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Field Campaign Guidelines

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Definitions

ARM: ARM Climate Research Facility (<http://www.arm.gov>), a U.S. Department of Energy scientific user facility.

ASR: Atmospheric System Research, the U.S. Department of Energy research program that works closely with ARM.

Climate Research Site: The integrated infrastructure and system of instruments, network, and data system components associated with ARM sites.

Collaborating Program: A program joining with the ARM Climate Research Facility to pursue a specific set of objectives by providing resources and participating in active planning and executing of an ARM field campaign.

Cooperating Program: A program or agency supporting a specific ARM field campaign, wherein ARM provides the resources.

External Data: Data whose origin is not from within the ARM Facility; may include data observed at ARM facilities, but whose processing and quality control is performed by another program or agency and captured by ARM through the External Data Center. Typically, ARM will not add additional data quality efforts to data already quality controlled by another agency or program.

Field Campaign: A scheduled, collaborative field effort where ARM researchers, an outside agency, program, or individual principal investigators cooperate with ARM toward the acquisition of a data set to meet a defined research or science need. Field campaigns were previously called Intensive Operational Periods (IOP).

Intensive Operational Period Request (IOPR): The request form (<http://www.arm.gov/campaigns/propose>) that potential ARM Climate Research Facility users to enter pre-proposal. ARM management uses this information to review and disposition the request to use the facility.

Metadata: Described as “information or data about the data.” Typically refers to information about primary data, which is usually numerical, or information describing aspects of the primary data. Such information could include, for example, instrument site information, environmental conditions under which the data were acquired, and any other data needed to understand the primary data.

Near-Real Time: When referred to in textual references considered to be “within an hour.”

Preliminary Data: Data that have not necessarily been subjected to review, quality control, and/or documentation by a responsible investigator. Preliminary data are not considered publishable without the coordination and concurrence of the responsible investigator. Generally applicable only to field campaign efforts where data sources beyond routine ARM data are being acquired.

Quality Assured Data: Typically, the final form of data to be submitted to the ARM data system. Includes datastream description documentation, fully calibrated data in commonly used geophysical units, quality flagged data files and all ancillary data (metadata) needed by a future user of the datastream to make full sense of it.

1.0 Purpose

The purpose of this document is to establish a common set of guidelines for the Atmospheric Radiation Measurement (ARM) Climate Research Facility for planning, executing, and closing out field campaigns. The steps that guide individual field campaigns are described in the Field Campaign Tracking database tool and are tailored to meet the scope of each specific field campaign.

2.0 Field Campaign Process

Proposals for a field campaign can originate with any scientist proposing research directly related to the [ARM Mission Statement](#). Generally, there are two types of field campaign – larger, more comprehensive proposals to the annual call that require vetting by the Science Board, and smaller field campaigns which may be reviewed, approved, and implemented independent of the annual call. Appendix D defines the timeline and process for each type.

The following text provides a detailed description of the field campaign proposal cycle.

1. Preproposals are recorded by the IOPR Administrator and communicated to the Infrastructure Management Board (IMB) and relevant site scientists. A review of the preproposal is made to evaluate use of the facility, potential collaborations, costs, and logistics.
2. When a preproposal is accepted, the scientist is invited to submit a “full proposal” that includes:
 - Proposal abstract no longer than one page
 - Project and Operational Plan
 - Science plan
 - Collaborators
 - Anticipated data products
 - Proposed schedule
 - Description of the additional support requested
 - Resources required.

Normally, no full proposal is required for smaller field campaign preproposals. However, there are exceptions depending on the scope, cost, or complexity of the campaign.

3. Full proposals are delivered to the Science Liaison, who initiates the review process. The review process has two primary dimensions—first the IMB and Operations Managers provide an analysis of the field campaign to refine and communicate costs, logistics (local, national, international), schedule, and other impacts associated with the implementation. Second, the assessment and full proposal is transmitted for review by the Science Board. The Science Liaison facilitates these communications and works with the IOPR Administrator to record and track all proposals and related information.

