SUNCOAST OBSERVER

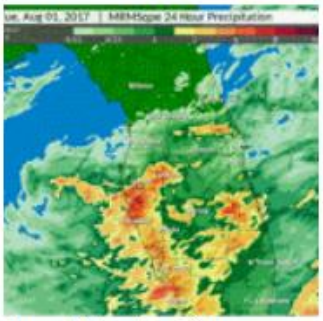
A quarterly newsletter brought to you by the National Weather Service Tampa Bay Area, FL

www.weather.gov/tampa

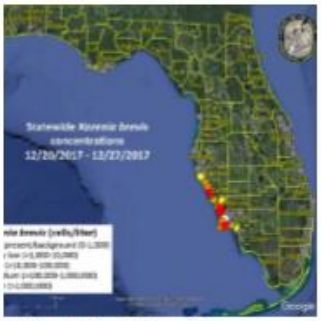
12.29.2017

Top stories in this newsletter

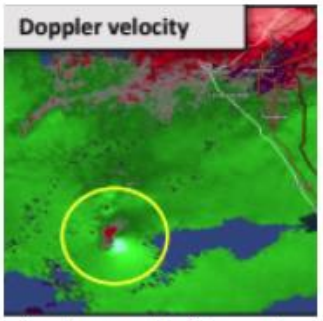
Billion Dollar Weather and Climate Disasters



Local Tropical Season Summary



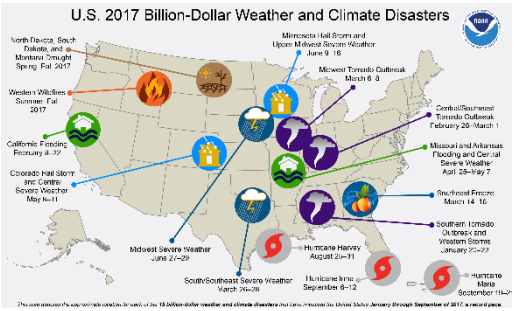
What Do You Know About HABs?



Anatomy of a Tornado Warning

Billion Dollar Weather and Climate Disasters

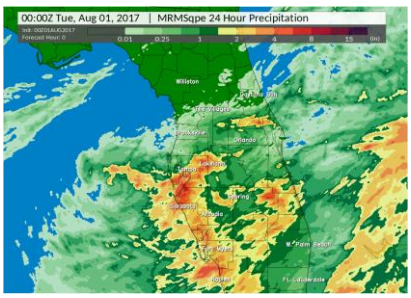
By: Dan Noah



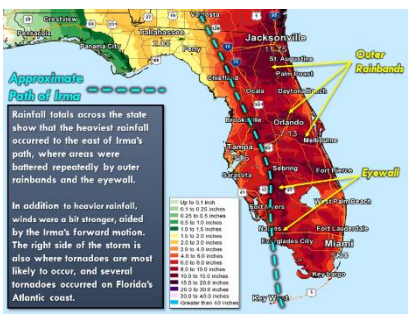
In 2017, there have been 15 weather and climate disaster events with losses exceeding $1 billion each across the United States. Overall, these events resulted in the deaths of 282 people and had significant economic effects on the areas impacted. Visit https://www.ncdc.noaa.gov/billions/ for more information.

Local Tropical Season Summary

By: Jen Hubbard



Tropical Storm Emily was an unusual event. Emily developed from a weak area of low pressure along a stalled frontal boundary, into a landfalling tropical storm, within about 12 hours. It made landfall on Anna Maria Island around 10:45 AM on July 31st. In addition to causing a great deal of trees downed, heavy rainfall caused quite a bit of flooding across the area.



Hurricane Irma was a Cape Verde storm that developed on August 30th in the Atlantic off of the Cape Verde Islands, and finally dissipated on September 12th over southwest Georgia. The storm made its second Florida landfall on Marco Island as a Category 3, lifting north and northwest up the spine of west Florida, gradually weakening as the southern eyewall eroded during the overnight hours as it lifted through the Tampa Bay area. The highest measured wind gust was 92 mph occurring in the mouth of Tampa Bay 6 miles NNW of Anna Maria Island. Over 9 inches of rain fell on the eastern side of the storm. Though damage assessments are still ongoing with this storm months later, over 80 fatalities occurred in Florida directly and indirectly from Irma. Power outages lasted for weeks with the incredible number of downed trees across much of the state.

What Do You Know About HABs?

By: Marc Austin

It's that time of year again! Time for HABs to rear their ugly heads across the west coast of Florida! What are HABs you say? Well, simply put they are **H**armful **A**lgal **B**looms! Harmful Algal Blooms are large populations of microorganisms which affect marine ecosystems and can have significant impacts on humans and the economy. They can occur in both salt and freshwater, and have been observed in the Gulf of Mexico, the eastern Pacific Ocean, and even the Great Lakes. The most common microorganism to affect the Gulf of Mexico is a brevetoxin known as Karenia Brevis. In large populations, it can result in a red, orange or yellowish tint to the water. This is one reason it is more commonly referred to as Florida Red Tide.

