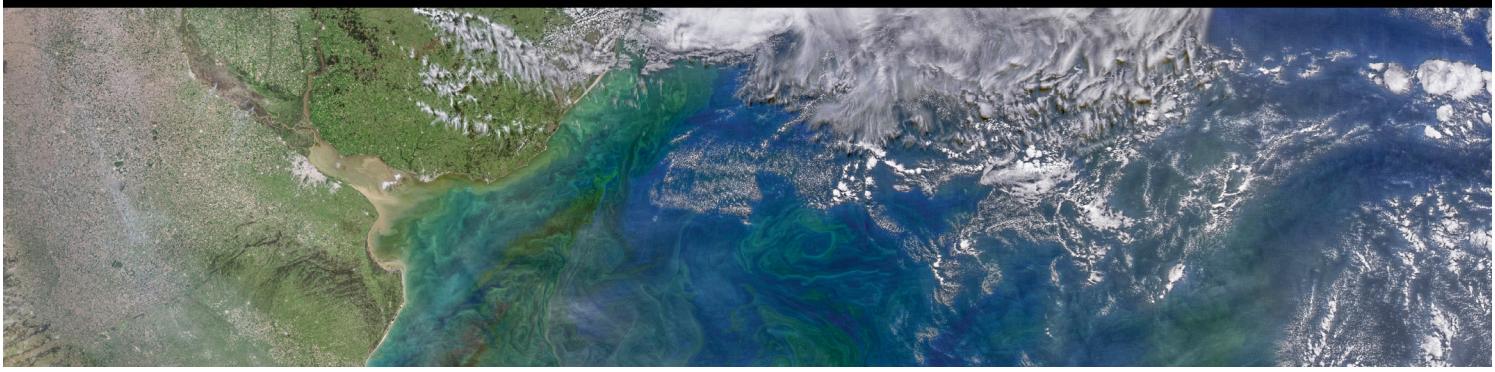
EOSDIS Update

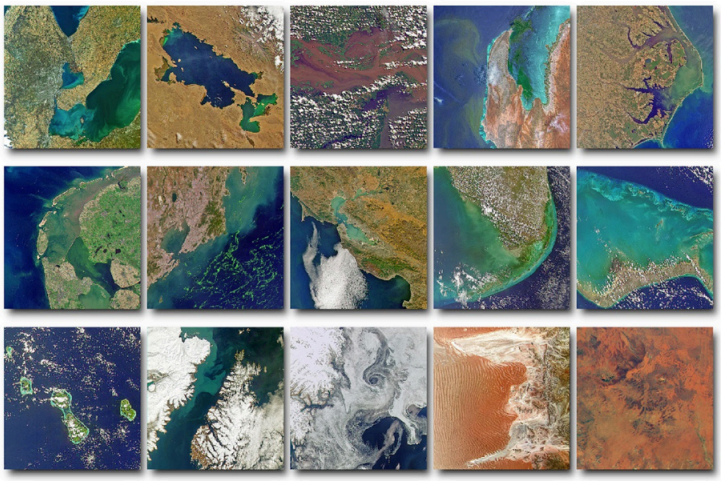
National Aeronautics and Space Administration

Earth Science Data and Information System (ESDIS) Project

A PUBLICATION OF NASA's EARTH OBSERVING SYSTEM DATA AND INFORMATION SYSTEM (EOSDIS), CODE 423



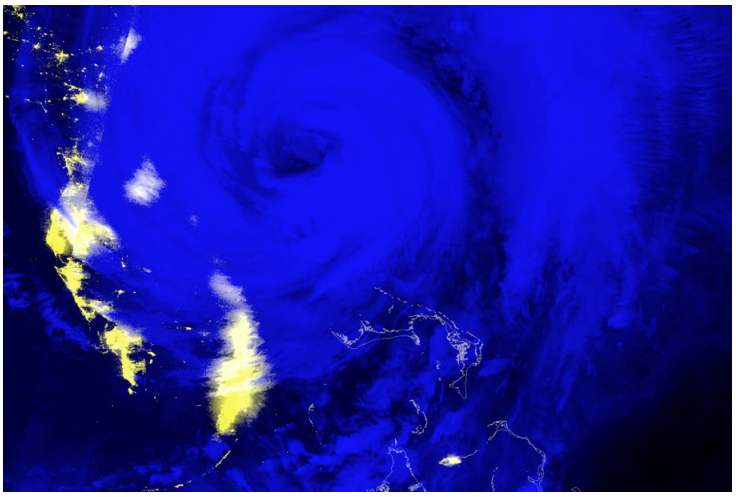
SeaHawk Mission Proves CubeSats Are a Viable Option for Collecting Credible Scientific Data



This gallery of images from SeaHawk's HawkEye imager offers a sample of the high-resolution imagery the instrument can produce. To see each of the images shown here in greater detail, visit the NASA Ocean Color website

The goal of the SeaHawk mission was to prove a concept—that it is possible to collect scientifically credible ocean color data comparable to that of previous ocean color satellite missions from a CubeSat, a small, cube-shaped satellite measuring just 10-centimeters x 10-centimeters x 30-centimeters. The successful receipt of the first image proved it was.

