



ARM Data Quality Office

Real-Time Assessment of ARM Data

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ARM Data Quality History


- ☀ Originally, each **Site Scientist** and **Instrument Mentor** was responsible for data quality analysis. This resulted in uneven treatment of instruments at the different ARM climate research facilities.
- ☀ The **ARM Infrastructure Review in 1999** decided there was a need for a single data quality “czar” to oversee DQ activities for all sites.
- ☀ In response to this review the **ARM DQO was established** in July 2000 at The University of Oklahoma.
- ☀ **ARM’s goal** is to provide the best data possible for scientific research.

ARM Data Quality History

☀ Two definitions

- ☀ “**Known**” - we have checked the data through a quality assurance process and can assign some sort of value to the quality
- ☀ “**Reasonable**” - the data are good for scientific research, as determined by longer-term assessment of their scientific utility through value-added product creation and analysis
- ☀ The **Data Quality Office** mainly deals with the “**known**” part


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File Edit View Go Bookmarks Tools Help
Back Forward Reload Stop Home http://dq.arm.gov/ Go


ARM Data Quality Program

PEOPLE | SITE INDEX | HOME
 SEARCH

ABOUT ARM | ABOUT ACRF | SCIENCE | SITES | INSTRUMENTS | MEASUREMENTS | **DATA** | PUBLICATIONS | EDUCATION | FORMS

Datastreams by Alpha | Datastreams by Category | PI Data Products | Related Data Sets | Value-Added Products



Overview

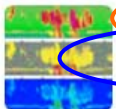
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The ARM Program Data Quality (DQ) Office, established in July 2000, conducts a [data quality program](#) to ensure the quality of the data collected by ARM field instrumentation. The DQ Office has the responsibility for ensuring that quality assurance results are communicated to 1) data users so that they may make informed decisions when using the data, and 2) ARM's site operators and engineers to facilitate optimal instrument performance and minimize the amount of unacceptable data collected.

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DQ HandS




- [QC Metrics and Plots](#)
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- [DQ wiki](#)

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- [Interactive Data Plotting](#)

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- Contact the Data Quality Office
- Color Tables of Flagging Results, and Plots
- Browser Showing Daily Plots
- On-line Interactive Plotting Tool
- Report ANY Problems/Issues with ARM Data

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File Edit View Go Bookmarks Tools Help

Back Forward Reload Stop Home http://dq.arm.gov/ Go



Data Quality Program

PEOPLE | SITE INDEX | HOME

SEARCH

ABOUT ARMABOUT ACRFSCIENCESITESINSTRUMENTSMEASUREMENTSDATAPUBLICATIONSEDITIONFORMS

Datastreams by AlphaDatastreams by CategoryPI Data ProductsRelated Data SetsValue-Added Products

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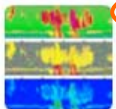
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- [Plot Browser](#)
- [DQ wiki](#)

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- [Interactive Data Plotting](#)

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- [Search All Reports](#)
- [DQ Assessment Reports](#)
- [Report Findings](#)

