

Reserve Name: JOB NERR Meteorological Metadata
Months and year the documentation covers: 01/01/2015 to 12/31/2015
Latest Update: Jan 8, 2020

I. Data Set and Research Descriptors

1) Principal investigator(s) and contact persons

Jobos Bay National Estuarine Research Reserve
PO Box 159
Salinas, PR 00704-0159
Ph. 787-853-4617
Fx. 787-853-4618

Angel Dieppa, Research Coordinator
Ph. 787-853-4617
Email. adieppa@gmail.com, adieppa@drna.gobierno.pr

Enid Malavé, Chemist
SWMP Technician
Ph. 787-853-4617
Email. emalave1@gmail.com, emalave@drna.gobierno.pr

2) Entry verification

Data are uploaded from the CR1000 data logger to a Personal Computer (IBM compatible). Files are exported from LoggerNet in a comma-delimited format and uploaded to the CDMO where they undergo automated primary QAQC and become part of the CDMO's online provisional database. During primary QAQC, data are flagged if they are missing or out of sensor range. The edited file is then returned to the Reserve where it is opened in Microsoft Excel and processed using the CDMO's NERRQAQC Excel macro. The macro inserts station codes, creates metadata worksheets for flagged data and summary statistics, and graphs the data for review. It allows the user to apply QAQC flags and codes to the data, append files, and export the resulting data file to the CDMO for tertiary QAQC and assimilation into the CDMO's authoritative online database. For more information on QAQC flags and QAQC codes, see Sections 11 and 12.

A Campbell Sci. transmitter is used to deliver data to the NOAA GOES satellite, NESDIS ID # 3B018394 and NWS Location ID JOXP4. The transmissions are scheduled hourly and contain four (4) datasets reflecting fifteen minute data sampling intervals. The telemetry data is flagged as "Provisional" data and after going through QAQC process is considered "Authentic" dataset used for long term monitoring and study. This data can be viewed by going to <http://cdmo.baruch.sc.edu> or <http://nerrsdata.org>.

Data management is performed by Angel Dieppa and Enid Malavé.

3) Research objectives

The principal objective is to record long-term meteorological data to track changes in meteorological conditions that can be associated to changes in estuarine habitats and conditions and regionally as well. A secondary objective is to promote the access and use of reliable baseline information by federal and local agencies, universities, researchers, educators

and local communities to enhance the process by which they make decisions regarding their daily activities. This data is also invaluable in the identification and development of future monitoring and research activities.

This meteorological weather station is located at 0.40Km off the Jobos Bay coast and record data and information of the conditions affecting the estuary. The station is part of a System Wide Monitoring Program (SWMP) designed to evaluate the relative contributions of climate on coastal forcing and watershed inputs to hydrodynamics, nutrient dynamics, and other ecological processes within the estuary. Data is used as a reference of atmospheric conditions for ongoing research projects at the Reserve as a support from NERR and for other short and long-term environmental monitoring projects within the Reserve.

4) Research methods

Campbell Scientific data telemetry equipment was installed at the JOBJBMET station on 07/20/06 and transmits data to the NOAA GOES satellite, NESDIS ID #3B018394. The transmissions are scheduled hourly and contain four (4) data sets reflecting fifteen minute data sampling intervals. Upon receipt by the CDMO, the data undergoes the same automated primary QAQC process detailed in Section 2 above. The “real-time” telemetry data become part of the provisional dataset until undergoing secondary and tertiary QAQC and assimilation in the CDMO’s authoritative online database. Provisional and authoritative data are available at <http://cdmo.baruch.sc.edu> or <http://nerrsdata.org>.

The 15 minute Data are collected in the following formats for the **CR1000**:

Averages from 5-second data:

Air Temperature (°C), Relative Humidity (%), Barometric Pressure (mb),
Wind Speed (m/s), Wind Direction (degrees), Battery Voltage (volts),
Maximum and Minimum Air Temperature (°C) and their times from 5-second
data (these data are available from the Reserve)
Maximum Wind Speed (m/s) and time from 5-second data
Wind Direction Standard Deviation (degrees)

Totals:

Precipitation (mm), PAR (millimoles/m²), and Cumulative Precipitation
(mm)

Calibration plan follows SWMP SOP’s. Wind Sensor, Photosynthetically Active Solar Radiation, Barometer are calibrated in a 2 year basis and Temp, RH, and Rain Bucket on a yearly basis.

