Hudson River (HUD) NERR Meteorological Metadata

January - June 2001

Latest Update: **February 3, 2023**

I. Data Set & Research Descriptors

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2. Entry verification

Person responsible for data verification: Erik Bedan, Research Assistant

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 Datalogger Program (hud30.csi) was loaded into the CR10X, which

controls the sensors and the data collection schedule (see 2b of the Entry

Verification section for the data collection schedule). For data storage, the

CR10X stored the data, via cable, on a Campbell Scientific SM 192 storage

module. The storage module was manually retrieved at the end of every month.

Using the PC208W software supplied by Campbell Scientific, the data were

downloaded from the storage module and stored on computer. All raw data files

were archived at the CDMO and at the reserve on ditto tapes, and CD-ROM.

Anomalous or missing data were either deleted or identified in sections 11 & 12.

When the entire month of data were stored on computer, the CDMO Weather

Data Management Program (WDMP) was used to convert the data into 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 were three main tasks

completed by the WDMP. First, it converted the comma delimited monthly raw data

file into an Access Database. Secondly, it checked the data against a

predetermined set of error criteria (see Part C of this section). Finally, it

produced error and summary reports. Any anomalous data were investigated and

were noted below in Anomalous Data section. Any data corrections that were

performed were noted in the Data Correction section below. Most common errors

from monthly reports were wind speeds below the 0.5m/s criteria.

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:

The objective of this study is to monitor the meteorological conditions at the

Tivoli Bays component of the Hudson River National Estuarine Research Reserve.

Measurements are taken all year long at one location in accordance with section

2b of the Entry Verification section. A water quality-monitoring program has

been ongoing for ten years at this component site, and the meteorological data

will help provide ancillary data to that program. In turn, this will help us to

better understand the relationships between the atmospheric and aquatic

environments at this site.

4. Research methods:

For data collection, the CR10X datalogger is programmed at intervals that are in

accordance with section 2b of the Entry Verification section. Data are

retrieved and stored from the datalogger via the Campbell Scientific storage

module at the end of each month. The data are analyzed using only the Weather

Data Management Program (WDMP). The program creates a database and error report

for each month of raw data. The error reports are used to aid in the QA/QC of

the data, along with the guidelines in section 2c. Any errors are reported and

corrected (if necessary) in sections 11 & 12. For routine maintenance,

sensors are investigated at least once a week to ensure there is no damage or

blockage to the sensors. According to Campbell Scientific, for proper data

collection, sensors are to be calibrated every two 2 years. After that time,

the sensors are removed from the tower, and shipped to their respective

manufacturer. Calibration methods are performed by the manufacturers for proper

and professional calibration. In order to avoid missing data, a second set of

sensors will be calibrated and available to be installed on the tower to

continue data collection.

5. Site location and character:

The Hudson River National Estuarine Research Reserve (HUDNERR) is a

multicomponent site composed of approximately 5,000 acres of tidal wetland, open

water, and adjacent upland buffer habitat. The four component sites of the

Reserve are located on the Hudson River in New York State by river miles (RM)

proceeding north from the southern tip of Manhattan. These include: Stockport

Flats (RM 124)(42o02'30"N 73o46'00"W), Columbia County; Tivoli Bays (RM

98)(42o02'15"N 73o55'10"W), Dutchess County; and Iona Island (RM 45)(41o18'15"N

73o58'45"W) and Piermont Marsh (RM 24)(41o02'30"N 73o54'15"W),Rockland County.

These four components are located along 100 river miles of the Hudson River and

are representative of the diverse plant and animal communities that occupy the

salinity gradient within the Hudson estuary. Development within the watersheds

of Hudson River NERR component sites ranges from predominantly urban/suburban to

forested/agricultural.

The weather station where the data is collected is located at the Tivoli Bays

component site with a position of 4652363.868N 589163.567W. The main office

for the Hudson River NERR is at the same site. Outside the office building is a

24'x 18' wood deck, 9 feet off the ground, on the west side of the building.

