Tijuana River (TJR) National Estuarine Research Reserve Meteorological Metadata
July - December 2001
Latest Update: **February 23, 2023**

I. Data Set & Research Descriptors

1) Principal investigator(s) & contact persons

Contact Persons:
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2) Entry verification

a) Data Input Procedures

The 15-minute, 1-hour average, and 24-hour meteorological data were downloaded from each instrument on the weather station to a Campbell Scientific CR10X datalogger. The CDMO Data Logger Program (nerr30.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 computer to which the data was uploaded (every 15 minutes) via a short haul modem to a computer located at Tijuana Estuary Visitor's Center. The data was saved as a raw data file (TJR.dat) on the hardrive. Following download from the CR10x the data were automatically uploaded via FTP to a SQL server at San Diego State University and are available near real time via the internet. The data are exported monthly from the SQL server into CDMO Weather Data Management Program (WDMP) to generate error logs (see section 2c for the CDMO Meteorological Data Collection Error/Anomalous Data Criteria), summary reports and to create export files to be sent to the CDMO. The WDMP program was developed in Visual Basic to interface with the NERR Meteorological Data Collection Schedule (see 2b of the Entry Verification section for the data collection schedule). Any anomalous data were investigated and are noted below in the Anomalous Data Section. Any data corrections that were performed are noted in the Data Correction Section below. All error messages and anomalous data were compared to reference data obtained from a nearby (1/2 mile) weather station operated by the NAVY. Michelle Cordrey was responsible for QA/Qc of data.

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.

b) Data Collection Schedule

i) Data is collected in the following formats:

1) 15 minute data are instantaneous readings except for PAR and precipitation data that are totalized from 5 second samples sorted by date and time. (Arrays 150 and 151)
2) Hourly averages (Arrays 101 and 102) are calculated from 5 second samples sorted by date and time except for PAR and precipitation data that are hourly totals calculated from 15 minute totals (Arrays 105 and 106).
3) Daily average (arrays 241 and 242), maximum with time, and minimum with time (arrays 243 and 244) are calculated from 5 second samples sorted by date and time except for PAR and precipitation data which are 24 hour totals calculated from hourly totals (arrays 245 and 246).

ii) 15 minute sample point parameters: Date, Time, Air Temperature (°C), Relative Humidity (%), LiCor (PAR), Barometric Pressure (mb), Wind Speed (m/s), Wind Direction (Array 150); Rainfall (mm) (Array 151)

iii) Hourly average parameters: Date, Time, Air Temperature (°C), Relative Humidity (%), Barometric Pressure (mb) (Array 101); Wind Speed (m/s), Wind Direction, Wind Speed Maximum (Array 102)

iv) Hourly total parameters: LiCor (PAR) (Array 105); Rainfall (mm) (Array 106)

v) Daily Average parameters: Date, Time, Air Temperature (°C), Relative Humidity (%), Barometric Pressure (mb) (Array 241); Wind Speed (m/s), Wind Direction, Wind Direction Standard Deviation (using Yamartino's Algorithm) (Array 242)

vi) Daily Total parameter: LiCor (PAR) (Array 245); Rainfall (mm) (Array 246)

vii) Daily Maximum parameters: Date, Time, Air Temperature (°C), Time, Relative Humidity (%), Time, LiCor (PAR), Time, Barometric Pressure (mb), Time, Wind Speed (m/s), Time, Battery Voltage, Time (Array 243)

viii) Daily Minimum parameters: Date, Time, Air Temperature (°C), Time, Relative

Humidity (%), Time, LiCor (PAR), Time, Barometric Pressure (mb), Time, Wind Speed (m/s), Time, Battery Voltage, Time (Array 244)

c) Error/Anomalous Data Criteria

Air Temp:

- 15 min sample greater than max for the day
- 15 min sample less than the min for the day
- 15 min sample greater than 3.0 °C from the previous 15 minutes
- Max and Min values not recorded for the day
- 1-hour average greater than 10% above the greatest 15 min sample recorded in the hour

Relative Humidity:

- Changed by more than 25% from the previous 15 minutes
- Max and Min values not recorded for the day
- 1-hour average greater than 10% above the greatest 15 min sample recorded in the hour

Rainfall:

- Precipitation greater than 5 mm in 15 minutes
- No precipitation for the month

Wind Speed:

- Wind speed greater than 30 m/s
- Wind speed less than 0.5 m/s

Wind Direction:

- Wind direction greater than 360 degrees
- Wind direction less than 0 degrees

Pressure:

- Pressure greater than 1040 mb or less than 980 mb
- Pressure changes greater than 5 mb per hour
- Max and Min values not recorded for the day
- 1-hour average greater than 10% above the greatest 15 min sample recorded in the hour

Time:

- 15-minute interval not recorded

For all data:

- Duplicate interval data

3) Research objectives (Campbell Weather Station):

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

4) Research methods:

The Campbell Scientific weatherstation 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-week sampling interval was chosen so that the CR10X datalogger would not run out of room and overwrite data, especially if the short haul modem link failed and data could not be automatically sent from the datalogger to the computer. If this were the case, the data would have to be downloaded at the storage module to a laptop or the storage module would be replaced and brought back to the lab for uploading following procedures in Part D. Section 4.5 of the CDMO Operations Manual. Periodically, sensors on the weatherstation 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. There were no other analyses done on the meteorological data at present.

5) Site location and character:

The Tijuana River NERR is located on the Southern Pacific Coast, next to the California border with Mexico at a latitude of 32 deg. 34 min. N and Longitude of 117 deg. 07 min. W. The area surrounding the 2,531 acre reserve is heavily developed by residential housing as is the watershed which drains into the estuary. Approximately 2/3 of the watershed is in Mexico and is subject to periodic raw sewage outflows. The North Eastern section of is bordered by a military helicopter training base. Vegetation in the area is dominated by common pickleweed (Spartina virginica) and Pacific cordgrass (Spartina foliosa).

The following climate summary for Imperial Beach was generated by the National Weather Service for the Imperial Beach Naval Outlying Landing Field which is 1 mile southeast of the TRNERR met station:

Imperial Beach is characterized by a sub-tropical climate with very dry summers and rain occurring during the winter season. The most significant precipitation amounts occur in November, December, January, February and March. The dry season extends from May through October. On rare occasions an extra-tropical storm may move into this area in late August or September from the south, bringing moderate east to southeast winds and heavy rainfall.

The station is subject to daily land and sea breezes. The sea breeze commences 2 to 4 hours after sunrise and is experienced as a westerly wind with an average speed of 10 knots. Land breezes normally begin 2 to 4 hours after sunset and are generally lighter than sea breezes. The approach of a cold front may increase the local winds from south or southwest and they may reach speeds of 30 to 40 knots. After the

frontal passage the winds diminish at the station as they shift to the north or northwest even though offshore they may continue to maintain speeds in excess of 30 knots. When "Santa Ana" winds occur, normally during the fall and winter months, there is a sharp increase in temperature as winds begin blowing from the Mojave Desert. The humidity may decrease to 15%% or less. Winds generally are sustained at 18 to 24 knots with gusts in excess of 30 knots from the east or southeast.

Thunderstorms at the station in the summer are infrequent and usually very weak. They occur with greatest frequency in the interior and are usually confined to the higher mountains and southeastern desert areas. During the winter they are rare but sometimes accompany cold frontal passages.

A local phenomena called the Catalina Eddy has a critical effect on fog and stratus along the coast from Santa Barbara to the Mexican border. The stratus layer is carried farther north and inland than would normally be expected.

Descriptions of the specific sampling station follows:

The weather station is located approximately 30m west of the TR NERR Visitor Centor at a Latitude of 32deg 34min 28.32sec N and a Longitude of 117deg 07min 37.05sec W. The station is 50m north of the water quality sampling station. The vegetation surrounding the weather station are mainly upland scrub species.

The anemometer, wind direction and Licor sensors are located at the top of a 3.5 meter aluminum tower. The temperature and humidity sensors are located midway up and on the west side of the tower. The Tipping Bucket rain gauge sits on a separate 2 meter high pole located approx. a meter to the west of the main tower. It is above the ground to limit interference from the security fence surrounding the weather station. The sensors were wired to the CR10X following the protocol in the CDMO Manual.

