ACE Basin National Estuarine Research Reserve
Meteorological Metadata Report
January - December 2005

Latest Update: **October 16, 2023**

I. Data Set & Research Descriptors

1. Principal investigator & contact persons:

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2. Entry Verification

a) Data Input Procedures:

The 15-minute, 1-hour average and 24-hour meteorological data recorded by each sensor are stored in a Campbell Scientific CR10X datalogger. The CDMO Data Logger Program (nerr4_3.csi) that is loaded into the datalogger controls the sensors and data collections 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.

The PC208W software is installed on a desktop and a laptop computer. The weather station is hard wired to the ACE Basin NERR field station located adjacent to the weather station. The weather data is downloaded from the datalogger weekly via the desktop computer located in the field station. The laptop computer is primarily used for a back-up, and the weather data is downloaded from the datalogger via a SC32A interface. These data are saved in a text file (*.DAT).

Data are uploaded from the CR10X data logger or storage module to a Personal Computer (IBM compatible). Files are exported from PC208W or LoggerNet in a comma-delimited format (.DAT) and opened in Microsoft Excel for pre-processing with the EQWin format macro that was developed by the CDMO to reformat the header columns, insert station codes, insert a date column (mm/dd/yyyy), correct the time column format and reformat the data to the appropriate number of decimal places. The pre-processed file is then ready to be copied into the EQWin weather.eqi file where the data are QA/QC checked and archived in a database. EQWin queries, reports and graphs are used to discover data set outliers (values which fall outside the range that the instrument is

designed to measure) and large changes in the data. EQWin is also used to generate statistics, view graphs, create customized queries and reports of the data, cross query the water, weather and nutrient data and finally export the data to the CDMO.

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

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

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

i) 15-minute average, maximum and minimum data are averages of 5-second readings for Air Temperature (degree C), Relative Humidity (%), Barometric Pressure (mb) and Wind Speed (m/s)

ii) Hourly average, maximum, and minimum data are averages of 5-second readings for Air Temperature (degree C), Relative Humidity (%), Barometric Pressure (mb), Wind Speed (m/s), and Wind Direction (degrees). Hourly totals for PAR (mmol/m^2) and Precipitation (mm) are totals of 15-minute readings.

iii) Daily average, maximum and minimum data are averages of 5-second readings for Air Temperature (degree C), Relative Humidity (%), Barometric Pressure (mb), Wind Speed (m/s), and Wind Direction (degrees). Daily totals for PAR (mmol/m^2) and Precipitation (mm) are totals of 15-minute readings.

Data were stored on a Campbell Scientific storage module (SM192 or SM4M), which can was retrieved monthly, but ACE NERR staff use the storage module as a back-up equipment if the CR10X data logger were to fail. The data were downloaded and pre-processed as described in Section 2. QA/QC of the data was conducted using EQWin. EQWin error reports and queries were based on the following anomalous data criteria:

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

Relative Humidity:
-Sample not greater than 100% or less than 0%

Pressure:
-Sample not greater than 1060 mb or less than 900 mb

Wind Speed:
-Wind speed not greater than 30 m/s
-Wind speed not less than 0.5 m/s for 12 consecutive hours

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

Rainfall:
-Precipitation not greater than 5 mm in 15 min

Photo synthetically Active Radiation (PAR):
-Sample not greater than 5000 mmol/m^2 or less than –0.5 mmol/m^2

Time:
-15-minute interval recorded

For all data:
-No duplicate data

Amy Whitaker Dukes and Julie L. Dingle are responsible for the above tasks.

3. Research objectives (Campbell Weather Station):

The principal objective of the Weather Monitoring Program is to record long-term meteorological data for the ACE Basin NERR in order to observe any environmental changes or trends over time.

4. Research Methods

The Campbell Scientific weather station measures the parameters every 5 seconds to produce both 15 minute, hourly and daily averages of those measurements of air temperature, relative humidity, barometric pressure, rainfall, and wind speed and wind direction. The PC208W software is installed on a desktop and a laptop computer. The weather station is hard wired to the ACE Basin NERR field station located adjacent to the weather station. The weather data is downloaded from the datalogger weekly via the desktop computer located in the field station. The laptop computer is primary used for a back-up, and the weather data is downloaded from the datalogger via a SC32A interface. These data are saved in a text file (*.DAT).