The weather station tower is affixed to this deck with the sensors atop a 30'

tower, except for the following. A heated rain gauge is attached to the

building, next to the tower, 7 feet up from deck. The temperature/barometer

sensor is next to the tower, attached to the railing, 3 feet up from the deck.

Although trees surround the area, the tree line begins approximately 60 feet

from the tower in most directions and the sensors are not shaded. It is not

yet known if there is any wind blockage from the trees because both tower and

trees are at similar heights. The tower is approximately 1.2 miles Southeast

of the TS water quality monitoring station, 2.3 miles Southeast of the TN water

quality monitoring station, and 0.2 miles Northwest of the SK water quality

monitoring station.

6. Data collection period:

The first data were recorded on January 10, 2001 at 15:15 hours EST, and ended

on December 31, 2001 at 2400 hours EST.

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 Hudson River NERR water quality-monitoring program examines the physical and

chemical constituents of the tributary waters and the tidal waters discharging

into the HUDNERR marshes and marsh waters. Measurements include total suspended

solids (TSS), dissolved oxygen (DO), alkalinity, pH, temperature, salinity, and

conductivity, as well as, concentrations of nitrate, phosphate, sulphate, and

chloride. Associated researchers with work at Tivoli Bays include: scientists

from the Institute of Ecosystem Studies, Millbrook, NY; Yale School of Forestry and

Environmental Studies, New Haven, CT; and Rensselaer Polytechnic Institute, Troy, NY.

II. Physical Structure Descriptors

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

Li-Cor 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: 400-700 nm

Date of last calibration: December 2000

Wind Sentry

Model # 03001

Operating Range: 0-50 m/s; 360° mechanical

Date of last calibration: December 2000

Temperature and Relative Humidity

Model #: HMP35C

Operating Range: -35°C to 50°C

Temperature Accuracy: ± 0.2°C @ 20°C

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

RH Accuracy: ±2% RH (0-90%) and ±3%(90-100%)

Uncertainty of calibration: ±1.2% RH

Date of Last calibration: December 2000

Barometric Pressure Sensor

Model # CS105

Operating Range: 600 to 1060 mb

Operating Temperature: -40°C to 60°C

Humidity: non-condensing

Accuracy: ±0.5 to 6.0 mb (+20°C to 60°C)

Stability: ± 0.1 mb per year

Date of Last calibration: December 2000

Tipping Bucket Rain and Snow Gauge

Model #: 375-L

Operating Range: -20°C to 50°C; 0-100% RH

Resolution: 0.1mm

Accuracy: ±0.5% at <12.5mm/hr; ±2.0%@<75mm/hr rate

Date of Last calibration: December 2000

10. Coded variable indicator and variable code definitions:

Field Station at Tivoli Bays = FS

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](http://www.nerrsdata.org/get/landing.cfm) throughout the fall of 2022.

January 2001

Anomalous criteria for wind speed (i.e. "wind speed is less than 0.5m/s") were

listed many times in the WDMP error report for this month as possible errors.

We are certain the sensor was operating properly, most likely there was simply

no wind. The data were left in.

Hourly and daily data were deleted on day 16 due to maintenance on the station which

results in 5 second data loss.

Array ID Julian Day Time Error

101 16 16 900 Technician changed 101 Array data from 16 ( 16) 900

to 16 ( 16) 900

102 16 16 900 Technician changed 102 Array from 16 ( 16) 900 to

16 ( 16) 900

241 16 16 2400 Technician changed 241 Array from 16 ( 16) 2400 to

16 ( 16) 2400

242 16 16 2400 Technician changed 242 Array from 16 ( 16) 2400 to

16 ( 16) 2400

243 16 16 2400 Technician changed 243 Array data from 16 ( 16) 2400

to 16 ( 16) 2400

244 16 16 2400 Technician changed 244 Array data from 16 ( 16) 2400

to 16 ( 16) 2400

February 2001

Anomalous criteria for wind speed (i.e. "wind speed is less than 0.5m/s") were

listed many times in the WDMP error report for the month as possible errors. We

are certain the sensor was operating properly, most likely there was simply no

wind. The data were left in.