4. The [ARM Science Board](#) was established to review proposals for use of the ARM Climate Research Facility. An important consideration is how well the proposed field campaign facilitates discovery-based research relevant to the ARM Mission Statement.
5. DOE Program Management reviews the recommendations from the Science Board and communicates acceptance or rejection rationale to the proposing scientist.
 - For approved field campaigns, the proposing scientist develops and provides a field campaign Science and Operational Plan. Normally, for smaller field campaigns no Science and Operational Plan is required. There are exceptions, however, depending on the scope, cost, or complexity.
6. Approved field campaigns and experiments are planned, tracked, and implemented by ARM Infrastructure.

3.0 Planning and Execution

The planning, executing, and reporting of an ARM field campaign are processes that need active tracking. The following sections delineate each step of an approved field campaign and the required documentation that goes with it.

3.1 Steps for Implementation within the ARM Infrastructure Process: Planning and Operations Process

3.1.1 Planning

Planning Process: Once a field campaign has been approved, several important planning activities need to take place. These include the finalization of the science plan and the completion of deliverables requested by the ARM Technical Director to the Field Campaign Lead Scientist. For any external coordination that is needed to acquire resources, data, or the participation of collaborators outside of ARM, these needs will be accommodated by the Field Campaign Lead Scientist, Operations Manager, and/or the ARM Technical Director through contracting action.

Required Documentation: The required documents for the planning process include the following:

- Science Plan
- Reply to Technical Coordinator Request
- Operations Plan
- Data Policy Agreement.

Requirements for each document are described below.

Science Plan: A science plan (if required) is prepared by the Field Campaign Lead Scientist during the formal approval process.

Science Liaison's Request for Information: Each Field Campaign Lead Scientist will be requested to provide information for initializing the field campaign. This includes the list of participating principal investigators (PIs), instruments, if appropriate, and the data products that are expected to be delivered upon completion of the field campaign.

Operations Plan: The operations plan (1) may be very brief for limited efforts; (2) could be quite substantive where substantial coordination is required, such as for aircraft operations or the use of hazardous devices; (3) will specify reporting requirements; and (4) will specify responsibilities during the field campaign, e.g., site operations manager, site scientist, and PI roles and responsibilities. The operations plan will be drafted approximately two months prior to the field campaign by Site Operations and/or the aircraft operations coordinator. Site Operations will coordinate with the ARM Technical Director to accommodate special hardware and data system related needs.

Data Policy Agreement: If required, a Field Campaign Data Policy will be prepared during the planning phase of the field campaign. See the Data Section below for more details.

3.1.2 Operations

Operations Reporting Process: Periodic reporting during a field campaign by the field campaign lead scientist is required. The Operations Plan will specify the planned reporting procedure. A blog and daily journals are available for use through the campaign site, in coordination with the ARM Communications Team.

Required Documentation: Operations Reports.

3.1.3 Final Reporting and Data Deliverables

Final Report and Data Information: A final “findings” report for the field campaign will be submitted within 6 months of completion to the Communications Team. The final data will be formatted and delivered as described in the Data Section below and provided to the ARM Data Archive through the External Data Center.

3.2 Data

The data acquired must be of sufficient quality to be useful and must be documented such that users will be able to clearly understand the meaning, organization, and quality of the data.

Final, quality-assured data sets will be retained in the Archive and will be accessible from there. Once submitted in final form, data sets will be freely accessible to the general scientific community. The only exception to “free and open” access would be a specific circumstance where ARM purchased a limited distribution data set for the specific use of its Science Team members.

Preliminary data are data that are shared among field campaign participants during and shortly following the campaign. To facilitate sharing, a restricted access capability will be established by the Archive. Access will be limited to participants and data managers. The data policy will be governed by the ARM

Data Policy (see <http://www.arm.gov/data/docs/policy>) if appropriate. Contact information for ARM data submission, processing, and access can be found in Appendix B.

