Apalachicola NERR Meteorological Metadata

January - December 2002

Last Update: **January 30, 2023**

I. Data Set & Research Descriptors

1) Principal investigator & contact persons:

Lee Edmiston, Research Coordinator

lee.edmiston@dep.st.fl.us

850.670.4783

Lauren Levi, Environmental Specialist II

lauren.levi@dep.state.fl.us

850.670.4783

Jennifer Wanat, Environmental Specialist II

jennifer.wanat@dep.state.fl.us

850.670.4783

Address: Florida Department of Environmental Protection

Apalachicola National Estuarine Research Reserve

350 Carroll Street

Eastpoint, FL 32328

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\_301.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.

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. Second, 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 the

Anomalous Data section. Any data corrections that were performed are noted in

the Data Correction section below. The most common error reported was the

"technician changed array data...". These data changes were primarily due to

sensor malfunction and wiring problems. In these instances the erroneous data

was deleted by the technician and replaced with the code "55555". Other common

errors were temperature changes greater than 3 ºC and precipitation differences

greater than 5 mm.

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:

Data collected from the East Bay weather station complements those data taken

from the East Bay water quality station. Positioning the weather station in

East Bay allows the Reserve to monitor changes in rainfall, photosynthetically

active radiation, temperature, and other weather parameters influencing the

water quality of East Bay. East Bay drains the Tate's Hell Swamp area, which

was altered in the late 1960's and early 1970's by timber companies. An EPA

grant allowed the Northwest Florida Water Management District to begin

restoration of the site in 1995 to reduce non-point source runoff.

4.) Research methods:

There were no other analyses, data collection intervals, or QA/QC procedures for

the WDMP in Apalachicola other than those expressed in Version 4.0 of the CDMO

manual.

5.) Site location and character:

The Apalachicola National Estuarine Research Reserve is located in the

northwestern part of Florida, generally called the panhandle. It is located

adjacent to the City of Apalachicola, and encompasses most of the Apalachicola

Bay system, including 52 miles of the lower Apalachicola River. Passes, both

natural and manmade, connect Apalachicola Bay to the northeastern Gulf of

Mexico. The sampling site is located in the upper reaches of East Bay. East

Bay is separated from Apalachicola Bay by two bridges and a causeway and is

located to the north of Apalachicola Bay proper. The bay is 8.2 km long, has an

average depth of approximately 1.0 m MHW, and an average width of 1.8 km. The

tides in East Bay are mixed and range from 0.3 m to 1.0 m (average 0.5 m).

The weather station is located at latitude 29 47.454' N and longitude 84

53.004' W. This site is less than 0.5 nautical miles west of the Apalachicola

water quality station. The site is located near the tip of a peninsula, which

separates Blount's Bay from West Bayou. The peninsula is dominated by marsh

vegetation (mainly Juncus roemerianus). There is a cabbage palm hammock along

the southern shoreline of the peninsula. The dominant upland habitat is

primarily pineland forest to the northwest, which includes slash pine, saw

palmetto, and sand pine. The weather station sensors are mounted at the top of a

3-meter tower. The Tower is mounted on a 6' platform. The tipping bucket rain

gauge is mounted on a 4' platform approximately 15 feet from the weather station

platform. There is nothing nearby to shade the tower and the nearest wind block

is the edge of the pine forest about one-half to three-quarters of a mile north

to northwest of the station.

6.) Data collection period: January-December, 2002

The Apalachicola weather monitoring station was erected on August 27, 1999 and

began monitoring on September 3, 1999. The data submitted with this report

encompasses data collected from 0030 hours January 1, 2002 through 2400 hrs

December 31, 2002. Actual module deployment during this time period began on

12/3/2001 at 0950 hrs and ended 1/10/02 at 1445.

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:

Northwest Florida Water Management District

Tate's Hell Restoration Project

Apalachicola Bay Freshwater Needs Study

Jennifer Putland

Florida State University Department of Oceanography

NOAA Graduate Research Fellowship

"Planktonic food web variations related to salinity and nutrient patterns

in Apalachicola Bay."

II. Physical Structure Descriptors

9.) Sensor Specifications

LiCor Quantum Pyranometer

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 calibration: Time of Purchase, late 1996

In Use Dates are from 00:00 1/1/2002 through 08:30 7/26/2002

LiCor Quantum Pyranometer

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: Time of Purchase, April 2002

In Use Dates are from 08:30 7/26/2002 through 24:00 12/31/2002

Wind Sentry: RM Young Model # 03001

Range: 0-50 m/s; 360° mechanical

Date of last directional calibration: At deployment, Aug 27, 1999

In Use Dates are from 00:00 1/1/2002 through 09:30 6/14/2002

Wind Sentry: RM Young Model # 03001-5

Range: 0-50 m/s; 360° mechanical

Date of last directional calibration: At deployment, June 14, 2002

In Use Dates are from 09:30 6/14/2002 through 24:00 12/31/2002

Temperature and Relative Humidity: Vaisala Model #: HMP35C

Operating Temperature:-40 to 60°C

Temperature Measurement Range: -40 to 60°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: Time of Purchase, late 1996

