EOSDIS Update

Earth Science Data and Information System (ESDIS) Project

National Aeronautics and
Space Administration

EOSDIS Products and Services Receive Highest Ranking Ever in 2021 ACSI Survey

2021 EOSDIS CSI vs. National Average and Federal Government Scores

|	
NASA EOSDIS Aggregate Score	81
National ACSI Average Score	74
Federal Government Average Score	63
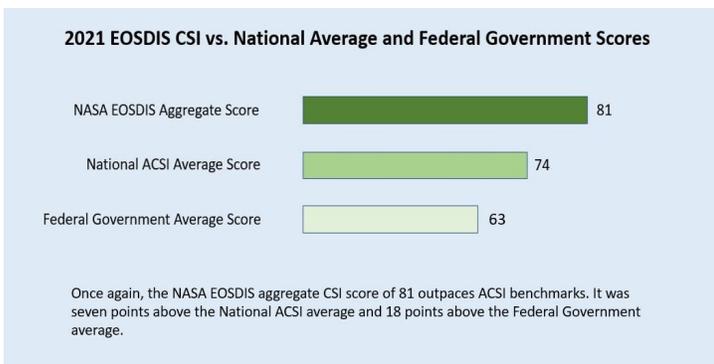
Once again, the NASA EOSDIS aggregate CSI score of 81 outpaces ACSI benchmarks. It was seven points above the National ACSI average and 18 points above the Federal Government average.

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NASA's Earth Observing System Data and Information System (EOSDIS) has been a central component of the NASA Earth observation program since the 1990s, providing end-to-end capabilities for managing NASA Earth science data from various sources — satellites, aircraft, field measurements, and various other programs. And although the system has changed substantially over the past 27 years, the global user community's satisfaction with EOSDIS products and services has remained consistent. According to the 2021 American Customer Satisfaction Index (ACSI) survey of EOSDIS data, products, and services, EOSDIS received a Customer Satisfaction Index (CSI) score of 81 out of 100, the highest score EOSDIS has ever received.

Landsat 9 to Provide a Wealth of Data to the Longest Continuous Global Record of Earth Imagery
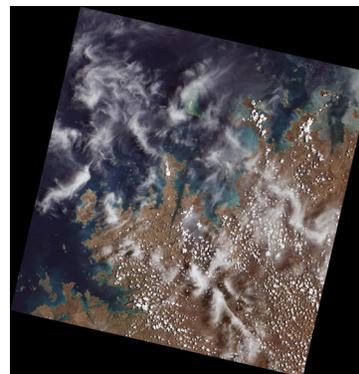
The first image collected by Landsat 9, on October 31, 2021, shows mangroves clustered in protected inlets and bays on the edge of the Indian Ocean. Fluffy cumulus clouds and high-altitude cirrus clouds hover nearby. The aqua colors of the shallow near-shore waters give way to the deep, dark blues of the ocean. Click here to see more first light images from Landsat 9. Credit: NASA/USGS.

On September 27, 2021, the Landsat mission took a significant step toward continuing the program's long-term record of Earth observation with the launch of Landsat 9 from Vandenburg Space Force Base, in California. Like its predecessor, Landsat 8, Landsat 9 has a higher imaging capacity than earlier Landsat satellites, allowing for more data to be added to the Landsat global data archive.

NASA Announces 2021 International Space Apps Challenge Global Award Winners

Ten teams from around the globe took home top honors in the world's largest hackathon addressing real-world problems on Earth and in space. Dubbed the "largest annual global hackathon in the world," the Space Apps Challenge invites teams to create open-source solutions to address technical challenges on Earth and in space around a specific theme over a collaborative weekend. NASA announced the 10 Award winners of the 2021 Space Apps Challenge on December 10, 2021.

