

Obtaining Data from the ACRF Archive

Orientation for new
Science Team Members




Office of Science
U.S. Department of Energy



One click to the ACRF Data Archive



The screenshot shows the ARM website interface. At the top left is the ARM logo with a sun and clouds. To the right are links for 'VIEW CART', 'PEOPLE', 'SITE INDEX', and 'HOME', along with a search bar. Below this is a navigation menu with tabs for 'ABOUT ARM', 'ABOUT ACRF', 'SCIENCE', 'SITES', 'INSTRUMENTS', 'MEASUREMENTS', 'DATA', 'PUBLICATIONS', 'EDUCATION', and 'FORMS'. A red arrow points to the 'DATA' tab. Below the navigation is a banner with the text 'A Science Research Program for Global Climate Change'. The main content area is divided into three columns. The left column features a 'RESEARCH SPOTLIGHT' section with three numbered tabs (1, 2, 3) and a plot titled 'Instrument Mask'. The middle column has a section titled 'Data Available for Aerosol Indirect Effects Study in China' with a photo of a sign for the 'AMF 综合观测试验站 中国·寿县 2008.05.16 - 2008.12.31'. The right column contains four sections: 'Field Campaigns', 'Annual Meeting', 'Update', and 'Results', each with a small image and a brief description. At the bottom of the right column is a 'Publications' section with a link to the '2008 Annual Report'.

ARM 

[VIEW CART](#) | [PEOPLE](#) | [SITE INDEX](#) | [HOME](#)
 [SEARCH](#)

[ABOUT ARM](#) | [ABOUT ACRF](#) | [SCIENCE](#) | [SITES](#) | [INSTRUMENTS](#) | [MEASUREMENTS](#) | **[DATA](#)** | [PUBLICATIONS](#) | [EDUCATION](#) | [FORMS](#)

A Science Research Program for Global Climate Change

RESEARCH SPOTLIGHT 1 2 3



Second Version of Long-Term Climate Modeling Best Estimate Data Released

With major improvements in the cloud fraction, cloud liquid water path (LWP), precipitable water vapor (PWV), and surface radiative fluxes, a new version of the "Climate Modeling Best Estimate" (CMBE) is now available from the ARM Climate Research Facility (ACRF) Archive. This data set, specifically tailored for use in evaluating global climate models, includes long-term best estimates from 11 selected ACRF measurements and now encompasses data from the ACRF sites in Barrow, Alaska; Nauru Island; Manus Island, Papua New Guinea; and Darwin, Australia; and the Southern Great Plains

Data Available for Aerosol Indirect Effects Study in China



Data collected by the [ARM Mobile Facility in Shouxiang](#) during the Aerosol Indirect Effects Study in China from May through December 2008 are now in the Data Archive. Extensive measurements of clouds, aerosols, radiation, and precipitation will help scientists to examine the role of aerosols in affecting the regional climate and atmospheric circulation. To check availability, visit the [instrument and data plot page](#).

[Go to the Archive to order](#)

Field Campaigns



Call now closed for FY 2011 AMF/AAF proposals; learn more about [ACRF campaigns](#)

Annual Meeting



Online registration is now closed; for more information go to [Science Team Meeting](#)

Update



[Scanning cloud radar](#) to join mobile facility in Azores

Results



[Retrieving dust](#) optical depth and mineral composition from infrared spectra

Publications




Available online—[2008 Annual Report](#)

ACRF Data Archive – Newly Designed Home Page

Data Access Tools


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. [Help](#)

 [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. [Help](#)

 [Catalog Browser](#) The catalog based user interface presents, in an interactive sequence of tables, a hierarchical summary of available data files organized in a way that will be useful to the inexperienced, as well as the expert Archive user. [Help](#)


 [Thumbnail Browser](#) View prepared plots of data to quickly find data of interest to you. The thumbnail browser uses location, measurement type and date range selections to retrieve data plot thumbnails that the user can browse. You can also download high-resolution images of the data plots, or download the data files. [Help](#)

 **NEW** [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. [Help](#)

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. [Help](#)

Plot previously ordered data

 [NCV Web](#) NCVWeb is an interactive NetCDF data plotting tool users can use to plot the data they have ordered from the archive, or plot regular standing data orders, eliminating the need for separate visualization software. It has many powerful features such as producing detailed tables of NetCDF file contents, data extraction, generating statistics, and plotting one variable. [Help](#)

VIEW CART | PEOPLE | SITE INDEX | HOME

SEARCH

Featured Data Sets

The ARM Archive receives data daily. The following data sets and streams may be of interest to you:

- NEW** [Radiative Flux Analysis](#) PI Product Data
- New Release!** Climate Modeling Best Estimate Product, [Version 2](#)
- 3-hour Temporal Resolution ESCCP Cloud Data Around the ARM sites: [ESCCP Cloud ARM Evaluation Data](#)

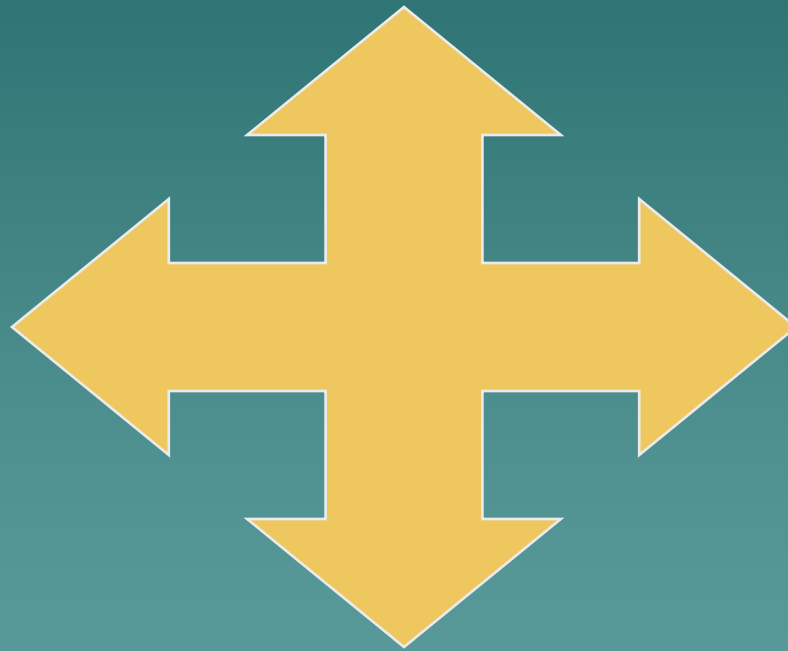
[External Data Center](#)

[Contact Us](#)

