



Jet Propulsion Laboratory
California Institute of Technology

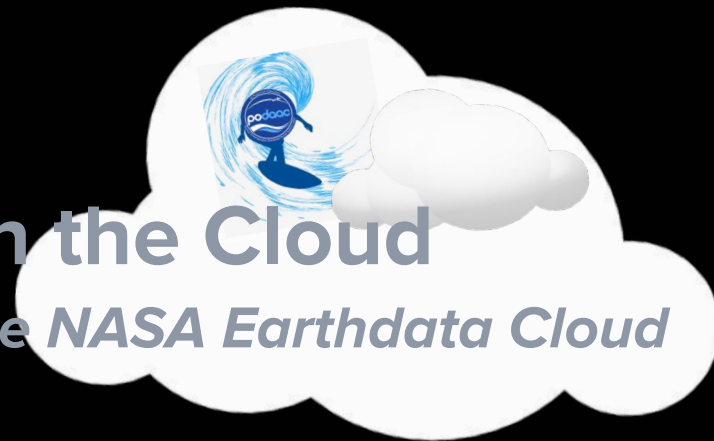
podaac

Physical Oceanography Distributed Active Archive Center



Surfing Ocean Data in the Cloud

The Beginners' Guide to PO.DAAC in the NASA Earthdata Cloud



<https://podaac.jpl.nasa.gov/>

August 17 2021

What we will cover today

- ***An introduction to our user migration plan***
- ***Tools and services to discover, search, access, and download PO.DAAC Data in the Cloud***
- ***How to engage and collaborate with PO.DAAC during the migration***

<https://podaac.jpl.nasa.gov/cloud-datasets/migration>



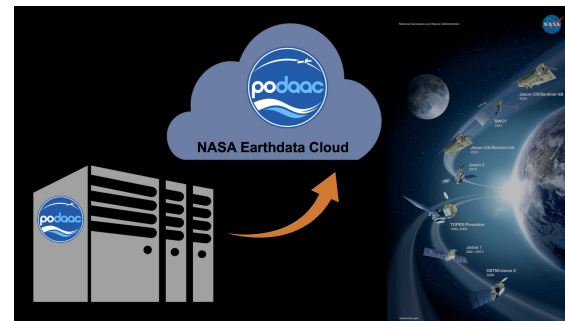
Moving Data to the Cloud

- **PO.DAAC will support new missions with big data**
 - With new missions like Sentinel-6 Michael Freilich and Surface Water and Ocean Topography (SWOT) PO.DAAC needs to manage large data volumes (petabyte scale)
- **PO.DAAC will provide the same level of service and access to users**
 - Data search, access, discovery and download will be continue to be free to all users
- **PO.DAAC will provide services that are co-located with the data in the cloud**
 - Minimize the amount of data downloaded
 - Allowing users to select and access only the data they are interested in
 - Making the data more analysis ready - whether the next step in the user workflow is to download and analyze the data locally or use cloud optimized services for analysis
- **By June 2022**, all existing and new datasets will be in the cloud for users to consume
 - Access to data via PO.DAAC Drive will shutdown in phases ⇒ Retirement complete by **June 6, 2022**

<https://podaac.jpl.nasa.gov/cloud-datasets/migration>

115 Datasets NOW AVAILABLE!

Project/Platform	# of Datasets
ECCO	79
SENTINEL-6 MICHAEL FREILICH	14
Pre-SWOT	10
GHRSSST	8
CYGNSS	1
METOP	1
AVHRR-3	1
VIIRS	1



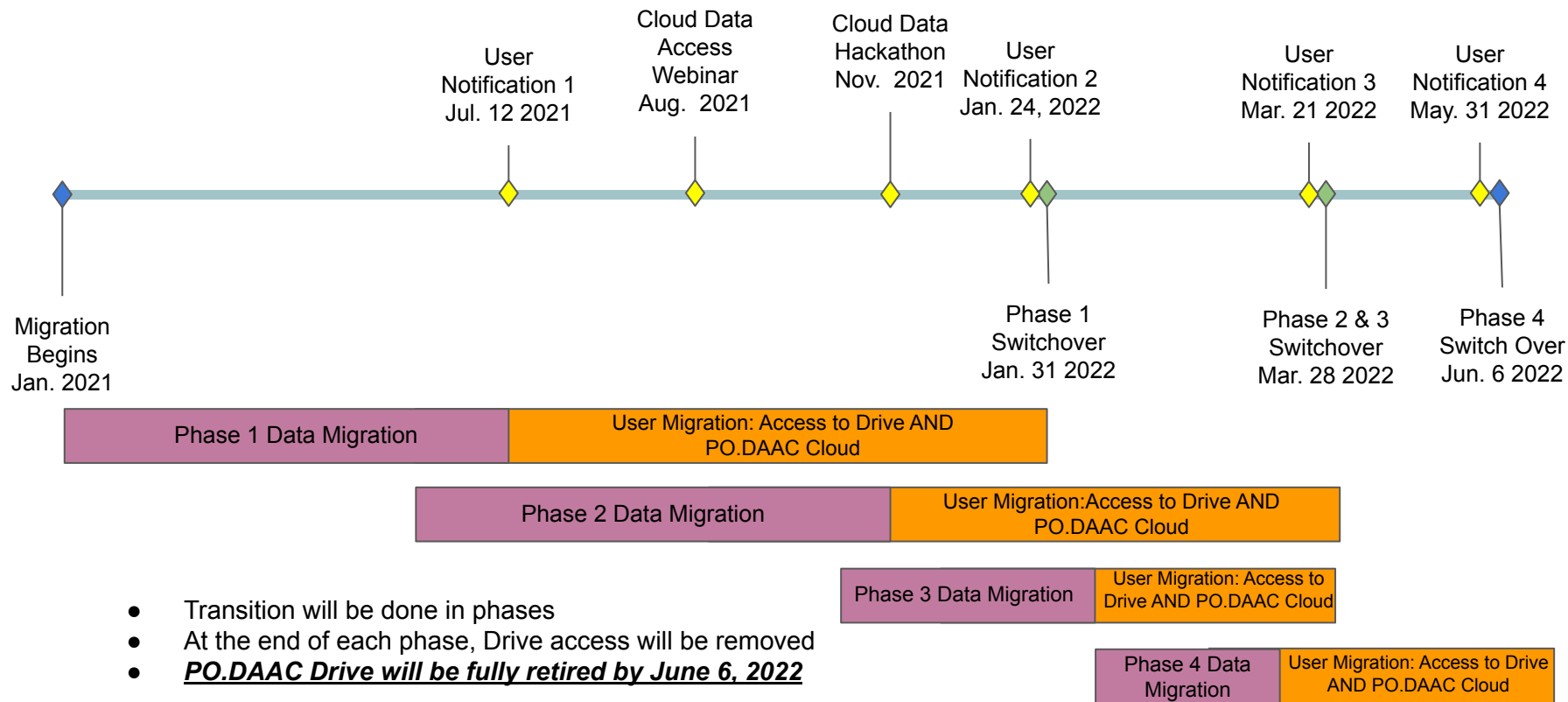
Goals of User Migration

- *The goal is to transition all users to cloud-based data and minimize the amount of disruption to user workflows*
 - **Communicate Effectively**
 - Notify you, the users, as early as possible across multiple channels
 - PO.DAAC will centralize migration information for users to consume
 - **Minimize the impact of user transition**
 - Develop notebooks, recipes, and tutorials to quickly help users migrate existing code/scripts to discover, access, and use data
 - Hold workshops and hackathons for user's to gain experience and ask questions about cloud based capabilities and features
 - **Provide a feedback loop for users**
 - Post questions and comments in the PO.DAAC Forum
 - Email our help desk at podaac@podaac.jpl.nasa.gov

