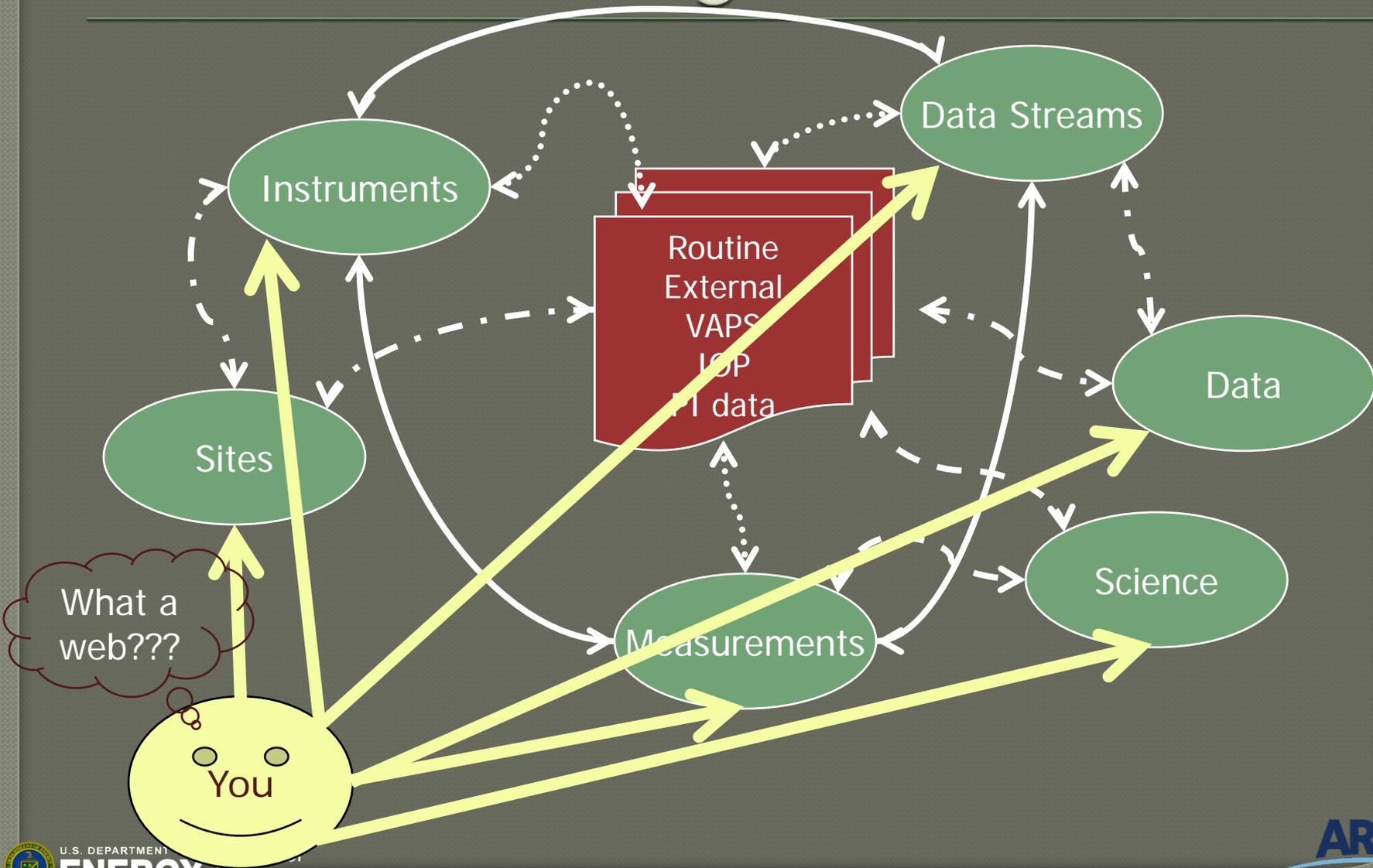


Obtaining Data from the ARM Archive

Orientation for new Science Team Members



Wandering ARM Web “stuff”



What a web???

You

Instruments

Data Streams

Sites

Data

Measurements

Science

Routine
External
VAPS
IOP
PI data

One click to the ARM Data Archive

The ARM Climate Research Facility is a U.S. Department of Energy scientific user facility for the study of global climate change by the national and international research community.

FEATURE 01.06.2010

Cirrus Clouds Hold Clues to Climate

On January 4, scientists sponsored by ARM began a five-month aircraft campaign to gather data from cirrus clouds in the skies above Oklahoma. Using an instrumented Learjet 25 research aircraft, their goal is to obtain a new and comprehensive set of in-cloud, or "in situ," measurements about the size and number of ice crystals that make up cirrus clouds. » Read More

[VIEW ALL FEATURES](#)

USING OUR FACILITIES

Preproposals for FY2012 for AMF and AAF deployments **due February 16**. Successful candidates will be eligible for up to **\$150K** per year for three years of research funding from Atmospheric System Research. To learn more, see [announcements](#).

FIELD CAMPAIGNS

- SPARTICUS**
Small Particles in Cirrus
- RHUBC-II**
Chile: Radiative Heating in Underexplored Bands Campaign 2
- CAP-MBL**
Azores: Clouds, Aerosol and Precipitation in the Marine Boundary Layer

Recovery Act
Learn about ARM's efforts.

ARM
CLIMATE RESEARCH FACILITY

U.S. DEPARTMENT OF **ENERGY**

Office of Science

ARM Data Archive Home Page

Get routine ARM data



Data Browser [?]

Select datastreams, view quality information about the data and order data files with the Data Browser. The "Novice Interface" guides new users through the process, while the "Datastream Interface" is designed for users experienced with ARM data.



Data Cart [?]

Browse ARM website pages to find datastreams of interest to place in the Archive data cart. This can be done by clicking "Build an Order" from any instrument, measurement, datastream, or VAP page.



Catalog Browser [?]

The catalog based user interface presents, in an interactive sequence of tabs, a list of available data files organized in a way that will be useful to the inexperienced Archive user.



Thumbnail Browser [?]

View prepared plots of data to quickly find data of interest to you. The thumbnail browser provides measurement type and date range selections to retrieve data plot thumbnails. You can also download high-resolution images of the data plots, or download



Emphasis on guiding users in their selection of data access tools



Statistical Browser [?]

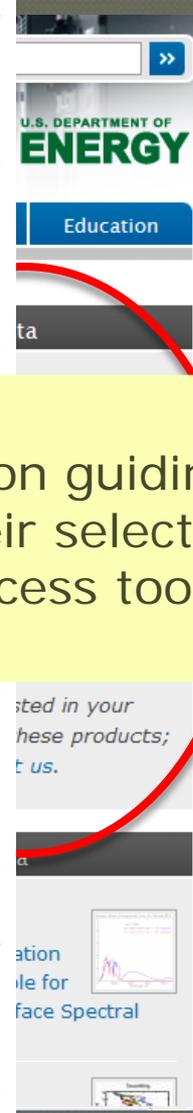
Users select a location and measurement and then drill down through time scales ranging from the full period of record to individual months. In addition to viewing graphs displayed by this interface, access to extractions of data behind the statistical graphs, obtain the measurements that were used for the statistics, or place the order for related ARM data files.

Get special data

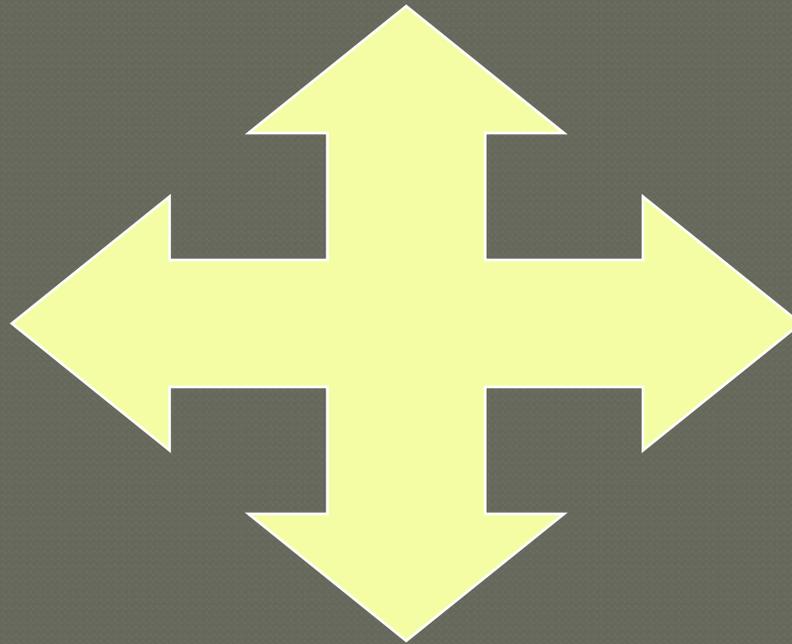


IOP Data PI Data Showcase Data [?]

Browse and download data generated from ARM Intensive Operation Periods or "IOPs". Data is stored in a directory structure organized by year, site, IOP name and instrument. A README file is included in each directory to provide documentation.



