

Hudson River (HUD) NERR Meteorological Metadata
January 2006 - December 2006
Latest Update: **October 20, 2023**

I. Data Set & Research Descriptors

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2. Entry verification:

The 15-minute, 1-hour average, and 24-hour data were downloaded from each instrument on the weather station to a Campbell Scientific CR10X datalogger. The CDMO Datalogger Program (NERR_5_3.CSI) was loaded into the CR10X, which controls the sensors and the data collection schedule (see Section 3). For data storage, the CR10X stored the data, via cable, on a Campbell Scientific SM4M storage module. The storage module was manually retrieved on a monthly basis. Using the PC208W software supplied by Campbell Scientific, the data were uploaded from the storage module and stored on a computer in comma-delimited format (.DAT). These raw data files were archived at the CDMO and at the reserve on CD-ROM. Raw data files were then opened in Microsoft Excel and pre-processed using the EQWin Format Macro developed by the CDMO. This macro reformats the header columns, inserts station codes, inserts a date column, corrects the time column format, and reformats the data to an appropriate number of decimal places. The Excel file is then copied into EQWin and the data are QA/QC checked using criteria defined in Section 3 and archived in a database. Queries, reports and graphs are used to discover outliers and large changes in the data. Data that were collected and retained but considered suspect are documented in Section 11. Data that were collected but deleted are documented in Section 12. Missing data are documented in Section 13.

The Research Assistant is responsible for data management and data entry verification.

3. Research objectives:

The objective of this study is to monitor the meteorological conditions at the Tivoli Bays component site of the Hudson River National Estuarine Research Reserve. Measurements of air temperature, relative humidity, barometric pressure, precipitation, photosynthetically active radiation, and wind speed and direction are taken throughout the year at the Tivoli Bays Field Station. A water quality-monitoring program has been ongoing since 1991 at this component site, and the meteorological data will help provide ancillary data. This will help us to better understand the relationships between the atmospheric conditions and aquatic environments at this site.

4. Research methods:

For routine maintenance, sensors are investigated at least once a month to ensure there is no damage or blockage to the sensors. According to Campbell Scientific, sensors are to be calibrated every two 2 years for proper data collection. After that time, the sensors are removed from the tower, and shipped to their respective manufacturers for proper and professional calibration. In order to avoid missing data, a second set of sensors is calibrated and available to be installed on the tower to continue data collection

For data collection, the CR10X datalogger is programmed to collect data in the following formats:

- i) 15-minute average, maximum and minimum data are averages of 5-second readings for Air Temperature (°C), Relative Humidity (%), Barometric Pressure (mb) and Wind Speed (m/s).
- ii) Hourly average, maximum, and minimum data are averages of 5-second readings for Air Temperature (°C), Relative Humidity (%), Barometric Pressure (mb), Wind Speed (m/s), Wind Direction (degrees). Hourly totals for PAR (mmol/m²) and Precipitation (mm) are totals of 15-minute readings.
- iii) Daily average, maximum and minimum data are averages of 5-second readings for Air Temperature (°C), Relative Humidity (%), Barometric Pressure (mb), Wind Speed (m/s), Wind Direction (degrees). Daily totals for PAR (mmol/m²) and Precipitation (mm) are totals of 15-minute readings.

Data are stored on the Campbell Scientific SM4M storage module as a backup to a PC file appended hourly via serial connection to the CR10X. The data are downloaded and pre-processed as described in Section 2. QA/QC of the data is conducted in EQWin. Queries are based on the following anomalous data criteria:

Air Temperature:

- 15 min sample not greater than max for the day
- 15 min sample not less than the min for the day
- Sample not greater than 50 C or less than -30 C

Relative Humidity:

-Sample not greater than 100% or less than 0%

Pressure:

-Pressure greater than 1060 mb or less than 900 mb

Wind Speed:

-Wind speed greater than 30 m/s

-Wind speed less than 0.5 m/s for 12 consecutive hours

Wind Direction:

-Wind direction not greater than 360 degrees or less than 0 degrees

Rainfall:

-Precipitation not greater than 5 cm in 15 min

Photosynthetically Active Radiation (PAR)

-Sample not greater than 5000 mmol/m² or less than -1.0 mmol/m²

Time:

-15-minute interval recorded

For all data:

-Duplicate data

Reports, graphs, and statistical analysis are then used to further analyze the data in EQWin.