3.2.1 General Guidelines for Field Campaign Data

ARM-sponsored data will be released in the general spirit of the basic tenets of ARM:

- Free and open access
- Immediate processing and sharing by principal investigators in the field if at all possible
- Timely release to the general scientific community through ARM data system.

Collaborating programs are encouraged to follow the ARM data protocols of timely release and free and open sharing.

All final field campaign data to be submitted to the ARM data system will be accompanied by full documentation in accordance with ARM standards.

Planning for field campaigns will include specific plans for data reduction, evaluation, and publication.

3.2.2 Data Processing and Handling

There are two classes of field campaign data:

- 1) Routine data from baseline ARM measurements (fixed, mobile, and aerial)

Routine ARM data are available to all participants on a free and open basis as they become available and are publishable upon receipt with acknowledgment of ARM as the source. These data are available from the Data Archive.

- 2) Investigator-provided instruments/measurement data

Final data from ARM-funded investigators need to be quality-assured, documented, and released to the Data Archive through the External Data Center as soon as possible after collection, but no later than 90 days from the date of completion of the field campaign.

For final data originating from non-ARM-funded sources, we request that the data are quality-assured, documented, and released to the Archive field campaign area through the External Data Center within four months from the completion of the field campaign, if possible, but no later than six months.

When final data (for ARM and non-ARM funded investigators and measurements) are released to the External Data Center, the data are considered publishable. Users are cautioned to confirm the data version with the responsible investigator prior to publication.

If requested, the Data Archive will provide registered participants with early (or preliminary) access to acquired data.

The External Data Center and Data Archive will track data versions and ensure that only the latest data versions are provided to data recipients, unless earlier versions are specifically requested. Participants may release their own preliminary data to whomever they wish; preliminary data of other investigators will be shared only with consent from the data's originator. All final data sets acquired during a field campaign will be made available to the External Data Center for dissemination to users through the ARM Archive IOP Server (<http://iop.archive.arm.gov/arm-iop/>) and the ARM website (<http://www.arm.gov>).

3.2.3 Data Submission

If preliminary data exist, they will be submitted to a password-protected area of the ARM Archive IOP Server through the Archive Manager (see Appendix B.) All final data sets will be submitted to the External Data Center. The steps to deliver final data to the External Data Center are available at <http://www.xdc.arm.gov/docs/iopsteps.html>. The point of contact is the Field Campaign Product Engineer (see Appendix B). The External Data Center will review final data sets for data content and readability, documentation, and visualization of example data. Final data sets must be viewed as stand-alone data sets and useable by the general scientific community.

3.2.4 Acknowledgments

The ARM Climate Research Facility should be acknowledged in publications as the programmatic origin of the field program. ARM-funded investigators will use the following acknowledgment:

“This research was supported by the Office of Biological and Environment Research of the U.S. Department of Energy (under grant or contract number—if you want or need to include it) as part of the Atmospheric Radiation Measurement Climate Research Facility.”

Publications resulting from collaborative efforts in which ARM data or facilities were used are requested to appropriately acknowledge the cooperation or collaboration of the “U.S. Department of Energy as part of the Atmospheric Radiation Measurement Climate Research Facility.”

In addition, the Communications Team must be notified of any articles submitted for publication as a result of the field campaign. You may submit your articles to ARM's publication database at <http://www.arm.gov/publications/db>.

Appendix A

Roles and Responsibilities

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ARM Data Archive: The ARM Data Archive will set up and maintain an externally accessible password-protected preliminary data file area for which access can be limited to participants until the final data are released to the External Data Center. The Archive is also responsible for safe-keeping the online archive of final field campaign data submissions and making the data available to end users in a way that tracks individual requests.

External Data Center: The External Data Center, also known as the XDC, is the gateway for all final data sets from temporary, guest, or supplemental instruments being submitted for general release and for permanent retention in the Archive. The External Data Center will ensure that the appropriate standards for data set submission have been met before data are released to the Archive.