<https://podaac.jpl.nasa.gov/cloud-datasets/migration>



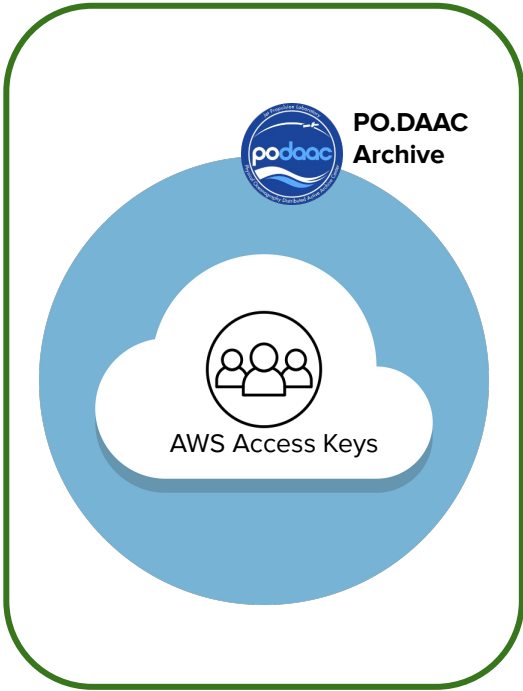
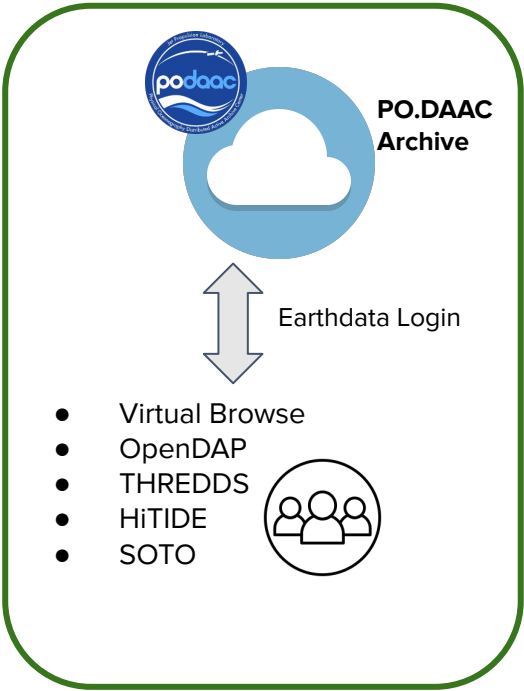
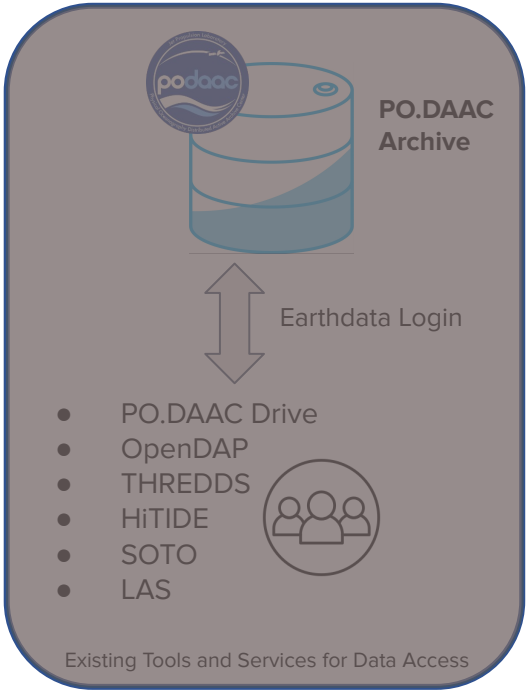
Migration Schedule



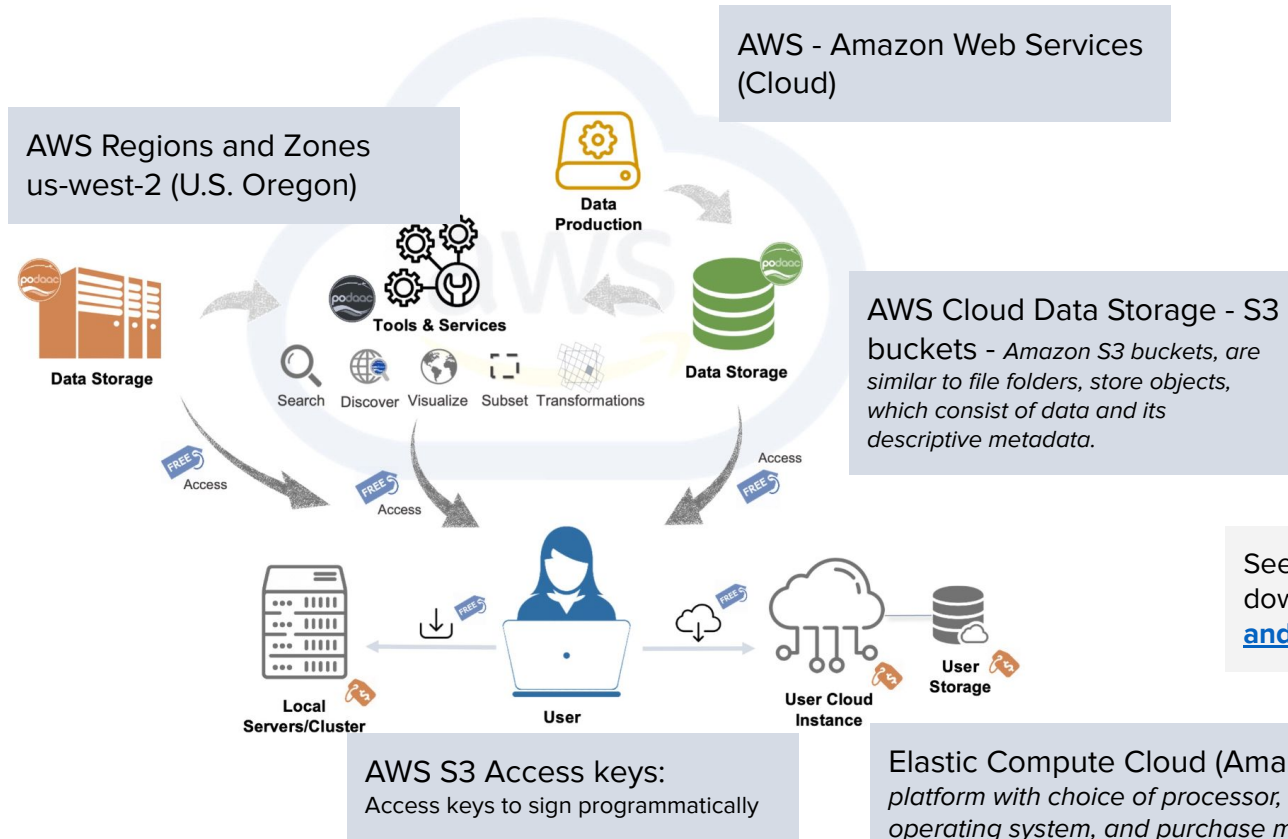
<https://podaac.jpl.nasa.gov/cloud-datasets/migration>

Migration Key Dates







Dataset Transition Phase	Cloud Access Begins	PO.DAAC Drive Access Ends
Phase 1	July 2021	January 31, 2022
Phase 2	November 2021	March 28, 2022
Phase 3	January 2022	March 28, 2022
Phase 4	March 2022	June 6, 2022

