

**North Carolina (NOC) National Estuarine Research Reserve
Research Creek Meteorological Metadata Report**

January - December 2006

Latest Update: **October 23, 2023**

I. Data Set and Research Descriptors

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2. Entry verification

Meteorological information is sampled every 5 seconds from each instrument on the weather station and stored on a Campbell Scientific CR10X data logger from January through April 2006. Data are output to a file in three arrays: array 15 stores 15 minute average, max and min data; array 60 stores hourly average, max and min data; and array 144 stores daily average, max and min data. The CDMO Data Logger Program (NERR_4.CSI) was loaded into the CR10X and controls the sensors. The CR10X then interfaces with the PC208W software supplied by Campbell Scientific.

The CR10X was replaced with a Campbell Scientific CR1000 data logger on 28 June 2006. Due to the installation and testing of the new equipment, several versions of the CDMO Data Logger Program that controls the sensors were used initially until a final fully working version (NOCRCMET_V3.0_101106.CR1) was uploaded on 11 October 2006. The CR1000 interfaces with Campbell Scientific LoggerNet software. Campbell Scientific data telemetry equipment is used at this station to transmit to the NOAA GOES

satellite, NESDIS ID # 3B02028E. The transmissions are scheduled hourly and contain four (4) datasets reflecting the fifteen min data sampling interval. The telemetry is “Provisional” data and not the “Authentic” Dataset used for long term monitoring and study. This data can be viewed by going to <http://cdmo.baruch.sc.edu>.

Data are uploaded from the CR10X/CR1000 data logger or storage module to a Personal Computer (IBM compatible). Files are exported from PC208W/LoggerNet in a comma-delimited format (.DAT) and opened in Microsoft Excel for pre-processing with the EQWin format macro that was developed by the CDMO to reformat the header columns, insert station codes, insert a date column (mm/dd/yyyy), correct the time column format and reformat the data to the appropriate number of decimal places. The pre-processed file is then ready to be copied into the EQWin weather.eqi file where the data are QA/QC checked and archived in a database. EQWin queries, reports and graphs are used to discover data set outliers (values which fall outside the range that the instrument is designed to measure) and large changes in the data. EQWin is also used to generate statistics, view graphs, create customized queries and reports of the data, cross query the water, weather, and nutrient data and finally export the data to the CDMO.

Any anomalous data were investigated and noted below in the Anomalous/Suspect Data Section. Any data corrections that were performed are noted in the Deleted Data Section below. The most common reported errors/anomalies in 2006 were precipitation differences greater than 5mm in 15 minutes, negative PAR values, and relative humidity values over 100%. All errors were double checked with other data that could support such "anomalous" weather changes and were noted in the sections that follow.

Raw data files and EQWin databases were saved on multiple hard drives, archived on compact discs, and backed-up on the CDMO server. Paula Murray was responsible for error checking and compiling 2006 weather data.

3. Research Objectives

The principal objectives are to establish long-term monitoring of the weather in the vicinity of Masonboro Island, to obtain better data on storms and to be able to correlate the weather, water quality, chlorophyll and nutrient data. In addition, the weather data collected will be used in support of other ongoing projects within the Reserve and nearby area.

4. Research methods

The Campbell Scientific weather station samples every 5 seconds continuously throughout the year. These data are used by the CR10X to produce 15 minute averages, maximum and minimums (array 15), hourly averages, maximums and minimums (array 60) and daily averages, maximums and minimums (array 144) of air temperature, relative humidity, barometric pressure, rainfall, wind speed, and wind direction. Data are stored in a storage module connected to the CR10X and also downloaded hourly to a PC located in the NOCNERR lab via telemetry using the PC208W software package.

Beginning June 28, 2006 a CR1000 produced 15 minute averages, maximums and minimums (array 15) based on continuous 5 second samples throughout the year. Data are telemetered via satellite every hour and downloaded monthly onto a laptop computer using LoggerNet software.

