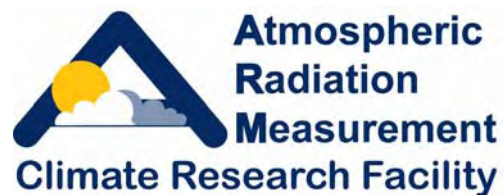


**Atmospheric Radiation Measurement Program  
Climate Research Facility Operations  
Quarterly Report**

October 1 – December 31, 2006



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

## Contents

1. Data Availability.....	1
2. Site Visit Requests, Archive Accounts, and Research Computer Accounts.....	2
3. Safety .....	3

## Tables

<b>Table 1.</b> Operational Statistics for the Fixed ACRF and AMF Sites for the Period October 1 – December 31, 2006.....	2
<b>Table 2.</b> Summary of ACRF User Site Visits, Archive Accounts, and Research Computer Accounts for the January 1, 2006 – December 31, 2006.....	3
<b>Table 3.</b> Consecutive Days of Injury-Free Operation for the period October 1 – December 31, 2006. ....	4

# Atmospheric Radiation Measurement Program Climate Research Facility Operations Quarterly Report October 1 –December 31, 2006

## 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 first 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 October 1 through December 31, 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 first quarter comprises a total of 2,208 hours. For all fixed sites, 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 first quarter of fiscal year (FY) 2007.

**Table 1.** Operational Statistics for the Fixed ACRF and AMF Sites for the Period October 1 – December 31, 2006.

Site	Hours Of Operation			Data Availability	
	Opsmax	Actual	Variance	Goal	Actual
NSA	1,987.20	2,119.68	-0.0667	0.90	0.96
SGP	2,097.60	2,119.68	-0.0105	0.95	0.96
TWP	1,876.80	2,009.28	-0.0706	0.85	0.91
<b>Site Average</b>	<b>1,987.20</b>	<b>2,082.88</b>	<b>-0.0482</b>	<b>0.90</b>	<b>0.94</b>
AMF Niamey	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. 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 January 1, 2006 – December 31, 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 January 1, 2006 – December 31, 2006. For the first quarter of FY 2007, the overall number of users is up 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 continue to show a steady growth, which is independent of the size of IOPs. For this quarter, the number of Archive data user accounts was 961, the highest since record-keeping began.

**Table 2.** Summary of ACRF User Site Visits, Archive Accounts, and Research Computer Accounts for the Period January 1, 2006 – December 31, 2006.

Site	Visitors	Visitor Days	On-Site Device Accounts	Off-Site Device Accounts	Research Accounts	Archive Accounts	Total Users*
NSA	80	669	7	25	22	193	327
SGP	226	630	11	50	24	468	779
TWP	43	402	9	31	26	171	280
NIM	36	281	2	11	8	80	137
PYE						49	49
DMF					43		43
Total	385	1,982	29	117	123	961	1,615

\*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 October 1 – December 31, 2006. There were no recordable or lost workdays or incidents for the first quarter of FY 2007.

**Table 3.** Consecutive Days of Injury-Free Operation,\* October 1 – December 31, 2006.

<b>ES&amp;H Category</b>	<b>NSA</b>	<b>SGP</b>	<b>TWP</b>	<b>AMF</b>
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.