

# **www-air Data Repository**

## **Introduction**

**Michael Shook, Gao Chen, Ali Aknan, and  
Morgan Silverman**

# www-air Website

- <https://www-air.larc.nasa.gov/>
- A repository for observational and ancillary data products and relevant documentation/reports to facilitate science team data exchange and data processing
- Password-protected document and file sharing
- Will host FireSense and FASMEE Data holdings include aircraft data as well as other data as needed/requested

NASA NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

FIND IT @ NASA:  Search NASA

Airborne Science Data for Atmospheric Composition

HOME TOOLS MISSIONS DATA CONTACT US

Welcome to the NASA LaRC Suborbital Science Data for Atmospheric Composition

Promoting a better understanding of air quality and climate change issues by archiving, managing, and sharing tropospheric composition data from airborne field studies.

**Current / Upcoming Missions**

**FireSense 2023-2028**

PACE-PAX 2024

STAQS 2023

DCOTSS

ACTIVATE 2022 - 2020

CPEX-CV 2022

ACCLIP 2022

SARP 2023 - 2009

CAMP<sup>2</sup>Ex/PISTON

SASA 2022

FIREX-AQ 2019

KORUS-AQ

**MEASUREs Projects**  
Creating a Unified Airborne Database for Model Assessment

**TAMMOP**  
Tropospheric Airborne Measurement Evaluation Panel

An Interagency Interest Group on Applying Aerosol Observations to Earth System Models

2023

Data Archive:  
FireSense / FASMEE 2023 ArcView

File Sharing [private]:  
Telecons, Meetings, Reports, etc.

Field Data Archive Introduction

**Data Upload Tools**

Steps for submitting data to the Archive

Data Submittal / Scanning  
» Help FScan

Register PI dataIDs

ICARTT Data Format Document

**Useful Tools**

- Download HDFView -- visual tool for browsing & editing HDF files
- Download FileScanning S/W for Windows (Requires ID)
- Download Flight Planning S/W for Windows (Requires Google Earth)

FireSense FASMEE

NASA FireSense

The NASA Science Mission Directorate (SMD) FireSense project is focused on delivering NASA's unique Earth science and technological capabilities to operational agencies, striving towards measurable improvement in US wildland fire management. The NASA SMD FireSense project is part of a larger NASA wide Wildland Fire Initiative involving SMD, the Aeronautics Research Mission Directorate (ARM), and the Space Technology Mission Directorate (STMD).

The FireSense project will include an airborne science component (annual campaigns) where improved capabilities and technologies will be developed and evaluated, and ultimately demonstrated to agency stakeholders in a large capstone airborne campaign in year 5 of the project (2027-2028).

Through initial stakeholder engagement activities, the FireSense project will begin by focusing on four uses-cases focused on characterization and measurement of (i) pre-fire fuels conditions, (ii) active fire dynamics, (iii) post fire impacts and threats, and (iv) air quality impacts and forecasting, each co-developed with identified stakeholders.


**2023 FireSense Airborne Field Campaign**


- Objectives in 2023:
  - Test technologies with heritage instrument; collect data to help fire modeling community
  - Targeted FireSense use cases:
    - Pre-Fire (AVIRIS-3, UAVSAR, SLAP)
    - Active Fire (SWIS, MASTER, AVIRIS-3)
    - Post-Fire (AVIRIS-3, UAVSAR)

# FireSense/FASMEE Website

Data Access


2023

[Data Archive: FireSense / FASMEE 2023](#) 



[File Sharing \[private\]:](#) 

Telecons, Meetings, Reports, etc.

Document Upload/Download

[Field Data Archive Introduction](#) 




**Data Upload Tools**

- [Steps for submitting data to the Archive](#)
- [Data Submittal / Scanning](#)   
» [Help FScan](#)
- [Register PI dataIDs](#) 

dataID Registration and Data Upload

[ICARTT Data Format Document](#)

**Useful Tools**

- [Download HDFView -- visual tool for browsing & editing HDF files](#) 
- [Download FileScanning S/W for Windows](#) (Requires IE)   
» [What's New](#)
- [Download Flight Planning S/W for Windows](#) (Requires Google Earth) 

