

Chesapeake Bay Virginia (CBV) NERR Meteorological Metadata
January - December 2003
Latest update: **January 30, 2023**

I. Data Set & Research Descriptors

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2) Entry verification

a) Data Input Procedures:

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 Data Logger Program (nerr.csi) was loaded into the CR10X and controls the sensors and data collection schedule (see 2b of the Entry Verification section for the data collection schedule). The CR10X then interfaced with the PC208W software supplied by Campbell Scientific. This software was located on a laptop computer to which the data was downloaded manually in the field. Data was downloaded monthly from a storage module located within the weather station. Once an entire month of data was available, the CDMO Weather Data Management Program (WDMP) was used to convert the files to an Access database. This program was developed in Visual Basic to interface with the NERRS data collection schedule (see 2b of the Entry Verification section for the data collection schedule). The WDMP will automatically input and convert the monthly raw data file into an Access Database. There are three main steps the WDMP performs. First, it converts the comma delimited monthly raw data file into an Access Database. Secondly, it checks the data against a predetermined set of error criteria (see Part C of this section). Finally, it produces error and summary reports. Any anomalous data were investigated and are noted below in Anomalous Data section. Any data corrections that were performed are noted in the Data Correction section below.

Gemteck's EQwin version 5 and the CDMO developed Microsoft Excel EQWinFormat.xls macro now replaces the WDMP as the NERR MET database management program and primary QA/QC program.

The Centralized Data Management Office converted all SWMP weather data collected with CR10X program versions prior to version 4.0 which was distributed in October 2003. This was necessary in order to merge the old data format (12 array output) with the new data format found in version 4.0 (3 array output). The new format produces averages, maximums and minimums every fifteen minutes (array 15), every hour (array 60) and every day (array 144) for any sensors hooked up to the CR10X. Specifically, the 150 and 151 fifteen minute data were converted to the new 15 array; the hourly 101, 102, 105 and 106 data were converted to the new 60 array; and the daily 241, 242, 243, 244, 245 and 246 data were converted to the new 144 array. With the new format, the use of 55555's to code for deleted data and 11111's to code for missing data has been abandoned. Hence, all 55555's or 11111's contained in the SWMP weather data collected prior to Version 4.0 of the CR10X program were removed and left blank.

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

- i) 15-minute data are collected instantaneously for Air Temperature (C), Relative Humidity (%), Barometric Pressure (mb), Wind Speed (m/s), and Wind Direction (degrees). 15-minute Precipitation (mm) and PAR (mmol/m²) data are totaled from 5-second readings, prior to NERR_4.CSI
- ii) 15-minute average, maximum and minimum data are averages of 5-second readings for Air Temperature (oC), Relative Humidity (%), Barometric Pressure (mb) and Wind Speed (m/s) with NERR_4.CSI.
- iii) Hourly average, maximum, and minimum data are averages of 5-second readings for Air Temperature (oC), Relative Humidity (%), Barometric Pressure (mb), Wind Speed (m/s), and Wind Direction (degrees). Hourly totals for PAR (mmol/m²) and Precipitation (mm) are totals of 15-minute readings.
- iv) Daily average, maximum and minimum data are averages of 5-second readings for Air Temperature (oC), Relative Humidity (%), Barometric Pressure (mb), Wind Speed (m/s), and Wind Direction (degrees). Daily totals for PAR (mmol/m²) and Precipitation (mm) are totals of 15-minute readings.

