

RECAP

JANUARY 2009

- ▶ NEW WIND-ONLY SYSTEM
 - ▶ NEW SENSORS/OPTIONS
 - ▶ WANTED: SALES MANAGER
- www.columbiaweather.com

For Professionals Who Monitor the Weather

▼ Capricorn 2000 Meets Hurricane Ike

by Tom Rum Senior Captain / Falcon 50EX, Cooper Industries

Because of the logistics involved in operating a jet aircraft in an area where there is a constant threat of hurricanes, anytime there is a hurricane in the Gulf of Mexico, it gets my prompt attention. I track each and every hurricane and monitor the predicted landfall target. Hurricane Ike immediately spurred my interest when long range forecasts had it heading for the Texas coast.

About 96 hours from landfall, it was becoming very apparent that Hurricane Ike was going to hit the upper Texas Gulf coast. Initially Ike's predicted track was going to make land fall close to Corpus Christi, missing Houston. But as time progressed, Ike's track turned further north and was evident that Houston was the storm's final target.

I am a licensed Amateur Radio Operator and my radio station along with my weather station is located in my study. For emergency back-up power for my radio station I have two large gel cell 265 Amp Hour batteries to power my equipment. A quick check on the Capricorn Control Module and the touch-screen Weather Display Console verified that both were powered by 12VDC, the same voltage of my batteries.

continued on page 4



Falling trees made a hole in a neighbor's roof.

▼ CWS News

Product Development

Look on pages 3 and 4 for info on new products including the Orion LT Wind-Only Weather Station and Orion Surge Protector, as well as new solar radiation and visibility sensor options.

Staff Change: Seeking New Sales Manager

We are looking for a new Sales Manager with the following characteristics:

- Experience in proactive outside sales to industry and government agencies
- Strong computer skills - Access database, Internet, word processing
- Technology experience with instrumentation, industrial automation, computer networks

If you or anyone you know might be interested, please contact us.



Columbia Weather Systems, Inc.

2240 NE Griffin Oaks St.

Hillsboro, OR 97124

Toll-free 1 888 508-7375

Phone (503) 629-0887

Fax (503) 629-0898

info@columbiaweather.com

www.columbiaweather.com

► **New Product: Orion LT™ Wind Only**

For applications requiring only wind speed and direction, the Orion LT offers ultrasonic technology for high accuracy and stability, with the connectivity of all other CWS weather station systems for data access via computer software, Weather MicroServer, or PLC.

- Triangular design ensures excellent data availability and 360° measurement accuracy.
- No moving parts make it superior to conventional mechanical wind sensors.
- Easy to install and requires no field calibration or maintenance.
- Low power requirements make it economical and perfect for solar or battery-powered applications.
- Compact and robust sensor in durable, corrosion-resistant housing.
- Starting threshold for both wind speed and direction is virtually zero.
- Heated model is available.

For More Info: www.columbiaweather.com/OrionLT.html



◀ **Surge Protector for Orion Weather Stations**

One of the most frequent repairs we receive is weather station sensors that have been damaged by an electrical surge due to proximate lightning.

To help protect your weather station investment, we highly recommend the new Orion Surge Protector, designed for weather stations in areas with an elevated risk of lightning strike such as on top of high buildings, or anywhere with cable lengths greater than 100 feet.

Superior Protection

The Orion Surge Arrestor offers three-stage protection against surge currents up to 10kA entering through the power and signal cables.

Powerful Technology

The Orion Surge Protector has four

channels, two of which are dedicated to power lines and two for data lines. Each channel uses a three-stage protection scheme as follows: first there are discharge tubes, then voltage dependent resistors (VDR), and finally transient zener diodes. Between each stage, there are either series inductors or resistors.

Both differential and common mode protection is provided for each channel: across the wire pairs, against the operating voltage ground, and against the earth.

The Orion Surge Protector also includes noise filtering against HF and RF interference.

Housed in a weather-proof IP66 enclosure, the Orion Surge Protector mounts below the Orion sensor head with an adjustable mounting clamp.