6) Data collection period:

Weather data collection began at the Tidal Linkage station in 1999. However, since too long a period between calibrations of sensors had elapsed, data prior to July 2001 has been determined not to sufficiently reliable.

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:

The Tijuana River NERR has a water quality station located at the Tidal Linkage. The principal objective of this study is to record long-term water quality data for the Tijuana Estuary in order to observe any physical changes or trends in water quality both spatially and over time. Additionally, NERR SWMP tier 1 nutrient monitoring is being conducted at the Tidal Linkage station.

II. Physical Structure Descriptors

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

LiCor Quantum Sensor
Model # LI190SB
Stability: <±2% change over 1 yr
Operating Temperature: -40 to 65°C
Sensitivity: typically 5 µA per 1000µmoles s-1 m-2
Light spectrum wavelength: 400 to 700 nm
Date of last calibration: 04/17/01

Wind Sentry
Model # 03001 R.M Young
Range: 0-50 m/s; 360° mechanical
Date of last calibration: May 2001

Temperature and Relative Humidity
Model #: HMP35C
Operating Temperature: -35 to +50°C
Temperature Measurement Range: -35 to +50°C
Temperature Accuracy: ± 0.2 °C (0-60°C)
Relative Humidity Operating Temperature: : -20 to +60°C
Relative Humidity Measurement Range: 0-100% non-condensing
RH Accuracy: +/-2% RH (0-90%) and +/-3%(90-100%)
Date of Last calibration: May 2001

Barometric Sensor
Model # CS-105
Operating Range: Pressure: 600-1060 mb
Temperature: -40 to +60C
Humidity: non-condensing
Accuracy: ±0.5 to 6.0 mb (+20-60C)
Stability: ± 0.1 mb per year
Date of Last calibration: not known

Tipping Bucket Rain Gauge
Model #: TE 525
Range: 0.1 mm
Accuracy: 1.0% at <2"/hr
Date of Last calibration: June 2001

10) Coded variable indicator and variable code definitions:

Sampling station:	Sampling site code:	Station code:
Tidal Linkage	TL	tjrtlmet

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.

Wind Direction Sensor Comment: A faulty connection between the wind direction sensor cable and the sensor body prevented the sensor from reporting the full range of wind direction data (0-360 degrees) accurately. The sensor was reporting a maximum wind direction of approximately 45 degrees, therefore all wind direction data were

removed.

July 2001

Data correction:
Wind direction data were removed for the following arrays, dates and times due to malfunctioning wind direction sensor:

ArrayID	Date	Time	Error Message
102	182	100	Technician changed 102 Array from 1 (182) 100 to 31 (212) 1200
150	182	15	Technician changed 150 Array data from 1 (182) 15 to 31 (212) 1230
242	182	2400	Technician changed 242 Array from 1 (182) 2400 to 30 (211) 2400

August 2001

None

September 2001

None

October 2001

RH data dips from 10/14 830-1200 (99% to 39%) then recovers. Data retained.

Data correction:
Wind direction data were removed for the following arrays, dates and times due to malfunctioning wind direction sensor:

ArrayID	Date	Time	Error Message
102	282	1100	Technician changed 102 Array data at 9 (282) 1100 to 31 (304) 2400
150	282	1015	Technician changed 150 Array data at 9 (282) 1015 to 31 (304) 2400
242	282	2400	Technician changed 242 Array data at 9 (282) 2400 to 31 (304) 2400

Licor data were removed for the following arrays, dates and times due to the sensor being covered:

ArrayID	Date	Time	Error Message
150	282	1100	Technician changed 150 Array data at 9 (282) 1100 to 31 (304) 2400
105	282	2400	Technician changed 105 Array data at 9 (282) 2400 to 31 (304) 2400
243	282	2400	Technician changed 243 Array data at 9 (282) 2400 to 31

(304) 2400
244 282 2400 Technician changed 244 Array data at 9 (282) 2400 to 31 (304) 2400
245 282 2400 Technician changed 245 Array data at 9 (282) 2400 to 31 (304) 2400

November 2001

It could not be determined if data are correct. Hourly data correlate to reference station but no 15 min data available for reference station.