On-site in-situ weather conditions are measured to verify the accuracy of the readings by the sensors, using a Kestrel 400 hand-held. After downloading data, sensors on the weather station are inspected for damage or debris. If any problems are found, it is repaired and/or cleaned. Tree limbs and other shrubs are cut back to prevent obstruction of the sensors. Sensors will be removed and sent back to Campbell Scientific for calibration at a minimum of every two years.

5. Site Location and Character

The ACE Basin National Estuarine Research Reserve (NERR) is located on the Southeastern Atlantic coast of the United States, including portions of Charleston, Colleton and Beaufort Counties in South Carolina. The study area encompasses the Ashepoo, Combahee, and South Edisto River basins, which empty into St. Helena Sound. Diverse estuarine wetlands provide extensive and complex habitat types for fish and wildlife. The NERR consist of approximately 92,000 acres of tidal marshes. Of this, 65,600 acres are salt marshes, 13,600 acres are brackish marshes and 12,100 acres are freshwater marshes. Interspersed within these three tidal marsh zones are approximately 26,000 acres of managed wetlands, marsh impoundments, and hammock islands. St. Helena Sound comprises approximately 23,870 acres of open coastal marine and estuarine waters.

The weather station is located at the Bennett's Point field station on Mosquito Creek, a navigable tributary off of the Ashepoo River. The weather stations latitudinal and longitudinal coordinates are: 32° 33.5623'N, 80° 27.2715'W. The station is approximately 90 m from the creek (800 m from the Ashepoo River) in a grassy field, 80 m to the southwest of the field station. The closest wind obstructions are oak trees, 25 m to the south and southwest of the weather station and 70 m from a public paved road.

The CR10X datalogger and the barometric sensor are enclosed in a 1.8 m elevated aluminum box. A 15 foot galvanized steal tower elevates the sensors above potential barriers and enhances the performance of each sensor. The LiCor and the Wind Sentry sensors are attached to a cross T bar at the top of the tower and the Temperature/Relative Humidity sensor is attached approximately half way up the tower. The Solar Panel is attached to 2.5 m long pole, and is oriented to the east at approximately a 47-degree angle. The Tipping Bucket Rain gauge (1.3 m height) is located 2.5 m to the southeast of the box on a concrete level platform. The sensors are wired to the CR10X following protocol in the CDMO Manual, with minor changes due to upgraded sensors.

6. Data Collection Period

Weather data have been collected at the ACE Basin NERR Bennett's Point weather station since the station became operational in March 2001. Data was collected for the entire year in 2005, with the exception of:

February 1, 2005 – No data was recorded @ 12:45 (array 15). The reason is unknown. The time corresponds to the time of data download.

August 22, 2005 @ 11:30 thru August 23, 2005 @ 12:00 – The weather station was powered down to install new weather probes and to perform general station maintenance.

7. Distribution

According to the Ocean and Coastal Resource Management Data Dissemination Policy for the NERRS System-wide Monitoring Program, is as follows.

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 NERR Water Quality Monitoring Project is a study, which records long-term water quality data for the ACE Basin in order to observe any physical changes or tends in water quality over time. The four sampling sites are in separate tributaries of the South Edisto and Ashepoo Rivers. Two sites represent an urban or "treatment" site, and the other two sites represent pristine areas with in the Reserve. A salinity gradient is also observed between theses four sites:

Big Bay Creek - approximately 14 kilometers from the weather station, GPS coordinates: 32.4941 N and -80.3241 W. The station is surrounded by residential and commercial development and subject to nonpoint source pollution.

St. Pierre Creek - approximately 9 kilometers from the weather station, GPS coordinates: 32.5233 N and -80.3568 W. The station is surrounded by a wide expanse of Spartina alterniflora marsh. Extensive mud flats and oyster reefs fringe the banks. Development in the immediate area is sparse, and this creek is subject to relatively light boat traffic.

