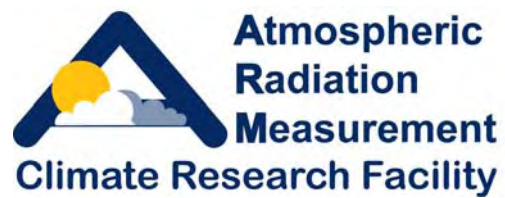


**Atmospheric Radiation Measurement Program  
Climate Research Facility Operations  
Quarterly Report**

October 1 – December 31, 2005



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, 2005

## 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 third quarter 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 of 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 ACRF 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, 2005, for the fixed sites. The AMF was in transit for this quarter and therefore no data were collected. The first 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 operational goal for the first quarter of fiscal year (FY) 2005. The aggregate average of actual data availability for the fixed also exceeded the aggregate operational goal for this period. Much work has gone into making the instruments more reliable

**Table 1.** Operational Statistics for the Fixed ACRF Sites for the Period October 1 – December 31, 2005

Hours of Operation					Data Availability
SITE	OPSMAX	ACTUAL	VARIANCE	GOAL	ACTUAL
NSA	1,987.20	2,053.44	-0.033	0.90	<b>0.93</b>
SGP	2,097.60	2,141.76	-0.021	0.95	<b>0.97</b>
TWP	1,876.80	2,053.44	-0.094	0.85	<b>0.93</b>
Site Average	1,987.20	2,082.88	-0.049	0.90	<b>0.94</b>

at all the sites, especially the TWP in preparation for the Tropical Warm Pool-International Cloud Experiment in January and February 2006. In addition, we have been able to calculate the ratio of the actual number of data records received daily at the Archive to the expected number of data records for two instruments (the microwave radiometer and the radiosonde) with varying daily data records. These instruments have a history of high reliability and, until now, have not been included the calculation of operational statistics.

## 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 currently represents one facility. In addition, users who require data more timely than that provided by the ACRF Archive can request an account on the local site data system. The eight research computers are located at the Barrow and Atqasuk facilities; the SGP Central Facility; the TWP Manus, Nauru, and Darwin sites; the DMF at PNNL; and the AMF (currently in Point Reyes, California). This report provides the cumulative numbers of visitors and user accounts by site for the period January 1, 2005 – December 31, 2005.

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 periods 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, 2005 – December 31, 2005. For the first quarter of FY 2006, the overall number of users decreased from the last reporting period, primarily due to the completion of the Mixed-Phase Arctic Cloud Experiment at the NSA. Although field campaigns were conducted for this first quarter at all the sites, they were small and did not involve many on-site researchers. The number of data users, however, was invariant from the last reporting period.

**Table 2.** Summary of ACRF User Site Visits, Archive Accounts, and Research Computer Accounts for the Period January 1, 2005 – December 31, 2005

Site	Visitors	Visitor Days	On-Site Device Accounts	Off-Site Device Account	Research Accounts	Archive Accounts	Total Users
NSA	88	836	13	28	30	202	361
SGP	222	1,381	13	37	24	464	760
TWP	61	508	6	22	24	156	269
AMF	130	1224	6	19	14	32	201
DMF					29		29
Total	501	3,949	38	106	121	854	1,620

### 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 tear down, packing, shipping, unpacking, set up, and maintenance activities and included in 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, 2005. There were no lost workdays for the first quarter of FY 2006.

**Table 3.** Consecutive Days of Injury-Free Operation, \* October 1 – December 31, 2005

<b>ES&amp;H Category</b>	<b>NSA</b>	<b>SGP</b>	<b>TWP</b>	<b>AMF</b>
Days Worked without Lost Time Incident	92	92	92	92
Days Worked without a Recordable Accident (Medical Treatment Case)	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 is provided in Table 4 and summarizes safety statistics for the period October 1, 1998 – December 31, 2005.

**Table 4.** Consecutive Days Since Last Recordable Lost Time Incident or Property Damage Incident, October 1, 1998 – December 31, 2005

<b>ES&amp;H Category</b>	<b>NSA</b>	<b>SGP</b>	<b>TWP</b>	<b>AMF</b>
Days Worked without Lost Time Incident	2,647	1,485*	2,647	731
Days Worked without a Recordable Accident (Doctor Case)	2,647	1,485*	2,647	731
Days Worked without a Property-Damage Incident	2,647	2,647	2,647	731
Days Worked without a Reportable Loss to Vehicles	2,647	2,647	2,647	731

\*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.