Data were stored on a Campbell Scientific storage module (SM192 or SM4M), which was retrieved monthly. The data were downloaded and pre-processed as described in Section 2. QA/QC of the data was conducted using either the WDMP or EQWin. WDMP error reports and EQWin queries were based on the following anomalous data criteria:

Air Temp:

- 15 min sample not greater than max for the day
- 15 min sample not less than the min for the day
- 15 min sample not greater than 3.0 C from the previous 15 minutes (WDMP only)
- Max and min temp recorded for the day (WDMP only)
- 1-hour average not greater than 10% above the greatest 15 min sample recorded in the hour (WDMP only)
- Sample not greater than 50 C or less than -30 C (EQWin only)

Relative Humidity:

- Not changed by more than 25% from the previous 15 minutes (WDMP only)
- Max and min humidity recorded for the day (WDMP only)
- 1-hour average not greater than 10% above the greatest 15 min sample recorded in the hour (WDMP only)
- Sample not greater than 100% or less than 0% (EQWin only)

Pressure:

- Pressure not greater than 1040 mb or less than 980 mb (WDMP only)
- Pressure changes greater than 5 mb per hour (WDMP only)
- Maximum and minimum values recorded for the day (WDMP only)
- 1-hour average not greater than 10% above the greatest 15 min sample recorded in the hour (WDMP only)
- Sample not greater than 1060 mb or less than 900 mb (EQWin only)

Wind Speed:

- Wind speed not greater than 65 m/s or less than 0.5 m/s (WDMP only)
- Wind speed not greater than 30 m/s (EQWin only)
- Wind speed not less than 0.5 m/s for 12 consecutive hours (EQWin only)

Wind Direction:

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

Rainfall:

- Precipitation not greater than 5 mm in 15 min
- No precipitation for the month (WDMP only)

Photosynthetically Active Radiation (PAR):

- Sample not greater than 5000 mmol/m² or less than -0.5 mmol/m²

Time:

- 15-minute interval recorded

For all data:

- No duplicate data

3) Research objectives:

The principal objective is to record long-term meteorological data within the York River watershed in order to observe any environmental changes or trends over time. Samples were taken every 5 seconds and 15 minutes over roughly one-week collecting intervals.

4) Research methods:

The Campbell Scientific weather station samples every 5 seconds to produce both hourly and daily averages of those measurements of air temperature, relative humidity, barometric pressure, rainfall, wind speed and wind direction. An instantaneous sample is taken every 15 minutes and that data is stored in array 150. A one-month sampling interval was chosen so that the storage module would not run out of room and overwrite data. Periodically, sensors on the weather station are inspected for damage or debris. If any is found, it is repaired and/or cleaned. Sensors are removed and sent back to Campbell Scientific for calibration at minimum of every two years.

5) Site location and character:

Taskinas Creek (TC) Component:

The Chesapeake Bay NERRS of Virginia maintains a long-term water quality-monitoring program, and stream gauge station at Taskinas creek station. The Taskinas Creek station is located in the transitional zone of the York River tributary in the York River State Park.

The Chesapeake Bay National Estuarine Research Reserve in Virginia is located on the York River, a tributary of the Chesapeake Bay. The weather station is located at York River State Park that borders the York River and includes the Taskinas Creek tributary. The bordering river is 50 km long, 38 kilometers from the mouth of the river, and it 2.25 kilometer wide near the weather station, and. The weather station is located (37°24' 50.79850" N, 76°42' 44.51934" W) on a bluff (11m elevation) 60m from the York River in a manicured lawn area of the park. No trees or other major structures within a 35m radius of weather station. The stream gauge located 2km NW (288 degree of weather station) and the water quality station located 200m (298 degree) of weather station. The weather station has a landscape fence around it to keep visitors of the park away from the weather station. All the instruments, the Wind Sentry, Temperature and Humidity sensor, Barometric Sensor, and LiCor Sensor all located

on the approximately 3.5 m aluminum tower following the descriptions outlined in the CDMO Manual V 4.0. The Tipping Bucket Rain gauge is located within 2m of the tower. The sensors were wired to the CR10X following the protocol in the CDMO Manual.

6) Data collection period:

Weather data has been collected at the Taskinas Creek since 1996. The current weather station has been operational since 1996. Data was collected for the entire year in 2003.

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 Access data tables.

8) Associated researchers and projects:

Taskinas Creek watershed is a site of limited impact due to development or recreational use. There is a water quality station and a stream gauge station at this site. This site is being developed as a control site for watershed work in the area.