5. Site location and character:

The Hudson River National Estuarine Research Reserve (HUDNERR) is a multi-component site totaling approximately 5,000 acres. Each component of the reserve is referenced by River Mile (RM) of the Hudson River in New York State proceeding north from the southern tip of Manhattan (RM 0). The reserve includes the following four component sites: Piermont Marsh, Rockland County (RM 24)(41°02'30"N 73°54'15"W), Iona Island, Rockland County (RM 45)(41°18'15"N 73°58'45"W), Tivoli Bays, Dutchess County (RM 98)(42°02'15"N 73°55'10"W), and Stockport Flats, Columbia County (RM 124)(42°02'30"N 73°46'00"W). The four component sites include open water, tidal wetland, and adjacent upland buffer habitats and are representative of the diverse plant and animal communities that occupy the salinity gradient within the Hudson River Estuary. Development within the watersheds of the four component sites ranges from predominantly urban/suburban to forested/agricultural.

The weather station (FS) is located at the Tivoli Bays component site in Annandale, NY (42°01'05.46"N 73°55'01.13"W). A 30 foot, aluminum tower is used to elevate some of the weather monitoring equipment. The tower is on the deck of the office

building, on the west side, 9 feet off the ground. The wind anemometer, wind speed, and light sensors are located at the top of the tower, 39 feet off the ground. The datalogger and the barometric pressure sensor are enclosed within a fiberglass case attached to the tower, 12 feet off the ground. A heated rain gauge is next to the tower, attached to the building, 16 feet off the ground. The temperature/humidity sensor is next to the tower, attached to the deck handrail, 12 feet off the ground. Although trees surround the area, the tree line begins approximately 60 feet from the tower in most directions. The trees are at similar heights to the tower, but the sensors are not shaded at that location. The tower is approximately 1.2 miles Southeast of the Tivoli South Bay water quality monitoring station, 2.3 miles Southeast of the Tivoli North Bay water quality monitoring station, and 0.2 miles Northwest of the Saw Kill Creek water quality monitoring station.

The Hudson River Research Reserve was a pilot site for a real-time data dissemination via the GOES satellite system. As of 11/14/2005 at 16:30 a Campbell TX-312 transmitter has been operating, sending a data stream available to the public via the NOAA Hydrometeorological Automated Data System (HADS) website :

<http://www.nws.noaa.gov/oh/hads/>

Our NESDIS ID: 3B00B4F4; NWSLI ID: ANMN6.

Infrastructure additions during the GOES equipment installation included a larger solar panel and battery, a larger enclosure to house the battery, a Campbell TX-312 transmitter, associated GPS for time synchronization and a Yagi antenna.

6. Data collection period:

Weather data have been collected at the Field Station at Tivoli Bays since July 1999. Weather data were collected for the entire year in 2006.

7. Distribution:

According to the Ocean and Coastal Resource Management Data Dissemination Policy for the NERRS System-wide Monitoring Program, NOAA/ERD retains the right to analyze, synthesize and publish summaries of the NERRS System-wide Monitoring Program 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 publications 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 Estuarine Reserves Division, Office of Ocean and Coastal Resource Management, National Ocean Service, National Oceanic and Atmospheric Administration. The data set enclosed within this package/transmission is 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 (please see Section 1 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 <http://cdmo.baruch.sc.edu/>. Data are available in text format and as Access data tables.

8. Associated researchers and projects:

The Hudson River NERR water quality-monitoring program examines the physical and chemical constituents of the tributary waters and the tidal waters of the freshwater tidal marshes at the Tivoli Bays component site. Measurements include seston, dissolved oxygen, alkalinity, pH, temperature, salinity, conductivity, and concentrations of nitrate, phosphate, sulfate, and chloride. These data are used to identify long-term trends and to determine the relationship between meteorological conditions and the aquatic environments at this site.

