

NASA's Airborne Data Management Group (ADMG)

Activities and Collaborations with GHRC

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GHRC User Working Group Meeting
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ADMG Context

- The need for better stewardship of NASA's airborne Earth Science observations was identified in the 2016 Satellite Needs Working Group (SNWG) Cycle 1 survey
- **August 2018: Airborne Data Management Group (ADMG) spun up within IMPACT**
 - First year Focus: support newly-funded Earth Venture Suborbital (EVS-3) campaigns, develop a level-of-service model, and expand ASDC's preliminary inventory assessment
- **Summer 2019: ADMG surveyed 60+ scientists across many disciplines to:**
 - Determine needs and wishes for airborne campaign data search/browse/access
 - Understand specific terminologies, definitions, and ranges of use

→ **Designed the structure for a curated inventory of contextual campaign information, striving for consistency in campaign communications**
- **Early 2020: ADMG scope expanded to also include field observations**
 - Discovered field-only campaigns in need to proper data stewardship, and relevance to ADMG's existing purview

ADMG Priorities

- Inventory of NASA airborne and field campaigns (CASEI)
- Support improvements to communications, processes, and policies to advance stewardship of NASA's suborbital (non-satellite) Earth Science data
- Identify data management and metadata best practices for airborne and field data
- To accomplish this, aside from CASEI efforts, ADMG:
 - Facilitates communication to ensure understanding among stakeholders
 - Coordinates data stewardship efforts: ASP, DAACs, SECs, ESDIS, Sci Teams, Program Scists
 - Updates policy, procedure, standards documentations
 - Supports active field campaigns in partnership with assigned DAACs
 - Ensures activities adhere to Open Science policies
 - Performs DAAC and data manager training as needed
 - Promotes awareness of NASA suborbital data issues and solutions (via ESIP, etc)
 - Facilitates DAAC assignment for new and old campaigns

CASEI Overview

Catalog of Archived Suborbital Earth Science Investigations

- **Non-satellite data are highly heterogeneous, multi-disciplinary**
 - Archived across NASA at multiple DAACs
 - Crucial for advancing understanding of physical processes and variabilities across spatiotemporal scales and science domains
 - Require contextual accuracy for appropriate reuse
- **Building the inventory:**
 - What are the boxes? How do they fit together?
 - ESCO review of CASEI Definitions, decision trees
 - Field campaign conceptual model
 - Human curators



CASEI Components

Catalog of Archived Suborbital Earth Science Investigations

impact.earthdata.nasa.gov/casei/

Relational Database

- Curated contextual metadata

Maintenance Interface (MI)

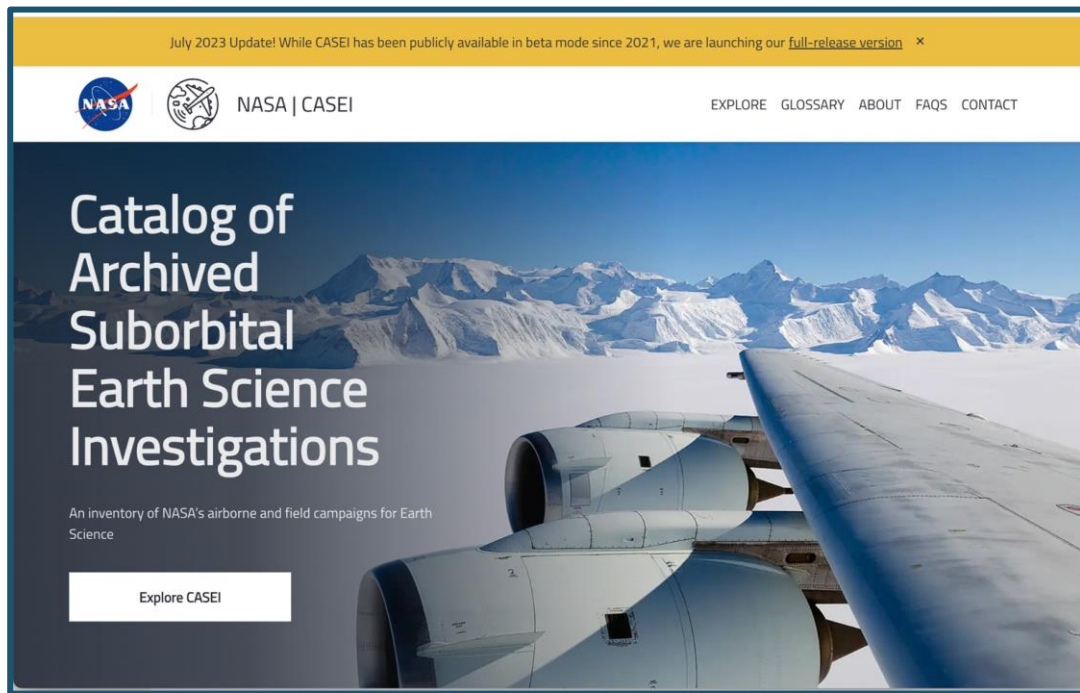
- How curators modify CASEI database content

