Jacques Cousteau (JAC) NERR Meteorological Metadata
January 1, 2022 – December 31, 2022
Latest Update: May 17, 2024

I. Data Set and Research Descriptors

1) Principal investigator(s) and contact persons

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2) Entry verification –

Data are uploaded from the CR1000X data logger to a personal computer with a Windows 7 or newer operating system. 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.

SWMP technician Patricia McHugh collected; QA/QC checked and compiled 2022 weather data per CDMO procedures. Raw data files were collected monthly and backed up to a secondary hard drive. Pre-processing macros were run on a dedicated met station computer. All data was backed up to secondary hard drive and remote servers.

3) Research objectives –

The principal objective is to record long-term meteorological data for the JC NERR in order to observe any environmental changes or trends over time. A major component of the JCNERR SWMP program is the monitoring of estuarine water quality. The close coupling between meteorological conditions and estuarine

water quality has necessitated the monitoring of atmospheric conditions in the system as well. The meteorological data collected at the Reserve site thus provide valuable information on the atmospheric influences on water quality in the JCNERR system.

4) Research methods –

Campbell Scientific data telemetry equipment was installed at the Nacote Creek Meteorological station on 11/15/05 and transmits data to the NOAA GOES satellite, NESDIS ID #3B00D112. The transmissions are scheduled hourly at 0:39:50 after the hour 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.

Data are collected in Eastern Standard Time (EST) for the entire year.

The 15-minute data are collected in the following formats for the **CR1000X**:

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/m^2), and Cumulative Precipitation (mm) (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.)

Recommended calibration frequency for the MET station sensors:

- Temperature/Humidity- yearly recalibration
- Precipitation 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/CR1000X-every 5 years

5) Site location and character –

The Jacques Cousteau National Estuarine Research Reserve (JCNERR) at Mullica River/Great Bay is located on the northeast coast of the United States on the Atlantic Ocean. The estuary is near Tuckerton, New Jersey about 14 kilometers north of Atlantic City. The met station is located adjacent to Nacote Creek, a tributary of the Mullica River. The site is approximately 14.3 kilometers WSW of Little Egg Inlet, the primary saltwater influence of the JC NERR. The met station is located on property owned by the Stockton University Marine Science and Environmental Field Station in Port Republic, NJ, and approximately 1.8 kilometers south of the Chestnut Neck marina on the Mullica River and 0.4 kilometers northeast of Rt. 9 in Port Republic, NJ.

GPS coordinates: N 39 degrees, 32 minutes, 06 seconds
W 74 degrees, 27 minutes, 49 seconds

The nearest long term water quality monitoring station is located at Chestnut Neck Marina, approximately 1.8 kilometers north of the met station. Water quality data (currently not included in the JAC NERR SWMP

program) for Nacote Creek is at a site adjacent to the met station. The unit is mounted on a 13-meter tower adjacent to the Nacote Creek, approximately 20 m from the high tide line. The elevations above the marsh surface are as follows; Barometric pressure - 2.2 m, temperature and relative humidity - 2.9 m, PAR - 4.5 m, wind – 12.5 m, highest point on tower (lightning rod) - 14 m. The rain gauge is approximately 2.1 m above the surface and 1.5 m north of the tower. The area is sparsely covered with clam shell debris and upland grasses. Typical weather patterns for the New Jersey Coast include afternoon sea breezes (SW) and near still winds from midnight until shortly after sunrise during the summer months. Major weather events typically include 2-3 day duration periods of ENE winds and significant cold fronts from October through March. These cold fronts typically bring extended periods of increased NW winds commonly reaching 25-40 knots.

SWMP Station Timeline

Station Code	SWMP Status	Station Name	Location	Active Dates	Reason Decommissioned	Notes
jacncmet	P	Nacote Creek	39° 32' 6.00 N, 74° 27' 48.96 W	10/01/2002 - current	NA	NA

6) Data collection period –

The meteorological monitoring program was started in October 2002 at the JCNERR. The Reserve has a long-standing program in the collection of water quality data and other meteorological data, which is available at the Rutgers University Marine Field Station before October 2002 by contacting the Research Coordinator listed above. The 2022 data collection interval spanned from January 1, 2022 at 00:00 to December 31, 2022 23:45.

File Start Date and Time	File End Date and Time
01/01/2022 0:00	02/02/2022 12:00
02/01/2022 0:00	03/08/2022 12:00
03/01/2022 0:00	04/04/2022 10:45
04/01/2022 0:00	05/05/2022 09:30
05/01/2022 0:00	06/06/2022 13:30
06/01/2022 0:00	07/06/2022 14:45
07/01/2022 0:00	08/12/2022 15:00
08/01/2022 0:00	09/02/2022 14:00
09/01/2022 0:00	10/07/2022 13:30
10/01/2022 0:00	11/01/2022 14:15
11/01/2022 0:00	12/02/2022 10:00
12/01/2022 0:00	01/03/2023 10:30

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 processed 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 2022.