Emphasis on guiding users in their selection of data access tools



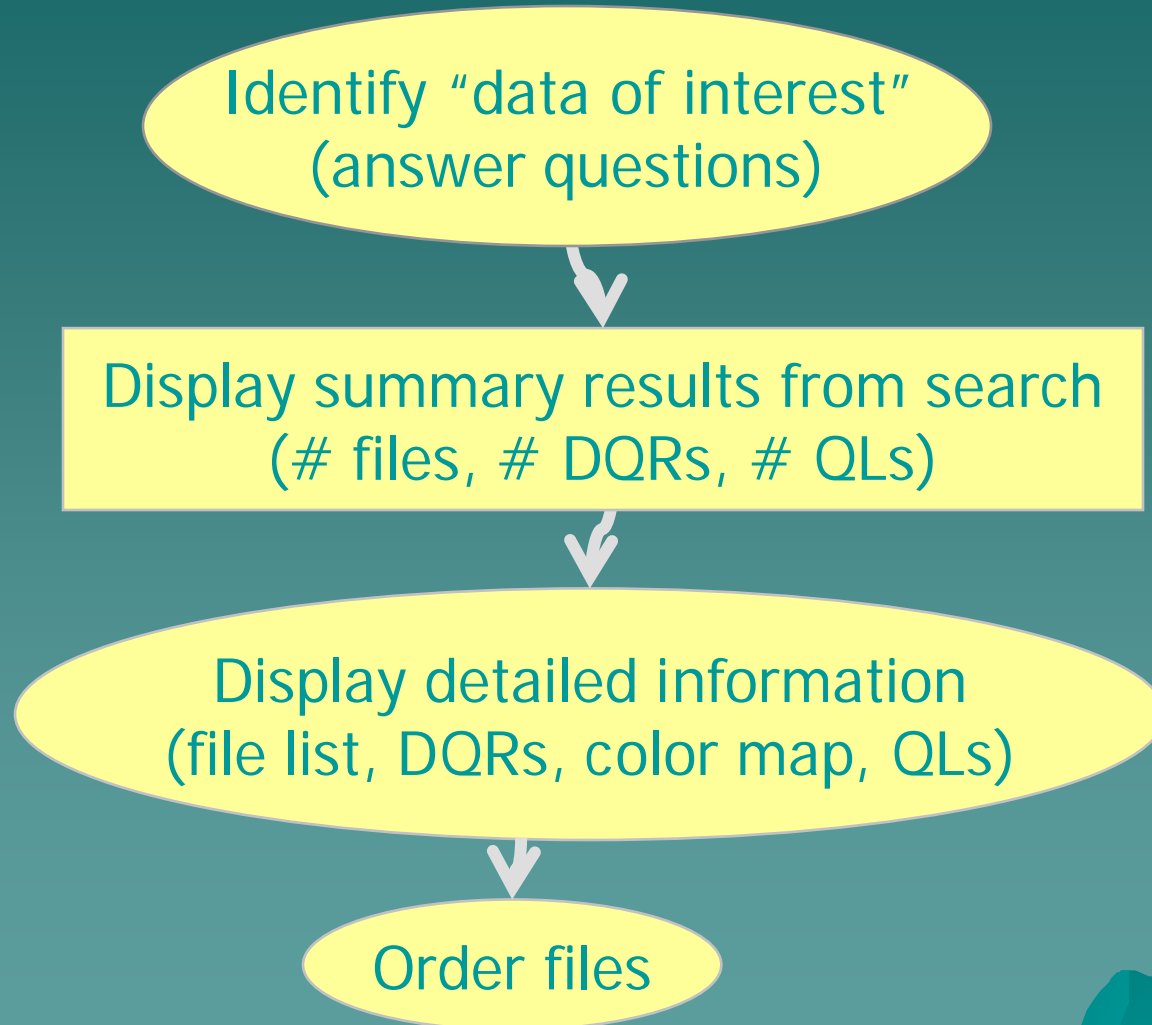
Accessing ARM Data: Options



Comparison of Browser/Interface Options

Interface name	Accessible data	"Shopping" approach (armarchive@ornl.gov , 1-888-ARM-DATA)
ARM 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
Web Shopping 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.
Statistical Browser	Special Data (CMBE, QCRAD, CONSTRVARANA)	<i>"I need to see climatological summaries 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 and their underlying measurements and data files.
IOP Data Browser	IOP, special, PI, and 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



ACRF Archive – Data Access Examples

Data Access Tools



VIEW CART

PEOPLE | SITE INDEX | HOME

SEARCH

Cloud base height

Measurement Categories: [Cloud Properties](#)

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

Note: Click the "☰" to expand/collapse the list.

Instruments that produce the measurement

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
- External Instruments
- Field Campaign Instruments

Value-Added Products (VAPs) including the measurement

- (ARSCL) Active Remotely-Sensed Cloud Locations Process
- (MPL) Micropulse Lidar Process
- (MPLCBH1SCOTT) Cloud Base Height from MPL Using Scott-Spinhime Algorithm Process
- (MPLNOR) Normalized Backscatter Profiles from the Micropulse Lidar Process
- (RLPROF) Raman LIDAR Vertical Profiles Process

Order Data

BUILD AN ORDER

Or use the [datastream interface](#) at the ARM Archive.



Questions/Comments?

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

Email Address

SUBMIT



The ARM Program gathers cloud and radiation measurements via land-based instruments, ships, and satellites.

NetCDF is an interactive NetCDF data plotting tool users can use to plot the data they have ordered from the archive, or plot regular standing data orders, eliminating the need for separate visualization software. It has many powerful features such as producing detailed tables of NetCDF file contents, data extraction, generating statistics, and plotting one variable

[Help](#)

[NCV Web](#)



ACRF Archive – Data Browser Example

Data Access Tools



ARM Data Browser

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

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

[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
- 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
- Tropical Western Pacific

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

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

[SUBMIT](#)

Reference Map



MAP LEGEND

- ARM Site
- Mobile Facility
- Other sites



ACRF Archive – Statistical Browser Example

The screenshot shows the ACRF Archive Statistical Browser interface. At the top, there are navigation tabs for 'ABOUT ARM' and 'ABOUT ACRF'. Below this, there's a section for 'Datastreams by Alpha' and 'Field'. The main content area is titled 'Data Plot Information and Data Extraction for *Cloud Fraction [%]*'. It features buttons for 'Get Statistics' and 'Get ARM Data Files'. A sidebar on the left allows users to 'Browse ARM Statistics' and '1) Select a Site', with options for 'North Slope Alaska', 'Southern Great Plains', and 'Tropical Western Pacific'. Below the site selection, there are thumbnails for data plots for dates '200611' and '200706'. A red arrow points from the '200611' thumbnail to the main plot area. The main plot area displays a vertical cross-section of 'Cloud Fraction based on MMCR at SGP, hourly mean, SGP.C1, 11/2006'. The y-axis is labeled 'height (m)' and ranges from 0 to 2.0x10⁴. The plot shows a color-coded vertical profile of cloud fraction. A sidebar on the right shows a date range selector with '11/2006' and '09/2007' options, and a thumbnail for '200705'. A 4-level pyramid diagram is overlaid on the plot, with levels labeled: 'Visualization via Plots' (top, blue), 'View Statistics' (second, blue), 'Raw Measurement Data' (third, blue), and 'Data Inventory & File Access' (bottom, green). Arrows point upwards between the levels, indicating a flow from data access to visualization.

many powerful features such as producing detailed tables of netCDF file contents, data extraction, generating statistics, and plotting one variable.



