



U.S. DEPARTMENT OF
ENERGY

Office of
Science

DOE/SC-ARM-12-009

ARM Radar Organization

JW Voyles

June 2012



DISCLAIMER

This report was prepared as an account of work sponsored by the U.S. Government. Neither the United States nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the U.S. Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the U.S. Government or any agency thereof.

ARM Radar Organization

JW Voyles

June 2012

Work supported by the U.S. Department of Energy,
Office of Science, Office of Biological and Environmental Research

Contents

1.0	Introduction	1
1.1	Objective	1
1.2	Proposed Structure	1
1.3	Coordination of Science and Operations.....	1
1.4	Radar Operations Group Manager	2
1.5	Radar Science Group Leader.....	2
1.6	Science and Infrastructure Steering Committee.....	2
2.0	Organizational Functions.....	3
2.1	Mission and Vision.....	3
2.2	Performance Goals, Objectives, and Metrics	4
2.3	Radar Science Group.....	4
2.4	Radar Operations Group.....	4
2.5	Science Products	4
2.6	Infrastructure Products	5
3.0	Radar Documentation	5

Figures

1	ARM radar organization	1
2	ARM radar organizational functions.....	3

Tables

1	Radar documentation.....	5
---	--------------------------	---

1.0 Introduction

1.1 Objective

The objective of the ARM Radar Organization is to provide enhanced coordination with the Atmospheric System Research (ASR) science team to ensure well characterized, observational, and advanced multi-sensor data products at the temporal, dimensional, and spatial scales necessary for improving climate model physics. The new structure implements an integrated approach to the management, leadership, planning, coordination, and communications required to produce this scientific outcome.

1.2 Proposed Structure

A change to the current organization will add and formalize two new groups: the Radar Operations Group and the Radar Science Group (Figure 1). The new groups will have a designated Manager for the Radar Operations Group and a designated Leader for the Radar Science Group. The goal is for these groups to work cooperatively in a synergistic way to improve the quality, characterization, calibration, availability, and utility of our radar and associated higher-order data products.

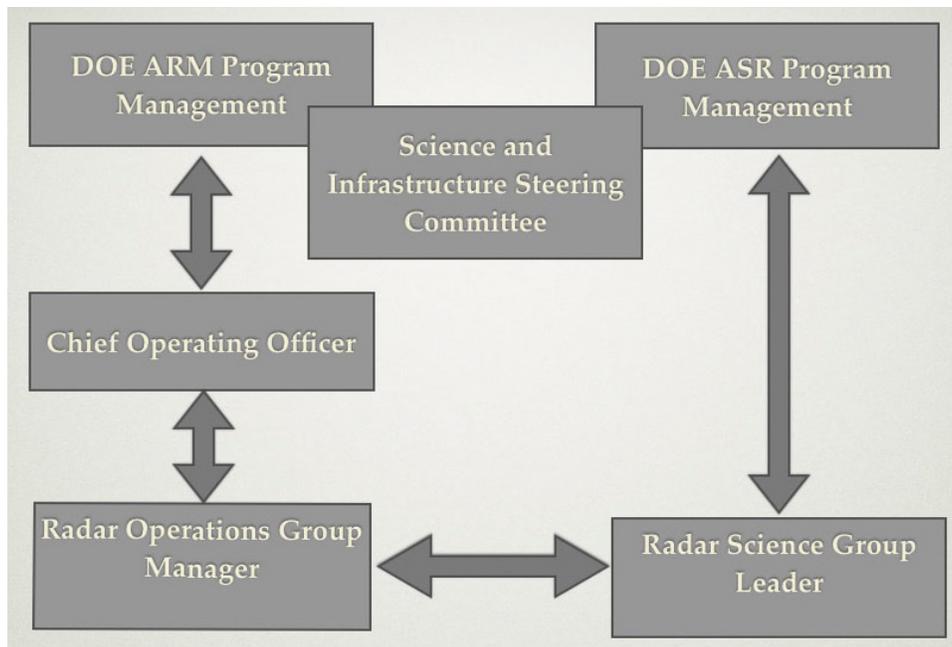


Figure 1. ARM radar organization.

1.3 Coordination of Science and Operations

The Radar Operations Group Manager and the Radar Science Group Lead are jointly responsible for ensuring that the ARM radars are operated to effectively meet the scientific needs of the users. The two leaders will establish lines of communication and performance goals (for science and operations) between the Radar Operations Group and the Radar Science Group. They will provide joint monthly status reports to the ARM Chief Operation Officer and DOE ARM and ASR Management. Focus areas

include: calibration, scanning modes, quality assurance, and advanced product development. The two leads will also be responsible for communicating an integrated message to the community on status, challenges, and accomplishments of the ARM radars.