FireSense FASMEE



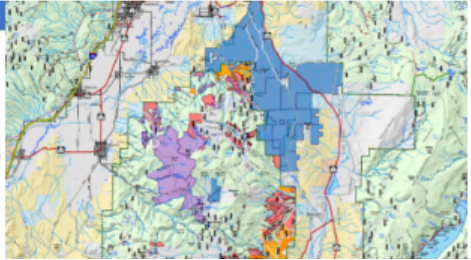
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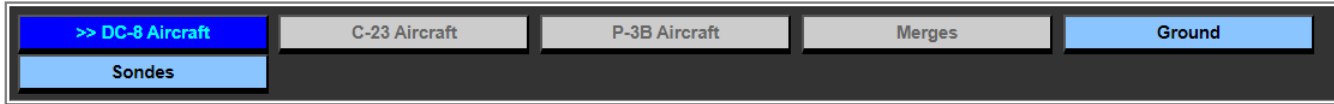
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## 2023 FireSense Airborne Field Campaign

- **Objectives** in 2023:
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  - Active Fire (SWIS, MASTER, AVIRIS-3)
  - Post-Fire (AVIRIS-3, UAVSAR)



# SARP-West Website Example: Data Access



Current list for the **DC8 AIRCRAFT** Data:

PI Directory	Last Updated	Parameters	Measurement / Research Description (SARP_2022)
<a href="#">BENNETT.RYAN/</a>	May 09, 2023	<a href="#">+ Show VarList</a>	<a href="#">NSRC DC-8 Meteorological and Navigation Facility Instrumentation</a>
<a href="#">DIGANGL.JOSHUA/</a>	Jun 27, 2022	<a href="#">+ Show VarList</a>	NASA LaRC Trace Gas Measurements
<a href="#">DISKIN.GLENN/</a>	Jun 27, 2022	<a href="#">+ Show VarList</a>	NASA LaRC Diode Laser Hygrometer
<a href="#">NEHRIR.AMIN/</a>	Jun 29, 2022		<a href="#">NASA LaRC High Altitude Lidar Observatory (HALO) - Water vapor, aerosol and cloud profiles</a>
<a href="#">STCLAIR.JASON/</a>	Jul 18, 2022	<a href="#">+ Show VarList</a>	<a href="#">NASA GSFC in situ formaldehyde</a>
<a href="#">ZIEMBA.LUKE/</a>	Jul 13, 2022	<a href="#">+ Show VarList</a>	

Data Organization:

1. locationID (Platform)
2. Principal Investigator
3. dataID (identifier)
4. Dates

[BENNETT.RYAN/](#)

Filename	Recv'd/Updated	Size (KB)
SARP-MetNav_DC8_20220621_R0_L1.ict	20230509	2715.3
SARP-MetNav_DC8_20220621_R0_L2.ict	20230509	2898.3
SARP-MetNav_DC8_20220623_R0.ict	20230509	5077.0

[DIGANGL.JOSHUA/](#)

Filename	Recv'd/Updated	Size (KB)
SARP-CRDS-CH4_DC8_20220623_RA.ict	20220627	191.4
SARP-CRDS-CO2_DC8_20220623_RA.ict	20220627	191.4
SARP-CRDS-CO_DC8_20220623_RA.ict	20220627	191.3
SARP-CRDS-O3_DC8_20220623_RA.ict	20220627	344.6
SARP-CRDS-CH4_DC8_20220621_RA_L1.ict	20220621	101.7
SARP-CRDS-CH4_DC8_20220621_RA_L2.ict	20220621	103.6
SARP-CRDS-CO2_DC8_20220621_RA_L1.ict	20220621	101.8
SARP-CRDS-CO2_DC8_20220621_RA_L2.ict	20220621	103.6
SARP-CRDS-CO_DC8_20220621_RA_L1.ict	20220621	101.8

# Current Understanding of FireSense and FASMEE LocationID/Platforms

- Planned FireSense LocationID/Platforms:
  - Aircraft: AFRC B200 (MASTER data at ORNL?), AFRC C-20A, Dynamic Aviation B200, LaRC B200, PA-39
  - Ground locationID for SDSU Drone measurements: TREN-Val, MILAND-Val
- FASMEE LocationID/Platforms: fire location based
  - Will be finalized after examining the sample and in consultation with the FASMEE team

# Points of Contact


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- **Field Repository ([www-air.larc.nasa.gov](http://www-air.larc.nasa.gov))**
  - Michael Shook, NASA Langley Research Center, michael.a.shook@nasa.gov, 757-864-5793
  - Gao Chen, NASA Langley Research Center, gao.chen@nasa.gov, 757-759-5642 (cell)
  - Ali Aknan, AMA/NASA Langley Research Center, ali.a.aknan@nasa.gov, 757-951-1609
  - Morgan Silverman, AMA/NASA Langley Research Center, morgan.l.silverman@nasa.gov (standard name issues)