Data points were reviewed before and after this error, and there was a notable

change, but the data were consistent. Most other parameters changed along with

the relative humidity, it was most likely an event. The data were left in.

Array Julian Day Time Error

150 33 2 2045 Rel hum difference from 2 (33) 2045 (97.213) to 2

(33) 2100 (64.048) is greater than 25%

Before and after data, from the data below, were found to be consistent. The

sensor measures up to 1040mb, but the data were within the percent error of the

instrument. The data were left in.

Array Julian Day Time Error

150 43 12 530 Pressure is greater than 1040 or less than 980 on

12 ( 43) 530 (1040.1)

150 43 12 545 Pressure is greater than 1040 or less than 980 on

12 ( 43) 545 (1040.4)

150 43 12 600 Pressure is greater than 1040 or less than 980 on

12 ( 43) 600 (1040.4)

150 43 12 615 Pressure is greater than 1040 or less than 980 on

12 ( 43) 615 (1040.3)

150 43 12 630 Pressure is greater than 1040 or less than 980 on

12 ( 43) 630 (1040.3)

150 43 12 645 Pressure is greater than 1040 or less than 980 on

12 ( 43) 645 (1040.2)

150 43 12 700 Pressure is greater than 1040 or less than 980 on

12 ( 43) 700 (1040.3)

150 43 12 715 Pressure is greater than 1040 or less than 980 on

12 ( 43) 715 (1040.6)

150 43 12 730 Pressure is greater than 1040 or less than 980 on

12 ( 43) 730 (1040.7)

150 43 12 745 Pressure is greater than 1040 or less than 980 on

12 ( 43) 745 (1040.6)

150 43 12 800 Pressure is greater than 1040 or less than 980 on

12 ( 43) 800 (1040.7)

150 43 12 815 Pressure is greater than 1040 or less than 980 on

12 ( 43) 815 (1040.5)

150 43 12 830 Pressure is greater than 1040 or less than 980 on

12 ( 43) 830 (1040.5)

150 43 12 845 Pressure is greater than 1040 or less than 980 on

12 ( 43) 845 (1040.4)

150 43 12 900 Pressure is greater than 1040 or less than 980 on

12 ( 43) 900 (1040.2)

March 2001

Anomalous criteria for wind speed (i.e. "wind speed is less than 0.5m/s") were

listed many times in the WDMP error report for the month as possible errors. We

are certain the sensor was operating properly, most likely there was simply no

wind. The data were left in.

April 2001

Anomalous criteria for wind speed (i.e. "wind speed is less than 0.5m/s") were

listed many times in the WDMP error report for the month as possible errors. We

are certain the sensor was operating properly, most likely there was simply no

wind. The data were left in.

Data points were reviewed before and after this error, and there was a notable

change, but the data were consistent. Most other parameters change along with

the relative humidity, it was most likely an event. The data were left in.

Array Julian Day Time Error

150 99 9 1915 Rel hum difference from 9 ( 99) 1915 ( 53.417) to

9 ( 99) 1930 ( 80.899) is greater than 25%

This error is possible because the "1 hour data" is averaged from 5-second

readings taken during that hour while the "15 minute data" (in this case the 15

minute minimum) is not averaged, and only recorded at 15-minute intervals.

Given the situation, these data can be very different. The data were left in.

Array Julian Day Time Error

101 119 29 1800 Relative humidity average in 1 hour data ( 19.65)

is less than 15 minute minimum ( 21.839)

May 2001

Anomalous criteria for wind speed (i.e. "wind speed is less than 0.5m/s") were

listed many times in the WDMP error report for the month as possible errors. We

are certain the sensor was operating properly, most likely there was simply no

wind. The data were left in.

Data points were reviewed before and after this error, and there was a notable

change, but the data were consistent. Most other parameters change along with

the air temperature, it was most likely an event. The data were left in.