New Black Marble Nighttime Blue/Yellow Composite Product Makes Detecting Power Outages Easier



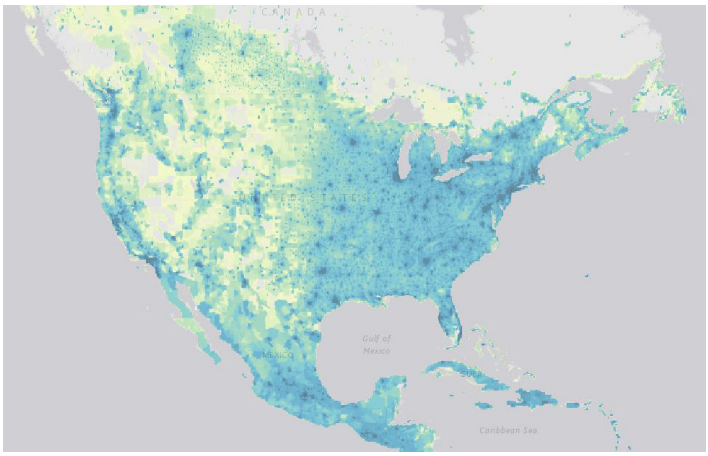
This Black Marble Nighttime Blue/Yellow Composite image shows Hurricane Dorian just after it moved away from the Bahamas on September 4, 2019. Note the outline of the Bahamas in white with almost no visible lights on the northern islands over which the storm directly passed.

In the wake of extreme weather, knowing where and how long electrical power has been out is vital information for emergency managers tasked with deciding where to send first responders, repair crews, and much-needed supplies. A new Black Marble Nighttime Blue/Yellow Composite

TABLE OF CONTENTS

Product from NASA's Land Atmosphere near Real-Time Capability for EOS (LANCE) enhances first responders' ability to determine whether changes in nighttime lights are the result of power outages or dense cloud cover.

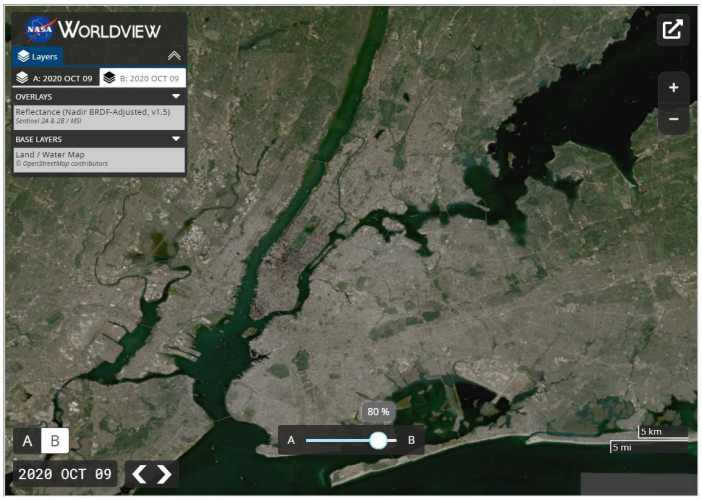
New SEDAC Datasets Offer Global, Spatial Population and Urban Land Projections based on Shared Socioeconomic Pathways



This graphic shows the Global One-Eighth Degree Population Base Year and Projection Grids Based on the Shared Socioeconomic Pathways, Revision 01, dataset, which consists of global urban, rural, and total population data for the base year 2000, and population projections at ten-year intervals for 2010-2100.

The Socioeconomic Data and Applications Center (SEDAC) recently released a suite of datasets showing how patterns of socioeconomic development in the era of climate change are likely to impact the spatial allocation of populations around the globe.

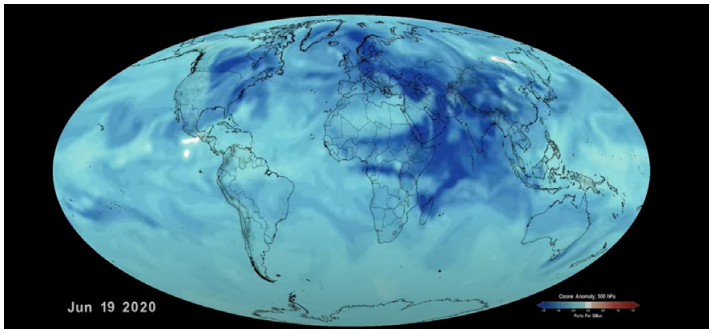
Worldview's New Embed Feature Makes Telling Data-Driven Stories Easier than Ever



This screen capture provides an example of how the embedded version of NASA Worldview appears on a web page or other web-based product.