ACRF Archive – Catalog Browser Example (new version)

Current Selections

Proceed to Order | Remove Selected Streams

Make Your Selections: Click on a non-zero cell in the table to make your selection.

Facility Type Selection: Selected: 2009-sgp

Instrument Category	Central	Extended	Boundary	Intermediate	External
Aerosols (?)	204	2214			
Atmospheric Profiling (?)					461
Atmospheric Carbon (?)					118
Cloud Properties (?)					2160
Derived Quantities and Metrics (?)					77
Radiometric (?)				129	304
Satellite Observations (?)					118
Surface Meteorology (?)		81			514
915rwpempspec (?)				80	
915rwpwindcon					
915rwpwindmon					
915rwpwindene					

Data Level Selection: Selected: 2009-sgp/atmprof-C

Instrument Code	a0	a1	b1	c1
1twrmr (?)				77
30twrmr (?)				77
915rwpempspec (?)				80

Month Selection: Selected: 2009-sgp/atmprof-C/30twrmr-c1

Facility	Jan	Feb	Mar
Central Facility, Lamont, OK (C1)	31	28	18

Site	Year					Month					2008		2009					
	1993	1994	1995	1996	2005	2006	2007	2008	2009	Jan	Feb	Mar	2008	2009				
Global Earth Coverage (?)	1472	2892	3876	4348	5074	4473	4	760	4164	3167	2150	78	2150	78				
North Slope Alaska (?)	184	365	365	607	2271	16973	2	4926	33588	33782	33593	5930	33593	5930				
Southern Great Plains (?)	15386	70313	77110	125171	182407	226725	262713	268323	256771	265364	237947	205823	191752	197800	198540	238517	44951	
Tropical Western Pacific (?)			2262	10430	12990	29247	31444	30897	43318	43488	40300	36997	53675	69771	74065	13493	238517	44951
SHEBA (Surface HEAT Budget of the Arctic) (?)				1645	6622												74065	13493
Niamey, Niger; Mobile Facility (?)									736	13449	242							
Point Reyes CA, USA; Mobile Facility (?)									7592	289								
Black Forest, Germany; Mobile Facility (?)													11001	44				
hfe																		9644



ACRF Archive – NCVWEB Example

Data Access Tools

Apply Changes X Y Plot

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

Y Axis
BestEstimate_down_short_hemisp [1440]
 Autoscale Manual
Ymin 0 Ymax 0

Symbol: None Plus Star Circle
Line:

Plot Size: Small Medium Large

Apply Changes You may switch to

Choose New File Choose New Record

Variable Details **Statistics**

Send Comments/Questions to [Sean Moore](#)

Variable Statistics for File: sgpqcradbeflux1longC1.c1.20090311.000000.cdf

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

NCV Web



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
- Call "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

IOP Data Browser – “home page”

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.*

/arm-iop/

- Parent Directory
- Obeta-data/
- Opi-data/
- Dref-data/
- Ospecial-data/
- 1993/
- 1994/
- 1995/
- 1996/
- 1997/
- 1998/
- 1999/
- 2000/
- 2001/
- 2002/
- 2003/
- 2004/
- 2005/
- 2006/
- README.html

Package Type

- bzip2 tar file
- gzip tar file
- zip file

Directories/Files to Include

Remove from list

Directories/Files to Exclude

Remove from list

Cancel request

Documentation

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

Click for access to year/site/iop directory structure

Directory Navigation

Download Management

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-parasl/](#)
- [minnis-visst/](#)
- [morris-pei/](#)

Click for access to more data sub-directories

My IOP Download Page | ARM IOP Data Browser | ARM Archive User Interface | 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"/> Remove from list	Directories/Files to Exclude <input type="text"/> Remove from list	<input type="button" value="Submit request"/> <input type="button" value="Cancel request"/>
---	---	---	--



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/>

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- [Parent Directory](#)
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File last modified: Wed Nov 16 21:10:22 2005 UTC
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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-parasl/](#)
- [minnis-visst/](#)
- [morris-pei/](#)

Click for access to more data sub-directories

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

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



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 20:32:00

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-
 [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**.

Package Type

bzip2 tar file
 gzip tar file
 zip file

Directories/Files to Include

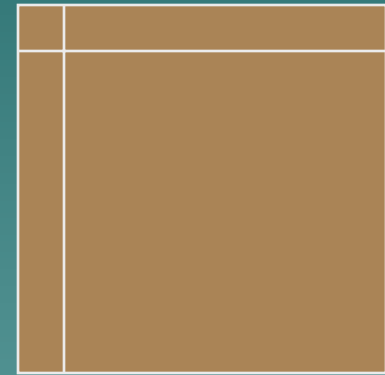
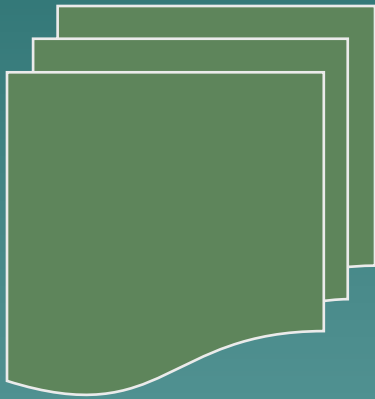
Directories/Files to Exclude