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 meteorological data collected in the SWMP program of JCNERR are important to assess migration patterns of key species found in the Mullica River-Great Bay Estuary, Little Egg Harbor, and other contiguous waters. Included here are the seasonal movements of striped bass (Morone saxatilis), bluefish (Pomatomus saltatrix) and summer flounder (Paralichthys dentatus). The meteorological data are also important for studies of the population dynamics of shellfish species, notably the hard clam (Mercenaria mercenaria) and blue crab (Callinectes sapidus). Furthermore, the data are valuable for evaluating environmental conditions that influence benthic communities, both those inhabiting soft sediments and living attached to hard surfaces (i.e., epibenthos). One of the most important areas of study for the coastal bay waters of Little Egg Harbor is dealing with submerged aquatic vegetation (Zostera marina and Ruppia maritima). A major concern is the health and vitality of the SAV, and how the beds in the bay are affected by natural factors (e.g., storms, unusual temperature conditions, reduced dissolved oxygen, etc.) and anthropogenic influences. All of the aforementioned studies are either underway or scheduled for future work.

As part of the SWMP long-term monitoring program, JAC NERR also monitors 15-minute water quality along with monthly grab samples and diel sampling for nutrient data which may be correlated with this meteorological dataset. These data are available at www.nerrsdata.org.

II. Physical Structure Descriptors

9) Sensor specifications –

Parameter: Photosynthetically Active Radiation
LI-COR Quantum Sensor #3
Units: mmoles m-2 (total flux)
Sensor type: High stability silicon photovoltaic detector (blue enhanced)
Model #: LI190
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: Q39591
Multiplier: 1.51
Date of Last Calibration: 6/28/2019
Dates of Sensor Use: 9/24/2019 – 4/20/2022

Parameter: Photosynthetically Active Radiation
LI-COR Quantum Sensor #4
Units: mmoles m-2 (total flux)

Sensor type: High stability silicon photovoltaic detector (blue enhanced)
Model #: LI190
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: Q51236
Multiplier: 1.21
Date of Last Calibration: 10/4/2021
Dates of Sensor Use: 4/20/2022 – current as of 04/26/2023

Parameter: Wind Speed
Sensor #3
Units: meter per second (m/s)
Sensor type: 18 cm diameter 4-blade helicoids propeller molded of polypropylene
Model #: R.M. Young 05106 Wind Monitor
Range: 0-60 m/s (134 mph); gust survival 100 m/s (220 mph)
Accuracy: +/- 0.3 m/s
Serial Number: 130540
Date of Last Calibration: 07/01/2019
Dates of Sensor Use: 9/24/2019 - 7/13/2022

Parameter: Wind Direction
Sensor #3
Units: degrees
Sensor type: balanced vane, 38 cm turning radius
Model #: R.M. Young 05106 Wind Monitor
Range: 360° mechanical, 355° electrical (5° open)
Accuracy: +/- 3 degrees
Serial Number: 130540
Date of Last Calibration: 07/01/2019
Dates of Sensor Use: 9/24/2019 - 7/13/2022

Parameter: Wind Speed
Sensor #4
Units: meter per second (m/s)
Sensor type: 18 cm diameter 4-blade helicoids propeller molded of polypropylene
Model #: R.M. Young 5108 Wind Monitor
Range: 0 to 100 m/s (0 to 224 mph)
Accuracy: ±0.3 m/s (±0.6 mph) or 1% of reading
Starting Threshold: 1.0 m/s (2.2 mph)
Serial Number: 161979
Date of Last Calibration: 09/27/2021
Dates of Sensor Use: 07/13/2022 - current as of 04/26/2023

Parameter: Wind Direction
Sensor #4
Units: degrees
Sensor type: balanced vane, 38 cm turning radius
Model #: R.M. Young 5108 Wind Monitor
Range: 360° mechanical, 355° electrical (5° open)

Accuracy: ±3°
Starting Threshold: 1.0 m/s (2.2 mph) at 10° displacement
Serial Number: 161979
Date of Last Calibration: 09/27/2021
Dates of Sensor Use: 07/13/2022 - current as of 04/26/2023

Parameter: Temperature
Sensor #3
Units: Celsius
Sensor type: Platinum resistance temperature detector (PRT)
Model #: HC2S# Temperature and Relative Humidity Probe
Operating Temperature: -40°C to +60°C
Range: -40°C to +60°C
Accuracy: ± 0.1 °C @ 23°C
Serial Number: 61247429
Date of Last Calibration: 07/05/2019
Dates of Sensor Use: 09/24/2019 – 04/20/2022

