



ARM Orientation for New and Current Principal Investigators

Second ASR Science Team Meeting
San Antonio, Texas
March 28, 2011



U.S. DEPARTMENT OF
ENERGY

Office of
Science

Outline

- ARM Overview
- How to:
 - Find a datastream
 - Order a datastream
 - Read a NetCDF file
 - Review data quality information
 - Submit a research highlight or publication
 - Submit an field campaign request
 - Find out what's going on around the program
 - Submit a general question or comment

DOE Climate Change Science Goals

From the 2009 BER Climate Change Research Program (CCRP)
Strategic Plan:

The two high-priority questions that focus the BER CCRP are:

1. *When, where, and by how much will climate be affected by increasing greenhouse gas concentrations in the atmosphere?*
2. *What are the likely consequences of climate change for ecosystems, the energy system, and other important human and natural systems?*

http://www.er.doe.gov/ober/ober_top.html

Resolving the Most Critical Uncertainties of Climate Change

- The three high-priority science questions that summarize this critically needed research are:
 1. *What are the present deficiencies in cloud formulations and cloud feedback representations in climate models, and how can they be eliminated?*
 2. *What are the climatically relevant chemical and physical properties of aerosols that control their effects on the atmosphere's radiation balance, and how can they be best represented in climate models?*
 3. *What are the present deficiencies in terrestrial carbon cycle feedback representations in climate models, and how can they be eliminated?*

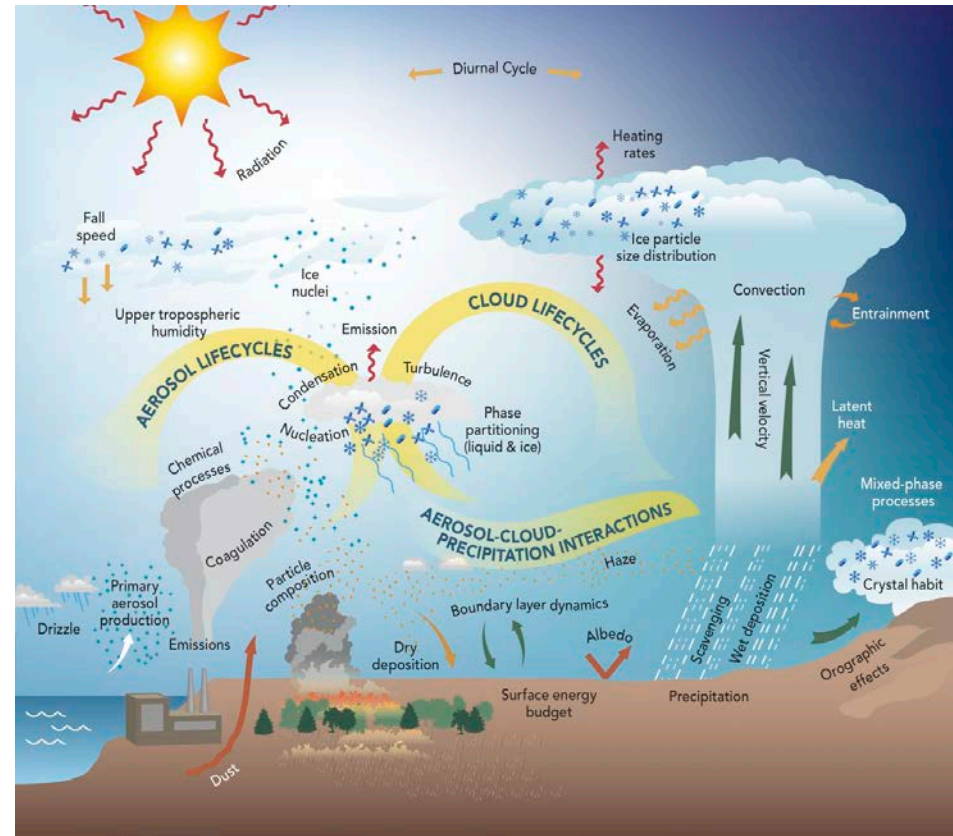
ASR and ARM

ARM: The Atmospheric Radiation Measurement Climate Research user facility collects and delivers observational data for the general climate research community.

ASR: The Atmospheric System Research program conducts climate research based on observations conducted with the ARM facility.

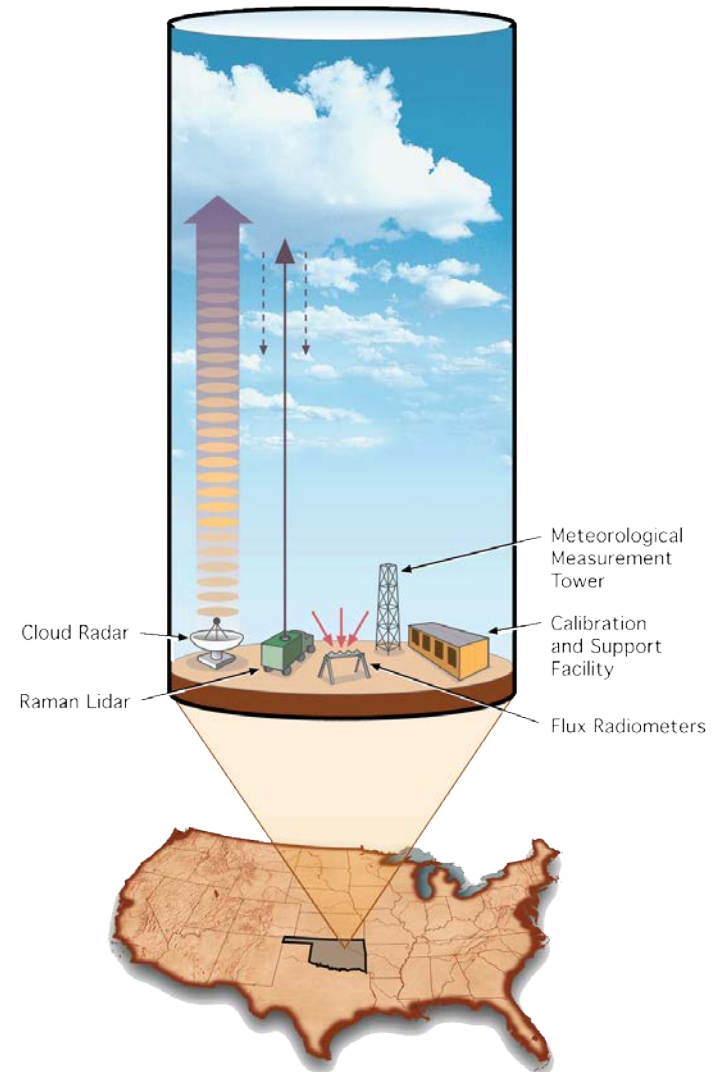
Atmospheric System Research (ASR) Mission Statement

The goal of ASR, in partnership with the ARM Facility, is to quantify the *interactions among aerosols, clouds, precipitation, radiation, dynamics, and thermodynamics* to improve fundamental **process-level understanding**, with the ultimate goal to reduce the uncertainty in global and regional climate simulations and projections.



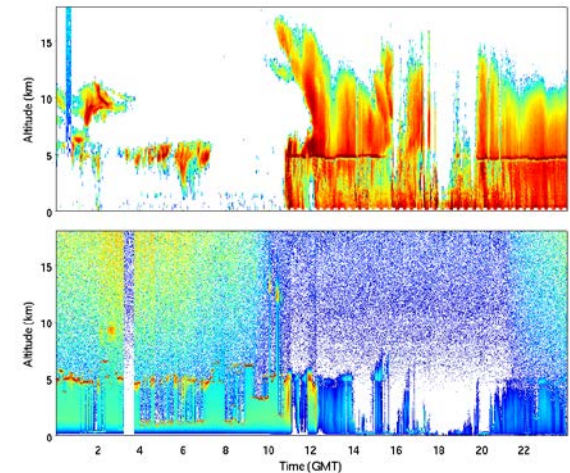
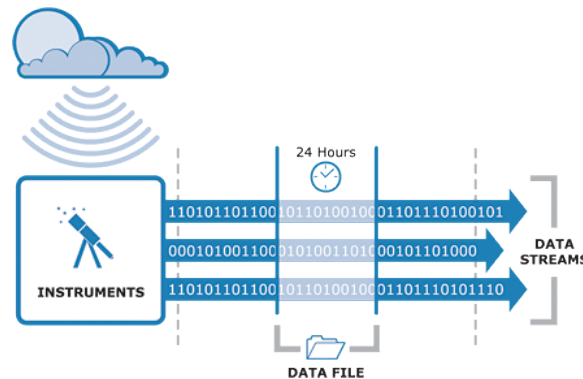
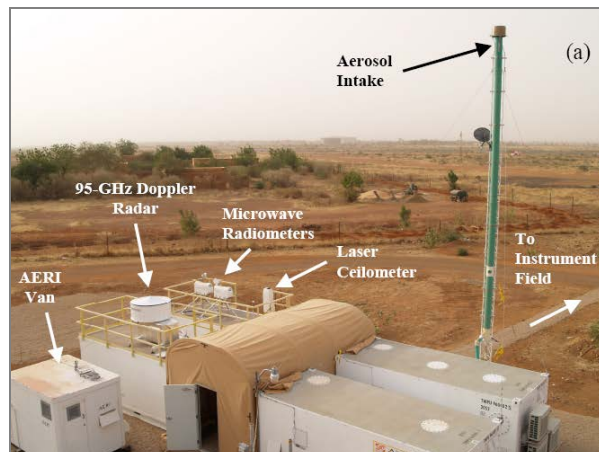
ARM Goals and Objectives

