NASA Tools and Resources for Airborne Data Users

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Categories of “Tools” and “Resources”

Use of airborne and field data may need more than just data file access. There are various activities for which software (“Tools”) and information “Resources” can help data users.

ADMG categorizes tools as:

Discover / Learn: Explore what information is available and learn more from documents and details

Search: Find the data or information we may need to do our work and determine if it is useful

Data Access: Download or read needed data files

Visualize: Look at data in a spatial or temporal manner. Can include maps or figures.

Analyze: Use data in some way

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ADMG Airborne and Field Data Tools Table

Updated Mar 2022

Tool Type	Tool Name	Description	Available Campaigns
Search and Data Access	Earthdata Search	General search tool for locating data using filters. Filter by organization to locate data at one DAAC [ALL]	All public campaign data in EOSDIS system
Search and Data Access	Suborbital Data Portal	A specialized Earthdata Search Portal for Airborne and Field Data Product Discovery [ALL]	Most public campaign data products published at DAACs
Discover and Learn, Data Access	CASEI Catalog of Archived Earth Science Investigations	A catalog of NASA airborne and field campaigns/projects [ALL] Released in June 2021 with roughly 30% of known campaigns, now has roughly 45%.	Contextual metadata for 70+ airborne and field campaigns
Visualize	SDAT (Spatial Data Access Tool)	Visualize and download select data using OGC standards [ORNL DAAC]	ABoVE, AfriSAR, CARVE, LBA
Visualize	Soil Moisture Visualizer	Subset, view, and download harmonized Soil Moisture data from various projects [ORNL DAAC]	AirMOSS, SoilSCAPE, SNOTEL, FLUXNET
Visualize	ADV Airborne Data Visualizer	Visualize airborne campaign flight track measurements [ORNL DAAC]	ACT-America, ATom, CARVE
Discover and Learn	ASDC Project Catalog and Explore Collections Tool	Online access providing a means to explore data collections at ASDC and review description of all projects [ASDC DAAC]	All ASDC DAAC campaigns
Search and Data Access	SOOT Sub-Orbital Order Tool Power User Interface	Search for data files from specific campaigns at ASDC. Download the data. Only power user interface is currently available. [ASDC]	ACEPOL, ARISE, CAMP2Ex, FIREX-AQ, LISTOS, LMOS, NAAMES, ORACLES
Visualize and Analyze	FCX Field Campaign Explorer	A visualization environment built on Cesium for exploring various field campaigns in multiple dimensions [GHRC DAAC]	GOES-R PLT (IMPACTS will be added next)
Search and Data Access	Vertex	A geographical and temporal search tool to locate and obtain SAR data [ASF]	AirSAR, UAVSAR
Visualize and Analyze	OpenSARLab	Jupyter environment for working with SAR data in the cloud, includes Jupyter Notebooks and python /SAR-specific tools. Approved testers only.	AirSAR, UAVSAR
Search and Data Access	Operation IceBridge Data Portal	Provides a means to visualize and perform temporal, spatial and keyword filtering of all Operation IceBridge data for data download [NSIDC DAAC]	IceBridge

Tool Demonstrations

- CASEI - Stephanie Wingo (ADMG)
- SOOT Power User Interface - Jennifer Tindell (ASDC)
- ADV and SDAT - Michele Thornton / Yaxing Wei (ORNL DAAC)
- FCX - Geoffrey Stano (GHRC)

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CASEI

Stephanie Wingo (ADMG)

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CASEI: The Catalog of Archived Suborbital Earth Science Investigations

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CASEI Provides a Holistic View of Campaigns

- "**Relating to or concerned with wholes** or with complete systems rather than with the analysis of, treatment of, or dissection into parts" *Merriam Webster*
- Big picture perspective
- Campaign data products do not exist in isolation, but are part of a **complete investigation** with a scientific purpose
- ***Contextual Information is essential*** - details connect the pieces of a campaign & explain the data collection environment - crucial for appropriate data use, reuse