1.4 Radar Operations Group Manager

The Radar Operations Group Manager is responsible for engineering, expediting data product development, quality documentation, operations, sustainability, maintenance, calibration, monitoring, and performance of ARM radars. This position is also responsible for working with the Radar Science Group to ensure representation of and attention to the needs of the science community.

The Radar Operations Group Manager reports to the Chief Operations Officer and is responsible for the performance of all radar operation activities: operations, engineering, and advanced product development. Members of the ARM Infrastructure will be tasked as required to keep progress on track. The Chief Operating Officer reports to the DOE ARM Program Manager for setting expectations and managing outcomes for the Radar Operations Group.

1.5 Radar Science Group Leader

The Radar Science Group Leader is responsible for leading the identification of scientific performance goals, objectives, measurement gaps, data products, processing algorithms, calibration methodologies, approaches to quality assessment, and metrics necessary to couple measurement products to the needs of the climate science community and for reporting progress toward these goals and objectives to DOE ARM and ASR Management. The Radar Science Group Leader will also serve as a resource to principal investigators in developing science plans for approved ARM field campaigns. This position is also responsible for working in a proactive way with the Radar Operations Group to translate for the science community the operational challenges and priorities for the ARM radars.

The Radar Science Group Leader is appointed by and reports to the ASR Program Managers. The Radar Science Group Leader works cooperatively with DOE ARM and ASR Management, ASR members, the Radar Operations Group, and the climate and cloud-resolving modeling science community to provide operational science input and establish measurement and product definitions for implementation. The Radar Science Group Leader will chair the Radar Science Group.

1.6 Science and Infrastructure Steering Committee (SISC)

The DOE ASR and ARM Program Managers appoint the SISC members. A vital role of the SISC is to provide scientific perspective to assist the ARM Infrastructure Management Board (IMB) with the following:

- strategies to produce or decommission ARM value-added products (VAPs)
- procurement and modifications of ARM measurement systems
- establishing specifications for instrument operational configurations.

The SISC will evaluate the joint recommendations of the radars groups within the context of the overall programmatic needs.

2.0 Organizational Functions

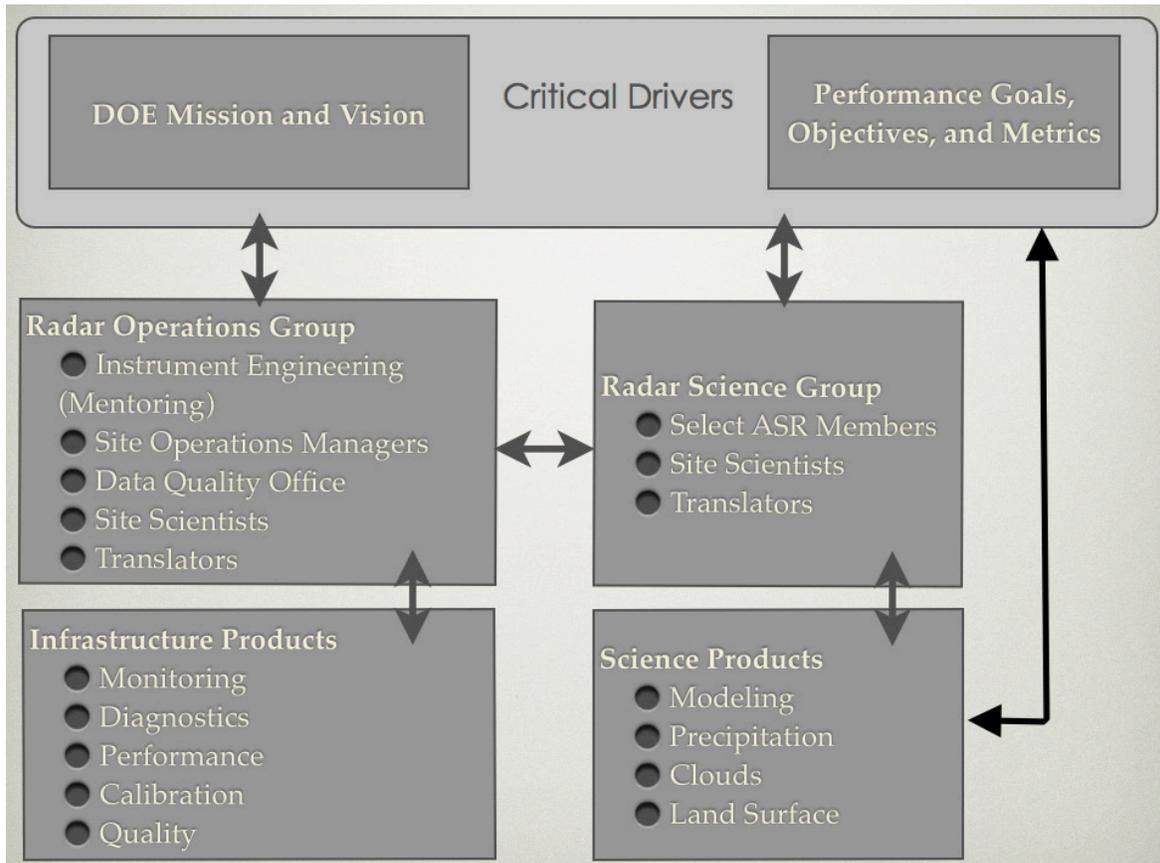


Figure 2. ARM radar organizational functions.