II. Physical Structure Descriptors

9) Sensor specifications, operating range, accuracy, date of last calibration

CSI LiCor Quantum Sensor

Model # LI190SB

Stability: $<\pm 2\%$ change over 1 yr

Operating Temperature: -40 to 65°C

Sensitivity: typically $5\ \mu\text{A}$ per $1000\ \mu\text{moles s}^{-1}\text{ m}^{-2}$

Light spectrum wavelength: 400 to $700\ \text{nm}$

Date of last calibration: 8/2000 installed 3/2003

CSI Wind Sentry

Model # 03001-5, #03301-5

Range: 0 - $50\ \text{m/s}$; 360° mechanical

Date of last calibration: 12/2000 installed 3/2003

CSI Temperature and Relative Humidity

Model #: HM45C

Operating Temperature: -40 - $+60^{\circ}\text{C}$

Temperature Measurement Range: -40 - $+60^{\circ}\text{C}$

Temperature Accuracy: $\pm 0.2^{\circ}\text{C}$ @ 20°C

Relative Humidity Measurement Range: 0 - 100% non-condensing

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

Uncertainty of calibration: $\pm 1.2\%$ RH

Date of Last calibration: 10/2000 installed 3/2003

CSI Barometric Sensor

Model #PTB101B

Operating Range: Pressure - 600 - $1060\ \text{mb}$

Temperature: -40 - $+60^{\circ}\text{C}$

Humidity: non-condensing

Accuracy: ± 0.5 to $6.0\ \text{mb}$ ($+20$ - 60°C)

Stability: $\pm 0.1\ \text{mb}$ per year

Date of Last calibration: 7/2000 installed 3/2003

Fluid Isolation Technology Tipping Bucket Rain Gauge

Model #: RG-2000-C

Range: 0.1 mm

Accuracy: 1.0% at <14"/hr

Date of Last calibration: 1/2001

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.

10) Coded variable indicator and variable code definitions:

Sampling station:	Sampling site code:	Station code:
Taskinas Creek	TC	cbvtcmet

11) Data anomalies/Data corrections:

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.

CalD=Calendar Day.

January 2003 TC

The following data appear to be correct:

Array	CalD	Time	Error Message
150	11	2300	Air temp diff >3C from 11 2300 (-5.0836) to 11 2315 (-1.5385)
150	11	2300	Humidity diff >25% from 11 2300 (81.07) to 11 2315 (51.639)
150	15	2145	Humidity diff >25% from 15 2145 (69.253) to 15 2200 (43.76)
150	16	2100	Humidity diff >25% from 16 2100 (59.903) to 16 2115 (85.643)
150	12	1445	Technician changed <0 wind direction to 0
150	14	1345	Technician changed <0 wind direction to 0
150	15	230	Technician changed <0 wind direction to 0

150	21	1415	Technician changed <0 wind direction to 0
150	26	2300	Technician changed <0 wind direction to 0
101	11	2400	Air temp avg (-1.7325) <15 minute min (-1.5385) by at least 10%
101	25	1200	Air temp avg (.68615) <15 minute min (.76902) by at least 10%

February 2003 TC

The following data appear to be correct:

Array ID	Calendar Day	Time	Error Message
150	22	1230	Air temp diff >3C from 22 1230 (11.954) to 22 1245 (7.6798)
150	23	945	Air temp diff >3C from 23 945 (16.781) to 23 1000 (13.712)
150	13	800	Humidity diff >25% from 13 800 (69.806) to 13 815 (42.827)
102	15	1900	Wind speed is less than 0.5 m/s from 15 1900 to 17 100
102	17	500	Wind speed is less than 0.5 m/s from 17 500 to 18 1300
150	25	645	Technician changed <0 wind direction to 0
150	26	1330	Technician changed <0 wind direction to 0
150	19	745	Pres diff >5mm from 19 745 (1032.5) to 19 (50) 800 (1027.3)
101	8	1000	Air temp avg (.04768) >15 minute max (-.16309) by at least 10%
101	25	2300	Air temp avg (.35605) >15 minute max (.3142) by at least 10%

