

Chesapeake Bay Virginia (CBV) NERR Meteorological Metadata

January 2007 - December 2007

Latest Update: June 3, 2010

I. Data Set and Research Descriptors

1) Principal investigator(s) and contact persons.

Chesapeake Bay National Estuarine Research Reserve of Virginia (CBNERRVA)
Virginia Institute of Marine Science
College of William and Mary
PO Box 1346, Gloucester Point, VA 23062
Phone: (804) 684-7135 (main phone)

Dr. William Reay, Director

E-mail: wreay@vims.edu; (804) 684-7119

Dr. Kenneth Moore, Research Coordinator

E-mail: moore@vims.edu; (804) 684-7384

Mr. Scott Lerberg, Stewardship Coordinator

E-mail: lerbergs@vims.edu; (804) 684-7129

Responsible for Data Management and Submission

Mr. Eduardo Miles, Marine Scientist

E-mail: emiles@vims.edu; (804) 684-7836

Responsible for Field Data Collection

2) Entry verification:

a) Data Input Procedures:

Some History: In 2005, the Centralized Data Management Office converted all SWMP (System Wide Monitoring Program) weather data collected with CR10X program versions prior to version 4.0. 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 (which was used in 2006 metadata reporting) produces averages, maximums and minimums every fifteen minutes (array 15), every hour (array 60) and every day (array 144) for any sensors connected to the CR10X.

At the Taskinas Creek Met Station prior to November 30th, 2006, 15-minute, 1-hour average, and 24-hour data were downloaded from each sensor on the weather station to a Campbell Scientific CR10X datalogger. The CDMO Data Logger Program (NERR.SCI) was loaded into the CR10X and controlled the sensors and data collection schedule. Data collected from the CR10X were stored on a Campbell Scientific storage module (SM4M) and downloaded manually onto a laptop computer using PC208W program from Campbell Scientific. Data were downloaded biweekly or monthly from the storage module located within the weather station.

The raw data files were then exported from the PC208W program in comma-delimited format (.DAT files) and opened in Microsoft Excel using the EQWIN Format Macro developed by CDMO to reformat the header columns, insert station codes, insert a date column, correct the time column format, and format all columns to the correct number of decimal places. This formatted file was then copied into the EQWIN weather.eqi file where the data were QA/QC checked and archived in a database. Data were investigated as recommended in the CDMO NERR SWMP Data Management Manual Version 5.2, and included the use of queries, graphs, and reports. EQWIN was also used to generate customized reports and export the data in a standardized

format to send to CDMO. Any anomalous data were investigated and noted in an Anomalous Data section (Section 11). Data tagged as being “anomalous” are double checked and where the data truly appear anomalous, they are compared with other regional meteorological data for verification. Any data corrections or removed data were noted in the Deleted Data section (Section 12). Any missing data was documented in the Missing Data section (Section 13).

After switching out the Campbell Scientific CR10X Datalogger for a CR1000 instrument at the Taskinas Creek Station (on December 1, 2006) programming changes dictated only 15-minute data being downloaded from each sensor. The CDMO Data Logger Program (CBV_CBVTCMET_V3.0_113006.CR1) was loaded into the CR1000 which controls the sensors and data collection schedule. Data are downloaded biweekly to monthly directly from the CR1000 as the storage module was no longer needed in this new configuration.

For data collection from December 1, 2006 to present, the CR1000 datalogger was programmed to collect data in the following formats:

- 15-minute average, maximum and minimum data averaged from 5-second readings for Air Temperature (degrees C)
- 15-minute average data averaged from 5-second readings for Relative Humidity (%), Barometric Pressure (mb) and Wind Speed (m/s).
- 15-minute Precipitation (mm) and PAR (mmol/m²) data are totaled from 5-second readings.

Following the installation of the CR1000 (and associated programs), hourly and daily data were no longer collected. In addition, hardware and software changes resulted in a reduced parameter list which no longer included the following parameters (now considered Non-SWMP parameters):

- Maximum Relative Humidity
- Maximum Relative Humidity Time
- Minimum Relative Humidity
- Minimum Relative Humidity Time
- Maximum Barometric Pressure
- Maximum Barometric Pressure Time
- Minimum Barometric Pressure
- Minimum Barometric Pressure Time
- Minimum Wind Speed
- Minimum Wind Speed Time

Data collected from the CR1000 Version 3.0 Meteorological Program were processed in a slightly different manner than the CR10X. Data were collected directly from the CR1000 and downloaded onto a laptop computer using the LoggerNET Ver. 3.2 program from Campbell Scientific. These raw data files are then exported from the LoggerNET program in comma-delimited format (.DAT files) and run through a PERL Script program (CONVERT1_GUI_BATCH_V4.exe) to convert the CR1000 raw data file to the CR10X format (with a .csv extension). This intermediate file can then be opened with the EQWIN Format Macro developed by CDMO (November 2006) to reformat the header columns, insert station codes, insert a date column, correct the time column format, and format all columns to the correct number of decimal places (although with a reduced parameter list – see above). The formatted file could then be processed in EQWIN using the same methods described in the paragraph above for the CR10X data.

