

ARM Updates: Organization, Activities and Plans

Jim Mather ARM Technical Director

ARM/ASR Joint User Facility PI Meeting Vienna, VA March 17, 2015



Providing measurements to support climate research and model development

The ARM mission is to provide the climate research community with strategically located in situ and remote sensing observatories designed to improve the understanding and representation, in climate and earth system models, of clouds and aerosols as well as their interactions and coupling with the Earth's surface.









Strengthening the link to models

ARM is undergoing a reconfiguration to better integrate observations and highresolution modeling with the continued goal of improving climate models. The reconfiguration has three main facets:

 Optimization of the ARM measurement facilities at two megasites to better support high-resolution modeling



- Development of a routine modeling strategy for process studies and to provide a link to Global-scale models
- Development of a data processing strategy to bridge measurements and models

While continuing to provide observations from the mobile facilities, aerial platforms, and the new long-term site on Graciosa Island in the Azores.





Refining the ARM organization to improve support and enable change



New Roles



Giri Palanisamy



Jennifer Comstock



Hanna Goss





The Southern Great Plains Megasite

For the SGP, science questions raised through the May 2014 high-resolution modeling workshop included:

- What are the relative impacts of large-scale forcing, local forcing, and aerosol on shallow continental cloud properties?
- What is the role of coupling between the land surface and atmosphere for planetary boundary layer structure and cloud



- Properties do models represent the vertical distribution of aerosols and how is this impacted by model resolution?
- Do models capture the wet removal of aerosols correctly?
- What are the relationships among components of cloud systems (microphysics, radiation, dynamics)?
- Why do GCMs fail to predict the correct diurnal cycle of convection at the SGP?





SGP Measurement Enhancements

- Activities currently planned or in discussion for the SGP include:
- Requirements document for four boundary layer profiling sites to include an AERI, microwave radiometer, and Doppler lidar co-located with surface flux sites
- Plans to evaluate real-time profile processing to support operational data assimilation
- Aerosol Observing System and Raman upgrades
- Deployment plans for returning radars from the tropics
- Proposal to evaluate 3-wavelength lidar retrieval at the central facility
- Improvements to the soil moisture network







SGP Virtual Tour

An interactive virtual tour of the SGP facility is now available at:

http://www.arm.gov/sites/sgp

Virtual tours for Barrow, Oliktok, and Graciosa are coming in late 2015.







The North Slope of Alaska Megasite

- Science issues highlighted at the NSA workshop were organized around the themes of clouds, aerosols, vertical structure and long-range transport. Specific questions included:
- How do clouds interact with and respond to varying and heterogeneous terrestrial/ocean/sea-ice conditions?
- What processes control the life-cycle of mixedphase, single and multi-layer cloud/aerosol systems?
- How is variability in long-range and shortrange transport of heat, water vapor and aerosols manifested in the vertical structure of the atmosphere?
- What are the characteristics, sources, sinks, and distribution of ice and liquid nucleating aerosols?









NSA measurement enhancements





The near term development emphasis for the NSA megasite is on aerial measurements:

- UAS flights through the ERASMUS campaign
- Tethered balloon tests led by the NSA team
- G1 flights through the ACME V campaign

Other measurements suggested by the NSA workshop included:

- Move the Barrow HSRL to Oliktok to support multiwavelength aerosol retrievals
- Inventory of North Slope emission sources
- Add a snowflake camera at Barrow
- Inland observations (possibly Atqasuk)







Decadal Vision



A long-term vision document has been developed to capture the current plans for the megasites, modeling, and related activities. This document sets out to:

- Describe the goal of better integrating models with ARM observations and the current strategy for achieving this
- Summarize the outcome of the SGP and NSA workshops
- Emphasize the continued commitment to the AMFs
- Begin a discussion regarding the future of aerial measurements
- Begin a discussion regarding data efforts needed to better support complex observations and integrated observationmodel analysis

CLIMATE RESEARCH FACILITY

http://www.arm.gov/publications/programdocs/do

e-sc-arm-14-029.pdf?id=36



User Executive Committee

User facilities are expected to have a User Executive Committee whose purpose is to facilitate communications between the facility and the user community and represent the interests of the user community.

An ARM User Executive Committee was formed in January of this year. This group is in the process of identifying issues that ARM should be addressing and mechanisms to engage with the user community.