Field Campaign Lead Scientist: The field campaign lead scientist is responsible for coordinating scientific activities, setting schedules, and making final decisions on the use of resources. In collaboration with the site operations manager, the field campaign lead scientist determines safety issues and/or constraints of planned activities. The site operations manager has the final decision on safety issues. Finally, the field campaign lead scientist is responsible for the science plan, the periodic reports (potentially through blogs or journals on the field campaign site), a final "findings" report, and the submission of data to the ARM Archive through the Archive Manager (preliminary data) and the External Data Center (final data).

Field Campaign Participants: Field campaign participants have responsibility for their own scientific effort. In the field, each participant has the responsibility to either report their activity periodically to the site manager and other participants, or make reports to the lead scientist for integration into a larger report. Each participant is responsible for contributing to the final findings report and making certain that data are quality assured, documented, and submitted in accordance with procedures below.

Operations Manager: The operations manager is responsible for working with the site operations managers, the Technical Director, and relevant site scientists and PIs to ensure that all field campaign plans are developed and implemented.

Instrument Coordinator: The Instrument Coordinator is responsible for coordinating activities related instruments, measurements, and instrument mentor resources for the ARM Facility.

Science Liaison: The Science Liaison is responsible for coordinating the overall field campaign screening process with ARM management.

Science Team Working Groups: The Science Team Working Groups are Atmospheric System Research's (ASR) resident groups of scientific experts in given areas of emphasis. Working Groups represent the direct interests of the science team.

Site Operations Manager: The site operations manager is the coordinator of the field campaign and has the responsibility for integrating the support requirements indicated in each of the science plans into a field campaign operations plan and for coordinating site operations. Finally, the site operations manager is responsible for ensuring safe operations and has the final decision authority for scheduling and daily planning, where safety is a concern.

Site Scientist: The site scientist is the key science resource in integrating a field campaign activity proposed for a given research site.

Science Translators: The science translators represent the bridge between the ASR Science Team Working Groups and the ARM infrastructure. The primary roles of the science translators generally address how well the infrastructure is meeting the scientific data needs of the science team, the development of value-added products (VAPs), and the coordination of the scientific objectives of field campaigns. The scope necessitates close cooperation with ASR science team members, ASR science team working groups, site scientists, instrument mentors, and coordination points of contact for cooperating or collaborating programs outside of ARM. The science translators will be the primary coordination point for the development of final field campaign proposals coming from the ASR science team working groups.

Technical Director: The ARM Technical Director has the overall responsibility to ensure that all field campaign activities, by working with the operations manager, are fully coordinated, to identify and arrange for all participants, and to ensure that all plans and documents are completed and submitted as appropriate.

Appendix B

Field Campaign Contacts

Appendix B

Field Campaign Contacts

Contacts	Name	Phone Number	Email Address
Technical Director	Jim Mather	(509) 375-4533	jim.mather@arm.gov
Aerial Facility Program Director	Beat Schmid	(509) 375-2996	beat.schmid@arm.gov
ASR Science Working Group Leaders			
Aerosol Life Cycle	Allison McComiskey	(303) 497-6189	allison.mccomiskey@noaa.gov
	Jian Wang	(631) 344-7920	jian@bnl.gov
Cloud Life Cycle	Anthony Del Genio	(212) 678-5552	adelgenio@giss.nasa.gov
	Matthew Shupe	(303) 497-6471	matthew.shupe@noaa.gov
Cloud-Aerosol-Precipitation-Interactions	Steven Ghan	(509) 372-6169	steve.ghan@pnl.gov
	David Turner	(405) 325-6804	dave.turner@noaa.gov
Infrastructure			
Archive Manager	Raymond McCord	(865) 574-7827	raymond.mccord@arm.gov
ARM Mobile Facility 1	Kim Nitschke	(505) 667-1186	nitschke@lanl.gov
ARM Mobile Facility 2	Brad Orr	(630) 252-8665	brad.orr@arm.gov
Communications Team	Rolanda Jundt	(509) 375-2936	rolanda.jundt@arm.gov
Financial Administrator	Luci Walker	(509) 375-2810	lucille.walker@pnl.gov
Instrument Coordinator and Science Liaison	Jimmy Voyles	(979) 690-9846	jimmy.voyles@arm.gov
IOPR Administrator	Laurel Chapman	(630) 252-2887	laurel.chapman@arm.gov
NSA Site Manager	Mark Ivey	(505) 284-9092	mark.ivey@arm.gov
Operations Manager	Doug Sisterson	(630) 252-5836	doug.sisterson@arm.gov
Public Information Officer	Lynne Roeder	(509) 372-4331	lynne.roeder@arm.gov
SGP Site Manager	Brad Orr	(630) 252-8665	brad.orr@arm.gov
TWP Site Manager	Larry Jones	(505) 667-1186	larry.jones@arm.gov
XDC Field Campaign Product Engineer	Alice Cialella	(631) 344-3286	alice.cialella@arm.gov