# Two-Step Data Submission Process

- DataID Registration (one-time process):
  - dataID is part of the filename and will be used to organize PI files on the data repository
  - PI will need to first register dataID(s) before files can be submitted
- Data Submission:
  - File submission is through a scanning tool for checking filenames
  - ICARTT files are scanned for file contents:
    - File header: structure and keywords
    - Data Flags for missing data, LOD codes
    - Time Stamps: monotonically increase with no overlaps
  - Offline file checking by data managers for HDF/netCDF
  - Support zipped multi-file upload
  - Script-based batch upload available

2023


➔ Data Archive:  
FireSense / FASMEE 2023 


File Sharing [private]:   
Telecons, Meetings, Reports, etc.

➔ Field Data Archive Introduction 

**Data Upload Tools**




➔ Steps for submitting data to the Archive

➔ Data Submittal / Scanning   
» Help FScan

➔ Register PI dataIDs 

➔ ICARTT Data Format Document

**Useful Tools**


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» *What's New*
- Download Flight Planning S/W for Windows (Requires Google Earth) 

# DataID Registration Page

PI Last Name :	PI First Name :	Platform (LocationID) :
<input type="text"/>	<input type="text"/>	NASA AFRC B200 Aircraft ( AFRC-B200 ) <input type="button" value="v"/>

<b>dataID:</b> (max 45 chars) <i>Prefix with "firesense- OR fasmee-"</i> e.g., firesense-CO2	<b>Data Description:</b> (max 380 chars) <i>Describe your measurements; e.g., Carbon Dioxide Mixing Ratio</i>	<b>Instrument(s):</b> (max 190 chars) <i>List Instruments; e.g., LI-COR 6252</i>
<input type="button" value="Reset"/> <input type="text" value="firesense-fasmee-"/>	<input type="text" value="Enter one description per line AND press Enter"/>	<input type="text" value="Enter one instrument per line"/>

**Upload Your Instrument(s) Description Document:**  No file chosen (Select your file) 

\*\*\***(NOTE: Any new file/document upload WILL OVERWRITE your previously uploaded document)\*\*\***  
\*\*\***(If you have more than 1 file (document) to upload, please email the files to: [gao.chen@nasa.gov](mailto:gao.chen@nasa.gov) and/or [ali.a.aknan@nasa.gov](mailto:ali.a.aknan@nasa.gov). Thank you!)**\*\*\*

**OVERWRITE** my previous record (i.e., ALL previously registered dataIDs for this mission will be removed).

Link to PI website, instrument, experiment description, etc  
 *Optional: to display on LaRC Archive webpage*

Text describing PI experiment or measurements (e.g., NASA LaRC DIAL - Troposphere O3, Aerosols, and Clouds Profiles):  
 *Optional: to display on LaRC Archive webpage*

## Current Registered dataIDs on the Server for FireSense / FASMEE

PI Name: Last.First <input type="button" value="v"/>	LocationID <input type="button" value="v"/>	Registered dataIDs <input type="button" value="v"/>
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Click on "[Refresh](#)" to retrieve the latest list.



# FScan Page

**SARPEAST File Scanning and Submittal**  
[ICARTT File Format Document](#)

**IMPORTANT: In order to archive files, dataID(s) must be registered first because the PI Data Directory on the Server will be created from the registration.**

[Help](#)

What to do:  Scan Only  Scan and Archive (see dataIDs note above)

File Upload:  No file chosen (Select your file)

This is Final (i.e., NOT Field) data -- File Revision MUST be set to R0, R1, etc.

[How to upload multiple files in one step.](#) | [How to archive \\*.zip ICARTT files.](#)

This application scans three (3) file types -- defined as ICARTT: [FFI 1001](#), [FFI 2110](#), and [FFI 2310](#)

Select Data Time-Interval Type : Start, Stop, and Mid-point  
Start, Stop, and Mid-point  
Constant Equal (1 or less); {Or, irregular (Satellite/Trajectory/Ground)}

Display FScan results (report) :  Detailed  Brief

**Submit**

 Pressing this button will Scan *[and Archive]* the selected file(s).

Please scan your files on your machine first using [FScanBrowser \(Windows\)](#)  
\*\*\* Your Browser should allow FScan to open a new Window (to display FScan's results) \*\*\*

By: Ali Aknan -- Ver 3.7.8 (June 02, 2022)

**\*\*\* Scanning Failed. See [Error Messages Below](#) \*\*\***

Please scroll down to the end of this page to view the results.