In Use Dates are from 00:00 1/1/2002 through 07:45 7/25/2002

Temperature and Relative Humidity: Vaisala Model #: HMP45AC

Operating Temperature:-40 to 60°C

Temperature Measurement Range: -40 to 60°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: ± 0.6% RH

Date of Last calibration: 1/31/2002

In Use Dates are from 09:00 7/25/2002 through 24:00 12/31/2002

Barometric Sensor: Vaisala model CS-105

Operating Range:

Pressure: 600 to 1060 mb

Temperature: -40 to 60C

Humidity: non-condensing

Accuracy: ±0.5 to 6.0 mb (20 to 60C)

Stability: ± 0.1 mb per year

Date of Last calibration: time of purchase, late 1996

In Use Dates are from 00:00 1/1/2002 through 09:30 6/14/2002

Barometric Sensor: Vaisala model CS-105

Operating Range:

Pressure: 600 to 1060 mb

Temperature: -40 to 60C

Humidity: non-condensing

Accuracy: ±0.5 to 6.0 mb (20 to 60C)

Stability: ± 0.1 mb per year

Date of Last calibration: time of purchase, April 2002

In Use Dates are from 09:30 6/14/2002 through 24:00 12/31/2002

Precipitation: Tipping Bucket Rain Gauge FIT Model #: TE 525

Range: 0.1 mm

Accuracy: 1.0% at <2"/hr

Date of Last calibration: time of purchase, late 1996

In Use Dates are from 00:00 1/1/2002 through 09:30 6/14/2002

Precipitation: Tipping Bucket Rain Gauge FIT Model #: TE 525

Range: 0.1 mm

Accuracy: 1.0% at <2"/hr

Date of Last calibration: April 4, 2002

In Use Dates are from 09:30 6/14/2002 through 24:00 12/31/2002

10.) Coded variable indicator and variable code definitions:

Site Definitions: The weather data master table files for the Apalachicola NERR

are coded EB, indicating the location of the weather station (East Bay) within

the greater Apalachicola Bay system.

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.

Jan 2002

Array Day Julian Time Error

150 15 15 1645 Rel hum difference from 15 ( 15) 1645 ( 48.431)

to 15 ( 15) 1700 ( 77.762) is greater than 25%

The Relative humidity data above are considered correct and remain unchanged

102 28 28 2000 Wind speed is less than 0.5 m/s from 28 ( 28)

2000 to 29 ( 29) 1100

102 29 29 2000 Wind speed is less than 0.5 m/s from 29 ( 29)

2000 to 30 ( 30) 1100

The wind speed data above are considered correct and remain unchanged.

101 17 17 900 Technician changed 101 Array data from 17 ( 17)

900

102 17 17 900 Technician changed 102 Array from 17 ( 17) 900

The above errors were associated with the storage module exchange at 0825 on 17.

Hourly arrays for 0900 and all 24-hour arrays were deleted for this date.

150 30 30 1445 Technician changed 150 Array data from 30 (30)

1445

The wind speed datum above was considered incorrect and was deleted.

241 17 17 2400 Technician changed 241 Array from 17 ( 17) 2400

242 17 17 2400 Technician changed 242 Array from 17 ( 17) 2400

243 17 17 2400 Technician changed 243 Array data from 17 ( 17)

2400

244 17 17 2400 Technician changed 244 Array data from 17 ( 17)

2400

The above errors were associated with the storage module exchange and power down

of the CR10X at 0825 on 17. Hourly arrays for 0900 and all 24-hour arrays were

deleted for this date.

Feb 2002

Array Day Julian Time Error

150 6 37 245 Air temp difference from 6 ( 37) 245 ( 7.0948) to

6 ( 37) 300 ( 10.181) is greater than 3.0 degrees C

150 25 56 900 Air temp difference from 25 ( 56) 900 ( 12.058)

to 25 ( 56) 915 ( 15.138) is greater than 3.0 degrees C

101 27 58 2300 Air temp average in 1 hour data ( .07828) is less

than 15 minute minimum ( .11459) by at least 10%

The above air temperature data are considered correct and remain unchanged.

101 25 56 1600 Technician changed 101 Array data from 25 ( 56)

1600

102 25 56 1600 Technician changed 102 Array from 25 ( 56) 1600

241 25 56 2400 Technician changed 241 Array from 25 ( 56) 2400

242 25 56 2400 Technician changed 242 Array from 25 ( 56) 2400

243 25 56 2400 Technician changed 243 Array data from 25 ( 56)

2400

244 25 56 2400 Technician changed 244 Array data from 25 ( 56)

2400

The above errors were associated with the storage module exchange and power down

of the CR10X at 1535 on 56. Hourly arrays for 1600 and all 24-hour arrays were

deleted for this date.