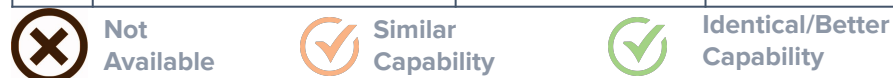


Cloud Data Access 101

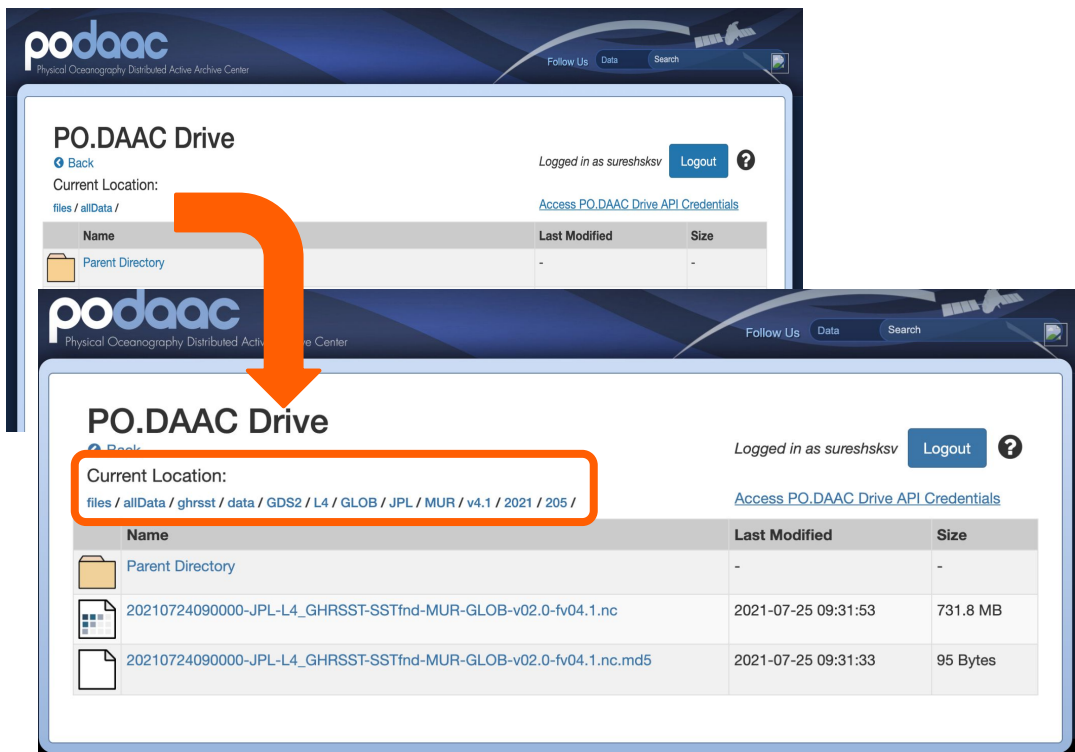


Data Access Use Cases Matrix: Now vs. Future

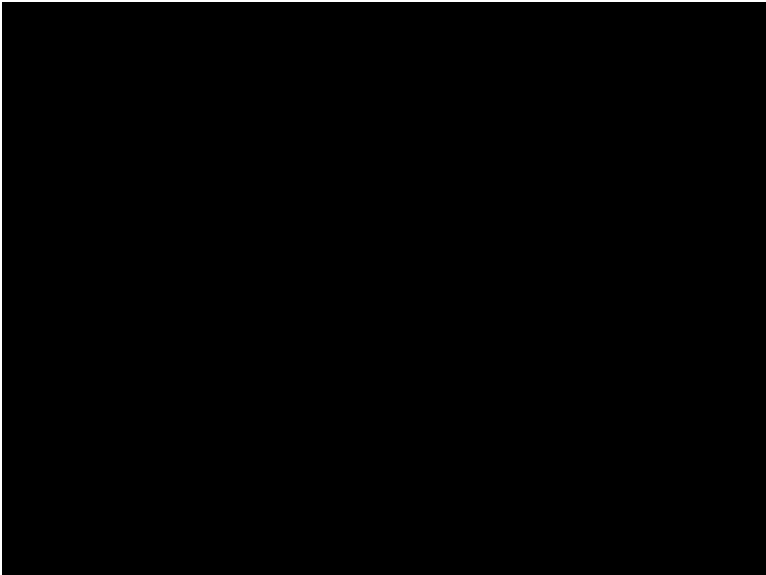
#	Use Case Description	Existing Tool	Interface Parity	Cloud Tool	Cloud Tool Capabilities
1	Browse and Download Files from the archive	- PO.DAAC Drive - Earthdata Search Portal		Virtual Directory Listing	- Browse data in more than one way (temporal and spatial) - Browse and download data at other DAACs
2	Download files everyday	- PO.DAAC Webservice - PO.DAAC Drive - Earthdata Search Portal	 <div>Fully Retiring June 6th 2022</div>	- CMR API - Data Subscriber - Earthdata Search Client	- Download specific files matching extensions - Multiple ways to find data that matches use case
3	WebDAV mount	PO.DAAC Drive		None	No mount capability available but access entire archive directly within the cloud
4	Access Entire Archive	None		In-region Cloud Access	- Scaled Compute - Process next to data, suitable for large volume needs
5	Subset data one at a time	OPeNDAP HiTIDE		- OPeNDAP - Harmony API	- Improved subsetting performance - Subset and transform in one go
6	Subset multiple files using a script	OPeNDAP HiTIDE		- OPeNDAP - Harmony API	- Create jobs for subsetting data - Subset and transform in one go



Use Case #1 - Browse and Download



PO.DAAC Drive
Fully Retiring June 6th 2022



<https://cmr.earthdata.nasa.gov/search/site/collections/directory/POCLOUD/gov.nasa.eosdis>

Virtual Browse

Use Case #2 - Scripted Access to archive files

Download Multiple Data Files from PODAAC Drive Using curl

Forum home < PODAAC Forums < Data Recipes

POSTREPLY Search this topic... Search

1 post • Page 1 of 1

Download Multiple Data Files from PODAAC Drive Using curl
by yiboj » Thu Sep 20, 2018 8:54 am

PODAAC Drive can be accessed both by **wget** and **curl** command on linux system. The recipe "Download Multiple Data Files from PODAAC Drive Using wget" shows how to use **wget** command, and this recipe will focus on the **curl** command.

“ curl is a tool to transfer data from or to a server, using one of the supported protocols (DICT, FILE, FTP, FTPS, GOPHER, HTTP, HTTPS, IMAP, IMAPS, LDAP, LDAPS, POP3, POP3S, RTMP, RTSP, SCP, SFTP, SMTP, SMTPS, TELNET and TFTP). The command is designed to work without user interaction.

curl offers a busload of useful tricks like proxy support, user authentication, FTP upload, HTTP post, SSL connections, cookies, file transfer resume, Metalink, and more. As you will see below, the number of features will make your head spin!

The major difference between **wget** and **curl** is that wget can download files recursively and **curl** can upload file to the server.

The curl command allows you to download as well as upload data through the command line in Linux. Following is its syntax:

```
CODE: SELECT ALL
curl [options] [URL...]
```



README.md

Scripted Access to PODAAC data



The example script is to download data given a PO.DAAC collection shortcode.

- These scripts can be set up as a cron that runs every hour or set up to download data per user needs
- PO.DAAC is providing this script as "starter" script for download -- advanced features can be added and it would be great if you can contribute these code back to PO.DAAC.
- The search and download relies on an API as defined at <https://cmr.earthdata.nasa.gov/search/site/docs/search/api.html>

Dependencies

Aside from **python 3**, the only dependency is the python 'requests' module, which can be installed via pip.

```
python -m pip install requests
```

Installation

While the subscriber is not available in the python repository, it can still be installed via pip:

```
python -m pip install git+https://github.com/podaac/data-subscriber.git
```

<https://github.com/podaac/data-subscriber>

Contr



Langu

Py

Use Case #2 - Scripted Access to archive files

```
podaac-data-subscriber -c VIIRS_N20-OSPO-L2P-v2.61 -d /tmp/webinar -e .nc.h5 -m 30 -b="-180,-90,180,90" --verbose >> /tmp/webinar/subscriber.log
```

Dataset

Format

Minutes

Spatial
Extent



Use Case #4 - Access Entire Archive

<https://archive.podaac.earthdata.nasa.gov/s3credentials>

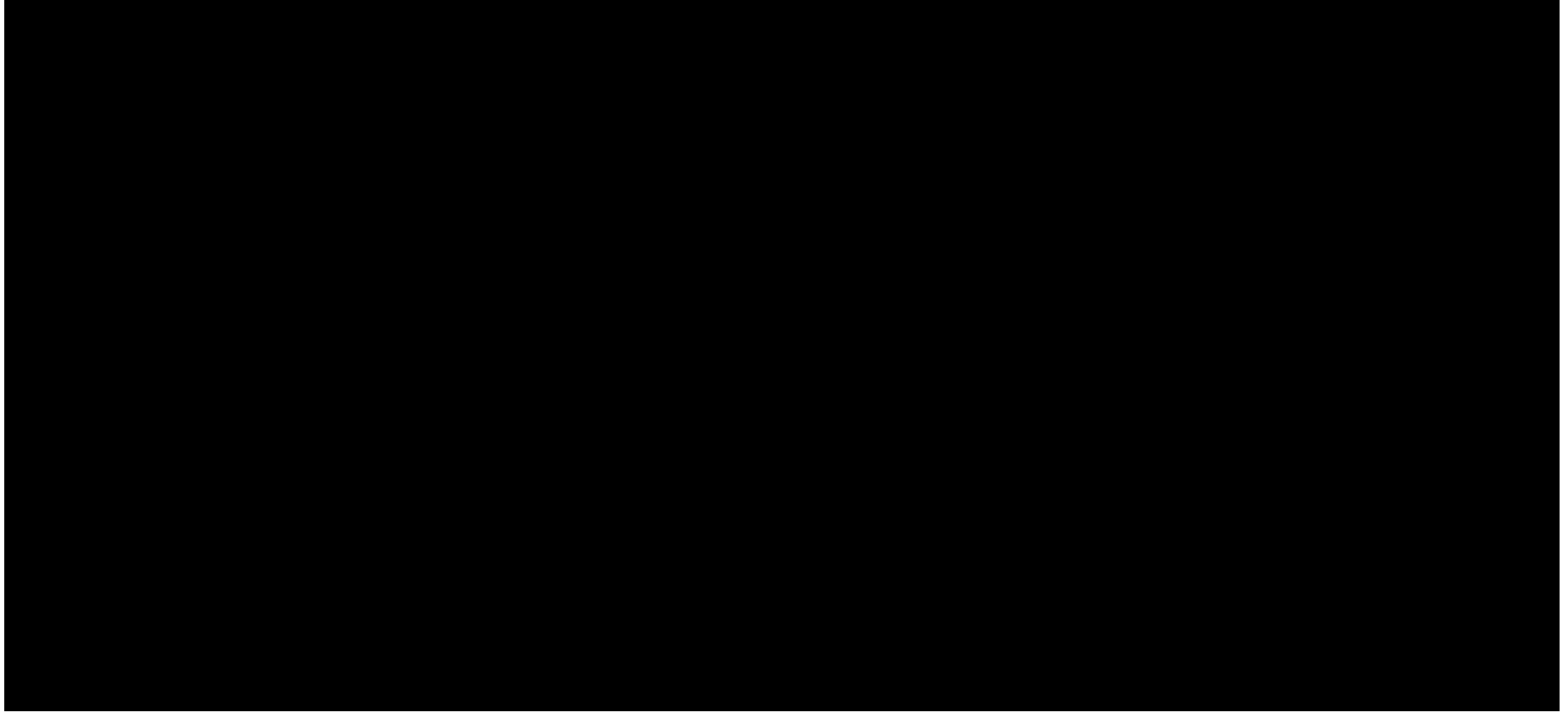
<https://archive.podaac.earthdata.nasa.gov/s3credentialsREADME>

Sample Response

The response is your temporary credentials. See the [AWS Credentials](#) reference.

```
{
  accessKeyId: "AKIAIOSFODNN7EXAMPLE",
  secretAccessKey: "wJalrXUtnFEMI/K7MDENG/bPxrFiCYEXAMPLEKEY",
  sessionToken: "LONGSTRINGOFCHARACTERS.../HJLgV91QJFCMlmY8s1IE0jr0ChLQYmzAqrb5U1ekoQAK6f86HKJFTT2d0NzPgmJN9ZvW5DBwt6XUxC9HAQ0LDPEYEwbjGVKkzSNQh/",
  expiration: "2021-01-27 00:50:09+00:00"
}
```