Other ACRF 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

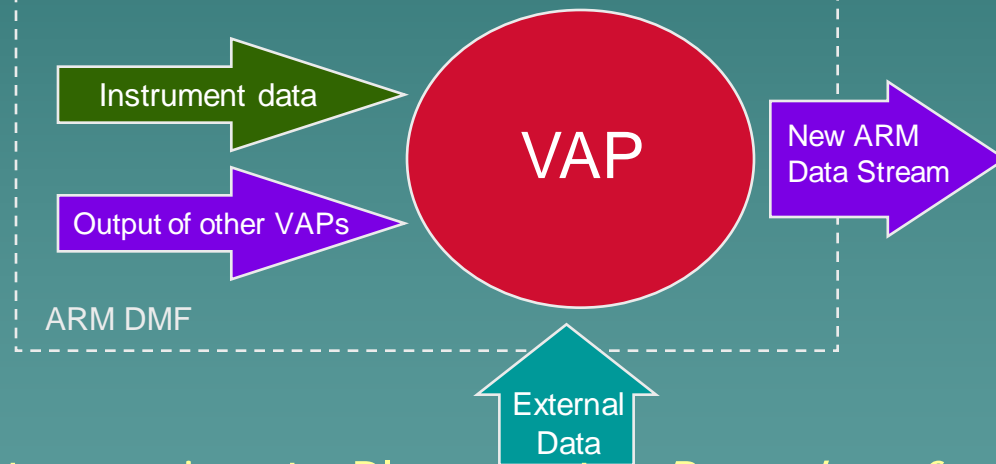
armarchive@ornl.gov
1-888-ARM-DATA

- ◆ 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
 - 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...

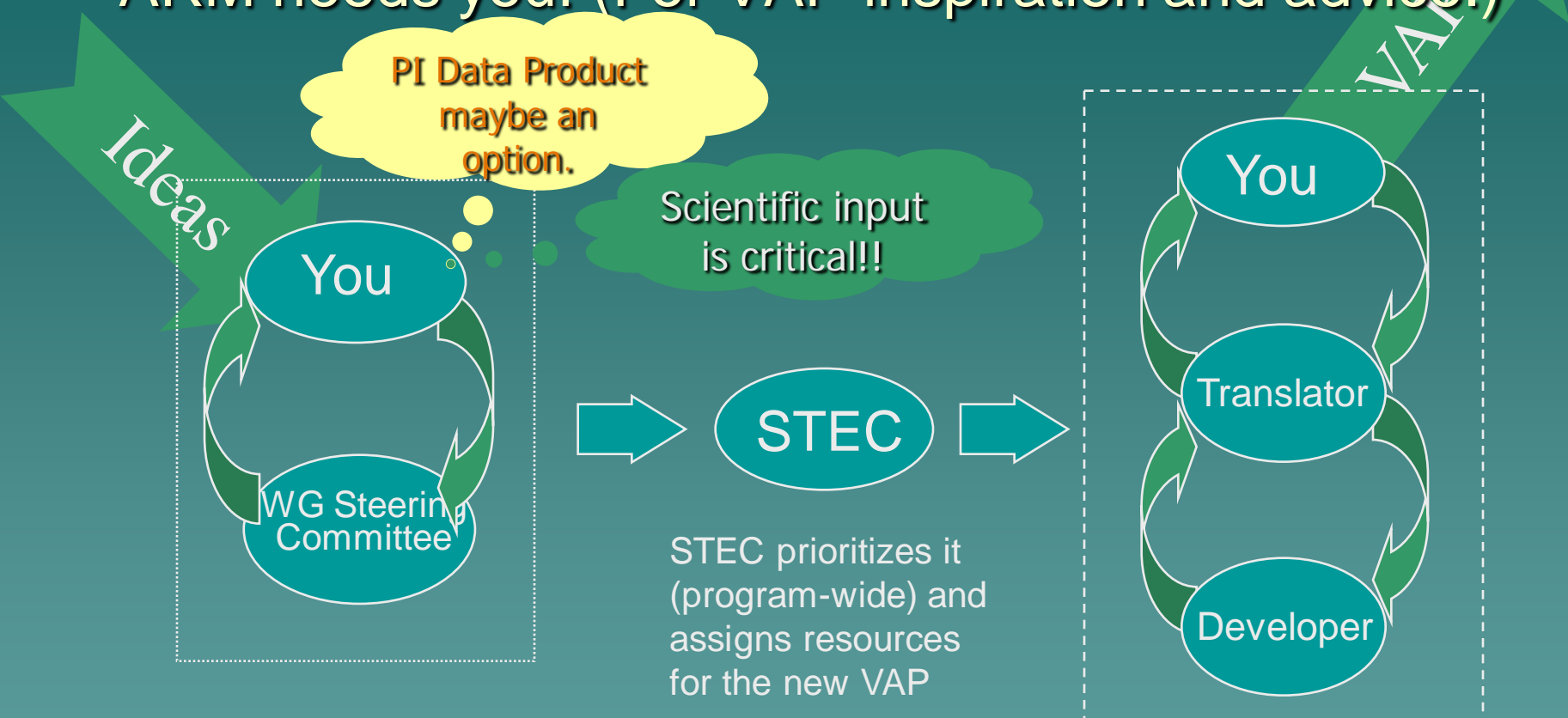
- ◆ VAPs are products from automated analytical procedures (models, retrievals, etc.) that are run in the ARM data system
- ◆ Inputs come from instruments, other VAPs, and/or external data
- ◆ Output is a new ARM data stream



- 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 STEC

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

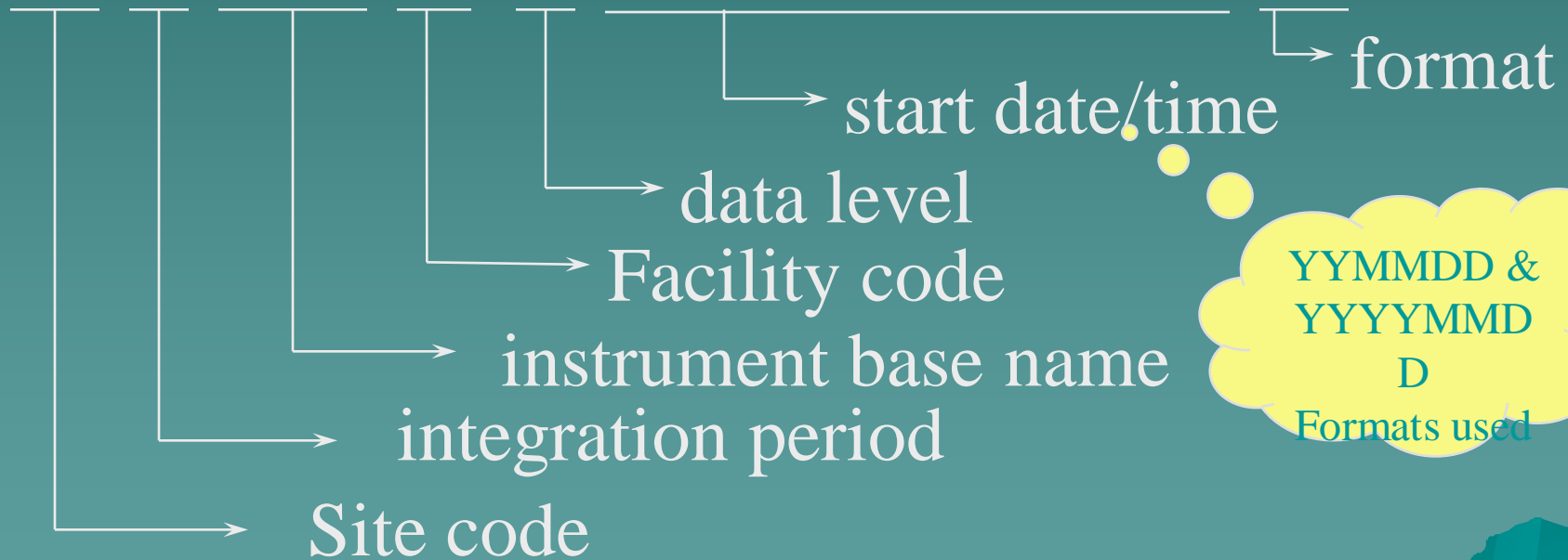
- ◆ External data
 - Generated by other programs (e.g., NOAA weather models, NASA satellites, etc.)
 - Many formatted into NetCDF consistent with ARM style
 - Specialized subsets specific to ARM sites
 - ◆ Geographic clips of global data
- ◆ Field Campaign Data
 - Special experiments (e.g., M-PACE, 2003 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