Fishing Creek – approximately 12 kilometers from the weather station, GPS coordinates: 32.6358 N and -80.3655W. The station is near Jehossee Island, a protected USFWS property, and is surrounded by extensive *Spartina cynosuroides* marsh and vast mud flats. The upland area is characterized by slash pine, live oak, and cabbage palmetto.

Mosquito Creek – approximately 2 kilometers from the weather station, GPS coordinates: 32.5558 N and -80.4380W. The station is surrounded by agriculture fields and impounded wetlands. A public boat landing and a commercial seafood business with three commercial shrimp boats and a fueling station are located about 0.8 km (0.5 mi) downstream of the monitoring station.

Measurements for all sites are taken every thirty minutes over roughly a two-week collection period.

In July 1997, the Reserve staff initiated nutrient monitoring study. The objective of the study is to ascertain the annual and tidal fluctuations in nutrient levels near our two data logger

sites. Nutrient levels are measured during a complete tidal cycle each month, and the samples are analyzed for ammonia, nitrite-nitrate, ortho-phosphate, and chlorophyll a concentrations. In January of 2002, the nutrient monitoring protocol was added to the NERR System Wide Monitoring Program (SWMP).

Dr. Charles Wenner of SCDNR/Marine Resources Research Institute received funding through the National Marine Fisheries Service in January of 2001 to continue an ongoing survey of red drum (Sciaenops ocellatus) in the South Edisto and Combahee River basins, by electro-fishing in tidal freshwater and low salinity brackish water. Although red drum are the target species, all catches are separated, measured and weighted to provide a distribution and population size for each species.

The ACE Basin NERR received initial funding from the U.S. Environmental Protection Agency to establish a National Atmospheric Deposition Program site in the Reserve. Sampling efforts began on January 1, 2002 and will continue for five years. Weekly precipitation samples are collected and analyzed for atmospheric pollutants. The precipitation collector is located on Bear Island, a Wildlife Management Area inside the NERR.

In May of 2005, Dr. Susan Wilde, SCDNR, began a CICEET funded project examining the effects of climatological cycles and storm events on water quality collected in the southeast US NERR sites. The project objectives include: 1) initiating the first phase in data analysis required to develop a statistical model of long-term climatic impacts upon water-quality parameters, including dissolved oxygen, salinity, turbidity, and nutrients and 2) examine storm tracks and meteorological history of named tropical systems between 1996-2004, in order to determine the frequency, duration, and intensity of systems that potentially impacted water quality.

The results from these studies and addition studies conducted in the ACE Basin can be obtained by contacting the Reserve.

II. Physical Structure Descriptors

9. Sensor Specifications, Operating Range, Accuracy, Date of Last Calibration

LiCor Quantum Sensor

Model #: LI-190SZ
Stability: < +/- 2% change over a 1 year period
Operating Temperature: -20 to +65 degree C
Sensitivity: Typically 30 nA per 100 klux
Light Spectrum Wavelength: 400 to 700 nanomaters
Date of last calibration: 06/29/2005

Wind Sentry

Model #: 03001
Range: 0-50 m/s; 360o Mechanical
Date of last calibration: Exact date is unknown; Purchase date 07/01/2005

Temperature and Relative Humidity

Model #: HMP45AC
Operating Temperature: -40 to +60 degree C
Temperature Measurement Range: -40 to +60 degree C
Temperature Accuracy: +/- 2% degree C @ 20 degree C
Relative Humidity Measurement Range: 0 - 100% non-condensing
RH Accuracy: +/- @% RH (0 - 90%) and +/- 3% (90 - 100%)
Uncertainty of calibration: +/- 1.2% RH
Date of last calibration: 04/25/2005

Barometric Sensor

Model #: PTB101B
Calibrated Range: 26" - 32" (Standard)
Supply Voltage: 12 VDC at 12 mA
Accuracy: +/- 0.7 of span
Operating Temperature Range: -22 to +55 degree C
Date of last calibration: 05/13/2005

