Finding "Stuff" from ARM Web Site and Data Archive

Orientation for new Science Team Members

Topics

- Navigating ARM web site
  - *finding ARM information*
- Demo of Archive access
  - *Finding and requesting ARM data files*
  - *(with web shopping cart interface)*
- Other Archive access options
  - *Brief logical comparison*
  - *(additional details as requested)*
- Other documentation topics
  - *(per user interest and time availability)*

ARM Home Web Page

ARM Home - Netscape Browser

File Edit View Go Bookmarks Tools Help

SEARCH http://www.arm.gov/ SECURITY CENTER

Personal Webmail

Welcome to T-Mobile HotSpot Custom... ARM Home

VIEW CART | PEOPLE | SITE INDEX | HOME

SEARCH

ARM

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

ARM Climate Research Facility Supports International Polar Year Research and Education

The Department of Energy's International Polar Year (IPY) contributions will be conducted at the Atmospheric Radiation Measurement (ARM) Climate Research Facility (ACRF) located in the North Slope of Alaska. This DOE user facility will host two experiments (thus far) during IPY, as well as support IPY education and outreach activities related to climate change research in the Arctic.

To learn more about ACRF contributions to IPY, see the ACRF IPY web page.

Atmospheric Radiation Measurement Program

The Atmospheric Radiation Measurement (ARM) Program is the largest global change research program supported by the U.S. Department of Energy (DOE). It was created to help resolve scientific uncertainties related to global climate change, with a specific focus on the crucial role of clouds and their influence on radiative feedback processes in the atmosphere. The primary goal of the ARM Program is to improve the treatment of cloud and radiation physics in global climate models in order to improve the climate simulation capabilities of these models. ARM's scientists research a broad range of issues that span remote sensing, physical process investigation and modeling on all scales. ARM's site operators focus on obtaining continuous field measurements and providing data products to promote the advancement of climate models.

ARM Climate Research Facility

Atmospheric Radiation Measurement Climate Research Facility

A National User Facility for the Scientific Community

ARM's climate research sites serve as a national scientific user facility for collaborative research primarily with university, government agency, and national laboratory researchers. These sites provide significant research capability for the global scientific community. The resulting new ARM Climate Research Facility (ACRF) has been designated a national user facility for the purpose of providing this unique asset for the study of global change to a broader national and international research community. Proposed projects at the ACRF are reviewed by the ACRF Science Board, a highly respected group of scientists who assist with reviewing proposals for use of the facility.

Field Campaigns

ACRF extends deadline to April 10 for FY2009 preproposals; submit yours now!

Annual Meeting

Online registration is now closed; **on-site registration begins March 26 at 7 a.m.**

Announcement

Office of Science issues call for ARM science proposals

News

International Polar Year begins at ACRF with 3-week campaign in Barrow

Update

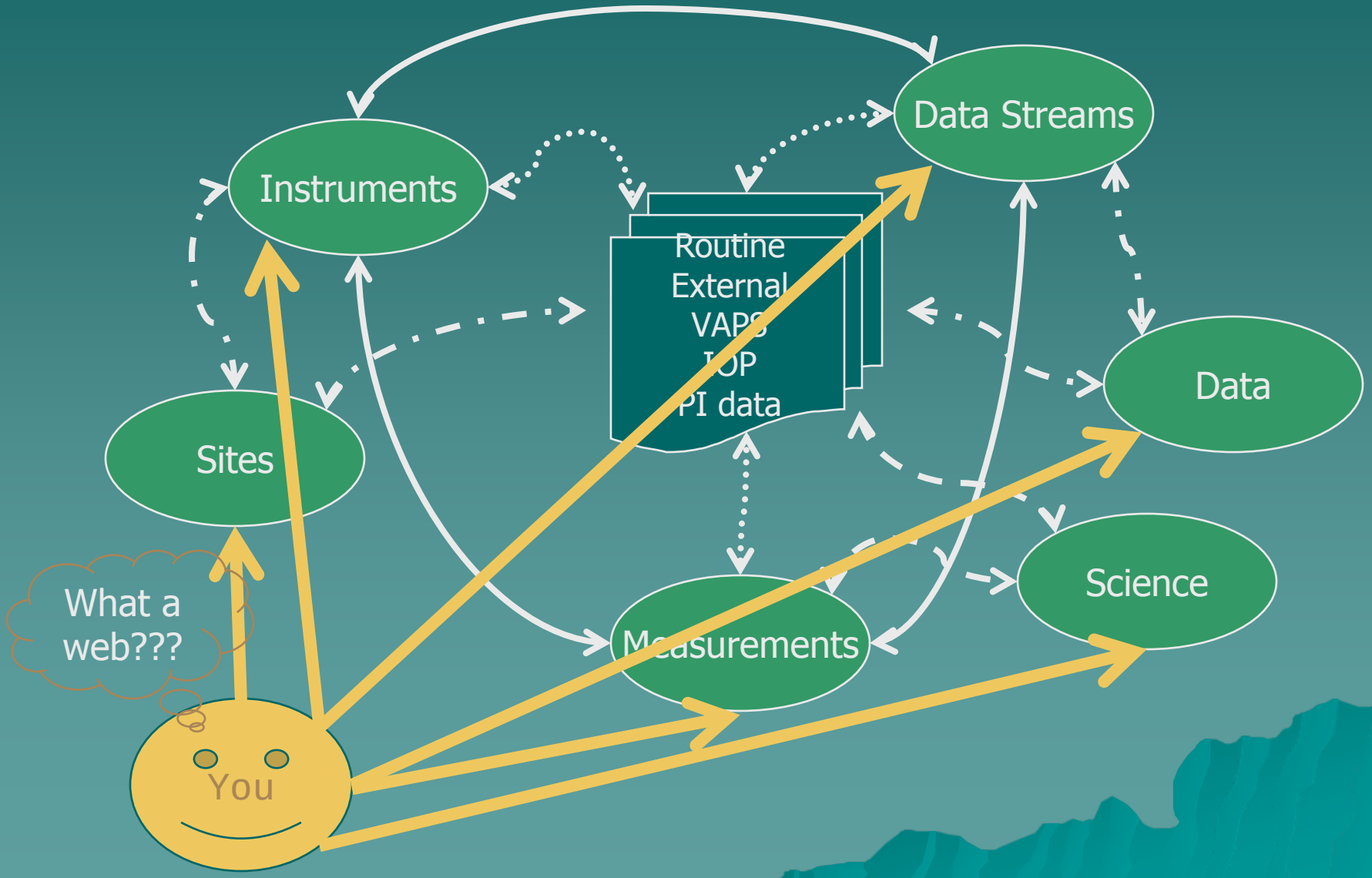
Güten tag to Germany! Mobile Facility bids adieu to Niger

Done

Unable to Update Blacklist

start ARM Home - Netscap... Microsoft PowerPoint ... Norton 11:04 AM

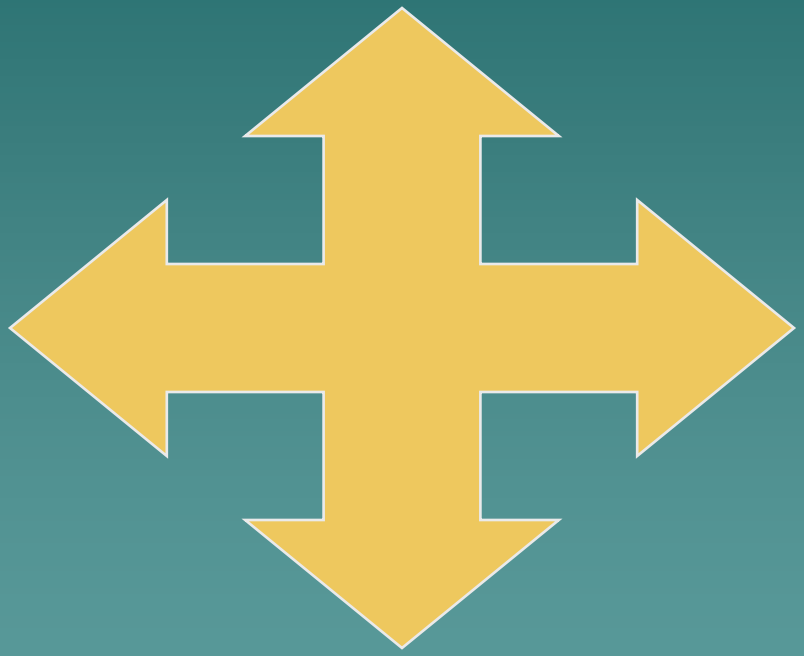
Wandering ARM Web “stuff”