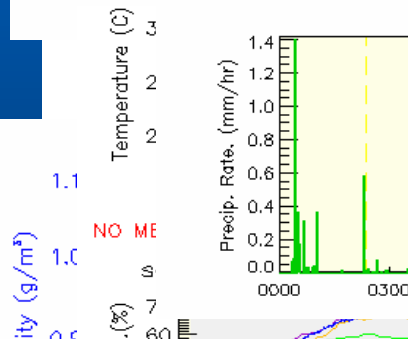
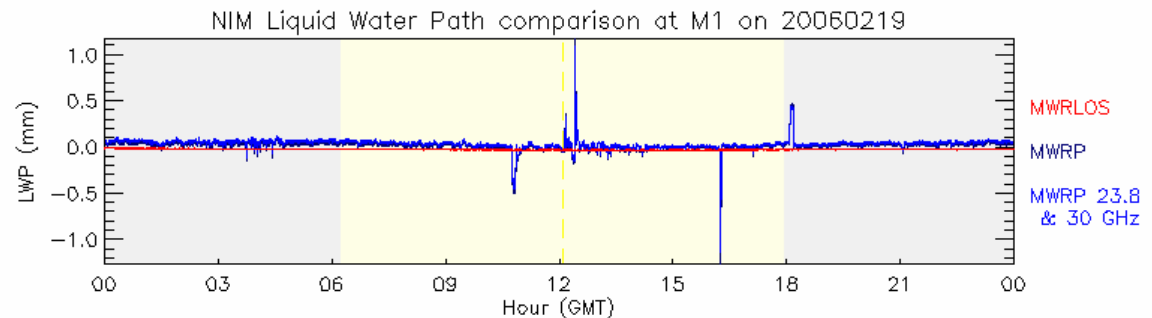
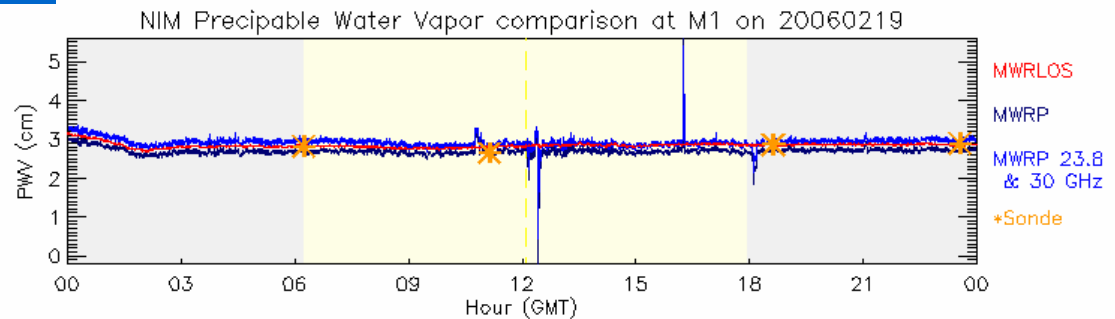


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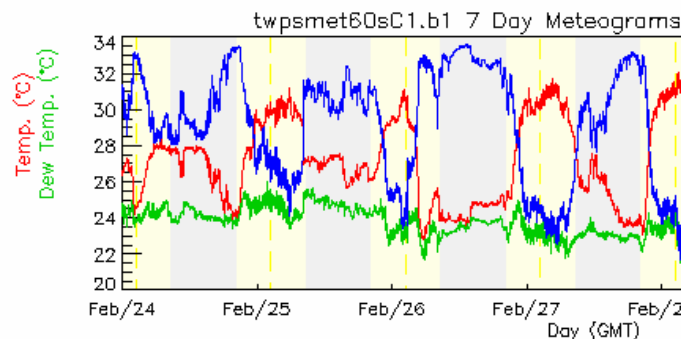
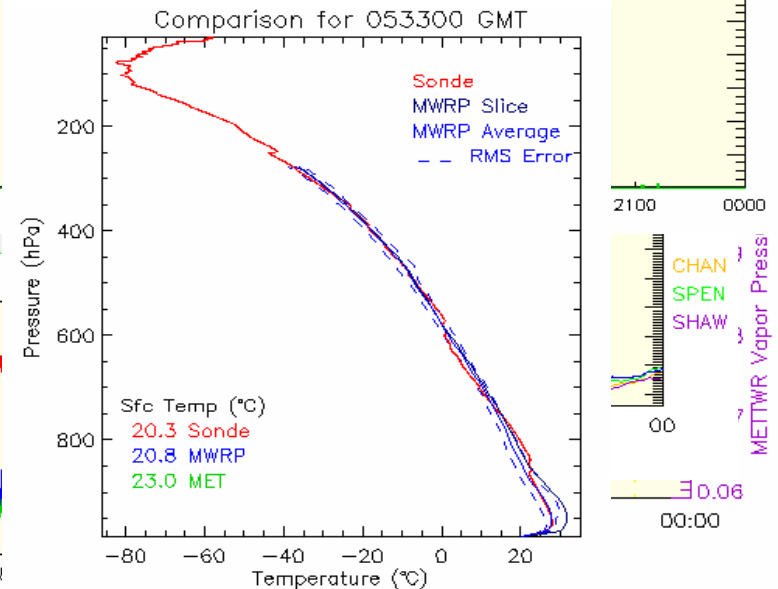
•Color Tables of Flagging Results, and Plots

Plots

- ✓ Primary Variables
- ✓ Co-located Instruments
- ✓ Similar Measurements from different instruments
- ✓ Similar Trending Measurements
- ✓ External Comparisons
- ✓ TSI Solar Noon Image



NIM Sonde tdry on 20060225



Dew Temp is not a variable in the SMET but is calculated and plotted for convenience