Use Case #4 - Access Entire Archive



Use Case #4 - Access Entire Archive

```
fs = begin_s3_direct_access()
mur_v42_2020_files =
fs.glob(join("podaac-ops-cumulus-protected/",
"MUR25-JPL-L4-GLOB-v04.2", "202001*.nc"))
mur_v42_2020_Dataset = xr.open_mfdataset(
    paths=[fs.open(f) for f in mur_v42_2020_files],
    combine='by_coords',
    mask_and_scale=True,
    decode_cf=True,
    chunks={'time': 1}) # analysis.
)
mur_v42_2020_Dataset.close()
mur_v42_2020 = mur_v42_2020_Dataset.analysed_ss
mur_v42_2020_gom = mur_v42_2020.sel(lat=slice(-89,
89), lon=slice(-179, 179))
fig = plt.figure(figsize=(16,6))
ax = fig.add_subplot(1, 1, 1, projection=ccrs.PlateCarree())
ax.coastlines()
ax.set_extent([mur_v42_2020_gom.lon.min(),
mur_v42_2020_gom.lon.max()],
mur_v42_2020_gom.lat.min(),
mur_v42_2020_gom.lat.max()])
mur_v42_2020_gom.isel(time=0).plot(ax=ax,
transform=ccrs.PlateCarree(), cmap='Spectral_r')
plt.savefig("pltsavefile.png")
```

ECCO Example:
https://github.com/podaac/ECCO/blob/main/Data_Access/cloud_direct_access_s3.ipynb

aws Services ▾ Search for services, features, marketplace products, and docs [Option+S] account_owner/suresh.vannan@jpl.nasa.gov ap podac-test-account... Oregon ▾ Sup

New EC2 Experience

Tell us what you think

✕

Resources

🔄 ⚙️

You are using the following Amazon EC2 resources in the **US West (Oregon) Region**:

Instances (running)	1	Dedicated Hosts	0	Elastic IPs	0
Instances	1	Key pairs	2	Load balancers	0
Placement groups	0	Security groups	4	Snapshots	0
Volumes	1				

💡 Easily size, configure, and deploy Microsoft SQL Server Always On availability groups on AWS using the AWS Launch Wizard for SQL Server. [Learn more](#) ✕

Launch instance

To get started, launch an Amazon EC2 instance, which is a virtual server in the cloud.

Launch instance ▾

Note: Your instances will launch in the US West (Oregon) Region

Scheduled events

🔄

US West (Oregon)

Service health

🔄 Service Health Dashboard ⌵

Zones

Zone name	Zone ID
us-west-2a	usw2-az2
us-west-2b	usw2-az1
us-west-2c	usw2-az3

Account attributes

🔄

[Supported platforms](#) ⌵

[Default VPC](#) ⌵

Settings

- [EBS encryption](#)
- [Zones](#)
- [EC2 Serial Console](#)
- [Default credit specification](#)
- [Console experiments](#)

Explore AWS

✕

Block Level Storage for EC2 Instances

Use Amazon EBS to provide high performance block level storage for EC2 instances. [Learn more](#) ⌵

Build a Containerized Web Application

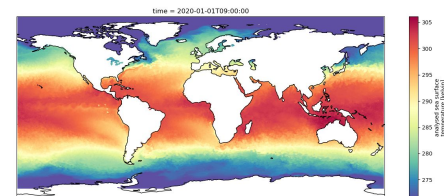
Get started with AWS App Runner, the easiest and fastest way to build a containerized web application on AWS. [Learn more](#) ⌵

Get Up to 40% Better Price Performance

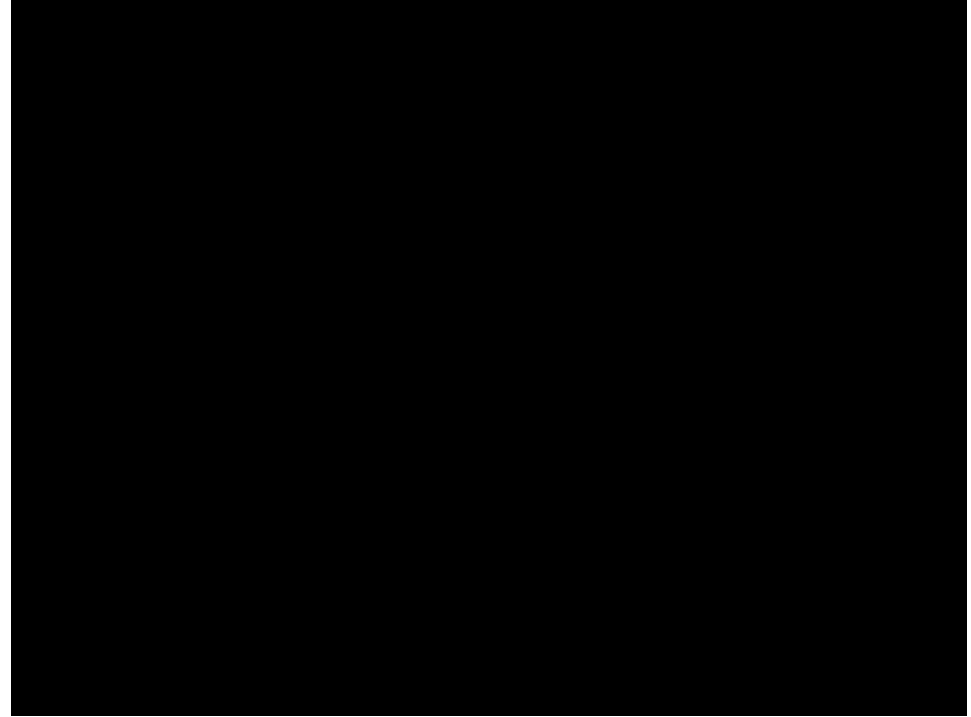
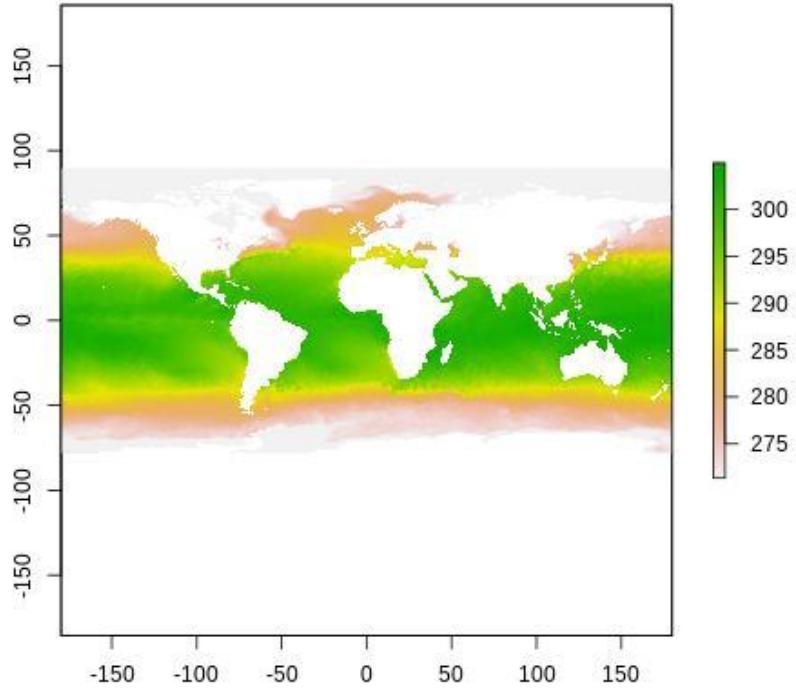
T4g instances deliver the best price performance for burstable general purpose workloads in Amazon EC2. [Learn more](#) ⌵

AWS Processing Cost
\$0.69


Note: Access to data is free -- data processing cost is user responsibility.



Use Case #4 - Access Entire Archive



Use Case #6 - Subset/Transform Data

 **Earthdata Harmony**

Harmony allows you to seamlessly analyze Earth observation data from different NASA data centers

[View Jupyter Notebook Demo](#) [API Documentation](#)

<https://harmony.earthdata.nasa.gov/>

Access Harmony outputs directly from STAC

The Harmony output image is loaded up into an xarray data array directly from the STAC catalog.

```
In [9]: da = stac_cat[list(stac_cat)[0]][entries[0].describe()['name']].to_dask()
da
```

Out[9]: xarray.DataArray (y: 141, x: 293)

	Array	Chunk
Bytes	41.31 kB	41.31 kB
Shape	(141, 293)	(141, 293)
Count	1 Tasks	1 Chunks
Type	uint8	numpy.ndarray

Coordinates:

	(y)	(x)
y	int64 0 1 2 3 4 5 ... 136 137 138 139 140	
x		int64 0 1 2 3 4 5 ... 288 289 290 291 292

Attributes: (0)

Harmony API conforming to OGC API - Coverages

Harmony API for requesting coverages for a range of NASA EOSDIS data using the OGC API - Coverages

Servers:

