



ARM Facility Updates

JIM MATHER

2020 ARM/ASR Joint Meeting

COVID-19 Impacts

COVID-19 Update as of June 1, 2020: With further easing of restrictions in Oklahoma, operations staff last week started Phase 2 of reopening the Southern Great Plains observatory. Operations continue at other atmospheric observatories; however, visitors continue to not be permitted at any of the ARM sites until further notice.

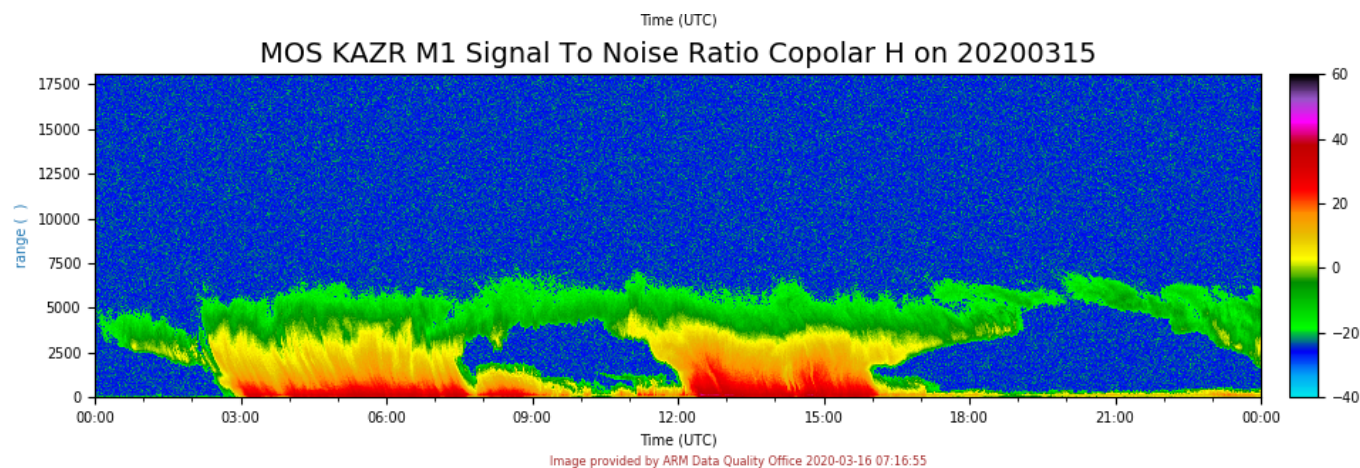
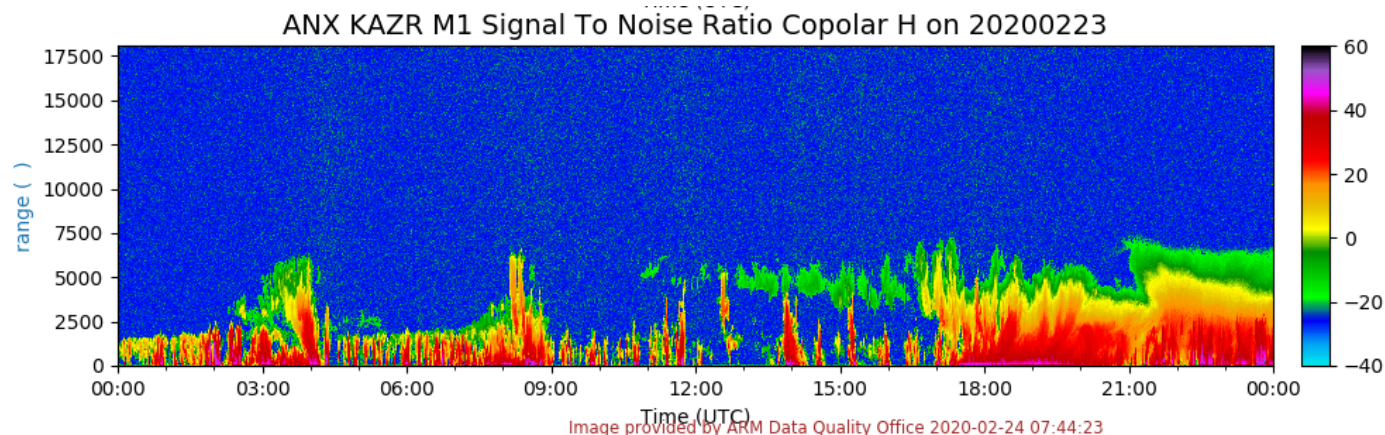
- ▶ Some instruments shut down during the Southern Great Plains April closure
 - Raman lidar, radiosondes, subset of AOS including HTDMA
 - For full report see April 6 post: <https://www.arm.gov/news/facility/post/61249>
- ▶ Instruments shutdown for winter at Oliktok have not been returned to service
 - Raman lidar, Cloud Condensation Nuclei counter, HTDMA
- ▶ Multiple instruments affected at ENA
 - KAZR, SACR, SAPR, wind profiler, Raman Lidar