ARM Shopping Cart Tutorial

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

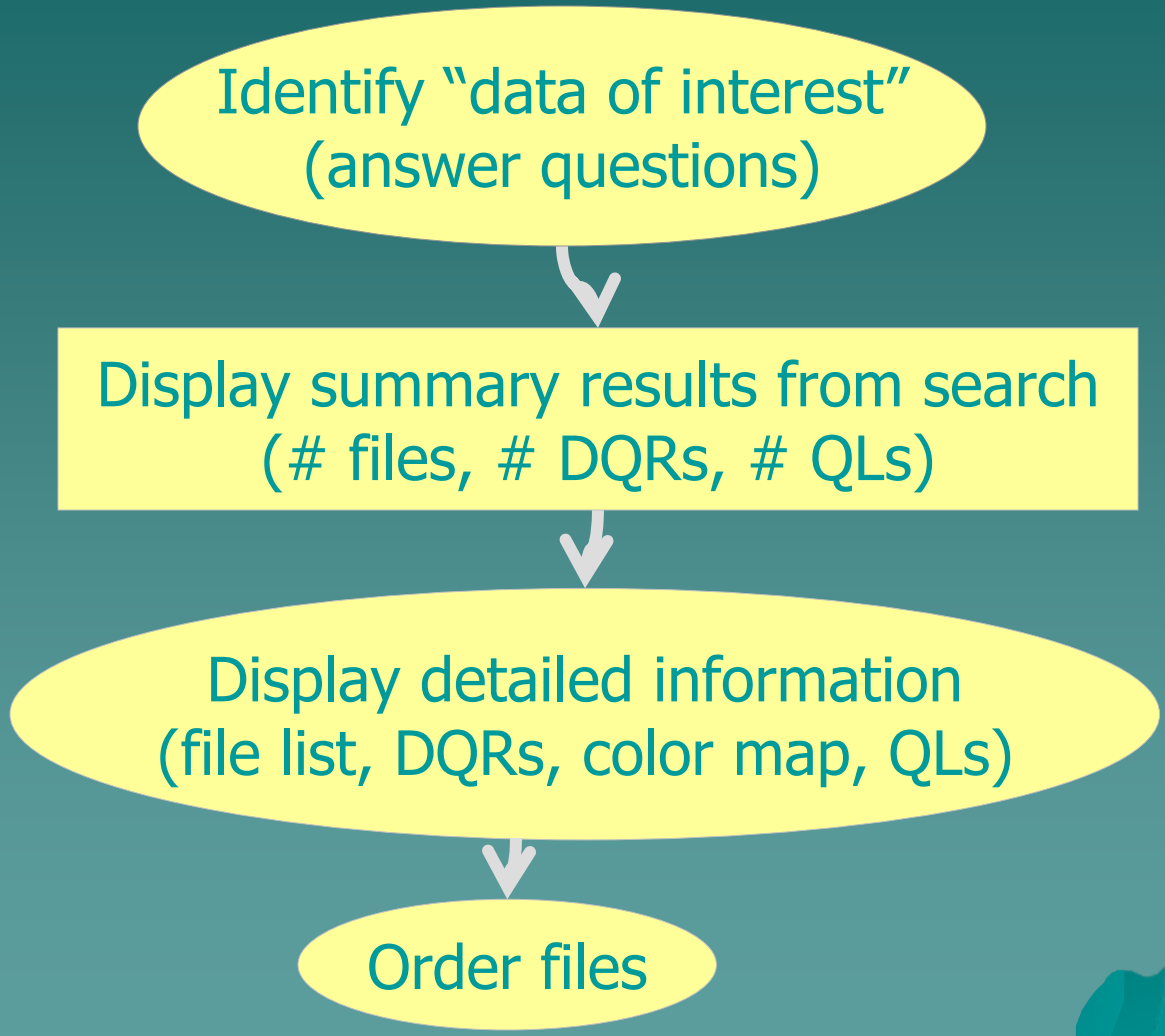
Other User Interface Options



Comparison of User Interface Options

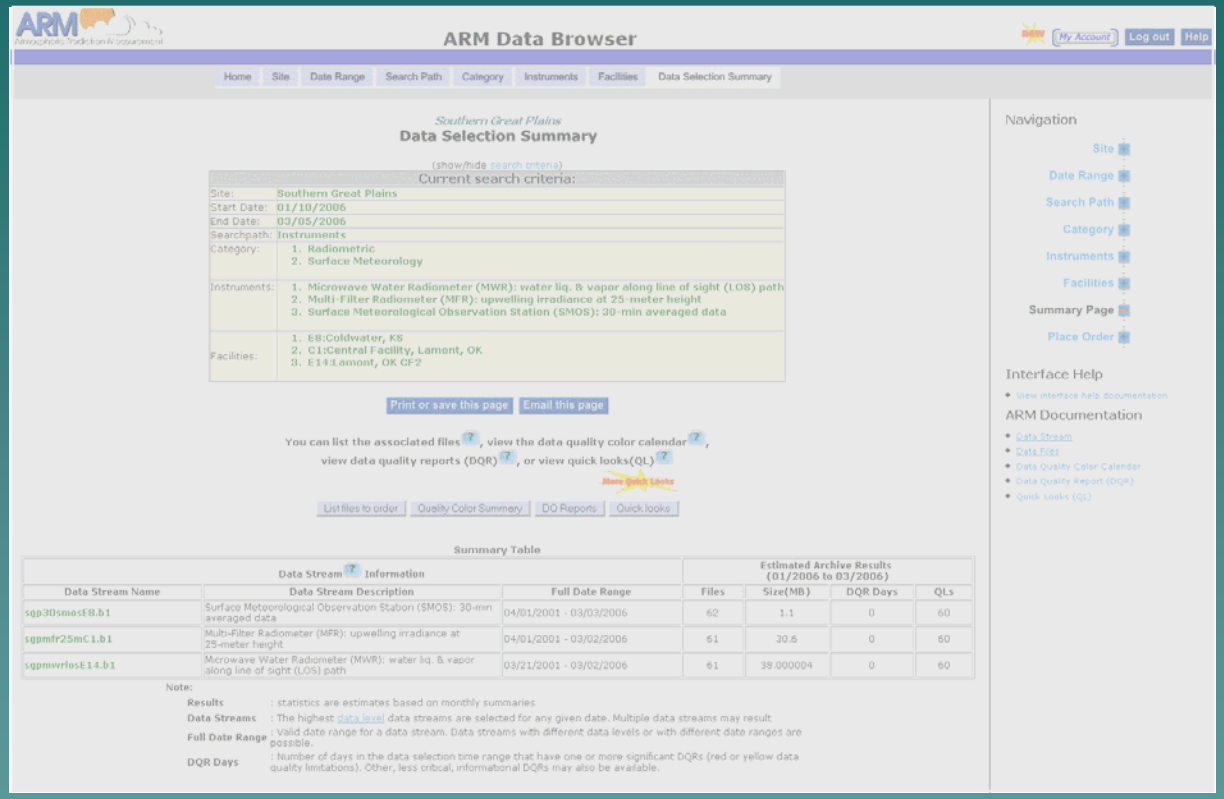
Interface name	Accessible data	"*Shopping*" approach (armarchive@ornl.gov, 1-888-ARM-DATA)
ARM Data Browser	Routine ARM data	*"I know what I want. Do you have it?"* Searching with predefined selection criteria.
Catalog Interface	Routine ARM data	*"I am not sure what I want. I need to see what you have available."* Browsing a hierarchy of availability summaries.
Thumbnail Browser	Most routine ARM data	*"I will know what I want when I see it."* 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 need to read about what you have, then I will decide."* Discover areas of interest by browsing the ARM web documentation and collect items of interest.
IOP Data Browser	IOP, special, PI, and beta data	*"I need to look in the odd parts bin."* Direct access to IOP data. Navigate /year/site/iop directory tree. Also use narrow Google search.

Overall Interface Scheme

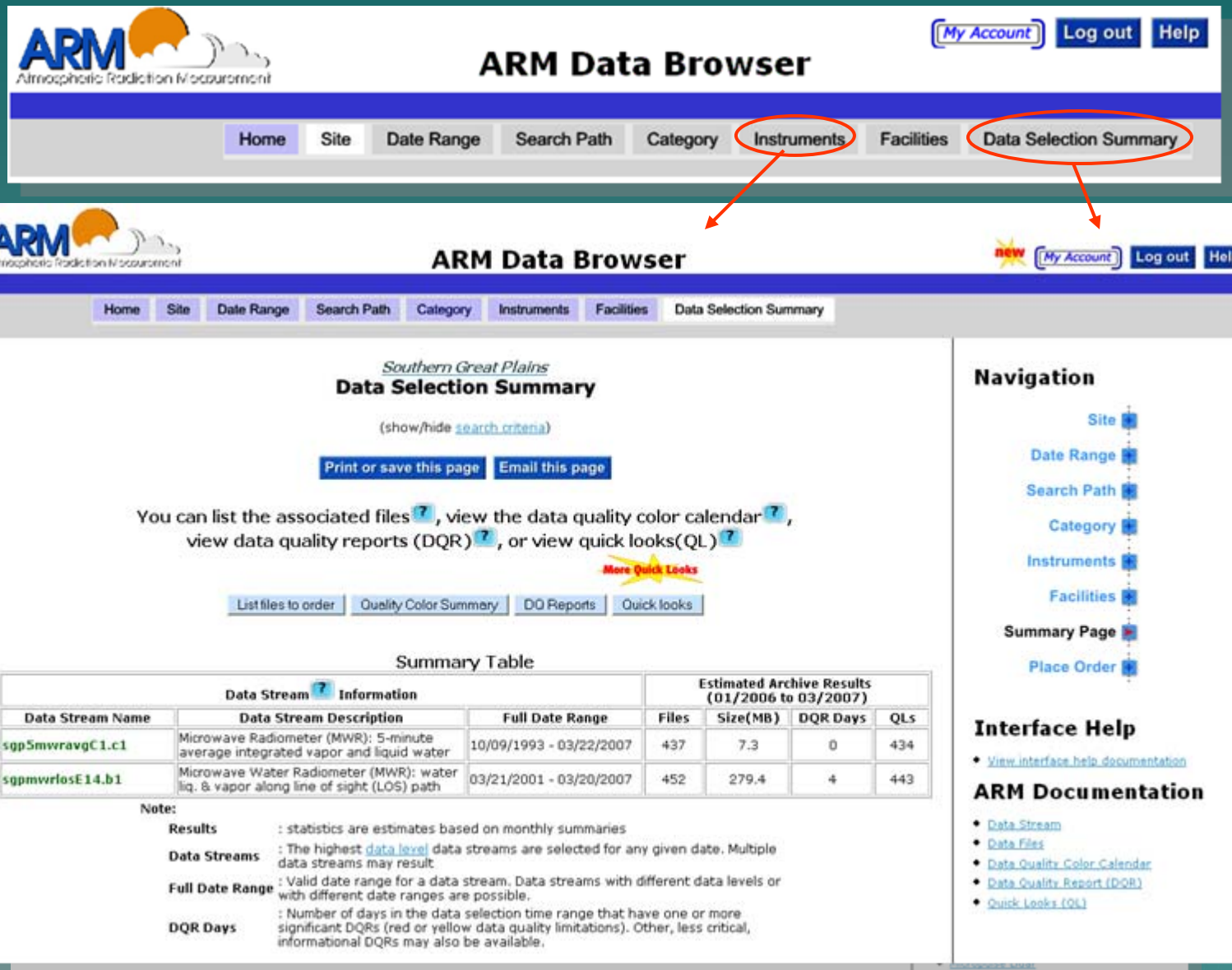


Interface Demonstrations (maybe??)