Embedding NASA's Worldview application allows users to explore over 1,000 global, full-resolution satellite imagery layers—many available within three hours of observation, and geostationary imagery layers provided in ten-minute increments for the last 30 days.

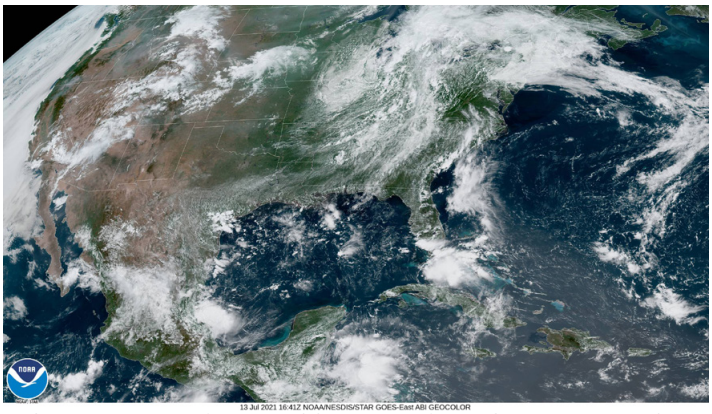
TROPESS Project Builds on Legacy Instruments' Success to Provide Continuous Records of Atmospheric Composition



As the coronavirus pandemic slowed global commerce to a crawl in early 2020, emissions of nitrogen oxides (NOx) – which create ozone, a danger to human health and to climate – decreased 15% globally with local reductions as high as 50%, according to a study led by scientists at NASA's Jet Propulsion Laboratory. Credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio

The TRopospheric Ozone and its Precursors from Earth System Sounding (TROPESS) project has released a suite of data products offering measurements of atmospheric trace gasses based on combined radiances from several satellite instruments.

NASA Worldview Adds GeoColor Imagery from the joint NASA/NOAA GOES-East and GOES-West Satellites



A daytime-scene GeoColor image of the continental United States (CONUS) from July 13, 2021. Credit: Colorado State University / CIRA.

NASA's EOSDIS has added Geostationary Operational Environmental Satellites (GOES) GeoColor imagery into Worldview. GeoColor imagery's quality, frequency, and interpretability will boost the amount of near real-time imagery available in Worldview, making it even more valuable to users.

2021 Summer Interns Deliver on Important Projects Despite Continued Pandemic Restrictions

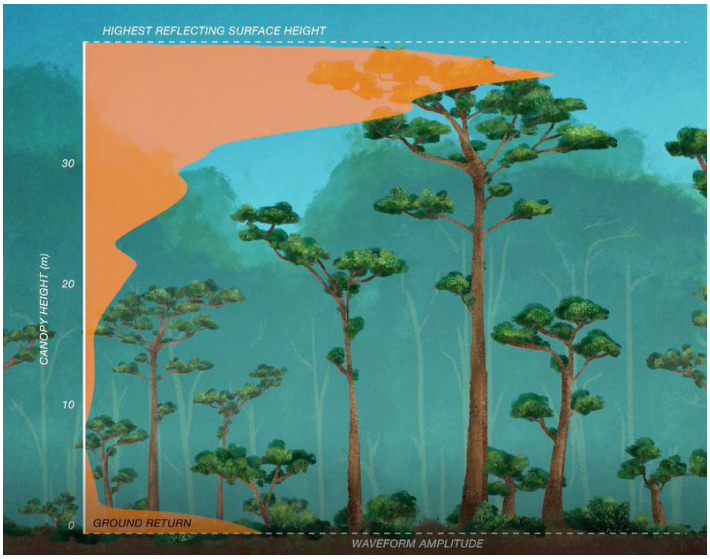
Top (left to right).*
Rohan Dayal, (GES DISC); Nathaniel Crosby, (GES DISC); Landon Clime, (ASDC); Kristina Stoyanova, (GES DISC); Kathy LaMarsh, (ASDC)

Middle (left to right):
Vanessa Chatman, (ESDIS); Kerri Anne Hoolihan, (SEDAC); Matthew Thompson, (PO.DAAC); Egan R. Jett-Parmer, (CDDIS);

Bottom (left to right):
Joshua Garde, (PO.DAAC); Nia Asemota, (CSDA), Andrew Cramer, (ESDIS); Sam Smith, (GES DISC).

The 2021 ESDIS Project, Commercial Smallsat Data Acquisition (CSDA) Program, and EOSDIS DAAC interns advanced critical NASA initiatives and gained valuable workplace experience while working remotely.