Array Julian Day Time Error

150 148 28 1130 Air temp difference from 28 ( 148) 1130 ( 20.015)

to 28 ( 148) 1145 ( 15.657) is greater than 3.0 degrees C

Data points before and after the following were reviewed, and there were

notable changes, but the data were consistent. Most other parameters change

along with the relative humidity, they were all most likely an event. The data

were left in.

Array Julian Day Time Error

150 134 14 1115 Rel hum difference from 14 ( 134) 1115 ( 43.837)

to 14 ( 134) 1130 ( 71.047) is greater than 25%

150 134 14 1130 Rel hum difference from 14 ( 134) 1130 ( 71.047)

to 14 ( 134) 1145 ( 39.947) is greater than 25%

The following error is from calculations the WDMP made with data that were

several days apart because there were a number of days with missing data

recorded (i.e. 11111's). The data were left in.

Array Julian Day Time Error

150 121 1 1130 Pressure difference from 1 ( 121) 1130 ( 1016.6)

to 9 ( 129) 1030 ( 1021.7) is greater than 5 mb

There was an unexplained low daily minimum pressure value of 925mb recorded

on May 15 at 925.

June 2001

Anomalous criteria for wind speed (i.e. "wind speed is less than 0.5m/s") were

listed many times in the WDMP error report for the month as possible errors. We

are certain the sensor was operating properly, most likely there was simply no

wind. The data were left in.

Data points before and after the following were reviewed, and there were a

notable changes, but the data were consistent. Most other parameters change

along with the air temperature, they were all most likely an event. The data

were left in.

Array Julian Day Time Error

150 154 3 800 Air temp difference from 3 ( 154) 800 ( 17.33) to

3 ( 154) 815 ( 11.583) is greater than 3.0 degrees C

150 171 20 1515 Air temp difference from 20 ( 171) 1515 ( 31.433)

to 20 ( 171) 1530 ( 26.801) is greater than 3.0 degrees C

150 181 30 1730 Air temp difference from 30 ( 181) 1730 ( 28.483)

to 30 ( 181) 1745 ( 22.946) is greater than 3.0 degrees C

Data points before and after the following were reviewed, and there were notable

changes, but they were all most likely an event. The data were left in.

Array Julian Day Time Error

151 154 3 800 Precip difference from 30 ( 154) 800 ( .254) to

30 ( 154) 815 (13.97) is greater than 5 mm

151 154 3 815 Precip difference from 30 ( 154) 815 ( 13.97) to

30 ( 154) 830 ( 4.064) is greater than 5 mm

151 162 11 1830 Precip difference from 30 ( 162) 1830 ( 1.27) to

30 ( 162) 1845 ( 7.62) is greater than 5 mm

July 2001

Anomalous criteria for wind speed (i.e. "wind speed is less than 0.5m/s") were

listed many times in the WDMP error report for this month as possible errors.

We are certain the sensor was operating properly, most likely there was simply

no wind. The data were left in.

Data points were reviewed before and after the following errors. There was a

notable change, but the data were consistent. Other parameters changed along

with the air temperature, it was most likely an event. The data were left in.

Array JulD CalD Time Error Message

150 186 5 1145 Air temp difference from 5 ( 186) 1145 ( 26.849) to 5

( 186) 1200 ( 21.77) is greater than 3.0 degrees C

150 196 15 1415 Air temp difference from 15 ( 196) 1415 ( 25.632) to

15 ( 196) 1430 ( 21.714) is greater than 3.0 degrees C

Data points were reviewed before and after the following error. There was a

notable change, and it was most likely an event. The data were left in.

Array JulD CalD Time Error Message

151 185 4 2000 Precip difference from 4 ( 185) 2000 ( 5.588) to 4 (

185) 2015 ( .508) is greater than 5 mm

August 2001

Anomalous criteria for wind speed (i.e. "wind speed is less than 0.5m/s") were

listed many times in the WDMP error report for this month as possible errors.