Mar 2002

Array Day Julian Time Error

150 12 71 1700 Air temp difference from 12 ( 71) 1700 ( 19.042)

to 12 ( 71) 1715 ( 14.955) is greater than 3.0 degrees C

This air temperature data is considered correct and remains unchanged.

Apr 2002

Array Day Julian Time Error

150 22 112 1630 Technician changed 150 Array data from 22(112)

1630

150 26 116 2030 Technician changed 150 Array data from 26 (116)

2030

The above relative humidity data were considered incorrect and were deleted.

May 2002

Array Day Julian Time Error

150 13 133 2300 Air temp difference from 13 ( 133) 2300 ( 25.694)

to 13 ( 133) 2315 ( 22.593) is greater than 3.0 degrees C

150 18 138 530 Air temp difference from 18 ( 138) 530 ( 25.685)

to 18 ( 138) 545 ( 22.582) is greater than 3.0 degrees C

The air temperature data above is considered correct and remains unchanged.

150 9 129 1200 Technician changed 150 Array data from 9 (129)

1200

The above relative humidity datum was considered incorrect and was deleted.

101 1 121 1000 Technician changed 101 Array data from 1 ( 121)

1000

102 1 121 1000 Technician changed 102 Array from 1 ( 121) 1000

241 1 121 2400 Technician changed 241 Array from 1 ( 121) 2400

242 1 121 2400 Technician changed 242 Array from 1 ( 121) 2400

243 1 121 2400 Technician changed 243 Array data from 1 ( 121)

2400

244 1 121 2400 Technician changed 244 Array data from 1 ( 121)

2400

The above errors were associated with the storage module exchange and power down

of CR10X at 0958 on 121. Hourly arrays for 1000 and all 24-hour arrays were

deleted for this date.

Jun 2002

Array Day Julian Time Error

150 20 171 2215 Air temp difference from 20 ( 171) 2215 ( 24.106)

to 20 ( 171) 2230 ( 20.787) is greater than 3.0 degrees C

The above air temperature data is considered correct and remains unchanged.

150 13 164 1330 Rel hum difference from 13 ( 164) 1330 ( 73.407)

to 13 ( 164) 1345 ( 100) is greater than 25%

150 13 164 1345 Rel hum difference from 13 ( 164) 1345 ( 100) to

13 ( 164) 1400 ( 74.875) is greater than 25%

The above relative humidity data is considered correct and remains unchanged.

151 20 171 2215 Precip difference from 20 ( 171) 2215 ( .254) to

20 ( 171) 2230 ( 17.018) is greater than 5 mm

151 20 171 2230 Precip difference from 20 ( 171) 2230 ( 17.018)

to 20 ( 171) 2245 ( 10.414) is greater than 5 mm

151 20 171 2245 Precip difference from 20 ( 171) 2245 ( 10.414)

to 20 ( 171) 2300 ( 2.032) is greater than 5 mm

151 23 174 430 Precip difference from 23 ( 174) 430 ( .254) to

23 ( 174) 445 ( 7.62) is greater than 5 mm

151 23 174 445 Precip difference from 23 ( 174) 445 ( 7.62) to

23 ( 174) 500 ( 2.032) is greater than 5 mm

151 24 175 730 Precip difference from 24 ( 175) 730 ( 1.016) to

24 ( 175) 745 ( 10.414) is greater than 5 mm

151 25 176 545 Precip difference from 25 ( 176) 545 ( 9.144) to

25 ( 176) 600 ( 1.778) is greater than 5 mm

The above precipitation data are considered correct and remain unchanged.

101 14 165 1000 Technician changed 101 Array data at 14 ( 165)

1000 to 30 ( 181) 2400

241 14 165 2400 Technician changed 241 Array data at 14 ( 165)

2400 to 30 ( 181) 2400

244 14 165 2400 Technician changed 244 Array data at 14 ( 165)

2400 to 30 ( 181) 2400

150 14 165 915 Technician changed 150 Array data at 14 ( 165)

915 to 30 ( 181) 2400

243 14 165 2400 Technician changed 243 Array data at 14 ( 165)

2400 to 30 ( 181) 2400

The above errors are associated with a malfunctioning barometric pressure

sensor. Barometric pressure data for the above arrays and time periods were

considered incorrect and were deleted.

241 3 154 2400 Technician changed 241 Array from 3 ( 154) 2400

242 3 154 2400 Technician changed 242 Array from 3 ( 154) 2400

243 3 154 2400 Technician changed 243 Array data from 3 ( 154)

2400

244 3 154 2400 Technician changed 244 Array data from 3 ( 154)

2400

The above errors were associated with the storage module exchange and power down

of the CR10X on 154. 24-hour arrays were deleted for this date.