March 2003 TC

The following data appear to be correct:

Array ID	Calendar Day	Time	Error Message
150	6	1430	Air temp diff >3C from 6 1430 (18.524) to 6 1445 (12.248)
150	9	1600	Air temp diff >3C from 9 1600 (21.7) to 9 1615 (18.565)
150	13	2000	Air temp diff >3C from 13 2000 (20.45) to 13 2015 (15.379)
150	20	2245	Air temp diff >3C from 20 2245 (16.056) to 20 2300 (11.385)
150	25	730	Air temp diff >3C from 25 730 (7.653) to 25 745 (10.789)
150	26	1715	Air temp diff >3C from 26 1715 (25.49) to 26 1730 (15.953)
150	26	1715	Humidity diff >25% from 26 1715 (31.611) to 26 1730 (68.025)
151	29	2345	Precip diff >5mm from 29 2345 (8.128) to 29 2400 (2.286)
151	30	15	Precip diff >5mm from 30 15 (1.27) to 30 30 (9.652)
151	30	30	Precip diff >5mm from 30 30 (9.652) to 30 45 (2.286)
102	12	1900	Wind speed is less than 0.5 m/s from 12 1900 to 13 800
102	15	2100	Wind speed is less than 0.5 m/s from 15 2100 to 16 1300
102	17	1500	Wind speed is less than 0.5 m/s from 17 1500 to 18 500
150	18	1515	Pres diff >5mb from 18 1515 (1005.7) to 19 1400 (1022.1)

April 2003 TC

The following data appear to be correct:

Array ID	Calendar Day	Time	Error Message
150	3	1730	Air temp >3 degree C from 3 1730 (29.412) to 3 1745 (26.078)
150	5	1030	Air temp diff from 5 1030 (23.833) to 5 1045 (20.164)
150	13	145	Air temp diff from 13 145 (6.7012) to 13 200 (10.175)
150	13	145	Rel hum diff > 25% from 13 145 (89.728) to 13 200 (63.137)

May 2003 TC

The following data appear to be correct:

Array ID	Calendar Day	Time	Error Message
150	8	1430	Air temp diff >3C from 8 1430 (27.336) to 8 1445 (23.202)
150	28	1345	Air temp diff >3C from 28 1345 (21.832) to 28 1400 (18.027)
150	28	1345	Rel hum diff >25% from 28 1345 (51.76) to 28 1400 (78.971)
151	26	245	Precip diff >5mm from 26 245 (1.27) to 26 300 (8.382)
102	17	2200	Wind speed is less than 0.5 m/s from 17 2200 to 18 2300
102	21	2400	Wind speed is less than 0.5 m/s from 21 2400 to 22 2400
102	23	300	Wind speed is less than 0.5 m/s from 23 300 to 23 2200

June 2003 TC

The following data appear to be correct:

Array ID	Calendar Day	Julian Date	Time	Error Message
151	4	2030	Precip difference from 4 (155) 2030 (.254) to 4 (155) 2045 (6.35) is greater than 5 mm	
151	4	2045	Precip difference from 4 (155) 2045 (6.35) to 4 (155) 2100 (1.27) is greater than 5 mm	
151	7	1515	Precip difference from 7 (158) 1515 (4.318) to 7 (158) 1530 (14.478) is greater than 5 mm	
151	7	1530	Precip difference from 7 (158) 1530 (14.478) to 7 (158) 1545 (1.778) is greater than 5 mm	
151	14	2215	Precip difference from 14 (165) 2215 (2.032) to 14 (165) 2230 (9.144) is greater than 5 mm	
151	14	2230	Precip difference from 14 (165) 2230 (9.144) to 14 (165) 2245 (3.048) is greater than 5 mm	
151	19	100	Precip difference from 19 (170) 100 (.762) to 19 (170) 115 (7.874) is greater than 5 mm	

