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Atmospheric Radiation Measurement Climate Research Facility Operations Quarterly Report

April 1–June 30, 2013



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Operations Quarterly Report**

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1.0 Data Availability

1.1 Description

Individual datastreams from instrumentation at the Atmospheric Radiation Measurement (ARM) Climate Research Facility fixed and mobile research sites are collected and routed to the Data Management Facility (DMF) for processing in near-real-time. Instrument and processed data are then delivered approximately daily to the ARM Data Archive, where they are made freely available to the research community. For each instrument, we calculate the ratio of the actual number of processed data records received daily at the Data Archive to the expected number of data records. The results are tabulated by (1) individual datastream, site, and month for the current year and (2) site and fiscal year dating back to 1998.

The U.S. Department of Energy requires national user facilities to report time-based operating data. The requirements concern the:

- actual hours of operation (ACTUAL) – 24 hours per day, **91** days or **2184** hours for this quarter
- estimated maximum operation or uptime target (TARGET)
- variance (VARIANCE), which is equal to $(1 - [\text{ACTUAL}/\text{TARGET}])$
- the TARGET and VARIANCE numbers account for unplanned downtime.

For this reporting period the TARGET uptimes for the fixed ARM research sites were:

- North Slope of Alaska (NSA) locale is **1965.6** hours (0.90 x ACTUAL)
- Southern Great Plains (SGP) locale is **2074.8** hours (0.95 x ACTUAL)
- Tropical Western Pacific (TWP) locale is **1856.4** hours (0.85 x ACTUAL).

The SGP locale has a spatial dimension of 150 km x 150 km, including the Central Facility, five extended facilities, eight new surface characterization facilities, four radar facilities, and three profiler facilities sited within the domain. The NSA locale has the Barrow site. The TWP locale has the Manus, Nauru, and Darwin sites.

The first ARM Mobile Facility (AMF1) is in the teardown and packing phase at Cape Cod, Massachusetts, after having completed the Two-Column Aerosol Project (TCAP). The TCAP campaign began on July 1, 2012. The AMF1 is being shipped to Brazil to participate in the GreenOceanAmazon (GOAMAZON) field campaign, which begins in January 2014.

The second AMF (AMF2) is now onboard the cargo ship Horizon (except during the dry dock ship maintenance period) in support of the Marine ARM GPCI Investigation of Clouds (MAGIC) field campaign. The MAGIC field campaign began on October 1, 2012.

The differences in TARGET performance reflect the complexity of local logistics and the frequency of extreme weather events. It is impractical to measure TARGET for each instrument or datastream. Data availability reported here refers to the average of the individual, continuous datastreams that have been received by the Data Archive. Therefore, data availability is directly related to individual instrument

uptime expressed in hours. Data not at the Data Archive are caused by downtime (scheduled or unplanned) of the individual instruments. Missing data due to scheduled downtime are not included in the metrics. Thus, the average percentage of data in the Data Archive represents the average percentage of the time the instruments were operating this quarter.

1.2 Summary

Table 1 shows the accumulated maximum operation time (planned uptime), actual hours of operation, and variance (unplanned downtime) for the fixed sites. Because the AMFs operate episodically, the AMF statistics are reported separately and not included in the aggregate average with the fixed sites. The average of the fixed sites met our goal this quarter.

Table 1. Operational statistics for the fixed ARM sites and mobile facilities for this reporting period.

Site	Hours Of Operation			Data Availability	
	Target	Actual	Variance	Goal	Actual
NSA	1965.6	2074.8	-0.0556	90.00%	95.00%
SGP	2074.8	2074.8	0.0000	95.00%	95.00%
TWP	1856.4	1834.56	0.0118	85.00%	84.00%
Site Average	1965.6	1994.72	-0.0148	90.00%	91.33%
AMF1 Cape Cod, MA	N/A	N/A	N/A	N/A	82.00%
AMF2 Horizon-CA, HI	N/A	N/A	N/A	N/A	N/A

2.0 Scientific Users

2.1 Description

Users can participate in field experiments at the sites and mobile facilities, or they can participate remotely. Therefore, there are a variety of mechanisms provided to users to access site information. The Site Access Request System is a web-based database used to track visitors to the fixed and mobile sites, all of which have facilities that can be visited. Users who have immediate (real-time) needs for data access can request a research account on the local site data systems. This access is particularly useful to users for quick decisions in executing time-dependent activities associated with field campaigns at the fixed site and mobile facility locations. The eight computers for the research accounts are located at the Barrow site; the SGP Central Facility; the TWP Manus, Nauru, and Darwin sites; the AMFs; and the DMF. However, users are warned that data provided at the time of collection are not fully screened for quality and therefore are not considered to be official ARM data. Hence, these accounts are considered to be part of the facility activities associated with field campaign activities, and users are tracked. Fully screened and approved ARM data are officially requested through the ARM Data Archive.