Accessing ARM Data: Options

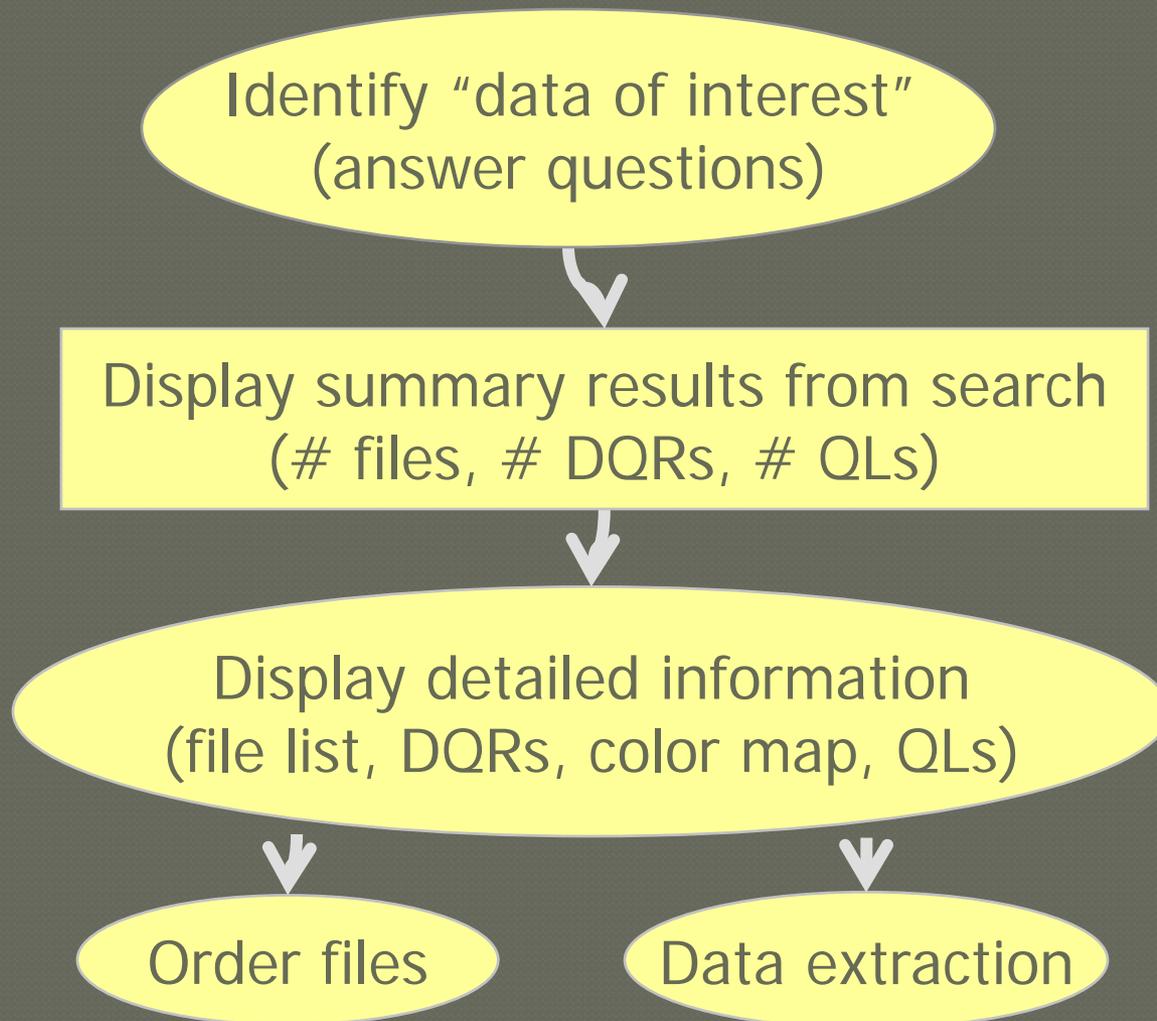


Comparison of Browser/Interface Options

Interface name	Accessible data	"Ordering" approach <i>(armarchive@ornl.gov, 1-888-ARM-DATA)</i>
Data Cart	Routine ARM data and some IOP data	<i>"I need to read about what you have, then I will decide."</i> Discover areas of interest by browsing the ARM web documentation and collect items of interest.
Data Browser	Routine ARM data	<i>"I know what I want. Do you have it?"</i> Searching with predefined selection criteria.
Catalog Interface	Routine ARM data	<i>"I am not sure what I want. I need to see what you have available."</i> Browsing a hierarchy of availability summaries.
Thumbnail Browser	Most routine ARM data	<i>"I will know what I want when I see it."</i> Searching with a combination of predefined selection criteria and visual review of data plots
NCVWeb	Routine ARM Data	<i>"I want to see my own data plot."</i> Interactive data plotting tool with visualizing, extracting, statistics generation capabilities.
Statistical Browser	Special Data (CMBE, QCRAD, CONSTRVARANA)	<i>"I need to see climatological summary of cloud and radiation data at ARM sites, then I'll drill down further."</i> Gain insight via statistical plots at the main sites for various time periods. Download the statistics, measurements and data files that went into them.
IOP, PI, and Showcase Data Browser	IOP, PI, and Showcase beta data	<i>"I need to look in the odd parts bin."</i> Direct access to IOP data. Navigate /year/site/iop directory tree. Also use narrow Google search.



Typical Logic behind Data Access Tools, Browsers, and Interfaces



General flow of User Interface

- Create account (new users only)
- Login to interface
- Formulate data selection
- Accept or reject results - submit request
- Logoff or do another request
- Wait for e-mail notification
- Copy files using anonymous FTP
- Search ARM web for ancillary information

Who are you? Who wants to know?

- Archive users must register.
- Notification helps you with data access.
- ARM infrastructure is a “National User Facility”
 - provides access to extra budget!!
 - OMB requests User Facilities to report user statistics for several “demographic categories”
- Some personal information is required*
 - *personal information is not reported individually and is accessible only to Archive staff after entry

“How personal??”

- Archive account creation requires:
 - Name
 - E-mail address
 - Mail address
 - Institution name
 - Institution type
 - Education status (student, graduate student, etc.)
 - Gender*
 - Ethnicity*
 - Citizenship*
 - ARM role and function

*”decline to state” option available for these items



ARM Archive – Data Access Examples

[ARM.gov](#) » [Measurements](#) » [Cloud base height](#)

Measurement : Cloud base height

For a given cloud or cloud layer, the lowest level of the atmosphere where cloud properties are detectable.

Categories

[Cloud Properties](#)

Instruments

The above measurement is considered scientifically relevant for the following instruments. Refer to the [datastream \(netcdf\)](#) file headers of each instrument for a list of all available measurements, including those recorded for diagnostic or quality assurance purposes.

- ☑ ARM Instruments
 - » [BLC](#) : Belfort Laser Ceilometer
 - » [MPL](#) : Micropulse Lidar
 - » [MWRP](#) : Microwave Radiometer Profiler
 - » [VCEIL](#) : Vaisala Ceilometer
- ☑ External Instruments
 - » [NCEPGFS](#) : National Centers for Environment Prediction Global Forecast System
 - » [NWSSURF](#) : National Weather Service Surface Meteorology Data
 - » [RUC](#) : Rapid Update Cycle Model Data
- ☑ Field Campaign Instruments
 - » [AERIPLUS-UWISC](#) : AERIPLUS-University of Wisconsin
 - » [CO2LIDAR](#) : Carbon Dioxide Doppler Lidar
 - » [CEIL-UMIAMI](#) : Ceilometer(University of Miami)
 - » [CIR](#) : Cloud Infrared Radiometer
 - » [IRSI](#) : Infrared Sky Imager
 - » [MIRAI](#) : JAMSTEC Research Vessel Mirai
 - » [MPL](#) : Micropulse Lidar
 - » [MPL-AIR](#) : Micropulse Lidar- Airborne
 - » [MWRP](#) : Microwave Radiometer Profiler
 - » [LBTM-MINNIS](#) : Minnis Cloud Products Using LBTM Algorithm
 - » [VISST](#) : Minnis Cloud Products Using Visst Algorithm
 - » [RONBROWN](#) : NOAA Research Vessel Ron Brown
 - » [NAWX](#) : NRC Airborne W and X Band Radar
 - » [NWSSURF](#) : National Weather Service Surface Meteorology Data
 - » [MPLNOR](#) : Normalized Backscatter Profiles from the Micropulse Lidar
 - » [PARSL](#) : PNNL's Atmospheric Remote Sensing Laboratory

Order Data

[BUILD AN ORDER](#) 



Comments?

We would love to hear from you!
Send us a note below or call us at
1-888-ARM-DATA.

 **SEND**

ARM Archive – Data Browser Example



ARM Data Browser

[My Account](#) [Log out](#)

[Home](#) [Site](#) [Date Range](#) [Data Stream](#) [Data Selection Summary](#)

Select ARM Site

Note: You will be asked to make some selections to establish your search criteria for ordering ARM data or viewing data quick looks and quality information

Please select an ARM Site [?] from the following list

- Black Forest, Germany; Mobile Facility
- Eureka, Ellesmere Is., Canada; for NOAA SEARCH project
- Global Earth Coverage
- Graciosa Island, Azores, Portugal; Mobile Facility
- Niamey, Niger; Mobile Facility
- North Slope Alaska
- Point Reyes CA, USA; Mobile Facility
- SHEBA (Surface HEat Budget of the Arctic)
- Shouxian, Anhui, China; Mobile Facility
- Southern Great Plains
- Southern Great Plains [development]
- Tropical Western Pacific



[NEXT](#) [RESET](#)

Reference Map



Navigation

- [Site](#)
- [Date Range](#)
- [Data Stream](#)
- [Summary Page](#)
- [Place Order](#)

Questions/Comments?