Tipping Bucket Rain Gauge

Texas Electronics
Model #: TR-525I
Calibration: 0.01 inch per tip
Accuracy: +/- 3% (Rates of 1 to 6 inches per hour)
Date of last calibration: August 2005

Storage Module

Model # SM4M
Storage capacity: 2 million low-resolution data values
Program storage: stores up to 8 program with a total capacity of 128 KB
Processor: Hitachi H8S
Operating system: 64 KB, flash memory based, user downloadable
Operating range: Temp: -35 to +65 degree C
Baud rates: 9600, 76800
Power requirements: 5 +/- 0.3 VDC @ 100 mA

Campbell Scientific CR10X datalogger and wiring panel has 128K flash memory (EEPROM), in which it stores the operating system and the actual weather program used to make the station operational. Additionally, there are 128K of SRAM, which it uses to run the program and store its measurements for final data storage.

10. Coded Variable Indicator and Variable Code Definition

Sampling station:	Sampling site code:	Station code:
Bennett's Point	BP	acebpmet

11. Data Anomalies / Suspect Data

Arrays:
During 2022 all pre-2007 weather data were revisited by the CDMO. Historically those datasets included 15 minute, hourly (60), and daily data arrays (144). As directed by the NERRS Data Management Committee, the CDMO removed the hourly and daily data arrays leaving only the 15 minute data to make the entire NERRS SWMP weather dataset consistent in its reporting. All references to the 60 and 144 arrays were left in the metadata document as they may still provide valuable information, but users should be aware that they are largely no longer relevant. The updated datasets were uploaded to the database and made available through the various data applications at www.nerrsdata.org/get/landing.cfm throughout the fall of 2022.

January 2005
No Anomalies Data

February 2005
Array 15 at 12:45 on February 1 (J32), no data was recorded. The reason is unknown. The time corresponds with the time of data download. The missing fifteen minute array did not affect array 60 at 13:00 or array 144 at 24:00, because those values are based on the five second reading stored in the short-term memory of the CR10X datalogger.

March – December 2005
No Anomalies Data

12. Deleted Data

Arrays:
During 2022 all pre-2007 weather data were revisited by the CDMO. Historically those datasets included 15 minute, hourly (60), and daily data arrays (144). As directed by the NERRS Data Management Committee, the CDMO removed the hourly and daily data arrays leaving only the 15 minute data to make the entire NERRS SWMP weather dataset consistent in its reporting. All references to the 60 and 144 arrays were left in the metadata document as they may still provide valuable information, but users should be aware that they are largely no longer relevant. The updated datasets were uploaded to the database and made available through the various data applications at www.nerrsdata.org/get/landing.cfm throughout the fall of 2022.

January – July 2005
No deleted data.

August 2005
The weather station was powered down on August 22 (J234) @ 11:30 to change out the sensors and was not powered on again until August 23 (J235) @ 12:00. Therefore all data is missing from this time period.
Array 144 at 24:00 on August 23 (J235) records were deleted, because these records were based off of five second records which were lost when the data logger was powered down.

September 2005
No deleted data.

October 2005
No deleted data.

November 2005
From 10:45 thru 11:00 on November 22 (J326), ACE NERR staff could not communicate with the CR10X datalogger, and data for array 15 for those time stamps were not recorded. The data logger was powered down for approximately fifteen minutes to troubleshoot the real-time data connections and to reset the functions of the data logger.
Array 60 at 11:00 on November 22 (J326) and array 144 at 24:00 on November 22 (J326) records were deleted, because these records were based off of five second records which were lost when the data logger was powered down.

December 2005
No deleted data.

13. Missing Data

Arrays:
During 2022 all pre-2007 weather data were revisited by the CDMO. Historically those datasets included 15 minute, hourly (60), and daily data arrays (144). As directed by the NERRS Data Management Committee, the CDMO removed the hourly and daily data arrays leaving only the 15 minute data to make the entire NERRS SWMP weather dataset consistent in its reporting. All references to the 60 and 144 arrays were left in the metadata document as they may still provide valuable information, but users should be aware that they are largely no longer relevant. The updated datasets were uploaded to the database and made available through the various data applications at www.nerrsdata.org/get/landing.cfm throughout the fall of 2022.