- Provide the national and international scientific community with the infrastructure needed for scientific research on global change
- Global change research includes the study of alterations to climate, land productivity, oceans, water cycle, atmospheric chemistry, and ecological systems

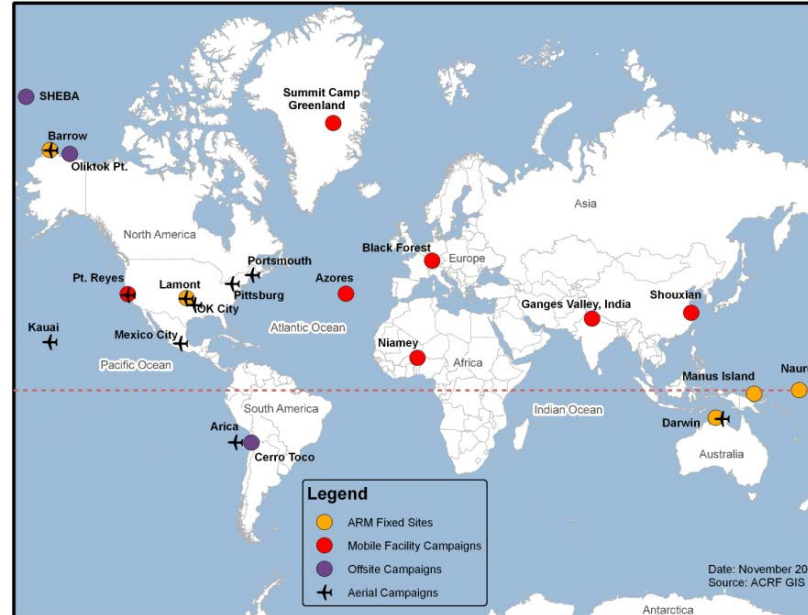


Overview: Facility Components

- Research sites – permanent, mobile, and aerial
- Instruments and measurements
- Data processing, data quality, Data Archive
- Field campaigns – ground-based and airborne



Overview: Research Sites



- Southern Great Plains (1993)
- North Slope of Alaska: Barrow (1998) and Atqasuk (1999)
- Tropical Western Pacific: Manus (1996), Nauru (1998), and Darwin (2002)
- First ARM Mobile Facility (2005); Second ARM Mobile Facility (2010)
- ARM Aerial Facility (2007)

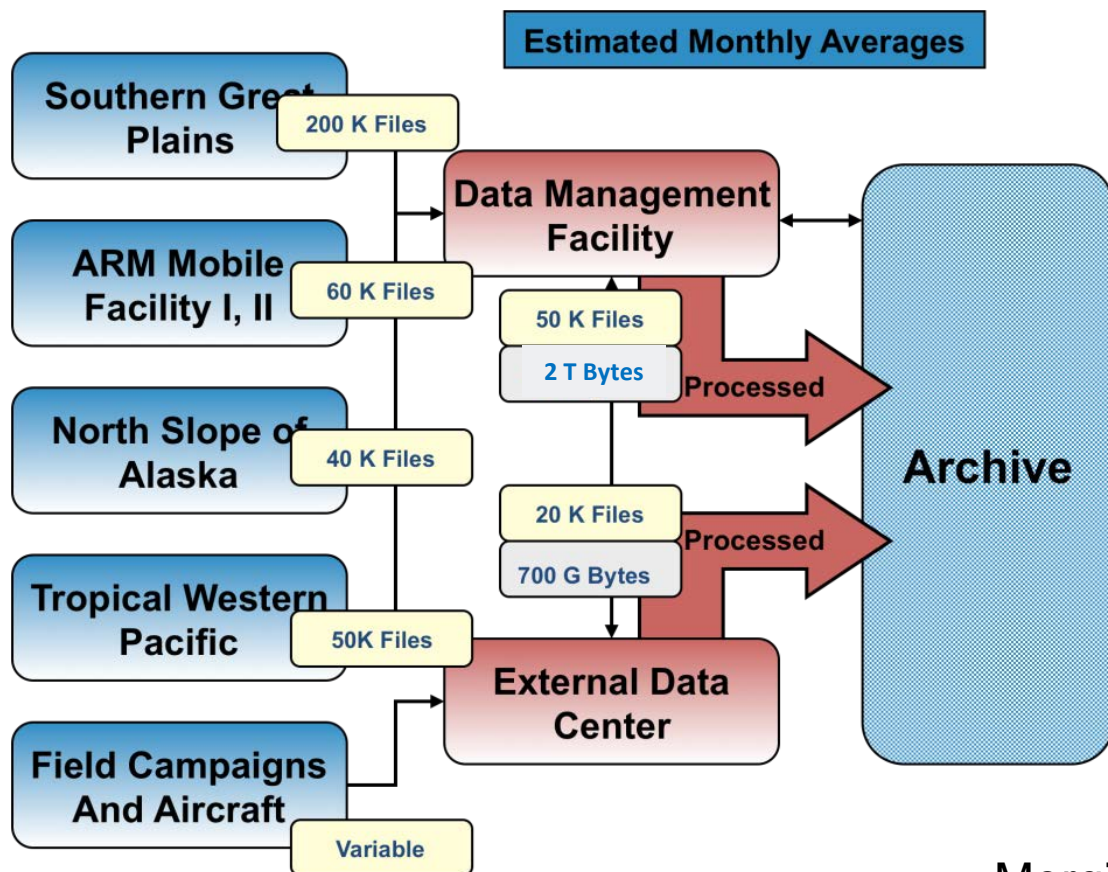
Overview: Measurements and Instruments

- Cloud profiles: millimeter radar and lidar
- Temperature/relative humidity/wind profiles: radiosondes
- Column water: microwave radiometer
- Column aerosol: solar spectral radiometer
- In situ aerosol optical and cloud nucleation properties
- Surface radiation budget: solar and terrestrial IR radiometers
- Surface meteorology: T/RH/wind

Additional instruments being deployed through the Recovery Act



Overview: Data Products



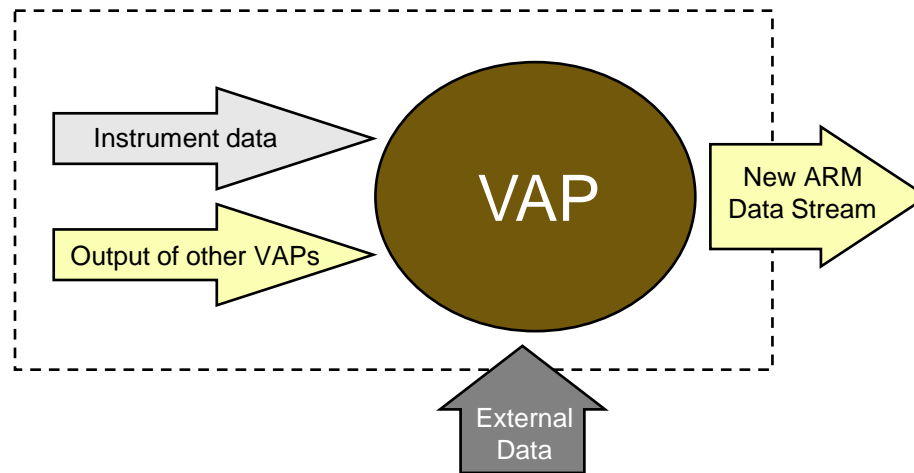
Most instrument data are processed to a standard NetCDF format before being delivered to the Archive.

When necessary, higher-order Value-Added Products (VAPs) are developed. VAPs serve a variety of purposes including:

- Merging data from multiple instruments
- Providing derived parameters
- Adding QC/QA information

More on VAPS...