Parameter: Temperature
Sensor #4
Units: Celsius
Sensor type: Platinum resistance temperature detector (PRT)
Model #: HC2S3 Temperature and Relative Humidity Probe
Operating Temperature: -40°C to +60°C
Range: -40°C to +60°C
Accuracy: ± 0.1 °C @ 23°C
Serial Number: 20076900
Date of Last Calibration: 09/27/2021
Dates of Sensor Use: 04/20/2022 – current as of 04/26/2023

Parameter: Relative Humidity
Sensor #3
Units: Percent
Sensor type: Vaisala HUMICAP© 180 capacitive relative humidity sensor
Model #: HC2S3 Temperature and Relative Humidity Probe
Range: 0-100% non-condensing
Accuracy: ± 0.8% @ 23°C
Temperature dependence of RH measurement +/- 3% (-40 to 60C)
Serial Number: 61247429
Date of Last Calibration: 07/05/2019
Dates of Sensor Use: 09/24/2019 - 04/20/2022

Parameter: Relative Humidity
Sensor #4
Units: Percent
Sensor type: Vaisala HUMICAP© 180 capacitive relative humidity sensor
Model #: HC2S3 Temperature and Relative Humidity Probe
Range: 0-100% non-condensing
Accuracy: ± 0.8% @ 23°C
Temperature dependence of RH measurement +/- 3% (-40 to 60C)
Serial Number: 20076900
Date of Last Calibration: 07/05/2019

Dates of Sensor Use: 04/20/2022 – current as of 04/26/2023

Parameter: Barometric Pressure
Sensor #3
Units: millibars (mb)
Sensor type: Vaisala Barocap © silicon capacitive pressure sensor
Model #: CS-106
Operating Range: Pressure: 500 to 1100 mb; Temperature: -40°C to +60°C;
Humidity: non-condensing
Accuracy: ± 0.3 mb at +20°C, ± 0.6 mb at 0°C to 40°C, ± 1 mb at -20°C to +45°C, ± 1.5 mb at -40°C to +60°C
Stability: ± 0.1 mb per year
Serial Number: M0310145
Date of Calibration: 06/28/2019
Dates of Sensor Use: 09/24/2019 – 04/20/2022

Parameter: Barometric Pressure
Sensor #4
Units: millibars (mb)
Sensor type: Vaisala Barocap © silicon capacitive pressure sensor
Model #: PTB110
Operating Range: Pressure: 500 to 1100 mb; Temperature: -40°C to +60°C;
Humidity: non-condensing
Accuracy: ± 0.3 mb at +20°C, ± 0.6 mb at 0°C to 40°C, ± 1 mb at -20°C to +45°C, ± 1.5 mb at -40°C to +60°C
Stability: ± 0.1 mb per year
Serial Number: T2530693
Date of Last Calibration: 08/27/2021
Dates of Sensor Use: 04/20/2022- current as of 04/26/2023

Parameter: Precipitation
Sensor #1
Units: millimeters (mm)
Sensor type: Tipping Bucket Rain Gauge
Model #: TE525
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
Serial Number: 525
Date of Calibration: 09/15/2013
Date of Calibration: 05/07/2020
Date of Calibration: 04/14/2022
Dates of Sensor Use: 08/26/2011 – current as of 04/26/2023

Datalogger:
CR1000X:
The CR1000X has a total onboard memory of 128 MB of flash and 4MB of battery backed SRAM. There is 8 MB of flash memory reserved for loading the operating system and 1MB of flash reserved for configuration settings. SRAM is used for the CRBasic program operating memory, communication memory, and data storage, with 72 MB of flash for extended data storage. Additional data storage expansion is available with a removable microSD flash memory card of up to 16 GB.

Serial Number: 12964
Date CR1000X Installed: 07/07/2020 – current as of 12/31/2022
Date CR1000X Calibrated: 10/10/2019 (purchased 2020)

CR1000X Firmware Version (s): CR1000x running OS 4.02 installed on 07/07/2020

CR1000/CR1000X Program Version(s): JACNCMET_CR1000X_6.0.0_063020 installed on 06/30/2020; JACNCMET_V6.0.0_07072020.cr1x installed on 07/07/2020; JACNCMET_CR1000X_V6.0.0_04202022.cr1x installed on 04/20/2022

GOES Transmitter:
Model Number: TX312
Serial Number: 1863
Date Installed: 11/05/2005

10) Coded variable definitions -

Sampling station:	Sampling site code:	Station code:
Nacote Creek	NC	jacncmet

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/CR1000X, 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
CVT*	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 LI-COR sensor and are due to normal errors in the sensor and the CR1000 Datalogger. The Maximum signal noise error for the LI-COR sensor is +/- 2.214 mmoles/m2 over a 15 minute interval. These values are automatically flagged and coded as <1> (CAF).