Appendix C

Annual ARM Facility Field Campaign Proposal and Implementation Schedule

Appendix C

Annual ARM Facility Field Campaign Proposal and Implementation Schedule

C.1 Proposal Schedule

1. **December:** Preproposal call announced for larger, more comprehensive proposals that require vetting by the Science Board. The time span for preproposals is current fiscal year (n+2). For example, the proposal call in January 2011 is for proposals taking place in fiscal year 2013. The proposal announcement is sent to the “ARM-all” mailing list and posted in BAMS, EOS, and on the ARM website.
2. **February:** Preproposal call closed.
3. **Mid-February:** Notifications sent for full proposal.
4. **May 15:** Full proposals due.
5. **June 15:** Infrastructure costs and logistics analysis.
6. **June 15:** Field campaign proposals and costs to Science Board.
7. **August:** Reviews by Science Board due two weeks before Science Board meeting.
8. **Mid-August:** Science Board review.
9. **September:** Award for campaigns at fixed sites, ARM Mobile Facility, and ARM Aerial Facility.

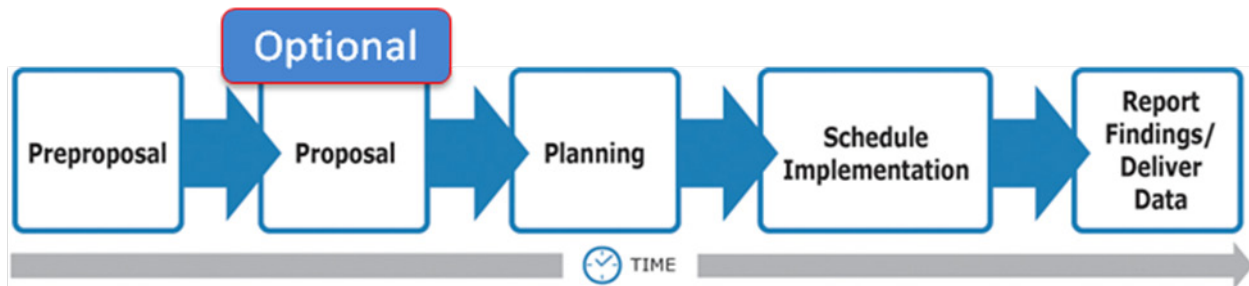


Implementation Schedule

10. Science and Operations Plan developed
11. **Field campaign is executed.**
12. **Six months after end of campaign:** All collaborative data submitted to the ARM Data Archive.

C.2 Small Field Campaign Request Process

- Requests (preproposals) for smaller field campaigns are open year-round, limited by cost and potential science impact. Examples of smaller field campaigns include instrument validation or data studies that take place at one of the permanent sites.
- IMB and relevant site operations component review the proposal for impacts (one to two weeks).
- DOE adds additional reviewers as required
- Science Liason sends acceptance or declination based on DOE recommendations.
- PI, Operations, and associated infrastructure components notified of disposition.



- Science and Operational Plan developed (if requested)
- Field campaign is planned and executed.
- All collaborative data submitted to the ARM Data Archive within six months after end of campaign.



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