Effective with the submission of 2007 SWMP MET data, the data submission process has been enhanced in order to improve the data delivery and availability of the non-telemetered NERRS SWMP data to the public. CDMO has developed a new data upload tool for the submission raw

2007 MET files to the CDMO (including SWMP and Non-SWMP parameters) as well as a new QA/QC Process.

Data are still collected from the CR1000 data logger via Loggernet (Version 3.2) using a laptop computer (Dell Toughbook). The Meteorological Program stored in the CR1000 was updated from Version 3.0 to Version 4.2 on 9/19/2007 to fix NAN values in the wind speed data and allow for negative PAR values. Files are exported from LoggerNet in a comma-delimited format (.Dat files) and uploaded to the CDMO where they are stored in a Microsoft SQL provisional database and undergo automated primary QA/QC and become part of the CDMO's online provisional database. During primary QA/QC, data are flagged if they are missing or out of sensor range. The edited file is then returned to CBNERRVA where it is opened in Microsoft Excel and processed using the CDMO's NERRQAQC Excel macro (Version 2.0512200). The macro inserts station codes, creates metadata worksheets for flagged data, and graphs the data for review. It allows the user to apply QA/QC flags and codes to the data, append files, and export the resulting data file to the CDMO for tertiary QA/QC and assimilation into the CDMO's authoritative online database (ODIS). For more information on QA/QC flags and QA/QC codes, see Sections 11 and 12.

Scott Lerberg was responsible for the QA/QC of the 2007 Weather data.

3) Research objectives:

The principal objective is to record long-term meteorological data within the York River watershed in order to observe any environmental changes or trends over time. Data may also be used for watershed research. Samples were taken every 5 seconds and averaged or totaled over 15 minutes for roughly two-week collecting intervals.

4) Research methods:

The Campbell Scientific weather station samples every 5 seconds to produce 15 minute averages (or totals in the case of rainfall and PAR readings) of measurements of air temperature, relative humidity, barometric pressure, rainfall, PAR, wind speed and wind direction. A bi-weekly to monthly sampling interval was chosen to periodically inspect and perform field verifications of the accuracy of the sensors and collect and send the raw data to CDMO for primary QA/QC. Sensors are scheduled to be removed and sent back to Campbell Scientific for calibration at minimum of every two years. It should be noted that no sensors were replaced in 2007; however, the Rain Gauge was recalibrated on 8/3/2007 (noted in Section 9 of this document.)

Campbell Scientific data telemetry equipment was installed at the Taskinas Creek station on 11/30/2006 and transmits data to the NOAA GOES satellite, NESDIS ID # 3B009218. The transmissions are scheduled hourly and contain four (4) data sets reflecting fifteen minute data sampling intervals. Upon receipt by the CDMO, the data undergoes the same automated primary QA/QC process detailed in Section 2 above. The "real-time" telemetry data become part of the provisional dataset until undergoing secondary and tertiary QA/QC and assimilation in the CDMO's authoritative online database. Provisional and authoritative data are available at <http://cdmo.baruch.sc.edu>.

5) Site location and character:

The Chesapeake Bay National Estuarine Research Reserve in Virginia (CBNERRVA) is located on the York River, a tributary of the Chesapeake Bay. CBNERRVA maintains a long-term water quality-monitoring station and stream gauge station at Taskinas Creek, a tributary of the York

River that is located in the transitional zone of the York River State Park. The Taskinas Creek weather station is also located within York River State Park. The park is located on the mainstem of the York River, which is 50 km long, 38 kilometers from the mouth of the river, and 2.25 kilometer wide near the weather station. The weather station is located (37°24' 50.79850" N, 76°42' 44.51934" W) on a bluff (11m elevation) 60m (horizontal distance) from the York River in a manicured lawn area of the park. No trees or other major structures are within a 35m radius of weather station. The stream gauge is located 2km NW (288 degrees) of the weather station and the water quality station is located 200m (298 degrees) of the weather station. The weather station has a landscape fence around it to deter park visitors from tampering with it. All the instruments are located on the approximately 3.5 m aluminum tower following the descriptions outlined in the CDMO Manual V 4.0. The Tipping Bucket Rain gauge is located within 2m of the tower. Specific sensor heights are as follows:

Ground to Precipitation Gauge (center of tipping unit) = 172.8 cm
Ground to Screen on Funnel over Precipitation Gauge = 193.7 cm
From Humidity Sensor (Closest Sensor on Tower) to Precipitation Gauge = 157.5 cm
Ground to Bottom of Solar Panel = 170.8 cm
Ground to Top of Solar Panel = 201.9 cm
Ground to Temperature and Humidity Probe = 183.5 cm
Ground to Barometric Pressure Sensor (in box) = 171.5 cm
Ground to Par Sensor (TOP) = 336.6 cm
Ground to Wind Sensor (along main line) = 360.7 cm

The sensors were wired to the CR1000 following the protocol in the CDMO Manual. The station is located approximately 40 feet above mean sea level.

6) Data collection period:

Weather data has been collected from the current weather station at the Taskinas Creek since 2000. Data was collected (by field downloads onto the laptop computer) for the calendar year 2007 on the following dates:

- January 3, 2007 (from 01/01/2007 at 0:15 to 01/03/2007 at 11:00)
- January 17, 2007 (from 01/03/2007 at 11:15 to 01/16/2007 at 09:00)
- January 31, 2007 (from 01/16/2007 at 09:15 to 01/30/2007 at 09:15)
- February 14, 2007 (from 01/30/2007 at 9:30 to 02/14/2007 at 16:45)
- February 27, 2007 (from 2/14/2007 at 17:00 to 2/27/2007 at 10:30)
- March 13, 2007 (from 02/27/2007 at 10:45 to 03/13/2007 at 08:45)
- March 27, 2007 (from 03/13/2007 at 09:00 to 03/27/2007 at 08:15)
- April 24, 2007 (from 3/27/2007 at 08:30 to 04/24/2007 at 08:15)
- May 9, 2007 (from 04/24/2007 at 08:30 to 05/09/2007 at 08:15)
- May 24, 2007 (from 05/09/2007 at 08:30 to 05/24/2007 at 08:15)
- June 7, 2007 (from 05/24/2007 at 08:30 to 06/07/2007 at 09:00)
- June 18, 2007 (from 06/07/2007 at 09:15 to 06/18/2007 at 09:00)
- July 2, 2007 (from 06/18/2007 at 09:15 to 07/02/2007 at 08:15)
- July 16, 2007 (from 07/02/2007 at 08:30 to 07/16/2007 at 08:30)
- July 31, 2007 (from 07/16/2007 at 08:45 to 07/31/2007 at 07:45)
- August 13, 2007 (from 07/31/2007 at 08:00 to 08/13/2007 at 09:30)
- August 27, 2007 (from 08/13/2007 at 09:45 to 08/27/2007 at 08:45)

- September 10, 2007 (from 08/27/2007 at 09:00 to 09/10/2007 at 08:15)
- September 19, 2007 (from 09/10/2007 at 08:30 to 09/19/2007 at 15:45)
- September 24, 2007 (from 09/19/2007 at 16:00 to 09/24/2007 at 18:15)
- October 8, 2007 (from 09/24/2007 at 08:30 to 10/08/2007 at 08:15)
- October 22, 2007 (from 10/08/2007 at 08:30 to 10/22/2007 at 09:15)
- November 07, 2007 (from 10/22/2007 at 09:30 to 11/07/2007 at 10:45)
- November 19, 2007 (from 11/07/2007 at 11:00 to 11/19/2007 at 09:15)
- December 05, 2007 (from 11/19/2007 at 09:30 to 12/05/2007 at 09:15)
- December 14, 2007 (from 12/05/2007 at 09:30 to 12/14/2007 at 15:15)
- January 3, 2008 (from 12/14/2007 at 15:30 to 12/31/2007 at 23:45)

7) Distribution:

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 this 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 and 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 use of this data.

NERR weather data and metadata can be obtained from the Research Coordinator at the individual NERR site (please see 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 comma separated format.