Recommended calibration frequency for the MET station sensors:

- Temperature/Humidity- yearly recalibration
- Rain Gauge- yearly recalibration
- Wind Speed/Direction- yearly or every 2 years (depending on the sensor)
- Barometric Pressure- every 2 years recalibration
- PAR- every 2 years recalibration
- CR1000-every 5 years (required beginning 2014, one year initial grace period)

5) Site location and character

The Jobos Bay National Estuarine Research Reserve (JBNERR) is located on the southern coastal plain of the island of Puerto Rico, a reserve within the West Indies geographical area.

JBNERR is composed of two major areas: (1) Mar Negro, located on the western margin of the Bay, and (2) Cayos Caribe (a chain of 17 tear-shaped islets located to the southeast) and Cayos Barca (a chain of 7 tear-shaped islets located to the southwest boundaries) both with a back-reef system. The Mar Negro area comprises the bulk of the Reserve, and consists of mangrove forests and a complex system of lagoons and channels interspersed with salt and mud flats. Coral reefs and sea grass beds, with small beach deposits and upland areas fringe Cayos Caribe and Cayos Barca mangrove islands.

A description of the specific sampling station follows:

The weather station is situated in front of the JBNERR Visitor's Center, located in the community of Aguirre in Salinas, Puerto Rico. Its coordinates are latitude 17 57' 23.34" and longitude 66 13' 22.56". The tower base is about 9m above sea level, approximately 110m north from Jobos Bay's southern shoreline. The station is installed in a 10 meter tower in front of the Main Building, the wind and PAR sensors are above the building height. At 11 meters to the northwest side of the tower there is a tree with a height of 15 meters presenting a minor obstruction to the sensors. In the southern region of Puerto Rico where JBNERR is located the winds persists from southeast and northeast, therefore the tree does not represent a significant obstruction for the winds. The height of the sensors are: Wind Sentry Anemometer (9.75 m high), Temperature/ Humidity sensor (2.7m high), Barometric Pressure sensor (2.7 m high), and PAR sensor (9.60 m high) are all located on a 10m aluminum tower following the descriptions outlined in the CDMO Manual V 5.1. The Tipping Bucket Rain gauge is located to the SW side of the tower 1 meter over the ground. The sensors are wired to a CR1000 following the protocol in the CDMO Manual.

The weather station is at the following distance from SWMP stations used for water quality monitoring:

- 2.2 Km. from Station 09
- 4.2 Km. from Station 10
- 1.8 Km. from Station 19
- 3.1 Km. from Station 20

6) Data collection period

The weather station was installed in 1999. On 7/20/06 new telemetry equipment was installed. During January 1st to December 31st, 2015 data was collected and saved in a computer where the meteorology station is connected via wire and transmitted via NOAA-GOES near real time telemetry.

During year 2015 data is acquired following SWMP SOP's. This is in 15 minutes interval year round.

Data were downloaded from the station on the following dates in 2015:

File Start Date and Time	File End Date and Time
12/18/2014 08:15	01/14/2015 15:15
01/14/2015 15:30	01/29/2015 10:15
01/29/2015 10:30	02/12/2015 07:45
02/12/2015 08:00	02/27/2015 08:00
02/27/2015 08:15	03/17/2015 08:15
03/17/2015 08:30	04/01/2015 08:30