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

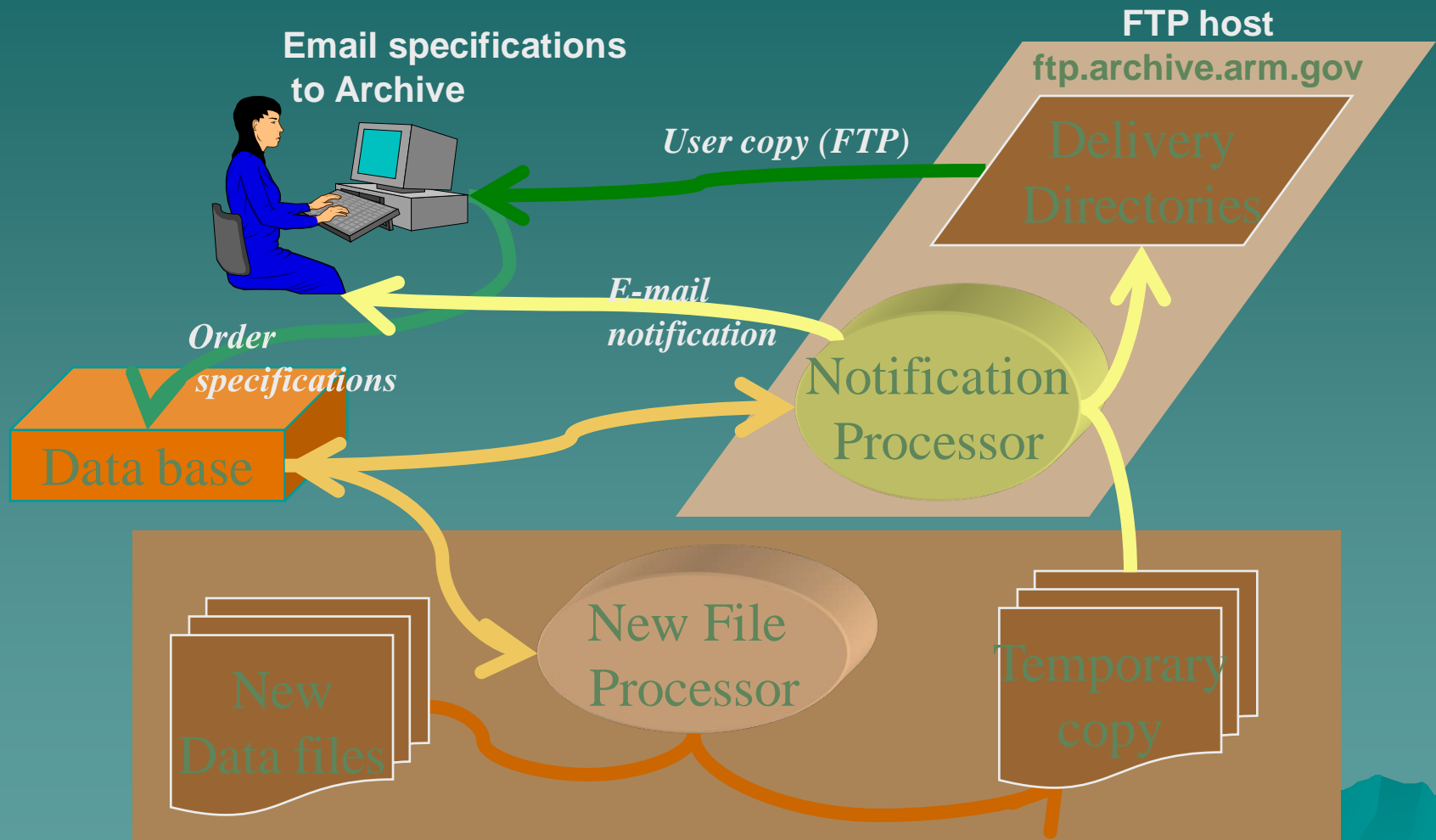
Hmmm...

“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...?