We would love to hear from you! Send us a note below or call 1-888-ARM-DATA.

Email Address

[Submit](#)

Interface Help

- [View interface help documentation](#)

ARM Documentation

- [Global Earth Coverage \(GEC\)](#)
- [Niamey, Niger, Mobile Facility \(NIM\)](#)
- [North Slope Alaska \(NSA\)](#)
- [Point Reyes CA, USA, Mobile Facility \(PYE\)](#)
- [Richland WA, USA, Mobile Facility test \(RLD\)](#)
- [SHEBA \(Surface HEat Budget of the Arctic\) \(SHB\)](#)

Data Extraction Capabilities

New! Available in all interfaces

ARM
CLIMATE RESEARCH FACILITY

Select Measurements: Please select measurement(s) from the following list, *base_time* and *time_offset*

About | Science

Data Stream Name	Measurements
sgp30smosE1.b1	Primary Measurements Humidity, relative, 30-min intervals, standard deviation (sd_rh) Humidity, relative, at 2-m height, 30-min intervals (rh) Precipitation, 30-min intervals (precip) Pressure, atmospheric, at 1-m height, 30-min intervals (bar_pres) Pressure, vapor, at 2-m height, 30-min intervals (vap_pres) Temperature, air, 30-min intervals, standard deviation (sd_temp) Temperature, air, at 2-m height, 30-min intervals (temp) Wind direction, 30-min intervals, standard deviation (sd_deg) Wind direction, at 10-m height, 30-min intervals (wdir)

Select files to

user ll
Total
Total

Allows users to extract the data for a specific set of measurements

(Use [control-mouse c

sgp30smosE1.b1.20
sgp30smosE1.b1.20
sgp30smosE1.b1.20
sgp30smosE1.b1.20
sgp30smosE1.b1.20
sgp30smosE1.b1.20
sgp30smosE1.b1.20
sgp30smosE1.b1.20
sgp30smosE1.b1.20
sgp30smosE1.b1.20

Select Output File Options:
Combine output files: yes no
package output file size as : 1 GB

Order Files and Create Subset

Select All | Submit Order | Extract Measurements **NEW**

Field Campaign Data: ARM provides two options

PRELIMINARY DATA SHARING SYSTEM

- Provides restricted access distribution during operations and initial data review
 - FTP only access via accounts with passwords
 - No usage tracking
- Provides an option for data review and delivery to ARM in a shared working space
 - Create, write, read, NO delete
- Allows very flexible data structures and documentation
 - Start as “user defined”
 - Evolve to “ARM defined”
- NOT for permanent storage

FINAL DATA SYSTEM

- Provides open access to all Archive users
 - Discovery is also linked to full web descriptions for Campaigns
 - Requires introductory documentation about campaigns, instruments, subdirectory and filename logic
 - README.html file required and displayed for each subdirectory
 - Usage is tracked and can be reported
 - For permanent storage

Data submission and distribution requirements arranged during Field Campaign Proposal process



Field Campaign Data

ARM Intensive Operati... x

My IOP Download Page | ARM IOP Data Browser | ARM Archive Home Page | ARM Homepage | Direct URL: <http://iop.archive.arm.gov/arm-iop/2009/nsa/mmcr/cherry-tps/?uid=GNK&st=4b993e2e>

NSA 2009 Barrow MMCR Calibration Campaign Total Precipitation Sensor (TPS)

The Total Precipitation Sensor (TPS) primarily measures total precipitation, temperature, and horizontal winds. The data are provided in netCDF format. Please note the DQR.txt file for information on missing or incorrect data.

Contact:
Jessica Cherry at jcherry@iarc.uaf.edu, PI

/arm-iop/2009/nsa/mmcr/cherry-tps/

Parent Directory

README.html
File last modified: Mon Jan 4 18:45:36 2010 UTC
File size: 552 bytes
File description: HyperText Markup Language document

DQR.txt
File last modified: Mon Jan 4 18:39:19 2010 UTC
File size: 580 bytes
File description: Text file

nsatpsS01_b1_20090226.200159.cdf
File last modified: Wed Apr 22 21:00:02 2009 UTC
File size: 20268 bytes
File description: netCDF file ([dump header](#))
netCDF comment:
netCDF history: created by user dsmgr on machine ruby at 18-Mar-2009,21:09:36, using \$State: ds-zebra-zeblib-4.16-0 \$
Base Time: Thu Feb 26 20:01:59 2009 UTC
First observation time: Thu Feb 26 20:01:59 2009 UTC
Last observation time: Thu Feb 26 23:59:40 2009 UTC
Number of observations: 235

nsatpsS01_b1_20090227.000040.cdf

My IOP Download Page | ARM IOP Data Browser | ARM Archive Home Page | ARM Homepage

Package Type <input type="radio"/> bzip2 tar file <input checked="" type="radio"/> gzip tar file <input type="radio"/> zip file	Directories/Files to Include <input type="text"/> <input type="button" value="Remove from list"/>	Directories/Files to Exclude <input type="text"/> <input type="button" value="Remove from list"/>	<input type="button" value="Submit request"/> <input type="button" value="Cancel request"/>
---	--	--	--

Done

AIRS Validation Soundings Phase IV and V-NSA

Weather Sensor and the Yankee Total Precipitation Sensor.

IOP Data Browser – “home page”

The screenshot shows the ARM Intensive Operation Period (IOP) Data Browser interface. At the top, the browser title is "ARM Intensive Operation Period (IOP) Data Browser". Below the title, there is a paragraph of introductory text and a "Documentation" link. The main content area displays a directory tree for "/arm-iop/". The directory tree includes a "Parent Directory" link and several sub-directories: "Obeta-data/", "Opi-data/", "Oref-data/", "Ospecial-data/", and a list of years from 1993 to 2006. A "README.html" file is also listed. Below the directory tree, there are three sections for download management: "Package Type" (with radio buttons for bzip2 tar file, gzipped tar file, and zip file), "Directories/Files to Include" (with a list box and a "Remove from list" button), and "Directories/Files to Exclude" (with a list box and a "Remove from list" button). A "Cancel request" button is also present.

ARM Intensive Operation Period (IOP) Data Browser

This system has been established to allow for easy browsing and download of data generated from ARM Intensive Operation Periods or IOPs. At every level in the hierarchy of data, a `readme.html` file is displayed in the top frame. This file describes the contents of the selected directory which is displayed in the middle frame. The bottom frame contains options for downloading entire directory trees from this system.

Users may browse through the data collection by clicking on directories shown in the middle frame. As the user navigates the directory hierarchy, documentation will be displayed in the top frame. If documentation is not available for a particular directory, a sincerely apologetic message will be displayed instead. Individual files may be viewed or downloaded by clicking on the desired file name displayed in the middle frame. *Remember: to ensure that a file is downloaded instead of displayed in a browser frame, click on the desired file name while holding down the shift key.*

Documentation

Directory Navigation

Download Management

Click for access to special, reference, beta, and PI data sets

Click for access to year/site/iop directory structure

IOP Data Browser – IOP View

My IOP Download Page | ARM IOP Data Browser | ARM Archive User Interface | ARM Homepage | Direct URL: <http://iop.archive.arm.gov/arm-iop/2004/nsa/mpace/>

Mixed-Phase Arctic Clouds Experiment (M-PACE)

Executive Summary

Significant, interrelated, atmospheric, oceanic and terrestrial changes have been occurring in the Arctic in recent decades. These changes are broad-ranging, impacting every part of the arctic environment. Arctic clouds have been identified as playing a central role in several hypothesized feedback processes. Yet, nowhere in the Northern Hemisphere are the interactions among clouds, the over- and underlying atmosphere, and the ocean surface more complex, have a greater potential climatic impact, and, at the same time, less understood than they are at high latitudes.

The recent SHEBA experiment revealed that mixed-phase clouds appear to dominate the low-cloud fraction within the Arctic. Moreover, it was found that the Arctic mixed-phase clouds are distinct from their lower latitude cousins. Unfortunately, SHEBA did not manage to produce a comprehensive data set needed to study these poorly understood arctic clouds. Numerical modeling studies suggest that the ice phase heavily influence cloud evolution, and the cloud microphysics also are intimately tied to cloud-scale dynamics and the underlying surface energy budget (i.e. sea ice coverage and thickness). Moreover, the radiative characteristic of these clouds are not fully understood.

- [Parent Directory](#)
- [README.html](#)
File last modified: Wed Nov 16 21:10:22 2005 UTC
File size: 6627 bytes
File description: HyperText Markup Language document
- [ameriflux-sfcflux/](#)
- [aux-data/](#)
- [bahrman-metar/](#)
- [daniel-nir/](#)
- [demott-cfdc/](#)
- [eloranta-hsrl/](#)
- [heymfield-cpi/](#)
- [kok-cvi/](#)
- [long-sfcflux/](#)
- [mather-parsl/](#)
- [minnis-visst/](#)
- [morris-ssi/](#)

Click for access to more data sub-directories

My IOP Download Page | ARM IOP Data Browser | ARM Archive User Interface | ARM Homepage

Package Type

- bzip2 tar file
- gzip tar file
- zip file

Directories/Files to Include

Directories/Files to Exclude



IOP Data Browser – Download Bulk Data

MPACE CSI data. Final data processing 1/17/2005

All condensed water concentrations are expressed in mg/m3.