102 14 165 1000 Technician changed 102 Array from 14 ( 165) 1000

242 14 165 2400 Technician changed 242 Array from 14 ( 165) 2400

The above errors were associated with the storage module exchange and power down

of the CR10X at 0935 on 165. Hourly data for array 101 and 102 at 1000 on 165 was

deleted. 24-hour data for array 241, 242, 243 and 244 on 165 was deleted.

The relative humidity sensor recorded zero values on the following dates and times.\

The technician considered these values to be incorrect and changed them to

55555: June 15 at 1215, 1245, 1345, 1430, 1645.

The temperature sensor recorded a -99999 value in the following arrays:

array 101 on June 17 at 1400, array 241 on June 17th at 2400 and aray 244 on June 17

at 2400.

Jul 2002

Array Day Julian Time Error

150 3 184 1515 Air temp difference from 3 ( 184) 1515 ( 29.479)

to 3 ( 184) 1530 ( 23.51) is greater than 3.0 degrees C

150 4 185 1245 Air temp difference from 4 ( 185) 1245 ( 30.373)

to 4 ( 185) 1300 ( 26.706) is greater than 3.0 degrees C

150 13 194 1645 Air temp difference from 13 ( 194) 1645 ( 29.53)

to 13 ( 194) 1700 ( 25.666) is greater than 3.0 degrees C

150 15 196 1315 Air temp difference from 15 ( 196) 1315 ( 31.367)

to 15 ( 196) 1330 ( 26.28) is greater than 3.0 degrees C

150 19 200 1645 Air temp difference from 19 ( 200) 1645 ( 30.407)

to 19 ( 200) 1700 ( 26.966) is greater than 3.0 degrees C

150 21 202 1115 Air temp difference from 21 ( 202) 1115 ( 31.424)

to 21 ( 202) 1130 ( 25.394) is greater than 3.0 degrees C

The above air temperature data are considered correct and remain unchanged.

150 17 198 1300 Rel hum difference from 17 ( 198) 1300 ( 77.672)

to 17 ( 198) 1315 ( 50.379) is greater than 25%

151 3 184 1530 Precip difference from 3 ( 184) 1530 ( 9.144) to

3 ( 184) 1545 ( 4.064) is greater than 5 mm

151 5 186 1200 Precip difference from 5 ( 186) 1200 ( 1.27) to

5 ( 186) 1215 ( 7.874) is greater than 5 mm

151 21 202 1130 Precip difference from 21 ( 202) 1130 ( .254) to

21 ( 202) 1145 ( 14.224) is greater than 5 mm

151 21 202 1200 Precip difference from 21 ( 202) 1200 ( 9.398) to

21 ( 202) 1215 ( 3.048) is greater than 5 mm

151 30 211 1030 Precip difference from 30 ( 211) 1030 ( 1.016) to

30 ( 211) 1045 ( 14.224) is greater than 5 mm

151 30 211 1045 Precip difference from 30 ( 211) 1045 ( 14.224)

to 30 ( 211) 1100 ( 1.778) is greater than 5 mm

The above precipitation and relative humidity data are considered correct and

remain unchanged.

101 1 182 100 Technician changed 101 Array data from 1 ( 182)

100 to 25 ( 206) 700

150 1 182 15 Technician changed 150 Array data from 1 ( 182)

15 to 25 ( 206) 745

241 1 182 2400 Technician changed 241 Array data at 1 ( 182)

2400 to 24 ( 205) 2400

243 1 182 2400 Technician changed 243 Array data at 1 ( 182)

2400 to 24 ( 205) 2400

244 1 182 2400 Technician changed 244 Array data at 1 ( 182)

2400 to 24 ( 205) 2400

The above errors are associated with a malfunctioning barometric pressure

sensor. Barometric pressure data for the above arrays and time periods was

considered incorrect and was deleted.

101 25 206 900 Technician changed 101 Array data at 25 ( 206)

900 to 31 ( 212) 2400

150 25 206 900 Technician changed 150 Array data at 25 ( 206)

900 to 31 ( 212) 2400

241 25 206 2400 Technician changed 241 Array data at 25 ( 206)

2400 to 31 ( 212) 2400

243 25 206 2400 Technician changed 243 Array data at 25 ( 206)

2400 to 31 ( 212) 2400

244 25 206 2400 Technician changed 244 Array data at 25 ( 206)

2400 to 31 ( 212) 2400

The above errors are associated with malfunctioning barometric pressure and

temperature/RH sensors. Barometric pressure, temperature, and relative humidity

data for the above arrays and time periods were considered incorrect and were

deleted. PAR data was considered incorrect for the above arrays and time

periods (7/25/02 0900 through 7/31/02 2400)and was deleted.