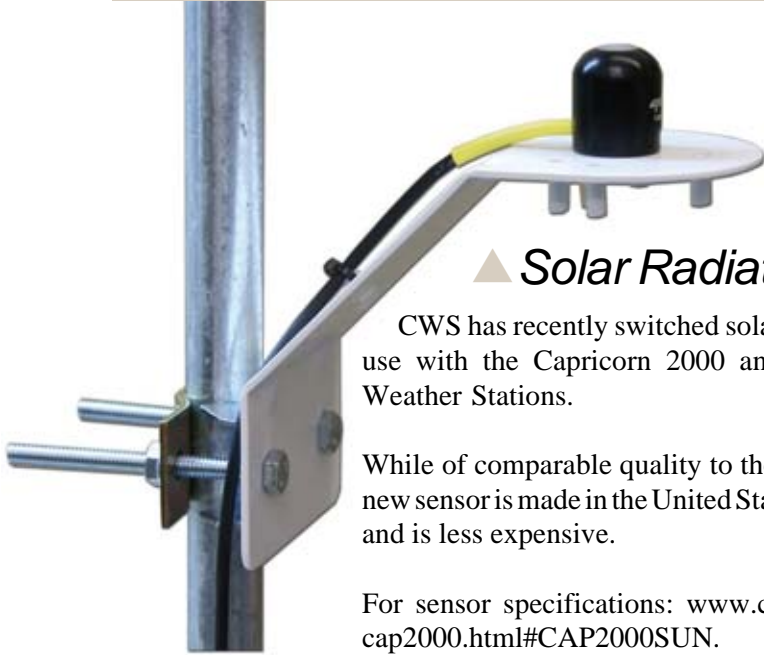
Order Information

Catalog Number: 8355
includes adjustable mounting clamp

Price: \$350.00

For use with all Orion Weather Stations. For more info visit:

www.columbiaweather.com/Accessories_main.html#SurgeProtector



▲ *Solar Radiation Sensor*

CWS has recently switched solar radiation sensors for use with the Capricorn 2000 and Capricorn 2000EX Weather Stations.

While of comparable quality to the previous sensor, this new sensor is made in the United State, has a higher output, and is less expensive.

For sensor specifications: www.columbiaweather.com/cap2000.html#CAP2000SUN.



The self-cleaning convex lens is designed to accurately measure low-angle radiation coming directly from the sun in the morning and evening.

► *New Parameter Option: Visibility*

Our new visibility sensor is now available for use with either Capricorn or Orion weather stations equipped with the Weather Microserver.

It measures atmospheric visibility (meteorological optical range) by determining the amount of light scattered by particles (smoke, dust, haze, fog, rain, & snow) in the air that pass through the optical sample volume. A 42-degree forward scatter angle is used to ensure performance over a wide range of particle sizes.

The sensor is made from anodized aluminum and rugged, UVresistant fiberglass enclosures rated to IP66. Based on the proven field experience of the NWS and FAA, the sensor uses a “look down” geometry to reduce window contamination and clogging from blowing snow.

All power and signal lines to the sensor are protected with surge and EMI filtering to help ensure uninterrupted service.

Installation and maintenance are simple – a mounting flange located on the bottom of the main enclosure box mates with a user-supplied 1-1/2 inch IPS mounting pipe. Power and signal cables are installed through waterproof cable glands on the bottom of the main enclosure box to terminal boards for simple but reliable connections.

Annual field calibration is recommended using a calibration fixture that is included with the sensor.

Options include heaters for extreme snowy environments and a photometer for aviation applications.

For specifications visit: www.columbiaweather.com/MicroServer#visibility.



► Hurricane Ike continued....

I realized that a direct hit from Hurricane Ike would likely cause a power outage, so I decide to use the batteries in anticipation of losing electricity.

Unfortunately I guessed correctly, the power did go out around 3 a.m. Saturday morning and did not return until 2 weeks later! With the weather station wired for 12V operation, I placed my Display Console on the night table next to by bed. I kept the backlight on continually, so that I could glance at the weather conditions anytime during the evening.