04/01/2015 08:45	04/15/2015 15:15
04/15/2015 15:30	05/05/2015 10:00
05/05/2015 10:15	05/19/2015 08:00
06/19/2015 08:15	06/22/2015 10:15
06/22/2015 10:30	07/14/2015 08:45
07/14/2015 09:00	08/06/2015 16:45
08/06/2015 17:00	08/21/2015 09:00
08/21/2015 09:15	09/04/2015 08:45
09/04/2015 09:00	09/18/2015 10:00
09/18/2015 10:15	10/02/2015 09:30
10/02/2015 09:45	10/16/2015 08:00
10/16/2015 08:15	10/30/2015 10:30
10/30/2015 10:45	11/16/2015 10:30
11/16/2015 10:45	12/09/2015 08:00
12/09/2015 08:15	12/22/2015 09:45
12/22/2015 10:00	01/12/2016 09:45

7) Distribution

NOAA retains the right to analyze, synthesize and publish summaries of the NERRS System-wide Monitoring Program data. The NERRS retains the right to be fully credited for having collected and process the data. Following academic courtesy standards, the NERR site where the data were collected should be contacted and fully acknowledged in any subsequent publications in which any part of the data are used. The data set enclosed within this package/transmission is only as good as the quality assurance and quality control procedures outlined by the enclosed metadata reporting statement. The user bears all responsibility for its subsequent use/misuse in any further analyses or comparisons. The Federal government does not assume liability to the Recipient or third persons, nor will the Federal government reimburse or indemnify the Recipient for its liability due to any losses resulting in any way from the use of this data.

Requested citation format:

NOAA National Estuarine Research Reserve System (NERRS). System-wide Monitoring Program. Data accessed from the NOAA NERRS Centralized Data Management Office website: <http://www.nerrsdata.org/>; accessed 12 October 2012.

NERR meteorological data and metadata can be obtained from the Research Coordinator at the individual NERR site (please see Principal Investigators and Contact Persons), from the Data Manager at the Centralized Data Management Office (please see personnel directory under the general information link on the CDMO home page) and online at the CDMO home page www.nerrsdata.org. Data are available in comma delimited format.

8) Associated researchers and projects

The Jobos Bay NERR maintains four water quality monitoring stations as part of the System Wide Monitoring Program (SWMP) to monitor variability in the estuarine environment. Meteorological station collect continuous information that support water quality data intended to address short-term variability and long-term changes in estuarine water parameters within the bay (i.e., localized impacts of seasonal storms and hurricane events, variability due to tidal

circulation, seasonal and interannual differences in rainfall, magnitude and influence of major events such hurricanes, spatial extent of oceanic and tidal forcing.

Our water quality monitoring program is a key component of SWMP. Variables measured include Temperature, Dissolved Oxygen, Turbidity, pH, Salinity, Chl-a fluorescence, and Depth in 4 permanent stations equipped with YSI datasondes. At the same stations, nitrogen, phosphorus, and chlorophyll are measured in a monthly basis.

II. Physical Structure Descriptors

9) Sensor specifications

Sensors working from 01/01/2015 to 05/19/2015

Parameter: Temperature

Units: Celsius

Sensor type: Platinum resistance temperature detector (PRT)

Model #: HMP45C Temperature and Relative Humidity Probe

Operating Temperature: -40°C to +60°C

Range: -40°C to +60°C

Accuracy: ± 0.2 °C @ 20°C

Serial Number: F1640118

Date of Calibration: 04/25/2010

Date Installed: 2/11/2011

Date sensors removed: 05/19/2015

Parameter: Relative Humidity

Units: Percent

Sensor type: Vaisala HUMICAP® 180 capacitive relative humidity sensor

Model #: HMP45C Temperature and Relative Humidity Probe

Range: 0-100% non-condensing

Accuracy at 20°C: $\pm 2\%$ RH (0-90%) and $\pm 3\%$ (90-100%)

Temperature dependence of RH measurement: $\pm 0.05\%$ RH/°C

Serial Number: F1640118

Date of Calibration: 04/25/2010

Date Installed: 2/11/2011

Date sensors removed: 05/19/2015

Parameter: Barometric Pressure

Units: millibars (mb)

Sensor type: Vaisala Barocap © silicon capacitive pressure sensor

Model #: CS-106 (PTB110)