DATA USER PROFILES & DATA CHATS
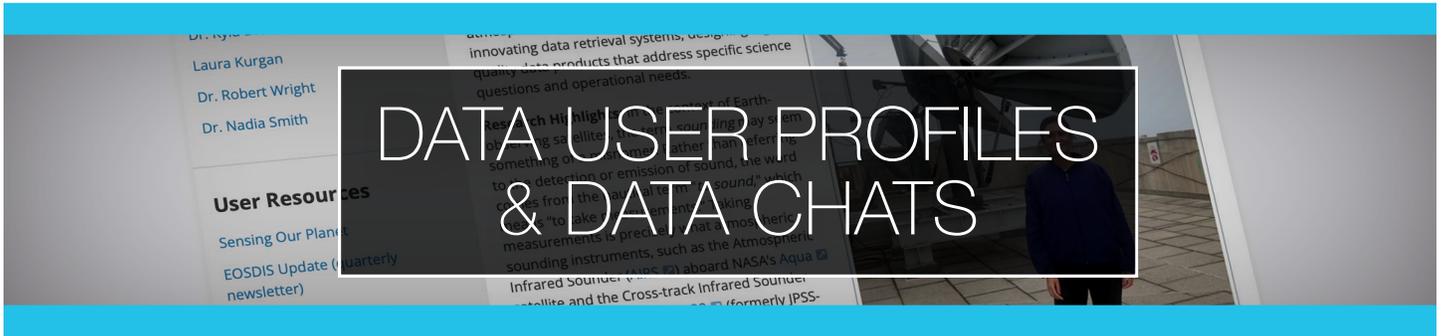
User Profile: Dr. Zachary Erickson

Data from NASA's Ocean Biology Distributed Active Archive Center (OB.DAAC) helps scientists like Dr. Zachary Erickson study the ocean's role in the global carbon cycle.

Research Oceanographer, National Oceanic and Atmospheric Administration Pacific Marine Environmental Laboratory

User Profile: Dr. Robert Holz

Data from NASA's Level-1 and Atmosphere Archive and Distribution System DAAC (LAADS DAAC) helps scientists like Dr. Robert Holz develop algorithms and data products that enhance observations of aerosols and clouds.

Senior Scientist, Space Science and Engineering Center (SSEC), University of Wisconsin–Madison

User Profile: Dr. Kevin Schaefer

Data from NASA's Oak Ridge National Laboratory DAAC (ORNL DAAC) helps scientists like Dr. Kevin Schaefer detect climate-induced thawing of permafrost throughout the Arctic.

*Research Scientist, National Snow and Ice Data Center, University of Colorado*

Data Chat: Alfreda Hall

As Project Manager, Alfreda Hall helps the Commercial Smallsat Data Acquisition Program acquire data from commercial sources in support of NASA's Earth science research and application goals.

Alfreda Hall, Program Manager with NASA's Commercial Smallsat Data Acquisition Program

RECENT WEBINARS & TUTORIALS

## Using Geospatial Data to Evaluate Climate Hazards and Inform Environmental Justice

December 8, 2021
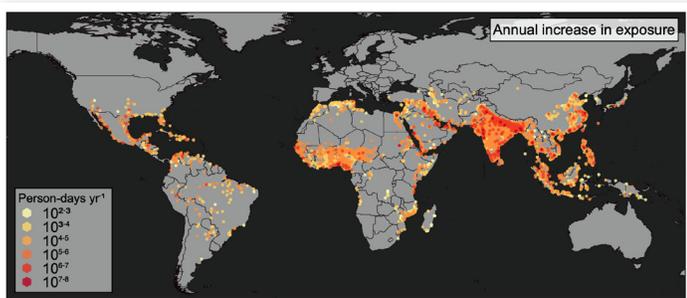
This webinar provides an introduction to two NASA Socioeconomic Data and Applications Center (SEDAC) datasets — Global High Resolution Daily Extreme Urban Heat Exposure, v1 (1983-2016) and U.S. Social Vulnerability Index Grids, v1 (2000, 2010, 2014, 2016, and 2018) — as well as brief data discovery and data access tutorials for analyzing the data using Python and QGIS.