Computed URL: /no-default-cmr-collection/ogc-api-coverages/1.0.0

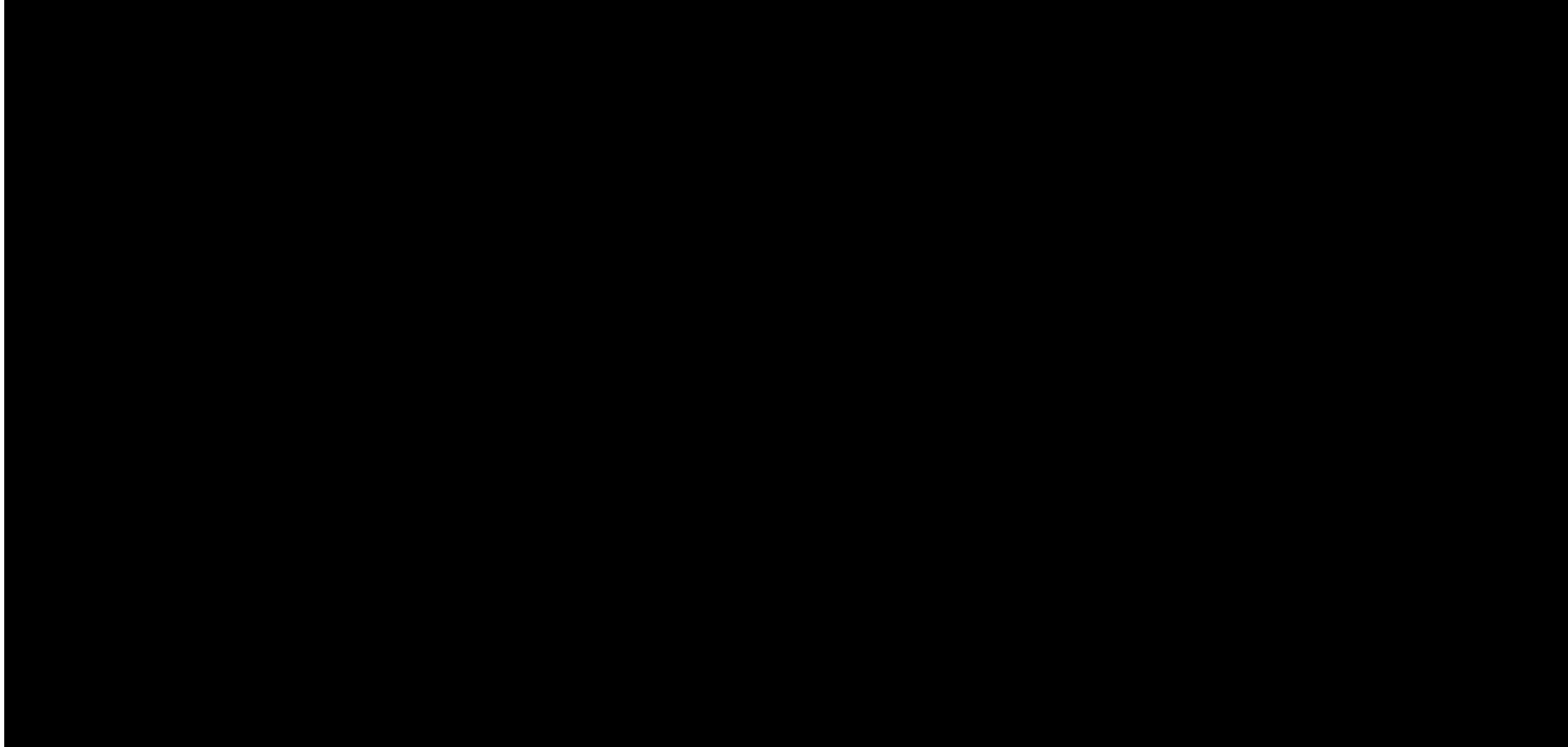
Server variables:

Capabilities

Essential characteristics of this API including information about the data.

- GET / landing page of this API
- GET /conformance information about standards that this API conforms to
- GET /collections Describe the collections in the dataset
- GET /collections/{collectionId} Describe the {collectionId} collection

Use Case #6 - Subset/Transform Data

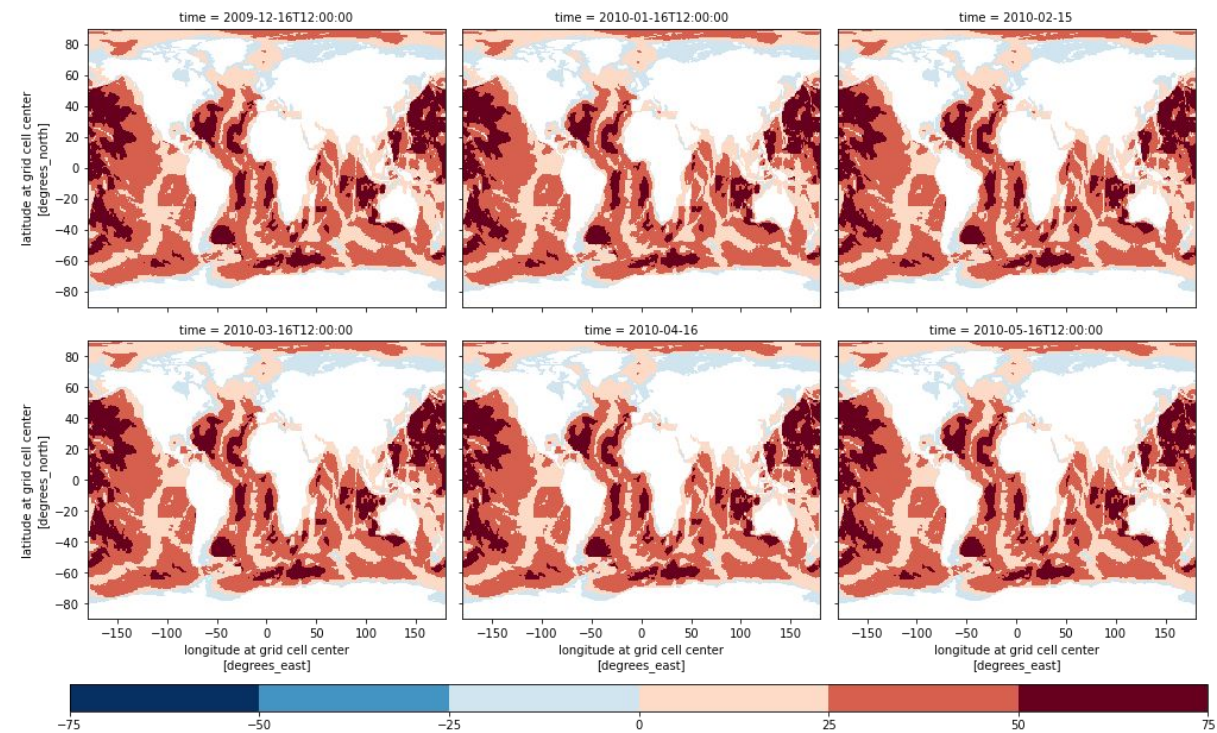


Use Case #6 - Subset/Transform Data

```
#####  
collection=Collection(id='C1990404791-P  
OCLOUD')  
  
harmony_client=harmony_client_login_a  
uth(edl)  
  
request = Request(  
    collection=collection,  
    temporal=[  
        'start': dt.datetime(2010, 10, 1),  
        'stop': dt.datetime(2010, 12, 30)  
    ],  
    format="application/x-zarr"  
)  
#####
```

<https://github.com/nasa/harmony-py> https://github.com/podaac/ECCO/blob/main/Data_Access/cloud_harmony_zarr_reformat.ipynb

Use Case #6 - Subset/Transform Data



https://github.com/podaac/ECCO/blob/main/Data_Access/cloud_harmony_zarr_reformat.ipynb

THREDDS:

- Similar to onsite -- THREDDS for PO.DAAC cloud datasets coming **January, 2022**

HiTIDE:

- Similar to onsite -- backend to be switched to Harmony
- Improving user interface
- Improving tool stability and performance
- Updates to be released to operations **December, 2021**

SOTO:

- Linking to data directly
- Adding additional tools for exploratory data visualization/analysis
- Updates to be released to operations **May 2022**

LAS:

- Exploration phase - No release plans finalized
- Tools are not cloud native

Surfing Ocean Data in the Cloud: The Where, What, Who, and How

1. **Where** do you go to find information about Cloud Data Access and Resources, Migration Timeline, and more?
2. **What** does the new cloud paradigm look like?
3. **Who** to contact if you have questions or need help transitioning your processes in the Cloud?
4. **How** much will it cost me to use Cloud or download data?



Surfing Ocean Data in the Cloud: Where do you go to find information?

For answers go to

PO.DAAC Cloud Data - About page screenshot. The page title is "CLOUD DATA - ABOUT". It includes a navigation menu with links: HOME, FIND DATA, ACCESS DATA, RESOURCES, ABOUT, HELP, and CLOUD DATA (highlighted with an orange box). The main content area has a sidebar with links: ABOUT (Earthdata, Harmony, Earthdata CMR, Earthdata Search), ACCESS DATA, FAQ, RESOURCES, and MIGRATION. The main text area contains an "Introduction: Access to PO.DAAC datasets in the cloud" section, followed by a paragraph about the transition to the cloud, a "Resources" section, and a "What does the new cloud paradigm look like?" section. At the bottom, there is a diagram showing the cloud paradigm with components like Data Storage, Tools & Services, Data Production, and User Cloud Instance. A user is shown interacting with the cloud via a laptop and a mobile device.

PO.DAAC CLOUD DATA PAGES



- ABOUT
- ACCESS DATA
- FAQ
- RESOURCES
- MIGRATION

- ABOUT

 - Earthdata
 - Harmony
 - Earthdata CMR
 - Earthdata Search
- MIGRATION

 - Timeline
 - What to Expect
 - Tutorials
 - Migration FAQs

<https://podaac.jpl.nasa.gov/cloud-datasets/about>

I am interested in migrating to the cloud. How do I do it?

Tutorials

User Goal	Cloud Tutorial or Tool
Find Collections	<ul style="list-style-type: none">PO.DAAC Web Portal (Tutorial)
Find Granules	<ul style="list-style-type: none">Earthdata Search (Tutorial 1, Tutorial 2)Earthdata Search PO.DAAC Cloud Portal
Browse / Download Whole Granules	<ul style="list-style-type: none">Virtual Browse Interface
Subscribe to Granules	<ul style="list-style-type: none">Data Subscriber (Demo, Download)
Direct In-Region Cloud Access	<ul style="list-style-type: none">Example data recipe with ECCO data
Access Data in zarr Cloud Optimized Format	<ul style="list-style-type: none">Example data recipe with ECCO data, using the Harmony netCDF formatting service.Example data recipe with GRACE data
Bulk Download	<ul style="list-style-type: none">Example data recipe with ECCO data
Transform: How do I subset L2 data?	<ul style="list-style-type: none">Harmony Subsetting (Jupyter Notebook Tutorial, Earthdata Search)

Migration FAQs

Are there any collections in the cloud I can try out right now?

