

Piermont Pier Meteorological Metadata
Latest Update: January, 2011

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Contacts:

Alene Onion, HRECOS Coordinator:
NYS DEC 625 Broadway, 4th floor, Albany, NY 12208
phone: 518 402 8139, email: amonion@gw.dec.state.ny.us
Wade McGillis, Piermont Pier Site Manager
Columbia University, New York, NY
phone: 508-685-4324, wade.mcgillis@columbia.edu

Distribution

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An example citation:

2010 Piermont Meteorologic Data (finalized) courtesy of the Hudson River Environmental Conditions Observing System (<http://www.hrecos.org>)

Entry Verification:

Data collection and verification were performed according to the HRECOS Quality Management Plan and the HRECOS Estuary Stations Quality Assurance Project Plan. Both are available at www.hrecos.org. This station is quality level B; the data is verified once per quarter.

Site Location and Character:

The meteorological instrumentation is on the roof of a small maintenance building at the end of Piermont Pier in the village of Piermont, NY (41° 2' 35.6784"N 73° 53' 47.6448"W). This meteorological station includes a HOBO Weather Station Data Logger (4 AA battery powered) and the SolarStream wireless data transceiver (battery and solar panel powered) along with sensors that monitor air temperature, barometric pressure, solar radiation, relative humidity, rain, wind direction, wind gust, and wind speed. All sensors are attached to a satellite tower with the exception of barometric pressure which is located inside the data logger to prevent environmental damage to the instrument. The building is at least 3 m from tree growth and the sensors are not shaded at that location.

Piermont meteorological station is located on Piermont Pier, owned and operated by the village of Piermont. Permission for research work can be obtained through Mayor Christopher Sanders (csanders898@optonline.net).

Data Collection Period:

Weather data have been collected at Piermont Pier since 4/25/2008.

Inspection Results

- 06/23/2008 - The results of this inspection were not recorded.
- 07/25/2008 - The results of this inspection were not recorded.
- 07/13/2009 - The results of this inspection were not recorded.
- 05/28/2010 - Rain “cap” was not on the rain gauge. Based on site visits, this must have occurred sometime between 5/20 and 5/28. Data for this period was marked as suspicious.
- 10/14/2010 - Everything was in good working order. Nothing to report.
- 03/11/11 - Sensors in good working order - telemetry had been malfunctioning – was able to fix.
- 07/8/2011 - Everything was in good working order. Nothing to report.
- 12/14/2011 - Sensors in good working order – replaced telemetry motherboard to resume sending of data online.

Other remarks/ notes including data coded “see Metadata”:

5/20/2010 – 5/28/2010

The site was visited on 5/20 and no problems were detected. On 5/28 the rain cap was found missing from the instrument. No rainfall was recorded at the Piermont Meteorological station during this time period which should be treated as suspicious. According to the weather station at Tarrytown, NY, 5/20-5/28 was mostly dry with only a 0.09 inch rainfall on 5/27/10.

11/8/2011 - 12/11/2011

Data was lost during this period. Although data was assumed to have been logged during this time, it got accidentally erased while trying to fix the telemetry portion of the station during December 2011.

Sensor Specifications

General Information	Date first operational	4/25/2008
	Date of first transmission	4/25/2008
	Data Logger Model	HOBO Weather Station Data Logger
	Data Transmitter	SolarStream Wireless Data Transceiver
	Collection Interval	15 min
Temperature	Sensor Type	12-Bit Temperature/RH Smart Sensor
	Sensor Model	HOBO S-THB-M002
	Units	Celsius
	Operating temperature	-40°C to 75°C
	Range	-40°C to 75°C
	Accuracy	0.2°C @ 0°C to 50°C
	Date of last calibration	2/2010
Relative Humidity	Sensor Type	12-Bit Temperature/RH Smart Sensor
	Sensor Model	HOBO S-THB-M002
	Units	percent
	Operating temperature	-40°C to 75°C
	Temperature Dependence	NA
	Range	0 to 100% RH
	Accuracy	±2.5% from 10 to 90% RH
Date of last calibration	2/2010	
Barometric Pressure	Sensor Type	HOBO Barometric Pressure smart sensor
	Sensor Model	HOBO S-BPA-CM10
	Units	Millibars
	Humidity	
	Range	660 mb to 1070 mb Temperature -40°C to 70°C
	Accuracy	±3.0 mbar over full pressure range at 25°C (77°F) Maximum Error of ±5.0 mbar over -40°C to 70°C
Date of last calibration	2/2010	