Data are periodically compared to values recorded by other local weather stations to verify accuracy. Data are also quality checked using EQWin. The reports, graphs and queries of meteorological data are printed and reviewed. Anomalous data and errors are further investigated and data are corrected, deleted (if necessary) or left unchanged and noted in the metadata report.

The weather station and sensors are inspected monthly for cleaning and/or repair. Sensors are replaced and/or calibrated according to the manufacturer's guidelines (annually or biannually).

5. Site Location and Character:

The components of North Carolina's National Estuarine Research Reserve (from north to south) are: Currituck Banks, Rachel Carson, Masonboro Island, and Zeke's Island. They are located along the southeast Atlantic coast of the United States. Currently, only data from Masonboro Island and Zeke's Island components are transferred to the CDMO.

The meteorological site is located on Masonboro Island, 2.09 km from the NOC NERR lab, and approximately 76.2 m from the Research Creek water quality deployment site. The weather station is located on an inactive dredge spoil island adjacent to Research Creek east of the Intracoastal Waterway. It is directly across the Intracoastal Waterway from Whiskey Creek, at 34° 9.328'N, 77° 51.054'W. The station sits at an elevation of approximately 4.88 m above sea level, slightly offset from the highest point of the spoil, which has a maximum elevation of approximately 5.8 m. The site has scrub surrounding the periphery, and grassy cover in the central areas. The weather station consists of a 3-meter aluminum tower that holds the wind sensor (wind speed and direction) at a height of 3.68 m and the Li-COR sensor at a height of 3.66 m. The temperature and relative humidity sensor is mounted on the tower at 2.39 m and the barometric pressure sensor, which is inside of the datalogger housing, is mounted at a height of 1.75 m. The rain gauge is located on a separate platform 7.62 m east south east of the tower and is mounted at a height of 1.79 m. The sensors were wired to the CR10X/CR1000 (Campbell datalogger) according to the protocol in the Meteorological Monitoring SOP. There are no surrounding objects that obstruct or shade the weather station.

6. Data collection period

Collection of meteorological data began on 15 March 1997 and continues through the present. Instruments were deployed prior to this date; however, data were for initial

testing and verification of functions, and have since been discarded. The data collection period for 2006 began on January 1 at 00:15 and ended December 31 at 23:45.

7. Distribution

National Oceanic and Atmospheric Administration (NOAA)/Estuarine Reserves Division (ERD) retains the right to analyze, synthesize and publish summaries of the NERRS SWMP data. The PI retains the right to be fully credited for having collected and processed the data. Following academic courtesy standards, the PI and NERR site where the data were collected will be contacted and fully acknowledged in any subsequent publication in which any part of the data are used. Manuscripts resulting from the NOAA/OCRM supported research that are produced for publication in open literature, including refereed scientific journals, will acknowledge that the research was conducted under an award from the ERD, OCRM, National Ocean Service (NOS), NOAA. The data enclosed within the package/transmission are only as good as the quality assurance/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.

NERR weather data and metadata can be obtained from the Research Coordinator at the individual NERR site (see section I. 1. Principal investigators and contact persons), from the Data Manager at the Centralized Data Management Office (see personnel directory under the general information link on the CDMO home page) and online at the CDMO home page <http://cdmo.baruch.sc.edu/>. Data are available in text tab-delimited format.

8. Associated researchers and projects

Meteorological data will be used to augment other research components of the System Wide Monitoring Program (SWMP) that currently include water quality, chlorophyll and nutrient monitoring. The principal objective of the water quality monitoring is to record long-term water quality data in order to observe and document any physical and chemical changes or trends in water quality over time. The objective of the chlorophyll and nutrient monitoring study is to ascertain the annual and tidal fluctuations in nutrient and chlorophyll a levels surrounding the four water quality sites.

Additional projects are ongoing and continually changing. Check with the Research Coordinator or other contact person for an updated list of research (see section I.1.).