Questions: Follow link at bottom of COVID-19 update page or “Ask Us”



New Field Campaign Data

- ▶ Data available for COMBLE
 - prefix “anx”
- ▶ Data available for MOSAiC into April
 - prefix “mos”
- ▶ b1-level radar data for CACTI
 - prefix “cor”
 - Report: “DOE/SC-ARM-TR-244”

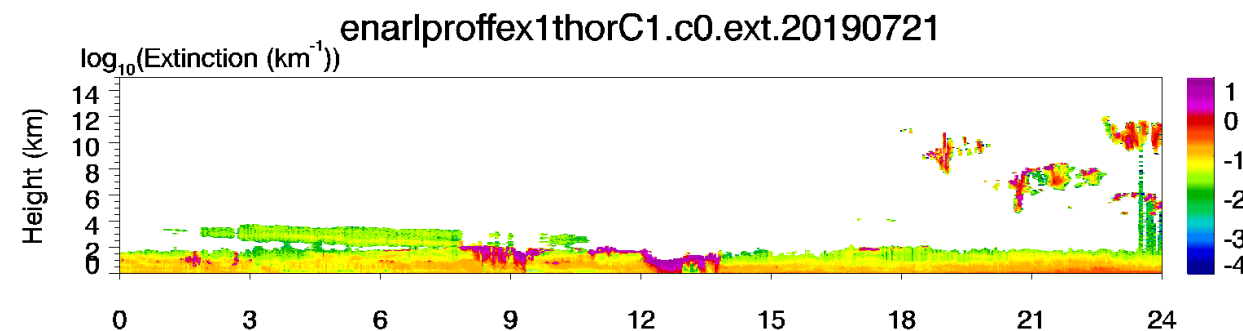
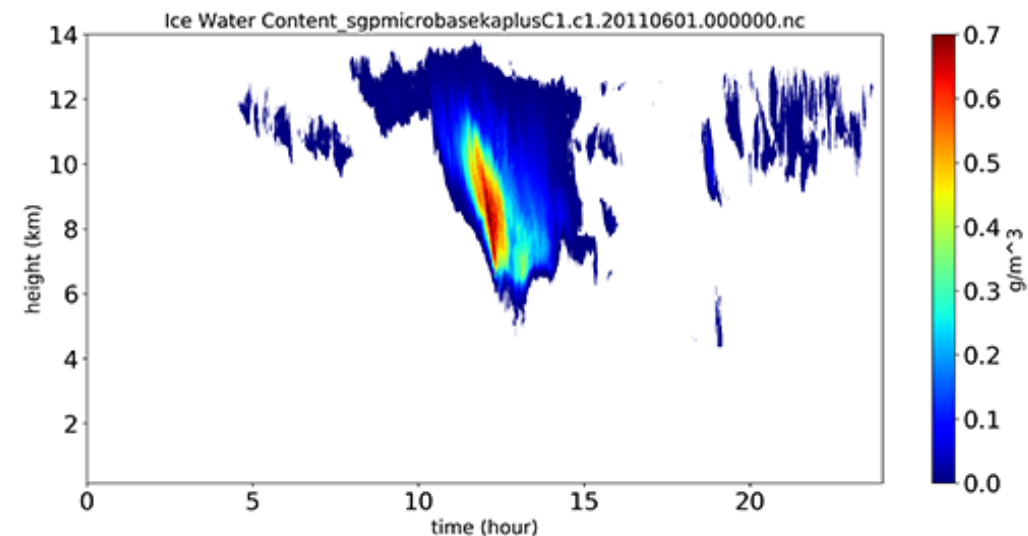


Recently Released Data Products

- ▶ ARM Best Estimate (ARMBE) for GOAmazon
- ▶ Variational Analysis for ACE-ENA period
- ▶ Cloud Microphysics (Microbase) for MC3E and LASIC
- ▶ X-band radar products at SGP (2018/2019):
 - Quasi-vertical profiles of domain mean hydrometeor properties
 - Horizontal wind speed fields
- ▶ Cloud and aerosol optical extinction from Raman lidar at SGP and ENA

More examples and information at:

<https://www.arm.gov/news-events/data-announcements>



Data Products Under Development



Underway this year

- ▶ ARM Best Estimate for ENA, AWARE
- ▶ Hygroscopicity Kappa parameter for SGP
- ▶ Updated MFRSR products for 1.6 micron channel
- ▶ Harmonized aerosol size distributions
- ▶ Gridded radar products for CACTI and COMBLE

Planned for FY21

- ▶ CCN profiles from CCN at surface + Raman lidar
- ▶ Merged aerosol size distributions
- ▶ Improved MicrobasePlus for SGP warm clouds
- ▶ Improved KAZR clutter rejection
- ▶ Advanced CSAPR2 products for CACTI

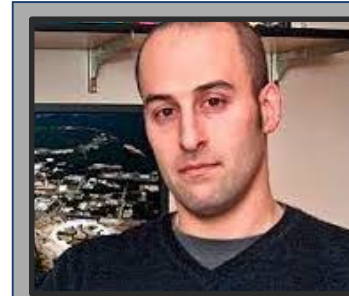
ARM Translators



Shaocheng Xie
Modeling



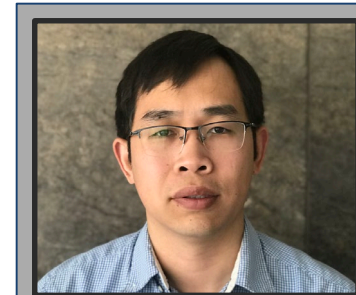
Scott Collis
Convection



Scott Giangrande
Warm Bnd Layer



John Shilling
Aerosol



Damao Zhang
High Lat.

Framework for Cloud Retrievals: OGRE

Operational Ground-based Retrieval Evaluation for Clouds (OGRE-CLOUDS)

- ▶ Uses MICROBASE as baseline retrieval
- ▶ Framework to evaluate new cloud retrievals using radiative closure
- ▶ Initial focus on MICROBASEPLUS during MC3E (2011 SGP convection campaign)
- ▶ Invite contributions of retrieval algorithms, codes, output for test cases

Contact Mike Jensen

Connecting with ARM Staff



ADDITIONAL CONTACTS

- U.S. Department of Energy
- Technical Director's Office
- Associate Director for Operations
- Engineering and Process Management
- Communications and Media
- Infrastructure Management Board (IMB)
- Science Board
- ARM-ASR Coordination Team (AACT)
- Architecture and Services Strategy Team (ASST)
- Atmospheric Observatories
- Instrument Mentors
- ARM Data Center
- Data Quality Office
- Cyber Security
- Constituent Groups
- Translators
- LASSO

ATMOSPHERIC RADIATION MEASUREMENT USER FACILITY

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GLOSSARY

Instrument Mentors

Mentors are the primary point of contact for their respective instruments. Roles and responsibilities include:

- ▶ Transfer of instruments to operations
- ▶ Calibration and oversight of maintenance
- ▶ Assessment of data quality
- ▶ Management of repairs, upgrades, and replacements
- ▶ Engagement with the user community

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Current Instrument Activities

- ▶ Preparing to deploy 2- λ (532/1064 nm) HSRL to SGP
- ▶ Adding routine Ice Nucleating Particle (INP) filter measurements (50 filters/year at two locations).
 - Initial plan for SGP + Oliktok (\rightarrow TRACER in 2021)
 - Mentors: Jessie Creamean and Tom Hill
- ▶ Implementation of a “best in class” surface radiation suite at SGP
- ▶ Instrument refresh activities include replacing:
 - Two AERIs at SGP
 - Doppler Lidar at SGP
 - Radar Wind Profiler at SGP
 - ENA CCN-100 with CCN-200



Planned Instrument Activities

- ▶ Replacement of Eppley radiometers with current generation instruments (likely in several phases)
- ▶ Replacement of Total Sky Imagers
- ▶ Additional SMPS
- ▶ Additional large particle sizer (evaluating options)

Exploring portable lidar options to provide aerosol extinction



Tethered Balloon and Unmanned Aerial System Activities



- ▶ 2020 flights have been impacted by COVID-19.
- ▶ Plans for upcoming flights
 - Conduct 2020 flights at SGP and Oliktok as possible
 - Make up flights in 2021 to the extent possible
- ▶ Call for guest instruments at TRACER coming out this month
- ▶ Continue to pursue collaboration with EMSL for filter analysis



- ▶ Conducted test flights of the ArcticShark at the Pendleton, Oregon, UAS range in 2019
- ▶ Review of operations following two hard-landing mishaps
- ▶ Developing a plan to get back in the air with first flights aimed at the Southern Great Plains in 2021

