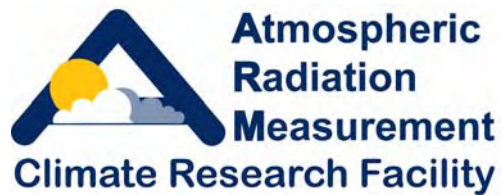


**Atmospheric Radiation Measurement Program
Climate Research Facility Operations
Quarterly Report**

July 1 – September 30, 2006



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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 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 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 for the Southern Great Plains (SGP) site is 2,097.60 hours ($0.95 \times 2,208$ hours this quarter). The OPSMAX for the North Slope Alaska (NSA) locale is 1,987.20 hours ($0.90 \times 2,208$), and that for the Tropical Western Pacific (TWP) locale is 1,876.80 hours ($0.85 \times 2,208$). The OPSMAX time for the ARM Mobile Facility (AMF) is 2,097.60 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), the actual hours of operation, and the variance (unplanned downtime) for the period July 1 through September 30, 2006, for the fixed and mobile sites. Although the AMF is currently up and running in Niamey, Niger, Africa, the AMF statistics are reported separately and not included in the aggregate average with the fixed sites. The fourth quarter comprises a total of 2,208 hours. For all fixed sites (especially the TWP locale), the actual data availability (and therefore actual hours of operation) exceeded the individual (and well as aggregate average of the fixed sites) operational goal for the fourth quarter of fiscal year (FY) 2006.

Table 1. Operational Statistics for the Fixed ACRF and AMF Sites for the Period July 1 – September 30, 2006.

Site	Hours Of Operation			Data Availability	
	Opsmax	Actual	Variance	Goal	Actual
NSA	1,987.20	2,074.52	-0.0439	0.90	0.94
SGP	2,097.60	2,141.76	-0.0210	0.95	0.97
TWP	1,876.80	2,097.60	-0.1176	0.85	0.95
Site Average	1,987.20	2,097.60	-0.0608	0.90	0.95
AMF Niamey	2,097.60	2,185.92	-0.0421	0.95	0.98

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. NIM represents the AMF statistics for the current deployment in Niamey, Niger, Africa. PYE represents the AMF statistics for the Point Reyes, California, past 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 in Niger. This report provides the cumulative numbers of visitors and user accounts by site for the period October 1, 2005 – September 30, 2006.

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 ACRF 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 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 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 October 1, 2005 – September 30, 2006. For the fourth quarter of FY 2006, the overall number of users is down from the last reporting period. The historical data show that there is an apparent relationship between the total number of users and the “size” of field campaigns, called Intensive Operation Periods (IOPs): larger IOPs draw more of the site facility resources, which are reflected by the number of site visits and site visit days, research accounts, and device accounts. These types of users typically collect and analyze data in near-real time for a site-specific IOP that is in progress. However, the Archive accounts represent persistent (year-to-year) ACRF data users that often mine from the entire collection of ACRF data, which mostly includes routine data from the fixed and mobile sites, as well as cumulative IOP data sets. Archive data users have shown a steady growth, which is independent of the size of IOPs. The Archive data user accounts for the last three quarters have been the highest since keeping records (898, 904, 882, respectively).

Table 2. Summary of ACRF User Site Visits, Archive Accounts, and Research Computer Accounts for the October 1, 2005 – September 30, 2006.

Site	Visitors	Visitor Days	On-Site Device Accounts	Off-Site Device Accounts	Research Accounts	Archive Accounts	Total Users*
NSA	76	473	10	26	20	178	310
SGP	176	496	11	46	25	447	705
TWP	57	466	9	32	26	156	280
NIA	50	839	2	16	8	64	140
PYE						37	37
DMF					43		43
Total	359	2,274	32	120	122	882	1,515

*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. Although the AMF is not officially collecting data this quarter, personnel are regularly involved with teardown, packing, shipping, unpacking, setup, and maintenance activities, so they are included in the safety statistics. 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, 2006. There were no recordable or lost workdays or incidents for the fourth quarter of FY 2006.

Table 3. Consecutive Days of Injury-Free Operation,* July 1 – September 30, 2006.

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.

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, 2006. This report includes a correction from the third quarter reflecting that the knee sprain that occurred on June 30, 2006 (reported in the third quarterly report) has been denied by the Cherokee Nations Distributor’s (CND) Workers Compensation carrier, who determined that the claim was coincidental with employment. Table 4 reflects this correction.

Table 4. Consecutive Days Since the Last Recordable Lost Time Incident or Property Damage Incident, October 1, 1998 – September 30, 2006.

ES&H Category	NSA	SGP	TWP	AMF
Days Worked without Lost Time Incident	2,920	1,757*	2,920	1005
Days Worked without a Recordable Accident	2,920	170‡	2,920	1005
Days Worked without a Property-Damage Incident	2,920	2,920	2,920	1005
Days Worked without a Reportable Loss to Vehicles	2,920	2,920	2,920	1005

*SGP has had three lost work day cases:

- 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); and
- FY 2000: 162 lost days and 130 restricted days to alleged injury of congenital defect to back.

‡SGP has had 2 recordable medical treatment cases during FY 2006:

1. A technician sustained a tick bite in April 2006 and was seen by a physician and treated with an antibiotic.
2. A technician sustained a sprain to her left knee walking down steps in June and seen by a physician. A revisit was required.

There was no lost time from either incident.

4. Publications

Description. As an additional measure of performance, this quarterly report includes the number of publications that are based on ACRF data, with emphasis on this year’s contribution but also summarizing historical data, collection of which began in 1990. The publication

categories are (1) abstracts or presentations at conferences, (2) technical reports, (3) books, (4) book chapters, (5) journal articles, and (6) papers in conference proceedings.

Summary. Table 5 shows the number of publications by category for 1990 through September 2005, the number of publications for FY 2006, and the total of publications for 1990 through September 2006.

Table 5. Number of Publications that Use ACRF Data

CATEGORY	1990–SEPTEMBER 2005	FY 2006	1990–SEPTEMBER 2006
Abstracts or Presentations	1,686	204	1,890
Technical Reports	128	13	141
Books	3	0	3
Book Chapters	51	0	51
Journal Articles	1,531	89	1,620
Conference Papers	1,652	87	1,739