Big Things Come in Very Small Packages SeaHawk — A New Way of Looking at the Ocean

January 26, 2022
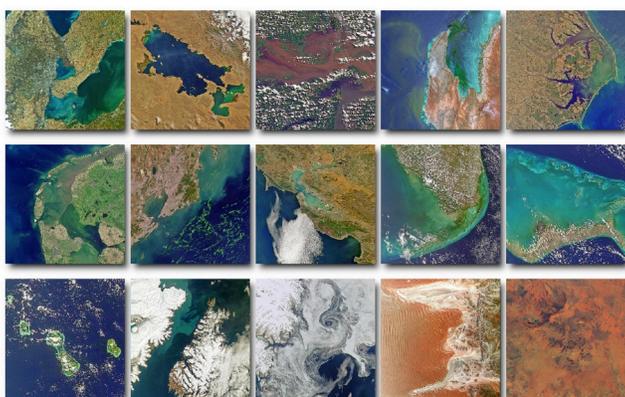
This webinar introduces the SeaHawk CubeSat ocean color mission and offers instruction on discovering, accessing, and working with SeaHawk ocean color data, conducting image searches, and submitting imagery requests for areas of interest at the OB.DAAC.

## SAR Data in Python- Get to Know the ASF Search Module

February 28, 2022
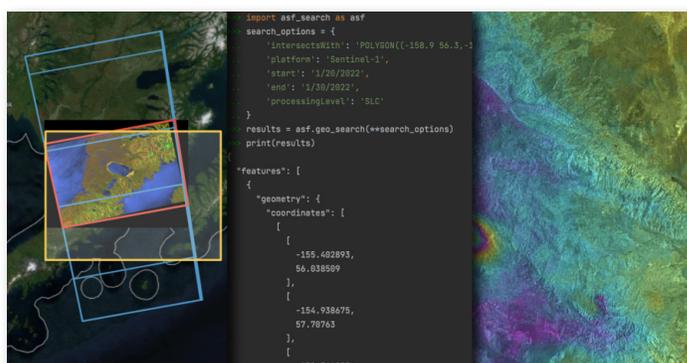
This webinar instructs users on asf_search available at the Alaska Satellite Facility (ASF) DAAC (ASF DAAC), a new Python library for search and discovery of synthetic aperture radar (SAR) data, and demonstrates several workflows, including granule and product searches, baseline searches, geographic search, and data download.

How to Find the Max Precipitation Value of a Region of Interest (ROI) Using an ArcGIS Image Service
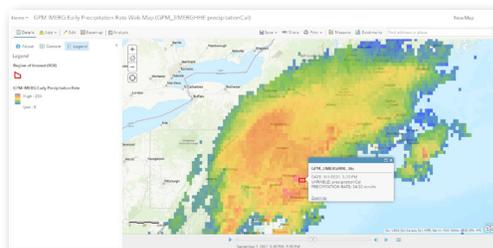
This tutorial informs users on finding the maximum precipitation rate (mm/hr) using an ArcGIS image service as data input, via a Jupyter Notebook for a defined Region of Interest.

Spatial and Temporal Subsetting of Gridded SIF Data

SIF Estimates for Summer 2017 in the Great Smoky Mountain National Park (units: mW m-2 nm-1 sr-1)
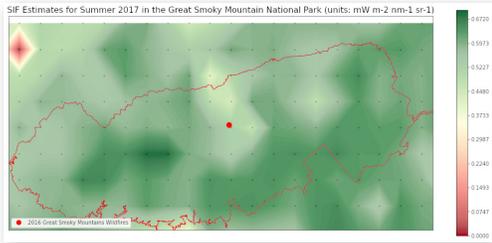
This tutorial demonstrates two simple scenarios of how to use Python to subset gridded data from the Solar-Induced Chlorophyll Fluorescence-Earth System Data Record (SIF-ESDR) project through the ORNL DAAC's Thematic Real-time Environmental Distributed Data Services (THREDDS) Data Server (TDS).

Download a Data Order at the ORNL DAAC with Wget

Learn how to use the command line tool Wget or a download manager to download your data order from NASA's ORNL DAAC.

Command Line Access to the ORNL DAAC Data Area with Wget or cURL

This tutorial shows users how to use command line tools such as cURL or Wget to access data from the ORNL DAAC archive.