→ ***Return on NASA investment***

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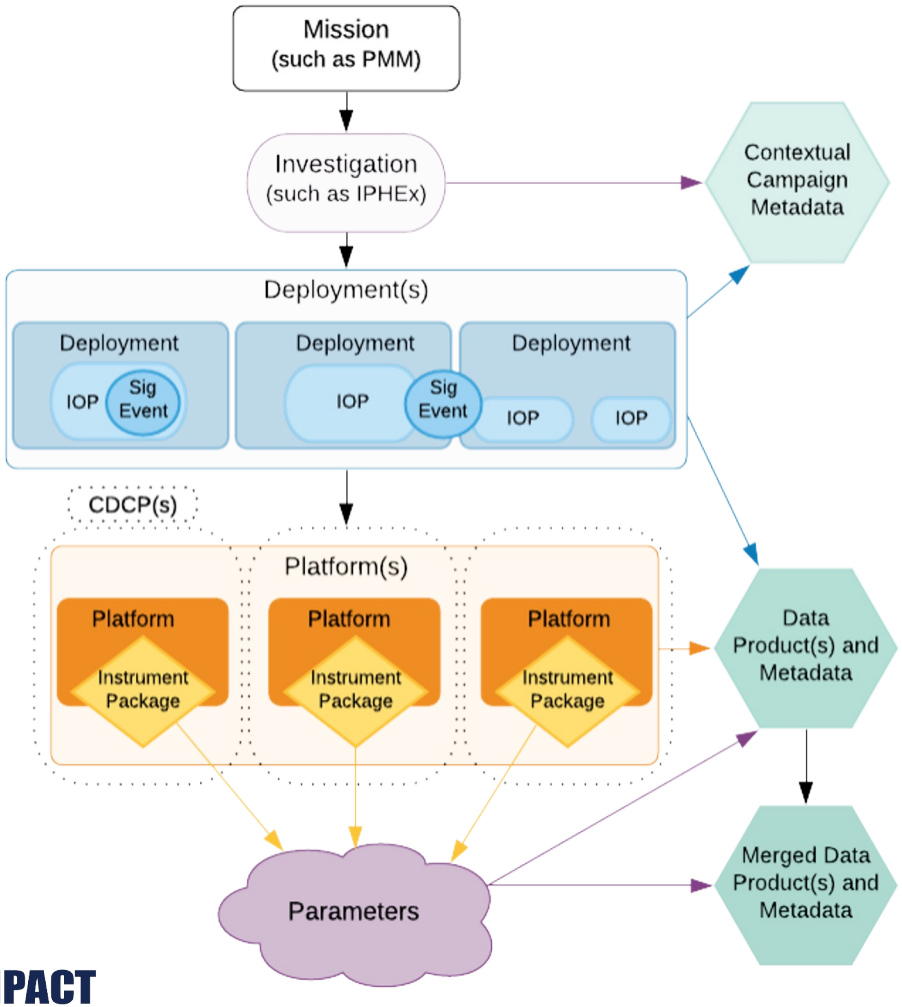
Contextual Metadata Added in CASEI

Relational Database of Contextual Metadata:

- Additional campaign information
- Aircraft/platform metadata; flight track data access
- Platform, instrument details
- Season, region, observation domain(s)
- Observed parameters
- Deployment and intensive operation period ranges
- Significant events
- Data product DOIs
- Links to related documents and publications
- Leadership, management, funding information
- Acronyms, aliases, logos



All information is highly inter-linked

Platforms

- type
- owner
- image (if available)
- GCMD name

Instruments

- measurement style/type
- owner, image (if avail)
- measurement region
- resolutions
- GCMD name