ORNL DAAC Releases First GEDI Level 4 Dataset Offering Predictions of Aboveground Biomass Density



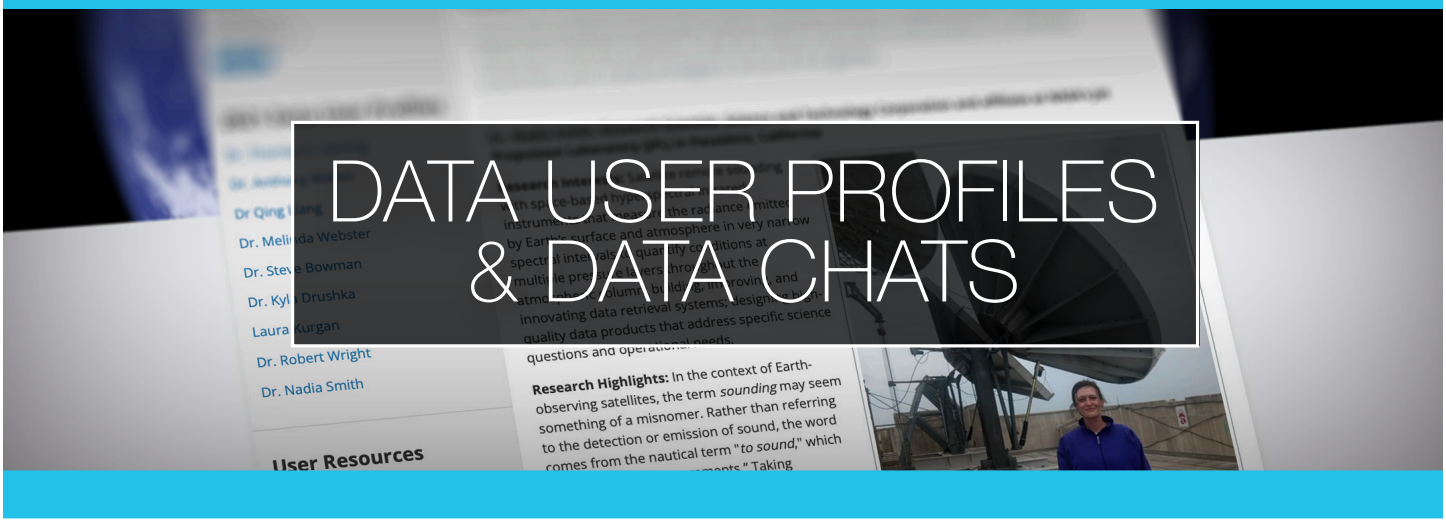
Each GEDI observation contains information about the vegetation, canopy, and topography within each lidar footprint. Scientists can then use this information to quantify canopy height, canopy vertical structure, and ground elevation. Credit: NASA Goddard Space Flight Center

A new Global Ecosystem Dynamics Investigation (GEDI) dataset released this summer provides the first high-resolution 3D aboveground biomass density estimates for tropical and temperate forests around the globe.

Nine Space-Agency Partners Join NASA to Expand Global Participation in 10th Annual International Space Apps Challenge

To mark the 10th annual NASA International Space Apps Challenge — the largest annual global hackathon in the world — NASA collaborated with nine of its space-agency partners to engage people from around the globe in using NASA's open data to find innovative solutions to real-world challenges on Earth and in space.

**Note: See article for academic affiliation and area of study*



Data User Profile: Dr. Kyla Drushka

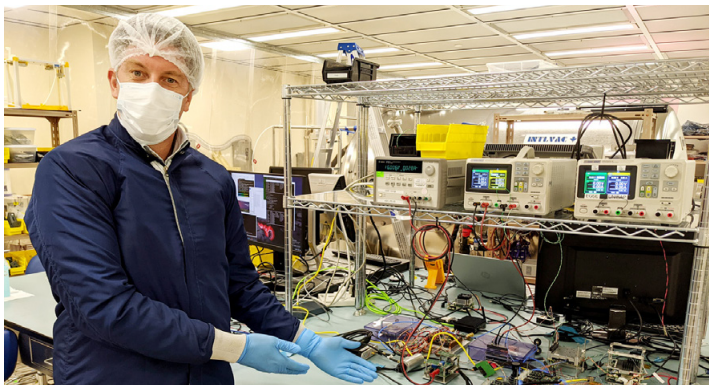
Dr. Kyla Drushka deploys ocean drifters to measure ocean currents at the sea surface. Drushka and her colleagues used these and other devices during a 2018 campaign she co-led off of the California coast near Monterrey/San Francisco. Credit: Peter Gaube

Salinity data from NASA's Physical Oceanography DAAC PO.DAAC helps Dr. Kyla Drushka investigate how variations in sea surface salinity affect the circulation and structure of the ocean.

User Profile: Professor Laura Kurgan

Laura J Kurgan, Professor of Architecture at the Graduate School of Architecture Planning and Preservation (GSAPP) at Columbia University, where she directs the Center for Spatial Research (CSR). Image courtesy of CSR.

Data from NASA's SEDAC helps researchers like Professor Laura Kurgan study the ways in which urban spaces are structured, shaped, and transformed by conflict, and identify the ideological assumptions behind many data visualization projects.