NOTE: error messages are displayed in RED; warnings and other info in ORANGE

---

Function Selected: Scan and Archive  
FScan Results Report: Detailed  
Time-interval Type Selected: Start, Stop, and Mid-point  
Filename Submitted: DCOTSS-MMS-1HZ\_ER2\_20210817\_RA.ict  
File Size: 3066538 bytes  
File Content: application/octet-stream

Receiving file was successful - now onto scanning ...

**✓ ALL DONE.**

Please scroll down to the end of this page to view the results.

NOTE: error messages are displayed in RED; warnings and other info in ORANGE.

---

Function Selected: Scan and Archive  
FScan Results Report: Detailed  
Time-interval Type Selected: Start, Stop, and Mid-point  
Filename Submitted: ACTIVATE-LARGE-SMPS\_HU25\_20220111\_RA\_L2.ict  
File Size: 55987 bytes  
File Content: application/octet-stream

Receiving file was successful - now onto scanning ...

Note: results open on a separate page, may need to change browser permissions

# ICARTT Format

- CSV text file with prescribed header format
- Self-describing (can be read programmatically)
- <https://www.earthdata.nasa.gov/s3fs-public/imported/ESDS-RFC-029v2.pdf>

Number of header lines → 42 1001

Principle Investigator (PI) → Luke Ziemba

Flight date → 2023,06,15 2023,06,15

Independent variable → Time\_Mid Secs after midnight,Time of acquisition

Missing data flags → -9999,-9999

Variable definition lines →

Metadata (normal header lines) →

Data (comma-separated) →

```
42 1001
Luke Ziemba
NASA Langley
In-situ microphysical aerosol measurements from the Dynamic Aviation B200
NASA 2023 SARP East
1,1
2023,06,15 2023,06,15
1 0
Time_Mid Secs after midnight,Time of acquisition
2
1,1
-9999,-9999
CNgt6nm, #/cm3, AerMP_NumConc_InSitu_RHd_None_Bulk_STP, Number concentration of particles with diameters greater than 6nm
CNgt6nm_nonvol, #/cm3, AerMP_NonVolatileNumConc_InSitu_RHd_None_Bulk_STP, Number concentration of nonvolatile particles with diameters greater than 6nm
0
26
*****
Langley Aerosol data from the 2023 SARP East field campaign

PI_CONTACT_INFO: luke.ziemba@nasa.gov
PLATFORM: Dynamic Aviation B200, N46L
LOCATION: Latitude, Longitude, and Altitude included in MetNav files
ASSOCIATED_DATA: N/A
INSTRUMENT_INFO: Flagged data are due to missing data or to instrument issues.
CN statistics: Condensation Particle Counters
- CNgt6nm is measured with a BMI CPC-1710
- CNgt6nm_nonvol is measured with a BMI CPC-1710, where the sample is heated to 350 deg C
DATA_INFO: Aerosol measurements are reported at standard temperature and pressure (0 deg C, 1013.25 mb)
- Data in this file is NOT time synced
UNCERTAINTY: CPC data is 10%
ULOD_FLAG: -7777
ULOD_VALUE: N/A
LLOD_FLAG: -8888
LLOD_VALUE: N/A
DM_CONTACT_INFO: Michael Shook (michael.shook@nasa.gov)
PROJECT_INFO: SARP East 2023
STIPULATIONS_ON_USE: This is FIELD data. Please consult the PI and/or DM prior to use.
OTHER_COMMENTS: None
REVISION: RA
RA: None
*****
Time_Mid,CNgt6nm,CNgt6nm_nonvol
49068,3392.94,1488.95
49069,3391.92,1572.72
49070,3369.56,1580.84
49071,3311.75,1563.65
49072,3407.56,1446.77
49073,3313.15,1433.20
```

# ICARTT File Naming Convention

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## DataID\_LocationID\_YYYYMMDD\_R# [\_Description].extension

- **DataID:** a short description of measured parameter/species, instrument, or model prefixed by “FASMEE-”
- **LocationID:** an identifier of measurement platform/type, will be provided on the website in a drop-down box
- **YYYYMMDD:** UTC date of takeoff for flight data or the beginning of the measurement for ground sites
- **R#:** Revision identifier. Typically RA, RB, RC, ... for field data and R0, R1, R2, ... for the publication quality data. *Note: archived files cannot be overwritten, only replaced with subsequent revisions*
- **Description:** optional additional description of the file if necessary
- **Extension:** “ict” for ICARTT files, and “h5” for HDF 5 files, nc for netCDF files, etc.
- The underscore, “\_”, is used ONLY to separate the different fields of the filename
- Examples: the filename for SARP-East LARGE aerosol optical measurements made on a June 15, 2023 flight may be:
  - SARPEAST-LARGE-OPTICAL\_DA-B200\_20230615\_RA.ict (for field data)
  - SARPEAST-LARGE-OPTICAL\_DA-B200\_20230615\_R0.ict (for publication quality data)