Operating Range: Pressure: 600 to 1060 mb; Temperature: -40°C to +60°C;

Humidity: non-condensing

Accuracy: ± 0.5 mb @ 20°C; ± 2 mb @ 0°C to 40°C; ± 4 mb @ -20°C to 45°C; ± 6 mb @ -40°C to 60°C

Stability: ± 0.1 mb per year

Serial Number: F1610094

Date of Calibration: 04/23/2010

Date Installed: 2/11/2011

Date sensors removed: 05/19/2015

Parameter: Wind speed
Units: meter per second (m/s)
Sensor type: 18 cm diameter 4-blade helicoids propeller molded of polypropylene
Model #: R.M. Young 05103 Wind Monitor
Range: 0-60 m/s (134 mph); gust survival 100 m/s (220 mph)
Accuracy: +/- 0.3 m/s
Wind sensor Mod 051003-5 SN WM100693
Date of Calibration: 04/25/2010
Date Installed: 2/11/2011
Date sensors removed: 05/19/2015

Parameter: Wind direction
Units: degrees
Sensor type: balanced vane, 38 cm turning radius
Wind sensor Mod 051003-5 SN WM100693 03/31/2010
From 3/18/11 @ 8:30AM the sensor was oriented to True North. Prior to that date, sensor was oriented to Magnetic North.
Date of Calibration: 04/25/2010
Date Installed: 2/11/2011
Date sensors removed: 05/19/2015

Parameter: Photosynthetically Active Radiation (PAR)
Units: mmoles m⁻² (total flux)
Sensor type: High stability silicon photovoltaic detector (blue enhanced)
Model #: LI190SB
Light spectrum waveband: 400 to 700 nm
Temperature dependence: 0.15% per °C maximum
Stability: <±2% change over 1 yr
Operating Temperature: -40°C to 65°C; Humidity: 0 to 100%
Sensitivity: typically 5 µA per 1000 µmoles s⁻¹ m⁻²
Serial Number: Q43066
PAR Multiplier = 1.1187
Date of Calibration: 02/19/2010
Date Installed: 2/11/2011
Date sensors removed: 05/19/2015

Parameter: Precipitation (non heated rain gauge)
Units: millimeters (mm)
Sensor type: Tipping Bucket Rain Gauge
Model #: RG-2000-C
Rainfall per tip: 0.01 inch
Operating range: Temperature: 0° to 50°C; Humidity: 0 to 100%
Accuracy: +/- 1.0% up to 1 in./hr; +0, -3% from 1 to 2 in./hr; +0, -5% from 2 to 3 in./hr
**Rain Gauge SN 43619-410
Previous Calibration: 11/16/2012
Most recent calibration: 06/15/2015

The CR1000 has 2 MB of Flash EEPROM that is used to store the Operating System. Another 128 K Flash is used to store configuration settings. A minimum of 2 MB SRAM is (4 MB optional upgrade) available for program storage (16K), operating system use, and data storage. Additional storage is available by using a compact flash card in the optional CFM100 Compact Flash Module.

Serial Number: 5278

Date CR1000 Installed: 07/20/2006 - 05/19/2015

Date CR1000 Calibrated: 06/19/2015

Date CR1000 Installed: 06/19/2015 - current as of 12/31/2015

CR1000 Firmware Version (s): New firmware 06/19/2015, version unknown.

CR1000 Program Version(s):

JOBIBMET_V5.5_041608 used from 04/16/2008 to 02/27/2015

JOBIBMET_V5.5_022715 used from 02/27/2015 to 06/17/2015

JOBIBMET_V5.5_022715 used from 06/17/2015 - current as of 12/31/2015

Sensors working from 06/19/2015 to present

Parameter: Temperature

Units: Celsius

Sensor type: Platinum resistance temperature detector (PRT)