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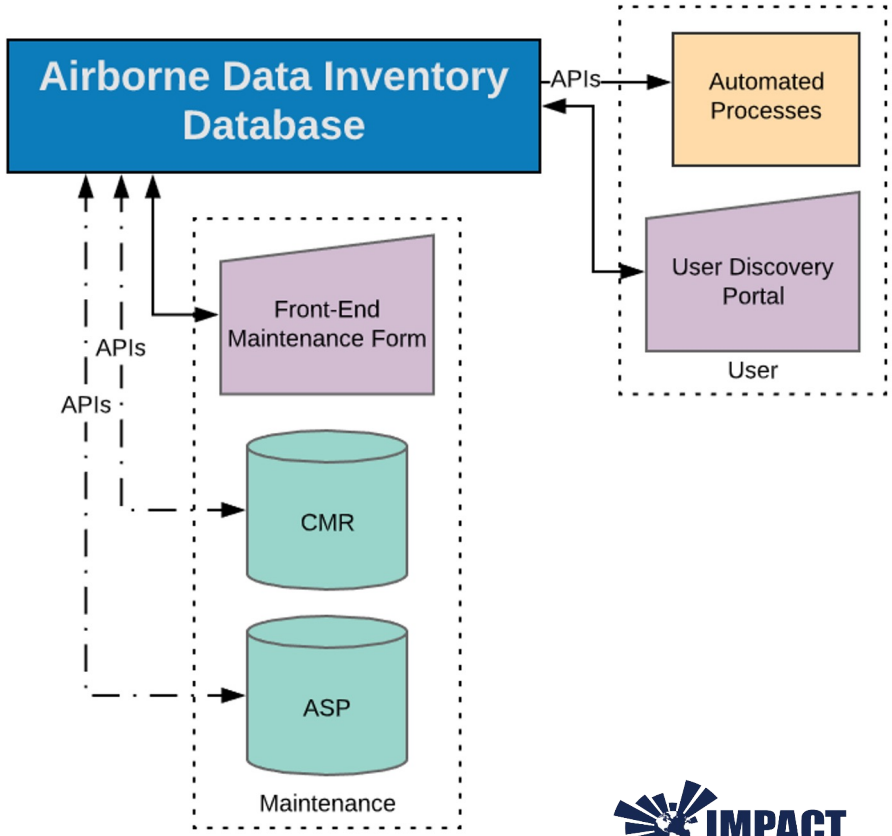
CASEI - Overall Design & Goals



User Portal - public user interface/website

- submit queries
- obtain information
- link to data access
- find campaign details

Maintenance Interface - metadata curation

- add new information
- curation reviews of existing information
- perform routine error checks
- access inventory user statistics (dev)