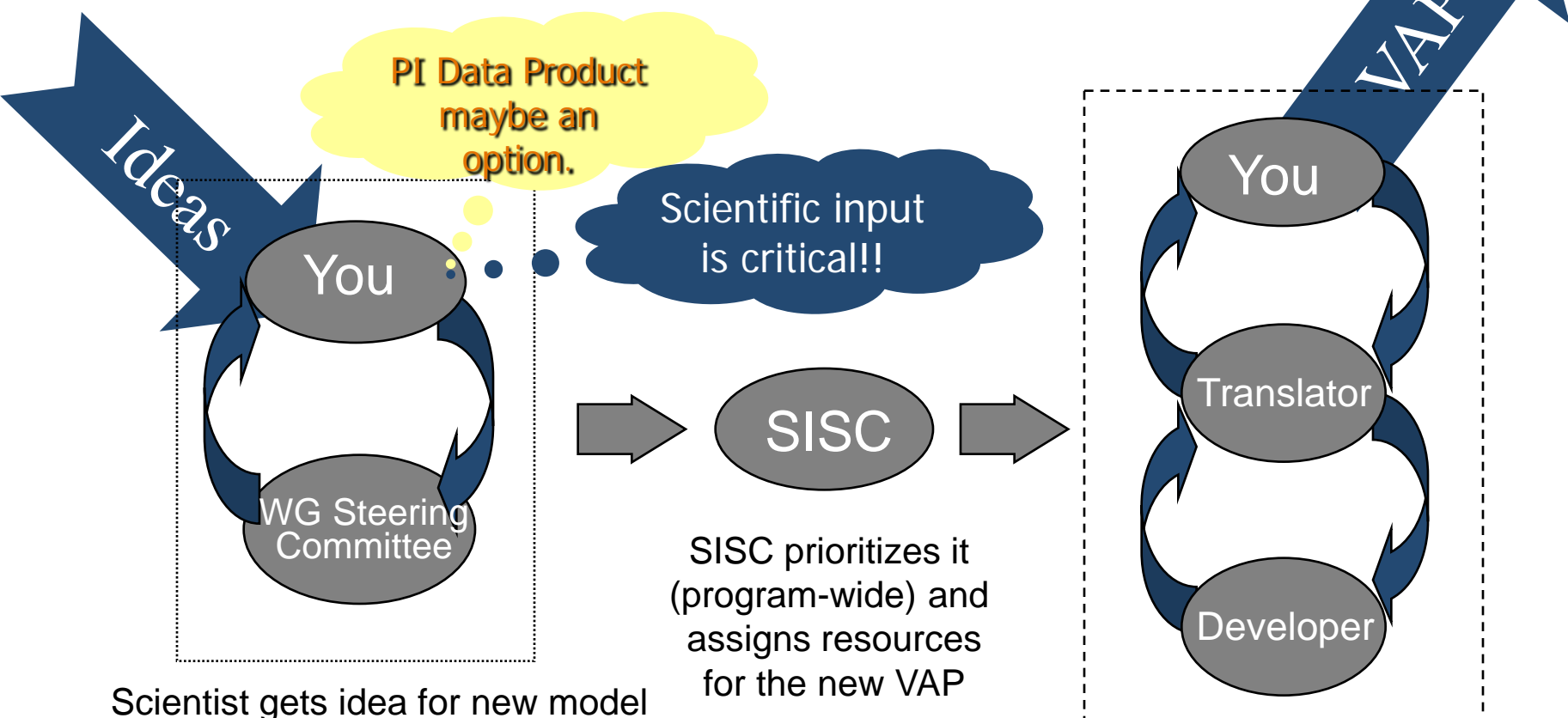
- VAPs are products from automated analytical procedures (models, retrievals, etc.) that are run in the ARM data system
- Inputs come from instruments, other VAPs, and/or external data
- Output is a new ARM data stream



ARM wants your input. Please note *"Procedure for Submitting Science and Research Products to the Data Archive"* at:

<http://www.arm.gov/data/docs/procedure>

Still more on VAPS... ARM needs you! (For VAP inspiration and advice.)

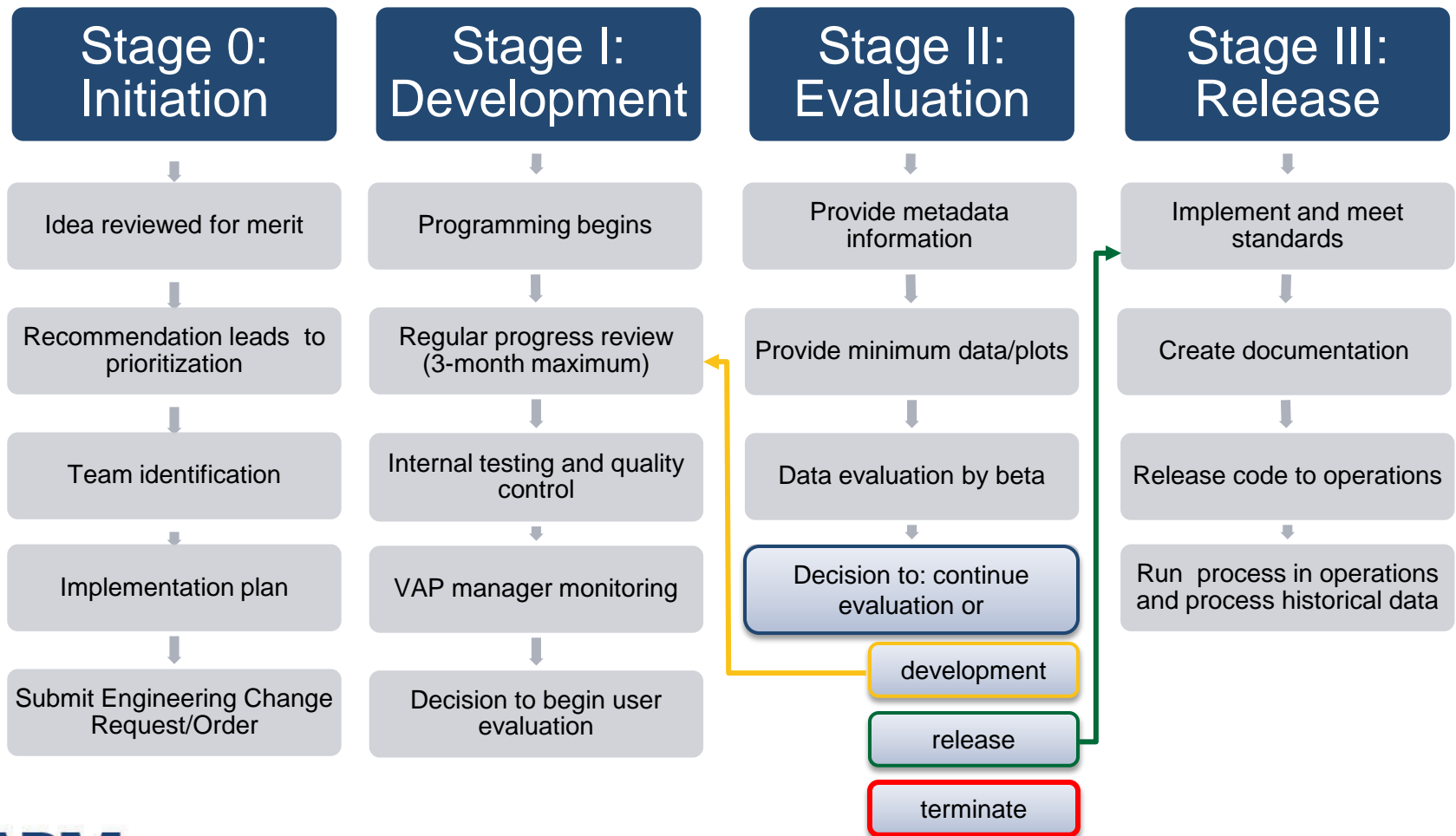


Scientist gets idea for new model or algorithm and presents it to the WG. The WGSC prioritizes the idea and contacts the SISC

SISC prioritizes it (program-wide) and assigns resources for the new VAP

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.

Value Added Product Stages



Key Contacts for New Datastreams

Working Group Chairs

- Cloud lifecycle: Matthew Shupe, Anthony Del Genio
- Aerosol lifecycle: Allison McComiskey, Jian Wang
- CAPI: Dave Turner, Steve Ghan

Translators


- Observation: Mike Jensen, Connor Flynn, Sally McFarlane
- Modeling: Shaocheng Xie, Jerome Fast

Program Contacts: <http://www.arm.gov/about/contacts>

People Database: <http://www.arm.gov/people>

Overview: Data Archive

- The Data Archive collects and delivers about 5 terabytes of data per month
- Nearly 6000 registered users from over 15 U.S. agencies, 475 universities, and 71 countries



CLIMATE RESEARCH FACILITY

ARM Catalog Interface

Current Selections

Proceed to Order Remove Selected Streams

Submit

Make Your Selections: Click on a non-zero cell in the table to make your selection and proceed to the next level of detail

Hints: Click the outside the highlighted dialog to close it. Double click to close all dialogs.