102 700	9	1900	Wind speed is less than 0.5 m/s from 9 (160) 1900 to 10 (161)
102 700	22	1900	Wind speed is less than 0.5 m/s from 22 (173) 1900 to 23 (174)
102 700	23	1800	Wind speed is less than 0.5 m/s from 23 (174) 1800 to 24 (175)
102 700	24	1700	Wind speed is less than 0.5 m/s from 24 (175) 1700 to 25 (176)
102 800	25	1800	Wind speed is less than 0.5 m/s from 25 (176) 1800 to 26 (177)
102 600	26	1800	Wind speed is less than 0.5 m/s from 26 (177) 1800 to 27 (178)
102 800	29	1600	Wind speed is less than 0.5 m/s from 29 (180) 1600 to 30 (181)
150 (-.09556)	29	2100	Wind direction is greater than 360 or less than 0 on 29 (180) 2100
150 (-.09557)	29	2145	Wind direction is greater than 360 or less than 0 on 29 (180) 2145
102	29	1800	Wind speed is less than 0.5 m/s from 29 1800 to 30 800

July 2003 TC

The following data appear to be correct:

Array ID	Calendar Day	Time	Error Message
150	7	1945	Air temp diff >3C from 7 1945 (27.403) to 7 2000 (24.274)
150	9	1730	Air temp diff >3C from 9 1730 (27.182) to 9 1745 (22.856)
150	13	1715	Air temp diff >3C from 13 1715 (27.124) to 13 1730 (23.924)
150	28	1930	Air temp diff >3C from 28 1930 (26.2) to 28 1945 (22.938)
151	9	1745	Precip diff >5mm from 9 1745 (8.636) to 9 1800 (.508)
151	18	2115	Precip diff >5mm from 18 2115 (1.016) to 18 2130 (12.7)
151	18	2130	Precip diff >5mm from 18 2130 (12.7) to 18 2145 (5.334)
151	18	2200	Precip diff >5mm from 18 2200 (7.112) to 18 2215 (.508)
151	18	2330	Precip diff >5mm from 18 2330 (8.636) to 18 2345 (1.524)
151	22	2000	Precip diff >5mm from 22 2000 (2.286) to 22 2015 (9.398)
151	22	2030	Precip diff >5mm from 22 2030 (8.128) to 22 2045 (.508)
151	22	2115	Precip diff >5mm from 22 2115 (2.286) to 22 2130 (11.938)
151	22	2130	Precip diff >5mm from 22 2130 (11.938) to 22 2145 (4.318)
151	30	1115	Precip diff >5mm from 30 1115 (1.524) to 30 1130 (11.176)
151	30	1130	Precip diff >5mm from 30 1130 (11.176) to 30 1145 (4.064)
102	14	1600	Wind speed is less than 0.5 m/s from 14 1600 to 15 400
102	29	1300	Wind speed is less than 0.5 m/s from 29 1300 to 30 900

August 2003 TC

The following data appear to be correct:

Array ID	Calendar Day	Time	Error Message
150	3	1230	Air temp diff >3C from 3 1230 (30.385) to 3 1245 (26.985)
150	17	1530	Air temp diff >3C from 17 1530 (29.654) to 17 1545 (25.787)
151	7	845	Precip diff >5mm from 7 845 (.254) to 7 900 (6.096)
151	9	1100	Precip diff >5mm from 9 1100 (7.874) to 9 1115 (2.032)
151	11	900	Precip diff >5mm from 11 900 (3.556) to 11 915 (11.176)
151	11	915	Precip diff >5mm from 11 915 (11.176) to 11 930 (5.08)
151	30	1845	Precip diff >5mm from 30 1845 (1.778) to 30 1900 (19.558)
151	30	1900	Precip diff >5mm from 30 1900 (19.558) to 30 1915 (5.588)
102	8	1800	Wind speed is less than 0.5 m/s from 8 1800 to 9 600
102	10	2000	Wind speed is less than 0.5 m/s from 10 2000 to 11 1200
102	11	1700	Wind speed is less than 0.5 m/s from 11 1700 to 12 700
102	12	1900	Wind speed is less than 0.5 m/s from 12 1900 to 13 1200
102	13	2000	Wind speed is less than 0.5 m/s from 13 2000 to 14 900
102	15	1800	Wind speed is less than 0.5 m/s from 15 1800 to 16 1100
102	16	1900	Wind speed is less than 0.5 m/s from 16 1900 to 17 1500
102	18	2100	Wind speed is less than 0.5 m/s from 18 2100 to 19 1000
102	21	1700	Wind speed is less than 0.5 m/s from 21 1700 to 22 600
102	24	1800	Wind speed is less than 0.5 m/s from 24 1800 to 25 700
102	25	1800	Wind speed is less than 0.5 m/s from 25 1800 to 26 1500
102	27	1400	Wind speed is less than 0.5 m/s from 27 1400 to 28 900
102	29	1800	Wind speed is less than 0.5 m/s from 29 1800 to 30 1800
102	30	2200	Wind speed is less than 0.5 m/s from 30 2200 to 31 2400