102 26 207 900 Technician changed 102 Array from 26 ( 207) 900

242 25 206 2400 Technician changed 242 Array from 25 ( 206) 2400

to 26 ( 207) 2400

The above errors are associated with the storage module exchanges and power down

of the CR10X that occurred on day 206 and 207. Data for the above time periods

was considered incorrect and was deleted.

The temperature sensor recorded a -99999 value in the following arrays:

array 101 on July 25 at 2400, array 150 on 25 from 2315-2400. The relative

humidity sensor recorded a -99999 value in the following arrays:

array 101 on July 30 at 1300.

Aug 2002

Array Day Julian Time Error

151 31 243 145 Precip difference from 31 ( 243) 145 ( .762) to

31 ( 243) 200 ( 7.62) is greater than 5 mm

151 31 243 200 Precip difference from 31 ( 243) 200 ( 7.62) to

31 ( 243) 215 ( .254) is greater than 5 mm

151 31 243 245 Precip difference from 31 ( 243) 245 ( .254) to

31 ( 243) 300 ( 8.128) is greater than 5 mm

151 31 243 300 Precip difference from 31 ( 243) 300 ( 8.128) to

31 ( 243) 315 ( 2.794) is greater than 5 mm

151 31 243 745 Precip difference from 31 ( 243) 745 ( .508) to

31 ( 243) 800 ( 7.62) is greater than 5 mm

The above precipitation data are considered correct and remain unchanged.

102 5 217 900 Technician changed 102 Array from 5 ( 217) 900

242 5 217 2400 Technician changed 242 Array from 5 ( 217) 2400

The above errors are associated with the storage module exchange and power down

of the CR10X that occurred on 217 at 0845. Hourly data for array 101 and 102 was

deleted as well as 24-hour data (array 241-244). Data for the above arrays and time

periods was considered incorrect and was deleted.

101 1 213 100 Technician changed 101 Array data from 1 ( 213)

100 to 18 ( 230) 600

101 18 230 1300 Technician changed 101 Array data at 18 ( 230)

1300 to 31 ( 243) 2400

150 1 213 15 Technician changed 150 Array data from 1 ( 213)

15 to 18 ( 230) 645

150 18 230 1300 Technician changed 150 Array data at 18 ( 230)

1300 to 31 ( 243) 2400

241 1 213 2400 Technician changed 241 Array data at 1 ( 213)

2400 to 31 ( 243) 2400

243 1 213 2400 Technician changed 243 Array data at 1 ( 213)

2400 to 31 ( 243) 2400

244 1 213 2400 Technician changed 244 Array data at 1 ( 213)

2400 to 31 ( 243) 2400

The above errors are associated with malfunctioning barometric pressure and

temperature/RH sensors. Barometric pressure, temperature, and relative humidity

data for the above arrays and time periods were considered incorrect and were

deleted.

Sep 2002

Array Day Julian Time Error

151 8 251 2000 Precip difference from 8 ( 251) 2000 ( 8.128) to

8 ( 251) 2015 ( 1.016) is greater than 5 mm

151 13 256 2130 Precip difference from 13 ( 256) 2130 ( 9.398) to

13 ( 256) 2145 ( 1.778) is greater than 5 mm

151 14 257 630 Precip difference from 14 ( 257) 630 ( 5.842) to

14 ( 257) 645 ( 10.922) is greater than 5 mm

151 14 257 645 Precip difference from 14 ( 257) 645 ( 10.922) to

14 ( 257) 700 ( 3.81) is greater than 5 mm

151 20 263 1030 Precip difference from 20 ( 263) 1030 ( 6.604) to

20 ( 263) 1045 ( 12.7) is greater than 5 mm

151 20 263 1045 Precip difference from 20 ( 263) 1045 ( 12.7) to

20 ( 263) 1100 ( 3.556) is greater than 5 mm

151 21 264 2145 Precip difference from 21 ( 264) 2145 ( 1.27) to

21 ( 264) 2200 ( 15.748) is greater than 5 mm

151 21 264 2200 Precip difference from 21 ( 264) 2200 ( 15.748)

to 21 ( 264) 2215 ( .508) is greater than 5 mm

The above precipitation data is considered correct and remains unchanged.

102 9 252 1000 Technician changed 102 Array from 9 ( 252) 1000

242 9 252 2400 Technician changed 242 Array from 9 ( 252) 2400

The above errors are associated with the storage module exchange and power down

of the CR10X that occurred on 252 at 0915. Hourly array data 101 and 102 were

deleted as well as 24 hour data (arrays 241-144). Data for the above arrays and time

periods was considered incorrect and was deleted.

