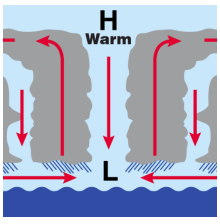
SUNCOAST OBSERVER

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

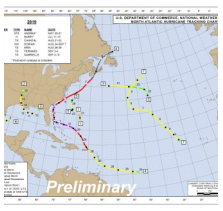
www.weather.gov/tampa

9.23.2019

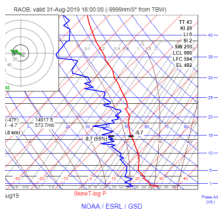
Top stories in this newsletter



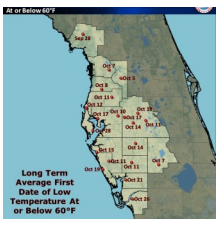
How Do Hurricanes Form?



2019 Hurricane Season Forecast Update and Current Season Summary So Far



Hurricane Dorian Special Soundings – How A Little Box Makes A Big Difference



It's Finally Fall, So When Will It Cool Off?

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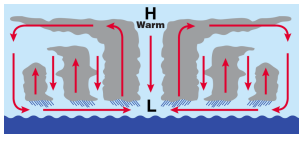

By: Dan Noah

When the water vapor from the warm ocean condenses to form clouds, it releases its heat to the air. The warmed air rises and is pulled into the column of clouds. Evaporation and condensation continue, building the cloud columns higher and larger. A pattern develops, with the wind circulating around a center (like water going down a drain). As the moving column of air encounters more clouds, it becomes a cluster of thunderstorm clouds, called a tropical disturbance.

As the thunderstorm grows higher and larger, the air at the top of the cloud column is cooling and becoming unstable. As the heat energy is released from the cooling water vapor, the air at the top of the clouds becomes warmer, making the air pressure higher and causing winds to move outward away from the high pressure area. This movement and warming causes pressures at the surface to drop. Then air at the surface moves toward the lower pressure area, rises, and creates more thunderstorms. Winds in the storm cloud column spin faster and faster, whipping around in a circular motion. When the winds reach between 25 and 38 mph, the storm is called a tropical depression.

When the wind speeds reach 39 mph, the tropical depression becomes a tropical storm. This is also when the storm gets a name. When the wind speeds reach 74 mph, the storm is officially a hurricane. The trade winds (which blow from east to west) push the hurricane toward the west—toward the Caribbean, the Gulf of Mexico, or the southeastern coast of the U.S. Hurricanes usually weaken when they hit land, because they are no longer being fed by the energy from the warm ocean waters. However, they often move far inland, dumping many inches of rain and causing lots of wind damage before they diminish completely.

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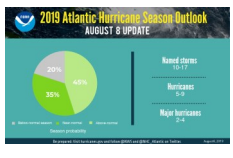
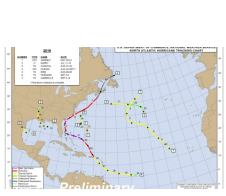


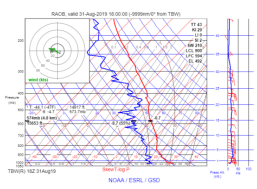
By: Jen Hubbard

On August 8th, the Atlantic Hurricane Season Outlook was updated. The update increased the chances for an above normal season, increased the number of Named Storms from 9-15 to 10-17, and increased the number of Hurricanes from 4-8 to 5-9. The number of Major Hurricanes remained the same at 2-4. This increase comes as a result of the El Nino officially ending and neutral conditions having returned over the Pacific Ocean.



So far this season, we have already had 10 named storms, 4 of which have become hurricanes, and 1 of those becoming a major hurricane. Andrea was a sub-tropical storm that remained over the open ocean. Barry formed in the northern Gulf of Mexico and impacted Louisiana and Arkansas. Chantal and Gabrielle both stayed over the central Atlantic. Category 5 Dorian had devastating impacts over the northern Bahamas and caused damage along the SE US coast from Florida to the Carolinas as it moved along the Gulf Stream and then all the way up into Canada. Erin was short lived over the western Atlantic. Fernand formed in the western Gulf of Mexico and moved into northern Mexico. Humberto followed a path similar to Dorian, only a bit more to the east, and impacted Bermuda. Imelda caused devastating flooding in the Houston/Beaumont areas of Texas. And finally, Jerry is moving just to the north of the Lesser Antilles and is expected to cause additional impacts to Bermuda.

Hurricane Dorian Special Soundings – How A Little Box Makes A Big Difference



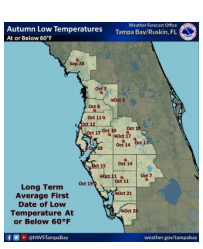
By: Austen Flannery

As Hurricane Dorian was approaching the Bahamas, meteorologists were working around the clock to understand what the potential impacts would be to the islands in the path. Beyond the Bahamas, residents in Florida began growing concerned about the very real possibility of a category 5 hurricane making landfall somewhere along the Florida coastline. Now more than ever, accurate data was necessary to fully understand just how strong Dorian could get and where exactly it could go.

Meteorologists at the National Weather Service Tampa Bay Area began conducting special weather balloon releases, known as soundings, at 1AM and 1PM to better understand what was happening in the atmosphere. On a typical day, this is done just twice – at 7AM and 7PM. Other offices all across the Southeastern United States began doing the same thing, in order to provide better data to the National Hurricane Center. With better data, the track forecast could be improved.

Thankfully, Hurricane Dorian made a hard-right turn and only dealt a glancing blow to the U.S. coastline. Data collected and analyzed from the little white box known as a radiosonde helped forecasters to see this right turn in advance, allowing many resources to be redirected to areas that would be harder hit well in advance. With nearly 900 locations launching balloons around the world each day, including 92 locations in the United States, the data collected from these flights is enormous. While each individual radiosonde may seem small and insignificant, it plays a key role in a larger puzzle, allowing meteorologists from Tampa Bay to Seattle and from San Francisco to New York to provide a better forecast to save lives, protect property, and build a Weather Ready Nation.

It's Finally Fall, So When Will It Cool Off?



By: Paul Close

During most years we do not see the first shot of cooler drier air until the middle of October, albeit usually is rather short lived, lasting only a day or two, with the real cool down not occurring until November. A good way to examine the timing of the first cool down is by looking at overnight low temperatures. The overnight low temperatures are highly dependent on a few factors, not the least being the amount of moisture in the air near the ground, measured by looking at the dew point, the amount of cloud cover, and winds. In general, overnight low temperatures cannot fall below the dew point, therefore if the dew points are still in the middle 60's to middle 70's as they are now, then the overnight low temperatures will most likely also be in the mid 60's to mid 70's unless a cool front moves through during the night. So to see when the first cool front moves across the region, we'll take a look at the dates when low temperatures fall below different thresholds at some locations.

Examining the map, we do see that the average time of the first real cool front appears to be during mid-October. This is when temperatures generally fall into the mid 50's across inland portions of the Nature Coast and below 60 degrees elsewhere across West Central and Southwest Florida. The only exception is near the coast where the water keeps temperatures higher and these areas take longer to fall below 60 degrees, as seen at St. Petersburg. A more in depth look at this can be found here: https://www.weather.gov/tbw/whencool

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