

ARM Updates

ARM-ASR Joint User Facility & PI Meeting

June 23, 2020

Sally McFarlane

Rick Petty

ARM Program Managers

Thank You

- **THANK YOU** to ARM staff
 - Thank you for your hard work, dedication, and flexibility to keep up with continually changing guidance and keep the ARM sites operating safely
 - Across the facility, you have had positive “can-do” attitudes and have figured out ways to increase communication and do your work remotely
- **THANK YOU** to ARM users
 - Thank you for your patience and understanding during this difficult time for all of us

COVID-19 Impacts on ARM

- ARM sites follow local, state, country, DOE, and Laboratory guidelines
- Suspension of user/staff visits to ARM sites in March
 - One field campaign ended early; several field campaigns postponed
 - ARM committed to working with PIs to reschedule campaigns
- Site operations:
 - Semi-limited operations - fewer staff on site; more remote monitoring
 - By DOE Office of Science guidance, only mission critical travel for Lab staff
 - SGP closed to site operations staff for ~month in April
 - Instruments still operated, but no daily maintenance
 - Will revisit site policies as local regulations change
- Status updated regularly on ARM website & in newsletter

Infrastructure Management Board Changes



- Mark Ivey, SNL
 - NSA Site Manager since 2006; AMF3 Site Manager
 - Involved with ARM since 1993 (originally with TWP sites)
 - Moving to NSA liaison role



- Jasper (Joe) Hardesty, SNL
 - New IMB member – Sep 2019
 - NSA/AMF3 site manager
 - Managing move of AMF3 site to SEUS

ARM New Aircraft Status

- G-1 aircraft was retired after successful CACTI campaign
- ARM received full funding for replacement aircraft in FY2019 appropriation; procured a Bombardier Challenger 850 jet aircraft
- Contract for aircraft modifications to prepare plane for atmospheric research was awarded in early June, 2020
- Aircraft expected to be ready for first science research mission in early 2023
- ARM Aerial Instrumentation Workshop held in March, 2020 to guide the addition and implementation of measurement capabilities for the new aircraft – **breakout session Wed afternoon** for further discussion



AMF3 Deployment to Southeast US (SEUS)

- AMF3 is an “extended term” **mobile** facility; planned for ~5 year deployments
- Following AMF workshop, BER announced plan to deploy AMF3 to a new site in the Southeast US
- BER put out a call for National Laboratory-led site science team to help maximize the scientific return of the AMF3 deployment:
 - Formulate a scientific research plan for the AMF3 deployment
 - Conduct analysis to inform the deployment and science strategy
 - Identify potential deployment locations for the AMF3; provide scientific guidance to ARM on site selection, site layout, and instrumentation needs
 - Identify and develop collaborations with partners in the region
 - Conduct initial process-based research with the AMF3 observations
 - Play a leadership role within the ASR and broader scientific community to catalyze future uses of the AMF3 measurements
- BER selected an AMF Site Science team led by Chongai Kuang (Brookhaven National Laboratory)
- Breakout session **Thursday afternoon** to get community input

Upcoming ARM campaigns (1)

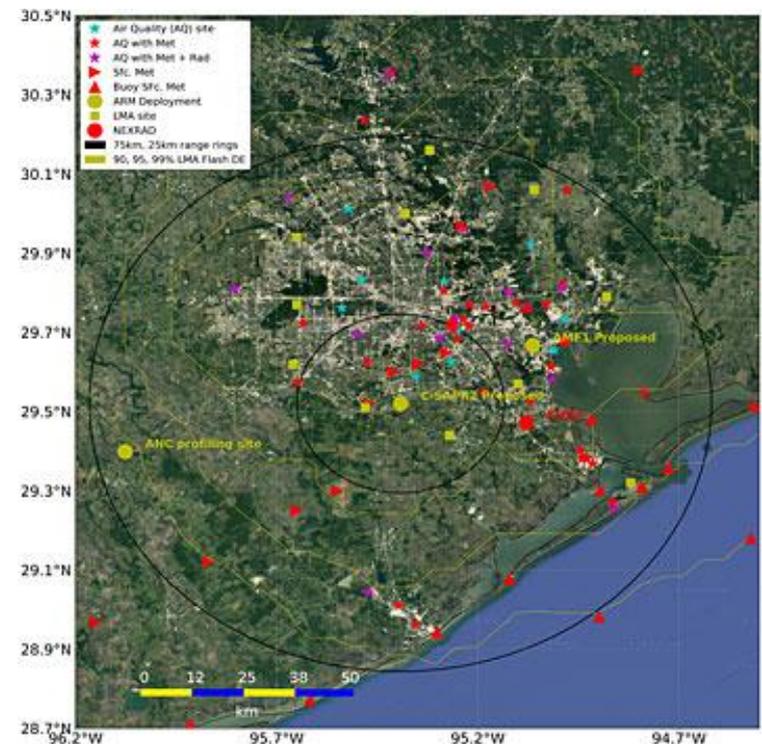
- SAIL (Surface Atmosphere Integrated Field Laboratory)
 - PI: Dan Feldman, LBNL
 - East River watershed, near Crested Butte, CO; Sep 15, 2021 – June 15, 2023
 - Will collocate ARM observations with ongoing surface and subsurface hydrologic observations sponsored by DOE's Environmental Systems Sciences (ESS) program
 - Addresses a high priority region (complex terrain) called out in AMF workshop report
 - Science goal: develop a quantitative understanding of the atmosphere and land-atmosphere interaction processes that impact mountain hydrology in the midlatitude continental interior of the United States.
 - **Breakout session Thurs morning**