We are certain the sensor was operating properly, most likely there was simply

no wind. The data were left in.

Data points were reviewed before and after the following errors. There was a

notable change, and it was most likely an event. The data were left in.

Array JulD CalD Time Error Message

151 225 13 1315 Precip difference from 13 ( 225) 1315 ( 4.572) to 13 (

225) 1330 ( 10.414) is greater than 5 mm

151 225 13 1330 Precip difference from 13 ( 225) 1330 ( 10.414) to 13

( 225) 1345 ( 1.016) is greater than 5 mm

151 243 31 2145 Precip difference from 31 ( 243) 2145 ( 1.016) to 31 (

243) 2200 ( 8.89) is greater than 5 mm

September 2001

Anomalous criteria for wind speed (i.e. "wind speed is less than 0.5m/s") were

listed many times in the WDMP error report for this month as possible errors.

We are certain the sensor was operating properly, most likely there was simply

no wind. The data were left in.

Data points were reviewed before and after the following error. There was a

notable change, but the data were consistent. Other parameters changed along

with the air temperature, it was most likely an event. The data were left in.

Array JulD CalD Time Error Message

150 266 23 1530 Air temp difference from 23 ( 266) 1530 ( 24.141) to

23 ( 266) 1545 ( 27.272) is greater than 3.0 degrees C

Data points were reviewed before and after the following error. There was a

notable change, and it was most likely an event. The data were left in.

Array JulD CalD Time Error Message

151 256 13 1945 Precip difference from 13 ( 256) 1945 ( 5.588) to 13 (

256) 2000 ( .254) is greater than 5 mm

October 2001

No data is available for this month. Upon retrieval of data, it was found to

have improper dates and times for the month. One explanation maybe that the

datalogger lost power, and reset all memory when power was re-established.

November 2001

Anomalous criteria for wind speed (i.e. "wind speed is less than 0.5m/s") were

listed many times in the WDMP error report for this month as possible errors.

We are certain the sensor was operating properly, most likely there was simply

no wind. The data were left in.

Data points were reviewed before and after the following error. There was a

notable change, but the data were consistent. It was most likely an event. The

data were left in.

Array JulD CalD Time Error Message

150 313 9 300 Rel hum difference from 9 ( 313) 300 ( 81.087) to 9 (

313) 315 ( 54.93) is greater than 25%

At this site, wintery weather requires us to utilize a heating tipping bucket

for precipitation data. The heater may not have been functioning this month,

precipitation data are suspect.

December 2001

Anomalous criteria for wind speed (i.e. "wind speed is less than 0.5m/s") were

listed many times in the WDMP error report for this month as possible errors.

We are certain the sensor was operating properly, most likely there was simply

no wind. The data were left in.

At this site, wintery weather requires us to utilize a heating tipping bucket

for precipitation data. The heater may not have been functioning this month,

precipitation data are suspect.

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](http://www.nerrsdata.org/get/landing.cfm) throughout the fall of 2022.

Data are missing due to equipment failure, or no probes deployed, or maintenance

of equipment. To find out more details about missing data, contact the Research

Coordinator at the site submitting the data.

January 2001

Array Julian Day Time Error

101 1 1 100 Missing 101 Array data (Hourly Averages) from 1 (

1) 100 to 10 ( 10) 1500

102 1 1 100 Missing 102 Array data (Hourly Average Wind

Parameters) from 1 ( 1) 100 to 10 ( 10) 1500

241 1 1 2400 Missing 241 data (Daily Averages) from 1 ( 1)

2400 to 9 ( 9) 2400

242 1 1 2400 Missing 242 data (Daily Average Wind Parameters)

from 1 ( 1) 2400 to 9 ( 9) 2400

243 1 1 2400 Missing 243 data (Daily Max/Time Values) from 1 (

1) 240 to 9 ( 9) 2400

244 1 1 2400 Missing 244 data (Daily Min/Time Values) from 1 (

1) 2400 to 9 ( 9) 2400

150 1 1 15 Missing 150 Array data (15 minute data) from 1 (

1) 15 to 10 (10) 1500

150 16 16 845 Missing 150 Array (15 minute data)