Flight data notes:

20040929: First research data flight. CSI baseline is high

20040930: Initial part of flight data is very good. Heavy ice

20041005: Initial data shows considerable water contamination

20041006: Initial shifting baseline. Data from 18:29:00-18:30:00

20041008: Excellent data set. From data start to 20:33:00

My IOP Download Page

Welcome back [Giri Palanisamy!](#)

Shown below are the IOP data packages which have been constructed for you. Clicking on the file name will transfer the file to your computer. Clicking on **Content listing** will display an index of the files. Files which are still being constructed may not be downloaded and are denoted by the blinking **Under construction...** label. This page will automatically reload every 60 seconds to provide updated status information.

If the links to any files below do not function properly, try browsing your download directory directly at <http://iop.archive.arm.gov/gp8/>. Be careful not to download any files which are still under construction.

[request.30359.20060320.120002.tar.gz](#)
Modification Time: Mon Mar 20 12:00:02 2006
133120 bytes
[Content listing](#)

Page created at Mon Mar 20 12:00:17 2006

/arm-iop/2004/nsa/mpace/kok-cvi/

[Parent Directory](#)

[20040929_CWC.txt](#)
File last modified: Mon Jan 17 19:06:04 2005 UTC
File size: 90869 bytes
File description: Text file

[20040930_CWC.txt](#)
File last modified: Mon Jan 17 19:06:04 2005 UTC
File size: 88944 bytes
File description: Text file

[20041005_CWC.txt](#)
File last modified: Mon Jan 17 19:06:08 2005 UTC
File size: 186018 bytes
File description: Text file

[20041006_CWC.txt](#)
File last modified: Mon Jan 17 19:06:13 2005 UTC
File size: 225790 bytes
File description: Text file

Your IOP data order has been submitted. Your Order ID is **30359**.

Electronic mail will be sent to you when the requested data have been packaged up and are ready for download. The data will be available for download from the [My IOP Download Page](#).

Thank you for using the ARM IOP Data Archive.

ARM IOP Data Archive

The requested data are approximately **376 KB** in size.

The data will be packaged into a tar file compressed with **gzip** so the actual download size may be considerably less.

To confirm this order, please click **Submit Confirmed Order**; otherwise, click **Cancel**.

My IOP Download Page | ARM IOP Data Browser | ARM Archive User Interface | ARM Homepage

Package Type

bzip2 tar file
 gzip tar file
 zip file

Directories/Files to Include

Directories/Files to Exclude

ARM Archive – Catalog Browser Example (new version)

ARM
CLIMATE RESEARCH FACILITY

ARM Catalog Interface

Current Selections

Questions/Comments

We would love to hear from you! Send us a note below or call 1-888-ARM-DATA.

Email Address:

Send us a note below or call 1-888-ARM-DATA.

Selected: 2009-sgp

Facility Type

Central Extended External Intermediate Network

Instrument Category

Aerosols (2)

Airborne Observations (2)

Atmospheric Profiling (2)

Atmospheric Carbon (2)

Cloud Properties (2)

Derived Quantities and Models (2)

Radiometric (2)

Make Your Selections: Click the outside the hints: Click the outside the hints

Site

Global Earth Coverage (2)

North Slope Alaska (2)

Southern Great Plains (2)

Tropical Western Pacific (2)

SHEBA (Surface Heat Budget of the Arctic) (2)

Niamey, Niger, Mobile Facility (2)

Point Reyes CA, USA; Mobile Facility (2)

Black Forest, Germany; Mobile Facility (2)

Shouxian, Anhui, China; Mobile Facility (2)

Graciosa Island, Azores, Portugal; Mobile Facility (2)

Portugal; mobile facility (2)

Data Level

Instrument Code	a0	a1	b1	c0	c1	s1
10rlprofas1ferr(2)				165		728
10rlprofdep1turn(2)				146		728
10rlprofext1ferr(2)				163		728
10rlprofint1turn(2)				296		728

Selected: 2009-sgp/aerosol-C

Month

Facility	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Central Facility, Lamont, OK (C1)	31	28	31	30	31	30	31	31	30	31	30	31

2009

Facility	2009	2010
Central Facility, Lamont, OK (C1)	3837	2764
Central Facility, Lamont, OK (C1)	37343	39198
Central Facility, Lamont, OK (C1)	35151	2833
Central Facility, Lamont, OK (C1)	1748	37
Central Facility, Lamont, OK (C1)	35151	2833
Central Facility, Lamont, OK (C1)	245596	18853
Central Facility, Lamont, OK (C1)	75282	6252
Central Facility, Lamont, OK (C1)	11860	44
Central Facility, Lamont, OK (C1)	12039	6
Central Facility, Lamont, OK (C1)	18342	2432

2010

38 1748 37

38 35151 2833

188 245596 18853

31 75282 6252

39 6

18342 2432

IOP Data PI Data Showcase Data [?]

Browse and download data generated from ARM Intensive Operation Periods or "IOPs". Data is stored in a directory structure organized by year, site, IOP name and instrument. A README file is included in each directory to provide documentation.



ARM Archive – NCVWeb Example

Variable Statistics for File: **sgpqcradbefflux1longC1.c1.20090311.000000.cdf**

Get routine ARM data

Apply Changes

NCV

X Axis
 gmthour [1440] (hours)
 Autoscale Manual
 Xmin 0 Xmax 0

Y Axis
 BestEstimate_down_short_hemisp
 Autoscale Manual
 Ymin 0 Ymax 0

Symbol: None Plus Circle
Line:

Plot Size: Small Medium

Apply Changes You may s

Choose New File 

Variable Details | Statistics

Send Comments/Questions to [Send](#)

Index	Variable Name	Min	Max	Mean	Std Dev	Outliers	Missing
0	base_time	1236729600	scalar	1236729600	n/a	n/a	0 out of 1
1	time_offset	0.0000000	86340.000	43170.000	24950.190	n/a	0 out of 1440
2	time	0.0000000	86340.000	43170.000	24950.190	n/a	0 out of 1440
3	BestEstimate_down_short_hemisp	-1.99831	943.562	208.835	287.590	31	31 out of 1440
5	source_BestEstimate_down_short_hemisp	-3	0	-0.0645833	0.435558	n/a	0 out of 1440
6	down_short_hemisp	-1.99831	943.562	208.835	287.590	40	31 out of 1440
8	aqc_down_short_hemisp	-1	4	0.00486111	0.297039	n/a	0 out of 1440
9	aqc_GSW2SumSW	-1	0	-0.565972	0.495801	n/a	0 out of 1440
10	aqc_DifSW2GSW	-1	0	-0.565972	0.495801	n/a	0 out of 1440
11	down_short_diffuse_hemisp	-0.310010	489.675	96.3599	128.689	0	0 out of 1440
13	aqc_down_short_diffuse_hemisp	0	0	0.00000	0.00000	n/a	0 out of 1440
14	short_direct_normal	-0.492220	951.710	183.684	293.778	0	0 out of 1440
16	aqc_short_direct_normal	0	0	0.00000	0.00000	n/a	0 out of 1440
17	up_short_hemisp	-0.617610	202.330	46.3570	63.7403	0	0 out of 1440
19	aqc_up_short_hemisp	0	0	0.00000	0.00000	n/a	0 out of 1440
20	aqc_SWupTest	-1	0	-0.563194	0.496163	n/a	0 out of 1440
21	down_long_hemisp	219.955	317.670	251.811	22.5164	29	29 out of 1440
23	aqc_down_long_hemisp	0	8	0.161111	1.12419	n/a	0 out of 1440
24	aqc_LWdn2Ta	-1	0	-0.0201389	0.140524	n/a	0 out of 1440
25	aqc_LWdn2LWup	-1	0	-0.0340278	0.181364	n/a	0 out of 1440
26	up_long_hemisp	288.875	374.090	319.065	22.1250	29	29 out of 1440
28	aqc_up_long_hemisp	0	8	0.161111	1.12419	n/a	0 out of 1440
29	aqc_LWup2Ta	-1	0	-0.0201389	0.140524	n/a	0 out of 1440
30	Temp_Air	-5.16099	3.29000	-0.818443	2.53534	0	0 out of 1440



Contact Us at ...

