

An Overview of NASA's Airborne and Field Data Resource Center

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Understanding the Needs of Airborne and Field Data Users and Data Stewards

- **March 2022: Airborne & Field Data Workshop**
 - Intentional community inclusion in planning to ensure needs are met
- **Synthesis of participants' feedback** revealed major themes:
 - Significance of communication
 - Need for cross-DAAC consistency for data handling
 - Need for more efficient data discovery, access, and use
 - Request for provision of additional information & resources

workshop jamboard

- Clear documentation, version notes, and consistent naming conventions
- Uniformity and standardization for all campaigns, it's a pain to find what are the important instrument consent to be able to re-analyze compare between different campaigns.
- Combine multiple consistent datasets into a single Zarr archive, with relevant coordinates automatically aligned.
- Convert user-friendly data every day... CMR if AC-compliant metadata
- way to visualize overlapping flight tracks and satellite swaths
- I would have liked to see more presentations by data provider types. The first session was very interesting and had some big ideas...
- Allow access and analysis of data through search without downloading the data. Because of the beginning of analysis, why doing data exploration, there is a need to look at many different datasets.
- locate field data products/points within subsets of different airborne datasets
- In Earthdata search, make sure that datasets show in the viewer... sometimes you have to scroll all the way to the end of the list for datasets to show up in the viewer.
- For any dataset in EDC, an automatically-generated codebook that can be copy-pasted into, like a Jupyter notebook to begin working on the data.
- contemplating, I would like to be able to find all measurements of trace gases at certain altitudes over a certain geographic region. This is probably possible, but I have not yet had to learn how to uncover
- Put data in the same format as much as possible. Provide notebooks to read the data.
- On CASEI, be able to search by theme/ themes instead of just locations -- YOU CAN!
- AIH access to determine provenance of data and location and type words in metadata
- Other CAPAC to others
- have a tool to get airborne data - sometimes flight lines are long and are being ingested in very large to download and work with. Creating and identifying data would be helpful



- **Summer 2022: Earth Science Information Partners (ESIP)**
 - Prioritized needs, assessed based on cost/effort
 - Single entry for efficient data discovery, data access, user education, services hub, information and data documentation guidance

Analyzed Feedback

Priority (low, med, high)	Need, want, not imp	Effort (low, high)	Cost (low, high)	Category Short Title	User Story (as a user I want to...)	Data User / Data Producer / DAAC / Developer (All)	Status	Ideas for How to Improve
Med	medium	medium	medium	Access	As a power data user I want to easily download bulk data	Data User	parts exist	"one-stop shopping" - users both download each, cloud storage/instrument consent. Does every DAAC have API access... prices already in existence
Med	medium	medium	medium	Access	As a data user, I want to be able to access data grouped by campaign or geographic area or some other variable by accessing virtual collections	Data User	in progress	virtual collections, CMR effort with variables
Med	medium	medium	medium	Discovery	As a data user I want to use Earthdata search, I want more airborne data in EDS because I don't know which DAAC to look at for the data products I need	Data User	in progress	Tag as airborne - as filter option
Med	medium	medium	medium	Access	As a data user I want to get all the instrument, platform, or campaign data accessible from one place	Data User	parts exist	Everything in Earthdata - filter by instrument, stock, campaign. Can do in CASEI, comprehensive landing page, collection of collections, DOI, instrument manufacturer, used consistency among DAACs because each do things in their own way
Need	high	high	high	Access	As a data user I want to combine multiple coincident datasets into a single Zarr archive, with relevant coordinates automatically aligned	Data User	not exist	CASEI is built to solve this for discovery/search, but not currently
Need	high	high	high	Access	As a data user I want to get all the instrument, platform or campaign data accessible from one place	Data User	in progress	already available for some subsets at some DAACs
Need	low	low	low	Access	As a data user I want to have a Jupyter notebook to help me use some particular airborne or field data	Data User	in progress	include airborne in EDC, some DAACs better than others at working with DPs - early involvement of DAACs will help
Need	medium	low	low	Support	As a data producer, I want to understand and have guidance on providing standardized data formats that meets the protocol for incorporation into community tool resources.	Developer	parts exist	EDD is a starting point, other EDCs is useful for developers - could there be a quick start guide for developers; ADRC knowledge center - pointer to other existing information
Need	high	low	low	Support	As a tool developer, I want to understand the common data format/standards in which airborne data are provided in order to create software products for the user community.	Developer	parts exist	Virtual collections in progress in CMR, DOI policy done
Need	low	low	low	Metadata	As a data user, I want to identify and work with all data that is part of a campaign, which spans multiple airborne platforms over discontinuous space and instrument used in multiple campaigns. I need metadata about these different flights/campaigns that will allow me to search by "virtual collector" or "group"	Data User	in progress	Earthdata Plus/EDD may help for new data, more effort for ready air data, need to keep value of landing/ed metadata. Inv. after going forward. High effort going back, APIC - assessments across DAACs, naming conventions, "link in user story"
Need	medium	medium	medium	Metadata	As a data user who wants to search by instrument/campaign, I need metadata that is more consistent, uniform/ish and searchable for all campaigns and instruments	Data User	in progress	EDD resources: easier to do going forward that going back. Different approach across DAACs - can it be uniform? Would best practice resources be helpful?
Need	medium	medium	medium	Consistency	As a data user or data producer, I want consistency in file names, units, file formats and variable names	All	parts exist	Earthdata cloud through Earthdata Search will help - also bulk
Need	low	low	low	Consistency	As a data user who obtains data from more than one DAAC and Earthdata, I want more consistency between archives and	Data User	in progress	