Florida Red Tide events result in a number of impacts along the Florida Gulf Coast. The most common and easily identifiable are fish kills, where hundreds to thousands of fish die and wash up on area beaches. This is due to the toxins produced by the algae, which attack the central nervous systems of the fish. Manatees can also perish during such events when their primary food source, seagrass, becomes contaminated. The most common impact to humans is respiratory irritation. As wave action releases some of the algae into the air and winds transport them inland, humans may inhale microscopic algae particles. This can result in coughing, sneezing, and watering eyes. People with existing respiratory conditions, such as emphysema, asthma, or an upper respiratory infection may be especially sensitive. The presence of dead fish and other sea creatures also results in a foul odor, which may drive people away from beaches if it becomes potent enough. On average, it is estimated that HABs such as Florida Red Tide result in some $50 million in economic losses across the U.S. each year due to impacts on commercial fishing and tourism.

In an effort to raise awareness of the presence of Florida Red Tide, the National Weather Service and National Ocean Service, in collaboration with other state and local agencies, have developed a product specifically for HABs. When algae concentrations are sufficiently high and winds are forecast to allow particles to become airborne, respiratory irritation may occur. If this impact is expected to be significant enough, a Beach Hazards Statement will be issued for the affected coastal and/or bay areas. Beach Hazards Statements are intended to warn the public of potential respiratory distress and advise them that it may be better to visit an unaffected beach nearby. Ultimately, the hope is to limit exposure to Florida Red Tide and its impacts, especially for people with pre-existing respiratory conditions.

You can monitor local Red Tide conditions by visiting the Florida Fish and Wildlife Conservation Commission (http://myfwc.com/REDTIDESTATUS) to check on the presence of Florida Red Tide along Florida's west coast beaches. You can also consult the National Ocean Service HAB-OFS reports at https://tidesandcurrents.noaa.gov/hab/gomx.html for detailed forecast and algae concentration information. For near-term guidance during a Florida Red Tide event, consult the latest Beach Hazards Statement issued by the National Weather Service Tampa Bay/Ruskin, FL.

Anatomy of a Tornado Warning

By: Bryan Mroczka

The Anatomy of a Tornado Warning

Central & Southern Florida

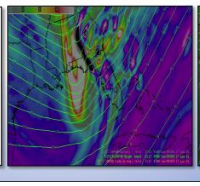
Severe Weather and Tornado Outbreak of January 17th, 2016

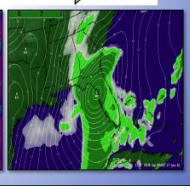
The National Weather Service in Ruskin, FL would like to take you through a typical timeline leading up to a severe weather event and the issuance of the first severe thunderstorm or tornado warning. For this discussion we will be looking at the days, hours, and minutes leading up to the severe weather and tornado outbreak that impacted the central and southern Florida peninsula early on the morning of January 17th, 2016.

Time Before Event: 5 Days | 3 Days | 1 Day | 12 hours | 3 hours | Minutes → Warnings Issued

Weather models began to show increasing potential for a potent storm system accompanied by severe thunderstorms up to 5 days in advance of the 17th. Forecast activities in preparation beginning at this stage included:

- Enhanced interrogation of weather models
- Emergency Management Briefings
- Public Hazardous Weather Outlooks
- Social Media Posts relaying the threat





Time Before Event: 5 Days | 3 Days | 1 Day | 12 hours | 3 hours | Minutes → Warnings Issued

Between one and three days before the onset of severe weather, office preparation ramps up, and so do Decision Support Services (DSS) provided to local partners in order to help them prepare and mobilize resources.

- Coordination for the Storm Prediction Center on Severe Weather Convective Outlooks
- Enhanced and more frequent decision support service and briefings to state and local emergency management and local media partners.
- Finalize schedule and bring in extra staffing to cover enhanced workload through the event.

Decision Support Services to local & state emergency management & media

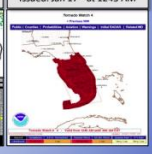
Storm Prediction Center (SPC) Convective Outlook
Issued: January 16th

Time Before Event: 5 Days | 3 Days | 1 Day | 12 hours | 3 hours | Minutes → Warnings Issued

The intensity of activity increases quickly as the onset of severe weather gets to within several hours. Communication with local partners becomes constant and higher resolution model guidance is used to pin down the kind of threats expected and the locations of greatest threat. If the threat of severe weather now appears to be significant within the next several hours, meteorologist here in Ruskin will coordinate with the storm prediction center on a severe thunderstorm or tornado watch for the local area.