UEC Members



Dave Turner



Larry Berg



Gannet Hallar



Hailong Wang



Pavlos Kollias



Ernie Lewis



Andrew Gettelman



Matt Shupe



Rob Wood



Chuck Long





www.arm.gov

The ARM web site provides:

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

The next generation facility requires a next generation web site.

| About Science Campaigns Sites | i Instruments Measurements Data | News Publications Education |
|--|---|--|
| World's premier ground-based observations facility | advancing climate change research | 0 🙂 💀 💩 |
| Feature | | Almospheric Radiation Measurement (ARM) Climate Research Facility |
| | | A U.S. Department of Energy Office of Science user facility, providing data from strategically located in sits and nemote sensing observatories around the world. |
| | | Upcoming Meetings ARM/ASR Joint User Facility and Principal Investigation Meeting Typons, United States, Nar 16-Mar 20. The mer meeting for ASR sciencits and ARM Facility users will be 16-20 March 2013 (Read merch) |
| Nature Article: Carbon Dioxide's Gre Confirmed Using ARM Data | enhouse Effect at Earth's Surface | User Highlights |
| Scientists have for the first time observed an increase surface. The research, conducted using data and data (ARM) Climate Research Facility, is reported Wednesda the journal Nature. >> Read More | in carbon dioxide's greenhouse effect at the Earth's products from the Atmospheric Radiation Measurement w, February 25, in the advance online publication of | 02.04.3013 Modeling Precipitating Cumulus Congestus Observed by the ARM Rader Suite During the MC3B Field |
| IN ALL FEATURES | | 07.01.2015 Evaluation of Trigger Functions for Convective Personnersization |
| 问 News & Announcements | Field Campaigns | behames |
| 03.03.2015 New Advisory Group Focuses Efforts on Unmanned Arcraft Systems | Submit your preproposal today. | Even at High Humidity, Aerosola Stick Aroundi Slowly Evaporating Particles Relute Assumption |
| | ARM Cloud Aerosol Precipitation Experiment | |
| 03.03.2015 User Executive Committee Chairs Named | BAECC | Featured Data |
| 03.03.2015 User Executive Committee Chairs Named 02.25.2015 Darwin Site Operations Come to an End | biogenic verosols - Effects on Clouds and Climate | 01.26.2013 New and Emproved Calometer |
| 03.03.2013 User Executive Committee Chairs Maned 02.25.2015 Derwin Site Operations Come to an End 02.25.2015 Nature Article: Carbon Dioxide's Greenhouse Effect & Barth's Surface Confirmed Using ARM Ubas | GOAMAZON Observations and Modeling of the Green Ocean Amazon (GOAMAZON 2014) | Datastream Available |
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A major website redesign will:

- Revamp content for accuracy and clarity.
- Ensure smooth and easy navigation.
- Increase the accessibility of ARM capabilities.





We need your input:

- What are your issues/challenges?
- Why do you come to the website?
- What do you wish was on the website?

NEXT GENERATION ARM WEBSITE

To meet the needs of the next generation ARM Climate Research Facility, the ARM website, www.arm.gov, is undergoing a redesign in 2015—with your input.

You Want to Know:

- How do I get my data fast?
- How can I know the data quality?
- How do I get more of what I wants

To Meet Your Needs, We're:

- Revamping content for accuracy.
- Ensuring smooth and easy navigation.
- Yes! Data objective design/netCDF header files will be back!



We are Listening...

To ensure the website serves you into the future, we need to hear from you.

- What are your issues/challenges?
- . Why do you come to the website?
- What do you wish was on the website?

Fill out a survey now! Or go to http://1.usa.gov/1wWxDqp

What We Have Now—What Would You Like to See?





Fill out an easy 6 question survey

http://1.usa.gov/1wWxDqp

Or get a hard copy from:

- A member of the Website Team
- At the Poster
- During Lunchtime Tutorials



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| CLIMATE RESEARCH FACILITY | |
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A Few ARM-Oriented Sessions

Next generation/Data

- Next Generation Data Analysis Tools (Wed 1:30-3:30)
- Assessing and communicating measurement uncertainties and data quality (Thurs 10:30-12:30)

Measurements

- Varied set of sessions last night
- Vertical Velocity (Wed 1:30-3:30)
- Land-Atmosphere-Cloud Interactions (Thurs 8:00-10:00)
- Precipitation Measurements (Thurs 10:30-12:30)
- Radar simulators (Thurs 1:30-3:30)