[Help](#)

Site	Year																		
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Global Earth Coverage (?)	1104	2176	2911	3275	3829	3379	3683	3704	3294	3292	3282	3299	3055	3265	3291	2178	1426	370	19
North Slope Alaska (?)	184	365	365	607	2290	18033	25011	31506	35934	36415	39961	36955	38933	38317	38436	40787	37435	34667	986
Southern Great Plains (?)	13566	67793	84375	131884	193247	250880	287132	291358	273674	277079	250860	231151	217646	224860	220803	263865	255599	180048	4662
Tropical Western Pacific (?)				2424	10912	13802	30662	32872	32360	45675	47634	45152	41558	56217	75286	83791	79867	63744	2163
SHEBA (Surface HEat Budget of the Arctic) (?)					1645	6622													
Niamey, Niger; Mobile Facility (?)													898	15267	263				
Point Reyes CA, USA; Mobile Facility (?)													8314	289					
Black Forest, Germany; Mobile Facility (?)															12410	44			
Shouxian, Anhui, China; Mobile Facility (?)																11986	6		
Graciosa Island, Azores, Portugal; Mobile Facility (?)																	19408	21349	272
Steamboat Springs CO, USA; Mobile Facility																		969	248

Recovery Act: Introduction

- \$60M from DOE Office of Science for investments in instrumentation and research infrastructure to support the instrumentation and the associated increase in data volume and complexity
- 3-dimensional measurements of cloud scale dynamics, microphysics, and precipitation
- Enhanced measurements of atmospheric aerosol composition and chemistry
- Enhance measurement base to bridge new knowledge into, and improve, the predictive performance of climate models

<http://www.arm.gov/about/recovery-act>



Recovery Act: Update

- Precipitation and cloud radars installed at the SGP
- 35 GHz radars upgraded at SGP, Darwin, and Manus
- HSRL lidars installed at Barrow and Steamboat Springs
- Raman lidar installed at Darwin
- Aircraft instruments flown as part of CARES and CalWater
- Infrastructure upgrades well under way at all sites
- Many other instruments (e.g. ceilometers, AERIs)

- Remaining installations include precipitation radar at Manus, scanning cloud radars beyond the SGP, microwave radiometers,



Upcoming Field Campaigns: MC3E

Midlatitude Continental Convective Clouds Experiment (MC3E): April 22 – June 6, 2011 at the SGP ARM site

- Joint campaign with NASA
- ARM components include: scanning radars, wind profilers in precipitation mode in multi-doppler lobes, radiosonde array
- NASA components include ER2 and North Dakota Citation and the NPOL Doppler radar
- Additional ground based measurements from NASA and NOAA

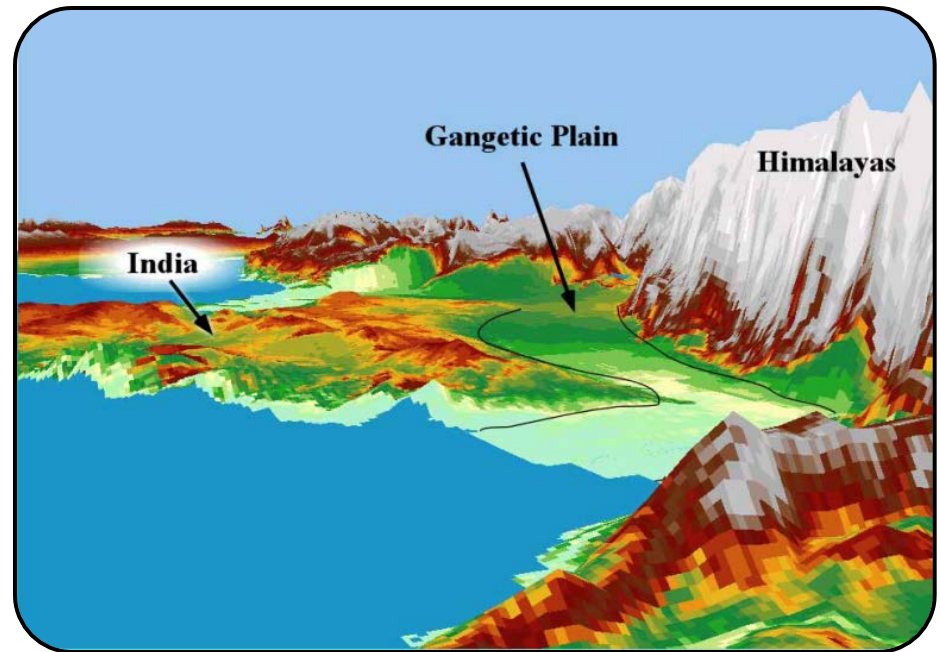


<http://campaign.arm.gov/mc3e>

Upcoming Field Campaigns: GVAX

Ganges Valley Aerosol Experiment (GVAX) June 2011 – March 2012

GVAX will use the first ARM Mobile Facility to obtain measurements of clouds, precipitation, and aerosols to study the impact of aerosols cloud formation and monsoon Activity.



<http://www.arm.gov/sites/amf/pgh>



Upcoming Field Campaigns: AMIE

ARM MJO Investigation Experiment (AMIE)

Two Components: Gan Island (AMF2) in the Indian Ocean and Manus Island (C-band radar and radiosondes)

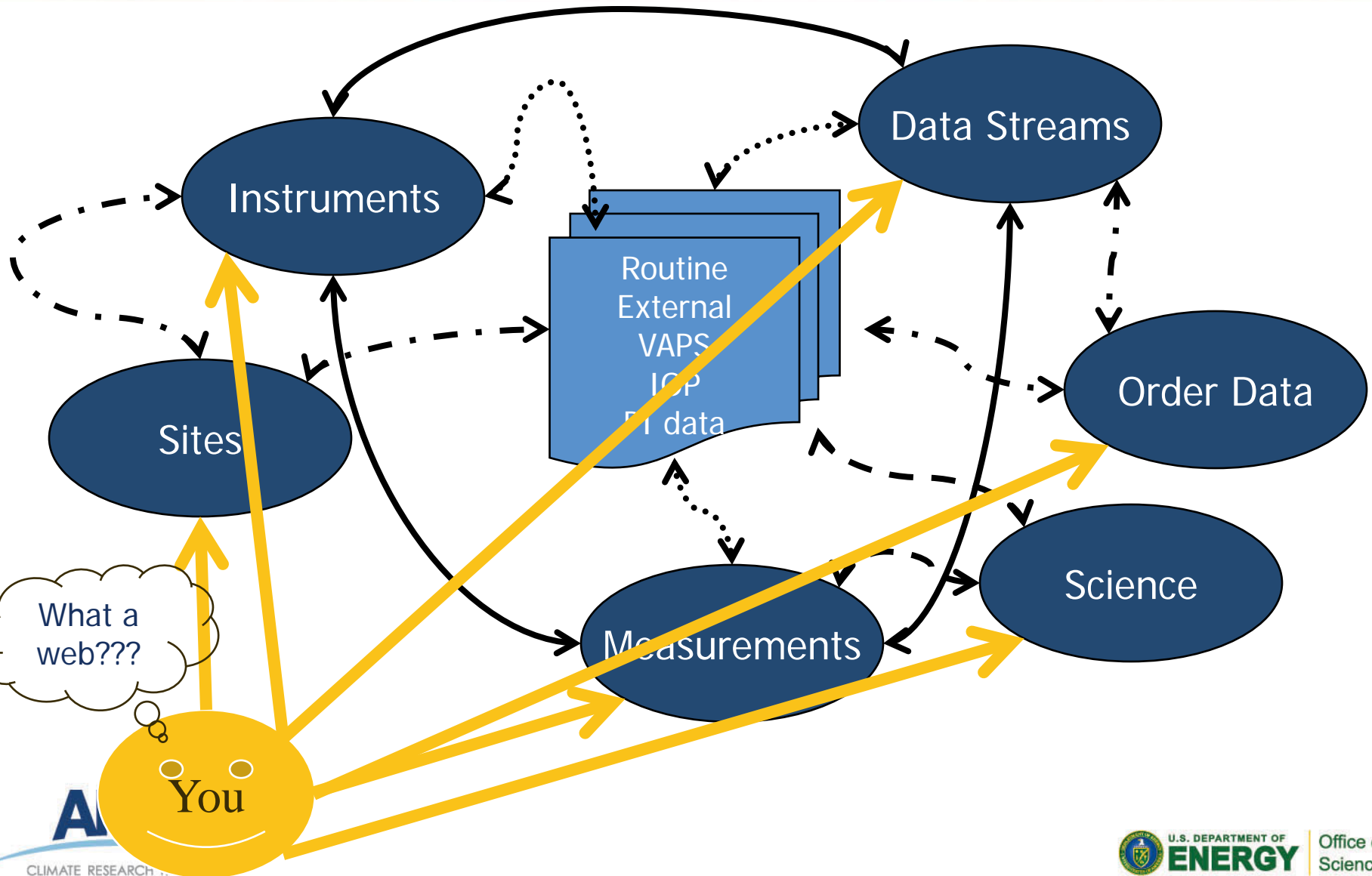
- AMIE runs from Oct. 1, 2011 through Mar. 31, 2012
- AMIE/DYNAMO a hypothesis testing driven effort
 - Hypotheses significantly formed using models due to lack of in-situ data
- Gives inherent synergy between observational and modeling efforts



Part II: How do I ...