Public cloud collections are those that are new to PO.DAAC and went immediate collections are only available through the cloud. Some examples of these are the new collections... will soon also see on-premise access.

How do I know

Why are there s

Other Question

WHY USE THE CLOUD?

HOW DO I BRING MY OWN SCRIPT TO THE CLOUD?

The Earthdata Cloud Primer has a downloadable PDF titled 'Bring your own script to the cloud'.

This tutorial explains how you can create and execute a custom script using AWS. AWS supports multiple ways to achieve this. One option, the AWS Lambda compute service, allows you to run code without provisioning or managing servers. It executes your code only when needed and scales automatically, from a few requests per day to thousands per second. You pay only for the compute time you consume - there is no charge when your code is not running. With AWS Lambda, you can run code for virtually any type of application or backend service - all with zero administration. AWS Lambda runs your code on a high-availability compute infrastructure and performs all of the administration of the compute resources, including server and operating system maintenance, capacity provisioning and automatic scaling, code monitoring and logging ...

CAN I STILL DOWNLOAD DATA FROM PO.DAAC?

WHAT CLOUD, REGION, AVAILABILITY ZONE, ET

HOW MUCH WILL IT COST ME TO DOWNLOAD

HOW MUCH WILL IT COST ME TO USE THE CLO

HOW CAN I GET STARTED USING CLOUD DATA?

I AM INTERESTED IN MIGRATING TO THE CLOUD

HOW DO I GET 'EARLY ACCESS' TO PO.DAAC DA

WHAT IS "DIRECT S3 ACCESS" ?



PO.DAAC in the CLOUD

Forum home • PO.DAAC Forums • PO.DAAC in the CLOUD

FORUM TOPICS
8 CLOUD DATA - ACCESS

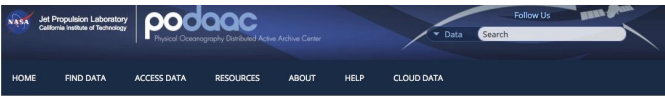
NEW TOPIC Search this forum... Search

TOPICS	REPLIES
1 CLOUD DATA - RESOURCES by podaac » Fri Jul 09, 2021 10:30 am	0
2 CLOUD DATA - ABOUT by podaac » Wed Jul 07, 2021 9:46 pm	0
3 CLOUD DATA - FAQ by podaac » Wed Jul 07, 2021 9:35 pm	0
4 CLOUD DATA - MIGRATION by podaac » Wed Jul 07, 2021 9:22 pm	0
5 Retirement of PO.DAAC Drive by podaac » Tue Jul 13, 2021 2:06 pm	282
6 Tutorial: Bulk download from the PO.DAAC and NASA Earthdata by podaac » Fri Jul 09, 2021 10:19 am	47
7 CLOUD DATA - ACCESS DATA by podaac » Wed Jul 07, 2021 11:14 pm	116
8 Tutorial: Scripted Access to PO.DAAC Data in the cloud by podaac » Wed May 19, 2021 9:10 am	7603

Display topics from previous: All Topics Sort by Post time Descending Go



<https://podaac.jpl.nasa.gov/cloud-datasets/migration>



CLOUD DATA - ABOUT

- ABOUT
- Earthdata
- Harmony
- Earthdata
- CMR
- Earthdata
- Search
- ACCESS DATA
- FAQ
- RESOURCES
- MIGRATION

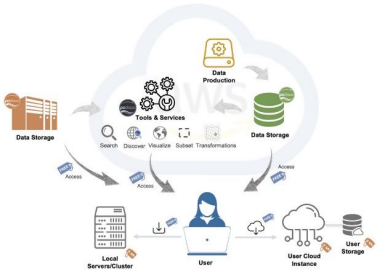
Introduction: Access to PO.DAAC datasets in the cloud

PO.DAAC is in the process of moving its data holdings to the cloud. The **Cloud Data** page at PO.DAAC offers access to resources to help guide data users in discovering, accessing, and utilizing cloud data.

The **Resources** section provides information, updates, data recipes, and other materials that help support the user in discovering, accessing and using datasets from and within the Earthdata Cloud. The **Migration** section offers information on the transition timeline and datasets, what to expect, and migration-specific FAQs and tutorials. For questions on what this transition means, please see the **FAQ** section.

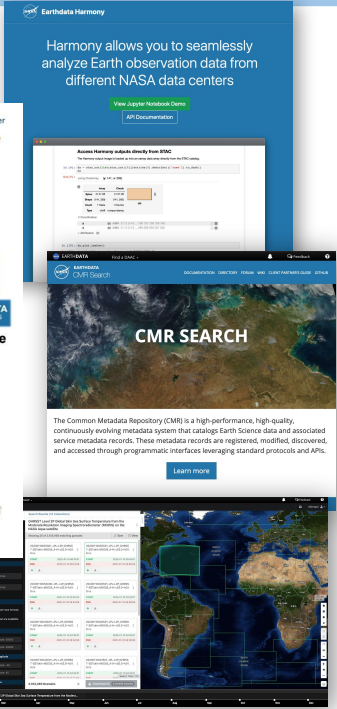
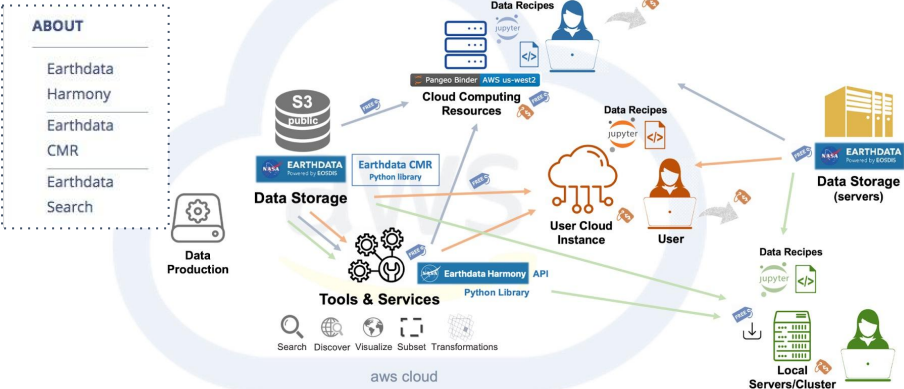
During this transition to the cloud, this Cloud Data page will be evolving and continuously updated with new content and data - please check back regularly.

What does the new cloud paradigm look like?



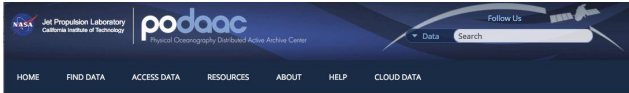
- In the new paradigm, the data storage, and DAAC-provided tools and services built on top of the data are co-located in the Earthdata Cloud (hosted in AWS cloud). So what does this mean to you, the user of the data?
- PO.DAAC will provide the same level of service to users, while handling large volumes of data, by leveraging the scalability capability of the cloud.
 - PO.DAAC will provide services that are co-located with the data in the cloud to minimize the amount of data downloaded, allowing you to select and access only the data you are interested in, making the data more analysis ready - whether the next step in your workflow is to download and analyze/do your work, or the next step is

Cloud Ecosystem
3 Data Access Pathways



Regardless of the access pathway, services and systems like the **Earthdata Harmony**, **Earthdata Common Metadata Repository (CMR)**, and **Earthdata Search** can be powerful resources in supporting data search, discovery, transformation and access, for data use from and/or within the cloud.

<https://podaac.jpl.nasa.gov/cloud-datasets/about>



CLOUD DATA - MIGRATION

ABOUT

ACCESS DATA

FAQ

RESOURCES

MIGRATION

Timeline

What to Expect

Tutorials

Migration FAQs

During 2021 PO.DAAC is in the process of migrating its data archive to the Earthdata Cloud, hosted in Amazon Web Services (AWS). During this transition, some data will continue to be available from the on-premise archive, while some data will also be available from and within the Earthdata Cloud.

Timeline

The dates listed in the tables below are the dates when on-premise access to the collections will **no longer** be available. At some point before the date below, **discoverability** (i.e. they won't show up on collection landing pages) of the on-premise endpoints will be turned off, while access to them will remain until the final date. Remember that while the endpoints to the data are changing from on-premise to cloud endpoints, download capabilities remain unaffected for the data user. Users will always be able to download data from PO.DAAC.

Phase 1 (January 31st 2022)	•
Phase 2 (March 28th 2022)	•
Phase 3 (March 28th 2022)	•
Phase 4 (June 6th 2022)	•

What to Expect

You will notice there will be some duplicate collections available. For example, if you search for "VIIRS L2P-v2.61" in Earthdata Search, you will see two collections. One of these is our normal, on-premise collection while the other is the cloud hosted collection.

The **PO.DAAC Web Portal** will label cloud hosted datasets as **CLOUD ENABLED** in an orange rectangle you know, at a glance, which datasets are cloud-enabled from the dataset search and dataset landing page. In the future, we will be removing discoverability of the "on-premise" collection and only the cloud version will be available, and you will not see duplicates.