Metrics

- ✓ Flagging Results
- ✓ Flagging Descriptions

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PEOPLE | SITE INDEX | HOME

SEARCH

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ABOUT ARM | ABOUT ACRF | SCIENCE | SITES | INSTRUMENTS | MEASUREMENTS | DATA | PUBLICATIONS | EDUCATION | FORMS

Datastreams by Alpha | Datastreams by Category | PI Data Products | Related Data Sets | Value-Added Products

 **GNDRAD**
click on image for information
[view plots](#)

ARM Site: Data Streams: Facilities: Start Date: End Date: Submit Assessment Report View Instrument Log View CM Log View PM Log Order Archive Data

NIM nimgndrad60s M1 20060301 20060324

Move the cursor over any bold cell to identify failures

M1	nimgndrad60s status by hour for 20060322																							
comp_up_long_hemisp	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
sfc_ir_temp	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
sfc_ir_temp_max	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
sfc_ir_temp_min	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
up_long_hemisp	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23

Information for up_long_hemisp during 13Z

Statistics

- 68% Passing
- 32% Failing(F)
- 0% Missing Value(M)
- 0% Not Available(N)

(Time Minute) Cause

- (0-6,11-12,14-23)F

Flags Tripped

- > MAX (650 W/m²)

Plots

20060322

= Missing Value (-9999)


Flags Tripped during 13Z for up_long_hemisp

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File Edit View Go Bookmarks Tools Help

Back Forward Reload Stop Home <http://dq.arm.gov/> Go

ARM  **Data Quality Program**

PEOPLE | SITE INDEX | HOME

SEARCH

ABOUT ARM ABOUT ACRF SCIENCE SITES INSTRUMENTS MEASUREMENTS **DATA** PUBLICATIONS EDUCATION FORMS

[Datastreams by Alpha](#) [Datastreams by Category](#) [PI Data Products](#) [Related Data Sets](#) [Value-Added Products](#)

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- [Plot Browser](#)
- [DQ Wiki](#)


NCVweb

 • [Interactive Data Plotting](#)

DQ Reports

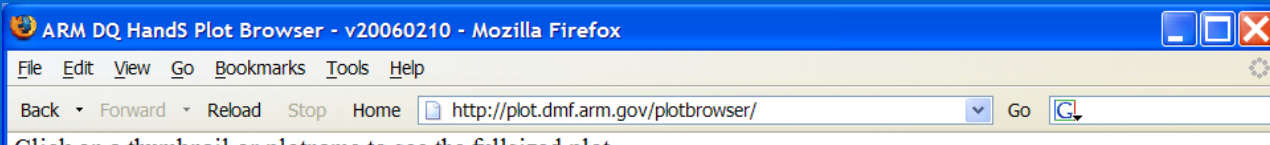
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- [DQ Assessment Reports](#)
- [Report Findings](#)