- Find a datastream
- Order a datastream
- Read a NetCDF file
- Review data quality information
- Submit a research highlight or publication
- Submit an field campaign request
- Find out what's going on around the program
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Wandering around ARM Web "stuff"



How Do I Find a Datastream for a Specific Measurement?

Each measurement page lists the datastreams that include that measurement. Click the datastream name or click **Build an Order**.



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U.S. DEPARTMENT OF ENERGY | Office of Science

About | Science | Campaigns | Sites | Instruments | **Measurements** | Data | News | Publications | Education

ARM.gov >> Measurements >> Cloud fraction

Measurement : Cloud fraction

Fraction of sky covered by clouds, observed directly or derived from SW irradiance.

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
- External Instruments
- Field Campaign Instruments

Value-Added Products

- WSICLOUD : Whole Sky Imager Cloud Products (Process)
- ARSCL : Active Remotely-Sensed Cloud Locations (Process)
- SWFLUXANAL : Shortwave Flux Analysis (Process)
- SFCCLDGRID : Surface Cloud Grid (Process)

Datastreams

- TSI : Total Sky Imager Datastreams
- WSI : Whole Sky Imager Datastreams
- ECMWF : European Centre for Medium Range Weather Forecasts Model Data Datastreams
- TLCV : Time-Lapsed Cloud Video Datastreams
- NCEPGFS : National Centers for Environment Prediction Global Forecast System Datastreams
- NWSSURF : National Weather Service Surface Meteorology Data Datastreams
- MOLTS : Model Output Location Time Series Datastreams
- ECMWF DIAG : European Centre for Medium Range Weather Forecasts Diagnostic Analyses Datastreams

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.

Email Address

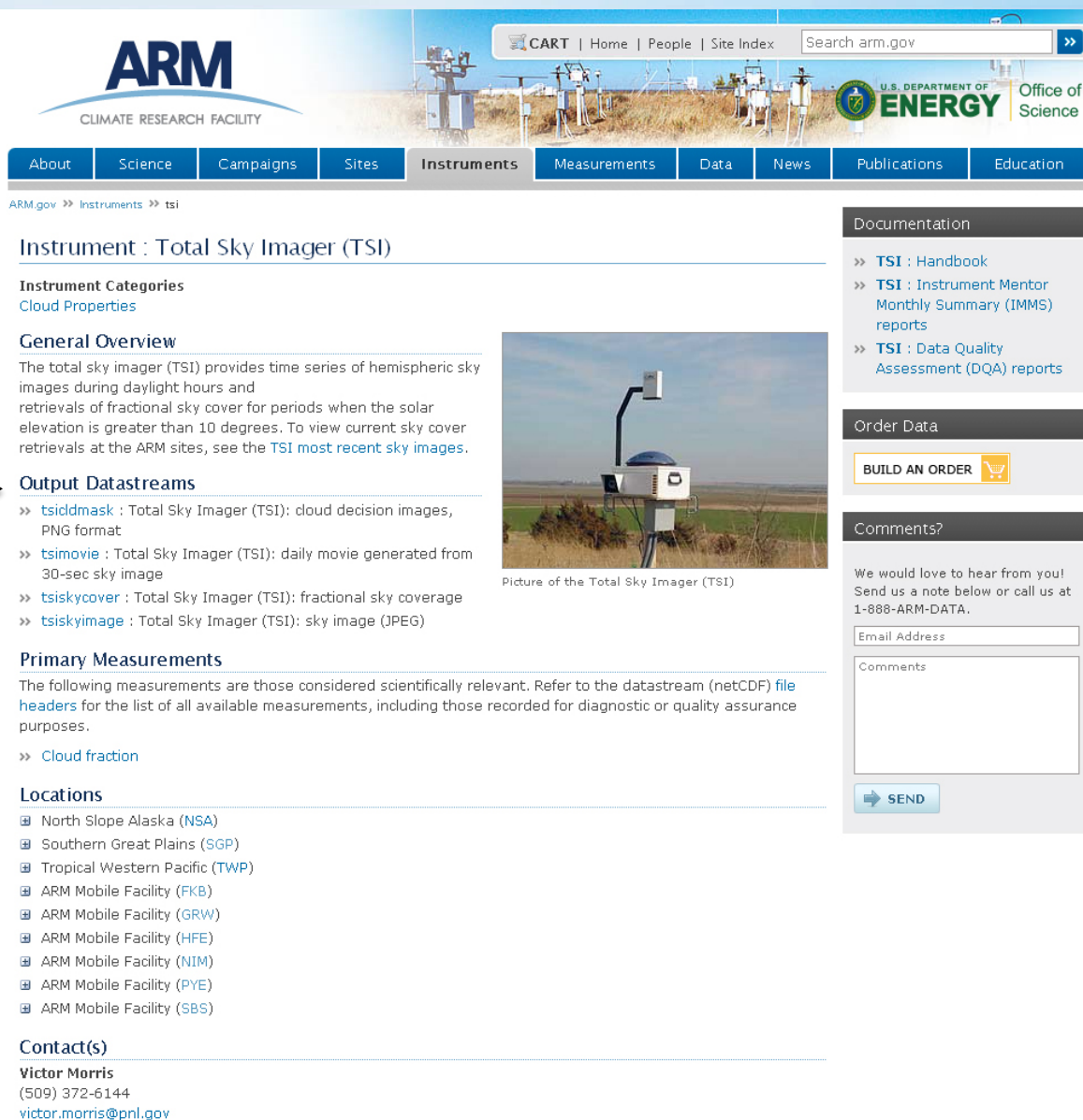
Comments

SEND

How Do I Find a Datastream for a Specific Instrument?

Each instrument page lists the datastreams associated with that instrument.

You can click on a datastream name for more information, or click **Build an Order** to begin ordering data.



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About | Science | Campaigns | Sites | Instruments | Measurements | Data | News | Publications | Education

ARM.gov >> Instruments >> tsi

Instrument : Total Sky Imager (TSI)

Instrument Categories
[Cloud Properties](#)

General Overview
The total sky imager (TSI) provides time series of hemispheric sky images during daylight hours and retrievals of fractional sky cover for periods when the solar elevation is greater than 10 degrees. To view current sky cover retrievals at the ARM sites, see the [TSI most recent sky images](#).

Output Datastreams

- >> [tsildmask](#) : Total Sky Imager (TSI): cloud decision images, PNG format
- >> [tsimovie](#) : Total Sky Imager (TSI): daily movie generated from 30-sec sky image
- >> [tsiskycover](#) : Total Sky Imager (TSI): fractional sky coverage
- >> [tsiskyimage](#) : Total Sky Imager (TSI): sky image (JPEG)

Primary Measurements
The following measurements are those considered scientifically relevant. Refer to the datastream (netCDF) [file headers](#) for the list of all available measurements, including those recorded for diagnostic or quality assurance purposes.

- >> [Cloud fraction](#)

Locations

- North Slope Alaska ([NSA](#))
- Southern Great Plains ([SGP](#))
- Tropical Western Pacific ([TWP](#))
- ARM Mobile Facility ([FKB](#))
- ARM Mobile Facility ([GRW](#))
- ARM Mobile Facility ([HFE](#))
- ARM Mobile Facility ([NIM](#))
- ARM Mobile Facility ([PYE](#))
- ARM Mobile Facility ([SBS](#))

Contact(s)
Victor Morris
(509) 372-6144
victor.morris@pnl.gov

Picture of the Total Sky Imager (TSI)

Documentation

- >> [TSI : Handbook](#)
- >> [TSI : Instrument Mentor Monthly Summary \(IMMS\) reports](#)
- >> [TSI : Data Quality Assessment \(DQA\) reports](#)

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.

Email Address

Comments

[SEND](#)

How Do I Find a Datastream by Name?

The Datastreams A-Z page lists all datastreams in alphabetical order by full name.