September 2003 TC

The following data appear to be correct:

Array ID	Calendar Day	Time	Error Message
151	3	1400	Precip diff from 3 1400 (.254) to 3 1415 (7.874)
151	3	1415	Precip diff >5mm from 3 1415 (7.874) to 3 1430 (2.794)
151	4	1600	Precip diff >5mm from 4 1600 (6.096) to 4 1615 (14.732)
151	4	1615	Precip diff >5mm from 4 1615 (14.732) to 4 1630 (2.286)
151	18	2100	Precip diff >5mm from 18 2100 (.762) to 18 2115 (10.414)
151	23	1415	Precip diff >5mm from 23 1415 (5.08) to 23 1430 (11.938)
151	23	1430	Precip diff >5mm from 23 1430 (11.938) to 23 1445 (1.524)
151	23	1730	Precip diff >5mm from 23 1730 (6.096) to 23 1745 (.254)
151	24	930	Precip diff >5mm from 24 930 (7.366) to 24 945 (.508)
151	24	1030	Precip diff >5mm from 24 1030 (2.794) to 24 1045 (31.75)
151	24	1045	Precip diff >5mm from 24 1045 (31.75) to 24 1100 (2.794)

102	1	100	Wind speed is less than 0.5 m/s from 1 100 to 2 1000
102	2	1700	Wind speed is less than 0.5 m/s from 2 1700 to 3 1400
102	3	2300	Wind speed is less than 0.5 m/s from 3 2300 to 4 1500
102	11	1100	Wind speed is less than 0.5 m/s from 11 1100 to 12 1100
102	13	2200	Wind speed is less than 0.5 m/s from 13 2200 to 16 100
102	16	1600	Wind speed is less than 0.5 m/s from 16 1600 to 17 1900
102	20	1700	Wind speed is less than 0.5 m/s from 20 1700 to 21 1000
102	25	1800	Wind speed is less than 0.5 m/s from 25 1800 to 26 700

October 2003 TC

The following data appear to be correct:

Array ID	Calendar Day	Time	Error Message		
150	16	545	Missing 150 Array (15 minute data)		
150	14	2200	Air temp diff > 3 C from 14 2200 (19.005) to 14 2215 (15.418)	150	27
	1600		Air temp diff > 3 C from 27 1600 (18.845) to 27 1615 (15.615)	150	2
			Technician changed <0 wind direction to 0		2345
150	4	530	Technician changed <0 wind direction to 0		
150	4	1800	Technician changed <0 wind direction to 0		
150	4	1900	Technician changed <0 wind direction to 0		
150	5	2145	Technician changed <0 wind direction to 0		
150	8	500	Technician changed <0 wind direction to 0		
150	10	200	Technician changed <0 wind direction to 0		
150	10	1945	Technician changed <0 wind direction to 0		
150	13	1945	Technician changed <0 wind direction to 0		
150	15	1715	Technician changed <0 wind direction to 0		
150	16	415	Technician changed <0 wind direction to 0		
150	17	200	Technician changed <0 wind direction to 0		
150	17	2215	Technician changed <0 wind direction to 0		
150	19	2115	Technician changed <0 wind direction to 0		
150	20	2330	Technician changed <0 wind direction to 0		
150	22	300	Technician changed <0 wind direction to 0		
150	24	1700	Technician changed <0 wind direction to 0		
150	28	615	Technician changed <0 wind direction to 0		
150	29	130	Technician changed <0 wind direction to 0		
150	31	1915	Technician changed <0 wind direction to 0		
151	14	2200	Precip diff >5mm from 14 2200 (.508) to 14 2215 (6.35)		
151	14	2215	Precip diff >5mm from 14 2215 (6.35) to 14 2230 (.762)		