Study Amazon Estuaries with Data from the EOSDIS Cloud
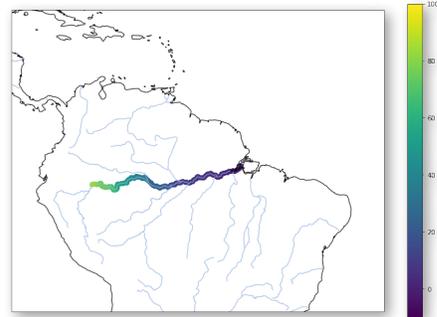
This tutorial uses multiple satellite data products to analyze the relationships between river height, land water equivalent thickness, sea surface salinity, sea surface temperature, and ocean color in the Amazon River basin's estuary.

How to Use the View Data Tool from LAADS DAAC

This video provides an introduction to the basic features of the View Data tool, a visual search tool from NASA's LAADS DAAC. This tool allows users to preview full-resolution images of Moderate Resolution Imaging Spectroradiometer (MODIS) and Visible Infrared Imaging Radiometer Suite (VIIRS) atmospheric datasets from LAADS before downloading or ordering.

Assessing Hurricane Ida using NASA Earth Observations in GIS
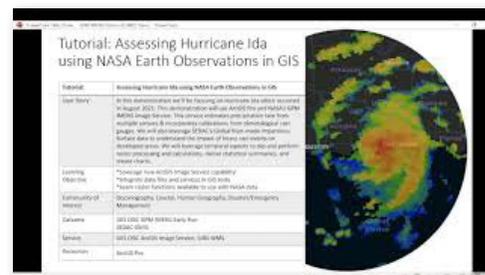
This tutorial shows viewers how to use ArcGIS Pro and NASA's Global Precipitation Measurement (GPM) Integrated Multi-satellitE Retrievals for GPM (IMERG) image service to investigate Hurricane Ida, a Category 4 Atlantic hurricane that made landfall in August of 2021.

Data in Action

Earth's Contemporary Sea Level Budget and Net Energy Imbalance in a Warming Climate
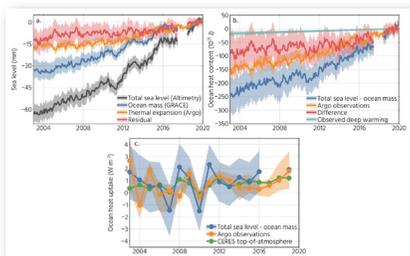
*Panel a shows global-mean sea level rise (black), and its contributing components: ocean mass changes measured by GRACE (blue) and thermal expansion as observed by the Argo float network (orange). The residual is shown in red. Panel b shows the estimated changes in ocean heat content. Heat content is measured by subtracting the ocean mass change from the total sea-level change, and multiplying the difference with the expansion efficiency of sea water (blue). The direct measurements from Argo (down to 2000m) are shown in orange. The difference between both (red) shows a much larger heat uptake than what limited deep-ocean measurements below 2000m (turquoise) show. Panel c shows the year-to-year variability of the ocean heat uptake, and a comparison with top-of-atmosphere radiative fluxes measured by CERES.*

In response to increasing emissions of greenhouse gases and the radiative forcings and feedbacks they impose, Earth gains heat energy and its climate changes. Often referred to as Earth's energy imbalance (EEI), the contemporary energy gain of 0.5-1 W/m2 is quite small compared to the radiation fluxes that enter and exit the Earth system at the top of the atmosphere.

Highlights from the Literature: October to December 2021
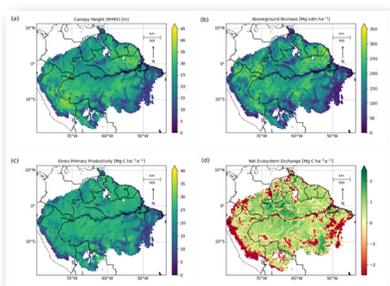
Maps of mean canopy height (RH95) in m (a), mean aboveground biomass (AGB) in Mg odm per ha (b), mean gross primary productivity (GPP) in Mg C per ha per year (c), and net ecosystem exchange (NEE) in Mg C per ha per year (d). The 1 km2 resolution was aggregated to 20 × 20 km2 resolution for visualization. Image and caption: Bauer and others (2021).