NASA's Airborne and Field Data Resource Center: Site Components

- **Introduction:** ESDS, ESDIS, NASA's DAACs
- **Learn About Data**
 - ASP, ADMG, CASEI
 - Satellite sensor development, calibration/validation; physical process studies
 - Data formats, data standards and NASA ESCO
- **Find & Access Data**
 - Earthdata Search, CASEI
 - *DAAC-produced resources:*
 - Field Campaign Explorer ([GHRC](#))
 - Airborne Data Visualizer ([ORNL](#))
 - Soil Moisture Data Visualizer ([ORNL](#))
 - Spatial Data Access Tool ([ORNL](#))
 - Vertex - Data Search ([ASF](#))
 - SubOrbital Order Tool ([ASDC](#))
- **Using Data**
 - User guides, micro articles
 - GitHub data recipes, tutorials
 - Jupyter notebooks; Storymaps
 - APIs - Earthdata Developers Portal
 - Recorded and upcoming Webinars
 - Citation guidelines
- **Archive Data**
 - Overview of the formal processes for archiving Earth Science data within EOSDIS
- **Help**
 - Earthdata Forum, Earthdata Support
 - DAAC User services
 - ADMG
- **Glossary & Acronym List**

NASA's Airborne and Field Data Resource Center: Example Page View

Primary section navigation buttons

Evolving sections for key concepts and resources

Single entry point for multiple ESDIS and DAAC-developed tools

The screenshot shows the NASA Airborne and Field Data Resource Center website. At the top, there is a navigation bar with tabs for Home, About, Contact, etc. Below this is a main banner titled 'Airborne and Field Data' with several images of aircraft and field equipment. The text below the banner describes the center's mission and provides information on how to use the data. A section titled 'NASA Science Program' lists various data collection methods and instruments. At the bottom, there is a 'You Might Also Be Interested In' section with filter buttons for 'All', 'Airborne', 'Field Data', 'Remote Sensing', 'Data', and 'Programs'.

Identifying ESDS banner, Airborne and Field Specification

- Easily navigable webpage, one-stop-shop for resources supporting the use, understanding, and stewardship of agency airborne and field observations
- Built in parallel with guidance from ESDS Web Unification and ESDIS Communications teams



← Scan to see the AFDRC now!

earthdata.nasa.gov/technology/airborne-and-field-data

Motivation

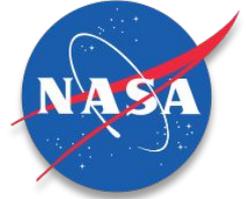
Community Input

Components

Approach

Input Welcome

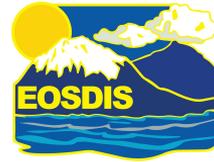
NASA's Airborne and Field Data Resource Center: A Highly Collaborative Effort



- AFDR is a coordinated, collaborative effort made possible by productive interactions across several groups:



- ESDS
- ESDIS
- DAACs
- NASA IMPACT / ADMG
- ESDIS Communications Team
- ESDS Web Unification Team
- And many others!



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NASA's Airborne and Field Data Resource Center



← **Scan to
see the
AFDRC
now!**

earthdata.nasa.gov/technology/airborne-and-field-data

😊 **Thank you!**

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Save the Date | 2nd Airborne and Field Data Workshop
April 23 -24, 2024

A collage of six images illustrating various data collection methods: a satellite dish, a red aircraft, a colorful satellite map, a NASA aircraft (N412), a research ship, and orange buoys in the ocean.

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