101 1 244 100 Technician changed 101 Array data from 1 ( 244)

100 to 9 ( 252) 800

101 9 252 1000 Technician changed 101 Array data at 9 ( 252)

1000 to 30 ( 273) 2400

150 1 244 15 Technician changed 150 Array data from 1 ( 244)

15 to 9 ( 252) 845

150 9 252 930 Technician changed 150 Array data at 9 ( 252) 930

to 30 ( 273) 2400

241 1 244 2400 Technician changed 241 Array data at 1 ( 244)

2400 to 30 ( 273) 2400

243 1 244 2400 Technician changed 243 Array data at 1 ( 244)

2400 to 30 ( 273) 2400

244 1 244 2400 Technician changed 244 Array data at 1 ( 244)

2400 to 30 ( 273) 2400

The above errors are associated with malfunctioning barometric pressure and

temperature/RH sensors. Barometric pressure, temperature, and relative

humidity data for the above arrays and time periods were considered incorrect and

were deleted.

Oct 2002

Array Day Julian Time Error

151 15 288 430 Precip difference from 15 ( 288) 430 ( .254) to

15 ( 288) 445 ( 6.096) is greater than 5 mm

151 29 302 1730 Precip difference from 29 ( 302) 1730 ( .254) to

29 ( 302) 1745 ( 5.588) is greater than 5 mm

The precipitation data above is considered correct and remains unchanged.

102 7 280 1000 Technician changed 102 Array from 7 ( 280) 1000

242 7 280 2400 Technician changed 242 Array from 7 ( 280) 2400

The above errors are associated with the storage module exchange and power down

of the CR10X that occurred on 280 at 0930. Data for the above arrays and time

periods was considered incorrect and was deleted.

101 1 274 100 Technician changed 101 Array data at 1 ( 274) 100

to 31 ( 304) 2400

150 1 274 15 Technician changed 150 Array data at 1 ( 274) 15

to 31 ( 304) 2400

241 1 274 2400 Technician changed 241 Array data at 1 ( 274)

2400 to 31 ( 304) 2400

243 1 274 2400 Technician changed 243 Array data at 1 ( 274)

2400 to 31 ( 304) 2400

244 1 274 2400 Technician changed 244 Array data at 1 ( 274)

2400 to 31 ( 304) 2400

The above errors are associated with malfunctioning temperature/RH sensors.

Tmperature and relative humidity data for the above arrays and time periods were

considered incorrect and were deleted.

101 1 274 100 Technician changed 101 Array data at 1 ( 274) 100

to 7 ( 280) 1000

150 1 274 15 Technician changed 150 Array data at 1 ( 274) 15

to 7( 280) 0930

241 1 274 2400 Technician changed 241 Array data at 1 ( 274)

2400 to 7 ( 280) 2400

243 1 274 2400 Technician changed 243 Array data at 1 ( 274)

2400 to 7 ( 280) 2400

244 1 274 2400 Technician changed 244 Array data at 1 ( 274)

2400 to 7 ( 280) 2400

Barometric pressure data for the above arrays and time periods were considered

incorrect and were deleted.

The relative humidity sensor recorded at -99999 value in array 101 on October 11

at 1600.

Nov 2002

Array Day Julian Time Error

101 1 305 100 Technician changed 101 Array data at 1 ( 305) 100

to 30 ( 334) 2400

150 1 305 15 Technician changed 150 Array data at 1 ( 305) 15

to 30 ( 334) 2400

241 1 305 2400 Technician changed 241 Array data at 1 ( 305)

2400 to 30 ( 334) 2400

243 1 305 2400 Technician changed 243 Array data at 1 ( 305)

2400 to 30 ( 334) 2400

244 1 305 2400 Technician changed 244 Array data at 1 ( 305)

2400 to 30 ( 334) 2400

The above errors are associated with a malfunctioning temperature and relative

humidity sensor. Temperature and relative humidity data for the above arrays

and time periods were considered incorrect and were deleted.

Dec 2002

Array Day Julian Time Error

151 19 353 2330 Precip difference from 19 ( 353) 2330 ( .508) to

19 ( 353) 2345 ( 6.35) is greater than 5 mm

151 19 353 2345 Precip difference from 19 ( 353) 2345 ( 6.35) to

19 ( 353) 2400 ( 1.27) is greater than 5 mm

151 24 358 1200 Precip difference from 24 ( 358) 1200 ( 1.524) to

24 ( 358) 1215 ( 18.288) is greater than 5 mm

151 24 358 1215 Precip difference from 24 ( 358) 1215 ( 18.288)

to 24 ( 358) 1230 ( 5.334) is greater than 5 mm

151 31 365 1415 Precip difference from 31 ( 365) 1415 ( 3.81) to

31 ( 365) 1430 ( 16.002) is greater than 5 mm

151 31 365 1430 Precip difference from 31 ( 365) 1430 ( 16.002)

to 31 ( 365) 1445 ( 2.286) is greater than 5 mm

The above precipitation data is considered correct and remains unchanged.