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

Data in Action: SWOT - A Mission to Unveil the Upper Ocean Circulation
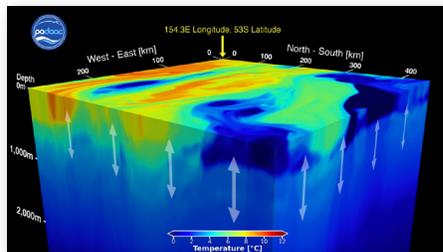
Three-dimensional temp. evolution based on ECCO 1/48-deg simulation (LLC4320) in the Southern Ocean

The world's oceans are turbulent. In the first several hundred meters of the upper ocean, vigorous small mesoscale (<~100km) ocean circulation can transport heat, carbon, and other oceanic tracers such as nutrients between the sea surface and the deeper ocean. These vertical exchanges ventilate the global ocean, support marine ecosystems, and modulate the Earth's climate.

General

2021 NASA ESDS Program Highlights Released

NASA's Earth Science Data Systems (ESDS) Program accomplishments during fiscal year 2021 furthered open science and made NASA Earth observation data available to a broader base of users. Learn more about 2021 accomplishments in the annual ESDS Highlights.

NASA GES DISC Top Ten Highlights of 2021

The NASA Goddard Earth Sciences Data and Information Services Center (GES DISC) recently took a moment to look back at its accomplishments from the past year.

Global Surface Temperatures and Precipitation Assessments

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

December 2021   **January 2022**   **February 2022**

New Datasets and Tools

The webpages linked listed below offer access to and descriptions of the newest datasets added to the EOSDIS collection during the months of December 2021 and January and February of 2022. For older datasets, visit the EOSDIS Data News Archive to search by keyword, such as a DAAC, an instrument, or mission, or scientific term.

December 2021

January 2022

**February 2022**

Level 2 Subsetting Service Adds Support for Additional TROPESS Products
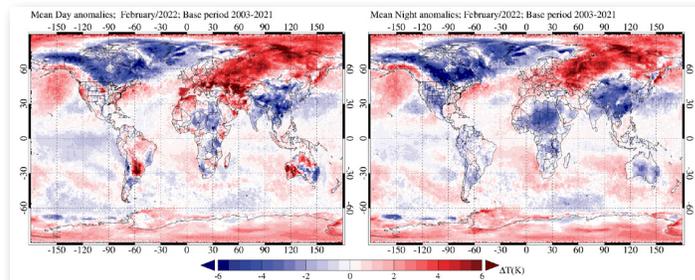
The GES DISC Level 2 Subsetting Service has added support for the majority of the new TRopospheric Ozone and Precursors from Earth System Sounding (TROPESS) project products – four high resolution West Coast fire products and 39 standard products.

Two ECOSTRESS Products Available through ORNL DAAC Subsetting Tools
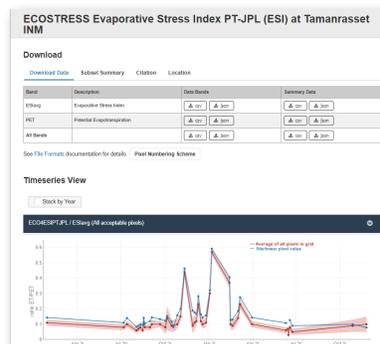
Fixed Site Subset screen shot for the Tumanrasset INM site in Algeria of the AERONET and BSRN networks.

Two ECOsystem Spaceborne Thermal Radiometer Experiment on Space Station (ECOSTRESS) mission data products have been added to the ORNL DAAC's Fixed Site Tool and the Web Service: the Evaporative Stress Index PT-JPL Daily L4 Global 70 m (ECO4ESIPTJPL v001) and ECOSTRESS Water Use Efficiency Daily L4 Global 70 m (ECO4WUE v001).