Data are missing due to equipment or associated specific probes not being deployed, equipment failure, time of calibration of equipment, or repair/replacement of the sampling station platform. For more details on deleted data, see the Deleted Data Section (12.). If additional information on missing data is needed, contact the Research Coordinator at the Reserve submitting the weather data.

14. Other Remarks – Daily Total Rainfall Amounts Measured in Millimeters

On 10/16/2023 this dataset was updated to include embedded QAQC flags for anomalous/suspect data. System-wide monitoring data beginning in 2007 were processed to allow for QAQC flags and codes to be embedded in the data files rather than detailed in the metadata alone (as in the anomalous/suspect, deleted, and missing data sections above). Prior to 2007, rejected data were deleted from the dataset so they are unavailable to be used at all, but suspect data were only noted in the metadata document. Suspect data flags <1> were embedded

retroactively in order to allow suspect data to be easily identified and filtered from the dataset if desired for analysis and reporting purposes. No other flags or codes were embedded in the dataset and users should still refer to the detailed explanations above for more information.

Arrays:
During 2022 all pre-2007 weather data were revisited by the CDMO. Historically those datasets included 15 minute, hourly (60), and daily data arrays (144). As directed by the NERRS Data Management Committee, the CDMO removed the hourly and daily data arrays leaving only the 15 minute data to make the entire NERRS SWMP weather dataset consistent in its reporting. All references to the 60 and 144 arrays were left in the metadata document as they may still provide valuable information, but users should be aware that they are largely no longer relevant. The updated datasets were uploaded to the database and made available through the various data applications at www.nerrsdata.org/get/landing.cfm throughout the fall of 2022.

Precipitation:
During the initial years of NERRS SWMP weather data collection the CR10X programming was inconsistent in how precipitation values were recorded. For most reserves, zeros were not recorded when rainfall had not occurred between 2001-2003, instead no rainfall was represented by a blank cell. The CDMO verified which datasets were impacted by this issue for the 2001-2006 datasets and inserted zeros when the metadata indicated that no precipitation occurred and data were not missing for other reasons. In some cases, zero values for precipitation data were evaluated and removed where the metadata confirmed that no rainfall should have been in the dataset. The pre-2007 data did not go through a thorough QAQC process again at that time (in addition to previous QAQC); however, if discrepancies were noticed between what was documented in the metadata and what was in the dataset, additional updates may have been made. The updated datasets were uploaded to the database and made available through the various data applications at www.nerrsdata.org/get/landing.cfm throughout early 2023.

During precipitation edits mentioned above it was noted that the 01/01/2005 00:00 line of data was missing. Those data were found in an archived original file and added back to the dataset.

LiCor/PAR: Negative LiCor/PAR data have been observed during the night. These small negative values are within the range of the sensor and are due to normal errors within the sensor and the CR10X datalogger. The Maximum signal noise error for the Licor sensor is +/- 2.214 mmoles/m2 over a 15 minute interval. These data were not corrected to zero.

Precipitation Outliers: Rain events that record more than 5 millimeters of precipitation in a fifteen minute period are flagged. Coastal South Carolina often experiences heavy rainfall events that accumulate large amounts of precipitation in a short time period. These data were not anomalies and were not deleted.