◉ ARM Information

- <http://www.arm.gov>
- info@arm.gov
- 1-888-ARM-DATA (1-888-276-3282)

◉ Archive Assistance

- armarchive@ornl.gov
- Phone: 1-888-ARM-DATA
- Fax : 1-865-574-4665



Backup Materials

- IOP Data Browser
- Other information
 - Other Data types
 - Sources
 - Filename syntax
- Quality information structure
- Standing Orders
- Archive details
- Web diagram
- Interface details
 - Catalog Browser
 - Thumbnail Browser

ARM IOP* Data Browser



*IOP == Field Campaign

Field Campaigns: Options for data sharing at the Archive

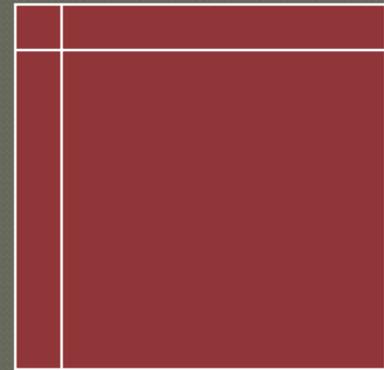
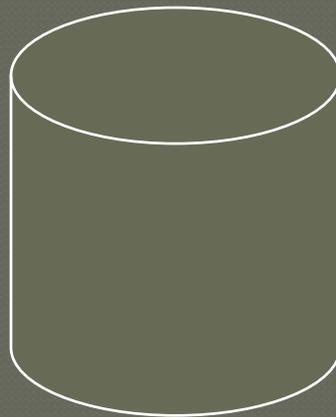
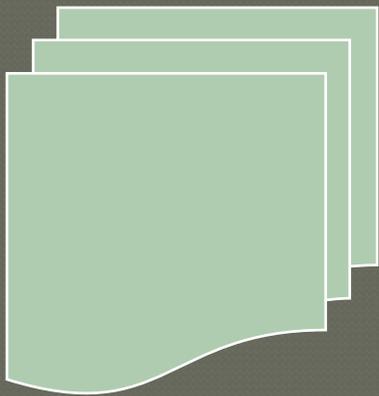
- Optional and available upon request by Campaign PI
- FTP-only accounts create for each Co-PI
- PI and coworkers are responsible for data transfers
- Storage and access valid for only 6-12 months after the end of Campaign
- ARM Archive / External Data Center staff will transfer data from preliminary area to fully open access to final data
 - Campaign data in preliminary area can be finalized there and do not needed to be resubmitted to IOP upload system
- OR
- Procedure for upload of final data (<http://www.xdc.arm.gov/docs/iopsteps.html>)
- Contact External Data Center Staff to coordinate data transfer
 - Currently: Alice Cialella (cialella@bnl.gov, 1-631-344-3286)

Other ARM Archive Documentation Topics

- Comparison of data types
 - *(routine data, IOP data, etc.)*
- Type of available quality information
 - *(flags, Data Quality Reports)*
- Data access beyond the user interfaces
 - *(“contact us”, Standing Orders)*
- Archive details
 - *Performance statistics*
 - *Logical configuration*



Data Types



ARM Data Types - overview

- Continuous data (stored offline, accessible by requests from user interface)
 - ARM collected data
 - Value added products
 - External data
- Special data (stored online, accessible from web interface)
 - Field Campaign (IOP) data
 - Beta data
 - PI generated data products



ARM Data Types – more detail

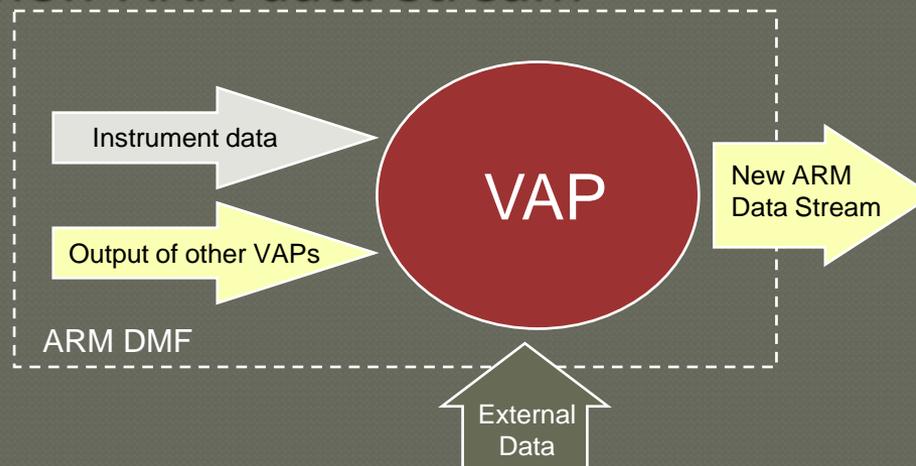
armarchive@ornl.gov
1-888-ARM-DATA

- ARM collected data
 - RAW data files
 - Available upon request, but not accessible from User Interface
 - Minimal documentation; user beware
 - Wide variety of formats; many are binary
 - Processed data files
 - Accessible from user interfaces
 - Common formats include NetCDF and HDF
- Value added products (VAPs)
 - Include one or more of the following
 - Advanced algorithms
 - Multiple data inputs
 - Input from long-time periods
 - Best estimate products
 - ARM produces some VAPs to improve the quality of existing measurements. In addition, when more than one measurement is available, ARM also produces "best estimate" VAPs.



More on VAPS...

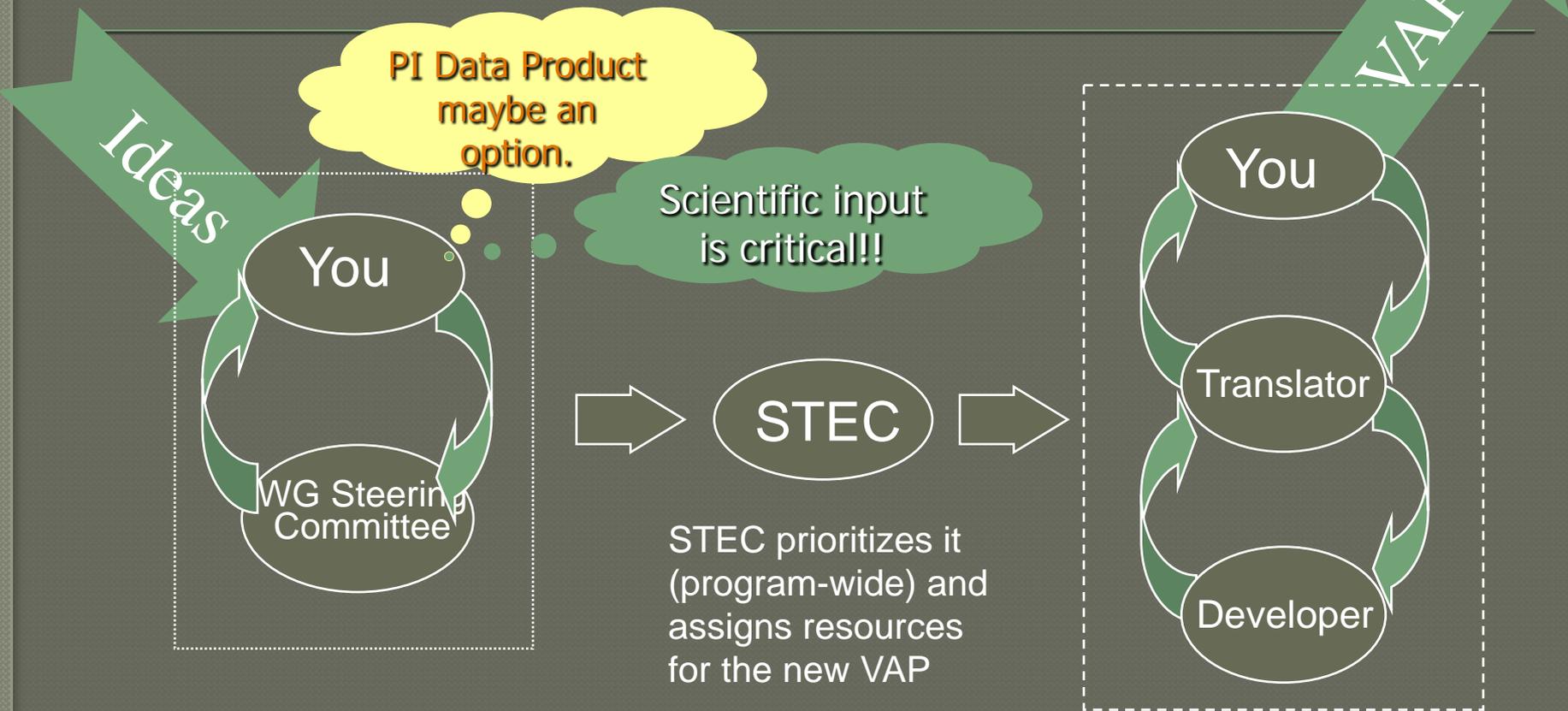
- ◆ VAPs are products from automated analytical procedures (models, retrievals, etc.) that are run in the ARM data system
- ◆ Inputs come from instruments, other VAPs, and/or external data
- ◆ Output is a new ARM data stream



- ARM wants your input. Please note *"Procedure for Submitting Science and Research Products to the Data Archive"* at:
http://www.arm.gov/data/pi_procedure.stm

Still more on VAPS...

ARM needs you! (For VAP inspiration and advice.)



Scientist gets idea for new model or algorithm and presents it to the WG. The WGSC prioritizes the idea and contacts the STEAC

Translator works with the Scientist to further define the algorithm, and then interacts with the Developer to implement the VAP. Translator and the Scientist then evaluate and document.