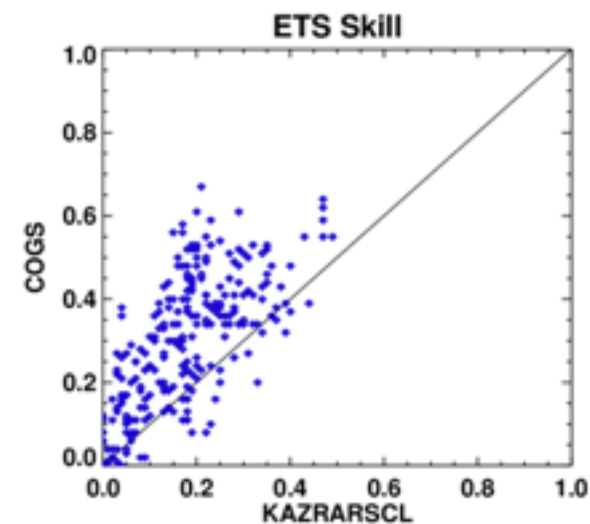
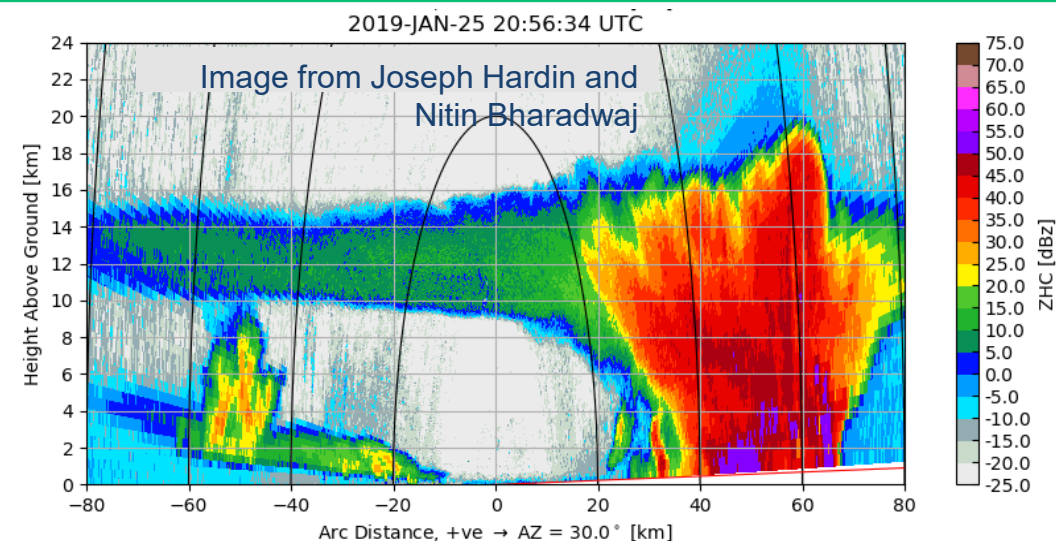
Extension of LASSO to Study Deep Convection

Developing cases from CACTI

- ▶ Currently testing forcing data sets
- ▶ Need to find appropriate balance between number of cases and simulation length

Also completing 2019 SGP shallow convection cases:

- ▶ 17 cases will be released this summer for 2019
- ▶ Preparing a cloud fraction comparison with preliminary COGS photogrammetry data
- ▶ High-resolution observations being bundled with simulations for 2018/2019



Data Discovery

- ▶ New data discovery interface released this spring
- ▶ "Data Search" combines features of previous data and datastream tools
- ▶ "Guided Search" steps you through search facets

ARM HOME DATA SEARCH SUPPORT ACCOUNT CART

High Resolution LASSO Data Bundles

LASSO data bundles integrate ARM observations of shallow convection at the Southern Great Plains facility with large-eddy simulations to facilitate related research. Data bundles are available spanning 4 shallow-convection seasons.

[Learn More](#) → [Use the LASSO Bundle Browser](#) →

Data Tools

ARM personnel regularly conduct field campaigns to augment routine data acquisitions and to test and validate new instruments.

- ARM Live Data Web Service**
Query and automate machine-to-machine downloads of ARM data with this application.
- Citation Generator**
Easily create citations on the fly for any datastream.
- Visualization Service**
Browse data plots and interactively view various measurements.