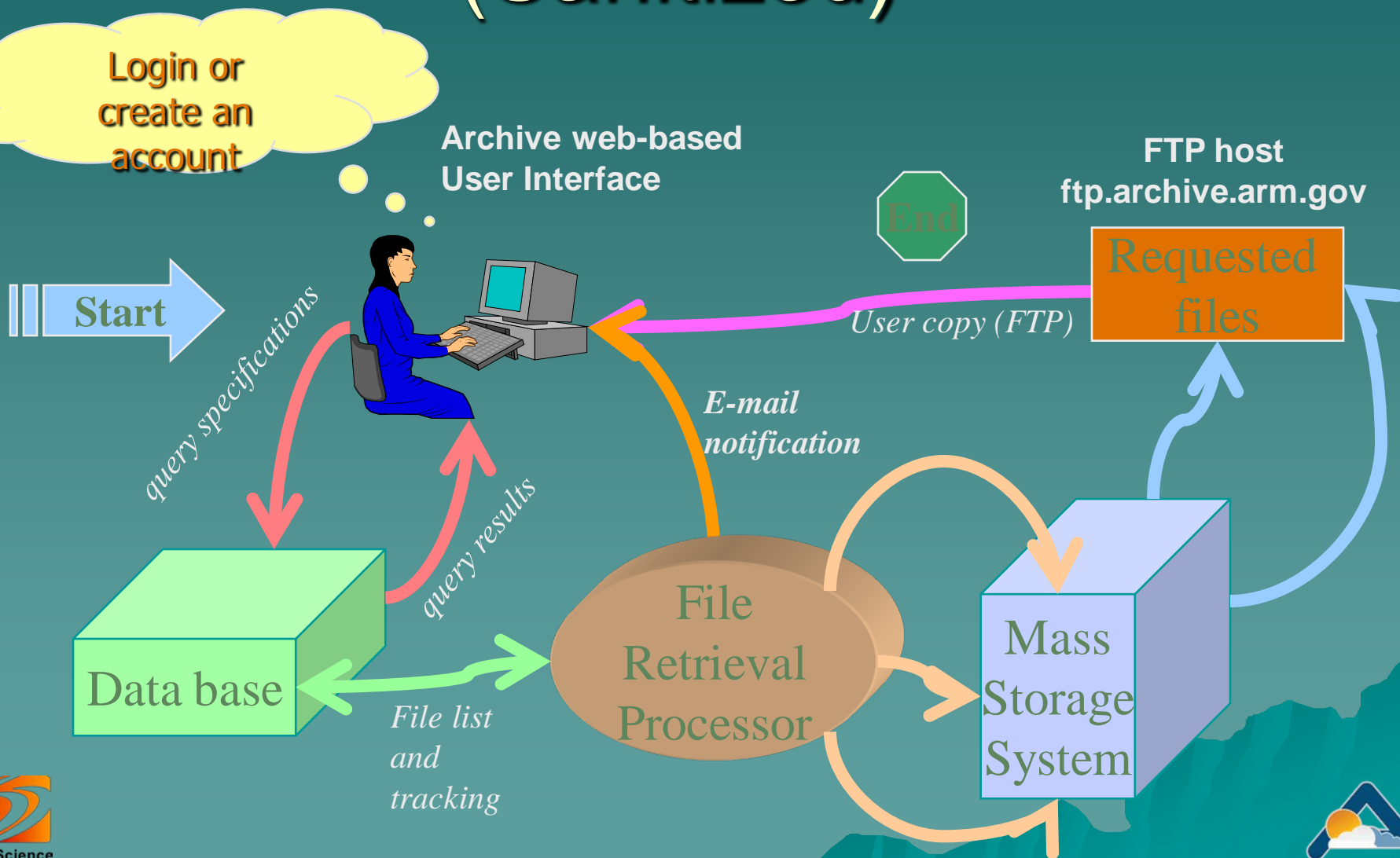


You are NOT alone...

- ◆ 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: 50-70,000 files, 2-3 TB per month
 - Total storage: 8.4 million files, 118 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**



New ARM Archive Developments

(Guided by feedback from a recent User Group meeting)

- ◆ User Group meeting held October 30, 2007
 - *12 members – ARM and non-ARM*
- ◆ The meeting covered:
 - *Planned revisions to existing Archive functionality*
 - *Planned additions to Archive functionality*
 - *New ideas and recommendations from the User Group*



Ongoing Revisions to Existing Archive Functionality

- ◆ New Login Page - Allows email address as an alternative to Archive User Name (user's choice)
- ◆ Clarifying "Account" Creation Process
- ◆ Developing more/better guidance on choosing and navigating the various user interfaces
- ◆ Developing categories for IOP data collection
- ◆ Clarifying routine (measured vs. derived), IOP, and aircraft designations



Planned Additions to Archive Functionality

◆ *Statistical Views of ARM Data*

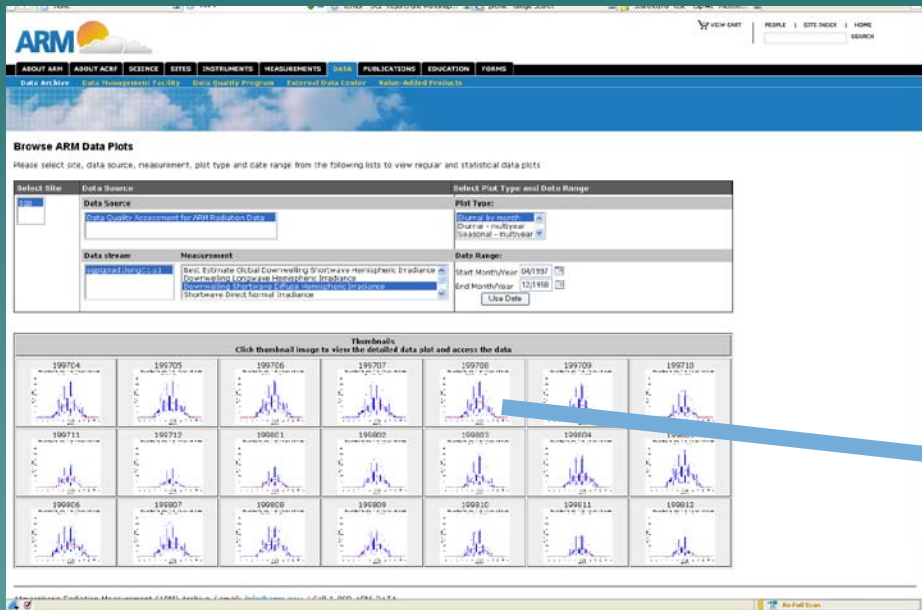
- A means of teasing potential data users
- An alternative to basic data products
- Being implemented only “by request” for highly polished data products
- See Poster 4G on Wednesday (Palanisamy *et al.*), and
- See demo at

