



Field Campaign (IOP) Guidelines



December 2004



Office of Science
U.S. Department of Energy

Purpose

The purpose of this document is to establish a common set of guidelines for the Atmospheric Radiation Measurement (ARM) Climate Research Facility (ACRF) for planning, executing, and closing out field campaigns, also known as intensive operational periods (IOPs). The steps that guide individual field campaigns—to be referred to as IOPs from this point forward in the document—are described in the Field Campaign Implementation and Tracking (FCIT) form and are tailored to meet the scope of each specific IOP.

Planning and Execution

The planning, executing, and reporting of an ACRF IOP are a process that needs active tracking. The following sections delineate each step of an approved IOP and the required documentation that goes with it.

Steps for Implementation Within the ACRF Infrastructure Process: Planning and Operations Process

Planning

Planning Process: Once an IOP 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 ACRF Technical Coordinator to the IOP Lead Scientist. For any external coordination that is needed to acquire resources, data, or the participation of collaborators outside of the ARM Program, these needs will be accommodated by the IOP Lead Scientist, Operations Manager, and/or the ACRF Technical Coordinator 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 is prepared by the IOP Lead Scientist during the formal approval process.

Technical Coordinators Request for Information: Each IOP Lead Scientist will be requested to provide information for initializing the IOP. 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 IOP.



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 IOP, e.g., Site Operations Manager, Site Scientist, and Principal Investigator roles and responsibilities. The operations plan will be drafted approximately 2 months prior to the IOP by Site Operations and the Aircraft Operations Coordinator. Site Operations will coordinate with the ACRF Technical Coordinator to accommodate special hardware and data system related needs.

Data Policy Agreement: If required, an IOP Data Policy will be prepared during the planning phase of the IOP. See the Data section below for more details.

Operations

Operations Reporting Process: Periodic reporting during an IOP by the IOP Lead Scientist is required. The Operations Plan will specify the planned reporting procedure.

Required Documentation: Operations Reporting.

Final Reporting and Data Deliverables

Final Report and Data Information: A final “findings” report for the IOP will be submitted within 6 months of completion to the Communications Group. 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.

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 ACRF purchased a limited distribution data set for the specific use of its Science Team members.

Preliminary data is data being shared among IOP 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/policy.stm>) if appropriate. Contact information for ARM data submission, processing, and access can be found in Appendix B.

General Guidelines for IOP Data

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



- Free and open access.
- Immediate processing and sharing by Principal Investigators in the field if at all possible.
- Timely release to ARM Science Team and general scientific community through ACRF data system.

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

All final IOP data to be submitted to the ACRF data system will be accompanied by full documentation in accordance with the ACRF standards.

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

Detailed Considerations for Data Processing and Handling

All participants will have early access to all data acquired. Direct transfer of preliminary data in the field may be necessary, but to the extent possible, ACRF will arrange common electronic sharing mechanisms. Preliminary data are defined as not quality controlled or documented by the investigator and should not be considered publishable without coordination with the responsible investigator. Routine ARM data are available to all participants on a free and open basis and are publishable upon receipt with acknowledgment of ACRF as the source.

Final data originating from ACRF-funded sources will be quality assured and released to the 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 IOP. When released as final data to the External Data Center, data are considered publishable, but users are cautioned to confirm data version with the originator prior to publication.

For final data originating from nonACRF-funded sources, it is desirable for those data to be quality assured and released to the Archive IOP area through the External Data Center within 4 months from the completion of the IOP, if possible, but not later than 6 months. At the time final data are transmitted to the External Data Center, they are considered publishable, but users are cautioned to confirm data version with the originator prior to publication.

The External Data Center and Archive will track data versions and ensure only 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 an IOP will be made available to the External Data Center for dissemination to users through the ARM Archive IOP Server (see <http://iop.archive.arm.gov/arm-iop/>).

Nonparticipants in an IOP who wish to use the data set are encouraged to enlist the collaboration of a participant in the field activity.



Data Submission

If preliminary data exist, they will be submitted to a password protected area of the ARM Archive IOP Sever through the Archive Manager (see Appendix B.) All IOP 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 scientists long after the completion of the ARM Program and without access to data originators.

ARM Acknowledgment in Publications

The ARM Program and ACRF 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 Program.”

ARM collaborators are encouraged to appropriately acknowledge the cooperation or collaboration of the “U.S. Department of Energy as part of the Atmospheric Radiation Measurement Program.”