101 1 335 100 Technician changed 101 Array data at 1 ( 335) 100

to 31 ( 365) 2400

150 1 335 15 Technician changed 150 Array data at 1 ( 335) 15

to 31 ( 365) 2400

241 1 335 2400 Technician changed 241 Array data at 1 ( 335)

2400 to 31 ( 365) 2400

243 1 335 2400 Technician changed 243 Array data at 1 ( 335)

2400 to 31 ( 365) 2400

244 1 335 2400 Technician changed 244 Array data at 1 ( 335)

2400 to 31 ( 365) 2400

The above errors are associated with a malfunctioning temperature and relative

humidity sensor. Temperature and relative humidity data for the above arrays

and time periods were considered incorrect and were deleted.

The relative humidity sensor recorded a -99999 value in the following arrays:

array 150 on December 5 from 1415-1430, array 101 on December 5 at 1400, 1500

array 101 on December 31 at 0600.

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.

Jan 2002

Array Day Julian Time Error

150 30 30 1500 Missing 150 Array data (15 minute data) from 30 (

30) 1500 to 30 ( 30) 2100

101 30 30 1500 Missing 101 Array data (Hourly Averages) from 30

( 30) 1500 to 30 ( 30) 2100

102 30 30 1500 Missing 102 Array data (Hourly Average Wind

Parameters) from 30 ( 30) 1500 to 30 ( 30) 2100

The CR10X datalogger did not collect data for the above missing data period. The

cause of the above errors is unknown.

Feb 2002

Array Day Julian Time Error

150 25 56 1500 Missing 150 Array data (15 minute data) from 25 (

56) 1500 to 25 ( 56) 1530

101 25 56 1500 Missing 101 Array (Hourly Averages)

102 25 56 1500 Missing 102 Array (Hourly Average Wind Parameters)

The above missing data is associated with storage module exchange and power down

of datalogger on 56 at 14:35

Mar 2002

No missing data

Apr 2002

Array Day Julian Time Error

150 3 93 1200 Missing 150 Array data (15 minute data) from 3 (

93) 1200 to 4 ( 94) 1145

101 3 93 1200 Missing 101 Array data (Hourly Averages) from 3 (

93) 1200 to 4 ( 94) 1100

102 3 93 1200 Missing 102 Array data (Hourly Average Wind

Parameters) from 3 ( 93) 1200 to 4 ( 94) 1100

241 3 93 2400 Missing 241 Array (Daily Averages)

242 3 93 2400 Missing 242 Array (Daily Average Wind Parameters)

243 3 93 2400 Missing 243 Array (Daily Max/Time Values)

244 3 93 2400 Missing 244 Array (Daily Min/Time Values)

The above missing data is associated with storage module exchange and power down

of datalogger on 93 at 11:44

150 15 105 215 Missing 150 Array data (15 minute data) from 15 (

105) 215 to 15 ( 105) 830

101 15 105 300 Missing 101 Array data (Hourly Averages) from 15

( 105) 300 to 15 ( 105) 800

102 15 105 300 Missing 102 Array data (Hourly Average Wind

Parameters) from 15 ( 105) 300 to 15 ( 105) 800

The above missing data may be associated with a low charge on the solar powered

battery, preceded by several days of cloud cover.

May 2002

No missing data

Jun 2002

Array Day Julian Time Error

150 3 154 1000 Missing 150 Array (15 minute data)

150 14 165 800 Missing 150 Array data (15 minute data) from 14 (

165) 800 to 14 ( 165) 900

101 3 154 1000 Missing 101 Array (Hourly Averages)

101 14 165 800 Missing 101 Array data (Hourly Averages) from 14

( 165) 800 to 14 ( 165) 900

102 3 154 1000 Missing 102 Array (Hourly Average Wind Parameters)

102 14 165 800 Missing 102 Array data (Hourly Average Wind

Parameters) from 14 ( 165) 800 to 14 ( 165) 900

The above errors are associated with the installation of new sensors and

concurrent power down of the datalogger.

Jul 2002

Array Day Julian Time Error

150 25 206 800 Missing 150 Array data (15 minute data) from 25 (

206) 800 to 25 ( 206) 845

101 25 206 800 Missing 101 Array (Hourly Averages)

102 25 206 800 Missing 102 Array (Hourly Average Wind Parameters)

The above errors are associated with the installation of new sensors and

concurrent power down of the datalogger.

Aug 2002

Array Day Julian Time Error

150 18 230 700 Missing 150 Array data (15 minute data) from 18

( 230) 700 to 18 ( 230) 1245

101 18 230 700 Missing 101 Array data (Hourly Averages) from 18

( 230) 700 to 18 ( 230) 1200

102 18 230 700 Missing 102 Array data (Hourly Average Wind

Parameters) from 18 ( 230) 700 to 18 ( 230) 1200

The CR10X datalogger did not collect data for the above missing data period. The

cause of the above errors may have been related to a low charge on the solar

powered battery in combination with cloud cover.