Tutorials

User Goal

Find Collections

Timeline

PO.DAAC data will be migrated to the cloud in a set of four Phases. The datasets and migration dates are below, but dates may be refined over time. For up to date information, please subscribe to the *PO.DAAC mailing list*. If you are having trouble finding a collection below, the transition date is also listed on each collection's landing page.

The dates listed in the tables below are the dates when on-premise access to the collections will **no longer** be available. At some point before the date below, **discoverability** (i.e. they won't show up on collection landing pages) of the on-premise endpoints will be turned off, while access to them will remain until the final date. Remember that while the endpoints to the data are changing from on-premise to cloud endpoints, download capabilities remain unaffected for the data user. Users will always be able to download data from PO.DAAC.

Phase 1 (January 31st 2022)

Phase	Cloud Only Access Date	Collections
Phase 1	January 31st 2022	<ul style="list-style-type: none">• MetOp-A ASCAT Level 2 Ocean Surface Wind Ocean• CYGNSS Level 1 Climate Data Record Version 1• GHRSSST Level 2P Global Sea Surface Skin Temperature Resolution Imaging Spectroradiometer (MODIS)• GHRSSST Level 2P Global Sea Surface Skin Temperature Resolution Imaging Spectroradiometer (MODIS)• GHRSSST Level 4 MUR Global Foundation Sea Surface Temperature (v4.1)• GHRSSST Level 2P OSPO dataset v2.61 from (GDS v2)• GHRSSST Level 2P Global Sea Surface Skin Temperature Infrared Imager/Radiometer Suite (VIIRS) on Suomi NPP• GHRSSST Level 2P 1m Depth Global Sea Surface Temperature from the VIIRS satellite• GHRSSST Level 2P 1m Depth Global Sea Surface Temperature from the VIIRS satellite
Phase 2	March 28th 2022	
Phase 3	March 28th 2022	
Phase 4	June 6th 2022	

Migration FAQs

Are there any collections in the cloud I can try out right now?

Public cloud collections are those that are new to PO.DAAC and went immediately into the cloud. These collections are only available through the cloud. Some examples of these are the **ECCO data products**. As new collections become available, you will see them show up on our Portal, CMR, and Earthdata Search. You will soon also see migrated datasets from PO.DAAC on-premise into the cloud and both will be available until on-premise access ends.

How do I know if a collection is in the cloud or not?

Why are there so few collections in the first phase? Why so many in other phases?

Other Questions?

How do you know when a dataset will be migrated to the CLOUD?

Phase 1 (January 31st 2022)		
Phase	Cloud Only Access Date	Collections
Phase 1	January 31 st 2022	<ul style="list-style-type: none">• MetOp-A ASCAT Level 2 Ocean Surface Wind Vectors Optimized for Coastal Ocean• CYGNSS Level 1 Climate Data Record Version 1.0• GHR SST Level 2P Global Sea Surface Skin Temperature from the Moderate Resolution Imaging Spectroradiometer (MODIS) on the NASA Aqua satellite (GDS2)• GHR SST Level 2P Global Sea Surface Skin Temperature from the Moderate Resolution Imaging Spectroradiometer (MODIS) on the NASA Terra satellite (GDS2)• GHR SST Level 4 MUR Global Foundation Sea Surface Temperature Analysis (v4.1)• GHR SST Level 2P OSPO dataset v2.61 from VIIRS on the NOAA-20 satellite (GDS v2)• GHR SST Level 2P Global Sea Surface Skin Temperature from the Visible and Infrared Imager/Radiometer Suite (VIIRS) on the Suomi-NPP satellite (GDS2)• GHR SST Level 2P 1 m Depth Global Sea Surface Temperature from VIIRS on Suomi NPP (GDS2) V1• GHR SST Level 2P 1 m Depth Global Sea Surface Temperature version 3.0 from the Visible Infrared Imaging Radiometer Suite (VIIRS) on the Suomi NPP satellite (GDS2)• GHR SST Level 2P OSPO dataset v2.61 from VIIRS on S-NPP Satellite (GDS v2)
Phase 2 (March 28th 2022)		
Phase 3 (March 28th 2022)		
Phase 4 (June 6th 2022)		

The Dataset Migration dates by Phases

Dataset DOI Landing Page

GHR SST Level 2P OSPO dataset v2.61 from VIIRS on the NOAA-20 satellite (GDS v2)

SHARE THIS PAGE

This dataset will be available through Earthdata Cloud only, starting **January 31st 2022**. [Learn More](#)

Information Data Access Documentation Citation Version History

Direct Access

PO.DAAC DRIVE https://podaac-tools.jpl.nasa.gov/drive/files/allData/ghrsst/data/GDS2/L2P/VIIRS_N20/OSPO/v2.61
PO.DAAC Drive

OPENDAP DATA https://podaac-opendap.jpl.nasa.gov/opendap/allData/ghrsst/data/GDS2/L2P/VIIRS_N20/OSPO/v2.61/
The OPENDAP base directory location for the collection.

How do you see the PO.DAAC cloud collections?

[Home](#)

Find Data

Datasets are being migrated to Earthdata Cloud. [Learn More](#)



Select Filter (Clear Filter)

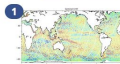
Found **115** matching dataset(s).

 Need help selecting a dataset?
Visit the [PO.DAAC Forum](#)

- [Advanced search](#)

View mode: [List](#) | [Table](#)

Prev 1 2 3 4 5 6 7 8 9 10 11 12 Next



CLOUD ENABLED

Sentinel-6A MF Jason-CS L2 P4 Altimeter Low Resolution (LR) NRT Ocean Surface Topography (JASON_CS_S6A_L2_ALT_LR_STD_OST_NRT_F)

SEA SURFACE TOPOGRAPHY: OCEAN WAVES

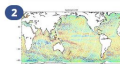
Platform/Sensor: Sentinel-6A/Poseidon-4 Radar Altimeter , Sentinel-6A/DORIS , Sentinel-6A/GNSS RECEIVER , Sentinel-6A/AMR

Processing Level: 2

Coverage: South: 66.15 West: 180 North: 66.15 East: 180

Start/End Date: 2020-Nov-30 to Present

Description: Provides low resolution (LR) near real time (NRT; 3-hour latency) measurements of sea surface height anomaly (SSHA), Significant Wave Height (SWH), and Wind Speed, along with 1 Hz and ... [more](#)



CLOUD ENABLED

Sentinel-6A MF Jason-CS L2 P4 Altimeter Low Resolution (LR) STC Ocean Surface Topography (JASON_CS_S6A_L2_ALT_LR_STD_OST_STC_F)

SEA SURFACE TOPOGRAPHY, OCEAN WAVES

Platform/Sensor: Sentinel-6A/Poseidon-4 Radar Altimeter , Sentinel-6A/AMR-C , Sentinel-6A/DORIS , Sentinel-6A/GNSS RECEIVER

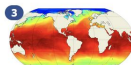
Processing Level: 2

Coverage: South: +6

Start/End Date: 2020 Dec 3 to Present

Description: Provides low resolution (1.5

Description: Provides low resolution (LR) short time critical (STC, 36-hour latency) measurements of sea surface height anomaly (SSHA), Significant Wave Height (SWH), and Wind Speed, along with ... [more](#)



CLOUD ENABLED

1 to 10 km (15)
10 to 50 km (2)

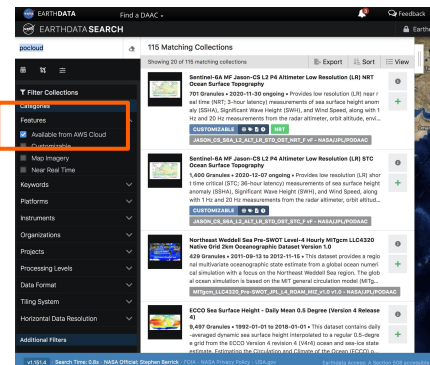
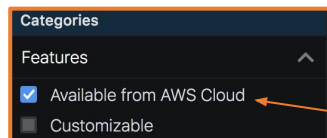
Additional Filters

☒ Earthdata Cloud Enabled (115)

There are several ways to see the PO.DAAC cloud collections.

For public collections, you can use Earthdata Search and the PO.DAAC Web portal filter options.

- On the PO.DAAC Web Portal dataset listing, select the “[Earthdata Cloud Enabled](#)” filter on the left hand side
- On Earthdata Search, search for ‘POCLOUD’ in search box or select the ‘[Available from AWS Cloud](#)’ feature checkbox on the left hand side



The [PO.DAAC Web Portal](#) will label cloud hosted datasets as **CLOUD ENABLED** in an orange rectangle. This will let you know, at a glance, which datasets are cloud-enabled from the dataset search and dataset landing pages.

How do you know if a dataset is in the CLOUD or not?

[Home](#)

Find Data

Datasets are being migrated to Earthdata Cloud. [Learn More](#)

Select Filter

(Clear Filter)

Processing Levels
2 - Geophys. Variables, Sensor Coordinates (2)

Keywords
Oceans (2)

Platforms
NOAA-20 (JPSS-1) (2)

Instruments
VIIRS (2)

Projects
GHRSSST (2)

Horizontal Data Resolution
500 to 1000 meters (2)

Additional Filters
☐ Earthdata Cloud Enabled (1)

Found 2 matching dataset(s).

Advanced search

Free Text Search

Enter search text
VIIRS_N20-OSPO-L2P-v2.