ARM Data Browser



ARM Data Browser



ARM Catalog Browser

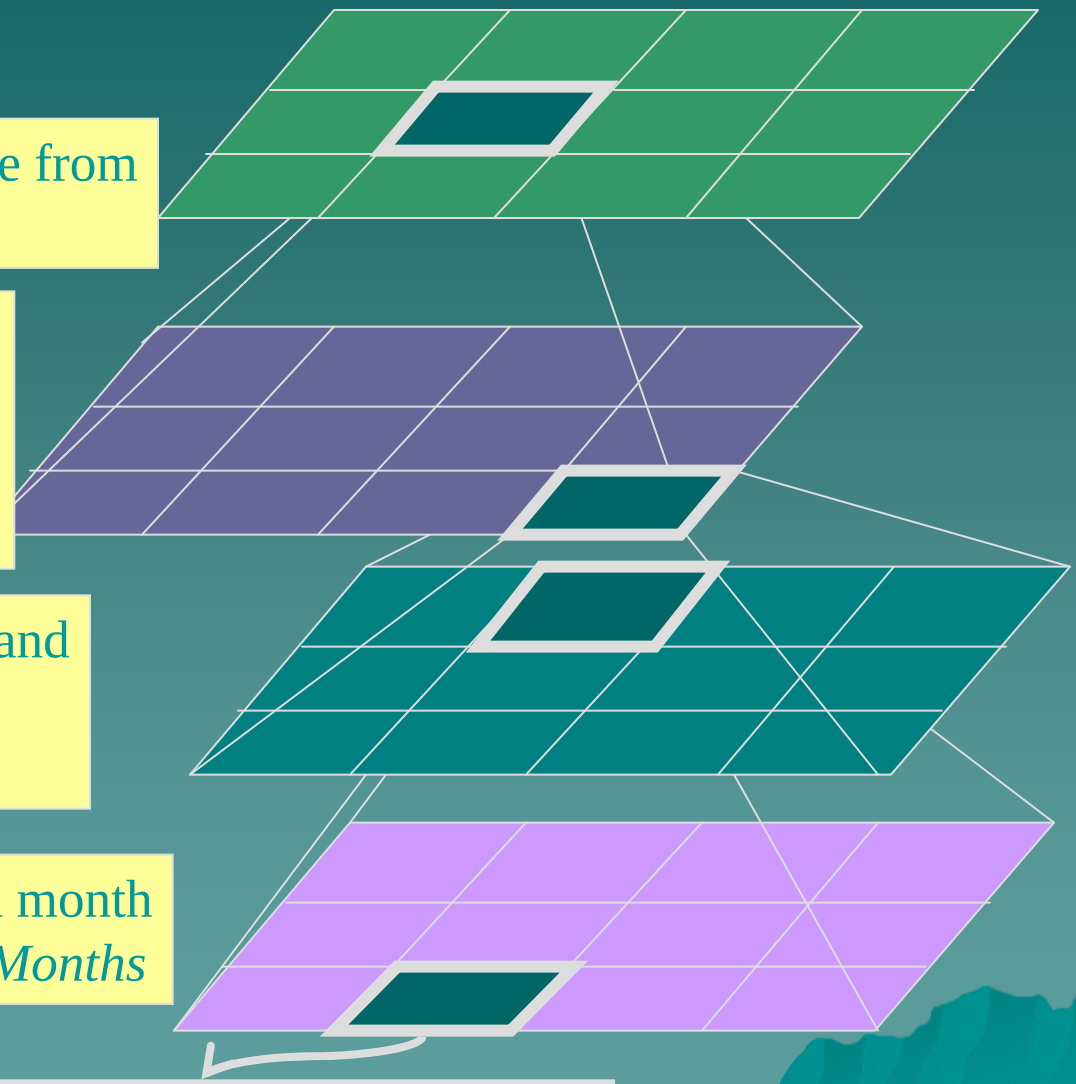
Logical Flow of Catalog Interface

Step1: select a year and a site from a table of *Years x Sites*

Step 2: select a facility type and instrument category from a table of *Instrument category x Facility type*

Step 3: select an instrument and a data level from a table of *Instruments x Data levels*

Step 4: select a facility and a month from a table of *Facilities x Months*



Data added to 'shopping cart'

Features of Catalog Tables

A: Title of the Table; showing selection ategories

B: Links to higher selection screens

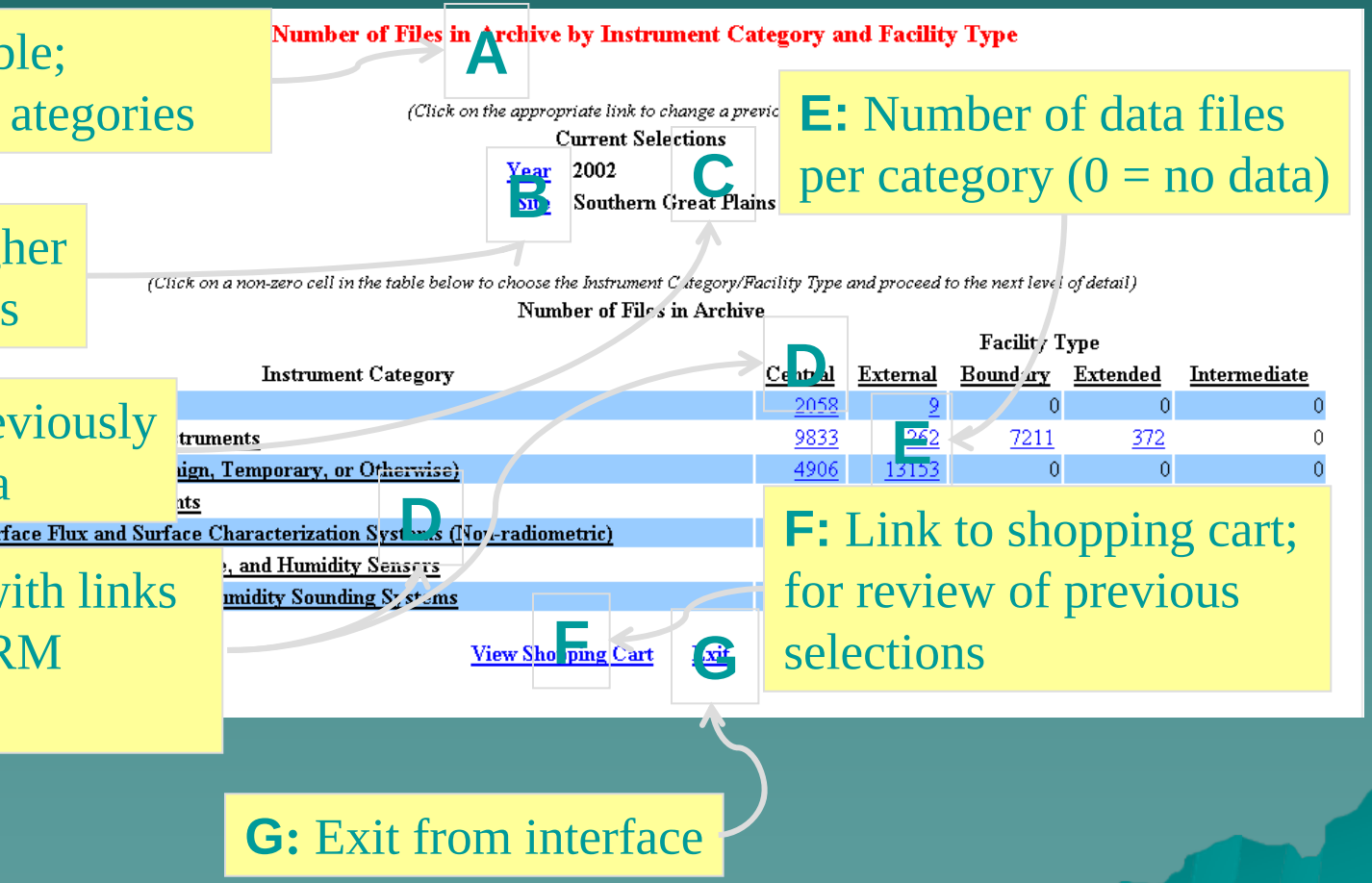
C: values of previously selected criteria

D: Categories with links to additional ARM documentation

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

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

G: Exit from interface



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)

Number of Files in Archive

Years Available

Site	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	9896	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