In addition, the ARM Chief Scientist and Communications Team must be notified of any articles submitted for publication as a result of the IOP.

Appendix A

Roles and Responsibilities

Science Team Working Groups: The Science Team Working Groups are the ARM Program's resident groups of experts in given areas of emphasis. Working Groups represent the direct interests of the Science Team.

Site Scientist: The Site Scientist is the key science resource in integrating an IOP activity proposed for a given research site.

Site Operations Manager: The Site Operations Manager is the coordinator of the IOP and, has the responsibility for integrating the support requirements indicated in each of the science plans into an IOP 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.

Science Translators: The Science Translators represent the bridge between the Science Team Working Groups and the ACRF Infrastructure, with oversight from the ARM Chief Scientist. 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 IOPs. The scope necessitates close cooperation with Science Team members, 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 IOP proposals coming from the Science Team Working Groups.

ACRF Technical Coordinator: The ACRF Technical Coordinator has the overall responsibility to ensure that all IOP activities, by working with the Operations Manager, is fully coordinated, to identify and arrange for all participants and to ensure that all plans and documents are completed and submitted as appropriate.

Operations Manager: The Operations Manager is responsible for working with the Site Operations Managers, the Technical Coordinator, and relevant Site Scientists and Principal Investigators to ensure that all IOP plans are developed and implemented.

IOP Lead Scientist: The IOP 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 IOP Lead Scientist determines safety issues and/or constraints of planned activities. The Site Operations Manager has the final decision on safety issues. Finally, the IOP Lead Scientist is responsible for the science plan, the periodic reports, 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).



IOP 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 to make certain that data are quality assured, documented, and submitted in accordance with procedures below.

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 releasing the data to the Archive.

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 released to the External Data Center. The Archive is also responsible for safe keeping the online archive of final IOP data submissions, and making the data available to end-users in a way that tracks individual requests.

Definitions

ACRF: ARM Climate Research Facility.

ACRF Field Campaign: Is synonymous with IOP and is a scheduled, collaborative field effort where ARM researchers, an outside agency, program, or individual Principal Investigators cooperate with ACRF toward the acquisition of a data set to meet a defined research or science need.

Climate Research Site: The integrated infrastructure and system of instruments, network, and data system components associated with ACRF 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 ACRF field campaign.

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

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

Intensive Operational Period (IOP): Is synonymous with ACRF field campaign and is a scheduled period of time when the frequency of observations is changed to augment the routine observations at an ACRF site or to satisfy a particular data requirement.

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 IOP 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 data stream 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 data stream to make full sense of it.

Appendix B

IOP Contacts

Contacts	Name	Phone Number	Email Address
ARM Chief Scientist	Thomas Ackerman	(509) 372-6032	tom.ackerman@arm.gov
ARM Technical Coordinator	Jimmy Voyles	(509) 372-4856	jimmy.voyles@arm.gov
Science Liaison	Sylvia Edgerton	(772) 492-4092	sylvia.edgerton@arm.gov
Science Translators			
Instantaneous Radiative Flux	Chuck Long	(509) 372-4917	chuck.long@arm.gov
Cloud Parameterization and Modeling	Steve Klein	(925) 423-9777	steve.klein@arm.gov
Cloud Properties	Mark Miller	(631)-344-2958	mark.miller@arm.gov
Aerosols	Connor Flynn	(509) 375-2041	connor.flynn@arm.gov
Clouds With Low Liquid Water Path	Dave Turner	(509) 372-4926	dave.turner@arm.gov
Infrastructure			
Operations Manager	Doug Sisterson	(630) 252-5836	doug.sisterson@arm.gov
Chief Engineer	Kevin Widener	(509) 375-2487	kevin.widener@arm.gov
SGP Site Manager and Instrument Coordinator	Jim Liljegren	(630) 252-9540	jim.liljegren@arm.gov
TWP Site Manager	Larry Jones	(505) 667-1186	larry.jones@arm.gov
NSA Site Manager	Bernie Zak	(505) 845-8631	bernie.zak@arm.gov
XDC Field Campaign Product Engineer	Alice Cialella	(631) 344-3286	alice.cialella@arm.gov
Archive Manager	Raymond McCord	(865) 574-7827	raymond.mccord@arm.gov
Public Information Officer	Lynne Roeder	(509) 372-4331	lynne.roeder@arm.gov
Communications Team	Rolanda Jundt	(509) 375-2936	rolanda.jundt@arm.gov