# Other Data Reporting Requirements

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- **All files should follow ICARTT file naming convention**
- Keep the same number of variables and variable names for same dataID
  - Needed to facilitate online merge tool as the online merge tool UI is based on the latest submission
  - Required for publication quality files
- Use fixed variable name(s) for Time Stamps, i.e., Time\_Start, Time\_Stop, and Time\_Mid
- Indicate if the data is synched with the sampling time standard determined by the science team
- Variable standard names are required for publication quality data .ict files
- Add attributes for standard names when using netCDF or HDF format to maintain uniformity
- Publication-quality data cannot have mandatory user requirements or stipulations on use

# Data Reporting Requirements (cont.)

## Atmospheric Composition Variable Standard Names (ACVSN)

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- Standard name is designed as a “tag” to enhance data discoverability, usability, and ingest processing
  - Measurement category and CoreName are for discoverability across missions and archival process
  - Attributes: information for data use and more detailed search
- Please use the fields from the ACVSN list:  
<https://www-air.larc.nasa.gov/missions/etc/AtmosphericCompositionVariableStandardNames.pdf>
- New standard names can be added by contacting Morgan, Gao, or Michael
- Morgan will check the files on the repository and provide feedback to PI as necessary
- Best practices:
  - Use “none” for non-data product variables, e.g., total temperature
  - Use the same standard name for main variable and ancillary variable, e.g., O3 and O3\_unc
  - Additional information should be provided in long name/description

# Example Document Sharing Page

- <https://www-air.larc.nasa.gov/cgi-bin/DocXhg/SARPDocs>

**Login here to view/upload documents**

User ID :

Password :

## SARP Documents / File Sharing

Status Update	Telecons	Presentations	Publications	Forecasts	Meetings	Research & Other Docs	Mission Reports	Hide All
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No. Date Recv'd [ Author Name ] Document Description

1.	2023-06-15	[Travis]	DA-B200 Flight Report 20230613 1230	[1.69 MB]	*	<a href="#">mission_report</a>
2.	2023-06-15	[Travis]	DA-B200 Flight Report 20230613 0930	[1.13 MB]	*	<a href="#">mission_report</a>
3.	2023-06-15	[Travis]	DA-B200 Flight Report 20230613 1230	[1.44 MB]	*	<a href="#">mission_report</a>
4.	2023-06-15	[Travis]	DA-B200 Flight Report 20230613 0930	[1.13 MB]	*	<a href="#">mission_report</a>

\* Login Required

# Example Document Sharing Page

- <https://www-air.larc.nasa.gov/cgi-bin/DocXhg/SARPDocs>
- File upload process:
  - Log in
  - Choose file, document type, author name, and text to appear on the file list
- File list is public, but viewing/downloading requires logging in

**File Upload :**  No file chosen

\* **Doc Type**      \* **Author's Name**      \* **Text describing the file; e.g.,**  
Science Team Meeting 8/27/15 @LaRC - Deployments & Coordination

Please Select ...

     \* **Required**      *For help, please contact Ali Aknan | Last Updated: December 2022 | Ver 2.3*

## SARP Documents / File Sharing

Status Update	Telecons	Presentations	Publications	Forecasts	Meetings	Research & Other Docs	Mission Reports	<b>Hide All</b>
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No.	Date Recv'd	[ Author Name ]	Document Description	
1.	<a href="#">2023-06-15</a>	[Travis]	<a href="#">DA-B200 Flight Report 20230613 1230 [1.69 MB]</a>	<a href="#">mission report</a>
2.	<a href="#">2023-06-15</a>	[Travis]	<a href="#">DA-B200 Flight Report 20230613 0930 [1.13 MB]</a>	<a href="#">mission report</a>
3.	<a href="#">2023-06-15</a>	[Travis]	<a href="#">DA-B200 Flight Report 20230613 1230 [1.44 MB]</a>	<a href="#">mission report</a>
4.	<a href="#">2023-06-15</a>	[Travis]	<a href="#">DA-B200 Flight Report 20230613 0930 [1.13 MB]</a>	<a href="#">mission report</a>