Temporal Search

Start Date

Stop Date

Perform Search

Reset

Need help selecting a dataset?
Visit the PO.DAAC Forum

View mode: List | Table

1

GHRSSST Level 2P OSPO dataset v2.61 from VIIRS on the NOAA-20 satellite (GDS v2) (VIIRS_N20-OSPO-L2P-v2.61)
OCEAN TEMPERATURE
Platform/Sensor: NOAA-20/VIIRS
Processing Level: 2P
Coverage: South: -90, West: -180, North: 90, East: 180
Start/End Date: 2018-Jan-5 to Present
Description: NOAA-20 (N20/JPSS-1/J1) is the second satellite in the US NOAA latest generation Joint Polar Satellite System (JPSS). N20 was launched on November 18, 2017. In conjunction with the ... [more](#)

2

GHRSSST Level 2P OSPO dataset v2.61 from VIIRS on the NOAA-20 satellite (GDS v2) (VIIRS_N20-OSPO-L2P-v2.61)
OCEAN TEMPERATURE
Platform/Sensor: NOAA-20/VIIRS
Processing Level: 2P
Coverage: South: -90, West: -180, North: 90, East: 180
Start/End Date: 2018-Jan-5 to Present
Description: NOAA-20 (N20/JPSS-1/J1) is the second satellite in the US NOAA latest generation Joint Polar Satellite System (JPSS). N20 was launched on November 18, 2017. In conjunction with the ... [more](#)

GHRSSST Level 2P OSPO dataset v2.61 from VIIRS on the NOAA-20 satellite (GDS v2)

SHARE THIS PAGE

This dataset will be available through Earthdata Cloud only, starting January 31st 2022. [Learn More](#)

Information

Data Access

Documentation

Citation

Version History

Direct Access

PO.DAAC DRIVE https://podaac-tools.jpl.nasa.gov/drive/files/allData/ghrsst/data/GDS2/L2P/VIIRS_N20/OSPO/v2.61
PO.DAAC Drive

OPENDAP DATA https://podaac-opendap.jpl.nasa.gov/opendap/allData/ghrsst/data/GDS2/L2P/VIIRS_N20/OSPO/v2.61/
The OPeNDAP base directory location for the collection.

Web Service <https://podaac.jpl.nasa.gov/ws/search/granule/?datasetId=PODAAC-GHV20-2PO61>
(Search Granule)

Format (Compression)
NETCDF

Read Software

- https://podaac-tools.jpl.nasa.gov/drive/files/allData/ghrsst/sw/generic_nc_readers
Generic netCDF readers provided in multiple programming languages

In the current Local Archive

In the CLOUD

GHRSSST Level 2P OSPO dataset v2.61 from VIIRS on the NOAA-20 satellite (GDS v2)

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CLOUD ENABLED

This dataset will be available through Earthdata Cloud only, starting January 31st 2022. [Learn More](#)

Information

Data Access

Documentation

Citation

Direct Access

DATA TREE <https://cmr.earthdata.nasa.gov/virtual-directory/collections/C1996880450-POCLOUD>
HTTPS endpoint for data browse and download

Earthdata Search <https://search.earthdata.nasa.gov/search/granules?p=C1996880450-POCLOUD>
Browse granule search results | [Earthdata Search](#)

Format (Compression)
netCDF-4

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CLOUD DATA - RESOURCES

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Physical Oceanography Distributed Active Archive Center

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Data Recipe: Working with ECCO data in Earthdata Cloud

Tutorial: Scripted Access to PO.DAAC Data in the cloud

PO.DAAC Cloud Tutorials

Workshop: Working with Cloud-Based NASA Earth Observations Data and Tools

Data Recipe: Explore coastal processes with satellite data in the cloud

Data Recipes for SWOT Applications Early Adopters Hackweek

Data Recipe: Co-locate satellite and in-situ data for cross-validation

Webinar: PO.DAAC: An Open Ocean of Remote Sensing and In Situ Data for Science in the Cloud

Data Recipe: Analysis Ready Data - MODIS L2P SST example

Article: Jupyter Notebooks on AWS EC2 in 12 (mostly easy) steps

Article: Skip the download! Stream NASA data directly into Python objects

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Data Recipe: Working with ECCO data in Earthdata Cloud

Tutorial: Scripted Access to PO.DAAC Data in the cloud

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PO.DAAC Tutorial

GitHub

A place to find cloud relevant tutorials on how to use Earthdata tools, services, and data.

Most tutorials in this repository are authored by the PO.DAAC.

Data Recipes

Amazon River Estuary Exploration

Use Case: Study Amazon Estuaries with Data from the EOSDIS Cloud

Overview

SWOT GR-2021

SWOT

Scripted Access to PO.DAAC DATA in the cloud

<https://podaac.jpl.nasa.gov/cloud-datasets/resources>

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Physical Oceanography Distributed Active Archive Center

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CLOUD DATA - Frequently Asked Questions (FAQ)



CLOUD DATA - FAQ

ABOUT

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FAQ

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MIGRATION

If your question is not here feel free to submit it to us via **Forum** or by emailing to podaac@podaac.jpl.nasa.gov

WHY USE THE CLOUD?

HOW DO I BRING MY OWN SCRIPT TO THE CLOUD?

The Earthdata Cloud Portal

This tutorial explains ways to achieve this, provisioning or managing a few requests per day to change when your code application or backend availability compute including server and monitoring and logging.

HOW MUCH WILL IT COST ME TO USE THE CLOUD?

While downloading data from PO.DAAC is free, the usage of cloud compute resources to subsequently do analysis on that data is something the end user is expected to pay for. Determining this cost can be challenging in the resources available. One resource which contains a section on costs. It is usually best to resources once you understand make.

HOW MUCH WILL IT COST ME TO DOWNLOAD DATA FROM PO.DAAC?

There is absolutely **no charge** to download data from PO.DAAC. If you download data to your laptop, that's all there is to it. We do recommend investigating processing data in the cloud, as the increasing volumes of data, and the proximity to other data of interest in the cloud, might yield faster or more timely performance, but we understand that this process has to be done on a case by case basis. If you'd like to do your analysis next to the data, in the Amazon Web Services (AWS) cloud, please see the next question for cost associated with that.

- CAN I STILL DOWNLOAD DATA FROM PO.DAAC?
- WHAT CLOUD, REGION, OR PROVIDER?
- HOW MUCH WILL IT COST TO USE THE CLOUD?
- HOW MUCH WILL IT COST TO DOWNLOAD DATA FROM PO.DAAC?
- HOW CAN I GET STARTED?
- I AM INTERESTED IN MIGRATING MY DATA TO THE CLOUD.
- HOW DO I GET 'EARLY ACCESS' TO PO.DAAC DATA IN THE CLOUD?
- WHAT IS "DIRECT S3 ACCESS"?
- WHERE DO I FIND GLOSSARY AND ACRONYMS EXPLAINED?

PO.DAAC FORUM



PO.DAAC in the CLOUD

Forum home • PODAAC Forums • PO.DAAC in the CLOUD

FORUM	TOPICS	POSTS	LAST POST
CLOUD DATA - ACCESS	8	5	by podaac Tue Jul 13, 2021 2:06 pm

NEWTOPIC* Search this forum...

8 topics • Page 1 of 1

TOPICS	REPLIES	VIEWS	LAST POST
CLOUD DATA - RESOURCES by podaac » Fri Jul 09, 2021 10:30 am	0	176	by podaac Fri Jul 09, 2021 10:30 am
CLOUD DATA - ABOUT by podaac » Wed Jul 07, 2021 9:46 pm	0	85	by podaac Wed Jul 07, 2021 9:46 pm
CLOUD DATA - FAQ by podaac » Wed Jul 07, 2021 9:35 pm	0	79	by podaac Wed Jul 07, 2021 9:35 pm
CLOUD DATA - MIGRATION by podaac » Wed Jul 07, 2021 9:22 pm	0	87	by podaac Wed Jul 07, 2021 9:22 pm
Retirement of PO.DAAC Drive by podaac » Tue Jul 13, 2021 2:06 pm	0	282	by podaac Tue Jul 13, 2021 2:06 pm
Tutorial: Bulk download from the PO.DAAC and NASA Earthdata by podaac » Fri Jul 09, 2021 10:19 am	0	47	by podaac Fri Jul 09, 2021 10:19 am
CLOUD DATA - ACCESS DATA by podaac » Wed Jul 07, 2021 11:14 pm	0	118	by podaac Wed Jul 07, 2021 11:14 pm
Tutorial: Scripted Access to PO.DAAC Data in the cloud by podaac » Wed May 19, 2021 9:10 am	0	7603	by podaac Wed May 19, 2021 9:10 am

Display topics from previous: Sort by

FORUM: PODAAC in the Cloud: <https://podaac.jpl.nasa.gov/forum/cloud>

PO.DAAC CLOUD DATA PAGES



Need Help!

Find resources to support you in navigating the Cloud migration:

- <https://podaac.jpl.nasa.gov/cloud-datasets/about>
- <https://podaac.jpl.nasa.gov/cloud-datasets/migration#Tutorials>
- <https://podaac.jpl.nasa.gov/cloud-datasets/faq>
- <https://podaac.jpl.nasa.gov/cloud-datasets/resources>



FORUM: PO.DAAC in the CLOUD



Submit your questions:

- **FORUM:** <https://podaac.jpl.nasa.gov/forum/cloud>
- **EMAIL:** podaac@podaac.jpl.nasa.gov



For up to date information and latest announcements Subscribe to the

- **PO.DAAC Mailing List:** <https://podaac.jpl.nasa.gov/MailingList>



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