ArrayID	Date	Time	Error Message
150	333	145	Rel hum difference from 29 (333) 145 (41.875) to 29 (333) 200 (100) is greater than 25%
150	333	200	Rel hum difference from 29 (333) 200 (100) to 29 (333) 215 (.13444) is greater than 25%
150	333	245	Rel hum difference from 29 (333) 245 (.33618) to 29 (333) 300 (100) is greater than 25%
150	333	315	Rel hum difference from 29 (333) 315 (100) to 29 (333) 330 (.13448) is greater than 25%
150	333	400	Rel hum difference from 29 (333) 400 (.13448) to 29 (333) 415 (100) is greater than 25%
150	333	430	Rel hum difference from 29 (333) 430 (100) to 29 (333) 445 (62.061) is greater than 25%

The following data appear to be correct:

151	309	2100	Precip difference from 5 (309) 2100 (.508) to 5 (309) 2115 (6.096) is greater than 5 mm

The following data appear to be correct:

ArrayID	Date	Time	Error Message
102	305	2000	Wind speed is less than 0.5 m/s from 1 (305) 2000 to 2 (306) 800
102	306	1900	Wind speed is less than 0.5 m/s from 2 (306) 1900 to 3 (307) 900

It could not be determined if data are correct. Hourly data correlate to reference station and sensor working properly.

ArrayID	Date	Time	Error Message
101	333	500	Relative humidity average in 1 hour data (52.966) is less than 15 minute minimum (62.061) by at least 10%

Data correction:
Wind direction data were removed for the following arrays, dates and times due to malfunctioning wind direction sensor:

ArrayID	Date	Time	Error Message
102	305	100	Technician changed 102 Array from 1 (305) 100 to 10 (314) 1400
102	317	1100	Technician changed 102 Array data at 13 (317) 1100 to 30

(334) 2400
150 305 15 Technician changed 150 Array data from 1 (305) 15 to 10 (314) 1400
150 317 1115 Technician changed 150 Array data at 13 (317) 1115 to 30 (334) 2400
242 305 2400 Technician changed 242 Array from 1 (305) 2400 to 9 (313) 2400
242 317 2400 Technician changed 242 Array data at 13 (317) 2400 to 30 (334) 2400

Licor data were removed for the following arrays, dates and times due to the sensor being covered:

ArrayID Date Time Error Message
150 305 1015 Technician changed 150 Array data at 1 (305) 1015 to 10 (314) 2400
105 305 2400 Technician changed 105 Array data at 1 (305) 2400 to 10 (314) 2400
243 305 2400 Technician changed 243 Array data at 1 (305) 2400 to 10 (314) 2400
244 305 2400 Technician changed 244 Array data at 1 (305) 2400 to 10 (314) 2400
245 305 2400 Technician changed 245 Array data at 1 (305) 2400 to 10 (314) 2400

December 2001

ArrayID Date Time Error Message
150 347 1815 Air temp difference from 13 (347) 1815 (12.784) to 13 (347) 1830 (9.5154) is greater than 3.0 degrees C

It could not be determined if data are correct. Hourly data correlate to reference station but no 15 min data available for reference station.

Array ID Date Time Error Message
150 341 1130 Rel hum difference from 7 (341) 1130 (35.032) to 7 (341) 1145 (60.127) is greater than 25%
150 342 2000 Rel hum difference from 8 (342) 2000 (68.167) to 8 (342) 2015 (35.124) is greater than 25%
150 342 2015 Rel hum difference from 8 (342) 2015 (35.124) to 8 (342) 2030 (81.531) is greater than 25%
150 351 130 Rel hum difference from 17 (351) 130 (59.766) to 17 (351) 145 (100) is greater than 25%
150 351 145 Rel hum difference from 17 (351) 145 (100) to 17 (351) 200 (56.412) is greater than 25%
150 351 315 Rel hum difference from 17 (351) 315 (64.28) to 17 (351) 330 (.13448) is greater than 25%
150 351 330 Rel hum difference from 17 (351) 330 (.13448) to 17 (351) 345 (100) is greater than 25%
150 351 400 Rel hum difference from 17 (351) 400 (100) to 17 (351) 415