User Interface (UI)

- Public website

API

- Publically accessible
- Fully documented



CASEI UI Components

Catalog of Archived Suborbital Earth Science Investigations

Explore Tabs

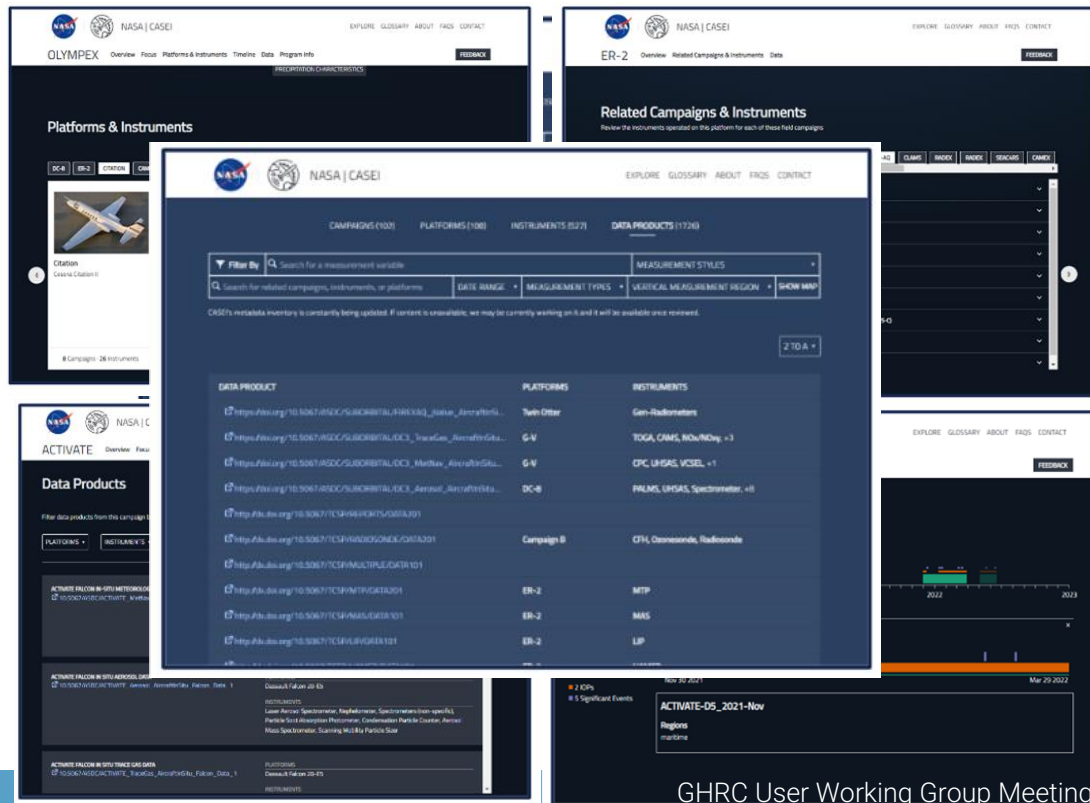
- Campaigns, Platforms, Instruments, Data Products

Landing Pages:

- Show relationships
- Data Products
- Interactive Timeline

Data Product Filtering

- Multiple facets and searching permitted
- Results link to data product landing pages via DOIs