APIs for external database access

- NASA Common Metadata Repository (CMR)
- NASA Airborne Science Program database

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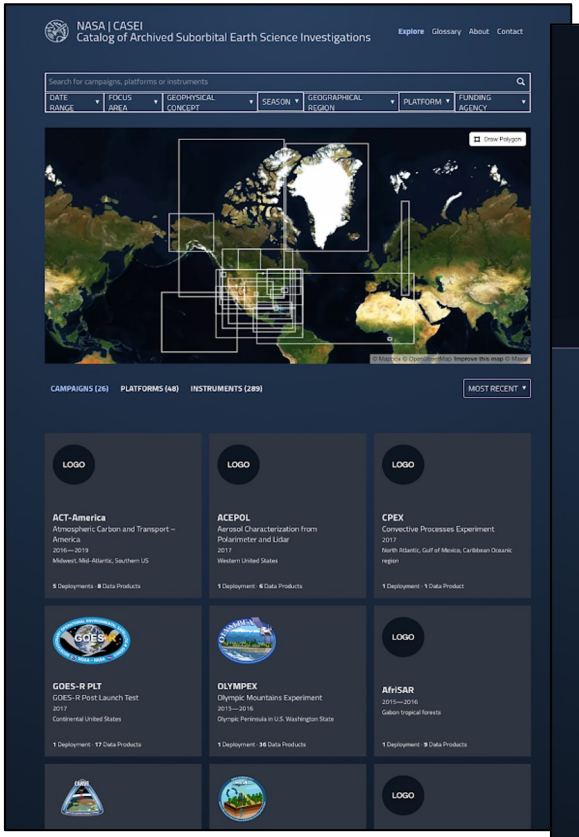
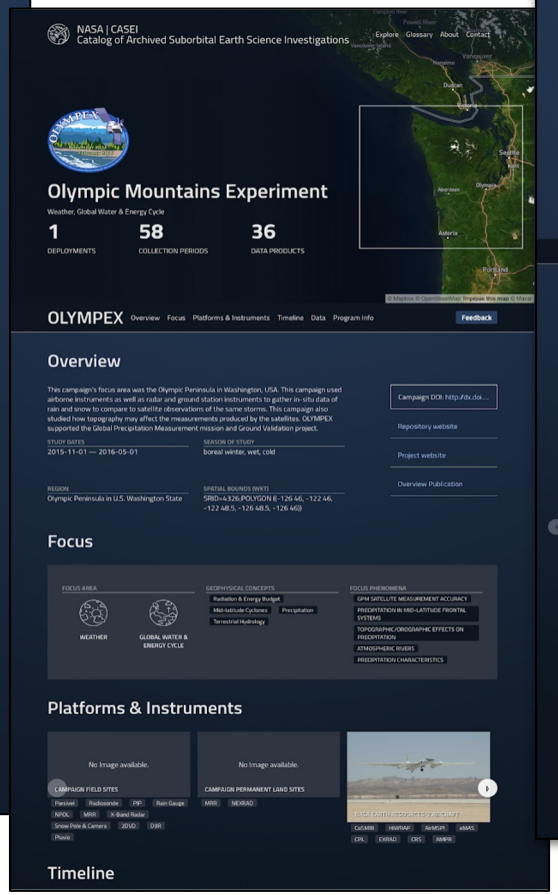
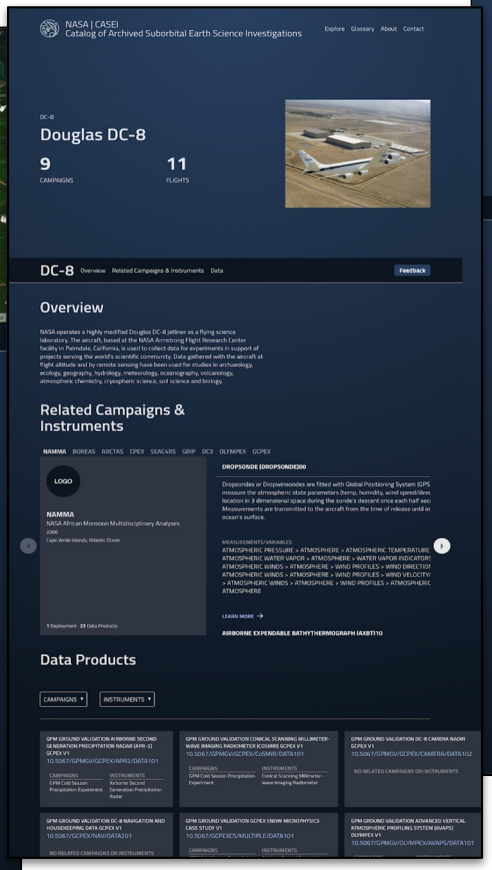
CASEI Design and Function