November 2003 TC

The following data appear to be correct:

Array ID	Calendar Day	Time	Error Message
150	6	1430	Air temp diff > 3 C from 6 1430 (25.554) to 6 1445 (21.487)
150	19	1330	Air temp diff > 3 C from 19 1330 (23.298) to 19 1345 (19.763)
150	24	2045	Air temp diff > 3 C from 24 2045 (20.325) to 24 2100 (15.053)
150	26	800	Air temp diff > 3 C from 26 800 (2.1933) to 26 815 (5.3345)
150	28	1845	Air temp diff > 3 C from 28 1845 (21.041) to 28 1900 (14.643)
102	17	1700	Wind speed is less than 0.5 m/s from 17 1700 to 18 1000

December 2003 TC

150	1	1230	Missing 150 Array (15 minute data)
150	24	1545	Air temp diff > 3 C from 24 545 (16.458) to 24 1600 (10.786)
150	27	2000	Air temp diff > 3 C from 27 2000 (4.1102) to 27 2015 (.83538)
101	18	200	Air temp avg (.0958) < 15 minute min (.19219) by at least 10%
101	19	2000	Air temp avg (.05939) > 15 minute max (.0529) by at least 10%

The following data appear to be correct:

Array ID	Calendar Day	Time	Error Message
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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.

March 2003 TC

101	18	1700	Technician changed 101 Array data from 18 1700 to 19 1400
102	18	1700	Technician changed 102 Array from 18 1700 to 18 1700
150	18	1700	Technician changed 150 Array data from 18 1700 to 19 1330
241	18	2400	Technician changed 241 Array from 18 2400 to 19 2400
242	18	2400	Technician changed 242 Array from 18 2400 to 18 2400
243	18	2400	Technician changed 243 Array data from 18 2400 to 19 2400

244 18 2400 Technician changed 244 Array data from 18 2400 to 19 2400

Station maintenance occurred on 3/18 and 3/19, on 3/18 at 15:30 the station was powered down until 16:45 therefore hourly data at 17:00 and daily data at 24:00 were deleted.

The station was powered down on 3/19 at 13:45 to perform maintenance, therefore hourly data at 14:00 and daily data at 24:00 were deleted.

BP probe was wired wrong after the station maintenance was performed therefore BP data were deleted from 3/18 at 16:45 to 3/19 at 13:45 when the probe was rewired again. Daily BP data were also deleted.

April 2003 TC

101 16 1100 Technician changed 101 Array data from 16 1100 to 16 1100
102 16 1100 Technician changed 102 Array from 16 1100 to 16 1100
241 16 2400 Technician changed 241 Array from 16 2400 to 16 2400
242 16 2400 Technician changed 242 Array from 16 2400 to 16 2400
243 16 2400 Technician changed 243 Array data from 16 2400 to 16 2400
244 16 2400 Technician changed 244 Array data from 16 2400 to 16 2400

On 4/16 at 11:00 station was powered down for maintenance, due to 5 second data being lost hourly data at 11:00 were deleted as well as daily data.

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.