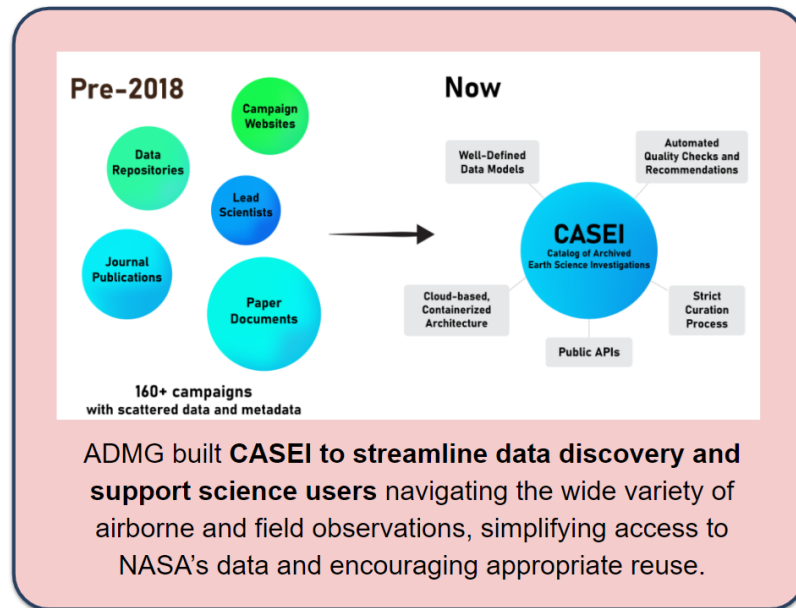


CASEI Content and Metrics

CASEI currently contains curated metadata for:

- **107** Campaigns (65%)
- **122** Platforms
- **547** Instruments
- **1821** Data Products

...and counting!



ADMG built **CASEI** to streamline data discovery and support science users navigating the wide variety of airborne and field observations, simplifying access to NASA's data and encouraging appropriate reuse.

← CASEI UI metrics 8 Aug - 12 Sep 2023

NASA Webinar (30 Aug); Labor Day Holiday

Currently: **~30 Engaged Sessions** per weekday

CASEI Future

<u>Investigations for Inclusion in CASEI</u>	<u>How many known?</u>	<u>Available in CASEI</u>	<u>Undergoing Curation Now</u>	<u>Still Need Curation</u>
Campaigns	164	107	1	56
Facility Instruments & Major Airborne Instruments	24	11 (24*)	7	6
Surface Observation Networks	11	2 (6*)	0	9

**available in CASEI with limited metadata*

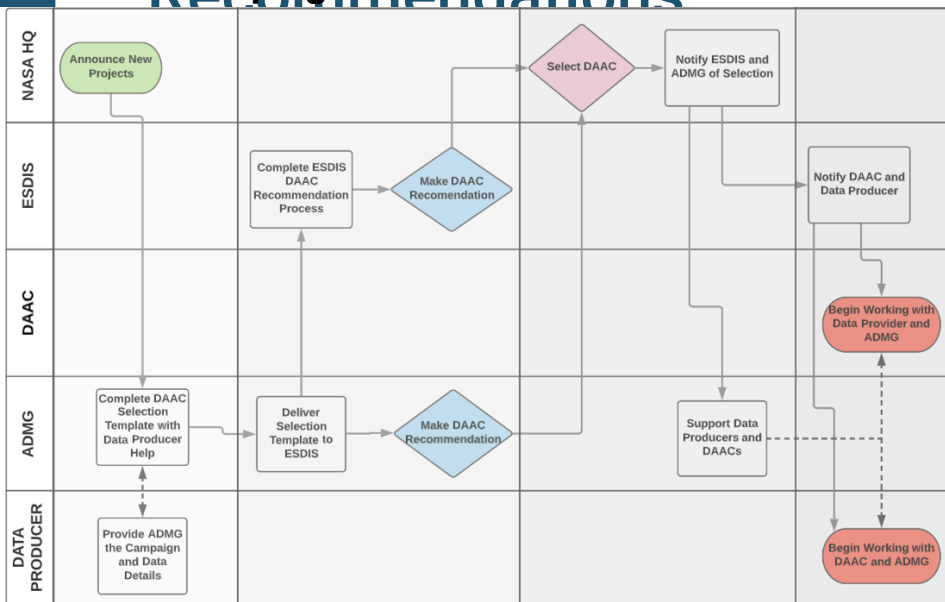
- At current pace, ADMG estimates **~18-20 months to complete curation of known** remaining items
- Exploring potential for **AI-augmented curation** with IMPACT ML team
- Envision possibility of **DAACs eventually populating suborbital metadata**, as is already done for CMR at data publication