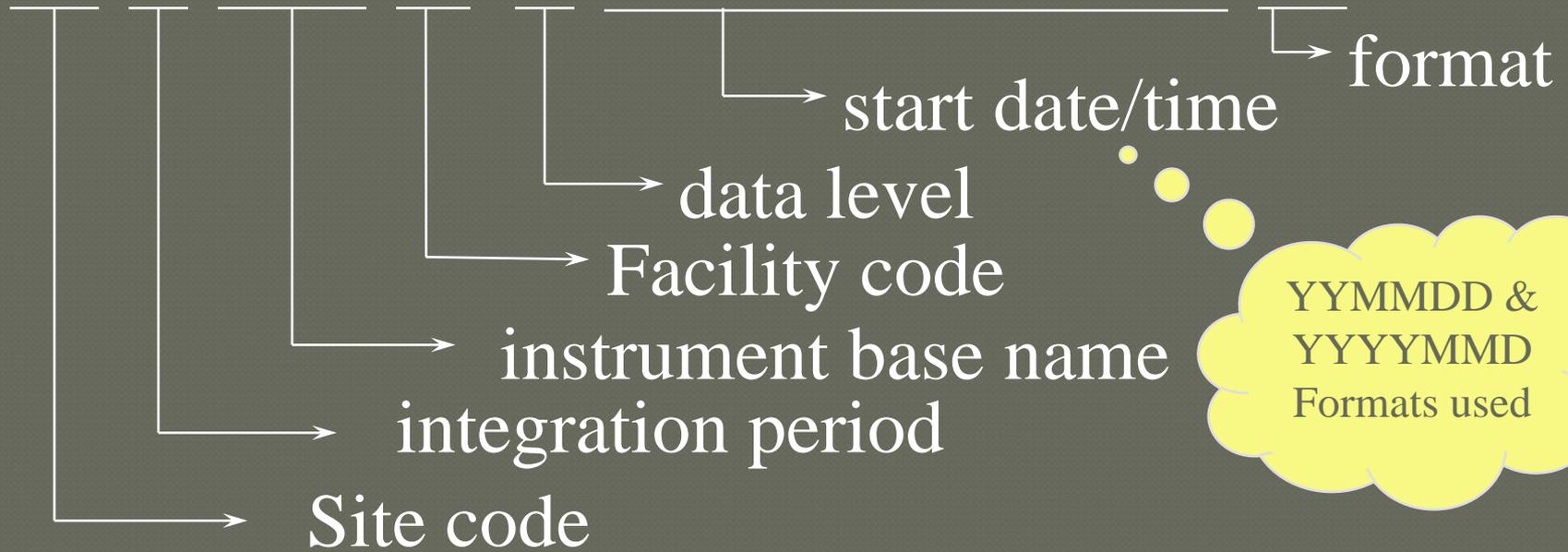


ARM Data Types – still more detail

- External data
 - Generated by other programs (e.g., NOAA weather models, NASA satellites, etc.)
 - Many formatted into NetCDF consistent with ARM style
 - Specialized subsets specific to ARM sites
 - Geographic clips of global data
- Field Campaign Data
 - Special experiments (e.g., M-PACE, 2003 Aerosols, etc.)
 - Stored online in separate data structure
- PI generated data products
 - Considered useful to ARM users
 - Provided “at will” by a researcher
 - Supported by the researcher
- Showcase data sets
 - Condensed and integrated subsets of selected ARM datastreams
 - Targeted for a particular research community and contain only a few measurements
 - Usually “best estimates” derived from instruments and/or VAPS

sgp30@%\$#&!!! (or, making sense of the ARM file naming convention)

sgp30smosE1.a1.20000311.000000.cdf



YYMMDD &
YYYYMMDD
Formats used



Quality Information



Types of Quality Information

- Automated products

- QC flags
 - inserted in data files during processing
- Summaries of flags (data color)

- Manual products

- Data Quality Reports (DQRs)
 - web accessible reports; delivered as html files after data requests (more later); event driven and problem-based
- Instrument Mentor Monthly Summary Reports
 - web accessible; linked to instrument web pages.
- Data Quality Assessment Reports



Beyond User Interfaces



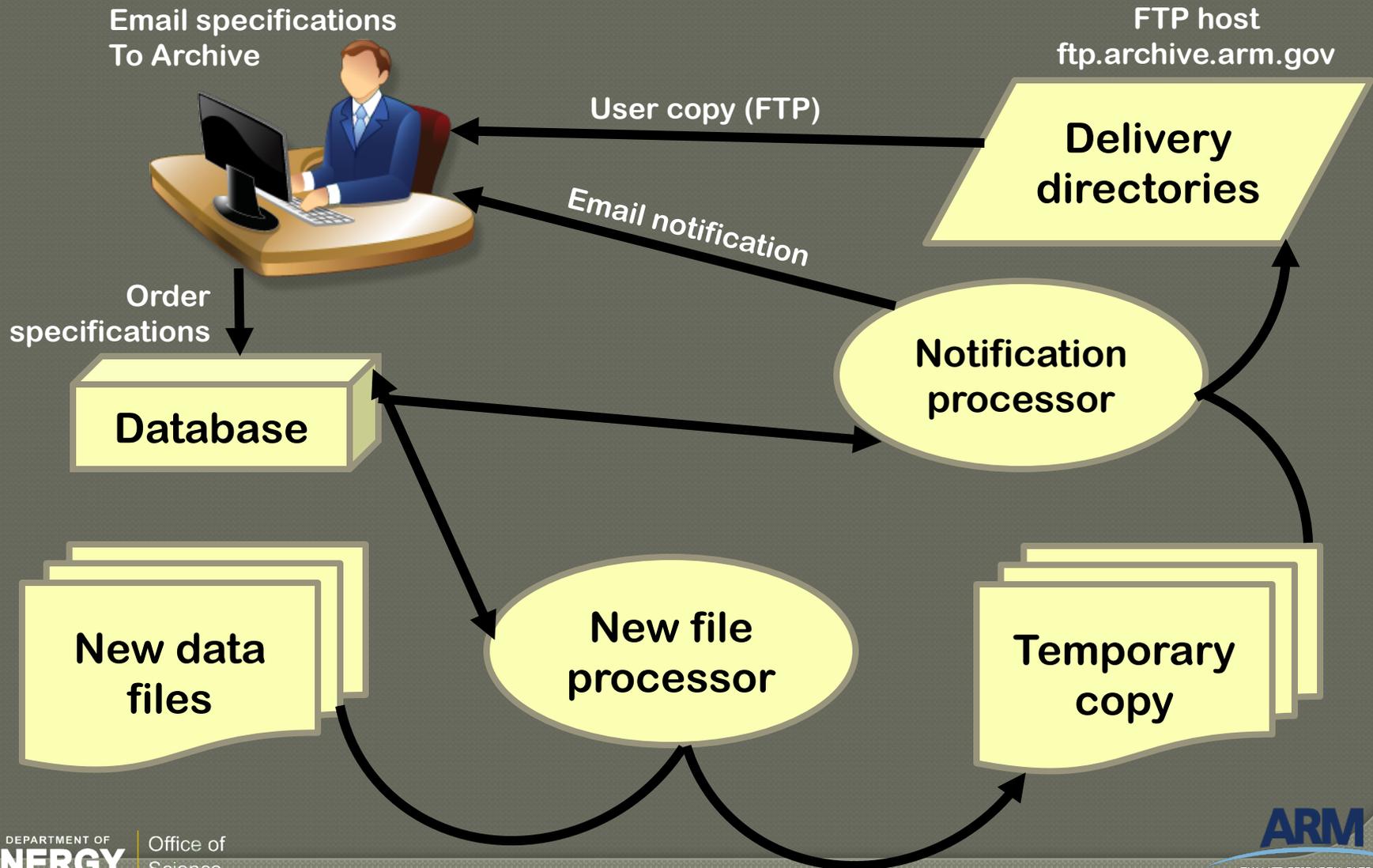
Hmmm...



“Standing Orders”: Data Distribution Upon Arrival

- A “Standing Order” is an open request for access to a copy of all new files arriving at the Archive
 - Matching a user-specified set of data streams
 - Arriving during a delivery period
- Designed for users wanting to:
 - Access data shortly after Archival
 - Build their own complete collection of selected data streams

Standing Order Processing



Standing Order Information

- Online documentation
 - <http://www.archive.arm.gov/docs/standing-orders.html>
- Send request:
 - What data streams?
 - What delivery frequency?
 - To: armarchive@ornl.gov
- More details in reference section of handout

Archive Details

More than you want to know...?