<http://www.archive.arm.gov/arm/stattnb1.jsp>

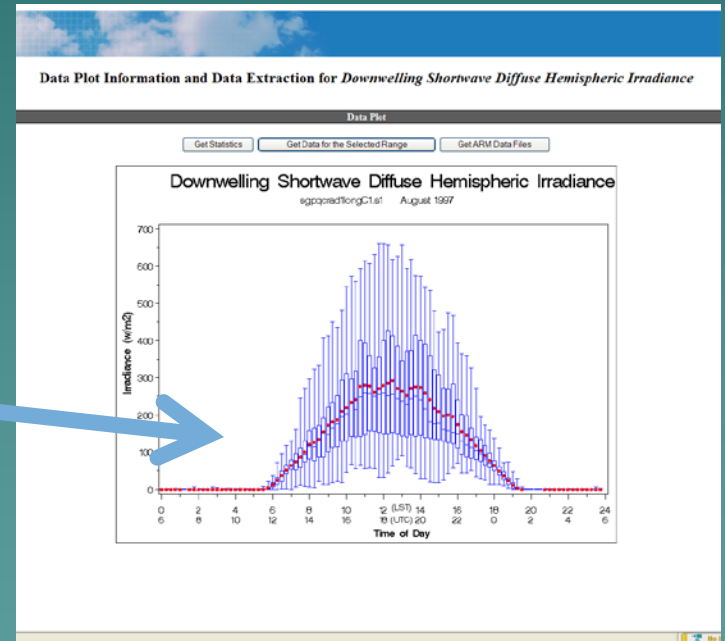


Planned Additions to Archive Functionality

- ◆ *Statistical Views of ARM Data*
 - an example using QCRAD data



User interface to select thumbnails of Statistical Views



Detailed view of graph; options to order statistics, data, or data files



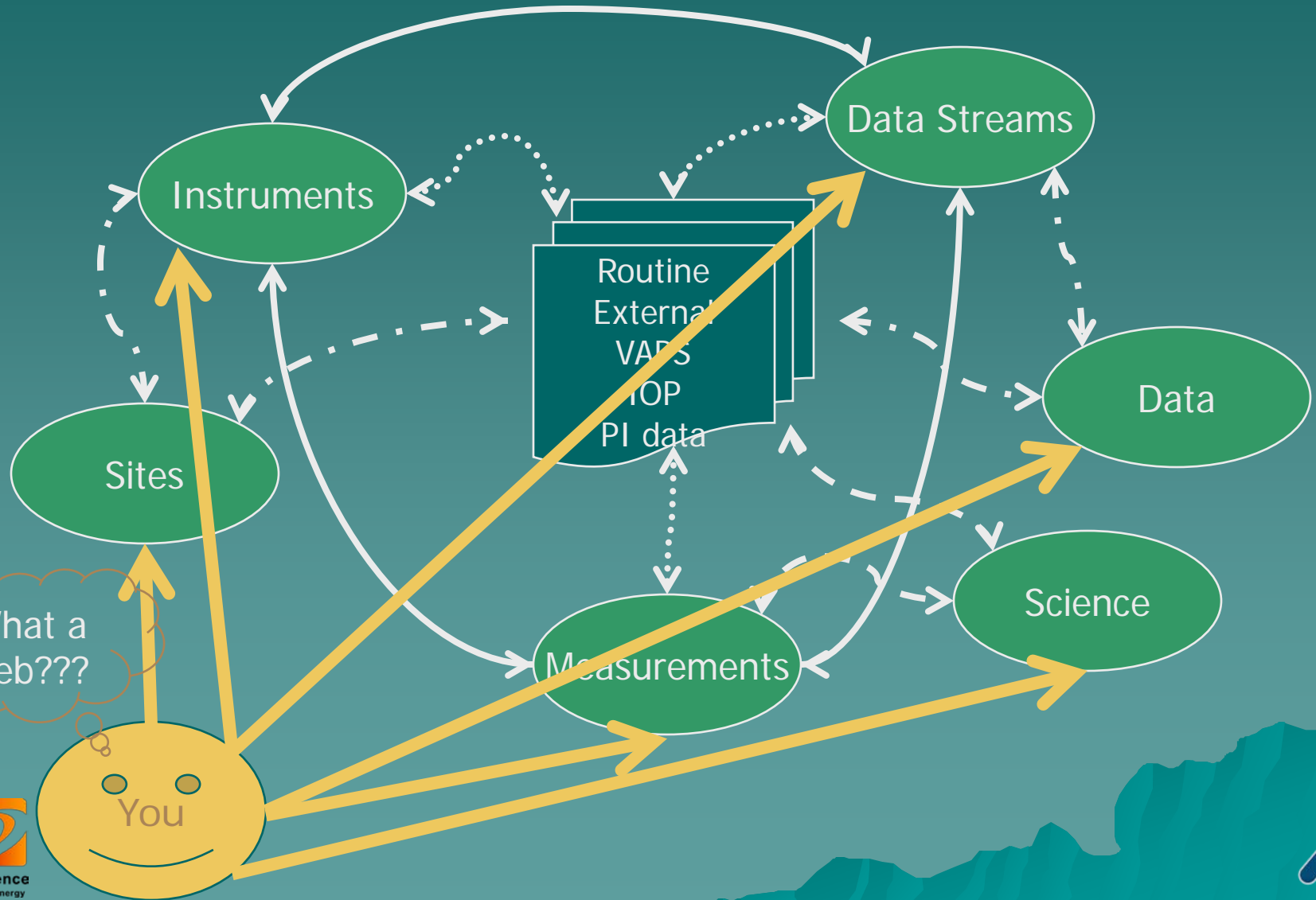
Planned Additions to Archive Functionality

Data Extraction

- Developing a more explicit version of NCVweb for data extraction
 - ◆ Other data formats
 - ◆ Concatenated data files
- Developing an “insertion” into measurements part of Data Browser user interface so that retained measurements from a single data stream can be saved
 - ◆ Look at extending this to include the specification of a conditional query for data selection
 - ◆ Include (??) a companion file containing DQR “quality mask” to go with selected data



Wandering ARM Web “stuff”




ARM Shopping Cart Tutorial

- ◆ Available at:
http://dev.www.arm.gov/data/arm_orderData_tutorial.html



ARM Data Browser



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)

Current search criteria:

Site:	Southern Great Plains
Start Date:	01/10/2006
End Date:	03/05/2006
Searchpath:	Instruments
Category:	1. Radiometric; 2. Surface Meteorology
Instruments:	1. Microwave Water Radiometer (MWR): water liq. & vapor along line of sight (LOS) path 2. Multi-Filter Radiometer (MFR): upwelling irradiance at 25-meter height 3. Surface Meteorological Observation Station (SMOS): 30-min averaged data
Facilities:	1. E8-Coldwater, KS 2. C1-Central Facility, Lamont, OK 3. E14-Lamont, OK CF2

[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) [?](#)

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

Summary Table

Data Stream Name	Data Stream ? Information	Full Date Range	Estimated Archive Results (01/2006 to 03/2006)			
			Files	Size(MB)	DQR Days	QLs
sgp30smosE8.b1	Surface Meteorological Observation Station (SMOS): 30-min averaged data	04/01/2001 - 03/03/2006	62	1.1	0	60
sgpmfr25mC1.b1	Multi-Filter Radiometer (MFR): upwelling irradiance at 25-meter height	04/01/2001 - 03/02/2006	61	30.5	0	60
sgpmvrlosE14.b1	Microwave Water Radiometer (MWR): water liq. & vapor along line of sight (LOS) path	03/21/2001 - 03/02/2006	61	39.000004	0	60

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: Valid date range for a data stream. Data streams with different data levels or with different date ranges are possible.

