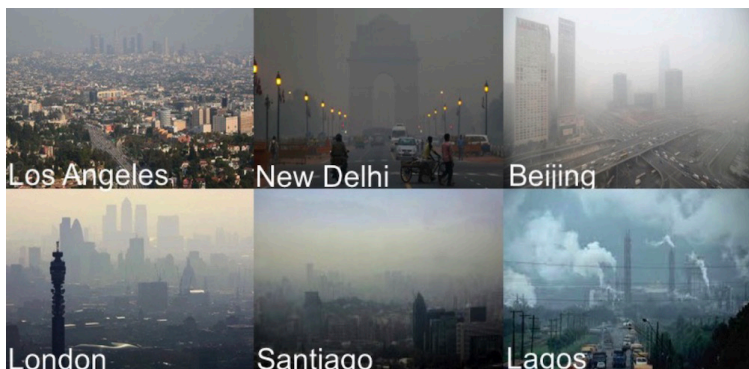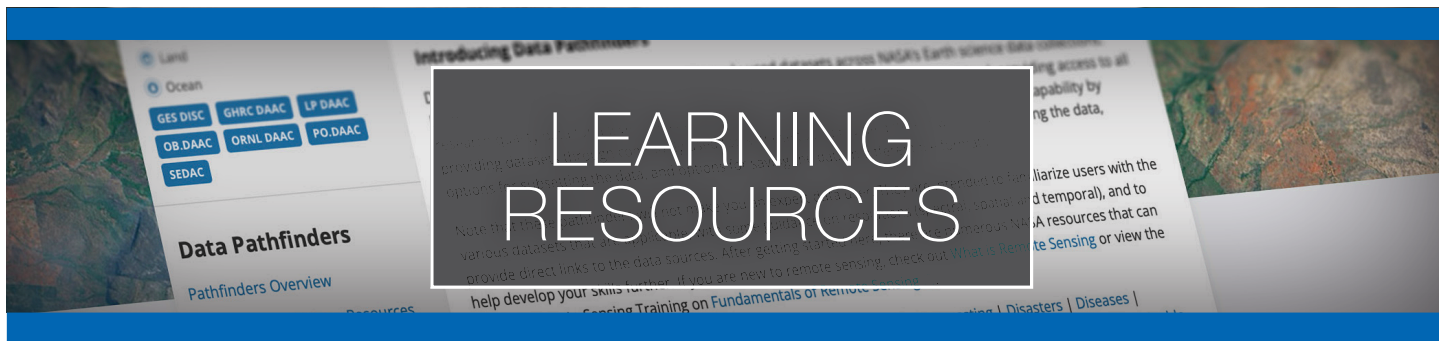
Air quality is a global issue as seen in these images of major cities around the world. Credit: National Center for Atmospheric Research (NCAR).

Each year, air pollution accounts for an estimated 7 million premature deaths around the globe, and high levels of aerosols and other suspended particles are associated with impaired cognitive development in children and mental health problems in adults. NASA's Earth Science Data Systems (ESDS) Program provides unrestricted access to data for assessing to air quality, as well as tools and applications for analyzing and applying these data. Learn more about these resources in a new Health and Air Quality Data Resource Page on the Earthdata website.

NEED HELP?

Need help with our data, services, or tools? Email Earthdata Support at support@earthdata.nasa.gov

Join the NASA Earthdata Forum: Interact with subject matter experts from several NASA Distributed Active Archive Centers (DAACs) to discuss general questions, research needs and data applications. Users can query how to access, view and interpret the data. https://forum.earthdata.nasa.gov

About NASA EOSDIS

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