Model #: HMP45C Temperature and Relative Humidity Probe

Operating Temperature: -40°C to +60°C

Range: -40°C to +60°C

Accuracy: ± 0.2 °C @ 20°C

Serial Number: Y3940017

Date of Calibration: 02/13/2013

Dates of Sensor Use: 06/19/2015– current as of 04/04/2016

Parameter: Relative Humidity

Units: Percent

Sensor type: Vaisala HUMICAP® 180 capacitive relative humidity sensor

Model #: HMP45C Temperature and Relative Humidity Probe

Range: 0-100% non-condensing

Accuracy at 20°C: $\pm 2\%$ RH (0-90%) and $\pm 3\%$ (90-100%)

Temperature dependence of RH measurement: $\pm 0.05\%$ RH/°C

Serial Number: F1640118

Date of Calibration: 02/13/2013

Dates of Sensor Use: 06/19/2015– current as of 04/04/2016

Parameter: Barometric Pressure

Units: millibars (mb)

Sensor type: Vaisala Barocap © silicon capacitive pressure sensor

Model #: PTB101B (CS105)

Operating Range: Pressure: 600 to 1060 mb; Temperature: -40°C to +60°C;

Humidity: non-condensing

Accuracy: ± 0.5 mb @ 20°C; ± 2 mb @ 0°C to 40°C; ± 4 mb @ -20°C to 45°C; ± 6 mb @ -40°C to 60°C

Stability: ± 0.1 mb per year

Serial Number: Y2830017

Date of Calibration: 02/15/2013

Dates of Sensor Use: 06/19/2015– current as of 04/04/2016

Parameter: Wind speed
Units: meter per second (m/s)
Sensor type: 18 cm diameter 4-blade helicoids propeller molded of polypropylene
Model #: R.M. Young 05103-L Wind Monitor
Range: 0-60 m/s (134 mph); gust survival 100 m/s (220 mph)
Accuracy: +/- 0.3 m/s
Wind sensor Mod 051003-L
Serial Number: 58413
Date of Calibration: 02/13/2013
Dates of Sensor Use: 06/19/2015– current as of 04/04/2016

Parameter: Wind direction
Units: degrees
Sensor type: balanced vane, 38 cm turning radius
Wind sensor Mod 051003-L
Serial Number: 58413
Date of Calibration: 02/13/2013
Dates of Sensor Use: 06/19/2015– current as of 04/04/2016
**Sensor oriented to True North.

Parameter: Photosynthetically Active Radiation (PAR)
Units: mmoles m⁻² (total flux)
Sensor type: High stability silicon photovoltaic detector (blue enhanced)
Model #: LI190SB
Light spectrum waveband: 400 to 700 nm
Temperature dependence: 0.15% per °C maximum
Stability: <±2% change over 1 yr
Operating Temperature: -40°C to 65°C; Humidity: 0 to 100%
Sensitivity: typically 5 µA per 1000 µmoles s⁻¹ m⁻²
Serial Number: Q50390
PAR Multiplier = 1.1742
Date of Calibration: 09/25/2013
Dates of Sensor Use: 06/19/2015– current as of 04/04/2016 New PAR Multiplier=1.1742

Parameter: Precipitation (non heated rain gauge)
Units: millimeters (mm)
Sensor type: Tipping Bucket Rain Gauge
Model #: RG-2000-C
Rainfall per tip: 0.01 inch
Operating range: Temperature: 0° to 50°C; Humidity: 0 to 100%
Accuracy: +/- 1.0% up to 1 in./hr; +0, -3% from 1 to 2 in./hr; +0, -5% from 2 to 3 in./hr
Rain Gauge SN 43619-410
Previous Calibration: 11/16/2012
Most recent calibration: 06/15/2015

The CR1000 has 2 MB of Flash EEPROM that is used to store the Operating System. Another 128 K Flash is used to store configuration settings. A minimum of 2 MB SRAM is (4 MB optional upgrade) available for program storage (16K), operating system use, and data storage. Additional storage is available by using a compact flash card in the optional CFM100 Compact Flash Module.

Datalogger Campbell Sci.
CR1000-RMA
Serial Number: 5278
Date of Calibration: 05/29/2015
Date Installed: 06/19/2015 - current as of 12/31/2015

CR1000 Firmware Version (s): Version(s) and dates changed are unknown.