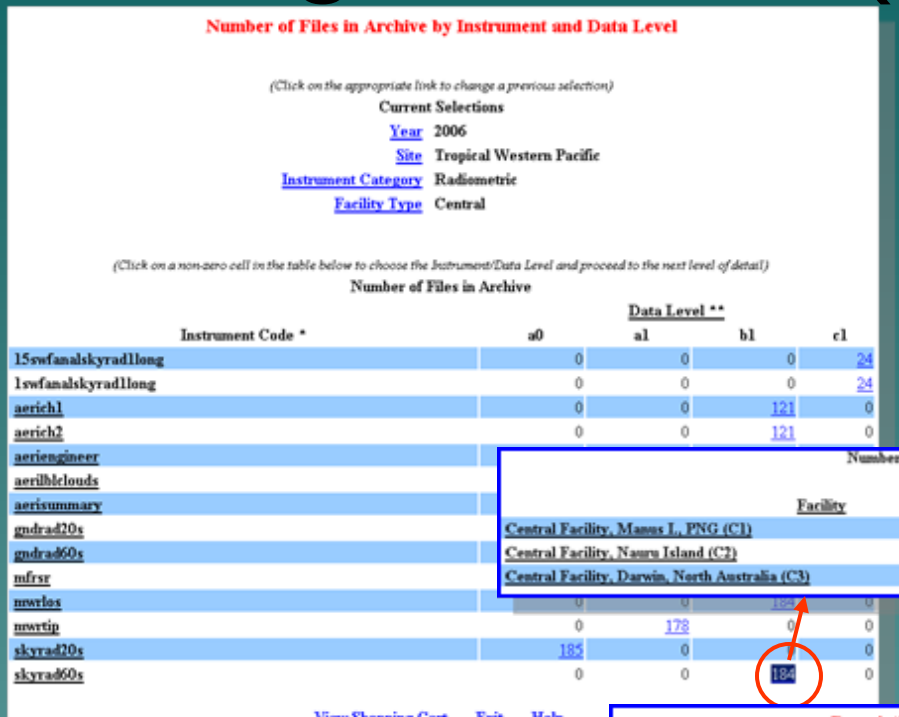
Site Tropical Western Pacific

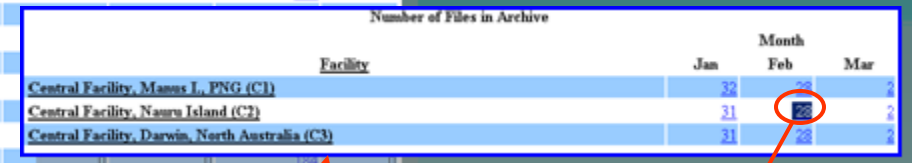
(Click on a non-zero cell in the table below to choose the Instrument Category/Facility Type and proceed to the next level of detail)

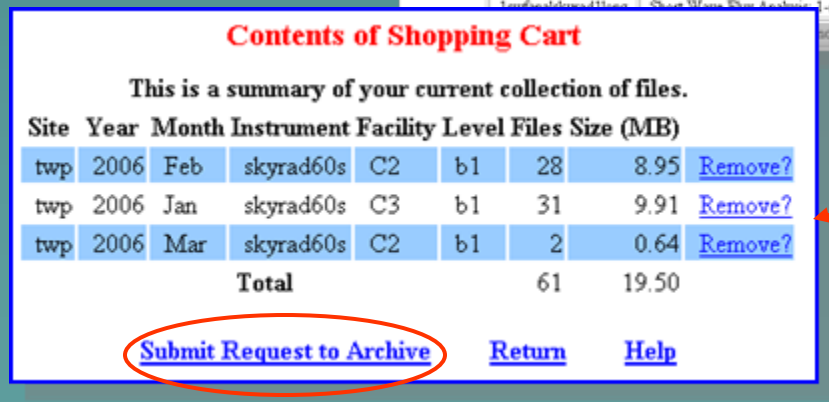
Number of Files in Archive

Instrument Category	Facility Type: Central	Facility Type: External
Aerosols	366	0
Atmospheric Profiling	748	59
Cloud Properties	1928	0
Derived Quantities and Models	121	82
Radiometric	2058	0
Surface Meteorology	183	0

Catalog Browser (2)