To access this page, select **Datastreams** under the **Data** tab on the ARM website.

<http://www.arm.gov/data/datastreams>

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ARM.gov >> Data >> Datastreams

Datastreams A-Z

ARM Datastreams External Datastreams

Datastream	Full Name	Start	End
AERI01CH1	Atmospheric Emitted Radiance Interferometer (AERI) 01: ch. 1 data	1995.07.22	2011.03.19
AERI01CH2	Atmospheric Emitted Radiance Interferometer (AERI) 01: ch. 2 data	1995.07.22	2011.03.19
AERI01SUMMARY	Atmospheric Emitted Radiance Interferometer (AERI) 01: summary data	1995.07.22	2011.03.14
AERICH1	Atmospheric Emitted Radiance Interferometer (AERI): channel 1 data	1994.01.10	2011.03.12
AERICH2	Atmospheric Emitted Radiance Interferometer (AERI): channel 2 data	1994.01.10	2011.03.12
AERIENGINEER	Atmospheric Emitted Radiance Interferometer (AERI): engineering data	1997.10.21	2011.03.12
AERISUMMARY	Atmospheric Emitted Radiance Interferometer (AERI): summary data	1994.01.10	2011.03.12
AOS	Aerosol Observing System (AOS): aerosol data, 1-min	1995.11.03	2011.03.19
AOSCCN	Aerosol Observing System (AOS): cloud condensation nuclei data	2005.03.04	2011.03.19
AOSCPC	AOS: condensation particle counter	2010.10.14	2011.03.19
AOSMET	AOS: aerosol-based meteorology data	2010.10.03	2011.03.19
AOSNEPHDRY	AOS: ambient nephelometer measurements	2010.10.04	2011.03.19
AOSNEPHWET	AOS: humidified nephelometer measurements	2010.10.04	2011.03.19
AOSOZONE	AOS: O ₃ measurements	2010.10.04	2011.03.19
AOSPSAP3W	AOS: 3 wavelength particle soot absorption photometer	2010.10.11	2011.03.19
BLC	Belfort Laser Ceilometer (BLC): 30-s avgs of cloud base heights at up to 3 levels	1994.08.11	2000.05.23
BLCPROF	Belfort Laser Ceilometer (BLC): profiles	1996.11.01	2000.05.23
BRS	Broadband Radiometer Station (BRS): broadband shortwave and longwave radiation	2001.03.05	2011.03.19
BRS60S	Broadband Radiometer Station (BRS): 60-second broadband shortwave and longwave radiation	2001.03.05	2003.04.17
BSRN	Baseline Solar Radiation Network (BSRN): solar irradiances	1993.07.01	2001.01.22
CARBONFLASKS	Flask Sampler for Carbon/Isotopes/Trace gasses	2002.01.24	2011.02.28

Measurement Categories

Select below to highlight datastreams in specified measurement categories.

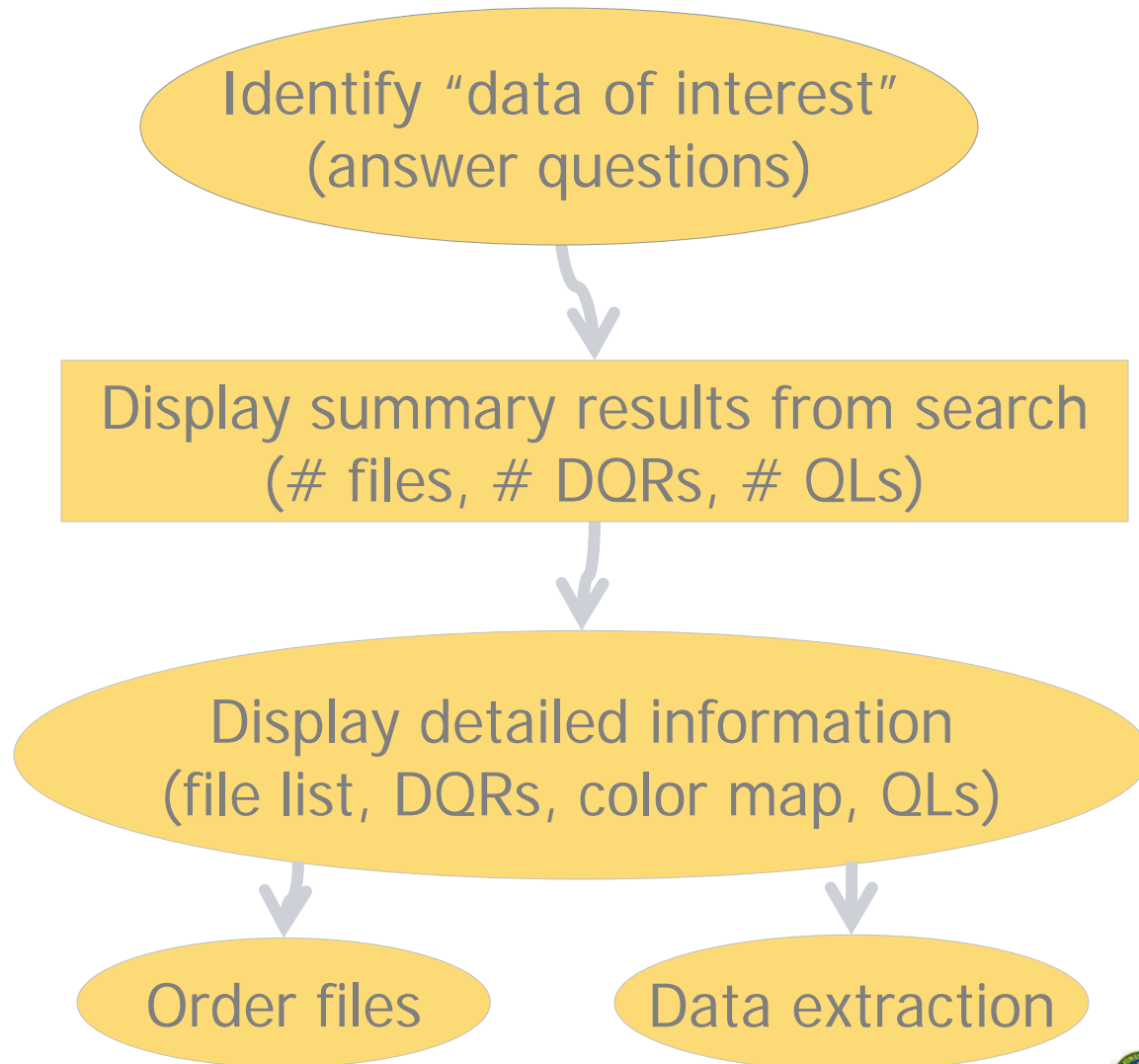
- Aerosols
- Atmospheric Carbon
- Atmospheric State
- Cloud Properties
- Radiometric
- Surface Properties

Select All | Invert Selection

Comparison of Interface Options

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 statistics, measurements and files.
"IOP" Data Browser	IOP, PI, Showcase 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



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 do I order data?

In addition to the “Build an Order” options on the Instrument and Measurement pages, there are several browsers available to find and order data. →

The screenshot shows the ARM Data Archive website. At the top is the ARM logo and navigation menu (About, Science, Campaigns, Sites, Instruments, Measurements, Data, News, Publications, Education). A search bar and a line graph are also visible. The main content area is titled "ARM Data Archive" and lists four data browsing methods: Data Browser, Data Cart, Catalog Browser, and Thumbnail Browser, each with a brief description and a small thumbnail image. On the right side, there are two sections: "Showcase Data" with a list of products and a feedback link, and "Featured Data" with a list of recent data releases and their dates.

ARM Data Archive

Data collected through the routine operations and scientific field experiments of the ARM Climate Research Facility are stored at and distributed through the Archive. These data are available to the public free of charge. Data can be acquired via the methods described below or by browsing the "instruments", "measurements", and other tabs above and looking for pages that have "Build an Order" in their right-side navigation.

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 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.
- 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.

Showcase Data

The following data products represent "best estimates" derived from several instruments and/or VAPs.

- » Climate Modeling Best Estimate (CMBE)
- » View CMBE plots and Extract Data using Statistical Browser

We are interested in your feedback for these products; please contact us.

Featured Data

- 11.26.2010
Radiatively Important Parameters Best Estimate Data Available for Southern Great Plains
- 11.03.2010
Long-Term, Large-Scale Ensemble Forcing Data Set for Darwin Available
- 10.13.2010
More Climate Modeling

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

How Do I Read NetCDF Data?

NetCDF is a self-describing scientific data format. There are many tools available to read NetCDF. Some of these are referenced under the ARM website data tab: <http://www.arm.gov/data/tools>. Further details are available at the Unidata NetCDF website.