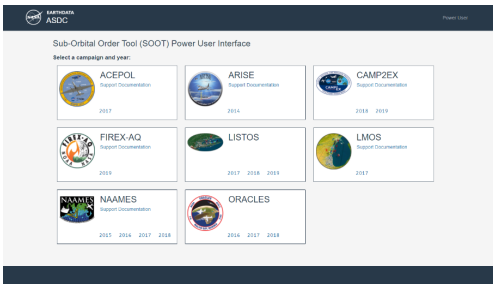


Dr. Robert Wright, Director of the Hawaii Institute of Geophysics and Planetology at the University of Hawaii at Mānoa, in the clean room with Hyperspectral Thermal Imager CubeSat, which will monitor volcanic hazards from space. Image courtesy of Dr. Robert Wright.

Data from NASA's Land Processes DAAC (LP DAAC) helps scientists like Dr. Robert Wright develop systems for autonomously detecting volcanic eruptions from space.

Powered Up Data—Getting to Know the Sub-Orbital Order Tool (SOOT) Power User Interface

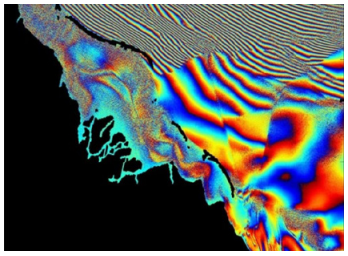
Date: June 30, 2021



This webinar highlights the functionality of the Sub-Orbital Order Tool (SOOT) Power User Interface: a new tool released by NASA's Atmospheric Science Data Center (ASDC) designed to promote discovery and access of airborne and field campaign data for suborbital data research and analysis.

Accelerate your Science with On-Demand InSAR Processing from NASA ASF DAAC

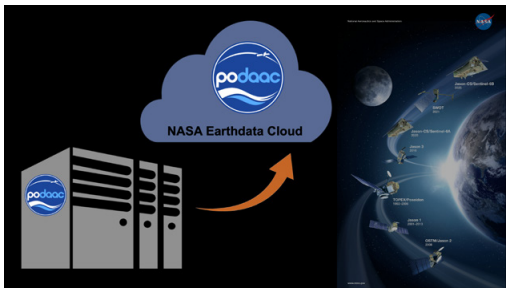
Date: July 28, 2021



In this webinar, learn how to request analysis-ready on-demand InSAR products, both through NASA's Alaska Satellite Facility (ASF DAAC) Vertex data discovery and data access portal and programmatically.

Surfing Ocean Data in the Cloud: The Beginner's Guide to PO.DAAC in the Earthdata Cloud

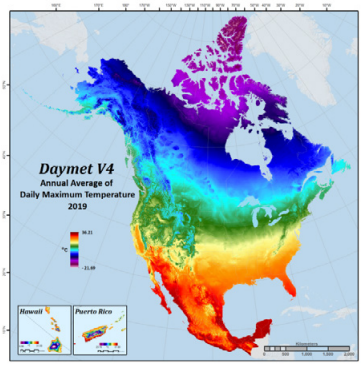
Date: August 17, 2021



In this webinar, learn more about the migration of NASA physical oceanography data to the Earthdata Cloud hosted in the Amazon Cloud (AWS). We discuss which data will be hosted in the cloud, show you options for migrating your ocean data discovery and access process to the cloud, and also provide useful resources to support you in navigating this migration.

Toward Analysis Ready Data- Programmatically Discover, Access, and Subset Daymet V4 Data with Python

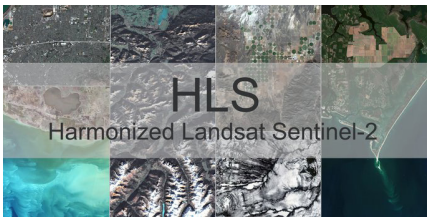
Date: August 31, 2021



The Daymet dataset provides long-term, continuous, gridded estimates of daily weather and climatology variables across North America. In this webinar, we provide an introduction to the Version 4 available at

NASA's ORNL DAAC after Version 4 Data Collection and provide several Jupyter Notebook and Xarray demonstrations to programmatically discover and subset Daymet data to a region and time period of interest.

Script: Harmonized Landsat and Sentinel-2 (HLS) Bulk Download

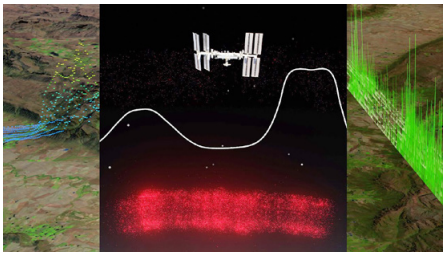


A new Harmonized Landsat and Sentinel-2 (HLS) Bulk Download script at NASA's (LP DAAC) enables the bulk download of HLS data by tile ID and date range (along with other filtering parameters) and identifies and downloads previously unavailable granules.