CR1000 Program Version(s):

JOBJBMET_V5.5_041608 used from 04/16/2008 to 02/27/2015
JOBJBMET_V5.5_022715 used from 02/27/2015 to 06/17/2015
JOBJBMET_V5.5_022715 used from 06/17/2015 - current as of 12/31/2015

10) Coded variable definitions

Sampling station:	Sampling site code:	Station code:
Jobos Meteorology	jib	jobjbmet

11) QAQC flag definitions

QAQC flags provide documentation of the data and are applied to individual data points by insertion into the parameter's associated flag column (header preceded by an F_). During primary automated QAQC (performed by the CDMO), -5, -4, and -2 flags are applied automatically to indicate data that is above or below sensor range, or missing. All remaining data are then flagged 0, as passing initial QAQC checks. During secondary and tertiary QAQC 1, -3, and 5 flags may be used to note data as suspect, rejected due to QAQC, or corrected.

- 5 Outside High Sensor Range
- 4 Outside Low Sensor Range
- 3 Data Rejected due to QAQC
- 2 Missing Data
- 1 Optional SWMP supported Parameter
- 0 Passed Initial QAQC Checks
- 1 Suspect Data
- 2 *Open - reserved for later flag*
- 3 *Open - reserved for later flag*
- 4 Historical Data: Pre-Auto QAQC
- 5 Corrected Data

12) QAQC code definitions

QAQC codes are used in conjunction with QAQC flags to provide further documentation of the data and are also applied by insertion into the associated flag column. There are three (3) different code categories, general, sensor, and comment. General errors document general problems with the CR1000, sensor errors are sensor specific, and comment codes are used to further document conditions or a problem with the data. Only one general or sensor error and one comment code can be applied to a particular data point, but some comment codes

(marked with an * below) can be applied to the entire record in the F_Record column.

General Errors

GIM	Instrument malfunction
GIT	Instrument recording error, recovered telemetry data
GMC	No instrument deployed due to maintenance/calibration
GMT	Instrument maintenance
GPD	Power down
GPF	Power failure / low battery
GPR	Program reload
GQR	Data rejected due to QA/QC checks
GSM	See metadata

Sensor Errors

SDG	Suspect due to sensor diagnostics
SIC	Incorrect calibration constant, multiplier or offset
SIW	Incorrect wiring
SMT	Sensor maintenance
SNV	Negative value
SOC	Out of calibration
SQR	Data rejected due to QAQC checks
SSD	Sensor drift
SSN	Not a number / unknown value
SSM	Sensor malfunction
SSR	Sensor removed

Comments

CAF	Acceptable calibration/accuracy error of sensor
CCU	Cause unknown
CDF	Data appear to fit conditions
CML	Snow melt from previous snowfall event
CRE*	Significant rain event
CSM*	See metadata
CVI*	Possible vandalism/tampering
CWE*	Significant weather event

13) Other remarks/notes

Data are missing due to equipment or associated specific sensors not being deployed, equipment failure, time of maintenance or calibration of equipment, or repair/replacement of a sampling station platform. Any NANs in the dataset stand for “not a number” and are the result of low power, disconnected wires, or out of range readings. If additional information on missing data is needed, contact the Research Coordinator at the reserve submitting the data.

Small negative PAR values are within range of the sensor and are due to normal errors in the sensor and the CR1000 Datalogger. The Maximum signal noise error for the Licor sensor is +/- 2.214 mmoles/m² over a 15 minute interval.

Relative Humidity data greater than 100 are within range of the sensor accuracy of $\pm 3\%$.

