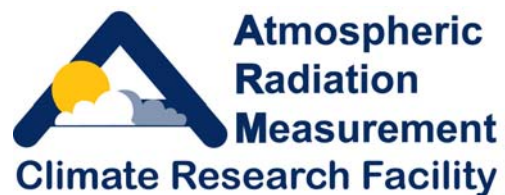


**Atmospheric Radiation Measurement Program  
Climate Research Facility Operations  
Quarterly Report**

October 1 – December 31, 2007



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

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# Atmospheric Radiation Measurement Program Climate Research Facility Operations Quarterly Report October 1 – December 31, 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 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 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 first quarter of FY 2008 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 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 October 1 – December 31, 2007, for the fixed sites and the mobile site. The AMF has been deployed to Germany and this was the final operational quarter. The first quarter comprises a total of 2,208 hours. Although the average exceeded our goal this quarter, a series of severe weather events (i.e., widespread ice storms) impacted utility services that affected the SGP performance measures. Ice-covered instruments and downed power and data communication lines for more than ten days in some areas of Oklahoma and Kansas resulted in some SGP lost data.

**Table 1.** Operational Statistics for the Fixed ACRF Sites for the Period October 1 – December 31, 2007.

Site	Hours Of Operation			Data Availability	
	Opsmax	Actual	Variance	Goal	Actual
NSA	1,987.20	2,075.52	-0.0444	0.90	0.94
SGP	2,097.60	2,009.28	+0.0421	0.95	0.91
TWP	1,876.80	2,119.68	-0.1294	0.85	0.96
<b>Site Average</b>	<b>1,987.20</b>	<b>2,075.52</b>	<b>-0.0444</b>	<b>0.90</b>	<b>0.94</b>
AMF (FKB)	2,097.60	2,185.92	-0.0421	0.95	0.99

## 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 completed its mission at the end of this quarter in Haselback, Germany (FKB designation). NIM represents the AMF statistics for the Niamey, Niger, Africa, past deployment in 2006. PYE represents the AMF Archive statistics for the Point Reyes, California, deployment in 2005. In addition, users who do not want to wait for data to be provided through the ACRF 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 ACRF 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=](http://www.db.arm.gov/cgi-bin/IOP2/selectExecSummary.pl?iopName=sdsr2005search&person_id=). The designation for the archived Eureka data is YEUE 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 January 1, 2007 – December 31, 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.

Research computer accounts are counted in the same manner as for the ACRF 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 one 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 January 1, 2007 – December 31, 2007. For the first quarter of FY 2008, the overall number of users was up significantly from the last reporting period. For the fourth 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 to note this quarter that 22% (a slight decrease from last quarter) of the Archive users are ARM Science-funded principal investigators and 35% (the same as last quarter) of all other facility users are either ARM Science-funded principal investigators or ACRF infrastructure personnel.

**Table 2.** Summary of ACRF User Site Visits, Archive Accounts, and Research Computer Accounts for the Period January 1, 2007 – December 31, 2007.

Site	Visitors	Visitor Days	On-Site Device Accounts	Off-Site Device Accounts	Research Accounts	Archive Accounts	Total Users*
NSA	58	437	9	35	23	212	<b>337</b>
SGP	269	1,709	11	58	20	479	<b>837</b>
TWP	30	226	6	35	15	247	<b>333</b>
FKB	1009	6,146	7	21	9	62	<b>1108</b>
PYE						51	<b>51</b>
NIM						103	<b>103</b>
DMF					47		<b>47</b>
YEU						3	<b>3</b>
Total	<b>1,366</b>	<b>8,518</b>	33	149	114	<b>1,157</b>	<b>2,819</b>

\*Excludes visitor days.

### 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 October 1 – December 31, 2007. There were no incidents this reporting period.

**Table 3.** Consecutive Days of Injury-Free\* Operation, October 1 – December 31, 2007.

ES&H Category	NSA	SGP	TWP	AMF
Days Worked without a Lost Time Incident	92	92	92	92
Days Worked without a Recordable Accident	92	92	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.