Wind Speed	Sensor Type	3-cup anemometer
	Sensor Model	Onset Wind Speed and Direction Smart Sensor S-WCA-M003
	Units	m/s
	Range	0 to 44 m/s
	Accuracy	±0.5 m/s ±3% 17 to 30 m/s ±4% 30 to 47 m/s
Date of last calibration	2/2010	
Wind Direction	Sensor Type	balanced aluminum vane
	Sensor Model	Onset Wind Speed and Direction Smart Sensor S-WCA-M003
	Units	degrees
	Range	0 to 358°, 2° Dead Band
	Accuracy	±5 Degrees
Date of last calibration	2/2010	
Radiation	Sensor Type	Silicon Pyranometer Sensor
	Sensor Model	HOBO S-LIB-M003
	Units	W/m ²
	Light Spectrum Waveband	300 to 1100 nm
	Temperature Dependence	0.38 W/m ² /°C from 25°C (0.21 W/m ² /°F from 77°F)
	Stability	<±2% change over 1 yr
	Operating temperature	-40°C to 75°C
	Sensitivity	NA
	Date of last calibration	2/2010
Precipitation	Sensor Type	6" diameter Tipping Bucket Rain Gauge
	Sensor Model	HOBO Rain Gauge Smart Sensor S-RGA-M002
	Units	Millimeters (mm)
	Rainfall per tip	0.2 mm
	Range	10 cm or 0" to 5" per hour; Temperature 0° to 50°C
	Accuracy	±1.0% at up to 20 mm or 1" per hour
Date of last calibration	2/2010	

QAOC flag definitions:

	Flag	Description
Automatic Data Flags	0	Acceptable data
	5	Data that demonstrate a dramatic increase or decrease from the previous value. This flag will be applied to all parameters except chlorophyll, radiation, rainfall, wind direction, and wind direction standard deviation where dramatic increases and decreases are expected. The boundaries for these flags are: <ul style="list-style-type: none"> ○ $x > 3(\text{previous value})$ for Acidity, Dissolved Oxygen, Water Level, Water Temperature, Barometric Pressure, and Absolute Pressure. ○ $x < 1/3(\text{previous value})$ for Specific Conductivity, Salinity, and Relative Humidity. ○ $x > 10 + 3(\text{previous value})$ for Turbidity, Wind Gusts, and Wind Speed. ○ $x > 10 + 3(\text{previous value})$ for Air Temperature
	6	Flat lined data (20 or more repeated records of the same value). This flag will be applied to all parameters except specific conductivity, chlorophyll, radiation, and rainfall where flat lined data is expected. For the same reason, this flag will not be applied to salinity data from Norrie Point.
	30	Hydrological data outside three standard deviations of the seasonal mean. The seasons will be defined by the solstices and equinoxes.
	40	Hydrological data outside four standard deviations of the seasonal mean. The seasons will be defined by the solstices and equinoxes.
	100	Data outside the range of the instrument.
	Added by Site Manager	0
10,000		Suspicious data according to a final review by the site manager
20,000		Corrected Data
500,000		Rejected data according to a final review by the site manager.
Added by HRECOS Coordinator	5,000	Data from instruments that exceed the post-deployment warning level as defined by the HRECOS quality management plan
	9,000	Data from instruments that exceed the post-deployment alarm level as defined by the HRECOS quality management plan

QAQC Comment Code definitions:

Comment Codes Added By Site Managers	General Errors	Hyd + Met	GIM	instrument malfunction	GPF	power failure/low battery	
			GIT	instrument recording error, recovered telemetry data	GQR	rejected due to QAQC checks	
			GMC	no instrument deployed due to maintenance/calibration	GSM	see metadata	
		Hyd	GIC	no instrument deployed due to ice	GOW	out of water event	
			GNF	deployment tube clogged/no flow			
		Met	GMT	instrument maintenance	GIM	program reload	
			GPD	power down			
		Sensor Errors	Hyd	SBO	blocked optic	SPC	post calibration out of range
				STF	catastrophic temperature sensor failure	SSDN	sensor drift, record not corrected
	SCF			conductivity sensor failure	SSDC	sensor drift, record corrected	
	SDF			depth port frozen	SSM	sensor malfunction	
	SDP			DO membrane puncture	SOW	sensor out of water	
	SDO			DO suspect	SSR	sensor removed (not deployed)	
	SIC			incorrect calibration/contaminated standard	STS	turbidity spike	
	SNV			negative value	SWM	wiper malfunction/loss	
	Met			SIC	incorrect calibration constant, multiplier or offset	SOC	out of calibration
			SNV	negative value	SSM	sensor malfunction	
			SSN	not a number/unknown value	SSR	sensor removed	
	Comments		Hyd	CAF	acceptable calibration/accuracy error of sensor	CRE	significant rain event
				CBF	biofouling	CSM	see metadata
				CCU	cause unknown	CTS	turbidity spike
				CDA	DO hypoxia <28 percent saturation	CWD	data collected at wrong depth
		CDB		disturbed bottom	CAP	depth sensor in water, affected by atmospheric pressure	
		CDF		data appear to fit conditions	CAB	algal bloom	
		CFK		fish kill	CVT	possible vandalism/tampering	
		CIP		surface ice present at sample station	CMC	in field maintenance/cleaning	
		CLT		low tide	CMD	mud in probe guard	
		CND		new deployment begins			
		Met	CAF	acceptable calibration/accuracy error of sensor	CSM	see metadata	
			CDF	data appear to fit conditions	CVT	possible vandalism/tampering	
			CRE	significant rain event			