Data recorded for all parameters (with the exception of cumulative precipitation) at the midnight timestamp (00:00) are the 15 minute averages and totals for the 23:45-23:59 time period of the previous day. Cumulative precipitation data at the midnight timestamp (00:00) are the sum of raw (unrounded) precipitation data from 00:00 to 23:59 of the previous day. Summing each individual 15-minute total precipitation value from the same period will result in small differences from cumulative precipitation due to rounding. It is especially important to note how data at the midnight timestamp are recorded when using January 1st and December 31st data. **Note: Cumulative precipitation is no longer available via export from the CDMO. Please contact the Reserve or the CDMO for more information or to obtain these data.**

CDMO PAR Sensor Drift Edits 01/08/2020:

There were noticeable changes in PAR values following the swap to a freshly calibrated sensor (assumed to be accurate) on 10/11/2018. The sensor (Q50390) was removed and was not post calibrated to check for drift. Since drift numbers are not known all PAR data 1 year prior to the sensor swap, from 10/10/2017 08:15 to 10/10/2018 08:15 are flagged and coded as <1> SSD CSM (unless otherwise flagged and coded, such as rejected data). PAR data for the remainder of this deployment (06/19/2015 08:30 – 10/10/2017 08:00) are flagged and coded as <0> CSM (unless otherwise flagged and coded) and users should note that drift for that period may have exceeded acceptable limits as well. If users are comfortable assuming that drift was linear (in a real world environment it is unlikely to be entirely linear), these data may be ‘corrected’ for assumed linear drift at the user’s discretion using manufacturer’s instructions.

Suspect Data:

The following data are considered suspect and are coded as out of calibration due to being collected with an out of calibration sensor.

Air temperature 01/01/2015 00:00 - 05/19/2015 08:00
Relative Humidity 01/01/2015 00:00 - 05/19/2015 08:00
Barometric Pressure 01/01/2015 00:00 - 02/27/2015 14:00
Wind parameters 01/01/2015 - 05/19/2015 08:00
Precipitation 01/01/2015 - 05/19/2015 08:00

All parameters are also considered suspect from 2/15/2015 00:15 through 5/19/2015 08:00 due to being collected with an out of calibration CR1000. The F_Record is coded as {CSM}.

In addition to being suspect due to an out of calibration sensor, Elevated Nighttime PAR data are also considered suspect. Elevated nighttime PAR data are flagged and coded as <1> CSM unless otherwise flagged and coded.

On 01/17/15 at 18:45 to 01/18/14 at 01:00 (these data are coded with SOC in addition to CSM since the sensor was out of calibration)
On 11/30/15 at 19:30
On 12/01/15 at 20:45, 21:00, 21:30, 21:45, 22:15, 22:45, 23:30
On 12/02/15 at 00:15, 19:30 - 21:00
On 12/03/15 at 19:00, 19:15, 19:45
On 12/23/15 at 19:45
On 12/25/15 at 20:30-21:30, 22:15
On 12/30/15 at 19:30, 20:00

10/25/2015 18:00 precipitation value exceeded the upper range of the sensor limit and is considered suspect, <1> GSM CRE. Cumulative precipitation values are flagged as suspect through the remainder of the day, 10/26/2015 00:00.

Rejected Data:

On 02/27/15 at 14:15 all data rejected due to Program reload. The barometric pressure sensor malfunctioned following the program reload. BP data are rejected from 02/27/2015 14:30 - 5/19/2015 08:00, <-3> SSM CSM.

On 06/19/15 at 8:15 data rejected. The CR1000 was re-installed after calibration, a new program was uploaded and new calibrated sensors (Air temperature/RH, BP, Wind, and PAR. Precipitation gauge calibrated while station offline) were installed.

Total precipitation values were rejected from 6/19/2015 08:30 to 08/21/2015 08:30, the rain collector connections failed due to incorrect wiring. Cumulative precipitation values were rejected through 08/22/2015 00:00. Even though the JBNERR precipitation gauge was not working, we do have precipitation data from a manual pluviometer (see note below table).