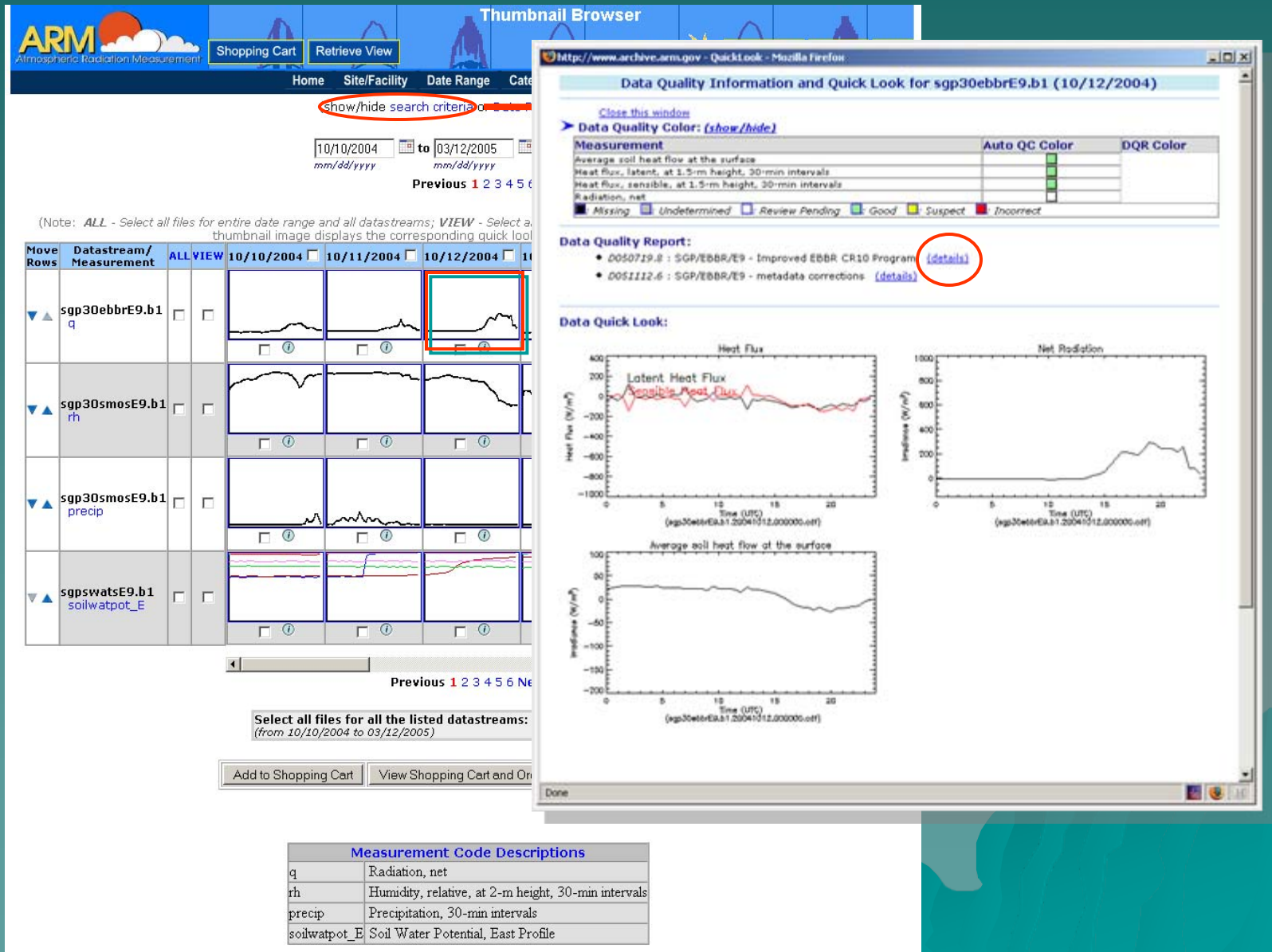






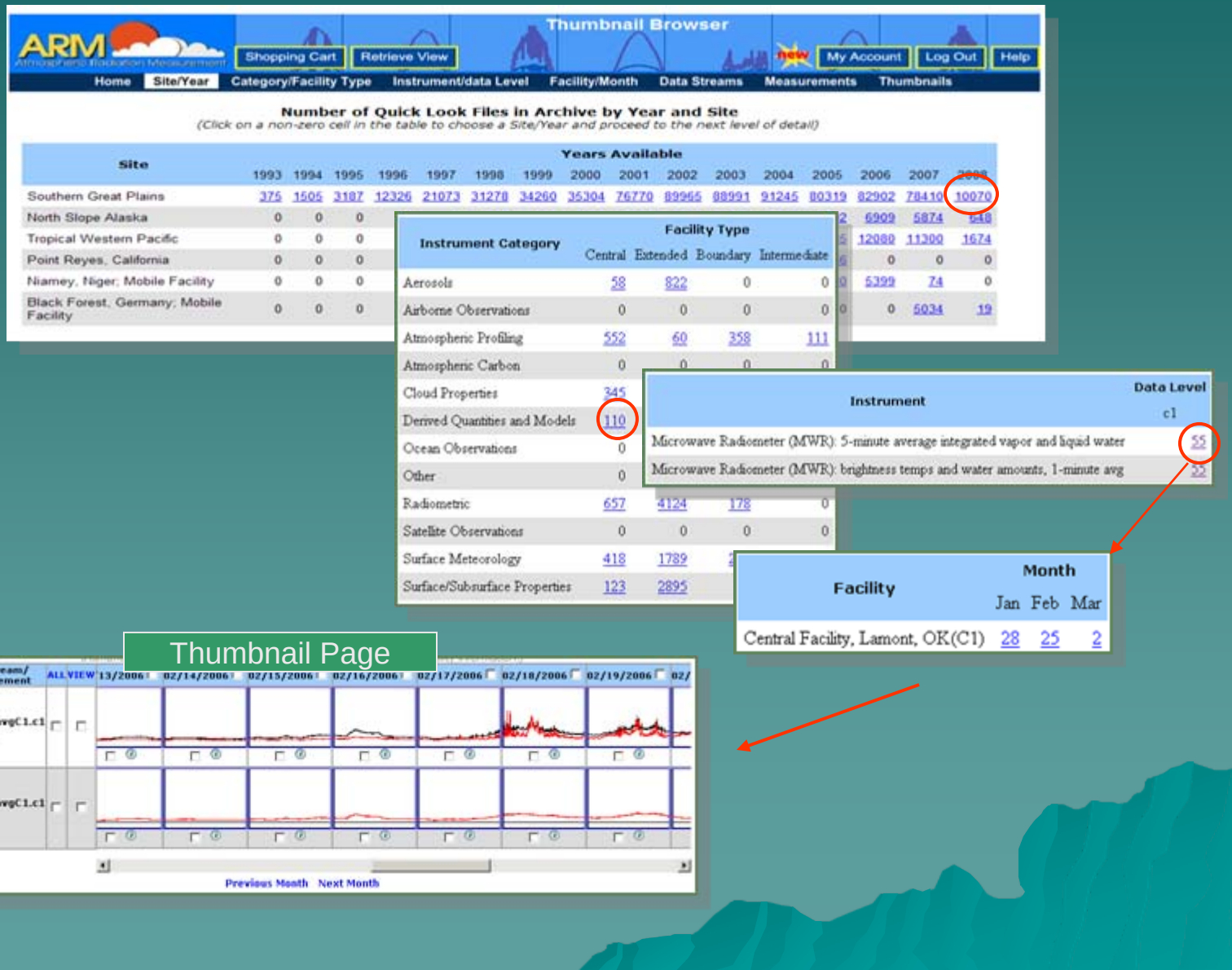
ARM Thumbnail Browser

Display Thumbnails



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

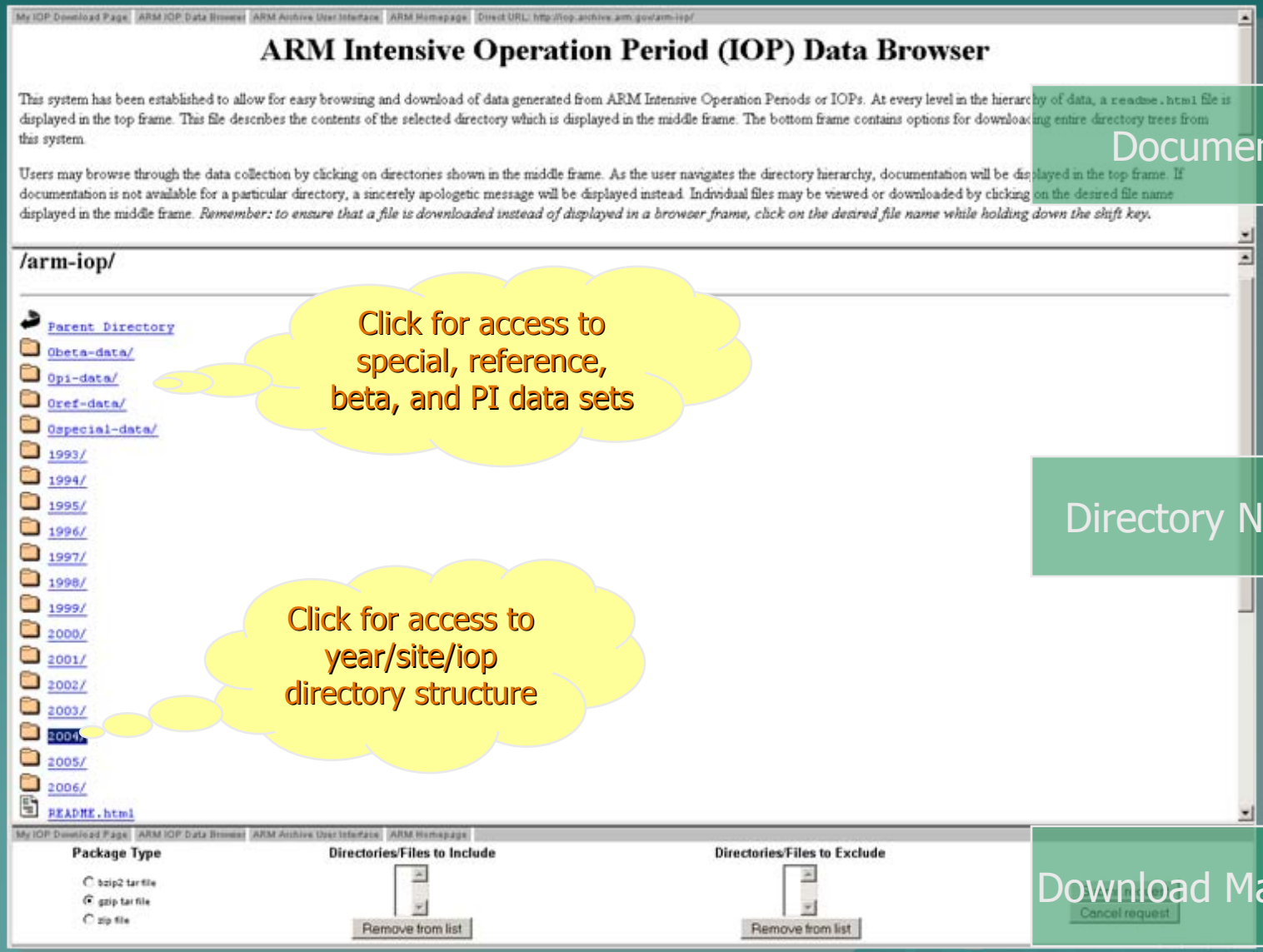
Thumbnail Browser – Catalog Interface



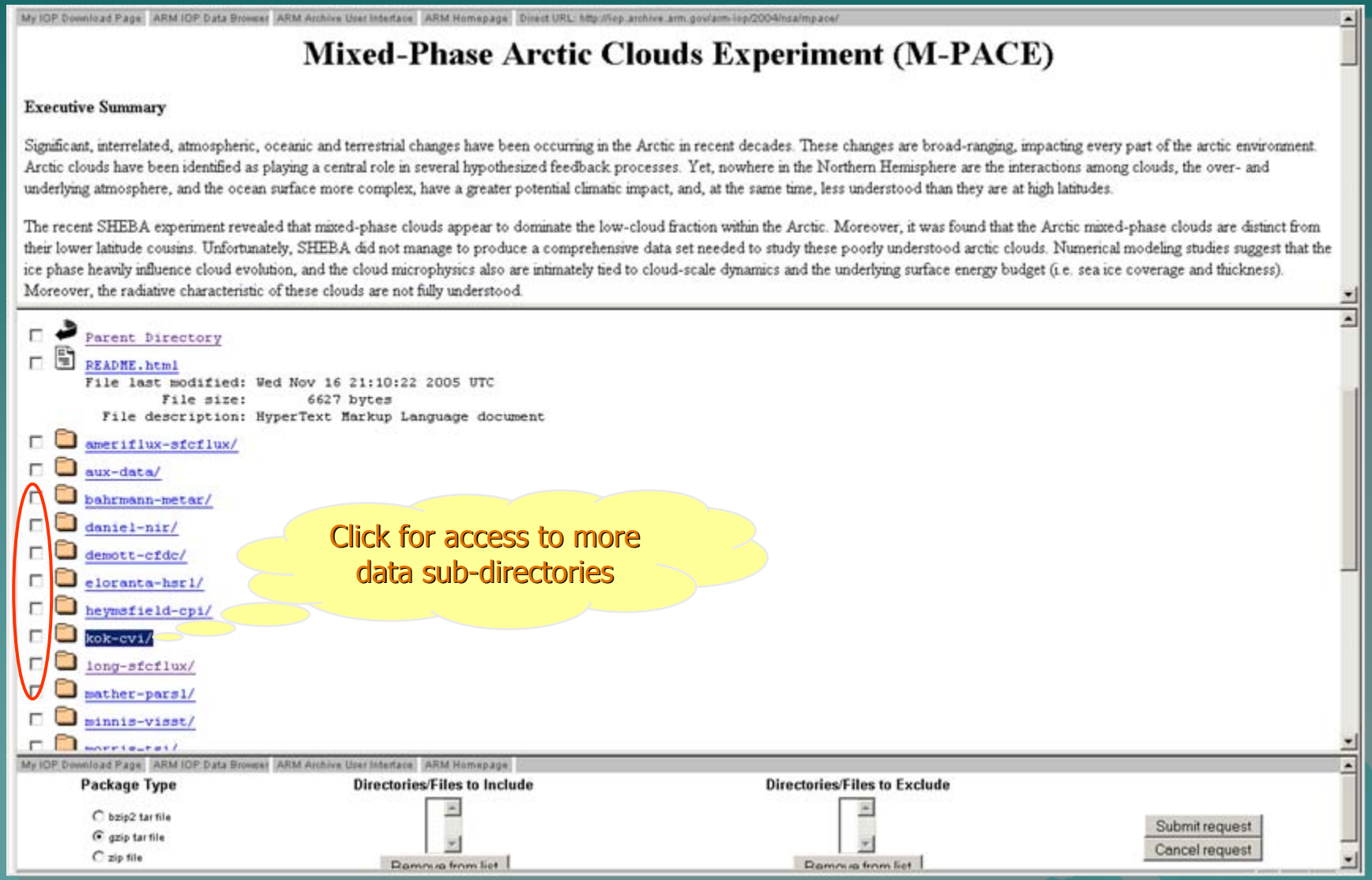
ARM IOP* Data Browser

*IOP == Field Campaign

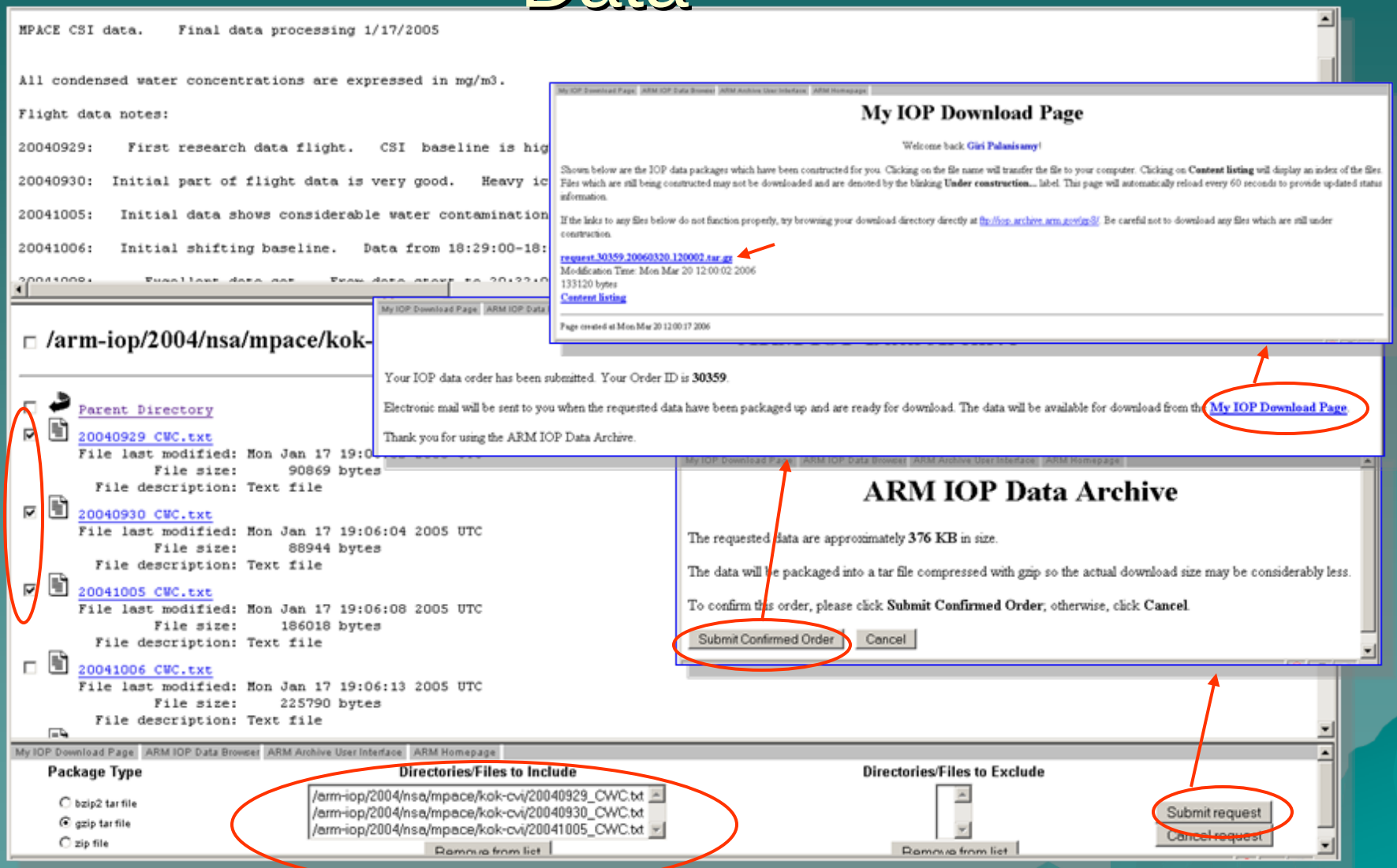
IOP Data Browser – “home page”



IOP Data Browser – IOP View



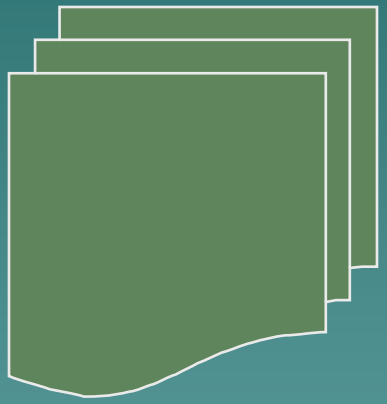
IOP Data Browser – Download Bulk Data

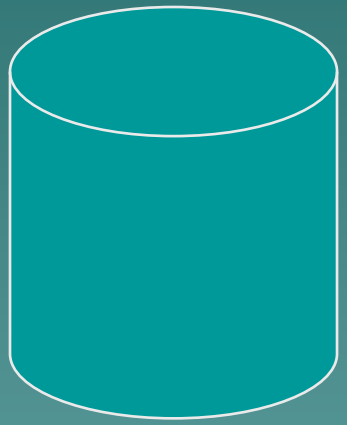