LEARNING RESOURCES
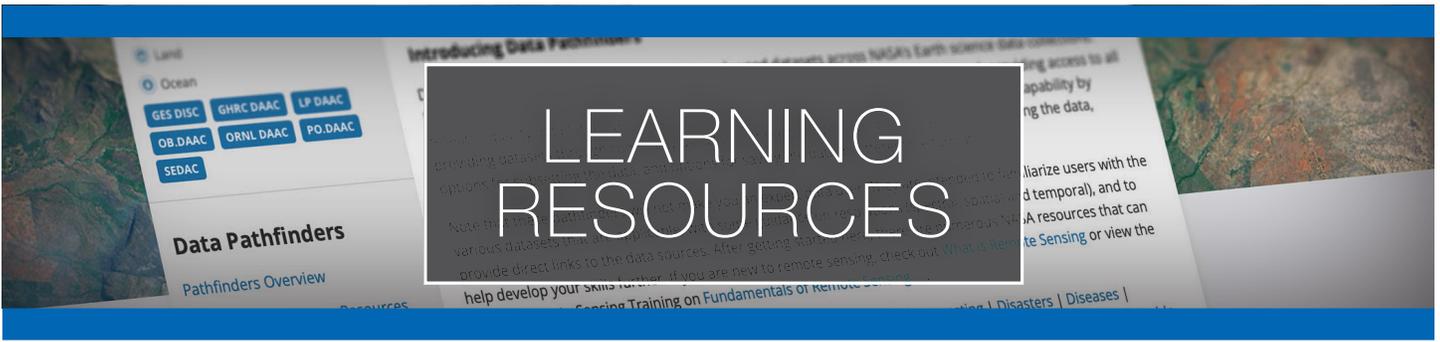
Environmental Justice Backgrounder
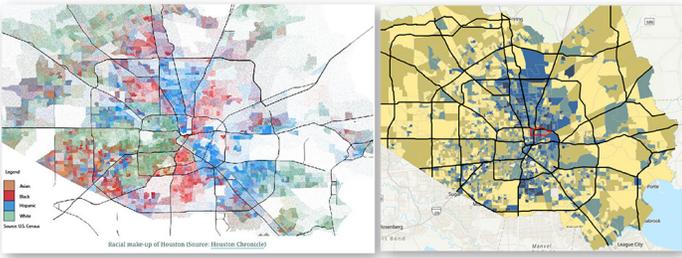
Left map: Racial make-up of the Greater Houston Metropolitan Area. Right map: Block group level Flood Vulnerability Index created by SEDAC and IRI. Darker colors (such as in north Houston) indicate regions of higher flood vulnerability. Note how the high percentage of Black (red) and Hispanic (blue) communities shown in the left-side map correspond with areas with higher flood vulnerability shown in the right-side map. The red outline near the center of the right map indicates the Kashmere Gardens community. Maps from Understanding Flood Vulnerability: A Case Study of Harris County StoryMap produced by SEDAC.

This backgrounder provides information about how NASA data are used to support environmental and climate justice efforts along with use cases showing how scientists and decision-makers are applying a wide combination of datasets to assess the vulnerability and exposure of communities to environmental challenges.

Getting Started with NASA Worldview Tutorial
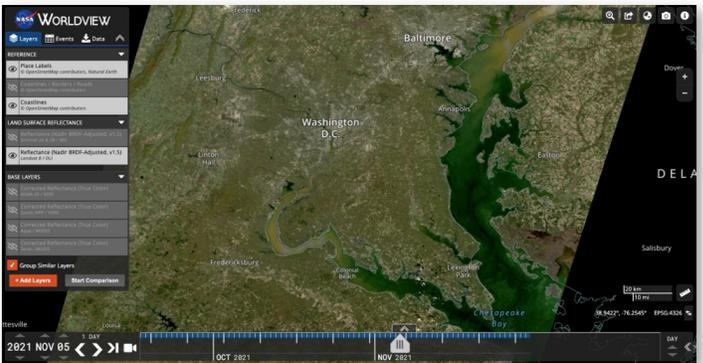
In this tutorial, learn how to use NASA's EOSDIS Worldview imagery mapping and visualization application to create and export an image snapshot, animate imagery to see change over time, compare different types of satellite imagery from different dates, explore vector data layers like Fires and Thermal Anomalies, and much more!

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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