(.13448) is greater than 25%
150 351 430 Rel hum difference from 17 (351) 430 (.13448) to 17 (351) 445 (100) is greater than 25%
150 351 445 Rel hum difference from 17 (351) 445 (100) to 17 (351) 500 (.13448) is greater than 25%
150 351 500 Rel hum difference from 17 (351) 500 (.13448) to 17 (351) 515 (100) is greater than 25%
150 351 515 Rel hum difference from 17 (351) 515 (100) to 17 (351) 530 (.13448) is greater than 25%
150 351 545 Rel hum difference from 17 (351) 545 (.13448) to 17 (351) 600 (79.207) is greater than 25%
150 351 600 Rel hum difference from 17 (351) 600 (79.207) to 17 (351) 615 (26.29) is greater than 25%
150 351 615 Rel hum difference from 17 (351) 615 (26.29) to 17 (351) 630 (64.212) is greater than 25%
150 351 630 Rel hum difference from 17 (351) 630 (64.212) to 17 (351) 645 (31.871) is greater than 25%
150 351 645 Rel hum difference from 17 (351) 645 (31.871) to 17 (351) 700 (74.231) is greater than 25%
150 351 700 Rel hum difference from 17 (351) 700 (74.231) to 17 (351) 715 (44.982) is greater than 25%
150 352 245 Rel hum difference from 18 (352) 245 (84.893) to 18 (352) 300 (53.571) is greater than 25%
150 352 445 Rel hum difference from 18 (352) 445 (54.109) to 18 (352) 500 (100) is greater than 25%
150 352 500 Rel hum difference from 18 (352) 500 (100) to 18 (352) 515 (.13443) is greater than 25%
150 352 645 Rel hum difference from 18 (352) 645 (1.7482) to 18 (352) 700 (100) is greater than 25%
150 352 715 Rel hum difference from 18 (352) 715 (100) to 18 (352) 730 (64.414) is greater than 25%
150 353 430 Rel hum difference from 19 (353) 430 (100) to 19 (353) 445 (11.83) is greater than 25%
150 353 515 Rel hum difference from 19 (353) 515 (2.4202) to 19 (353) 530 (39.129) is greater than 25%
150 353 530 Rel hum difference from 19 (353) 530 (39.129) to 19 (353) 545 (100) is greater than 25%
150 353 630 Rel hum difference from 19 (353) 630 (100) to 19 (353) 645 (35.972) is greater than 25%
150 353 645 Rel hum difference from 19 (353) 645 (35.972) to 19 (353) 700 (92.385) is greater than 25%
150 354 515 Rel hum difference from 20 (354) 515 (100) to 20 (354) 530 (63.854) is greater than 25%
150 354 600 Rel hum difference from 20 (354) 600 (100) to 20 (354) 615 (69.837) is greater than 25%
150 361 545 Rel hum difference from 27 (361) 545 (46.715) to 27 (361) 600 (83.952) is greater than 25%
150 361 600 Rel hum difference from 27 (361) 600 (83.952) to 27 (361)

615 (11.427) is greater than 25%
150 361 615 Rel hum difference from 27 (361) 615 (11.427) to 27 (361) 630 (100) is greater than 25%
150 361 645 Rel hum difference from 27 (361) 645 (78.642) to 27 (361) 700 (52.495) is greater than 25%

The following data appear to be correct:

ArrayID	Date	Time	Error Message
102	358	2000	Wind speed is less than 0.5 m/s from 24 (358) 2000 to 25 (359) 1000
102	363	1800	Wind speed is less than 0.5 m/s from 29 (363) 1800 to 30 (364) 800

It could not be determined if data are correct. Hourly data correlate to reference station and sensor working properly.
101 352 600 Relative humidity average in 1 hour data (51.042) is greater than 15 minute maximum (.13446) by at least 10%

Data corrections:
Wind direction data were removed for the following arrays, dates and times due to malfunctioning wind direction sensor:

ArrayID	Date	Time	Error Message
102	335	100	Technician changed 102 Array data at 1 (335) 100 to 31 (365) 2400
150	335	15	Technician changed 150 Array data at 1 (335) 15 to 31 (365) 2400
242	335	2400	Technician changed 242 Array data at 1 (335) 2400 to 31 (365) 2400

RH values were removed from the following arrays, dates and times where data were suspiciously low:

ArrayID	Date	Time	Error Message
150	351	330	Technician changed 150 Array data at 17 (351) 330 to 17 (351) 545
150	352	330	Technician changed 150 Array data at 18 (352) 500 to 18 (352) 715
150	353	345	Technician changed 150 Array data at 19 (353) 345 to 19 (353) 645
244	351	2400	Technician changed 244 Array data at 17 (351) 2400 to 19 (353) 2400
244	361	2400	Technician changed 244 Array data at 27 (361) 2400 to 27 (361) 2400

12) 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.

July 2001

Failure to download data caused memory overwrite beginning on July 31.

ArrayID	Date	Time	Error Message
150	212	1245	Missing 150 Array data (15 minute data) from 31 (212) 1245 to 31 (212) 2400
101	212	1300	Missing 101 Array data (Hourly Averages) from 31 (212) 1300 to 31 (212) 2400
102	212	1300	Missing 102 Array data (Hourly Average Wind Parameters) from 31 (212) 1300 to 31 (212) 2400

August 2001

All data missing. Failure to download data caused memory overwrite

September 2001

All data missing. Failure to download data caused memory overwrite

October 2001

Data missing for the following arrays, dates and times. Failure to download data caused memory overwrite

ArrayID	Date	Time	Error Message
150	274	15	Missing 150 Array data (15 minute data) from 1 (274) 15 to 9 (282) 1000
101	274	100	Missing 101 Array data (Hourly Averages) from 1 (274) 100 to 9 (282) 1000
102	274	100	Missing 102 Array data (Hourly Average Wind Parameters) from 1 (274) 100 to 9 (282) 1000
241	274	2400	Missing 241 data (Daily Averages) from 1 (274) 2400 to 8 (281) 2400

242 274 2400 Missing 242 data (Daily Average Wind Parameters) from 1 (274) 2400 to 8 (281) 2400
243 274 2400 Missing 243 data (Daily Max/Time Values) from 1 (274) 2400 to 8 (281) 2400
244 274 2400 Missing 244 data (Daily Min/Time Values) from 1 (274) 2400 to 8 (281) 2400

November 2001

Data missing for the following arrays, dates and times. Failure to download data caused memory overwrite

ArrayID Date Time Error Message
150 314 1415 Missing 150 Array data (15 minute data) from 10 (314) 1415 to 13 (317) 1100
101 314 1500 Missing 101 Array data (Hourly Averages) from 10 (314) 1500 to 13 (317) 1100
102 314 1500 Missing 102 Array data (Hourly Average Wind Parameters) from 10 (314) 1500 to 13 (317) 1000
241 314 2400 Missing 241 data (Daily Averages) from 10 (314) 2400 to 12 (316) 2400
242 314 2400 Missing 242 data (Daily Average Wind Parameters) from 10 (314) 2400 to 12 (316) 2400
243 314 2400 Missing 243 data (Daily Max/Time Values) from 10 (314) 2400 to 12 (316) 2400
244 314 2400 Missing 244 data (Daily Min/Time Values) from 10 (314) 2400 to 12 (316) 2400

December 2001
None

13) Other remarks:

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.

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.

Rain Events:

Please note that monthly rainfall totals are not available during months where data was missing.

July

Date	RainAmount (mm)
none	

October

Date	Rainamount (mm)
20	.254

November

Date	Rainamount (mm)
5	11.938
6	.254
13	4.318

20	.254
21	.254
23	.508
25	14.224
26	.254
30	1.778

December

Date	RainAmount (mm)
4	1.524
5	2.540
10	.254
11	3.302
12	.254
15	1.270
21	.254
22	4.318

"Monthly Total"13.7