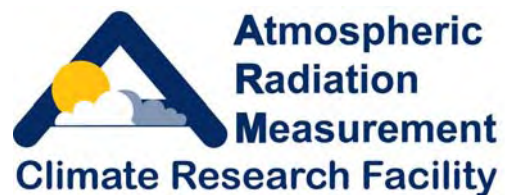


**Atmospheric Radiation Measurement Program
Climate Research Facility Operations
Quarterly Report**

July 1 – September 30, 2007



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Atmospheric Radiation Measurement Program Climate Research Facility Operations Quarterly Report July 1 – September 30, 2007

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 daily to the ARM 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 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 [$1 - (\text{ACTUAL}/\text{OPSMAX})$], which accounts for unplanned downtime. The OPSMAX time for the fourth quarter of FY 2007 for the Southern Great Plains (SGP) site is 2,097.6 hours ($0.95 \times 2,208$ hours this quarter). The OPSMAX for the North Slope Alaska (NSA) locale is 1,987.2 hours ($0.90 \times 2,208$), and that for the Tropical Western Pacific (TWP) locale is 1,876.8 hours ($0.85 \times 2,208$). The OPSMAX time for the ARM Mobile Facility (AMF) is 2,097.6 hours ($0.95 \times 2,208$). 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 percent of data in the Archive represents the average percent of the time (24 hours per day, 92 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 the period of July 1 – September 30, 2007, for the fixed sites and the mobile site. The AMF has been deployed to Germany and is operational this quarter. The fourth quarter comprises a total of 2,208 hours. Although the average exceeded our goal this quarter, the lack of an approved federal budget meant that funds were not available until the third quarter to promptly repair instruments, which contributed to lower performance measures at all sites. A combination of severe weather activity affecting utility services, flooding rains, and theft affected the SGP performance measures. One Extended

Table 1. Operational Statistics for the Fixed ACRF Sites for the Period July 1 – September 30, 2007.

Site	Hours Of Operation			Data Availability	
	Opsmax	Actual	Variance	Goal	Actual
NSA	1,987.20	1,757.83	+0.1154	0.90	0.89
SGP	2,097.60	2,016.57	+0.0386	0.95	0.91
TWP	1,876.80	2,097.60	-0.1176	0.85	0.95
Site Average	1,987.20	2,024.07	-0.0186	0.90	0.92
AMF (FKB)	2,097.60	2,097.60	+0.0000	0.95	0.95

Facility experienced severe flooding that required instruments at that location to be shut down for 30 days. Continued telephone interruptions at another Extended Facility delayed data delivery, which resulted in “missing” data at the end of this quarter. However, this data was not lost and will be obtained and processed within the next several weeks. Theft of the main power line for copper and the resulting damage have resulted in data loss for several weeks at an Intermediate Facility.

2. Site Visit Requests, Archive Accounts, and Research Computer Accounts

Description. The Site Access Request System is a web-based database used to track visitors to the fixed 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 is currently operational in Haselback, Germany (FKB designation). NIM represents the AMF statistics for the Niamey, Niger, Africa, past deployment in 2006. PYE represents just the Archive statistics for the AMF deployment in Point Reyes, California, in 2005. In addition, users who do not want to wait for data to be provided through the ARM Archive can request an account on the local site data system. The eight research computers are located at the Barrow and Atqasuk sites; the SGP Central Facility; the TWP Manus, Nauru, and Darwin sites; the DMF at PNNL; and the AMF currently in Germany. In addition, the ACRF serves as a data repository for a 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 and currently cloud radar data are available. 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. Due to the similarity of ACRF NSA data streams, and the important synergy that can be formed between a network of Arctic atmospheric observations, much of the SEARCH observatory data is archived in the ARM Archive. Instruments will be added to the site over time. For more information, please visit http://www.db.arm.gov/cgi-bin/IOP2/selectExecSummary.pl?iopName=sdsr2005search&person_id=. The designation for the archived Eureka data is YEU and is now included in the ACRF user metrics. This quarterly report provides the cumulative numbers of visitors and user accounts by site for the period October 1, 2006 – September 30, 2007.

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 accounts. During this reporting period, the ARM Archive did not collect data on user characteristics in this way. Work is under way to collect and report these data.