May 2001

Array Julian Day Time Error

150 1 121 1015 Missing 150 Array data (15 minute data) from 1 ( 121)

1145 to 9 ( 129) 1015

150 21 141 815 Missing 150 Array data (15 minute data) from 21 ( 141)

815 to 21 ( 141) 1430

101 1 121 1200 Missing 101 Array data (Hourly Averages) from 1 ( 121)

1200 to 9 ( 129) 1000

101 21 141 900 Missing 101 Array data (Hourly Averages) from 21 ( 141)

900 to 21 ( 141) 1400

102 1 121 1200 Missing 102 Array data (Hourly Average Wind Parameters)

from 1 ( 121) 1200 to 9 ( 129) 1000

102 21 141 800 Missing 102 Array data (Hourly Average Wind Parameters)

from 21 ( 141) 800 to 21 ( 141) 1400

241 1 121 2400 Missing 241 data (Daily Averages) from 1 ( 121) 2400

to 8 ( 128) 2400

242 1 121 2400 Missing 242 data (Daily Average Wind Parameters) from

1 ( 121) 2400 to 8 ( 128) 2400

243 1 121 2400 Missing 243 data (Daily Max/Time Values) from 1 ( 121)

2400 to 8 ( 128) 2400

244 1 121 2400 Missing 244 data (Daily Min/Time Values) from 1 ( 121)

2400 to 8 ( 128) 2400

October 2001

No data is available for this month. Upon retrieval of data, it was found to

have improper dates and times for the month. One explanation maybe that the

datalogger lost power, and reset all memory when power was re-established.

13. 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](http://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](http://www.nerrsdata.org/get/landing.cfm) throughout early 2023.

Please note, monthly totals are not available in months where there was missing data.

Rain Events:

January

Date RainAmount (mm)

15 .508

19 3.048

21 8.128

30 11.684

31 .254

February

Date RainAmount (mm)

5 16.002

6 .254

9 1.778

10 .254

14 .762

16 1.524

22 1.524

23 .254

25 9.652

"Monthly Total" 32.0

March

Date RainAmount (mm)

4 1.524

5 15.748

6 4.572

9 7.112

13 12.700

17 1.270

21 12.192

22 2.794

29 .762

30 37.846

"Monthly Total" 96.5

April

Date RainAmount (mm)

6 2.286

7 1.778

8 7.366

9 1.524

12 1.016

21 .762

"Monthly Total" 14.7

May

Date RainAmount (mm)

22 31.750

23 29.210

24 1.016

25 2.540

26 7.620

27 15.240

28 4.064

June

Date RainAmount (mm)

1 6.858

2 30.734

3 21.082

11 12.192

17 19.304

20 .762

21 .254

23 17.780

29 .254

30 8.128

"Monthly Total" 117.3

July

Date RainAmount (mm)

4 7.112

5 4.826

1 2.540

8 1.270

9 2.286

11 5.334

15 .508

17 1.778

26 11.430

Monthly Total 37.1

August

Date Rainamount (mm)

3 .508

4 4.064

10 1.016

12 12.192

13 22.606

17 1.016

20 2.794

28 1.524

31 10.668

Monthly Total 56.4

September

Date RainAmount (mm)

4 3.302

10 1.016

13 12.446

14 13.970

20 21.844

21 5.842

24 1.016

25 12.700

28 6.096

Monthly Total 78.2

November

Date Rainamount (mm)

20 4.318

24 .508

25 12.446

28 .762

29 4.318

30 11.684

Monthly Total 34.0

December

Date RainAmount (mm)

9 .508

10 1.778

11 9.652

12 .762

13 2.032

14 9.652

17 7.366

18 7.112

23 2.032

24 6.858

25 .254

Monthly Total 48.0