Sep 2002

Array Day Julian Time Error

150 9 252 900 Missing 150 Array data (15 minute data) from

9 ( 252) 900 to 9 ( 252) 915

101 9 252 900 Missing 101 Array (Hourly Averages)

102 9 252 900 Missing 102 Array (Hourly Average Wind Parameters)

The above errors are associated with storage module exchange and power down of

datalogger on 252 at 0845.

Oct 2002-Dec 2002

No missing data

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.

New sensors were installed in June and July of 2002. Wiring and programming

modifications made subsequent to installation account for a period of missing

and/or deleted data for barometric pressure, temperature, relative humidity, and

PAR. After all corrections were made to the temperature/RH sensor it was

discovered that this sensor was faulty. The temperature/RH sensor was returned

to the manufacturer for warranty repair work.

The new temperature/RH sensor was installed on July 25, 2002 at 07:45. All

temperature/RH data collected from the installation date through the end of 2002

was incorrect due to a faulty sensor. The temperature/RH sensor was repaired

in February of 2003 and is now functioning correctly.

The new barometric pressure sensor was installed on June 14, 2002 at 07:45.

All barometric pressure data collected from the installation date through

October 7, 2002 at 09:30 was incorrect due to an erroneous jumper setting.

Data collected after the jumper was corrected on October 7, 2002 at 09:30 is

correct.

A new LiCor Quantum Pyranometer was installed on July 26, 2002 at 08:30. The

multiplier for this sensor was not corrected until October 7, 2002 at 09:30.

Data collected with the incorrect multiplier was recalculated using the

corrected multiplier. The incorrect PAR data has been replaced for this time

period with the corrected data.

Tropical Storm Hannah made landfall in the Florida Panhandle on September 14,

2002. Hurricane Isidore made landfall in Louisiana on September 26, 2002.

Significant rain events associated with these storms occurred in the

Apalachicola Bay area.

Rain Events: Please note that monthly totals are not available during those months

where data was missing due to the station being powered down and not collecting data.

January

Date RainAmount (mm)

1 .762

2 1.524

3 .762

4 9.652

5 .254

6 17.272

9 .254

11 .254

12 7.112

13 7.874

14 12.954

15 24.638

16 22.606

19 2.286

21 7.874

22 16.256

23 3.810

24 1.270

25 15.748

27 25.146

28 5.334

29 .254

30 .254

31 .254

February

Date RainAmount (mm)

1 .254

6 1.524

7 2.794

8 4.826

9 1.270

13 .254

20 .254

21 .254

25 .508

28 .254

March

Date RainAmount (mm)

2 78.740

3 20.066

4 2.286

1 .762

2 6.096

12 3.302

13 4.572

14 2.286

15 3.048

18 .254

19 .254

20 .254

21 .508

26 .254

27 .254

"Monthly Total" 122.9

April

Date RainAmount (mm)

3 .254

May

Date RainAmount (mm)

13 .508

14 .254

17 1.270

18 15.494

19 18.796

20 1.270

30 2.286

31 4.064

"Monthly Total" 43.9

June

Date RainAmount (mm)

7 31.496

8 32.258

9 12.446

10 .762

14 4.572

17 2.032

18 9.144

19 5.842

20 33.274

21 1.270

23 53.594

24 26.670

25 11.684

26 11.938

July

Date RainAmount (mm)

3 13.462

5 16.002

7 1.270

8 1.270

9 1.016

12 2.032

13 4.572

14 .254

15 5.334

18 4.318

19 4.318

21 30.988

22 7.366

26 3.048

27 1.016

28 2.286

30 18.288

August

Date Rainamount (mm)

1 23.114

2 1.524

4 11.684

5 2.286

7 .254

13 1.016

14 2.794

18 6.350

19 1.778

28 10.414

29 4.318

30 1.270

31 72.644

September

Date RainAmount (mm)

5 10.922

8 9.144

9 .254

12 1.016

13 25.400

14 49.530

20 31.242

21 18.542

24 47.244

25 .762

26 11.684

27 2.540

30 .508

October

Date Rainamount (mm)

1 1.778

11 .254

13 13.208

14 8.128

15 34.798

20 .508

21 1.778

23 3.810

24 .254

29 40.640

30 .254

"Monthly Total" 105.4

November

Date Rainamount (mm)

5 .254

6 9.906

9 .508

12 12.446

15 2.286

16 34.036

25 .254

30 .508

"Monthly Total" 60.2

December

Date RainAmount (mm)

5 3.048

8 .254

9 8.890

10 5.588

11 .254

12 3.810

13 8.890

18 .254

19 8.128

20 1.270

24 32.004

31 37.592

"Monthly Total" 110.0