Research computer accounts are counted in the same manner as for the ARM Archive accounts: an individual is counted as only one unique user per site, even though he or she opens and closes an account several times to obtain different data at one or more sites. However, site visitors are counted each time they visit, because many visitors participate in multiple, unrelated experiments or events.

Also, users that visit sites can connect their computer or instrument to an ACRF 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 tracked.

All user accounts are established for a period of up to 1 year and must be renewed annually. To report users, we counted the number of active users for the previous 12 months during the last month of the quarterly reporting period.

Summary. Table 2 shows the summary of cumulative users for the period October 1, 2006 – September 30, 2007. For the fourth quarter of FY 2007, the overall number of users is up (significantly in some cases) from the last reporting period. For the third consecutive reporting period, a record high number of Archive users was recorded. In addition, the number of visitors and visitor days set a new record this reporting period particularly due to the large number of field campaign activities in conjunction with the AMF deployment in Germany. It is interesting

Table 2. Summary of ACRF User Site Visits, Archive Accounts, and Research Computer Accounts for the Period October 1, 2006 – September 30, 2007.

Site	Visitors	Visitor Days	On-Site Device Accounts	Off-Site Device Accounts	Research Accounts	Archive Accounts	Total Users*
NSA	58	312	9	32	21	204	324
SGP	304	1676	11	53	21	482	871
TWP	29	212	6	35	16	229	315
FKB	767	4729	7	20	9	45	848
PYE						56	56
NIM						95	95
DMF					46		46
YEU						4	4
Total	1,158	6,929	33	140	113	1,115	2,559

*Excludes visitor days.

to note this quarter that 26% (a significant decrease from last quarter) of the Archive users are ARM Science funded Principal Investigators and 35% (only slightly less than last quarter) of all other facility users are either ARM Science funded Principal Investigators or ACRF Infrastructure personnel.

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. If any lost work time is incurred by any employee, it is counted as a workday loss. Table 3 reports the consecutive days since the last recordable or reportable injury or incident causing damage to property, equipment, or vehicle for the period July 1 – September 30, 2007. A technician from the ACRF SGP site alleged he injured his back when he stepped in a hole while performing maintenance activities at a remote site. As of September 30, 2007, 40 lost work days (30 days away from work and 10 light duty days) resulted from this incident.

Table 3. Consecutive Days of Injury-Free* Operation, July 1 – September 30, 2007.

ES&H Category	NSA	SGP	TWP	AMF
Days Worked without a Lost Time Incident	92	52	92	92
Days Worked without a Recordable Accident	92	52	92	92
Days Worked without a Property-Damage Incident	92	92	92	92
Days Worked without a Reportable Loss to Vehicles	92	92	92	92

*“Injury-free” is defined as days without a recordable lost time incident or property damage incident.

This quarterly report also includes historical safety performance data, which are provided in Table 4 as a summary of safety statistics for the period October 1, 1998 – September 30, 2007.

Table 4. Consecutive Days Since the Last Recordable Lost Time Incident or Property Damage Incident, NSA, SGP, & TWP for October 1, 1998 – September 30, 2007, and AMF for January 1, 2004 – September 30, 2007

ES&H Category	NSA	SGP	TWP	AMF
Days Worked without Lost Time Incident	3285	52	3285	1368
Days Worked without a Recordable Accident	3285	52	3285	1368
Days Worked without a Property-Damage Incident	3285	3285	3285	1368
Days Worked without a Reportable Loss to Vehicles	3285	3285	3285	1368

SGP has had four lost work day cases and one recordable medical case to date:

FY 1998: 2 lost days restricted work for lower back sprain;

FY 1999: 14 lost days for fracture of wrist (slipped and fell on ice after hail storm);

FY 2000: 162 lost days and 130 restricted days due to an alleged injury from a congenital defect to back.

SGP FY 2006: Recordable medical treatment cases: 1) A technician sustained a tick bite in April 2006, seen by a physician, and treated with an antibiotic. There was no lost time from this incident.

SGP FY2007: 30 lost days and 10 restricted days due to an alleged back injury. A technician reported that he allegedly injured his back when he stepped in a hole at a remote field site.