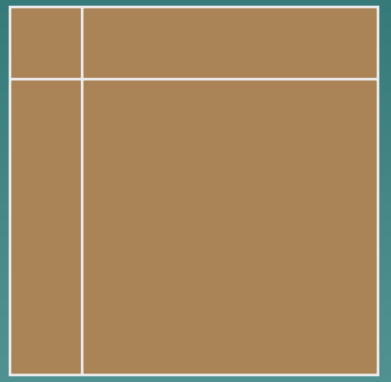
Other Documentation Topics

- 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*
  - *Current and future improvements under development*

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

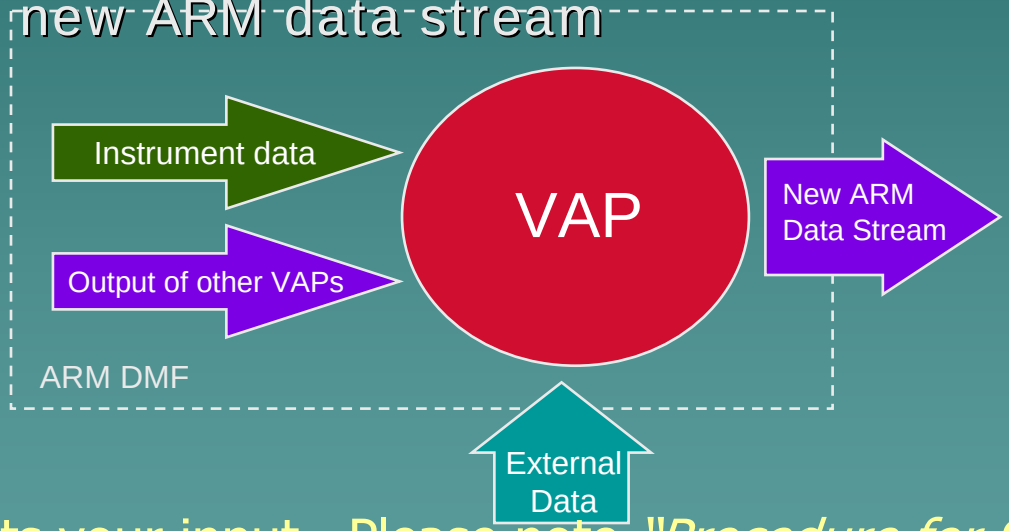
ARM Data Types – more detail

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…

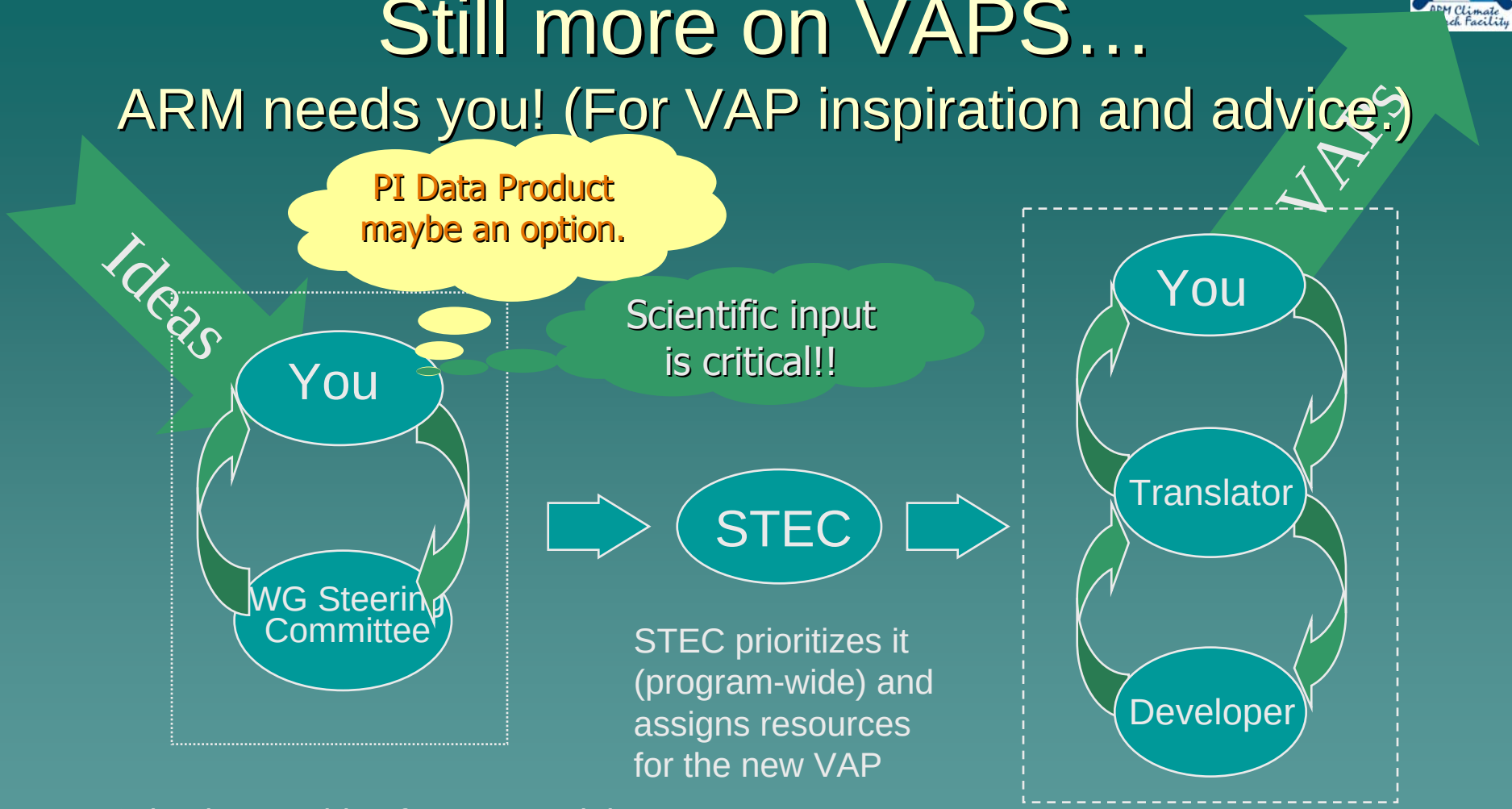
- VAPs are products from automated analytical procedures (models, retrievals, etc.) that are run in the ARM data system
- Inputs come from instruments, other VAPs, and/or external data
- Output is a new ARM data stream



