NASA Earth Data Cloud

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Earthdata Cloud (EDC)

- "Managed" commercial cloud for Earth Observations on AWS
- Improves the efficiency of NASA's data systems operations – maintaining free/open data policy
- Initially architected for NASA DAACs (applications and mission data ingest, archive, distribution)
- Operational July 2019. First in, Common Metadata Repository (CMR) Application, Earthdata Search Application, 6 PB Sentinel-1 mission data.
- 23 PB of mission data in EDC as of May 2022 with plan to onboard 50/75 top datasets by Q4 CY 2022, establishing initial "data lake".

What is the Earthdata Cloud Platform?

Earthdata Cloud Platform (NGAP - NASA General Application Platform) is a multi-account, Infrastructure-as-a-Service (IaaS) cloud platform operating on Amazon Web Services (AWS) under a single Earth System Data and Information System (ESDIS) owned top level "payer account", providing shared cloud services and controls to EOSDIS. ESDIS Managed / EED Operated.

Maximizes Autonomy

Be a platform, not a gate; foster experimentation/innovation and support production needs of application owners

Maximizes Flexibility

Provide projects the freedom to implement solutions that fit their problem domains

Shared Services & Controls

Platform manages common shared services & controls to reduce duplication, system complexity, and cost across EOSDIS

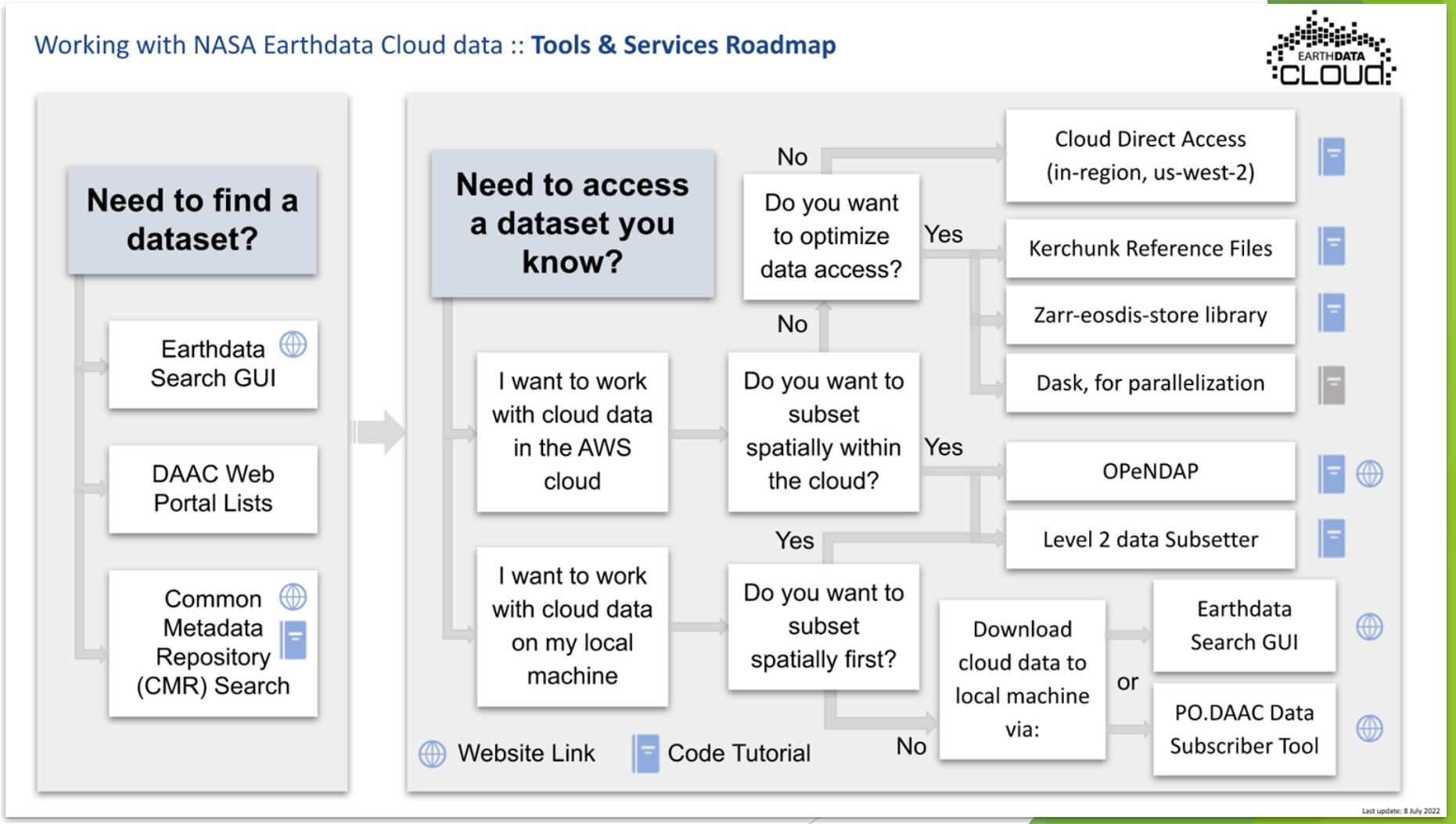
Earthdata Cloud Cookbook

Cheatsheets & Guides

demo

Tools & Services Roadmap

- Practical guide for learning and selecting the right tool or service for a given use case



https://nasa-openscapes.github.io/earthdata-cloud-cookbook/cheatsheet.html#tools-services-roadmap

Earthdata Cloud Cookbook

Supporting NASA Earth science research teams' migration to the cloud

- Curated collection of tutorials have been iterated on and adapted following versions and feedback from interactive training events
- Focus on the common steps across DAACs/users
- For self-paced learning
- Links back to underlying GitHub repo
- Under active, open development

A place to learn, share, and experiment with NASA Earthdata on the Cloud. We know this has a lot of moving parts, and we are iterating as we go, and welcome feedback and contributions.

https://nasa-openscapes.github.io/earthdata-cloud-cookbook/

Tools and access development

earthaccess: simplifying access

Overview

TL;DR: **earthdata** is a Python package to search, preview and access NASA datasets (on-prem or in the cloud) with a few lines of code.

```python
from earthdata import Auth, DataGranules, Store

# first we authenticate with NASA EDL
auth = Auth().login(strategy="netrc")

# Then we build a Query with spatiotemporal parameters
GranuleQuery = DataGranules().concept_id("C1575731655-LPDAAC_ECS").bounding_box(-134.7,58.9,-133.9,59.2)

# We get the metadata records from CMR
granules = GranuleQuery.get()

# Now it{s time to download (or open) our data granules list with get()
files = Store(auth).get(granules, local_path='./data')

# Now to the important science!
```

https://nasa-openscapes.github.io/

How can users interact with the data?

- Work with the data in the cloud
  - Jupyter Notebooks
  - EC2
  - Amazon tools
- Download the data locally

Why does all of this matter?

- Accelerate science
- Work with curated data sets
- Facilitate collaboration
- Expand the use of data
  - No downloads required
  - Not limited by local storage and compute
- Upcoming missions (NISAR, SWOT, SBG, etc.) have greatly increased data volumes
- Greater understanding likely comes from combining data from multiple missions

Thanks!

Questions?

- http://earthdata.nasa.gov
- https://nasa-openscapes.github.io/