In addition, users that visit sites can connect their computer or instrument to an ARM site data system network, which requires an on-site device account. Remote (off-site) users can also have remote access to any ARM instrument or computer system at any ARM site, which requires an off-site device account. These accounts are also managed and tracked.

Official ARM data collected through the routine operations and scientific field experiments at the fixed sites and mobile facility that have passed through the formal data quality review process are stored at and distributed through the Data Archive. The Data Archive receives fully quality-assured data within 24–48 hours of the collection and processing of data that takes place at the DMF. These data are available to the public free of charge.

The U.S. Department of Energy requires national user facilities to report facility use by total visitor days—broken down by institution type, gender, race, citizenship, visitor role, visit purpose, and facility—for actual visitors and for active user research computer and Data Archive accounts. This information is maintained but not presented in this report. Visitor role and visit purpose information are peer-reviewed to identify scientific users.

Scientific users¹ are defined as members of the scientific community and infrastructure who are using the ARM Facilities or data to perform peer-reviewed science and research. For the ARM Infrastructure, this includes the scientists and engineers who are involved in the development of synthesis products, value-added products, instrument performance analysis, and uncertainty quantification.

This quarterly report provides the number of unique scientific users. All user accounts are established for a period of up to one year and must be renewed. **Unique scientific users** are defined as a single use of an ARM Facility's **on-site** assets, **off-site** services, or **data** services during the defined reporting period.

¹ Beginning in FY2013, the approach used to count scientific users for the ARM Climate Research Facility was revised to align with other DOE Office of Science user facilities. Please contact Jimmy Voyles at jimmy.voyles@pnl.gov with any questions related to the information presented here about the facility statistics.

2.2 Summary

Figure 1 shows the summary of unique scientific users for the previous 12 months.

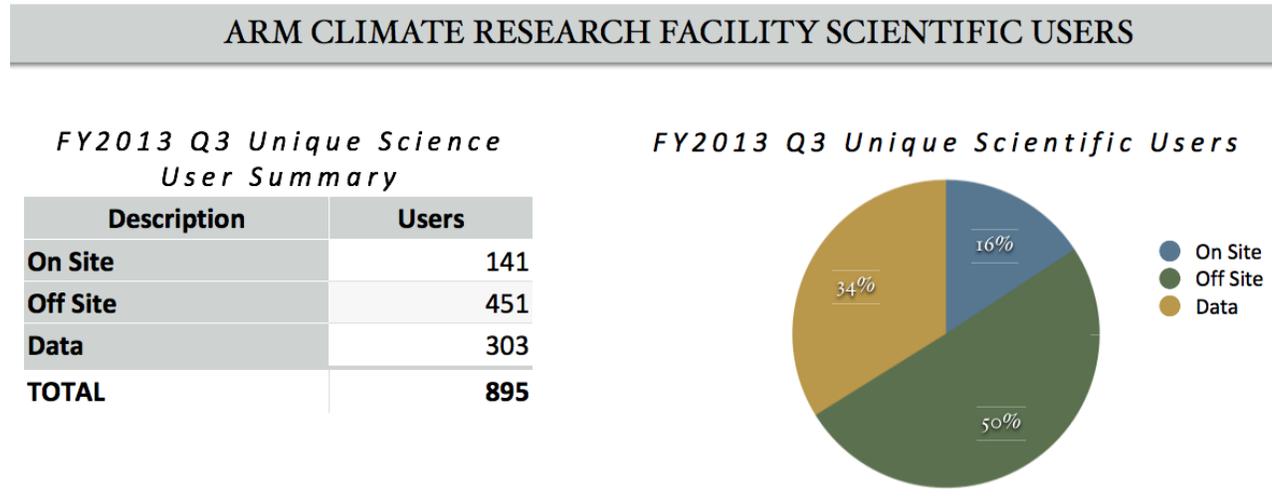


Figure 1. Summary of ARM scientific users.

3.0 Safety

For reporting purposes, the three ARM sites and the two AMFs operate 24 hours per day, 7 days per week, and 52 weeks per year. Time is reported in days instead of hours. If any lost work time is incurred by any employee, it is counted as a workday loss. Table 2 reports the consecutive days since the last recordable or reportable injury or incident causing damage to property, equipment, or vehicles for this reporting period. There were no recordable lost workday cases or reportable injury or incidents causing damage to property, equipment, or vehicles reported.

Table 2. Consecutive days of injury-free* operation for this reporting period.

ES&H Category	NSA	SGP	TWP	AMF1	AMF2
Days Worked without a Lost-Time Incident	91	91	91	91	91
Days Worked without a Recordable Accident	91	91	91	91	91
Days Worked without a Property Damage Incident	91	91	91	91	91
Days Worked without a Reportable Loss to Vehicles	91	91	91	91	91
**"Injury-free" is defined as days without a recordable lost-time incident or property damage incident.					



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