Video Tutorial: What is HLS?

HLS data are comprised of observations from Landsat 8 and Sentinel-2 and provide a set of seamless data products that can be used as they were obtained from a single sensor, providing a global observation of the land every 2-3 days at 30-meter spatial resolution. This video highlights the benefits of HLS data due to its increased temporal frequency, common gridding, unified atmospheric correction, illumination and view angle normalization, and spectral bandpass adjustment.

Video Tutorial: Meet GEDI! The Global Ecosystem Dynamics Investigation Sensor Aboard the International Space Station (ISS)



GEDI is a full-waveform lidar instrument that produces detailed observations of the three-dimensional structure of the Earth's surface. GEDI precisely measures forest canopy height, canopy vertical structure, and surface elevation which enhances our understanding of global carbon and water cycle processes, biodiversity, and habitat.

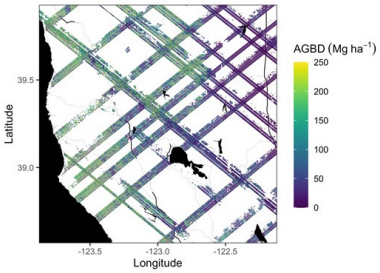
Script: How to Bulk Download Physical Oceanography Data in the Cloud

This guide shows users how to complete HTTPS bulk data download from the PO.DAAC and NASA Earthdata.

Script: Discover Generic NetCDF Data Readers for Python, R, IDL and MATLAB

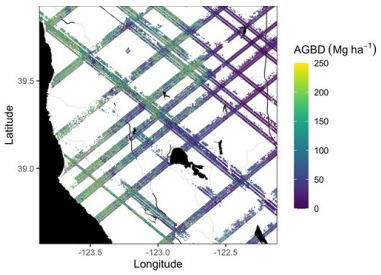
The data readers within this repository are intended to generically read all data variables and metadata from a formatted data file (e.g., netCDF). Readers are available in Python (version 3.x), R, IDL, and MATLAB.

Script: Learn How to Search and Download the GEDI L4A Dataset



This tutorial demonstrates how to search and download GEDI Level 4A (L4A) Footprint Level Aboveground Biomass Density (AGBD) dataset available at NASA's ORNL DAAC. This new Version 1 dataset covers latitudes from 52 North to 52 South, is in the Hierarchical Data Format 5 (HDF5), and each file represents one ISS orbit.

Script: Subsetting GEDI L4A Footprints



This tutorial will demonstrate how to subset GEDI L4A Footprint Level Aboveground Biomass Density (AGBD) dataset to a study area of interest.

Workshop Tutorials: Synergistic Use of SAR and Lidar Data for Terrestrial Ecology Research (Ecological Society of America Annual Meeting 2021)

These tutorials introduce synthetic aperture radar (SAR) and LiDAR data available from NASA's EOSDIS to the terrestrial ecology community; present data techniques and workflows that ecologists can use to explore these data; and showcase terrestrial ecology science applications that leveraged multi-source SAR and LiDAR data.

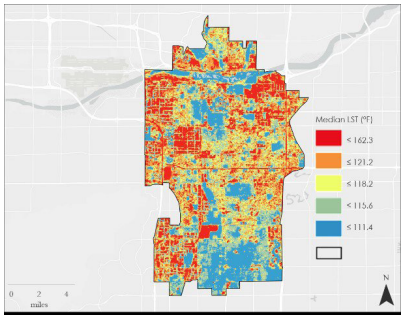
Script: Explore Python Search Library for SAR Data

ASF DAAC's asf_search, a new Python module available through PyPI and Conda simplifies search and download processes, allowing users to find and download SAR data in just a few lines of Python. Numerous search types are supported, including those previously offered by ASF's Search API, as well as search workflows previously only available through Vertex, such as Baseline/InSAR searches.

ANNOUNCEMENTS

New 'Data-in-Action' Stories

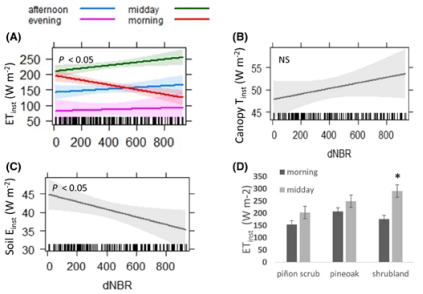
Highlights from the NASA DEVELOP National Program Fall 2020 Term



2015-2020 composite map of the median Land Surface Temperature (LST) for all warm season months in Tempe, Arizona derived from Landsat 8 OLI/TIRS. Areas in red illustrate the hottest areas in the city. Image Credit: Tempe Urban Development II Team.

During the Fall 2020 term of NASA's DEVELOP National Program, participants used geospatial data and technologies to investigate agriculture, air quality, drought, ecosystems, energy, natural disasters, oceans, urban planning, water resources, and wildfires.