ARM

Data Search | LASSO Bundle Browser | Support
Guided Search | Citation Generator | My Account
Previous Discovery Tool | ARM Live Data Web Service | Privacy & Security

Beta Version 0.1.17

Feedback

Data Discovery

- ▶ Intelligent search capabilities
- ▶ Primary measurement or datastream view
- ▶ Recommendations based on data quality completeness and readiness (set preference under "Account")
- ▶ Drill down for more details (e.g. data quality reports, contacts, handbook)
- ▶ Submit issues or questions to "Support"

https://youtu.be/e_HM8wRfBiw

ARM

HOME DATA SEARCH **SUPPORT** ACCOUNT Login CART

Sort By: A-Z

SEARCH BY DATE RANGE

SEARCH RESULTS - Showing 1-10 of 119 data products

AOSMPS

Data Level: a1
Description: AOS: Scanning-Mobility Particle Sizer

Site: Ascension Island, South Atlantic Ocean; Mobile Facility (LASIC) (ASI)
Location: Ascension Island, South Atlantic Ocean; AMF1 (Lat: -7.9669600000000003, Long: -14.34981)
Facility Code: M1
Category: Aerosols
Source Instrument/Data: Scanning mobility particle sizer
Sampling Interval: 5 minutes
Start Date: 2016-05-20
End Date: 2017-10-20
DOI: 10.5439/1095583

Citation Format: Select

Map Satellite

Google

Map Data Terms of Use

Data Timeline & Quality

Viewing: number_size_distribution

2016 Jul Oct 2017 Jan Apr Jul Oct

ROUTINE INCORRECT SUSPECT MISSING NOTE LIMITED ACCESS

Click to view data quality reports, scroll to zoom in/out

Reset timeline view

Data Plots

total_concentration

Primary Measurements File Header Information

VARIABLES:

Aerosol particle size distribution: Variable: Number size distribution (dN/dlogDp) (number_size_distribution)

Aerosol concentration: Variable: Total concentration (total_concentration)

Instrument Contacts: Chongai Kuang (Lead) Cynthia Salwen (Associate)

Additional Resources: Instrument/VAP Info Campaign Information Instrument Handbook Related Publications

Actions: Visualize Data Tag this Data Add to Cart

Aerosol particle size distribution	AOS: Ultrahigh Sensitivity Aerosol Spectrometer	aosuhas
Aerosol particle size distribution	AOS Humidified Tandem Differential Mobility Analyzer	aoshtdma
Aerosol particle size distribution	ARM Aerial Facility (AAF) Ultra-High Sensitivity Aerosol Spectrometer	aafuhas
Aerosol particle size distribution	AOS: Scanning-Mobility Particle Sizer: nanoscale particles	aosnanosmps

Constituent Groups



- ▶ User Executive Committee (UEC)
- ▶ Aerosol Measurements and Science Group (AMSG)
- ▶ Clouds and Precipitation Measurements and Science Group (CPMSG)

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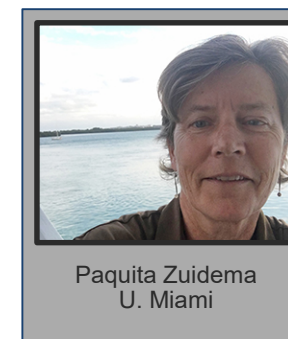
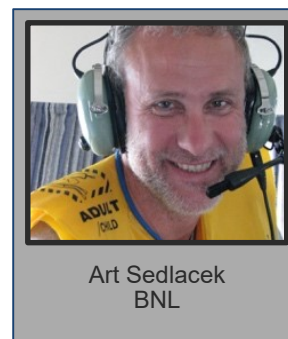
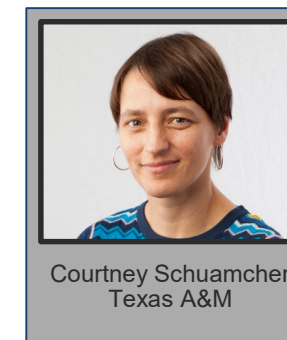
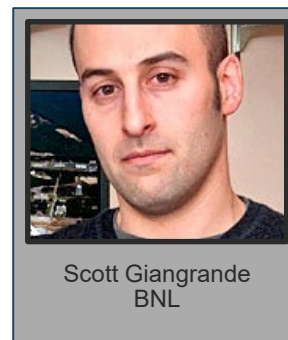
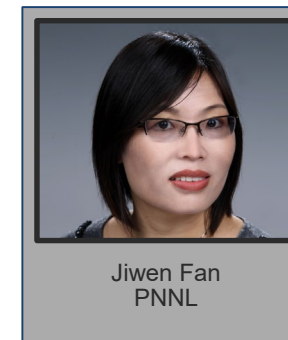
ACRONYMS

GLOSSARY

User Executive Committee



- ▶ Represents user community to the ARM facility
- ▶ Links to broader community
- ▶ Focus areas have included
 - Web portals
 - Surveys
 - Uncertainties
- ▶ Bring issues you would like to raise concerning the facility



In Memory of Chuck Long