II. Physical Structure Descriptors

9. Sensor specifications

Parameter: Precipitation
Units: millimeters (mm)

Sensor Type: Ecoharmony tipping bucket rain gauge
Model # TB4
Range: 0 to 600 mm/hr
Accuracy: 0.01 inches per bucket tip; +/- 3% for intensities from 25-600 mm/hr
Date of last calibration: 07/07/06

Parameter: Temperature
Units: Celsius
Sensor Type: Platinum resistance temperature detector (PRT)
Model #: HMP45C
Range: -40°C to 60°C
Accuracy: +/- 0.2°C @ 20°C
Date of last calibration: 04/19/06 (installed on 06/28/06)

Parameter: Relative Humidity
Units: Percent
Sensor Type: Vaisala HUMICAP© 180 capacitive relative humidity sensor
Model # HMP45C
Range: 0 to 100% non-condensing
Accuracy: 20°C +/- 2% RH (0 - 90% RH), +/- 3% RH (90 - 100% RH)
Temperature dependence of RH measurement: +/- 0.05% RH/°C
Date of last calibration: 04/19/06 (installed on 06/28/06)

Parameter: LI-COR Quantum Sensor
Units: mmol m⁻² (total flux)
Sensor type: High stability silicon photovoltaic detector (blue enhanced)
Model #: LI190SZ
Light spectrum waveband: 400 to 700 nm
Temperature dependence: 0.15% per °C maximum
Operating Temperature: -40°C to 65°C; Humidity: 0 to 100%
Range: 1% up to 10,000 µmol s⁻¹m⁻², 400-700 nm
Accuracy: 5 µA per 1000 µmol s⁻¹m⁻², with a stability of <± 2% change per year
Date of last calibration: 05/13/06 (installed on 06/28/06)

Parameter: Wind Speed and Wind direction
Units: meters per second (m/s); degrees
Sensor type: Vaisala Ultrasonic Wind Sensor
Model #: 425
Range: 0 to 65 m/s (0 to 144 mph, 0 to 125 knots); 0 to 360°
Accuracy: ±0.135 m/s (±0.3 mph, ±0.26 knots) or 3% of reading, whichever is greater; ±2°
Date of last calibration: N/A (no calibration required) installed new on 07/15/02

Parameter: Barometric Pressure
Units: millibars (mb)
Sensor type: Vaisala Barometric Pressure
Model #: PTB101B
Range: 600 to 1060 mb
Accuracy: +/- 0.45 mb
Date of last calibration: 04/13/06 (installed on 06/28/06)

Storage Module
Model#: SM192
Storage capacity: 192,896 bytes
Operating range: Temperature: -35°C to +65°C
Processor: Hitachi 6303
Baud rates: 300, 1200, 9600, 76800
Memory type: user selectable for either ring style (default) or fill and drop.
Power requirements: 5 +/-0.4 VDC @ 100mA

Storage Module
Model#: SM4M
Storage capacity: 2 million low-resolution data values
Program storage: stores up to 8 programs with a total capacity of 128 KB
Processor: Hitachi H8S
Operating System: 64 KB, flash memory based, user downloadable
Operating range: Temperature: -35°C to +65°C
Baud rates: 9600, 76800
Memory type: user selectable for either ring style (default) or fill and drop.
Power requirements: 5 +/-0.3 VDC @ 100mA

Campbell Scientific CR10X Wiring Panel has 128K of flash memory (EEPROM), in which it stores the operating system and it's program (that it uses to run the weather station). Additionally, there are 128K of SRAM, which it uses to run the program and store its measurements and for final data storage.

The CR1000 has two MB 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) is 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.

10. Coded variable definitions

Sampling station:	Sampling site code:	Station code:
Research Creek	RC	nocrcmet

11. Anomalous/Suspect Data

Arrays:

During 2022 all pre-2007 weather data were revisited by the CDMO. Historically those datasets included 15 minute, hourly (60), and daily data arrays (144). As directed by the NERRS Data Management Committee, the CDMO removed the hourly and daily data arrays leaving only the 15 minute data to make the entire NERRS SWMP weather dataset consistent in its reporting. All references to the 60 and 144 arrays were left in the metadata document as they may still provide valuable information, but users should be aware that they are largely no longer relevant. The updated datasets were uploaded to the database and made available through the various data applications at www.nerrsdata.org/get/landing.cfm throughout the fall of 2022.