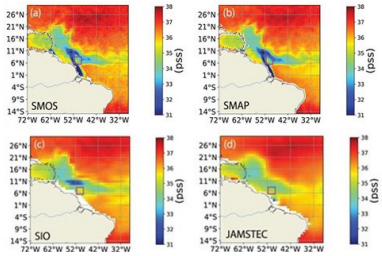
Highlights from the Literature: April to June 2021



Effects plots of (A) diurnal variation in instantaneous evapotranspiration (ETinst), which differed across the day, (B) morning canopy transpiration (Tinst) and (C) morning soil evaporation (Einst), and (D) mean ETinst-for morning and midday by vegetation type. Graphs and caption provided by the authors, Poulos and others (2021).

Data products distributed by the LP DAAC play an important role in modeling, detecting changes to the landscape, and assessing ecosystem variables, to name a few. Three of those applications, published between April and June 2021, are highlighted in this feature.

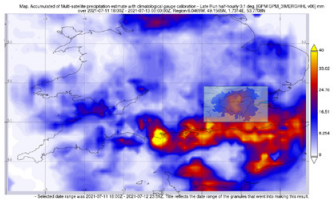
Satellite Sea Surface Salinity to Monitor River Plumes Impacts



August 2015 sea surface salinity (SSS) maps from (a) SMOS and (b) SMAP satellites, and (c) Scripps Institution of Oceanography (SIO) and (d) Japan Agency for Marine-Earth Science and Technology (JAMSTEC) in-situ products near the mouth of the Amazon River.

Large rivers, key components of the land-ocean branch of the global water and biogeochemical cycles, can have important impacts on ocean processes. Learn how satellite and in-situ sea surface salinity (SSS) data have been used to monitor the time varying discharge patterns of river plumes and to study their impacts.

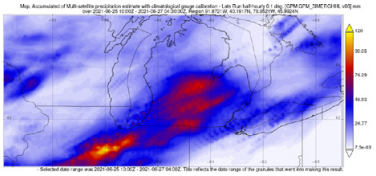
Heavy Rains Lead to London Floods



Accumulated rainfall over southern England July 11-12, 2021

Many countries in Europe experienced extremely heavy rains and destructive flooding July 2021. Integrated Multi-satellitE Retrievals for Global Precipitation Measurement (IMERG) Late Run data was used to assess the impact.

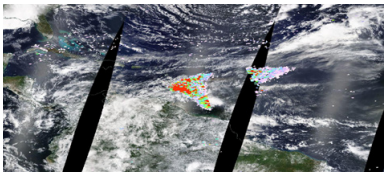
Late June 2021 Storms Bring Floods to Detroit and Chicago



The accumulated rainfall map for June 25-27 shows that more rain fell in central Michigan, northeast Illinois and northwest Indiana than in Detroit, but the heavy rain rates directly over the city caused extensive flooding.

On June 25-27, 2021, a series of thunderstorms moved from northern Illinois and northern Indiana and caused flooding in the Chicago region.

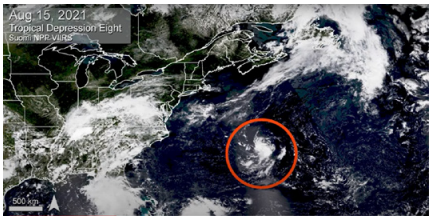
Exploring the La Soufriere Volcanic Eruption



AIRS Prata Sulfur Dioxide Index on April 10, 2021 showing the volcanic plume from La Soufriere.

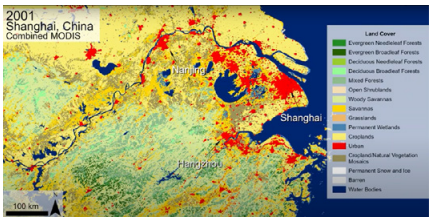
This Goddard Earth Sciences Data and Information Services Center (GES DISC) article explores the use of the NASA Worldview application to examine the aerosol index and sulfur dioxide plumes associated with the La Soufriere volcanic eruption of December 2020.

Observing the Development of Hurricane Henri



Observe the development of Hurricane Henri between August 15-23, 2021 using data from the joint NOAA/NASA Suomi National Polar-Orbiting Partnership (Visible Infrared Imaging Radiometer Suite satellite sensor.

Urban Growth: Shanghai, China 2001-2019



From 2001 to 2019, observe the increase in the urban areas (shown in red), and change in vegetative land cover surrounding Shanghai, China from NASA Terra and Aqua Combined Moderate Resolution Imaging Spectroradiometer (MODIS) Version 6 Land Cover data product.

New Data Animations

Applications for Harmonized Landsat and Sentinel-2 Data

Three new Harmonized Landsat and Sentinel-2 (HLS) project data animations developed by the NASA LP DAAC showcase how HLS data can be used in various applications.

