DAACs and Data Producers: in an Earthdata Cloud World

Airborne and Field Data Workshop
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12 DAACs: Science Focus Areas

**Alaska Satellite Facility DAAC**
- SAR Products, Sea Ice, Polar Processes, Geophysics

**Land Processes DAAC**
- Land Cover, Surface Reflectance, Radiation, Temperature, Topography, Vegetation Indices

**National Snow and Ice Data Center DAAC**
- Frozen Ground, Glaciers, Ice Sheets, Sea Ice, Snow, Soil Moisture

**Physical Oceanography DAAC**
- Gravity, Sea Surface Temperature, Ocean Winds, Topography, Circulation & Currents

**Goddard Earth Sciences Data and Information Services Center**
- Global Precipitation, Solar Irradiance, Atmospheric Composition, and Dynamics, Global Modeling

**Socioeconomic Data and Applications Center**
- Human Interactions, Land Use, Environmental Sustainability, Geospatial Data

**Physical Oceanography DAAC**
- Gravity, Sea Surface Temperature, Ocean Winds, Topography, Circulation & Currents

**Crustal Dynamics Data Information System**
- Space Geodesy, Solid Earth

**Ocean Biology DAAC**
- Ocean Biology, Sea Surface Temperature

**Level 1 and Atmosphere Archive and Distribution System (LAADS) DAAC**
- MODIS Level-1 and Atmosphere Data Products

**Global Hydro meteorology Resource Center DAAC**
- Hazardous Weather, Lightning, Tropical Cyclones and Storm-induced Hazards

**Atmospheric Science Data Center**
- Radiation Budget, Clouds, Aerosols, Tropospheric Chemistry

**EOSDIS Core System (ECS) Sites**
Primary DAAC Responsibilities

- Data Publication
- Data Access
- User Support

Make NASA Earth Science data as FAIR as practical:

Credit: Sangya Pundir via [Wikimedia Commons](https://commons.wikimedia.org), CC-SA 4.0
Different DAACs, Different Systems

Having multiple DAACs is a strength:
• Different science communities have different needs
• DAACs are Science Enabling Centers

But differences, particularly unnecessary differences, can be a challenge for both Data Producers and Data Users.

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Earthdata Cloud

- Evolution of the infrastructure for the Earth Observing System Data and Information System (EOSDIS)
- A common platform, using public cloud (Amazon Web Services) for delivering data and services
- A migration that will take years to complete

https://earthdata.nasa.gov/eosdis/cloud-evolution
Why?

- Enable user access to large volume data
- Remove barriers to cross-DAAC data access and tools
- Enable synergy across the ESDIS elements, particularly the DAACs

Enable the next level of Open Science, including Analysis In Place

Credit: Matthew Hanson, Element 84
Evolving ESDIS and DAAC Responsibilities

● Enable “Analysis in Place” for data where appropriate
  ○ Cloud Optimized data formats
  ○ High quality spatiotemporal and variable metadata
  ○ Direct S3 Access
  ○ Spatiotemporal Asset Catalogs (STAC)

● Use common tools where practical (Harmony, OPeNDAP, …)

● Create & maintain domain-specific tools where necessary
Earthdata Pub

Initiative to improve DAAC interaction with data producers during data publication

- Data publication workflow software hosted in the Earthdata Cloud
- Provides a common interface
- Uses common terminology
  - Terminology intended to be understood by data producers
- Provides central location of data producers resources
Data publication is a series of activities to make data products discoverable, accessible, and usable by the public user community.

Data publication is a collaborative process between the data producer and the DAAC.
Earthdata Pub

Data Producers can use Earthdata Pub to:

- LEARN: Find instructions on how to publish with a DAAC
- START: Initiate the publication process for their data product
- SUBMIT: Provide information and data to the DAAC needed for publication
- TALK: Communicate with DAAC staff
- MONITOR: Check status of publication request
First release of Earthdata Pub is available for DAAC use

Spring 2022

Additional DAACs to implement

Summer 2022+

Spring/Summer 2022

GHRC and ORNL DAACs first to implement