- 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.)



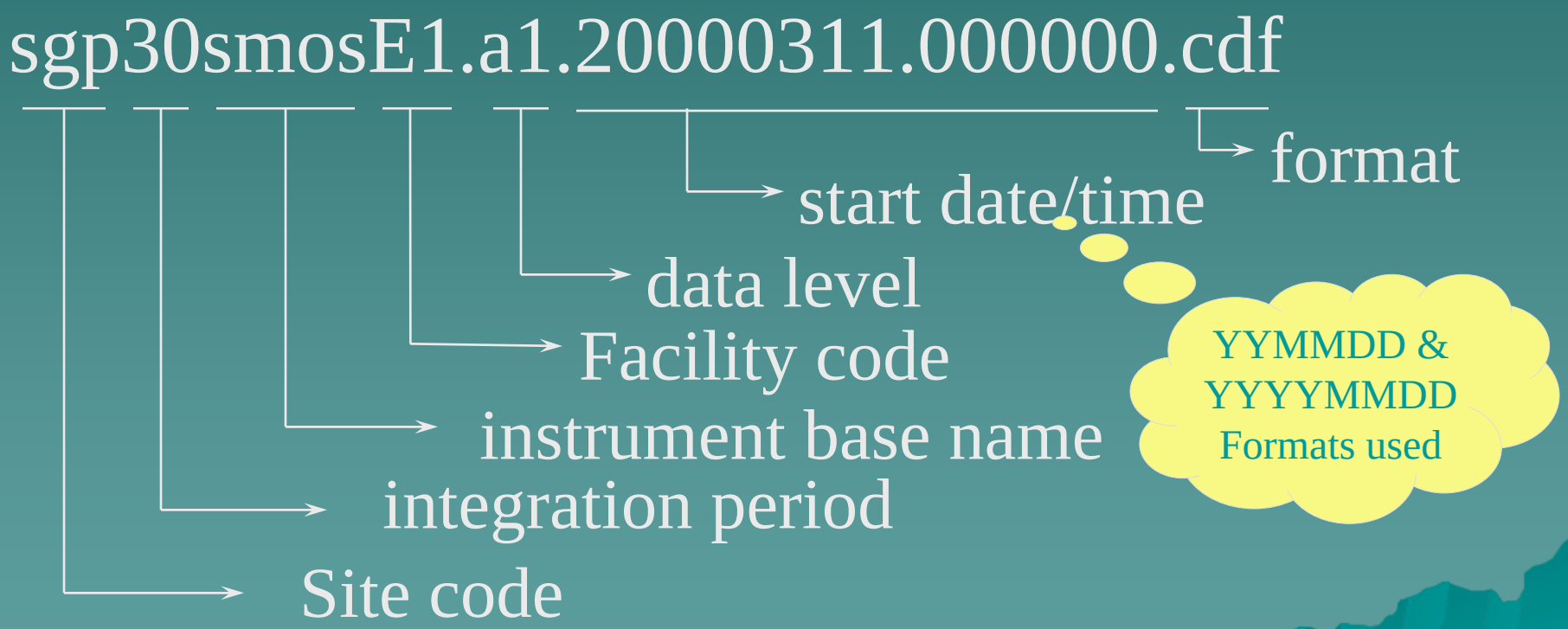
Scientist gets idea for new model or algorithm and presents it to the WG. The WGSC prioritizes the idea and contacts the STEC

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)



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

Accessing Data from the Archive

- *Contact Us……*
  - *1-888-ARM-DATA, armarchive@ornl.gov*
- Continuous data distribution
  - "Standing Orders"

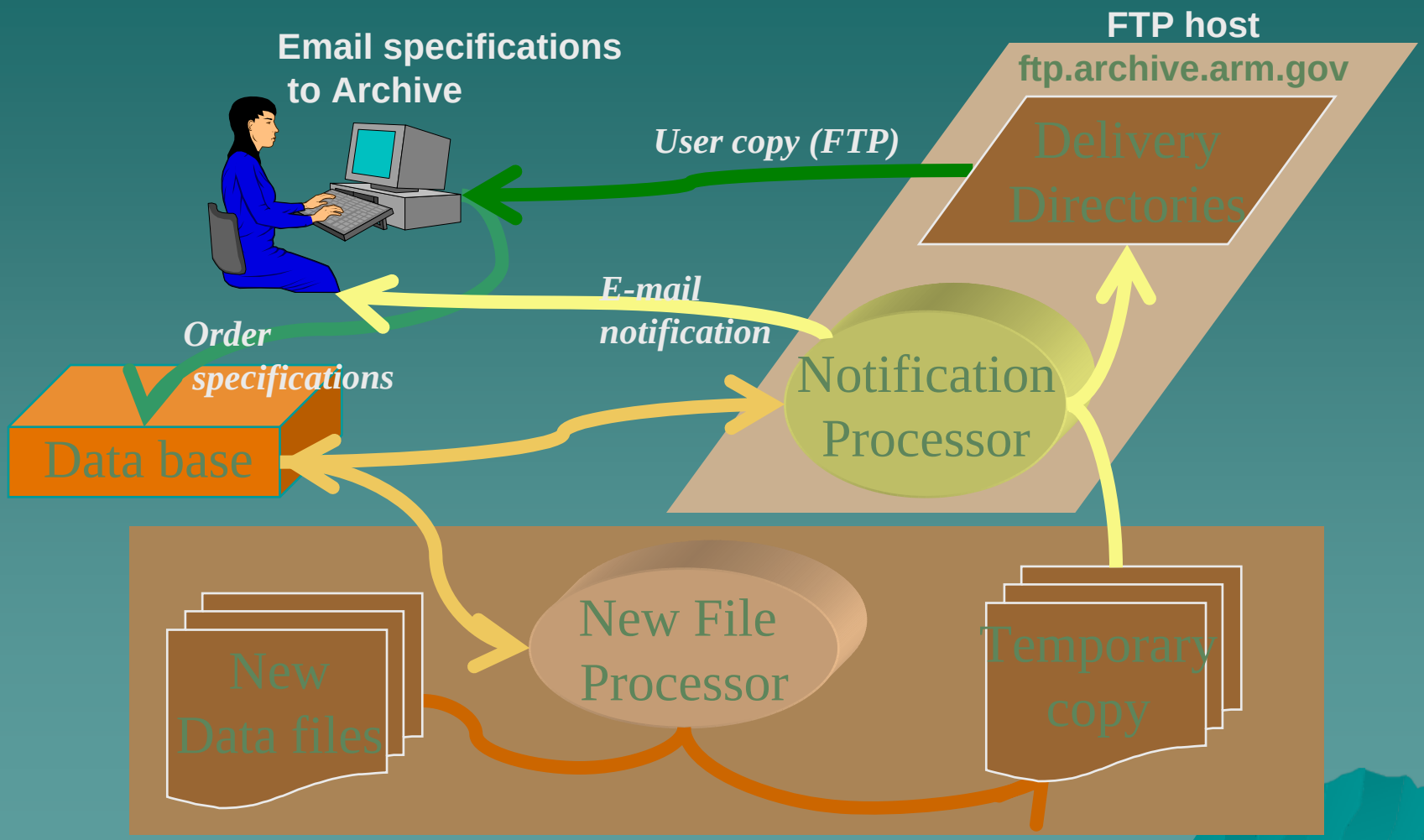
Contact Us at . . .