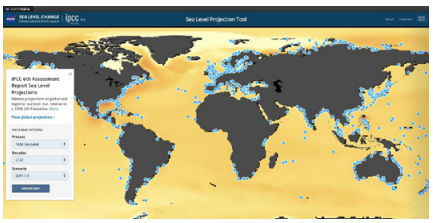
HLS Application Agriculture : Spring Fieldwork in Northeast China

HLS Application Fires: Magnum Fire, Arizona (June 1- July 1, 2020)

HLS Application Volcanos: Stromboli's Summer Eruptions 2019

New Datasets and Tools

IPCC Sea Level Projection from the IPCC AR6 Available at NASA's PO.DAAC



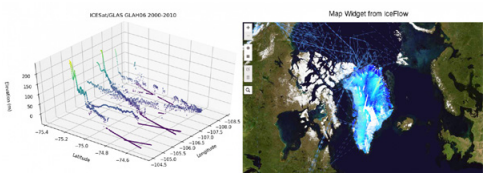
New Intergovernmental Panel on Climate Change (IPCC) global and regional sea level projections from the IPCC 6th Assessment Report (AR6) are available at the PO.DAAC, and cover sea level projections between 2020 to 2150.

EOSDIS New Datasets: June 2021

EOSDIS New Datasets: July 2021

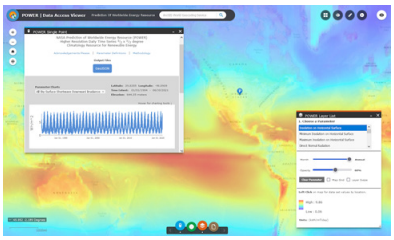
EOSDIS New Datasets: August 2021

New IceFlow and icepyx Python Tools Harmonize Laser Altimetry Datasets



Learn how to harmonize IceBridge, ICESat-1, and ICESat-2 data products into similar formats and apply the necessary geophysical corrections to immediately access, compare, and visualize data using Python and Jupyter Notebook based tools.

Release of POWER Web Services Portal Version 2

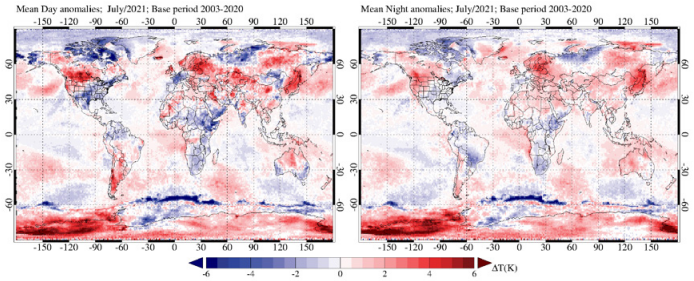


In a new NASA Prediction of Worldwide Energy Resources (POWER) Web Services Portal release, the Data Access Viewer (DAV) was improved to incorporate updated parameter groupings, new analytical capabilities, and the new data formats. Updated methodology documentation and usage tutorials, as well as application developer specific pages, allow users to access to POWER data more efficiently.

General

New Paper in the AGU's *EOS* Addresses Benefits and Difficulties of Integrating Remote Sensing and Health Data

Global Surface Temperatures and Precipitation Assessments



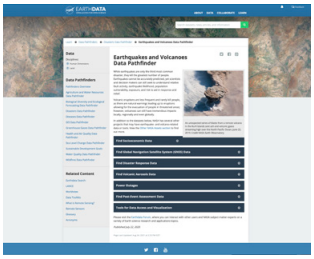
July 2021 Atmospheric Infrared Sounder (AIRS) surface air temperature anomalies at 95% confidence.

June 2021 July 2021 August 2021

New Cloud Data Resources available at NASA PO.DAAC

A new cloud data resources page to help data users in discover, access, and use cloud data. The PO.DAAC Cloud in the Forum provides a place to find answers to your cloud migration questions.

Data Pathfinders



Data pathfinders are organized by topic, discipline, or area of application, and are designed to help guide users through the process of selecting data products and learning how to use them. By providing access to relevant data, services and tools within each discipline, topic, or application and across NASA's Earth science data collections. Three new Data Pathfinders were released this summer including one focused on GIS, Earthquakes and Volcanoes and Extreme Heat. Each of the words should be linked to the Pathfinder as they currently are in their separated out mode.

GIS

Earthquakes and Volcanoes

Extreme Heat

StoryMaps

A new ***NASA at Your Table: Earth Data Informs Agriculture and Water Resource Management*** StoryMap introduces you to some of the scientists using NASA Earth science data to monitor the production and health of crops, assess the state of and threats to supplies of freshwater, and better predict the risk and severity of drought, all to help food producers maximize yields and conserve resources as they work to feed people around the globe. The Learning Resources section of the StoryMap provides links to Data Pathfinders, Data Toolkits, articles, webinars, and more.

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