8) Associated researchers and projects:

CBNERRVA System Wide Monitoring Program. Since its initiation in 1995, CBNERRVA has fully participated in the NOAA/NERRS System-Wide Monitoring Program. Within the York River system, CBNERRVA maintains a network of long-term, year-round continuous water quality stations located at White House (2003-current), Sweet Hall Marsh (2000-current), Taskinas Creek (1995-current), Clay Bank (2001-current), Gloucester Point (2003-current) and Goodwin Island (1997-current). In 2002 and 2004, CBNERRVA implemented the NOAA/NERRS nutrient/plant pigment monitoring program and SAV Tier II Biological Monitoring Program, respectively. Beginning in 2000, CBNERRVA established a weather station at Taskinas Creek to support meteorological monitoring aspects of SWMP. In addition, CBNERRVA maintains additional weather stations at Sweet Hall Marsh, Goodwin Islands, and Harcum Creek to support York River watershed level studies and site-specific research projects.

National Atmospheric Deposition Program's National Trends Network (NADP/NTN) and Mercury Deposition Network (NADP/MDN). CBNERRVA staff maintains the southern Chesapeake Bay NADP/NTN and NADP/MDN station (ID: VA98) at Harcum, Va. The

network's purpose is to collect data on the chemistry of precipitation for monitoring of temporal and geographical long-term trends of concentrations and loading rates. Measured physical parameters include air temperature, precipitation, PAR, wind speed and direction. Measured chemical parameters include hydrogen ion activity (acidity as pH), sulfate, nitrate, ammonium, chloride, base cations (such as calcium, magnesium, potassium and sodium), total mercury and methyl-mercury. The NADP/NTN and NADP/MDN stations were established in August, 2004 and December, 2004, respectively. Real-time delivery of physical parameters is currently available at this station through the National Weather Service's Hydrometeorological Automated Data System (HADS; NESDIS ID: 3B01236C; NWS Location ID: HAXV2) . Real-time data are available via the web at <http://www.nws.noaa.gov/oh/hads/>. Archived precipitation chemistry data are available via the web at <http://nadp.sws.uiuc.edu> . Partners: CBNERRVA, NADP and VaDEQ.

Integrated Ocean Observing System (IOOS). The CBNERRVA Meteorological Monitoring Program supports the national and Mid-Atlantic Coastal Ocean Observing Regional Association (MACOORA) through its participation in NERRS SWMP. CBNERRVA is also actively engaged at a more subregional and local level through its support of the Chesapeake Bay Observing System (CBOS) and the Virginia Estuarine and Coastal Observing System (VECOS). Real-time delivery of physical parameters is currently available for three stations through the National Weather Service's Hydrometeorological Automated Data System; stations include Taskinas Creek (NESDIS ID: 3B009218; NWS Location ID: YRSV2), Sweet Hall Marsh (NESDIS ID: 3B0116F6; NWS Location ID: SHXV2) and Harcum (NESDIS ID: 3B01236C; NWS Location ID: HAXV2). Real-time delivery of data for a fourth station located at Goodwin Islands can be obtained through NOAA's National Data Buoy Center (Station ID: GDIV2) at <http://www.ndbc.noaa.gov/> and through the VECOS web site (Station ID: YRK000.00P) at <http://chsd.vims.edu/realtime/>.

II. Physical Structure Descriptors

9) Sensor specifications:

Parameter: Temperature

Units: Celsius

Sensor type: Platinum resistance temperature detector (PRT)

Model #: HMP45C Temperature and Relative Humidity Probe

Operating Temperature: -40°C to +60°C

Range: -40°C to +60°C

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

Date of previous calibration: 10/1/2004. Date Installed 7/13/2005.

Date of last calibration: 9/25/2006. Date Installed 11/30/2006.

Parameter: Relative Humidity

Units: Percent

Sensor type: Vaisala HUMICAP® 180 capacitive relative humidity sensor

Model #: HMP45C Temperature and Relative Humidity Probe

Range: 0-100% non-condensing

Accuracy at 20°C : $\pm 2\%$ RH (0-90%) and $\pm 3\%$ (90-100%)

Temperature dependence of RH measurement: $\pm 0.05\%$ RH/ $^\circ\text{C}$

Date of previous calibration: 10/1/2004. Date Installed 7/13/2005.

Date of last calibration: 9/25/2006. Date Installed 11/30/2006.