- 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

“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

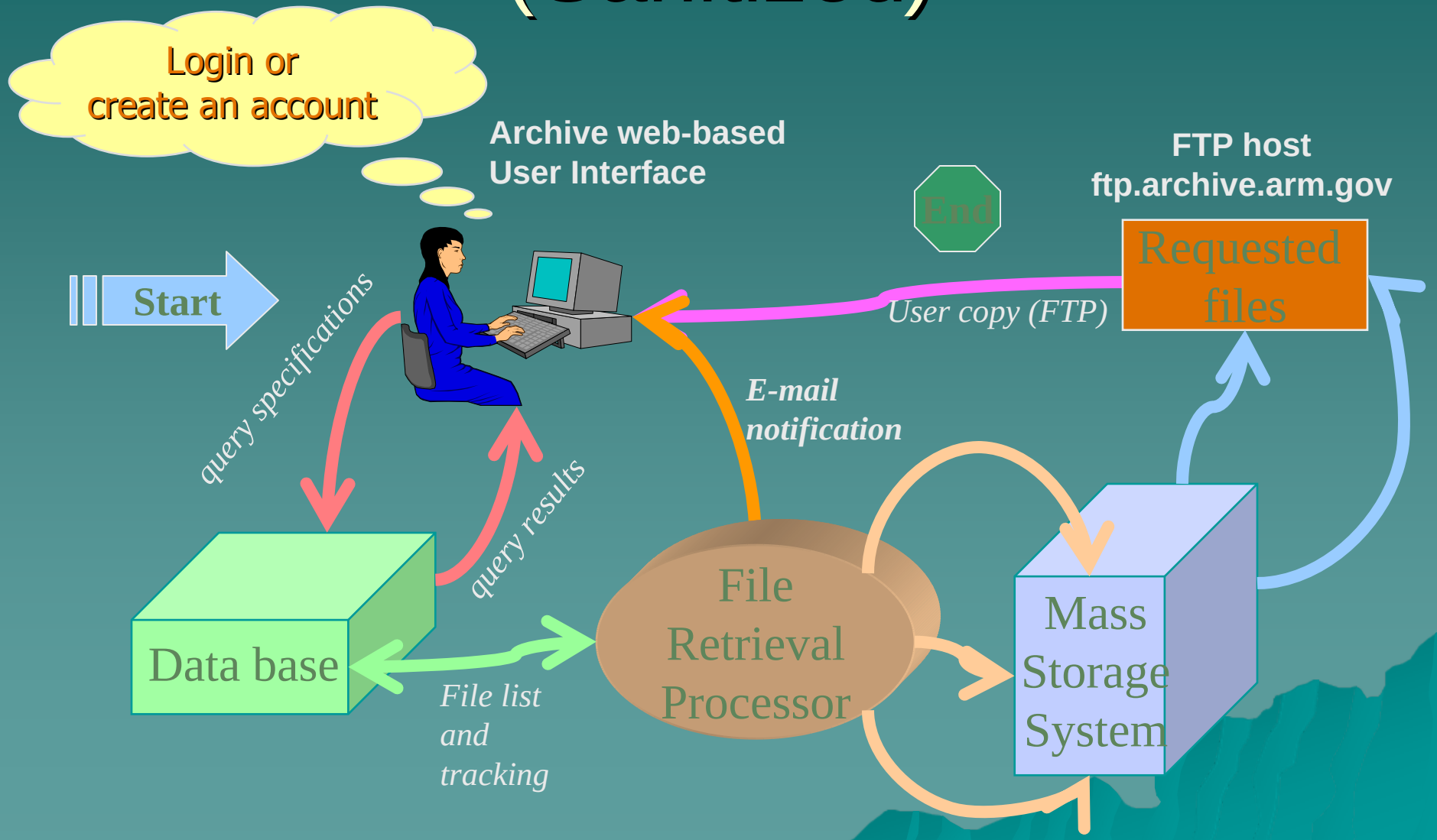
More than you want to know…?

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)



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
- More/better guidance on choosing and navigating the various user interfaces
- Adding categories for IOP data collection
- Clarifying lists of data sources
  - routine (measured vs. derived), IOP, and aircraft designations

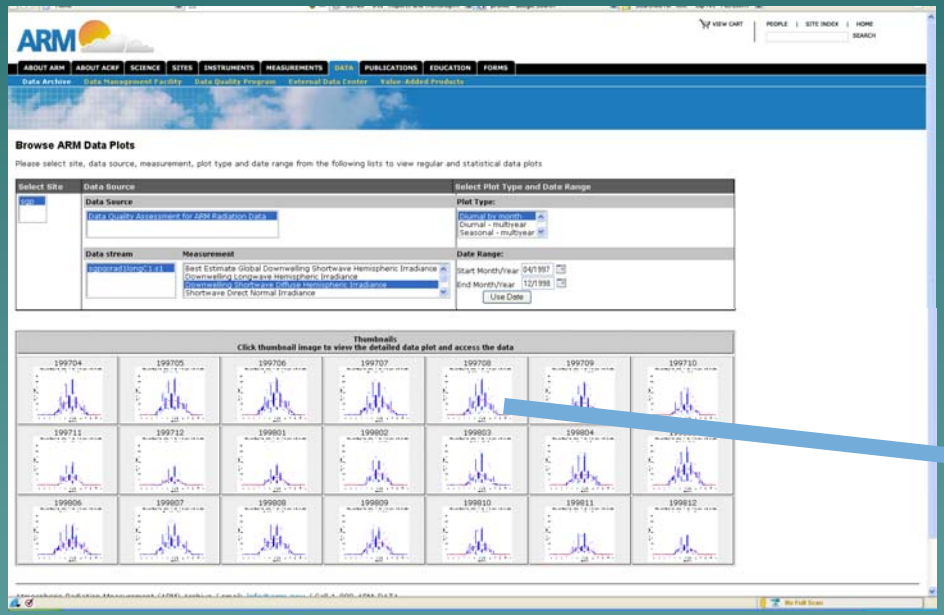
Planned Additions to Archive Functionality

- *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

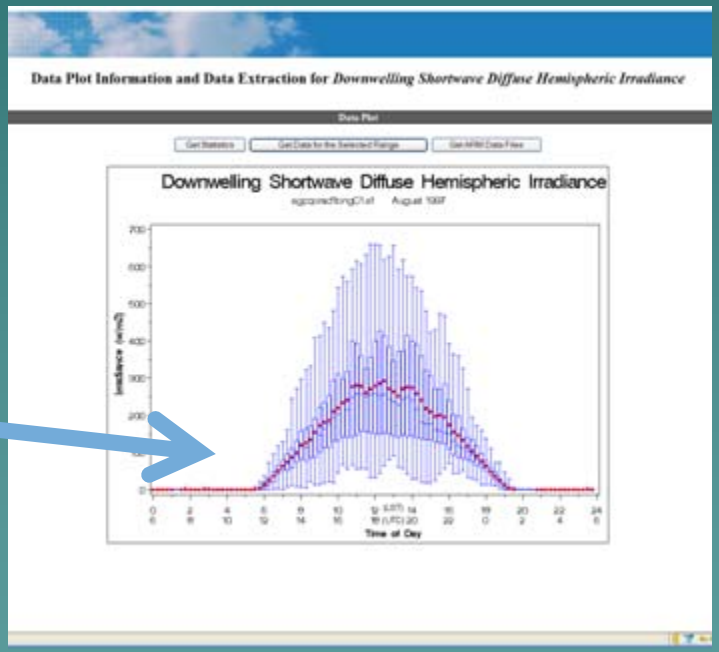
    http://www.archive.arm.gov/arm/stattnb1.jsp

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

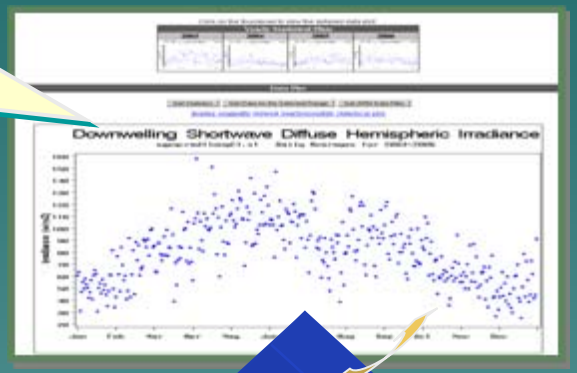
- Developing a more explicit version of NCVweb for data extraction
  - Other data formats
  - Concatenated data files
- Developing an “insertion” into measurements part of Data Browser user interface so that retained measurements from a single data stream can be saved
  - Look at extending this to include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

- *See Sean Moore’s poster at location 4H*

Statistical Browser

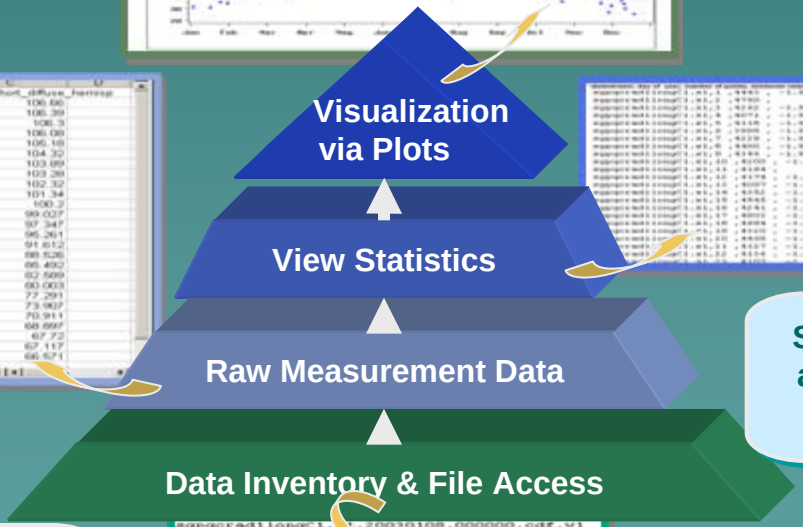
- *Provides integrated access to statistical plots and data extraction features*
- *Visit poster for live demo*

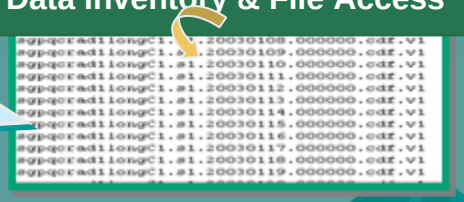
Interface allows hierarchical drill down of multi-year, yearly, and monthly statistical graphs.



Data can be extracted in various formats (text, netCDF, or Excel)

Statistical results are accessible in tabular format





Regular ARM data files can be ordered through integrated Archive data requests