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WEATHER

New on the hurricane radar: Four WeatherSTEM stations installed in Delray — here's how they work

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DELRAY BEACH — Residents can now storm watch from home.

The last of four WeatherSTEM stations will soon be installed in Delray Beach. The solar-powered technology, designed by Edward Mansouri, monitors the area's weather in real time – a feature previously unavailable to meteorologists reliant on forecasts and radars from the National Weather Service.

Now, measurements are being taken in the city, which grants exact updates on factors such as temperature, humidity, lightning and rain accumulation. Each station is connected to the Internet via cellular modems and has a built-in camera, allowing for snapshots to be taken once per minute and streamed online.

"It's one thing to know that it's 90 degrees," Mansouri said. "It's another thing to be able to see dark clouds towering overhead, or clear blue skies or foggy conditions."

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In addition to having a streaming site, each station is integrated with social media. Once a station is set up, it automatically has its own Facebook and Twitter pages, where forecasts, alerts and photos from the device cameras are posted throughout the day.

The importance of streaming these conditions is magnified during tropical storms and hurricanes, but also before they land. Often, people are outdoors boarding up their houses,

tying down loose furniture and taking up their yards in preparation for a storm. With these systems, hazardous conditions will show – also crucial in determining when winds have subsided safely enough for first responders.

The stations can withstand wind gusts up to 185 mph. But when winds are too high, it's safest to have clear roads.

"At a certain point, we'll stop responding to calls in the most severe portion of a storm," Delray Beach Emergency Manager Chris Bell said. "This will really help us keep our first responders on the roads as long as possible, and get them back out, after a storm, as quickly as possible to help."

Why the need for a WeatherSTEM system in Florida?

Currently, there are three hurricane-hardened WeatherSTEM (science, technology, engineering and math) systems in Delray Beach, two of which are on the beach and one which can be found at Fire Station 115 on Germantown Road. These were equipped in the spring. The fourth was installed Wednesday at Fire Station 111, in the northwest corner of the city. This will provide coverage to the majority of the area, with the beach locations providing some of Florida's southernmost footage that during a storm would yield the first camera analyses of any of WeatherSTEM's stations in the state.

"So, no matter which direction a storm is hitting us from, we'd be able to get the best information," Bell said.

Statewide, there are more than 150 of these state-funded stations, built to withstand Cat 5 hurricanes and the power outages that accompany them. In total, there are 404 WeatherSTEM sites in Florida, but these are not all hurricane-hardened.

After Hurricane Michael struck in October 2019, the need for more granular weather data, especially close to Florida's coastline, became evident. That's when Mansouri – a meteorologist who had created WeatherSTEM as an educative tool when he was managing technology at the Florida Virtual School – partnered with the Florida Division of Emergency Management, or FDEM, to build and distribute these throughout the state.

"There were some pretty significant gaps in data," Mansouri said of the information collected as Hurricane Michael took Florida's panhandle. Those gaps translated to a slower response time for understanding the storm's severity. "The more we understand about the storm, the better prepared we can be to protect municipalities and citizens in future storms."

For that reason, most of WeatherSTEM's first year in alliance with the FDEM was focused on the Florida Panhandle. But before then, Mansouri had actually been donating less-sophisticated versions of the devices to public schools throughout Florida's 67 counties. Although those weren't fortified to withstand severe hurricane-force winds, they provided school officials and students with educational tools on the area's weather and was a big help for athletic programs..

The idea was born when Mansouri had been discussing science courses at a meeting for the Florida Virtual School. He noticed no high school-level meteorology course was being offered, and found it strange.

"Our two biggest economies are agriculture and tourism," Mansouri said of Florida. "You can't name anything that impacts those industries, more than weather."

This year marks the fourth of the partnership between WeatherSTEM and the FDEM.

How much does a WeatherSTEM system cost and who pays for them?

For the past three fiscal years, the Florida Legislature has appropriated $970,000 per year for the devices, allowing for 50 to be installed, yearly. The first three years of service support are also covered by the state, as long as the government agency receiving the units agrees to pay for four to 10 years of maintenance, after that.

Each WeatherSTEM device is about $15,000, with an annual maintenance fee of $1,900. This year, the state appropriation for the devices is $971,400, FDEM Director of Communications and External Affairs Amelia Johnson said.

Mansouri hopes the partnership with the FDEM will exist for 10 years. By the end of those 10 years, 500 of the hurricane-hardened WeatherSTEM systems would be in place.

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