Supported languages include:

C, C++, Fortran,
Matlab, IDL,
Python, Java, R, ...

If you have questions –
Ask! There is a lot of
experience around the
program.

Unidata
Providing data services, tools, & cyberinfrastructure leadership
that advance Earth system science, enhance educational opportunities, & broaden participation

Data Tools Community Downloads Support Projects About Us • Login

Search advanced

CommunityCorner

- Director's Page
- Strategic Plan
- Unidata Leaflet
- Unidata Metrics Assessment
- 2009 Users Workshop
- Unidata Seminar Series
- CommunitE-letter
- Unidata Events
- Community Announcements
- Job Opportunities
- Acronyms List

ToolBox

- Downloads
- Data
- Software Tools

NetCDF
netCDF

NetCDF (network Common Data Form) is a set of software libraries and machine-independent data formats that support the creation, access, and sharing of array-oriented scientific data.

Getting Started with NetCDF

NetCDF is freely available ([LICENSE](#)). To build netCDF [download the netCDF source distribution](#). The distribution contains the C/C++/F77/F90 libraries, netCDF utilities ncgen, ncdump, and nccopy, and a built-in OPeNDAP client for remote data access. See the [release notes](#) for more information. See the [4.1.1 downloads page](#) for precompiled binaries.

NetCDF Build Troubleshooter

- Special instructions for [Intel](#) and [Portland Group](#) compilers.
- Current release [known problems/workarounds](#)
- Successful build output for [tested platforms](#)
- Successful builds on [other platforms](#)
- The usual [build problems](#)
- Build failure [symptoms and resolution](#)
- [Troubleshooting](#) build problems
- [Reporting problems](#)

NetCDF News and Announcements

Posted: 2011-01-11

Data Quality Assessment

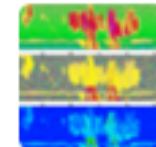
The assessment of data quality is managed by the ARM Data Quality Office

<http://dq.arm.gov/>

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; event driven and problem-based
 - Instrument Mentor Monthly Summary Reports
 - web accessible; linked to instrument web pages.
 - Data Quality Assessment Reports

DQ Hands



- [QC Metrics and Plots](#)
- [Plot Browser](#)
- [DQ wiki](#)

NCVweb



- [Interactive Data Plotting](#)

DQ Reports



- [Search All Reports](#)
- [DQ Assessment Reports](#)
- [Report Findings](#)

ARM

CLIMATE RESEARCH FACILITY

How Do I Submit a Research Highlight?

Research Highlights are an efficient way to exchange results with your colleagues. They're used in annual reports and other high-level documents, as well as in program reviews and outreach materials.

<http://asr.science.energy.gov>

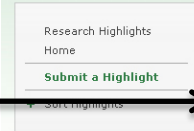


To access the Research Highlights Submittal Form:

1. On the ASR website, click **Science**.
2. Click **Research Highlights**.
3. Click **Submit a Highlight**.

How Do I Submit a Research Highlight?

Select or submit up to two associated publications.



Select your area of research and ASR working group.

Enter the title and use the Look Up button to select up to two contacts.

Enter the Introduction, Main Discussion, and Conclusion.

You can enter up to two images with captions, but they are not required.

Research Highlight Submittal Form

Tell us about your research! This form is designed to collect summary information about working group research results. If you have any questions or comments, please contact the [administrators](#).

Journal or Book Reference(s) (if applicable):

Your reference from the Publications Database. Limit two references.

Area of Research:

Working Group:
(To select more than one, shift+enter.)

Title of Highlight:
(There is a 95 character limit.)

Who is submitting this highlight?

(Limit two contacts; contributors will be visible in the journal reference.)

Please limit the total of your introduction, main discussion, and conclusion to 5000 characters (this includes blank/white spaces). If you would like to include scientific characters or any other special characters, please use the [ISO 8859-1 standard](#) for HTML conversion or spell it out. For assistance with characters conversion, contact the [administrators](#).

Introduction:

Main Discussion:

Conclusion:

Images: (optional)

Only images in JPEG, BMP, GIF, or PNG can be accepted up to 10 Mb. The image caption is limited to 500 characters.

Read the "[Tips and Tricks](#)" before uploading multiple images to Research Highlights.

IMAGE1: Image Caption:

IMAGE2: Image Caption:

How Do I Submit a Field Campaign Request?

- First, review the [guidelines](#) for submitting proposals.
- Next, [submit a preproposal](#); a short summary of the proposed campaign.
- Wait for a response from the Infrastructure Management Board (IMB) and/or [ARM Science Board](#).
- A full proposal or science plan may be requested.

The screenshot displays the ARM website's 'Submit a Campaign: Preproposal Form' page. The page features a navigation menu with tabs for 'About', 'Science', 'Campaigns', 'Sites', 'Instruments', 'Measurements', 'Data', 'News', 'Publications', and 'Education'. The main content area is titled 'Submit a Campaign: Preproposal Form' and includes a 'Propose a Campaign: Preproposal Form' section with a 'Submit' button. Below this is the 'ARM Site Designation' section, which includes a dropdown menu for 'ARM Site Designation' and a 'Submit' button. The 'ARM Resources Requested' section includes a text area for 'ARM Resources Requested' and a 'Submit' button. The sidebar on the right contains a 'Submit a Campaign: Preproposal Form' section with a 'Submit' button and an 'ARM Site Designation' section with a 'Submit' button. The page also includes a search bar at the top right and a 'Submit a Campaign: Preproposal Form' button at the bottom right.

How Do I Stay Connected?

ARM News Center

<http://www.arm.gov/news/>

Facebook

<http://www.facebook.com/arm.gov>

Twitter

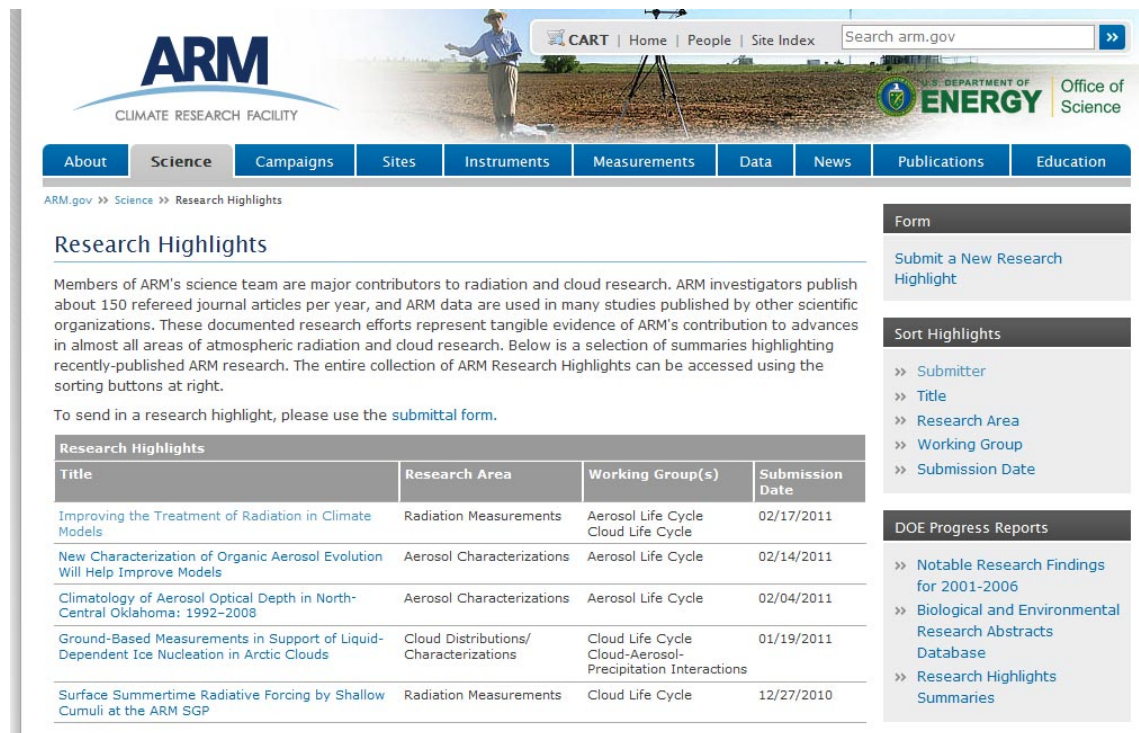
<http://twitter.com/armnewsteam>



How Do I Stay Connected?