Full Date Range : 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.

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.

Navigation


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

Interface Help

- [View Interface Help Documentation](#)

ARM Documentation

- [Data Stream](#)
- [Data Files](#)
- [Data Quality Color Calendar](#)
- [Data Quality Report \(DQR\)](#)
- [Quick Looks \(QL\)](#)



Office of Science
U.S. Department of Energy

ARM Data Browser



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

ARM Data Browser

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ARM Data Browser

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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 - 03/22/2007	437	7.3	0	434
sgpmwrlosE14.b1	Microwave Water Radiometer (MWR): water liq. & vapor along line of sight (LOS) path	03/21/2001 - 03/20/2007	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.

Navigation

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

Interface Help

- ♦ [View interface help documentation](#)

ARM Documentation

- ♦ [Data Stream](#)
- ♦ [Data Files](#)
- ♦ [Data Quality Color Calendar](#)
- ♦ [Data Quality Report \(DQR\)](#)
- ♦ [Quick Looks \(QL\)](#)



ARM Catalog Browser



Features of Catalog Tables

A: Title of the Table; showing selection categories

B: Links to higher selection screens

C: values of previously selected criteria

D: Categories with links to additional ARM documentation

A Number of Files in Archive by Instrument Category and Facility Type

(Click on the appropriate link to change a previous selection)

Current Selections

B Year 2002
C Site Southern Great Plains

E: Number of data files per category (0 = no data)

(Click on a non-zero cell in the table below to choose the Instrument Category/Facility Type and proceed to the next level of detail)

Number of Files in Archive

Instrument Category

D Central

External

Facility Type

Boundary

Extended

Intermediate

Instruments

2058

9

0

0

0

(Sign, Temporary, or Otherwise)

9833

E 262

7211

372

0

Units

4906

15153

0

0

0

Surface Flux and Surface Characterization Systems (Non-radiometric)

Temperature, and Humidity Sensors

Humidity Sounding Systems

F [View Shopping Cart](#)

G [Exit](#)

F: Link to shopping cart; for review of previous selections

G: Exit from interface

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 'shopping cart'

Catalog Browser (1)

Number of 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	Number of Files in Archive															
	Years Available															
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
North Slope Alaska	184	365	365	607	2271	15908	22351	27732	31686	31875	35293	32325	34196	32906	32223	3828
Southern Great Plains	15386	70313	77664	126577	183530	228437	265562	270873	258845	268537	241176	209197	194403	198422	191062	28193
Global Earth Coverage	0	0	0	4348	4950	4471	4744	5302	4754	4752	4742	4583	3290	1462	560	57
Tropical Western Pacific	0	0	0	2328	10603	12833	28933	30774	30240	43410	43163	39624	36243	52146	65065	5516
Surface Heat Budget of the Arctic	0	0	0	0	1645	6622	0	0	0	0	0	0	0	0	0	0
Niamey, Niger	0	0	0	0	0	0	0	0	0	0	0	0	709	12829	242	0
Point Reyes, California	0	0	0	0	0	0	0	0	0	0	0	0	6788	289	0	0
Black Forest, Germany	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9696	30

[View Shopping Cart](#) [Exit](#) [Help](#)

Number of Files in Archive by Instrument Category and Facility Type

(Click on the appropriate link to change a previous selection)

Current Selections

[Year](#) 2006

[Site](#) Tropical Western Pacific

(Click on a non-zero cell in the table below to choose the Instrument Category/Facility Type and proceed to the next level of detail)

Instrument Category	Number of Files in Archive	
	Central	External
Aerosols	366	0
Atmospheric Profiling	748	59
Cloud Properties	1928	0
Derived Quantities and Models	121	82
Radiometric	2055	0
Surface Meteorology	183	0



Catalog Browser (2)

Number of Files in Archive by Instrument and Data Level

(Click on the appropriate link to change a previous selection)

Current Selections
[Year](#) 2006
[Site](#) Tropical Western Pacific
[Instrument Category](#) Radiometric
[Facility Type](#) Central

(Click on a non-zero cell in the table below to choose the Instrument/Data Level and proceed to the next level of detail)

Number of Files in Archive

Instrument Code *	Data Level **			
	a0	a1	b1	c1
15swfanalskyradllong	0	0	0	24
lswfanalskyradllong	0	0	0	24
aerich1	0	0	121	0
aerich2	0	0	121	0
aeriengineer				
aerilclouds				
aerisummary				
gndrad20s				
gndrad60s				
mfrsr				
mwrlos	0	0	168	0
mwrtip	0	178	0	0
skyrad20s	185	0	0	0
skyrad60s	0	0	184	0

[View Shopping Cart](#) [Exit](#) [Help](#)

*** Instrument Code Descriptions**

Instrument Code	Description
15swfanalskyradllong	Short Wave Flux Analysis: 15-min resolution on SKYRAD
lswfanalskyradllong	Short Wave Flux Analysis: 15-min resolution on SKYRAD
aerich1	Acoustic Interferometer (AERI): ch...

Number of Files in Archive

Facility	Month		
	Jan	Feb	Mar
Central Facility, Manus I., PNG (C1)	32	28	2
Central Facility, Nauru Island (C2)	31	28	2
Central Facility, Darwin, North Australia (C3)	31	28	2

Description of Archive Files

(Click on the appropriate link to change a previous selection)

Current Selections
[Year](#) 2006
[Site](#) Tropical Western Pacific
[Instrument Category](#) Radiometric
[Facility Type](#) Central
[Instrument](#) skyrad60s
[Data Level](#) b1
[Facility](#) Central Facility, Nauru Island
[Month](#) Feb
 Files 28
 Total Size (MB) 8.950

Add files to your Shopping Cart?

Click "Yes" to add the current set of files to your collection. Either button returns to the previous page (Facilities/Month).

Contents of Shopping Cart

This is a summary of your current collection of files.

Site	Year	Month	Instrument	Facility	Level	Files	Size (MB)	
twp	2006	Feb	skyrad60s	C2	b1	28	8.95	Remove?
twp	2006	Jan	skyrad60s	C3	b1	31	9.91	Remove?
twp	2006	Mar	skyrad60s	C2	b1	2	0.64	Remove?
Total						61	19.50	

[Submit Request to Archive](#) [Return](#) [Help](#)



ARM Thumbnail Browser



Display Thumbnails

ARM Atmospheric Radiation Measurement

Shopping Cart Retrieve View

Home Site/Facility Date Range Cate

show/hide search critere

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

Net Radiation

Average soil heat flow at the surface

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
[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	0	5034	19

Instrument Category

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		
Surface/Subsurface Properties	123	2895		

Instrument

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

Facility

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

Thumbnail Page