Calendar Day	Precipitation Total measured in Millimeters (mm)		
January 2005	01/15/2005	11.2	0.50

February 2005	02/09/2005	8.9	0.40
	02/14/2005	1.3	0.06
	02/21/2005	14.2	0.63
	2/22/2005	5.3	0.24
	02/24/2005	7.6	0.34
March 2005	03/08/2005	0.5	0.02
	03/22/2005	68.3	3.05
	03/23/2005	0.3	0.01
	03/25/2005	1.8	0.08
	03/26/2005	0.8	0.04
	03/27/2005	95.5	4.26
	03/28/2005	8.1	0.36
	03/31/2005	0.3	0.01
April 2005	04/01/2005	6.6	0.29
	04/02/2005	20.8	0.93
	04/07/2005	19.8	0.88
	04/13/2005	4.6	0.21
	04/22/2005	9.4	0.42
	04/26/2005	1.0	0.04
	04/27/2005	0.5	0.02
	04/30/2005	2.5	0.11
May 2005	05/01/2005	0.3	0.01
	05/05/2005	26.7	1.19
	05/06/2005	0.5	0.02
	05/16/2005	7.6	0.34
	05/17/2005	28.4	1.27
	05/20/2005	10.2	0.46
	05/30/2005	6.9	0.31
	05/31/2005	16.5	0.74
June 2005	06/01/2005	1.3	0.06
	06/02/2005	30.0	1.34
	06/03/2005	7.9	0.35
	06/05/2005	40.9	1.83
	06/09/2005	0.5	0.02
	06/11/2005	0.3	0.01
	06/18/2005	0.3	0.01
	06/19/2005	4.1	0.18
	06/23/2005	2.0	0.09
	06/25/2005	15.2	0.68
	06/26/2005	0.8	0.04
	06/27/2005	0.8	0.04

	06/28/2005	21.6	0.96
	06/29/2005	40.1	1.79
	06/30/2005	0.5	0.02
July 2005	07/01/2005	2.3	0.10
	07/02/2005	8.6	0.38
	07/03/2005	102.6	4.58
	07/04/2005	1.3	0.06
	07/05/2005	1.3	0.06
	07/09/2005	15.7	0.70
	07/10/2005	1.5	0.07
	07/13/2005	2.0	0.09
	07/14/2005	1.3	0.06
	07/29/2005	5.1	0.23
	07/30/2005	0.3	0.01
	07/31/2005	25.7	1.15
August 2005	08/01/2005	17.5	0.78
	08/02/2005	4.1	0.18
	08/06/2005	0.3	0.01
	08/07/2005	17.3	0.77
	08/11/2005	8.6	0.38
	08/12/2005	7.1	0.32
	08/13/2005	0.5	0.02
	08/17/2005	6.1	0.27
	08/18/2005	20.8	0.93
	08/24/2005	6.6	0.29
	08/26/2005	16.0	0.71
	08/27/2005	22.1	0.99
	08/30/2005	0.3	0.01
September 2005	09/01/2005	2.3	0.10
	09/06/2005	4.1	0.18
	09/16/2005	1.3	0.06
	09/22/2005	0.3	0.01
	09/28/2005	3.6	0.16
	09/30/2005	11.9	0.53
October 2005	10/04/2005	0.8	0.04
	10/05/2005	87.1	3.89
	10/06/2005	6.4	0.29
	10/07/2005	7.6	0.34
	10/10/2005	2.5	0.11
	10/11/2005	0.3	0.01
	10/12/2005	0.5	0.02
	10/21/2005	2.3	0.10
	10/24/2005	14.0	0.63

November 2005	11/01/2005	0.3	0.01
	11/15/2005	0.5	0.02
	11/20/2005	18.3	0.82
	11/21/2005	97.5	4.35
	11/27/2005	0.3	0.01
	11/28/2005	3.0	0.13
	11/29/2005	0.5	0.02
December 2005	12/04/2005	6.1	0.27
	12/05/2005	20.1	0.90
	12/08/2005	1.0	0.04
	12/09/2005	8.4	0.38
	12/15/2005	4.3	0.19
	12/25/2005	1.5	0.07
	12/28/2005	0.3	0.01
	12/29/2005	3.0	0.13
Annual Total 2005		1157.8 mm	51.69 in

Historical Annual Precipitation Totals at ACE NERR Bennett's Point Weather Station:

Annual Total 2004	802.6 mm	35.83 in
Annual Total 2003	794.1 mm	35.45 in
Annual Total 2002	1281.7 mm	57.22 in