2.1 Mission and Vision

ARM Mission: The ARM Climate Research Facility, a DOE scientific user facility, provides 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.

ARM Vision: To provide a detailed and accurate description of the earth atmosphere in diverse climate regimes to resolve the uncertainties in climate and earth system models toward the development of sustainable solutions for the Nation's energy and environmental challenges.

ASR Mission: Is an observation-based research program established to advance process-level understanding of the key interactions among aerosols, clouds, precipitation, radiation, dynamics, and thermodynamics, with the ultimate goal of reducing the uncertainty in global and regional climate simulations and projections.

2.2 Performance Goals, Objectives, and Metrics

The establishment of performance goals, objectives, and metrics is a dynamic and evolutionary process that is achieved through communication and cooperation between the Radar Science Group, the Radar Operations Group and DOE program management. The Mission and Vision provide the top-level framework for forming goals and objectives. The observational needs of the modeling community should be a driver for the development of data products and for the implementation of radar scan strategies. Please reference the DOE Biological and Environmental (BER), Climate and Environmental Sciences Division (CESD) Strategic Plan.

2.3 Radar Science Group

This group consists of a steering committee consisting of selected ASR Scientists and a non-ASR radar scientist, with ex officio participation of site scientists, translators, and a representative from the Data Quality Office. The ASR Program Managers, in consultation with the Radar Science Group Leader, will appoint the steering committee. This group works together with the ASR science community and in cooperation with the Radar Operations Group to define and prioritize advanced multi-sensor data products at the temporal, dimensional, and spatial scales necessary for improving climate model physics. In addition, this group is tasked to identify the scientific performance goals, objectives, and metrics necessary to couple measurement products to the needs of the climate science community. This group helps define, refine, and recommend standard operational, calibration, and scanning modes for radars at each research site, with input from the Radar Operations Group.

2.4 Radar Operations Group

An integrated activity that is primarily carried out by two ARM organizational units—Engineering and Operations—under a common management structure and set of processes. The Radar Operations Group consists of instrument mentors, site operations managers, the Data Quality Office, site scientists, and translators. The members of this group are responsible for the maintenance and performance of ARM radars and the on-time delivery of high-quality data products to the Data Archive. Also, this group is responsible for the development of innovative value-added products (VAPs), designed in cooperation with the Radar Science Group to advance improvements in climate model physics. This group is also responsible for the final rules and processes used to implement standard operational, calibration, and scanning modes for radars at each research site.

2.5 Science Products

Science products are defined by the Radar Science Group, in consultation with the Radar Operations Group, and are implemented by the Radar Operations Group. Designed to improve model physics, advanced data products are developed, including multi-sensor techniques that describe precipitation, clouds, and land surface processes at the temporal, dimensional, and spatial scales necessary to describe and constrain the physical dynamics.

2.6 Infrastructure Products

Infrastructure products are defined and implemented by the Radar Operations Group. They are designed to provide functional system monitoring and diagnostics, performance assessments, calibration, and quality review/documentation needed to meet the ARM and ASR objectives.

3.0 Radar Documentation

Table 1. Radar documentation.

Document	Contact
Radar Organization Plan (this document, DOE/SC-ARM-12-009)	Jimmy Voyles
Radar Operations Plan, controlled document: ARM Climate Research Facility Radar Operations Plan (DOE/SC-ARM-12-006). This document defines roles and responsibilities, communications, and processes required to operate, monitor, repair, maintain, and ensure a well-documented, high-quality, and available radar data set from all research sites	Jimmy Voyles
Science Goals for ARM Recovery Act Radars (DOE-SC-ARM-12-010)	Jim Mather
Radar Data Quality Plan, controlled document	Randy Pepler
Scanning Radar Policy, controlled document	Jim Mather
Scan Strategy for ARM Radars, controlled document	Nitin Bharadwaj
Radar Calibration Plan, controlled document	Nitin Bharadwaj
Instrument Handbooks, controlled documents	Kevin Widener
Radar status and information: www.radar.arm.gov	Kevin Widener



U.S. DEPARTMENT OF
ENERGY

Office of Science