Relative humidity values over 100% that were within range of the sensor (up to 103%) were retained.

Fifteen minute sample rainfall amount differences of over 5 mm in 15 minutes can occur during storms and indicate intense precipitation bursts during hurricanes, tropical storms, thunderstorms or frontal passages.

The following precipitation data appear to be correct:

Date	Time	Julian	Array ID	TotPrecp
04/03/2006	19:15	93	15	9.1
04/17/2006	17:00	107	15	17.8
08/31/2006	11:30	243	15	8.4
08/31/2006	13:00	243	15	8.4
08/31/2006	13:15	243	15	10.9
08/31/2006	20:30	243	15	5.3
09/05/2006	10:30	248	15	6.6
09/05/2006	20:00	248	15	5.1
09/19/2006	07:15	262	15	6.9
10/08/2006	15:45	281	15	9.7
10/08/2006	16:00	281	15	18.0
10/08/2006	16:15	281	15	8.1
10/09/2006	03:45	282	15	6.9
10/09/2006	04:00	282	15	7.1

All remaining values for maximum wind speed, precipitation and PAR from 10:45 on 28 June through 7:45 on 28 August should be considered suspect due to errors in the CR1000 program that may have affected these parameters.

Wind speed was unusually high (42.6 m/s) at 15:15 on 1 August for unknown reasons. The value was retained as it is within the range of the sensor.

12. Deleted data:

Arrays:

During 2022 all pre-2007 weather data were revisited by the CDMO. Historically those datasets included 15 minute, hourly (60), and daily data arrays (144). As directed by the NERRS Data Management Committee, the CDMO removed the hourly and daily data arrays leaving only the 15 minute data to make the entire NERRS SWMP weather dataset consistent in its reporting. All references to the 60 and 144 arrays were left in the metadata document as they may still provide valuable information, but users should be aware that they are largely no longer relevant. The updated datasets were uploaded to the database and made available through the various data applications at www.nerrsdata.org/get/landing.cfm throughout the fall of 2022.

Negative values for PAR were recorded for numerous periods of time from January through April when no light was present. These values were most likely due to normal errors in the sensor and the CR10X Datalogger or they could have resulted from sensor calibration drift. These data were deleted.

01/01/2006 00:15-07:00, 17:45-24:00
01/02/2006 00:15-07:30, 17:30-24:00
01/03/2006 00:15-04:30, 05:00-07:00, 18:00-19:00
02/05/2006 01:30-02:00, 19:00-19:30, 20:00
02/06/2006 04:45-05:00, 22:45-24:00
02/07/2006 02:00-03:00, 04:15-07:00, 18:15-24:00
02/08/2006 00:15-04:15, 05:00, 18:30-24:00
02/09/2006 00:15-07:00
02/12/2006 18:30-19:00
02/15/2006 18:30-24:00
02/16/2006 00:15-07:00, 18:30-24:00
02/17/2006 00:15-07:00, 18:15-24:00
02/18/2006 00:15-07:00, 18:15-24:00
02/19/2006 00:15-07:00, 18:30-24:00
02/20/2006 00:15-07:15, 18:15-24:00
02/21/2006 00:15-07:15, 18:30-24:00
02/22/2006 00:15-07:00, 18:30-24:00
02/23/2006 00:15-07:15, 07:45-08:15, 09:00, 18:15-24:00
02/24/2006 00:15-07:00, 18:30-24:00
02/25/2006 00:15-07:00, 17:45-24:00
02/26/2006 00:15-07:30, 18:15-24:00
02/27/2006 00:15-07:00, 18:30-24:00
02/27/2006 00:15-07:00, 18:30-24:00
02/28/2006 00:15-07:00, 18:45-24:00
03/01/2006 00:15-06:45, 18:45-24:00
03/02/2006 00:15-06:30, 19:00-20:00, 20:30-24:00
03/03/2006 00:15-01:00, 01:45-06:30, 19:15-21:00, 22:00
03/04/2006 01:15-04:00, 19:30-20:00

