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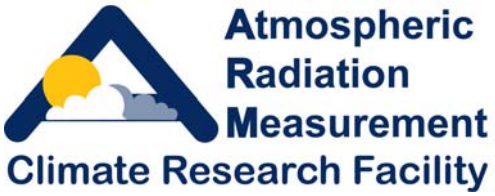
Atmospheric Radiation Measurement Program
Climate Research Facility Operations
Quarterly Report

April 1 – June 30, 2009



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1. Data Availability

Description. Individual raw data streams from instrumentation at the Atmospheric Radiation Measurement (ARM) Program Climate Research Facility (ACRF) fixed and mobile sites are collected and sent to the Data Management Facility (DMF) at Pacific Northwest National Laboratory (PNNL) for processing in near-real time. Raw and processed data are then sent approximately daily to the ACRF Archive, where they are made available to users. For each instrument, we calculate the ratio of the actual number of data records received daily at the archive to the expected number of data records. The results are tabulated by (1) individual data stream, site, and month for the current year and (2) site and fiscal year (FY) dating back to 1998.

The U.S. Department of Energy (DOE) requires national user facilities to report time-based operating data. The requirements concern the actual hours of operation (ACTUAL); the estimated maximum operation or uptime goal (OPSMAX), which accounts for planned downtime; and the VARIANCE [1 – (ACTUAL/OPSMAX)], which accounts for unplanned downtime. The OPSMAX time for the third quarter of FY 2009 for the Southern Great Plains (SGP) site is 2,074.80 hours (0.95 × 2,184 hours this quarter); for the North Slope Alaska (NSA) locale it is 1,965.60 hours (0.90 × 2,184); and for the Tropical Western Pacific (TWP) locale it is 1,856.40 hours (0.85 × 2,184). The ARM Mobile Facility (AMF) was officially operational May 1 in Graciosa Island, the Azores, Portugal, so the OPSMAX time this quarter is 1390.80 hours (0.95 x 1464). The differences in OPSMAX performance reflect the complexity of local logistics and the frequency of extreme weather events. It is impractical to measure OPSMAX for each instrument or data stream. Data availability reported here refers to the average of the individual, continuous data streams that have been received by the Archive. Data not at the Archive are caused by downtime (scheduled or unplanned) of the individual instruments. Therefore, data availability is directly related to individual instrument uptime. Thus, the average percentage of data in the Archive represents the average percentage of the time (24 hours per day, 91 days for this quarter) the instruments were operating this quarter.

Summary. Table 1 shows the accumulated maximum operation time (planned uptime), actual hours of operation, and variance (unplanned downtime) for April 1 – June 30, 2009, for the fixed sites. Because the AMF operates episodically, the AMF statistics are reported separately and are not included in the aggregate average with the fixed sites. The AMF statistics for this reporting period were not available at the time of this report. The third quarter comprises a total of 2,184 hours for the fixed sites. The average well exceeded our goal this quarter.

Table 1. Operational Statistics for the Fixed ACRF Sites for April 1 – June 30, 2009

Site	Hours of Operation			Data Availability	
	OPSMAX	ACTUAL	VARIANCE	Goal	Actual
SGP	2,074.80	2,096.64	-0.0105	0.95	0.96
NSA	1,965.60	2,140.32	-0.0889	0.90	0.98
TWP	1,856.40	2,140.32	–0.1529	0.85	0.98
Site Average	1,965.60	2,118.48	–0.0827	0.90	0.97

2. Scientific Users

Description. 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. The NSA locale has the Barrow and Atqasuk sites. The SGP site has a central facility, 23 extended facilities, 4 boundary facilities, and 3 intermediate facilities. The TWP locale has the Manus, Nauru, and Darwin sites. The AMF began its 20-month deployment in Graciosa Island, Azores, Portugal, on May 1, 2009.

Users can participate in field experiments at the sites and mobile facility, or they can participate remotely. Therefore, various mechanisms are provided to users to access site information. 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 sites and mobile facility locations. The eight computers for the research accounts are located at the Barrow and Atqasuk sites; the SGP central facility; the TWP Manus, Nauru, and Darwin sites; the AMF; and the DMF at PNNL. However, users are warned that data are provided at the time of collection are not fully screened for quality and therefore not considered to be official ACRF 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 ACRF data are officially requested through the ACRF archive.

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

Official ACRF 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 archive. The 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 archive also serves as a data repository for cloud radar data at the long-term Arctic atmospheric observatory in Eureka, Canada (80°05' N, 86°43' W) as part of the multiagency Study of Environmental Arctic Change (SEARCH) program. NOAA began providing instruments for the site in 2005. The intent of the site is to monitor the important components of the Arctic atmosphere, including clouds, aerosols, atmospheric radiation, and local-scale atmospheric dynamics. Because of the similarity of ACRF NSA data streams and the important synergy that can be formed between a network of Arctic atmospheric observations, the SEARCH radar data are Archived in the ACRF archive. Instruments will be added to the site over time. The designation for the Archived Eureka data is YEU and is now included in the ACRF user metrics.

DOE requires national user facilities to report facility use by total visitor days—categorized by institution type, gender, race, citizenship, visitor role, visit purpose, and facility—for actual visitors and for active user research computer and Archive accounts. This information is maintained but not presented in this report. Visitor role and visit purpose information are used to identify scientific users. Based on the information provided by users about their role and visit purpose, the following types of users were categorized as scientific users: principal and co-principal investigators, postdoctoral researchers, graduate students, undergraduate students, infrastructure instrument mentors, and infrastructure chief and site scientists. Although other categories can be identified, they are considered nonscientific. They are reported here for completeness.

This quarterly report provides the cumulative numbers of scientific user accounts by site for July 1, 2008 – June 30, 2009. Starting with this reporting period, ACRF users are being computed differently. Only scientific users are being officially counted, and they are determined by the sum of unique scientific users for each of the ACRF facility components (i.e., AMF, NSA, SGP, TWP, DMF, and Archive), regardless of access mechanism (research account, physical visit, on- and off-site device accounts). As before, all user accounts are established for a period of up to one year and must be renewed. To report users, we count the number of active users for the previous 12 months during the last month of the quarterly reporting period. The change in formulation to report ACRF users results in significantly reduced user statistics compared with those reported in the past, but the alteration in formulation does not reduce the number actual scientific users, just how they are counted. Therefore, the apparent reduction in the number of unique scientific users is not due to diminished use of ACRF resources.

Summary. Table 2 shows the summary of cumulative scientific and nonscientific users for July 1, 2008 – June 30, 2009. Of the total number of 1,056 ACRF users, 781 were characterized as scientific users.

Table 2. Summary of ACRF Scientific and Nonscientific Users for July 1, 2008 – June 30, 2009

ACRF Facility Component	Unique Scientific Users	Unique Nonscientific Users
SGP	67	99
NSA	27	44
DMF	24	39
TWP	19	15
AMF (Azores)	15	14
Archive	629	64
Total	781	275

3. Safety

For reporting purposes, the three ACRF sites and the AMF operate 24 hours per day, 7 days per week, and 52 weeks per year. Time is reported in days instead of hours. Any lost work time incurred by an employee is counted as a workday loss. There were 91 consecutive days since the last recordable or reportable injury or incident causing damage to property, equipment, or vehicle for April 1 – June 30, 2009; specifically, there were no incidents this reporting period.