Coordination with SPC for location/timing of Tornado Watch

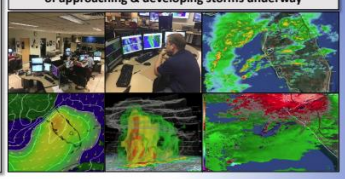
Tornado Watch
Issued: Jan 17th at 1245 AM



Time Before Event: 5 Days | 3 Days | 1 Day | 12 hours | 3 hours | Minutes → Warnings Issued

A couple of hours to only minutes before the onset of severe weather bring office activity to a fever pitch. Full staffing is now in place to make a complete event team. Typical staffing for a large severe weather event will include an event coordinator, multiple doppler radar interrogators, decision support providers, social media personnel, hydrology personnel, as well as personnel to continue of all the traditional day-to-day forecast services.
Storms are interrogated top to bottom through a variety of doppler radar products…
…and then one of the storms begin to rotate.

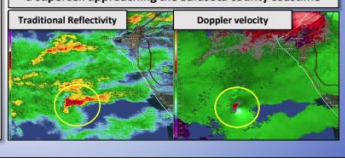
Full staffing in place / 3 dimensional radar interrogation of approaching & developing storms underway



Time Before Event: 5 Days | 3 Days | 1 Day | 12 hours | 3 hours | Minutes → Warnings Issued

Around 2 AM EST one of the offshore storms takes on supercell characteristics, and begins to show a strong signal of rotation (tornadic potential). Although the storms is well offshore it is moving toward the coast at 55 mph. Radar interrogators must pay close attention to this storm, as action may be require soon.
The potential threat is communicated to media partners and Sarasota county emergency management / law enforcement so these partners are ready should a warning become necessary.

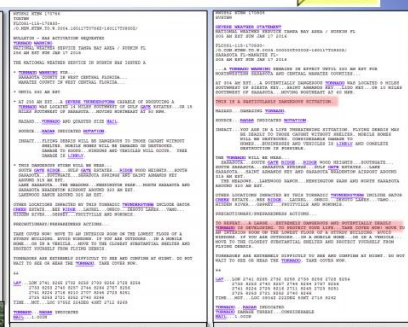
2:03 AM EST Low level scan from KTBW Doppler radar of a supercell approaching the Sarasota county coastline



Time Before Event: 5 Days | 3 Days | 1 Day | 12 hours | 3 hours | Minutes → Warnings Issued

During the next several radar scans, the rotation signature only became more defined on radar. The quick motion of the storm increased the potential for this storm to maintain its tornadic threat all the way to the coast.
Radar interrogators must now act. The threat to life and property in the Sarasota/Bradenton area is imminent and a tornado warning is necessary.

- **First tornado Warning is issued at 2:56 AM EST**
- **The rotation grows ever stronger with the following two radar scans.**
- **Tornado Warning is updated at 3:05 AM to include "particulary dangerous situation & potentially deadly tornado" wording**



Polygon Tornado Warning: Issued 256 AM

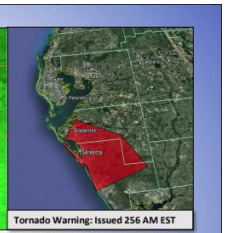
Tornado Warning Issued: 256 AM EST
Tornadic Signature ~15 miles offshore of Siesta Key.

Tornado Warning Updated at 305 AM to include "Particularly dangerous situation and potentially deadly tornado" wording.

What Actually Happened?

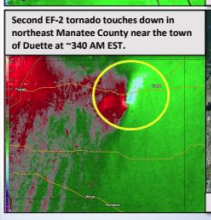
- Tornado Warning is issued for coastal Sarasota / Manatee Counties at 2:56 AM EST
- Tornado #1 moves ashore near Siesta Key in Sarasota County with a rating of EF-2 at approx. 3:15 AM EST.
- Tornado #1 lifts shortly thereafter after crossing Siesta Key.
- The thunderstorm continues to show weak rotation on radar as it moves inland from the coast. The rotation grows stronger once again shortly before 3:30 AM EST.
- A new tornado warning is issued for central and eastern Manatee County at 3:28 AM EST.
- Tornado #2 touches down at approx. 3:40 AM EST near the town of Duette in northeast Manatee County.
- Tornado #2 produces EF-2 damage near Duette and tragically claims one life.
- Tornado #2 lifts shortly thereafter before reaching the Hillsborough County line.

EF-2 tornado moves ashore near Siesta Key in Sarasota County at ~ 315 AM EST



Tornado Warning: Issued 256 AM EST

Second EF-2 tornado touches down in northeast Manatee County near the town of Duette at ~340 AM EST.



Tornado Warning: Issued 328 AM EST

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