■ Research Highlights

<http://www.arm.gov/news/research> or
<http://www.arm.gov/science/highlights>



The screenshot shows the ARM Climate Research Facility website. The header includes the ARM logo, navigation links (CART, Home, People, Site Index), a search bar, and the U.S. Department of Energy Office of Science logo. A menu bar contains links for About, Science, Campaigns, Sites, Instruments, Measurements, Data, News, Publications, and Education. The main content area is titled "Research Highlights" and contains a paragraph about the science team's contributions, a link to a submittal form, and a table of recent research highlights. A sidebar on the right offers options to "Submit a New Research Highlight", "Sort Highlights" (by Submitter, Title, Research Area, Working Group, Submission Date), and "DOE Progress Reports" (including Notable Research Findings for 2001-2006, Biological and Environmental Research Abstracts Database, and Research Highlights Summaries).

Research Highlights			
Title	Research Area	Working Group(s)	Submission Date
Improving the Treatment of Radiation in Climate Models	Radiation Measurements	Aerosol Life Cycle Cloud Life Cycle	02/17/2011
New Characterization of Organic Aerosol Evolution Will Help Improve Models	Aerosol Characterizations	Aerosol Life Cycle	02/14/2011
Climatology of Aerosol Optical Depth in North-Central Oklahoma: 1992-2008	Aerosol Characterizations	Aerosol Life Cycle	02/04/2011
Ground-Based Measurements in Support of Liquid-Dependent Ice Nucleation in Arctic Clouds	Cloud Distributions/ Characterizations	Cloud Life Cycle Cloud-Aerosol- Precipitation Interactions	01/19/2011
Surface Summertime Radiative Forcing by Shallow Cumuli at the ARM SGP	Radiation Measurements	Cloud Life Cycle	12/27/2010

How Do I Submit a Question?

<http://www.arm.gov/>

- Data/instrument issue
 - Use comment box on their web pages
- General questions
 - Go to Contacts page, linked off of every web page
- Needed measurement suggestions
- Contact any SISC member or send it in through the web on the Contacts page

The screenshot shows the ARM website interface for the X-band Scanning ARM Precipitation Radar (XSAPR). The page is titled "Instrument : X-band Scanning ARM Precipitation Radar (XSAPR)" and includes a navigation menu with options like "About", "Science", "Campaigns", "Sites", "Instruments", "Measurements", "Data", "News", "Publications", and "Education". The main content area provides an overview of the instrument, including its capabilities and output datasets. A "Comments?" section is visible on the right side of the page, with a "SEND" button. A red box highlights the "Send comments" button on the left side of the page, and another red box highlights the "Comments?" form on the right side of the page. An arrow points from the "Send comments" button to the "Comments?" form.



For More Information on ARM

- Description of sites, instruments, data
- Upcoming campaigns
- Science highlights
- ARM News (subscribe to RSS feed)
- Wiki pages
- Provide Feedback
- Contacts

The screenshot shows the ARM Climate Research Facility website. At the top, there is a navigation bar with links for 'Home', 'People', and 'Site Index', along with a search bar. The main header features the ARM logo and the text 'CLIMATE RESEARCH FACILITY'. Below this is a horizontal menu with categories: 'About', 'Science', 'Campaigns', 'Sites', 'Instruments', 'Measurements', 'Data', 'News', 'Publications', and 'Education'. The main content area includes a 'Recovery Act' section, a featured article titled 'Not Your Typical 3D Movie' with a 3D radar visualization, a 'News & Announcements' section with several news items, and a 'FEATURED DATA' section. On the right side, there are three vertical panels: 'USING OUR FACILITIES', 'FIELD CAMPAIGNS' (listing GVAX, MC3E, and STORMVEX), and 'USER HIGHLIGHTS'.

Visit the ARM website:

<http://www.arm.gov>

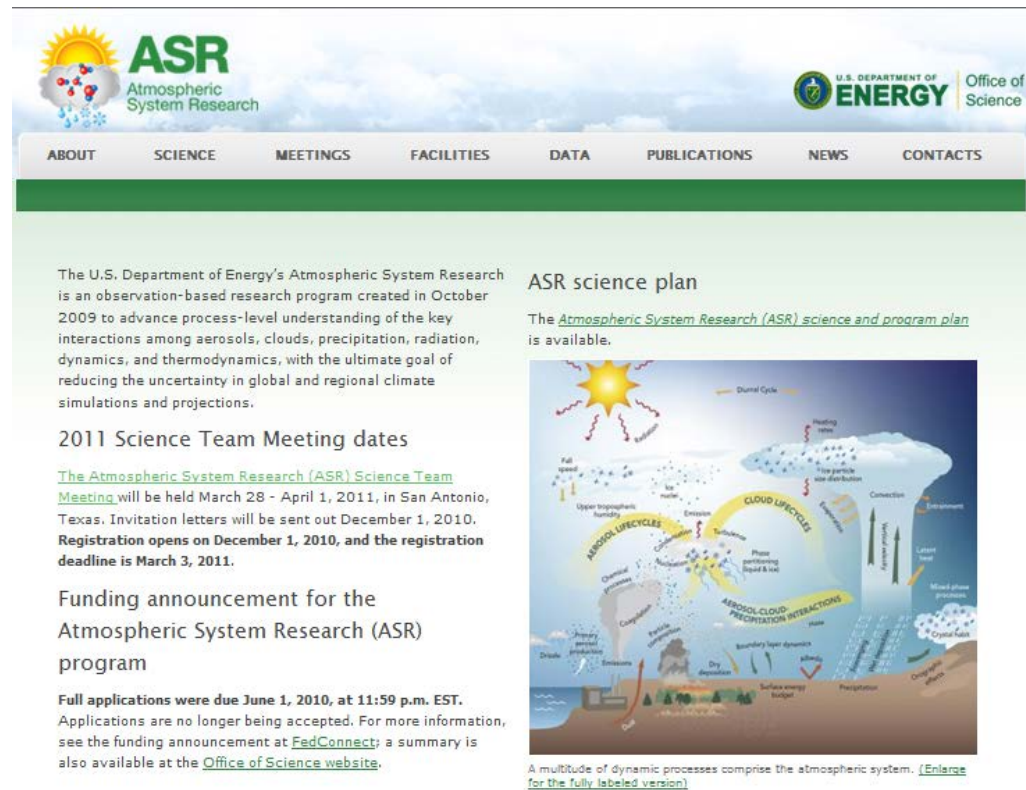
Or visit us on Facebook, Twitter, or YouTube

For More Information on ASR

- Description of program goals
- Description of working groups
- Science highlights
- Meeting information
- Links to ARM resources
- Contacts

Visit the ASR website:

<http://asr.science.energy.gov/>



The screenshot shows the ASR website homepage. At the top left is the ASR logo (Atmospheric System Research) featuring a sun and a globe. To the right is the U.S. Department of Energy Office of Science logo. Below the logos is a navigation menu with links: ABOUT, SCIENCE, MEETINGS, FACILITIES, DATA, PUBLICATIONS, NEWS, CONTACTS. The main content area includes a paragraph about the ASR program, a section for the 2011 Science Team Meeting dates, and a funding announcement. On the right side, there is a section titled "ASR science plan" with a link to the science and program plan. Below this is a detailed diagram of the atmospheric system showing various processes like aerosol cycles, cloud lifecycles, and aerosol-cloud-precipitation interactions.

The U.S. Department of Energy's Atmospheric System Research is an observation-based research program created in October 2009 to advance process-level understanding of the key interactions among aerosols, clouds, precipitation, radiation, dynamics, and thermodynamics, with the ultimate goal of reducing the uncertainty in global and regional climate simulations and projections.

2011 Science Team Meeting dates

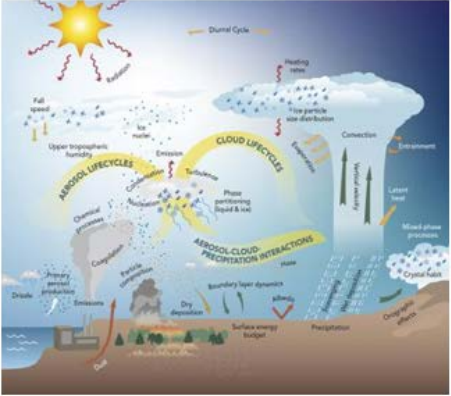
[The Atmospheric System Research \(ASR\) Science Team Meeting](#) will be held March 28 - April 1, 2011, in San Antonio, Texas. Invitation letters will be sent out December 1, 2010. Registration opens on December 1, 2010, and the registration deadline is March 3, 2011.

Funding announcement for the Atmospheric System Research (ASR) program

Full applications were due June 1, 2010, at 11:59 p.m. EST. Applications are no longer being accepted. For more information, see the funding announcement at [FedConnect](#); a summary is also available at the [Office of Science website](#).

ASR science plan

The [Atmospheric System Research \(ASR\) science and program plan](#) is available.



A multitude of dynamic processes comprise the atmospheric system. [\[Enlarge for the fully labeled version\]](#)