Hurricane Winds

The winds started increasing late Friday evening September 12, when the outer bands of the storm system reached the beaches of Galveston. The eye of Hurricane Ike made landfall on the eastern side of Galveston Island early Saturday morning September 13.

At midnight a quick check on the weather console revealed wind velocities increasing to the 20mph range with peak gusts exceeding 40 mph. The sensors for my station are mounted approximately 5 ft above the roof peak, which places them about 45 feet above the ground. My house is heavily surrounded by trees, so the actual wind velocities are somewhat skewed. The eye of Hurricane Ike passed about 30 miles to the east of my home about 7 a.m. Saturday. I live in the extreme Northwest portion of Houston, about 70



Fallen trees dot the neighborhood.

“Needless to say I did not sleep at all that evening.”

~ Capt. Tom Rum

miles as the crow flies from the Gulf Coast. Needless to say I did not sleep at all that evening.

My battery powered radio took a back seat for weather information as I continually checked my station’s wind velocity, peak gusts, rainfall rates and accumulation. I noticed that the gust indicator on the console would measure a peak gust about 2-3 seconds before I felt the house windows shudder. Steady wind speeds throughout the early and mid-morning averaged about 55-60 m.p.h with gusts reaching 75 m.p.h. These gusts would come in waves as the bands from the storm traversed over my location. I never did witness the calm of eye, for the winds never decreased until Ike completely passed through Houston.

Throughout the night you could hear the tree limbs snapping with an occasional bang of a line transformer exploding in the distance. My Dachshund Bosco was a good indicator of trees snapping, for he would “woof” every time a tree or limb broke. Needless to say, he was “woofing” continually throughout the night.

Rainfall and Flooding

Living on the edge of the creek I was also concerned about rainfall. There is no concern of my property flooding until the daily accumulated rain reaches the 10-inch level. Rainfall rates during Ike averaged 3-4 inches per hour, though due to bands of precipitation Ike produced, the heavy downpours only lasted 20 minutes or so, with 30-45 minute intervals. This duration of these downpours drastically changed when the backside of the storm reached my location. By 10:00 the following morning the total rainfall was only 5.5 inches. The winds began subsiding (gusts of 40 mph) by 9 a.m. and I mistakenly thought the worst was over. As the final bands of precipitation came over the house the rain rate increased to about 5 inches an hour. That’s a lot of water! This rate lasted for little over an hour dumping another 6 inches on my property. The total rainfall in a 12-hour period was 11.5 inches. The storm finally passed around noon Saturday.

About 6 hours later as the creek rose there was about 18 inches of water on my property. Fortunately my home sits 5 ½ ft off the ground, so the house was high and dry. As the

continued on page 5

► *Hurricane Ike continued....*

water rose later that afternoon, my wife and I decided to leave and spend the night at a friend's house. The water quickly receded that evening and we returned the following morning to begin the cleanup which seemed to last for weeks.

Long-term Impact

The hardest hit communities that Hurricane Ike impacted were those along the Texas coast. The storm devastated Galveston and the Bolivar peninsula. Forty or so people are still missing after riding out the storm in their beach houses, the storm surge literally washing them and their homes out to sea. There was a story of two lucky guys who were washed into Galveston bay from the storm surge. Clinging to a piece of floating debris, these guys were blown about 30 miles across the bay in Hurricane force winds and surf, ending up on the opposite shore. Thirty percent of the population of Galveston has not returned. The impact of Hurricane Ike will be felt in these communities for years to come.

The damage to my house was minimal, a few minor roof leaks and some thermal seals leaking in my windows. The most damage inflicted by Ike was from falling trees, the flooding was minimal. Severe building damage, such as buildings collapsing, were rarities. In fact there were very few blown down billboards. Tree damage was the number one type of damage, many falling on homes. On my property fortunately I did not lose a single tree but the falling tree limbs were extensive. It took five workers three days to clean the two acres I live on.

