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## Abstract

The University of South Florida's College of Marine Science operates a Coastal Ocean Monitoring and Prediction System (COMPS) for the West Florida Shelf. The COMPS network consists of oceanographic-meteorological data collection systems on buoys and stationary platforms, computer base stations, and simulation models. COMPS products are presented to the public via the Internet at <http://comps.marine.usf.edu> (Figure 1).

The Ocean Modeling and Prediction Laboratory (OMPL) at the University of South Florida's College of Marine Science operates the near shore component of COMPS. OMPL has secured funding to improve specific components and data communication capabilities of existing COMPS near shore stations (Figure 2). Equipment from this upgraded system will replace instrumentation at eight COMPS coastal stations and at least three COMPS base stations. The working prototype consists of a fixed remote data collection platform with sensor array, bi-directional line of sight radio, asynchronous satellite transmitter, and a base station with a controlled data acquisition system and satellite downlink (Figure 3).

### Meteorological and Marine Data

Local system data : 02-13-04, Year-Day 044	
Position at time (UTG) : 22:02 (17:02 MST)	
Data threshold (UTC): Max 13-Feb-2000 3164	
Water Level	-0.801 m -1.84 ft
Barometric pressure	1028.8 mbars 30.28 in Hg
Air temperature	4.2°C 40.5°F
Relative humidity	88.0%
Wind Data using RM Young Anemometer	
Wind speed	8.0 m s <sup>-1</sup> 18.5 knots
Wind gusts	8.8 m s <sup>-1</sup> 20.0 knots
Wind direction	338° True
Wind Data using Sonic Anemometer	
Wind speed	8.4 m s <sup>-1</sup> 19.2 knots
Wind gusts	9.8 m s <sup>-1</sup> 22.4 knots
Wind direction	338° True
Water level referenced to NAVD 83 datum, as of 07-03-8062 2258 UTC.	

Wind direction is the compass angle from which the wind is blowing, referenced in degrees clockwise from true N (0=North, 90=East, 180=South, and 270=West).

Missing data represented by -99

Figure 5. Egmont Key real-time data access URL (<http://comps1.marine.usf.edu/egkn/index.shtml>)

## Data Collection

This functioning deployed system collects water level, wind, precipitation, air temperature, relative humidity, barometric pressure, water temperature, and sea surface conductivity data (Figure 5). Data collection intervals at the remote station range from one second to six minutes. Sensors transmit readings to the data collection platform serially via SDI12 and RS232 protocols and by frequency or analog signals. Processed station data are relayed to the OMPL base station by two communications systems. Real time data acquisition is accomplished by a 1-watt line of sight radio with data acquisition controlled by proprietary software at the base station. The throughput rate for the line of sight communication system is currently set at 115 Kilo baud with data being retrieved at six-minute intervals. Data are also transmitted via the Geostationary Operational Environmental Satellite (GOES) system. The transmission rate for this system is 1200 baud with one hour between transmissions. All transmitted records are stored at the stationary platform in a Compact Flash card.

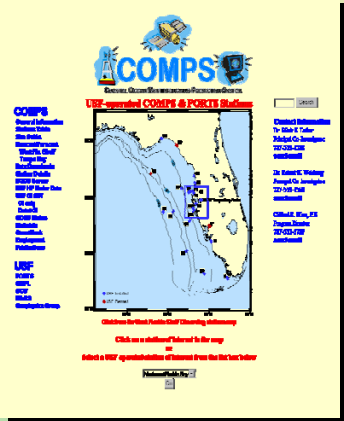


Figure 1. COMPS URL (<http://comps.marine.usf.edu>)



Figure 2. Upgraded COMPS Station at Egmont Key



Figure 3. OMPL Base Station antenna arrays



Figure 4. Redundant wind system at Egmont Key

Component	Manufacturer and Model Number	Notes
Data Collection Platform (DCP)	Campbell Scientific CR1000	DCP has 4 MB of SRAM and 64 MB card reader
Satellite (GOES) Transmitter	Campbell Scientific TX312	1200 baud ASCII transmission
Satellite Transmitter Antenna	Stevens V2TH	Enclosed antenna array
Line of Sight Radio System	FreeWave Technologies FGR 115RC	115 kilo baud communication rate with DCP
Line of Sight Data Acquisition Software	Campbell Scientific Loggernet	Retrieves logged data at 6-minute intervals
Water Level Sensor	Aquatrak 4110 System	Follows NOS sampling protocols
Wind Sensor A	RM Young 5103	Has marine grade bearings and seals
Wind Sensor B	Vaisalla WS425	Down configuration, data in RS232 ASCII string
Barometer	RM Young 61202 V	Uses Gill Pressure Port
Air Temperature & Relative Humidity Sensors	RM Young 41372 VC	Mounted in multi-port radiation shield
Rain Gage	Stevens TB1	Tipping Bucket with 1 mm tips
Water Temperature & Conductivity Sensors	Stevens EC 250	Has delrin housing and 0-60,000 ms range
Tower	Rohn 25G	30 feet of tower height

Table 1. Main components of upgraded station at Egmont Key

## Planned Future Applications

- Decode, log and relay real-time wave gage data strings from RDI & SeaBird Systems
- Trigger, record and relay JPEG picture images
- Acquisition, processing, logging and relay of high frequency data sets
- Quality control of sensor data sets at logger
- Placement of system in hardened enclosure system for offshore payload