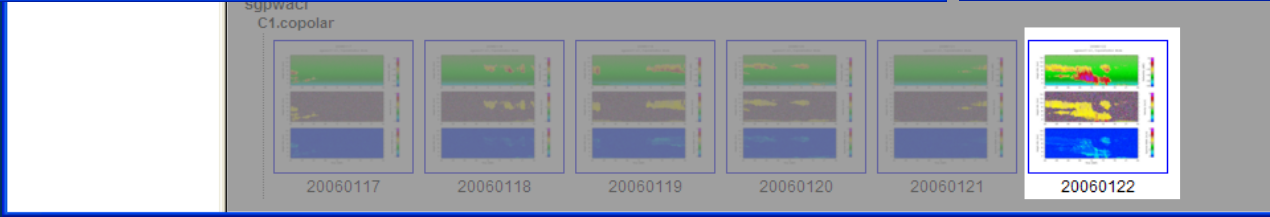
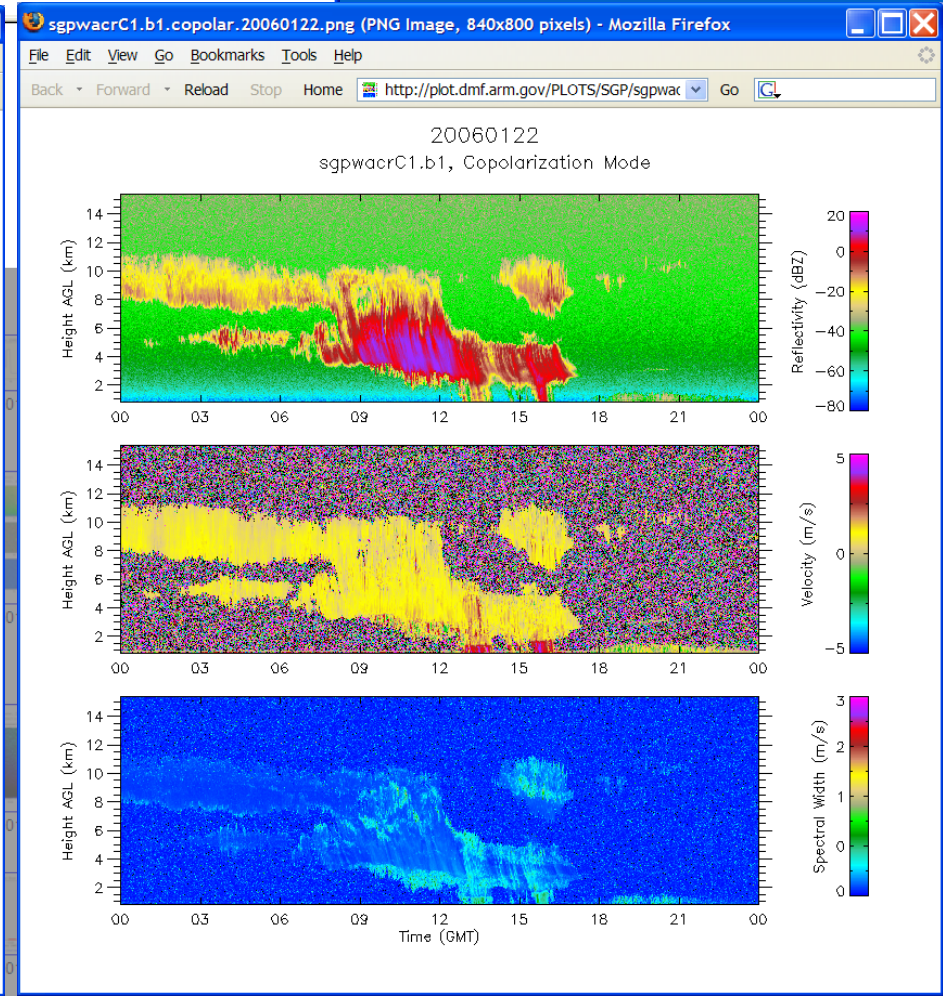
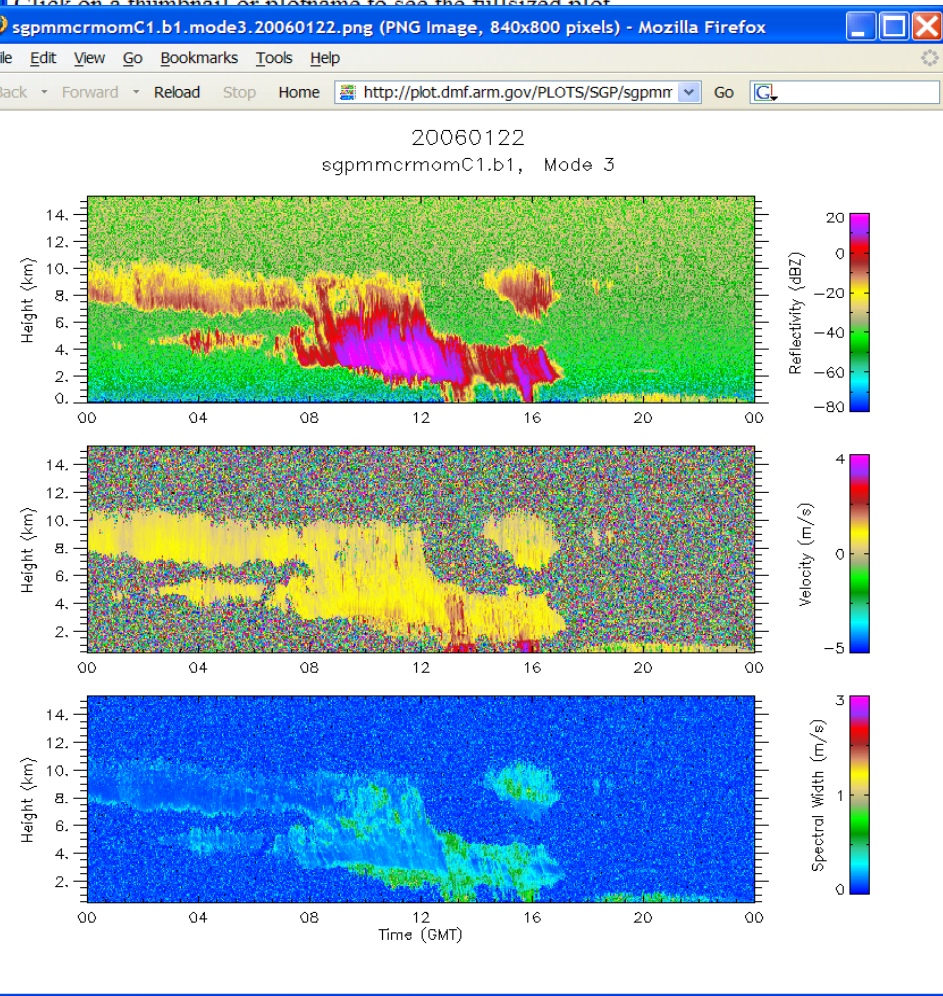
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File Edit View Go Bookmarks Tools Help