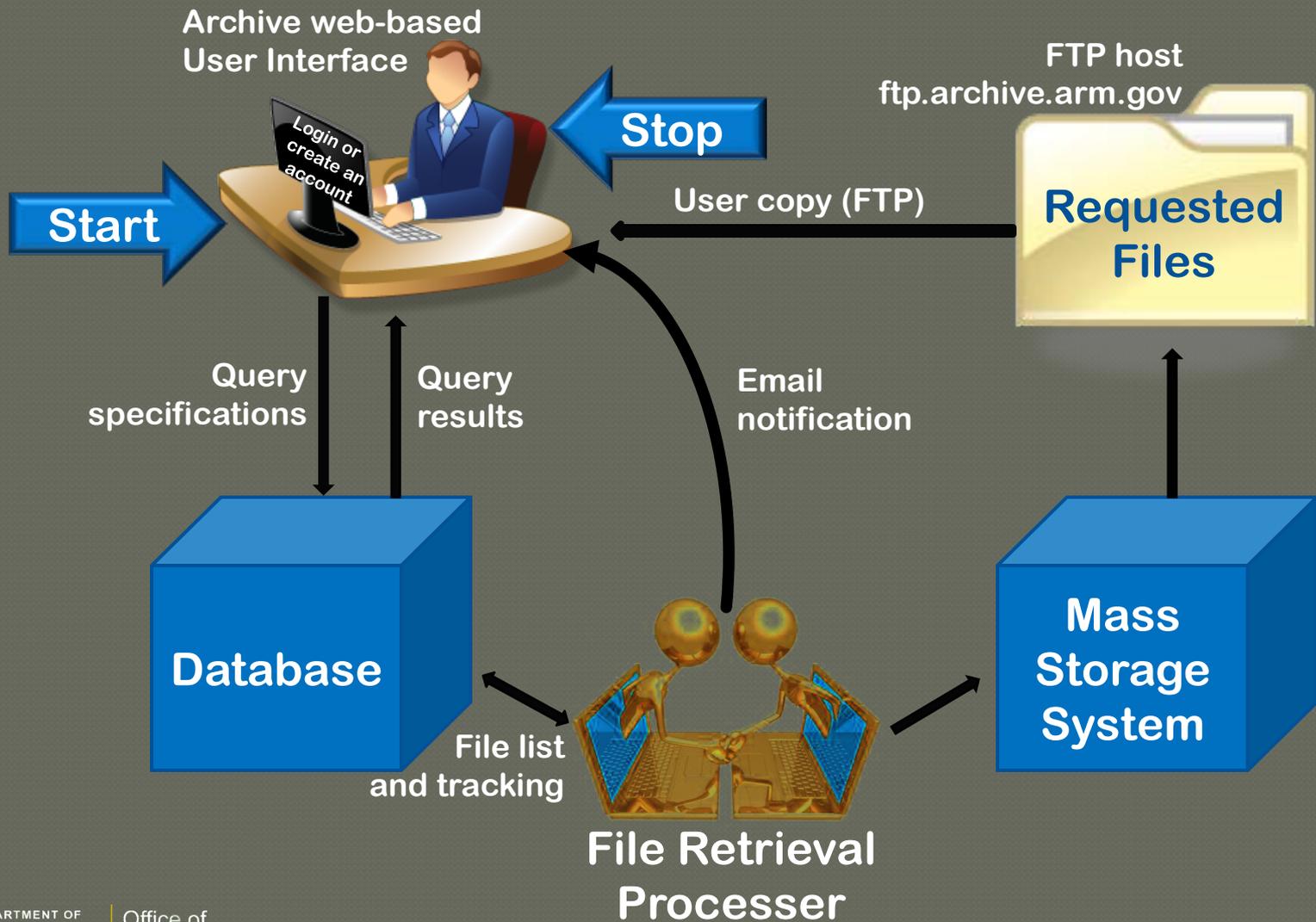


You are NOT alone...

- 3 sites
- 10's facilities
- 100's data sources
- 100's data users
- 1000's measurement types
- 1,000,000's data files
- 1,000,000,000's measurements
- 10,000,000,000,000's bytes
- Storage
 - New data: 50-100,000 files, 2-3 TB per month
 - Total storage: 9.9 million files, 182 TB of data
- Usage
 - Yearly requests – 2 million files, 20 TB of data
 - 800-1000 different users active each year.



You and the Archive 'Guts' (Sanitized)



Accessing Data from the Archive

- *Contact Us.....*

- *1-888-ARM-DATA, armarchive@ornl.gov*

- **Continuous data distribution**

- “Standing Orders”



**Remaining slides are backups; some
taken/moved out of STM2008 talk**



ARM Data Browser



CLIMATE RESEARCH FACILITY

ARM Data Browser

[My Account](#) [Log out](#) [Help](#)

[Home](#) [Site](#) [Date Range](#) [Search Path](#) [Category](#) [Instruments](#) [Facilities](#) [Data Selection Summary](#)



CLIMATE RESEARCH FACILITY

ARM Data Browser

[My Account](#) [Log out](#) [Help](#)

[Home](#) [Site](#) [Date Range](#) [Search Path](#) [Category](#) [Instruments](#) [Facilities](#) [Data Selection Summary](#)

[Southern Great Plains](#)

Data Selection Summary

(show/hide [search criteria](#))

[Print or save this page](#) [Email this page](#)

You can list the associated files [?](#), view the data quality color calendar [?](#), view data quality reports (DQR) [?](#), or view quick looks(QL) [?](#)

[More Quick Looks](#)

[List files to order](#) [Quality Color Summary](#) [DQ Reports](#) [Quick looks](#)

Summary Table

Data Stream ? Information			Estimated Archive Results (01/2006 to 03/2007)			
Data Stream Name	Data Stream Description	Full Date Range	Files	Size(MB)	DQR Days	QLs
sgp5mwravgC1.c1	Microwave Radiometer (MWR): 5-minute average integrated vapor and liquid water	10/09/1993 - 06/04/2007	446	7.4	0	445
sgpmwriosE14.b1	Microwave Water Radiometer (MWR): water liq. & vapor along line of sight (LOS) path	03/21/2001 - 04/26/2009	452	279.4	4	443

Note:

- Results** : statistics are estimates based on monthly summaries
- Data Streams** : The highest [data level](#) data streams are selected for any given date. Multiple data streams may result
- Full Date Range** : Valid date range for a data stream. Data streams with different data levels or with different date ranges are possible.
- DQR Days** : Number of days in the data selection time range that have one or more significant DQRs (red or yellow data quality limitations). Other, less critical, informational DQRs may also be available.

[ARM Data Browser Home \(Cancel selections\)](#) [PROBLEMS?](#)

Navigation

- [Site](#)
- [Date Range](#)
- [Search Path](#)
- [Category](#)
- [Instruments](#)
- [Facilities](#)
- [Summary Page](#)
- [Place Order](#)

Questions/Comments?

We would love to hear from you! Send us a note below or call 1-888-ARM-DATA.

Email Address

Interface Help

- [View interface help documentation](#)

ARM Documentation

- [Data Stream](#)
- [Data Files](#)
- [Data Quality Color Calendar](#)
- [Microwave Radiometer \(MWR\)](#)

ARM Catalog Browser



U.S. DEPARTMENT OF
ENERGY

Office of
Science



Logical Flow of Catalog Interface

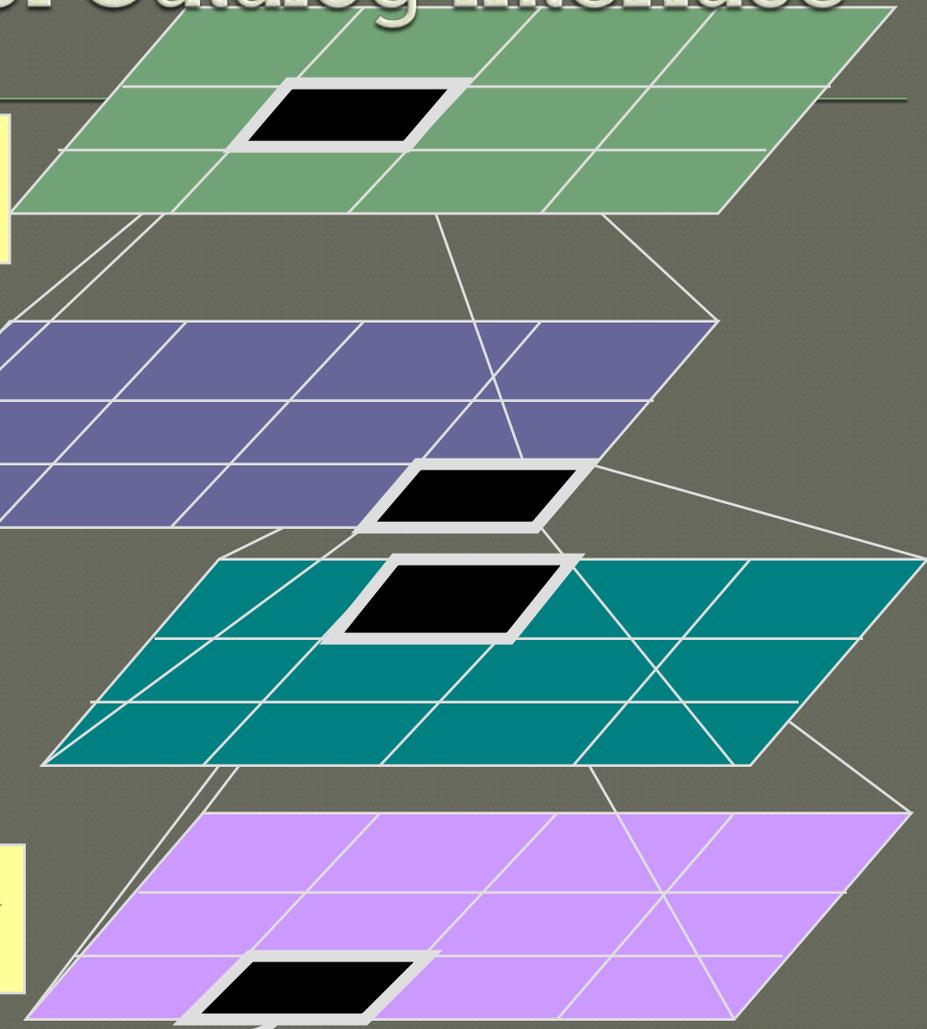
Step 1: select a year and a site from a table of $Years \times Sites$