Relative Humidity data greater than 100 are within range of the sensor accuracy of +/-3% and are flagged and coded as suspect, <1> (CAF). Values greater than 103 are rejected <-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.**

Precipitation data collected with rain gauges that are not designed specifically for measuring frozen precipitation (snow/ice/hail), including heated gauges and those that use antifreeze to melt frozen precipitation, may not be measured accurately. Blowing wind, sublimation, and rate of snowfall/ice melt all effect the amount of recorded precipitation. The reserve made no additional steps to record dates and times when frozen precipitation and subsequent melting occurred during 2022.

Air temperature and relative humidity are considered suspect, <1>[SOC] (CSM), due to an out of calibration beginning 09/24/2021. Data are flagged and coded from the beginning of 2022 until the sensor swap on 04/20/2022 10:30. Any suspect RH data values 101 -103 that would normally be coded with CAF are included in the SOC CSM coding.

There were noticeable changes in PAR values following the swap to a freshly calibrated sensor (assumed to be accurate) on 04/20/2022. The PAR sensor (Q39591) that was installed on 09/24/2019 appeared to measure lower values beginning in early 2020 and continuing until the sensor was replaced on 04/20/2022 (SN Q51236). Since Q39591 was not recalibrated after removal, drift values are not known, but sensor drift is suspected. Acceptable drift is +/- 2% for this sensor. All PAR data approximately 1.5 years prior the sensor swap, from 09/20/2020 00:15 to 04/20/2022 10:30 are flagged and coded as <1> SSD CSM. PAR data for the remainder of this deployment, 09/24/2019 16:00 – 09/20/2020 00:00, are flagged and coded <0> CSM 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. Slightly negative and elevated PAR values that would normally be flagged and coded as <1> (CSM) are included in the suspect flagging and coding for drift. Nighttime values greater than 2.214 or less than -2.214 were rejected, <-3> [SSD](CSM).

Following the PAR sensor replacement values were much higher than expected. When the PAR sensor was swapped, programming for the CR1000X logger was not updated. PAR values were corrected by dividing the incorrectly recorded value by the previous sensor's multiplier and then multiplying that value by the correct multiplier.

(Incorrect PAR/incorrect multiplier 1.51) * correct multiplier 1.21 = correct PAR

Corrected PAR values, <5> [SIC] (CSM), are considered suspect and are flagged and coded from 04/20/2022 12:30 through the end of 2022.

Beginning 01/01/2022 00:00 and continuing until the sensor swap on 07/13/2022, all wind data when 0 was recorded for all wind parameters were rejected, <-3>[SIW] (CSM). In addition, when there were long stretches of 0 value readings and rejected data, timestamps with wind values >0 were also rejected. All other wind data are considered suspect as those data cannot be confirmed to be accurate. All wind data were rejected as of 06/08/2022 15:00. The issue was found to be a bad wire from a spliced connection. The wire that came with the wind sensor was not long enough to reach the data logger, so the connection for wiring was spliced. A longer wire should be acquired to avoid an issue like this in the future. The station was powered down on 07/13/2022 09:00 – 10:15 to replace the wind sensor. All parameters are rejected at 10:30 due to an incomplete 15 minutes of 5-second data following the station power down.

Following the wind sensor replacement wind speed and max wind speed values were much lower than expected. When the wind sensor was swapped, programming for the CR1000X logger was not updated.

Wind speed and maximum wind speed values were corrected by dividing the incorrectly recorded value by the previous sensor's multiplier and then multiplying that value by the correct multiplier.

incorrect wind speed/0.098 * 0.1666 = corrected wind speed

incorrect max wind speed/0.098 * 0.1666 = corrected max wind speed

Corrected wind speed values, <5> [SIC] (CSM), are considered suspect and are flagged and coded from 04/20/2022 12:30 through the end of 2022.

The rain gauge was calibrated on 4/14/2022 from 13:30 to 15:30; the precipitation data and cumulative precipitation data recorded during this time period are rejected due to calibration/maintenance, <-3> [SMT] (CSM).

Data flagged as <-2>[GPD] (CSM)from 4/20/2022 10:45 to 4/20/2022 12:15 are from station shut down to replace the PAR, BP, and Temperature/RH sensors. Data at 04/20/2022 13:30 and 13:45 were rejected due to not being a full 15 minutes of 5-second records, <-2> [GPD] (CSM) and <-3> [GPR] (CSM). The Barometric pressure sensor was installed without first removing the jumper, so the readings after install from 4/20/2022 12:30 to 4/21/2022 16:30 are inaccurate and rejected, <-3> [SIW] (CSM). Maintenance was performed 4/21/2022 on the BP sensor at 16:15 and the 16:30 reading had not stabilized , so data were rejected until the first accurate reading at 16:45.