03/05/2006 02:30-04:00
03/07/2006 04:15-06:30, 19:30-20:30, 21:00,21:30-24:00
03/08/2006 00:15-03:00, 03:30-04:30, 05:00, 05:45-06:30
03/18/2006 20:45-22:00
03/19/2006 02:15, 03:00
03/20/2006 05:45, 19:00-19:15
03/21/2006 05:45-06:00
03/22/2006 19:30-20:00
03/23/2006 01:15-01:30, 02:00-03:15, 06:00
03/24/2006 06:00, 19:45-20:00, 23:45-24:00
03/25/2006 00:15, 01:00, 05:00, 20:30-24:00
03/26/2006 01:00-06:00, 19:00-24:00
03/27/2006 00:15-06:00, 19:00-24:00
03/28/2006 00:15-06:00, 19:00-24:00
03/29/2006 00:15-06:00, 19:15-24:00
03/30/2006 00:15-06:00, 19:15-21:15, 22:00, 23:00-24:00
03/31/2006 00:15-01:30, 02:00, 02:30-03:00, 03:30, 19:15-24:00
04/01/2006 00:15-03:00, 03:45-06:00, 19:15-24:00
04/02/2006 00:15-01:00, 01:45-03:15
04/04/2006 03:30-05:00
04/06/2006 01:00-01:15, 02:00, 04:15-05:15, 19:45
04/09/2006 05:30, 20:00-24:00
04/10/2006 01:30, 02:00, 03:45-05:15
04/13/2006 20:00
04/15/2006 02:15-02:30, 05:15, 22:45-24:00
04/16/2006 00:15-04:15, 05:00-05:15, 19:30
04/17/2006 19:15-21:00, 21:45, 22:15-22:30, 23:00
04/19/2006 19:30-21:00

All parameters were deleted on the following dates and times due to program reloads that resulted in missing 5-second data:

06/29/2006 10:15, 10:30
10/11/2006 15:00

All wind associated parameters were deleted from 10:45 on 28 June through 9:15 on 29 June due to program errors that were causing incorrect values and/or NAN (not a number) to be reported.

Precipitation data were not recorded from 10:45 on 28 June through 7:45 on 28 August due to an error in the CR1000 program, however, the value for precipitation during this time was reported as 0. Since the data were never actually recorded, the values were deleted.

The CR1000 reported NAN (not a number) for PAR frequently for the following dates and times from 28 June through 27 August due to errors in the program. The NANs were deleted from the data set.

06/28/2006 10:45-12:00, 13:15-17:30
06/29/2006 07:45-08:00, 11:15-11:30
07/01/2006 13:00
07/02/2006 12:30-13:45, 14:15
07/05/2006 12:45-13:00
07/06/2006 11:00, 12:00-14:00, 14:30-15:00
07/08/2006 12:15-13:00
07/09/2006 12:00
07/11/2006 11:00-13:00
07/12/2006 09:30-10:00, 11:15, 11:45, 12:30-14:15
07/13/2006 10:15-14:00
07/14/2006 11:30-12:30, 13:15-13:45
07/15/2006 12:15-12:45, 13:15-13:30
07/16/2006 10:15-10:30, 12:15, 13:15-13:30
07/17/2006 11:15-12:45
07/20/2006 10:45, 12:30-13:15
07/21/2006 12:00-13:45
07/22/2006 11:15-13:45, 14:15
07/23/2006 11:00-11:15, 11:45-13:15
07/24/2006 11:30-12:45, 14:45
07/25/2006 09:45, 10:15, 11:00-14:30
07/26/2006 11:00-11:45
07/28/2006 11:00-12:00, 12:30-14:00
07/29/2006 11:15-12:45, 13:15-14:15
07/30/2006 12:30, 13:15-14:00
07/31/2006 12:00-12:30
08/01/2006 12:00, 12:30-12:45
08/06/2006 12:00-13:30
08/09/2006 10:45-12:30
08/11/2006 10:15-10:45
08/13/2006 11:00-13:45, 14:15-14:30
08/14/2006 10:30, 12:00-12:15
08/16/2006 10:15
08/17/2006 11:15-12:00, 12:30-14:00
08/18/2006 10:45, 11:30-12:15, 12:45-13:45
08/19/2006 11:45-12:00, 12:30, 13:00-13:30
08/20/2006 10:45-13:45
08/21/2006 11:00-11:15
08/22/2006 11:30
08/23/2006 12:30-13:00
08/25/2006 11:30, 13:00
08/26/2006 11:30-11:45
08/27/2006 11:00-11:15, 12:15