East River Watershed. Photo by Connor Scalbom.

Upcoming ARM campaigns (2)

- TRACER (Tracking Convection Interactions Experiment)
 - PI: Mike Jensen, Brookhaven
 - AMF1 and C-SAPR2 to Houston, TX area to study aerosol-cloud interactions in deep convection
 - Houston region has high frequency of isolated convective systems and experiences a spectrum of aerosol conditions
 - April 2021 – April 2022; intensive operational period in summer 2021
 - PI-led virtual workshop in April, 2020
 - Many potential collaborative activities with other agencies – most still under review
 - ASR TRACER-related proposals and guest instrument deployments will be announced soon
 - ARM call for tethered balloon system (TBS) flights for TRACER released in late June



Current campaigns

- MOSAiC Atmosphere
 - PI Matt Shupe, U. Colorado/NOAA
 - AMF2 deployed on *Polarstern* icebreaker, frozen into and drifting with Central Arctic sea-ice for 1 year; Sep 2019 – Oct 2020
- MOSAiC has experienced logistics impacts due to COVID-19 & ice conditions
 - Delays in crew shifts and resupply; many MOSAiC team members spent significantly more time on ice than expected
 - *Polarstern* left the ice floe in May for resupply; has now returned to ice
 - Leads opened up near “met city”; instruments had to be moved
 - However – great data still being collected
 - ARM MOSAiC data from first few legs available in archive



Photo courtesy of David Chu, LANL



Photo courtesy of David Chu, LANL

Recently Completed Campaigns

- COMBLE (Cold-air Outbreaks in the Marine Boundary Layer Experiment)
 - PI Bart Geerts, U. Wyoming
 - Dec 2019 – May, 2020
 - AMF1 deployed to Andenes, Norway; supplemental measurements on Bear Island in the N. Atlantic
 - Quantify the properties of boundary layer convection and air-mass transformations in cold-air outbreaks over open water in the Arctic
 - Campaign completed and instruments being packed for shipping back to US
 - **Breakout session on Thurs afternoon**



Photos, courtesy of LANL



ARM Field Campaign Proposal Process

- 2020 Mobile Facility call – 7 pre-applications received; full applications due August; review panel likely in Dec
 - Due to current campaign schedules; will not have AMF call in 2021
- Tethered Balloon Systems (TBS)
 - TBS call for TRACER released late June
 - exploring opportunities for SAIL
 - call for 2021 SGP activities expected later this fall
- Small campaigns
 - Small campaigns & guest instrument deployments at fixed sites accepted year-round; reviewed/approved quarterly
 - Guest instrument deployments for TRACER considered in concert with ASR proposal call; additional proposals can be considered
 - Guest instrument deployments for SAIL – not planning a special call; requests should be submitted following general small campaign guidance

ARM Triennial Review

- BER conducts triennial reviews of its User Facilities to determine whether the facility is:
 - Producing high impact science
 - Being operated and managed in an effective manner
 - Effectively serving and engaging the user community
- Review panel is charged to consider a set of review questions spread across science, operations, and management
- To support reviewer evaluations, ARM is charged to:
 - Provide a written document in response to review questions
 - Update the ARM Decadal Vision Document
- Review will be held virtually Nov 4-6, 2020

Rickey Petty, ARM Aerial Facility Program Manager, retiring after 26 years at DOE