Associated researchers working at the Tivoli Bays component site include scientists from the Institute of Ecosystem Studies in Millbrook, NY, Yale School of Forestry and Environmental Studies in New Haven, CT, Bard College, Annandale-on-Hudson, NY, Simon's Rock College, Great Barrington, MA, Cornell University Center for the Environment, Cornell Institute for Resource Systems, Cornell Department of Natural Resources, Ithaca, NY, State University of New York College of Environmental Science and Forestry, Syracuse, NY and Rensselaer Polytechnic Institute in Troy, NY.

II. Physical Structure Descriptors

9. Sensor specifications, operating range, accuracy, date of last calibration:

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

Date of Last calibration: August 2005

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: +/- 2% RH (0-90%) and +/- 3% (90-100%)
Temperature dependence of RH measurement: +/- 0.05% RH/°C
Date of Last calibration: August 2005

Parameter: Barometric Sensor

Units: millibars (mb)

Sensor type: CS-105 Vaisala Barocap © silicon capacitive pressure sensor

Model #: PTB101B

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

Date of Last calibration: March 2004

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 (130 mph); gust survival 100 m/s (220 mph)

Accuracy: +/- 2%

Date of last calibration: November 2004

Parameter: Wind direction

Units: degrees

Sensor type: balanced vane, 38 cm turning radius

Model #: R.M. Young 05103 Wind Monitor

Range: 360° mechanical, 355° electrical (5° open)

Accuracy: +/- 5%

Date of last calibration: November 2004

Parameter: LI-COR Quantum Sensor

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

Date of last calibration: February 2005

Parameter: Precipitation (heated rain gauge)

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

Date of Last calibration: June 2004

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° 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 @ 100 mA

Transmitter

Model #: TX312

On-board memory: Non-volatile flash for setup parameters. 16 Kbytes for data.

Data Transmission Rates: 100, 300 and 1200 BPS

Transmit Power: 5.6 Watts for 100 and 300 bps, 11.2 watts for 1200 bps

Frequency range: 401.701 MHz – 402.09850 MHz

Channel bandwidth: 100/300 BPS 1.5 KHz; 1200 BPS 3 KHz

Time Keeping: Initial setting accuracy: ± 100 microseconds synchronized to GPS; Drift ± 10 milliseconds/day over operating temperature range; GPS scheduled updates are 1 at power up and once per day thereafter. Once every 28 hours required for continual operation.

Operating range: -40° to +60°C; Storage -50° to +70°C; 0-99% RH, non-condensing

Power requirements: 10.8 to 16 VDC, 5 mA during GPS fix and 2.6 Amps during transmission

Campbell Scientific CR10X Wiring Panel has 128K of flash memory (EEPROM), in which it stores the operating system and its 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.

10. Coded variable indicator and variable code definitions:

Sampling Station:

Field Station at Tivoli Bays

Sampling Site Code:

FS

Station Code:

hudfsmet

11. Data Anomalies:

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.

January 2006

- a. Negative PAR readings (-0.1 to -0.4 mmol m⁻²) were recorded throughout the month of January. These correspond to night time records, and the values are within the stability range of the LI-COR sensor of $\pm 2\%$ change over one year. These negative values were not deleted.
- b. Elevated Relative Humidity readings (101 – 102%) were recorded intermittently throughout the month of January. Associated Minimum Relative Humidity and Maximum Relative Humidity values were also over 100%. These values are within the range of accuracy ($\pm 2\%$) of this sensor, and were not deleted.

February 2006

- a. Negative PAR readings (-0.1 to -0.4 mmol m⁻²) were recorded throughout the month of February. These correspond to night time records, and the values are within the stability range of the LI-COR sensor of $\pm 2\%$ change over one year. These negative values were not deleted.
- b. Elevated Relative Humidity readings (101%) were recorded. Associated Minimum Relative Humidity and Maximum Relative Humidity values were also over 100%. These values are within the range of accuracy ($\pm 2\%$) of this sensor, and were not deleted. These anomalously high values occurred in the following range of records:
02/03/2006 08:30 to 02/05/2006 02:45

March 2006

- a. Negative PAR readings (-0.1 to -0.4 mmol m⁻²) were recorded throughout the month of March. These correspond to night time records, and the values are within the stability range of the LI-COR sensor of $\pm 2\%$ change over one year. These negative values were not deleted.
- b. Elevated Relative Humidity readings (101%) were recorded. Associated Minimum Relative Humidity and Maximum Relative Humidity values were also over 100%. These values are within the range of accuracy ($\pm 2\%$) of this sensor, and were not deleted. These anomalously high values occurred in the following range of records:

03/13/2006 04:30 to 03/13/2006 08:15

April 2006

a. Negative PAR readings (-0.1 to -0.3 mmol m⁻²) were recorded throughout the month of April. These correspond to night time records, and the values are within the stability range of the LI-COR sensor of $\pm 2\%$ change over one year. These negative values were not deleted.

b. Values from 04/11/2006 were among data retrieved from the Central Data Management Office website (see Section 13- Missing Data). The following values were recorded as “null” and entered into the database as blanks:

DATE	TIME	CLASS	PARAMETER
04/11/2006	10:45	15	PAR
04/11/2006	11:15	15	RH
04/11/2006	11:30	15	PAR, RH

May 2006

a. Negative PAR readings (-0.1 to -0.3 mmol m⁻²) were recorded throughout the month of May. These correspond to night time records, and the values are within the stability range of the LI-COR sensor of $\pm 2\%$ change over one year. These negative values were not deleted.

b. Values from 05/03/2006 were among data retrieved from the Central Data Management Office website (see Section 13- Missing Data). The following values were recorded as “null” and entered into the database as blanks:

DATE	TIME	CLASS	PARAMETER
05/03/2006	06:45	15	Wdir, Precip, PAR
05/03/2006	07:00	15	Wdir, Precip, PAR
05/03/2006	07:15	15	Precip, PAR
05/03/2006	07:30	15	Precip, PAR

June 2006

a. Negative PAR readings (-0.1 to -0.3 mmol m⁻²) were recorded throughout the month of June. These correspond to night time records, and the values are within the stability range of the LI-COR sensor of $\pm 2\%$ change over one year. These negative values were not deleted.

July 2006

- a. Negative PAR readings (-0.1 to -0.3 mmol m⁻²) were recorded throughout the month of July. These correspond to night time records, and the values are within the stability range of the LI-COR sensor of $\pm 2\%$ change over one year. These negative values were not deleted.

August 2006

- a. Negative PAR readings (-0.1 to -0.3 mmol m⁻²) were recorded throughout the month of August. These correspond to night time records, and the values are within the stability range of the LI-COR sensor of $\pm 2\%$ change over one year. These negative values were not deleted.

September 2006

- a. Negative PAR readings (-0.1 to -0.3 mmol m⁻²) were recorded throughout the month of September. These correspond to night time records, and the values are within the stability range of the LI-COR sensor of $\pm 2\%$ change over one year. These negative values were not deleted.

October 2006

- a. Negative PAR readings (-0.1 to -0.4 mmol m⁻²) were recorded throughout the month of October. These correspond to night time records, and the values are within the stability range of the LI-COR sensor of $\pm 2\%$ change over one year. These negative values were not deleted.

November 2006

- a. Negative PAR readings (-0.1 to -0.6 mmol m⁻²) were recorded throughout the month of November. These correspond to night time records, and the values are within the stability range of the LI-COR sensor of $\pm 2\%$ change over one year. These negative values were not deleted.

December 2006

- a. Negative PAR readings (-0.1 to -0.4 mmol m⁻²) were recorded throughout the month of December. These correspond to night time records, and the values are within the stability range of the LI-COR sensor of $\pm 2\%$ change over one year. These negative values were not deleted.

b. Elevated Relative Humidity readings (101%) were recorded. Associated Minimum Relative Humidity and Maximum Relative Humidity values were also over 100%. These values are within the range of accuracy ($\pm 2\%$) of this sensor, and were not deleted. These anomalously high values occurred in the following range of records:
12/23/2006 02:45 to 12/26/2006 10:00

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.