Back Forward Reload Stop Home http://dq.arm.gov/ Go



Data Quality Program

PEOPLE | SITE INDEX | HOME
 SEARCH

ABOUT ARMABOUT ACRFSCIENCESITESINSTRUMENTSMEASUREMENTSDATAPUBLICATIONSEDITIONFORMS

Datastreams by AlphaDatastreams by CategoryPI Data ProductsRelated Data SetsValue-Added Products

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DQ Hands



- [QC Metrics and Plots](#)
- [Plot Browser](#)
- [DQ wiki](#)

NCVweb



- [Interactive Data Plotting](#)

DQ Reports



- [Search All Reports](#)
- [DQ Assessment Reports](#)
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• On-line Interactive Plotting Tool

Interactive Plotting

NCVweb File Header - Microsoft Internet Explorer

Address: <http://plot.dmf.arm.gov/ncvweb/ncvweb.cgi?dd=site>


```
netcdf nimskyrad60sM1.b1.20060322.000000 {
  dimensions:
    time = UNLIMITED ; // (1440 currently)
  variables:
    int base_time ;
      base_time:string = "22-Mar-2006,0:00:00 GMT" ;
      base_time:long_name = "Base time in Epoch" ;
      base_time:units = "seconds since 1970-1-1 0:00:00 0:00" ;
    double time_offset(time) ;
      time_offset:long_name = "Time offset from base_time" ;
      time_offset:units = "seconds since 2006-03-22 00:00:00 0:00" ;
    double time(time) ;
      time:long_name = "Time offset from midnight" ;
      time:units = "seconds since 2006-03-22 00:00:00 0:00" ;
    int qc_time(time) ;
      qc_time:long_name = "Results of quality checks on sample time" ;
      qc_time:units = "unitless" ;
      qc_time:description = "The qc_time values are calculated by comparing each sample\n",
        "time with the previous time (i.e. delta_t = t[n] - t[n-1]).\n",
        "If the '\qc_check_prior\' flag is set the first sample time\n",
        "from a new raw file will be compared against the time just\n",
        "previous to it in the stored data. If the '\qc_check_prior'\n",
        "flag is not set the qc_time value for the first sample time\n",
        "will be set to 0\n",
        "\n",
        "The qc_time bit values are as follows:\n",
        "=====\n",
        "0x0 = delta time is within the specified range\n",
        "0x1 = delta time is equal to 0, duplicate sample times\n",
        "0x2 = delta time is less than the '\delta_t_lower_limit'\n",
        "0x4 = delta time is greater than the '\delta_t_upper_limit'\n",
        "\n",
        "" ;
      qc_time:delta_t_lower_limit = 60 ;
      qc_time:delta_t_upper_limit = 60 ;
      qc_time:prior_sample_flag = 1 ;
    float down_long_hemisp_shaded1(time) ;
      down_long_hemisp_shaded1:long_name = "Downwelling Longwave Hemispheric Irradiance, Shaded Pyrgeometer1" ;
      down_long_hemisp_shaded1:units = "W/m^2" ;
      down_long_hemisp_shaded1:valid_min = 200.f ;
      down_long_hemisp_shaded1:valid_max = 500.f ;
      down_long_hemisp_shaded1:missing_value = -9999.f ;
      down_long_hemisp_shaded1:ventilation_status = "Ventilated" ;
    int qc_down_long_hemisp_shaded1(time) ;
      qc_down_long_hemisp_shaded1:long_name = "Quality check results on field: Downwelling Longwave Hemispheric Irradiance, Shaded" ;
      qc_down_long_hemisp_shaded1:units = "unitless" ;
```