There was over 180 yards of tree debris removed from my property. (For perspective, the largest garbage dumpster you see at construction sites is only 40 yards.) While I was responsible in the cleanup my property, FEMA actually removed the debris, which was placed in the street, in front of my house. Local neighbors were not as lucky as I. Many had fences knocked down and a few had trees falling on their houses, the worst one, a tree falling squarely on his mother-in-law living quarter's roof. Luckily no one was injured.

FEMA Response

Retrospectively I think FEMA learned how NOT to handle a disaster with Hurricanes Katrina and Rita. Overall FEMA did an excellent job responding to Hurricane Ike here in Texas. There were power line repair crews working on the power grid just days after the storm. There was no looting, nor any chaos throughout the city. My debris was picked up only 2 ½ weeks after the storm. Pod sites were quickly established throughout the city supplying people with food and ice. FEMA roof repair crews were in my neighborhood the following Tuesday.

Hurricane Ike is still a concern of mine, since I am still dealing with my insurance company for some minor repair claims. The adjuster stated that he is here in Houston for two to three months while he helps my insurance company handle the 60,000+ claims!



Above: The author's weather sensors mounted on his roof. Below: He monitored the hurricane on his Weather Display Console.



About the Author:

Developing an interest in the weather

Being a professional pilot for the last 32 years, weather observation and conditions are not simply a casual curiosity, but an integral part of my daily life. My interest in weather did not develop when I became a pilot, it started much earlier.

My earliest recollection of this hobby was a Christmas gift I received from my parents when I was about 10 years old. It was a science weather kit that was packed in a large cardboard tube. It contained a plastic hand held an-

continued on page 6

► *Hurricane Ike continued....*

emometer and weather vane, a wet and dry thermometer, a weather handbook and a wall chart with pictures and details explaining the various cloud types. This chart hung proudly in my room for years. My education in weather continued on a more a formal level when first studying for my Private Pilot's license. In addition, while pursuing my B.S. Degree in Aeronautics, I took various aviation weather courses taught by an interesting professor, who was former German Luftwaffe weatherman.

Living in Houston, Texas for the past 30 years, hurricanes and severe weather are a major concern to me both on a personal and professional level, more so in recent years, for my home backs up to a major watershed creek in the county. Hurricane Ike was the second hurricane I experienced where the track of its eye passed in close proximity to my home, the first being Hurricane Alicia back in 1983. In June of 2001, Tropical Depression Alison stalled over Houston and dropped over 18 inches of water in a 24-hour period. Unfortunately I was out of town at the time and did not know exactly the weather conditions at my home, especially the rainfall rates and accumulation.

I decided after Allison that it was time to invest in a professional-grade weather station. I could then monitor, in real time via the internet, the actual weather conditions at my home, both current and accumulated. This information would not only be used for my personal needs but also in my profession as a corporate pilot.

I regularly read Weatherwise magazine and the Columbia Weather advert caught my attention, especially the touch screen console interface. No other weather equipment manufacturer at the time had a touch screen interface. A quick call to Columbia Weather Systems resulted in a long conversation with its president, Nader Khoury.

I was impressed with Nader's technical knowledge and his attention to customer service, which is very important to me as a customer. I ordered a system, and a few weeks later, my system arrived and was installed in my home. Since then it has become a permanent fixture in my study. The touch screen console sits on my desk and is monitored many times throughout out the day.

My weather station also has a full time connection to the Internet and is on the Weather Underground Web Site with the Rapid Fire option. Rapid Fire polls my station every 5 minutes and logs the data. It gives me access (via Internet) to the actual "real time weather conditions and trends" at my home, that I can easily check, even on my Blackberry.

It was 25 years between Hurricane Alicia and Hurricane Ike. Hopefully it will be another 25 years before Houston sees another major hurricane!

"I was impressed with Nader's technical knowledge and his attention to customer service."

~ Capt. Tom Rum



Author and weather enthusiast Tom Rum is a pilot for Cooper Industries.