January 2006

a. In the following records, erroneously low Minimum Temperature and Minimum Relative Humidity values were recorded in the 15 minute reading class. This also affected the 60 minute, and 144 minute classes. The following values were deleted:

SMPLDATE	SMPLTIME	CLASS	MinTemp	MinRH
1/6/2006	9:45	15	-47.4	2
1/6/2006	10:00	60	-47.4	2
1/6/2006	24:00	144	-47.4	2
1/23/2006	14:45	15	-43.4	1
1/23/2006	15:00	60	-43.4	1
1/23/2006	24:00	144	-43.4	1

February 2006

No data deleted

March 2006

No data deleted

April 2006

a. The following Out of Range records were deleted. The 11:30 records of Total Precipitation and Wind Direction were within range and were not deleted.

SMPLDATE	SMPLTIME	CLASS	BP	TotPrcp	Wdir	WSpd
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4/11/2006	11:15	15	-6439	-109	7118	924.8
4/11/2006	11:30	15	122			875.8

May 2006
No data deleted

June 2006

a. In the following records, erroneously low Minimum Temperature and Minimum Relative Humidity values were recorded in the 15 minute reading class. This also affected the 60 minute, and 144 minute classes. The following values were deleted:

SMPLDATE	SMPLTIME	CLASS	MinTemp	MinRH
6/19/2006	12:45	15	-36.6	22
6/19/2006	13:00	60	-36.6	22
6/19/2006	24:00	144	-36.6	22

July 2006
No data deleted

August 2006
No data deleted

September 2006

a. The following record experienced a malfunction. The values listed are erroneous and were deleted. The Precipitation value was logged as a blank.

SMPLDATE	SMPLTIME	CLASS	MinWSpd	MinWSpdT	PAR	AvgVolt
9/9/2006	10:00	15	70.7	73.068	66.6	859.0

b. The following record experienced a malfunction. The values listed are erroneous and were deleted. The remaining values for this record (MaxBPT, MinBP, MinBPT, etc.) were logged as blanks.

SMPLDATE	SMPLTIME	CLASS	MaxRHT	MinRH	MinRHT	BP	MaxBP
9/9/2006	19:00	15	0.2	945	0	972	13

October 2006

a. In the following records, erroneously low Minimum Temperature and Minimum Relative Humidity values were recorded in the 15 minute reading class. This also affected the 60 minute, and 144 minute classes. The following values were deleted:

SMPLDATE	SMPLTIME	CLASS	MinTemp	MinRH
10/24/2006	14:45	15	-78	4
10/24/2006	15:00	60	-78	4

10/24/2006 24:00 144 -78 4

November 2006
No data deleted

December 2006
No data deleted

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.

April 2006

Data (all sensors) were missing from 04/03/2006 10:00 to 04/30/2006 24:00. We believe this was the result of a timing conflict between an hourly upload from the CR10X to a computer and the telemetry transmission, combined with the computer used for the continuous upload crashing in the month of May. Data from the telemetry transmission were retrieved from the Central Data Management Office website, but only included the 15 minute readings of Air Temperature, Barometric Pressure, Relative Humidity, Precipitation, Photosynthetically Active Radiation, Wind Direction and Wind Speed. The Excel Macro could not be applied, so the data were formatted by hand and uploaded into EQWin for QA/QC processing. In addition, the following records were completely lost:

04/05/2006 11:45 to 12:30
04/13/2006 06:45 to 07:30
04/21/2006 10:45 to 11:30
04/22/2006 17:45 to 04/29/2006 23:45

May 2006

Data (all sensors) were missing from 05/01/2006 00:00 to 05/12/2006 08:00. We believe this was the result of a timing conflict between an hourly upload from the CR10X to a

computer and the telemetry transmission, combined with the computer used for the continuous upload crashing in the month of May. Data from the telemetry transmission were retrieved from the Central Data Management Office website, but only included the 15 minute readings of Air Temperature, Barometric Pressure, Relative Humidity, Precipitation, Photosynthetically Active Radiation, Wind Direction and Wind Speed. The Excel Macro could not be applied, so the data were formatted by hand and uploaded into EQWin for QA/QC processing. In addition, the following records were completely lost:

05/01/2006	11:45	to	18:30
05/03/2006	07:45	to	23:45
05/04/2006	00:15	to	16:30
05/06/2006	12:45	to	13:30
05/11/2006	08:45	to	09:30

June 2006

A single record (all sensors) is missing from 06/30/2006 09:00. This did not correspond with any weather station maintenance.

14. Other Remarks/Notes

On 10/20/2023 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.

None