Ordering ARM Data and Checking for DQRs

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File Edit View Go Bookmarks Tools Help

Back Forward Reload Stop Home http://www.archive.arm.gov/arm/selectInst.jsp Go



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PEOPLE | SITE INDEX | HOME

SEARCH

ABOUT ARMABOUT ACRFSCIENCESTITESINSTRUMENTSMEASUREMENTSDATAPUBLICATIONSEDUCATIONFORMS

ARM InstrumentsExternal InstrumentsField Campaign InstrumentsLocation TableInstrument CategoriesContacts

Selected Instrument: [Surface Meteorological Observation System Instruments for SGP](#)

Routine ARM Data

Finalize your desired date range and click on the "Select Date Range" button to view / update the list of available data streams.

Start Date: 01/01/2006 End Date: 02/28/2006 [Select Date Range](#)

Available Instruments				Estimated Order Details (01/01/2006 to 02/28/2006)					
Select	Instruments/Facilities	Start Date	End Date	Select	Datastreams	Files	Size (MB)	DQR Days (?)	QLs (?)
Southern Great Plains (sgp)									
<input checked="" type="checkbox"/>	Surface Meteorological Observation Station (SMOS): 1-minute averaged data (1smos)	07/01/1993	02/28/2006	<input checked="" type="checkbox"/>	sgp1smosE13.b1	55	7.0	0	54
				<input checked="" type="checkbox"/>	sgp1smosE15.b1	59	8.0	29	56
				<input checked="" type="checkbox"/>	sgp1smosE20.b1	59	8.0		
Facilities: Lamont, OK CF1(E13) Ringwood, OK(E15) Meeker, OK(E20)				Save to Cart					

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http://www.archive.arm.gov - D Q R - L i s t - Mozilla Firefox

Summary of Data Quality Report
(Click the DQR ID to view Data Quality Report)

The following summary table is sorted by data streams by default

Sort by: Data Stream Date Range Subject DQR ID

View DQR	Data Streams	Date Range	Subject	DQR ID
	sgp1smosE15.b1	01/03/2006-01/31/2006	SGP/SMOS/E15 - Barometer data missing or incorrect	D060110.1

Ordering ARM Data and Checking for DQRs

GetID - Microsoft Internet Explorer

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Back Forward Stop Home Search Favorites Refresh Print Mail Stop Taskbar

Address <http://www.db.arm.gov/cgi-bin/PIFCARDQR2/browse/GetID.pl> Go Links

DQR ID: D060110.1
DQR SUBMITTER: Michael Ritsche
DATE SUBMITTED: 02-09-2006
DQR SUBJECT: SGP/SMOS/E15 - Barometer data missing or incorrect
SUGGESTIONS: Use nearby SMOS/Mesonet sites or co-located EBBR system barometric data.
QUALITY COLOR: Red - Incorrect
PRB REVIEWED: Y

DQR DESCRIPTION:
After the data logger operating system upgrade on 01/03 barometric pressure was missing or reporting very low values.

DQR DATASTREAM(S):
sgp1440smosE15.b1
max_bar_pres
min_bar_pres
time_max_bar_pres
time_min_bar_pres
sgp1smosE15.b1
bar_pres
sgp30smosE15.b1
bar_pres
sd_bar_pres

START DATE/TIME: 01/03/2006 17:05 GMT END DATE/TIME: 01/31/2006 18:04 GMT

LINK(S):
DQPR: [DQPR 704](#)

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File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Links

Address <http://dq.arm.gov/> Go Links

ARM Data Quality Program

PEOPLE | SITE INDEX | HOME

SEARCH

ABOUT ARM ABOUT ACRF SCIENCE SITES INSTRUMENTS MEASUREMENTS **DATA** PUBLICATIONS EDUCATION FORMS

Datastreams by Alpha Datastreams by Category PI Data Products Related Data Sets Value-Added Products

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- [DQ wiki](#)

NCVweb

- [Interactive Data Plotting](#)

DQ Reports

- [Search All Reports](#)
- [DQ Assessment Reports](#)
- [Report Findings](#)