Parameter: Barometric Sensor

Units: millibars (mb)

Sensor type: Vaisala Barocap © silicon capacitive pressure sensor
Model #: CS-105
Operating Range: Pressure: 600 to 1060 mb; Temperature: -40°C to +60°C;
Humidity: non-condensing
Accuracy: ± 0.5 mb @ 20°C; ± 2 mb @ 0°C to 40°C; ± 4 mb @ -20°C to 45°C; ± 6 mb @ -40°C to 60°C
Stability: ± 0.1 mb per year
Date of Last calibration: 3/2/2005. Date Installed 7/14/2005
Date of last calibration: 7/10/2006. Date Installed 11/30/2006

Parameter: Wind speed
Units: meter per second (m/s)
Sensor type: 18 cm diameter 4-blade helicoids propeller molded of polypropylene
Model #: R.M. Young 05103 Wind Monitor
Range: 0-60 m/s (134 mph); gust survival 100 m/s (220 mph)
Accuracy: ± 0.3 m/s
Date of previous calibration 3/2004. Date Installed 6/23/04.
Date of last calibration 9/7/2006. Date Installed 11/30/2006

Parameter: Wind direction
Units: degrees
Sensor type: balanced vane, 38 cm turning radius
Model #: R.M. Young 05103 Wind Monitor
Range: 360° mechanical, 355° electrical (5° open)
Accuracy: ± 3 degrees
Date of previous calibration 3/2004. Date Installed 6/23/04.
Date of last calibration 9/7/2006. Date Installed 11/30/2006

Parameter: LI-COR Quantum Sensor
Units: mmol m⁻² (total flux)
Sensor type: High stability silicon photovoltaic detector (blue enhanced)
Model #: LI190SB
Light spectrum waveband: 400 to 700 nm
Temperature dependence: 0.15% per °C maximum
Stability: $\leq \pm 2\%$ change over 1 yr
Operating Temperature: -40°C to 65°C; Humidity: 0 to 100%
Sensitivity: typically 5 μ A per 1000 μ moles s⁻¹ m⁻²
Date of previous calibration: 4/1/2005. Date Installed 7/13/2005
Date of last calibration: 6/13/2006. Date Installed 11/30/2006

Parameter: Precipitation (specify if heated rain gauge)
Units: millimeters (mm)
Sensor type: Tipping Bucket Rain Gauge
Model #: TE525
Rainfall per tip: 0.01 inch
Operating range: Temperature: 0° to 50°C; Humidity: 0 to 100%
Accuracy: $\pm 1.0\%$ up to 1 in./hr; $\pm 0.3\%$ from 1 to 2 in./hr; $\pm 0.5\%$ from 2 to 3 in./hr
Date of Last calibration: Calibrated on 8/13/2007 (before that was 2/25/2005)

The CR1000 has 2 MB of Flash EEPROM that is used to store the Operating System.
Another 128 K Flash is used to store configuration settings. A minimum of 2 MB SRAM is (4 MB optional upgrade) available for program storage (16K), operating system use, and data

storage. Additional storage is available by using a compact flash card in the optional CFM100 Compact Flash Module

Date CR1000 Installed: December 1, 2006

10) Coded variable definitions:

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

11) QAQC flag definitions:

QAQC flags provide documentation of the data and are applied to individual data points by insertion into the parameter's associated flag column (header preceded by an F_). During primary automated QAQC (performed by the CDMO), -5, -4, and -2 flags are applied automatically to indicate data that is above or below sensor range or missing. All remaining data are then flagged 0, as passing initial QAQC checks. During secondary and tertiary QAQC 1, -3, and 5 flags may be used to note data as suspect, rejected due to QAQC, or corrected.

-5	Outside High Sensor Range
-4	Outside Low Sensor Range
-3	Data Rejected due to QAQC
-2	Missing Data
-1	Optional SWMP supported parameter
0	Passed initial QAQC checks
1	Suspect Data
2	Open – reserved for later flag
3	Open – reserved for later flag
4	Historical Data: Pre-Auto QAQC
5	Corrected Data

12) QAQC code definitions:

QAQC codes are used in conjunction with QAQC flags to provide further documentation of the data and are also applied by insertion into the associated flag column. There are three (3) different code categories, general, sensor, and comment. General errors document general problems with the deployment or the datalogger, sensor errors are sensor specific, and comment codes are used to further document conditions or a problem with the data. Only one general or sensor error and one comment code can be applied to a particular data point.