Current Development Efforts:

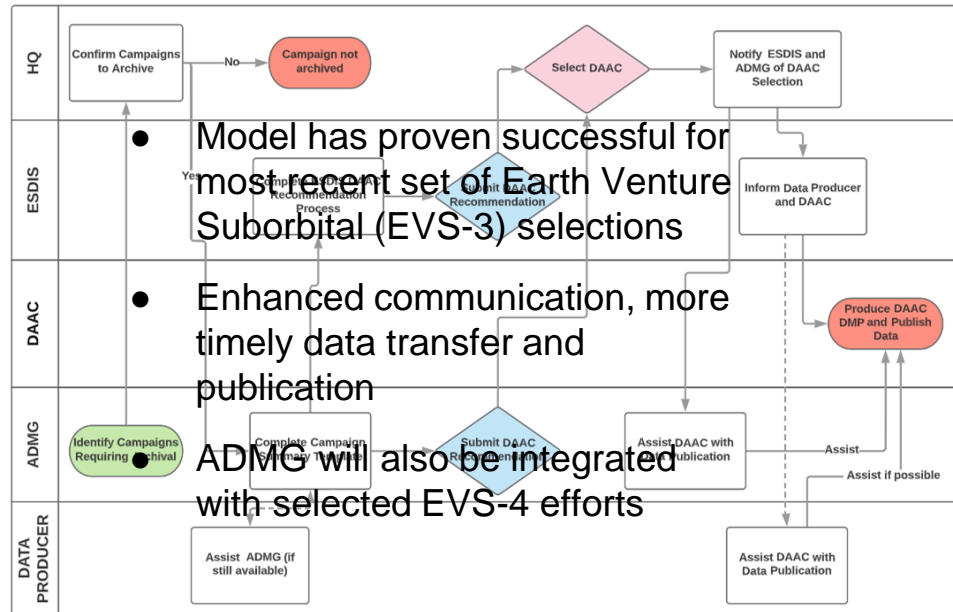
- No backend or database structure modification as initial IMPACT→ESDIS transition steps begin
- CASEI UI updates:
 - Platform tracks/maps - integrated within existing Timeline feature
 - Addition of satellite overpass information

ADMG's DAAC Assignment

New Campaigns



Historical Campaigns



Model has proven successful for most recent set of Earth Venture Suborbital (EVS-3) selections

Enhanced communication, more timely data transfer and publication

ADMG will also be integrated with selected EVS-4 efforts

→ **ADMG and ESDIS both provide suggestions of relevant DAAC(s) for the campaign**

→ **ESDS responsible to issuing final DAAC selection decision**

→ **ADMG assists** in facilitating transfer to selected DAAC by ensuring **timely communication and understanding**

GHRC-Specific Collaborations

- Anticipated new data based on ADMG recommendations for GHRC DAAC:
 - ER-2 airborne photos:
 - Variety of campaigns, spanning decades
 - From Ames, now at JSC being digitized
 - Airborne videos from GTE campaigns:
 - Mainly from DC-8, 1980s-90s
 - VHS tapes currently at LaRC



Cans of ER-2 photos at
NASA Ames



Pallet of VHS tapes at
NASA Langley

- ADMG's Continuing Education (ACE) Seminar Series
 - Dr. Geoffrey Stano - [Recording Available](#)
 - Lightning data applications and GHRC's Lightning Dashboard
 - Leigh Sinclair - [Recording Available](#)
 - GHRC's data publication process, EarthData Pub, data in cloud

Additional Broad Community Support

- **NASA's Airborne and Field Data Resource Center**
 - Collaboration among ESDIS, ADMG, DAACs with suborbital observations
 - Launching soon!
- **Assisting ESDS Web Unification effort**
- **Work with DAACs to bring consistency to airborne and field data stewardship where possible and logical**
- **Bring user and team needs to DAACs and share with ESDS/HQ**
- **Second Airborne & Field Data Workshop coming this spring**
 - Possible focus on tools specific to suborbital observations
- **Continue to improve support for both data producers and data stewards**
 - Early communications, introductions, understanding....

Thank You!

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