Duplicate, but not identical, readings were collected for all parameters on 8 July at 11:15, 11:30, 11:45, and 12:00 for unknown reasons. One set of readings for each of these times was deleted.

Inaccurate precipitation data were collected due to testing, calibration and/or cleaning of the rain gauge. Precipitation data for the following dates and times were removed or corrected:

Date	Time
08/28/06	08:15
10/11/06	15:00

Wind speed was unusually high (107.1 m/s) at 01:30 on 13 September for unknown reasons. The value was deleted as it is out of range of the sensor. The maximum windspeed value and time were also deleted.

The erroneous value of 447 was recorded periodically throughout the data set for wind speed maximums for unknown reasons. This value is most likely reported during conditions of extreme cold, freezing or heavy rain, or periods of very strong or no winds. These values were deleted from the data set.

Maximum wind speed:

Array ID	Date	Time
15	01/01/2006	09:00
60	01/01/2006	09:00
15	01/01/2006	09:15
60	01/01/2006	10:00
144	01/01/2006	24:00
15	01/10/2006	15:30
60	01/10/2006	16:00
144	01/10/2006	24:00
15	01/25/2006	10:30
60	01/25/2006	11:00
144	01/25/2006	24:00
15	01/31/2006	12:45
60	01/31/2006	13:00
144	01/31/2006	24:00
15	07/12/2006	16:00
15	07/17/2006	08:45
15	07/21/2006	07:15
15	07/22/2006	08:15
15	07/30/2006	11:00
15	08/01/2006	15:00
15	08/01/2006	15:15
15	08/01/2006	16:15
15	08/02/2006	15:30
15	08/03/2006	08:30
15	08/07/2006	06:15

15	08/11/2006	10:30
15	08/12/2006	10:15
15	08/12/2006	11:00
15	08/20/2006	11:45
15	09/02/2006	17:15
15	09/05/2006	15:15
15	09/13/2006	01:30
15	09/14/2006	18:15
15	09/15/2006	16:00
15	09/19/2006	16:15
15	09/19/2006	16:30
15	09/26/2006	15:00
15	10/30/2006	10:00
15	11/06/2006	08:00
15	11/09/2006	08:45
15	11/09/2006	09:00
15	11/15/2006	08:45
15	11/15/2006	09:45
15	12/25/2006	13:45

13. Missing data

Arrays:

During 2022 all pre-2007 weather data were revisited by the CDMO. Historically those datasets included 15 minute, hourly (60), and daily data arrays (144). As directed by the NERRS Data Management Committee, the CDMO removed the hourly and daily data arrays leaving only the 15 minute data to make the entire NERRS SWMP weather dataset consistent in its reporting. All references to the 60 and 144 arrays were left in the metadata document as they may still provide valuable information, but users should be aware that they are largely no longer relevant. The updated datasets were uploaded to the database and made available through the various data applications at www.nerrsdata.org/get/landing.cfm throughout the fall of 2022.