General Errors

GIM	Instrument Malfunction
GMT	Instrument Maintenance
GPF	Power Failure / Low Battery
GQR	Data Rejected Due to QA/QC Checks
GPR	Program Reload
GPD	Power Down

Sensor Errors

SIC	Incorrect Calibration Constant, Multiplier or Offset
SSN	Not a Number / Unknown Value

SNV	Negative Value
SOC	Out of Calibration
SSM	Sensor Malfunction
SSR	Sensor Removed
Comments	
CAF	Acceptable Calibration/Accuracy Error of Sensor
CDF	Data Appear to Fit Conditions
CRE	Significant Rain Event
CSM	See Metadata

13) Other remarks/notes:

Some General Notes

- Data are missing due to equipment or associated specific sensors not being deployed, equipment failure, time of maintenance or calibration of equipment, or repair/replacement of a sampling station platform. Any NaNs in the dataset stand for “not a number” and are the result of low power, disconnected wires, or out of range readings. If additional information on missing data is needed, contact the Research Coordinator at the reserve submitting the data.
- Small negative PAR values are within range of the sensor and are due to normal errors in the sensor and the CR1000 Datalogger. The Maximum signal noise error for the Licor sensor is +/- 2.214 mmol/m² over a 15 minute interval.
- Relative Humidity data greater than 100 are within range of the sensor accuracy of +/-3%.

Explanations for Data Coded as *CSM* (see metadata) within Taskinas Creek 2007 Dataset

1. Precipitation Corrections (Flagged as 5 or Corrected Data).

- These were false rain gauge readings resulting from tipping the rain gauge (to check accuracy) during bi-weekly downloads as well as several readings on 8/3/2007 during a time where the Rain Gauge was calibrated using the Static Method.

<u>Date</u>	<u>Time</u>	<u>Original Value Which was Changed to Zero.</u>
01/03	11:15	1.8
01/16	09:15	0.508
01/30	09:30	0.508
02/14	17:00	1.27
02/27	10:45	0.508
03/13	09:00	0.508
03/27	08:30	0.508
04/24	08:30	0.508
05/09	08:30	0.508
05/24	08:30	0.508
06/07	09:15	0.508
06/18	09:15	0.508
07/02	08:30	0.762
07/16	08:45	0.508
07/31	08:00	0.508
08/03	14:30	1.500
08/03	14:45	19.30
08/03	15:00	2.500

08/13	09:30	0.508
08/27	08:45	0.508
09/10	08:30	0.508
09/24	08:30	0.508
10/08	08:30	0.508
10/22	09:30	0.508
11/07	11:00	0.508
11/19	09:30	0.508
12/05	09:30	0.508
12/14	15:30	0.508

2. Wind Speed Corrections (Data Flagged as -3 for Suspect Data).

- Due to a problem with the Weather Station Program (Version 3.0), the wind speed data at 12:15 PM on each day (until the problem was corrected by installing a new program on 9/19/2007) recorded a value of NAN instead of recording an actual measurement. For this reason, this data was flagged as “-3” indicating “Rejected Data” and coded as “SSN” for “Not a Number”.

3. New Program Upload (Version 4.2) on 9/19/2007 (Data Flagged as -3 for Rejected Data).

- On September 19th 2007, a new version of the CR1000 Meteorological Program was installed at the Taskinas Creek Station between the time period of 15:45 and 16:00. For this reason, all of the data on 9/19/2007 at 16:00 has been flagged as “-3” and coded as “GPR” indicating this data is rejected due to a program upload. This is because of the 5 second measurements which are averaged or totaled for the 15 minute reading at 1600 will be incorrect due to the program upload.

4. PAR Values between 9/30/2007 and 12/31/2007. (Data Flagged as 1 for Suspect Data)

- This issue was addressed in the general notes portion at the beginning of this section. On 9/19/2007 the new MET Program (version 4.2) was uploaded to the CR1000 at Taskinas Creek. This program (unlike the previous version 3.0 program) did allow for negative PAR values (which before were “corrected” to a zero value). These small negative PAR values are within range of the sensor and are due to normal errors in the sensor and the CR1000 Datalogger. The Maximum signal noise error for the Licor sensor is +/- 2.214 mmoles/m² over a 15 minute interval. These data values were thus flagged as “1” indicating suspect data and coded CAF for being as acceptable within the error of the sensor.

5. PAR values on 5/10/2007 at 12:00. (Date flagged as 1 for Suspect Data)

- The primary reason for including the CSM code for this particular value is that during a comparison of this data with data collected at two other nearby weather stations (at Sweet Hall Marsh in the Pamunkey River and Harcum Creek Site in Harcum, Virginia), this PAR value was unusually elevated at Taskinas Creek and although this value may be “real” (and there do not appear to be any problems with the sensor or station software), we want potential users to use this value with caution.