Date	Precipitation (mm) *
May 10	4.31
May 11	0.25
May 17	1.52
May 26	0.25
May 27	43.43
June 1	0.51
June 2	1.27
June 3	0.51
June 7	0.76
June 10	2.79
June 11	1.02
June 12	2.29
June 17	0.25
June 21	0.76
June 22	0.51
June 26	2.03
June 28	2.29
June 30	19.05
July 12	17.30
July 19	0.76
July 20	1.78
July 21	5.59
July 22	0.25
July 30	0.25
Aug 2	2.03
Aug 6	0.51
Aug 7	0.76
Aug 9	2.03
Aug 10	0.25
Aug 16	22.1
Aug 17	0.51

*Recovered from a NOAA-NWS rain collector operated by JBNERR. Our station was offline due to CR1000 calibration and rain collector connection failed.

Missing data:

From 05/19/2015 at 08:15 to 06/19/2015 at 08:00 the station was offline due to CR1000 removal for calibration. Data on 06/19/2015 at 08:15 were rejected due to a program reload after the CR1000 was reinstalled.

Significant rain events:

Significant rain events are those close to or over one inch cumulative value that may span 24 hours. Discrete total precipitation values are coded with CRE while the records from the beginning of the event through the midnight time stamp are coded as CRE for cumulative precipitation. See note below table for amounts with *.

Date	Precipitation (mm)	Event associated with
May 27	43.43*	
June 30	19.05*	
July 12	17.30*	
Aug 16	22.1*	
Aug 25	24.1	
Sept 12	31.00	
Oct 25	107.4	
Nov 7	41.1	
Nov 8	21.8	
Nov 28 -29	32.5	

*Recovered from a NOAA-NWS rain collector operated by JBNERR. Our station was offline due to CR1000 calibration. These data are not in the dataset and are not coded as CRE.

New sensor installation:

On 6/19/15 a calibrated set of sensors were installed;

Wind sensor

PAR sensor

Temp sensor

Relative humidity sensor

Barometric pressure sensor

Precipitation gauge (not new but calibrated)

Sensors installed on 6/19/2015

Logger-CR100006192015-IN SERVICE			Serial Number	Manufacture Year	Date in Service	Service	Notes	History	SWMP
Add Sensor			5278	2004	06/19/2015	Edit	Edit		Yes
Type	Code	Model	Serial Number	Manufacture Year	Date in Service	Service	Notes	History	SWMP
BP	BP06192015	PTB101B (CS105)	Y2830017	2010	05/14/2016	Edit	Edit	View	Yes
PAR	PAR06192015	LI1905B	Q50390	2013	05/14/2016	Edit	Edit	View	Yes
precip	precip06192015	RG-2000-C	43619-410	2004	05/14/2016	Edit	Edit	View	Yes
temp/RH	tempRH06192015	HMP45C	Y3940017	2010	05/14/2016	Edit	Edit	View	Yes
wind	wind06192015	05103-L	58413	2010	05/14/2016	Edit	Edit	View	Yes

Sensors working from 01/01/2015 to 5/19/2015

Inactive Loggers										
Code	Model	Serial Number	Manufacture Year	Retired	Service	Notes	History	Tools	SWMP	
CR100001012004	CR1000	111	2004	no	Edit	Edit	View	Delete	Yes	

Inactive Sensors										
Type	Code	Model	Serial Number	Manufacture Year	Retired	Service	Notes	History	Tools	SWMP
BP	BP02182004	CS105	111	2004	no	Edit	Edit	View	Delete	Yes
BP	BP02192010	CS116	43619-410	2010	no	Edit	Edit	View	Delete	Yes
PAR	PAR02192010	LI190SB	Q43066	2010	no	Edit	Edit	View	Delete	Yes
PAR	PAR02182004	LI190SB	111	2004	no	Edit	Edit	View	Delete	Yes
precip	precip02182004	RG-2000-C	111	2004	no	Edit	Edit	View	Delete	Yes
temp/RH	tempRH04252010	HMP45C	F1640118	2010	no	Edit	Edit	View	Delete	Yes
temp/RH	tempRH02182004	HMP45C	111	2004	no	Edit	Edit	View	Delete	Yes
wind	wind02182004	R.M. Young 05103	111	2004	no	Edit	Edit	View	Delete	Yes
wind	wind03312010	RM Young 051003-5	WM100693	2010	no	Edit	Edit	View	Delete	Yes