January 2003 TC

None

February 2003 TC

None

March 2003 TC

150	18	1530	Missing 150 Array data (15 min data) from 18 1530 to 18 1645
150	19	1345	Missing 150 Array (15 minute data)
101	18	1600	Missing 101 Array (Hourly Averages)
102	18	1600	Missing 102 Array (Hourly Average Wind Parameters)

Data are missing due to station being powered down for routine maintenance and rewiring of probes.

April 2003 TC

None

May 2003 TC

None

June 2003 TC

None

July 2003 TC

None

August 2003 TC

None

September 2003 TC

none

October 2003 TC

150	16	545	Missing 150 Array (15 minute data)
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November 2003 TC

None

December 2003 TC

150	1	1230	Missing 150 Array (15 minute data)
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14) Other Remarks/notes

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.

Rain Events:

January 2003

Date	RainAmount (mm)
1	8.128
3	4.064
6	4.318
7	.254
15	2.286
17	.254
19	.254
20	.254
23	.254
29	10.160
30	16.256
31	1.778
Monthly Total	48.3

February 2003

Date	RainAmount (mm)
1	.254
4	4.318
7	17.780

10	5.080
14	1.016
15	17.526
17	.762
18	.508
19	28.448
20	.508
21	3.302
22	18.034
23	1.270
26	.254
27	26.416
28	4.064
Monthly Total	129.5

March 2003

Date	RainAmount (mm)
1	.508
2	8.890
4	.254
5	16.764
6	8.890
13	6.096
16	4.572
17	.254
18	.254
19	.254
20	34.036
26	4.064
27	.254
29	14.732
30	39.370
Monthly Total	139.2

April 2003

Date	RainAmount (mm)
1	.254
7	46.482
8	3.556
9	26.416
10	17.018
11	6.096
17	.254

18	14.224
25	9.906
26	1.016
27	.762
Monthly Total	126.0

May 2003

Date	RainAmount (mm)
------	-----------------

2	1.524
3	3.302
4	1.016
5	3.556
6	.254
8	.508
9	.254
10	1.778
15	.762
16	2.794
17	.508
18	21.590
21	29.972
22	13.970
23	6.350
25	2.032
26	22.352
27	4.064
28	.254
29	3.302
30	.254
31	9.652
Monthly Total	130.0

June 2003

Date	RainAmount (mm)
------	-----------------

3	.254
4	13.716
5	.254
7	32.512
9	4.572
11	1.778

12	.254
14	20.066
15	1.524
17	1.778
18	.254
19	24.384
20	1.524
28	1.778
Monthly Total	104.6

July 2003

Date	RainAmount (mm)
2	22.860
7	.254
8	2.032
9	13.208
10	1.524
13	18.034
14	2.032
18	41.910
19	1.016
22	50.038
23	.254
26	.254
28	13.462
29	13.970
30	30.988
31	1.524
Monthly Total	213.4

August 2003

Date	RainAmount (mm)
1	5.334
2	4.318
3	9.652
4	3.048
5	1.524
6	3.810
7	21.590
8	12.192
9	24.384
10	8.636

11	37.592
12	.762
13	.254
18	9.398
19	.254
24	5.588
27	.508
28	3.302
30	36.322
31	1.524
Monthly Total 190.0	

September 2003

Date	RainAmount (mm)
3	29.210
4	38.862
7	4.318
18	54.356
19	34.036
22	3.556
23	68.326
24	82.042
25	.762
27	4.064
Monthly Total 319.5	

October

Date	RainAmount (mm)
10	.254
11	.508
14	16.256
15	.254
17	3.302
26	1.270
27	4.572
28	14.732
29	28.448
Monthly Total 69.6	

November 2003

Date	RainAmount (mm)
4	.254
6	5.334
7	4.572

16	.254
18	.254
19	29.972
24	.508
28	10.668
Monthly Total	51.8

December 2003

Date	RainAmount (mm)
4	10.414
5	20.828
6	.254
10	19.304
11	5.842
14	40.132
16	.254
17	9.144
19	.508
23	.254
24	11.430
30	1.016

Monthly Total 119.4

2003 Year Total 1620.76mm