Step 2: select a facility type and instrument category from a table of $Instrument\ category \times Facility\ type$

Step 3: select an instrument and a data level from a table of $Instruments \times Data\ levels$

Step 4: select a facility and a month from a table of $Facilities \times Months$

Data added to 'Add to cart'



Catalog Browser (1)

Current Selections

Questions/Comments

We would love to hear from you! call 1-888-

Proceed to Order Remove Selected Streams

Make Your Selections: Click on a non zero cell in the table to view data. Click the outside the highlighted data to close it. Double click

Instrument Category	Facility Type				
	Central	Extended	Boundary	Intermediate	External Network
Aerosols	2583	14261			
Airborne Observations	280				
Atmospheric Profiling	2090	1172	947	1729	2007
Atmospheric Carbon	1779				
Cloud Properties	38948	133	1007		443 299
Derived Quantities and Models	1240	10004			4702 339
Radiometric	8881	51737	947		934 259
Surface Observations					443

Site	2001	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Global Earth Coverage	1472	2062	2678	4246	5024	4473	4804	5302	4754	4752	4742	4753	4710	4244	2247	2214	197	
North Slope Alaska	104	289	289	602	1250	1803	2500	3256	3492	3464	3530	3525	3740	3700	3743	3810	3320	
Southern Great Plains	1254	1757	1417	1210	1010	1010	1010	1010	1010	1010	1010	1010	1010	1010	1010	1010	1010	1010
Tropical Western-Pacific			252	1040	1200	1520	1464	1000	4300	4907	4000	3710	3000	1000	1000	1000	1000	1000
SHAR (Surface Heat Budget of the Arctic)			140	622														
Namoy, Niger, Mobile Facility														800	1521	262		
Pant Reyes CA, USA, Mobile Facility														600	20			
Black Forest, Germany, Mobile Facility																1100	44	
Shouren, Arica, Chile, Mobile Facility																	1200	1
Quilima Island, Azores, Portugal, Mobile Facility																		300

Help

9 2010

3 3Z

51 2003

596 18853

32 6262

42 2432

ARM Thumbnail Browser

The screenshot displays the ARM Thumbnail Browser interface. At the top, there is a navigation bar with the ARM logo and links for Shopping Cart, Retrieve View, My Account, Log Out, and Help. Below this is a secondary navigation bar with Home, Site/Facility, Date Range, Category, Instruments, Measurements, and Thumbnails. A search filter is set to Date Range from 10/10/2004 to 03/12/2005. The main content area shows a grid of thumbnails for four data streams: sgp30ebbrE9.b1, sgp30smosE9.b1, sgp30smosE9.b1 precip, and sgpswatsE9.b1 soilwatpot_E. Each thumbnail shows a time-series plot for a specific date from 10/31/2004 to 11/06/2004. The interface includes navigation controls like 'Previous', 'Next', and 'Customize view to 7 days'.

Move	Datastream	ALL VIEW	10/31/2004	11/01/2004	11/02/2004	11/03/2004	11/04/2004	11/05/2004	11/06/2004
▼	sgp30ebbrE9.b1	d							
▼	sgp30smosE9.b1	rh							
▼	sgp30smosE9.b1	precip							
▼	sgpswatsE9.b1	soilwatpot_E							



Display Thumbnails

ARM Atmospheric Radiation Measurement

Shopping Cart Retrieve View

Home Site/Facility Date Range Cate

show/hide search criteria

10/10/2004 to 03/12/2005
mm/dd/yyyy mm/dd/yyyy

Previous 1 2 3 4 5 6

(Note: ALL - Select all files for entire date range and all datastreams; VIEW - Select a thumbnail image displays the corresponding quick look)

Move Rows	Datastream/ Measurement	ALL	VIEW	10/10/2004	10/11/2004	10/12/2004
▼ ▲	sgp30ebbrE9.b1 q	<input type="checkbox"/>	<input type="checkbox"/>			
▼ ▲	sgp30smosE9.b1 rh	<input type="checkbox"/>	<input type="checkbox"/>			
▼ ▲	sgp30smosE9.b1 precip	<input type="checkbox"/>	<input type="checkbox"/>			
▼ ▲	sgpswatsE9.b1 soilwatpot_E	<input type="checkbox"/>	<input type="checkbox"/>			

Previous 1 2 3 4 5 6 Ne

Select all files for all the listed datastreams:
(from 10/10/2004 to 03/12/2005)

Add to Shopping Cart View Shopping Cart and On

http://www.archive.arm.gov - QuickLook - Mozilla Firefox

Data Quality Information and Quick Look for sgp30ebbrE9.b1 (10/12/2004)

Close this window

Data Quality Color: (show/hide)

Measurement	Auto QC Color	DQR Color
Average soil heat flow at the surface	<input type="checkbox"/>	<input type="checkbox"/>
Heat flux, latent, at 1.5-m height, 30-min intervals	<input type="checkbox"/>	<input type="checkbox"/>
Heat flux, sensible, at 1.5-m height, 30-min intervals	<input type="checkbox"/>	<input type="checkbox"/>
Radiation, net	<input type="checkbox"/>	<input type="checkbox"/>

Missing Undetermined Review Pending Good Suspect Incorrect

Data Quality Report:

- 0050719.8 : SGP/EBBR/E9 - Improved EBBR CR10 Program (details)
- 0051112.6 : SGP/EBBR/E9 - metadata corrections (details)

Data Quick Look:

Heat Flux

Latent Heat Flux
Sensible Heat Flux

Heat Flux (W/m²)

Time (UTC)

(sgp30ebbrE9.b1.20041012.000000.odf)

Net Radiation

Irradiance (W/m²)

Time (UTC)

(sgp30ebbrE9.b1.20041012.000000.odf)

Average soil heat flow at the surface

Irradiance (W/m²)

Time (UTC)

(sgp30ebbrE9.b1.20041012.000000.odf)

Done

Measurement Code Descriptions	
q	Radiation, net
rh	Humidity, relative, at 2-m height, 30-min intervals
precip	Precipitation, 30-min intervals
soilwatpot_E	Soil Water Potential, East Profile

Thumbnail Browser – Catalog Interface

ARM Atmospheric Radiation Measurement

Thumbnail Browser

Shopping Cart Retrieve View My Account Log Out Help

Home Site/Year Category/Facility Type Instrument/data Level Facility/Month Data Streams Measurements Thumbnails

Number of Quick Look Files in Archive by Year and Site
 (Click on a non-zero cell in the table to choose a Site/Year and proceed to the next level of detail)

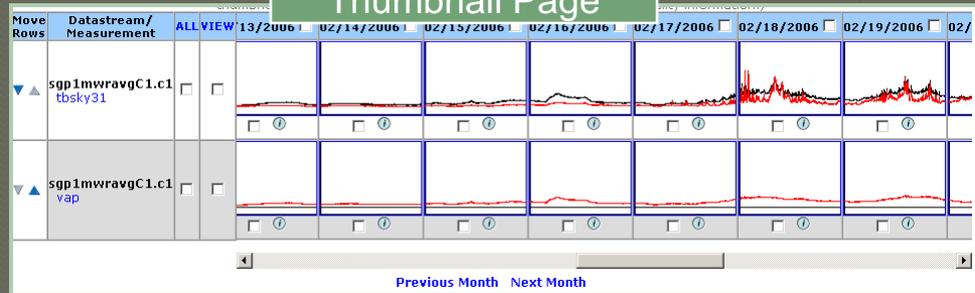
Site	Years Available																
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	
Southern Great Plains	375	1505	3187	12326	21073	31278	34260	35304	76770	89965	88991	91245	80319	82902	78410	10070	
North Slope Alaska	0	0	0											2	6909	5874	648
Tropical Western Pacific	0	0	0											5	12080	11300	1674
Point Reyes, California	0	0	0											6	0	0	0
Niamey, Niger; Mobile Facility	0	0	0											0	5399	74	0
Black Forest, Germany; Mobile Facility	0	0	0											0	5034	19	

Instrument Category	Facility Type			
	Central	Extended	Boundary	Intermediate
Aerosols	58	822	0	0
Airborne Observations	0	0	0	0
Atmospheric Profiling	552	60	358	111
Atmospheric Carbon	0	0	0	0
Cloud Properties	345			
Derived Quantities and Models	110			
Ocean Observations	0			
Other	0			
Radiometric	657	4124	178	0
Satellite Observations	0	0	0	0
Surface Meteorology	418	1789	2	2
Surface/Subsurface Properties	123	2895		

Instrument	Data Level
	c1
Microwave Radiometer (MWR): 5-minute average integrated vapor and liquid water	55
Microwave Radiometer (MWR): brightness temps and water amounts, 1-minute avg	55

Facility	Month		
	Jan	Feb	Mar
Central Facility, Lamont, OK(C1)	28	25	2

Thumbnail Page



ARM Data Cart Tutorial

- ◉ NEEDS NEW LINK!! Available at:
http://www.arm.gov/data/orderData_tutorial.stm