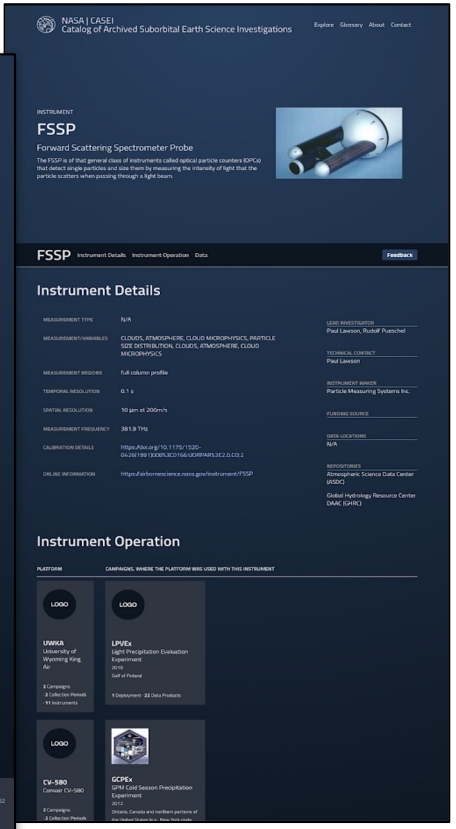
Explore Page



Campaign Page



Platform Page



Instrument Page

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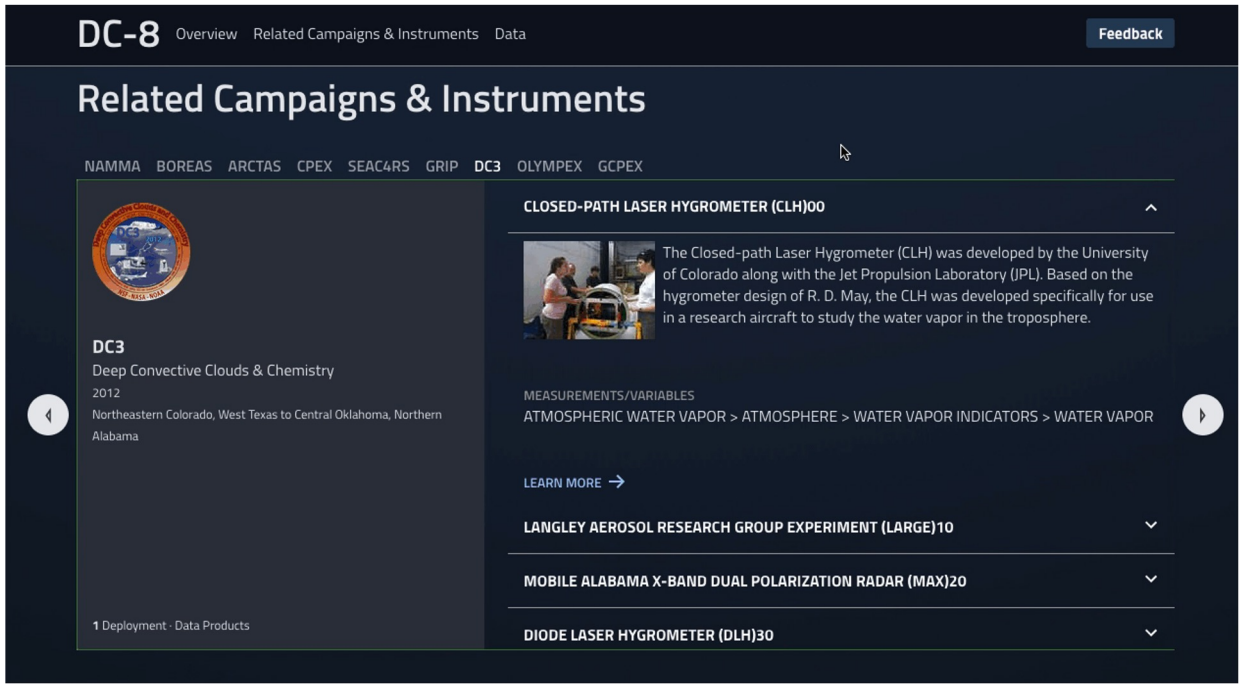
CASEI User Portal Overview

- Information pages approach:
  - Synthesis of information
  - Relationship(s) of information
- Interconnected campaigns, platforms, and instruments
- Heterogeneous data products connected via single interface
- Initial SME/user testing focused on important questions:
  - What are common user goals?
  - What search paths need to be prioritized?
  - Where do users run into informational dead ends?



CASEI Platform pages show related Campaigns and Instruments

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CASEI Design & Function: quick demo

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CASEI Inventory Status

ADMG continuously adds curated metadata to the CASEI inventory & regularly pushes new content to the CASEI website.

*Not all campaigns in CASEI have data in a NASA data center (yet)

*Not all NASA campaigns have metadata in CASEI (yet)

Campaigns in CASEI →

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