Data are missing due to equipment or associated specific probes not being deployed, equipment failure, time of maintenance or calibration of equipment, or repair/replacement of a sampling station platform. For more details on deleted data, see the Deleted Data Section (12). If additional information on missing data is needed, contact the Research Coordinator at the reserve submitting the data.

Specifically, all parameter data for the dates and times below are missing for the following reasons:

Date(s)	Time(s)	Reason
04/20/2006 – 6/28/2006	7:15 – 10:30	CR10X failure; possible lightning strike

Precipitation data were not recorded from 10:45 on 28 June through 7:45 on 28 August due to an error in the CR1000 program.

14. Other remarks/notes

On 10/23/2023 this dataset was updated to include embedded QAQC flags for anomalous/suspect data. System-wide monitoring data beginning in 2007 were processed to allow for QAQC flags and codes to be embedded in the data files rather than detailed in the metadata alone (as in the anomalous/suspect, deleted, and missing data sections above). Prior to 2007, rejected data were deleted from the dataset so they are unavailable to be used at all, but suspect data were only noted in the metadata document. Suspect data flags <1> were embedded retroactively in order to allow suspect data to be easily identified and filtered from the dataset if desired for analysis and reporting purposes. No other flags or codes were embedded in the dataset and users should still refer to the detailed explanations above for more information.

Arrays:

During 2022 all pre-2007 weather data were revisited by the CDMO. Historically those datasets included 15 minute, hourly (60), and daily data arrays (144). As directed by the NERRS Data Management Committee, the CDMO removed the hourly and daily data arrays leaving only the 15 minute data to make the entire NERRS SWMP weather dataset consistent in its reporting. All references to the 60 and 144 arrays were left in the metadata document as they may still provide valuable information, but users should be aware that they are largely no longer relevant. The updated datasets were uploaded to the database and made available through the various data applications at www.nerrsdata.org/get/landing.cfm throughout the fall of 2022.

Precipitation:

During the initial years of NERRS SWMP weather data collection the CR10X programming was inconsistent in how precipitation values were recorded. For most reserves, zeros were not recorded when rainfall had not occurred between 2001-2003, instead no rainfall was represented by a blank cell. The CDMO verified which datasets were impacted by this issue for the 2001-2006 datasets and inserted zeros when the metadata indicated that no precipitation occurred and data were not missing for other reasons. In some cases, zero values for precipitation data were evaluated and removed where the metadata confirmed that no rainfall should have been in the dataset. The pre-2007 data did not go through a thorough QAQC process again at that time (in addition to previous QAQC); however, if discrepancies were noticed between what was documented in the metadata and what was in the dataset, additional updates may have been made. The updated datasets were uploaded to the database and made available through the various data applications at www.nerrsdata.org/get/landing.cfm throughout early 2023.

Campbell Scientific data telemetry equipment is used at this station to transmit to the NOAA GOES satellite, NESDIS ID # 3B02028E. The transmissions are scheduled hourly and contain four (4) datasets reflecting the fifteen min data sampling interval. The telemetry is “Provisional” data and not the “Authentic” Dataset used for long term monitoring and study. This data can be viewed by going to <http://cdmo.baruch.sc.edu>.

The time stamps were off by three minutes from 10:42 on 28 June through 14:27 on 11 October due to errors in the CR1000 program installed during that time. These times were corrected by adding 3 minutes to the times and adjusting the date ahead at 00:00.

Tropical Storm Ernesto passed over the area on 31 August 2006.

LiCor:

Prior to the installation of the new NERR_4.CSI program in November 2003, all values less than 0 were altered in the raw data to read 0. These values may indicate an incorrect multiplier, calibration problems, or a sensor malfunction. Because these values are changed in the raw data, we cannot confirm that they are all valid data points.

Relative Humidity:

Prior to the installation of the new NERR_4.CSI program in November 2003, all values over 100% were altered in the raw data to read 100%. These values may indicate super saturated air, calibration problems, or a sensor malfunction. Because these values are changed in the raw data, we cannot confirm that they are all valid data points.