Suncoast Weather Observer

Summer 2010 Issue 1, Volume 15

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NWS Forecasters Help Australia with Fire Weather Support

By: Rick Davis

NWS TBW senior meteorologist and Incident Meteorologist (IMET) Rick Davis worked with the Australian Bureau of Meteorology (BoM) in Melbourne, providing fire weather decision support services, to the State of Victoria, for the month of April 2010. He was part of a small group of NWS forecasters to do so during their active fire season.

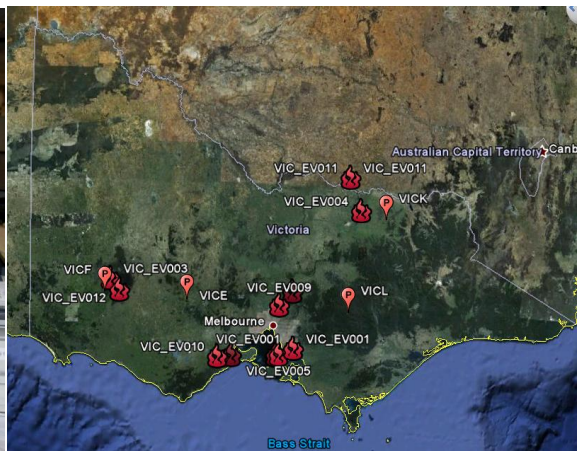
Typically, El Niño produces warmer and drier than normal summer conditions for Southeast Australia, and this was generally true this year as well. In Melbourne, a record number of days above 20 C (68 F) was set at 123 consecutive days ending April 11th, smashing the previous record, which helped make this the warmest summer on record, while rainfall was generally near normal. Fire Danger Ratings varied through the month but usually ranged from high to very high, then a cold weather outbreak brought cooler and more moist conditions with scattered rain for much of the state, reducing the fire danger ratings at the end of the month.

Rick worked full time shifts at the Australian Bureau of Meteorology Victoria Regional Office in Melbourne producing numerous fire weather products including; daily fire weather briefing forecasts, fire weather forecast estimates for days 1-4, fire weather outlook graphical maps and

forecasts, HYSPLIT smoke modelling forecasts, Fire Danger Ratings forecasts and Site Specific fire weather Spot forecasts. Rick became reacquainted with and used the BoM computer systems, including the Victoria, Australia domain of GFE to create and produce forecasts, products and briefings.

While on assignment he also participated in morning briefings at the Victoria State Control Centre (SCC) and observed how the Victorian Department of Sustainability and Environment (DSE) and County Fire Authority (CFA) use the fire weather forecast products for bushfire decision support services. He also discussed fire weather, fire behaviour, and fire science with the top state Fire Behaviour Analysis (FBAN). Rick also provided a GFE, BoM fire weather and American assistance overview and workstation demo, to the BoM Regional Director and the National Bushfire Cooperative Research Centre (CRC) Stakeholder Council at the annual meeting.

Rick in the BoM Victoria Regional Office



Large fires in Victoria mid April 2010

Fire smokes SW of Geelong

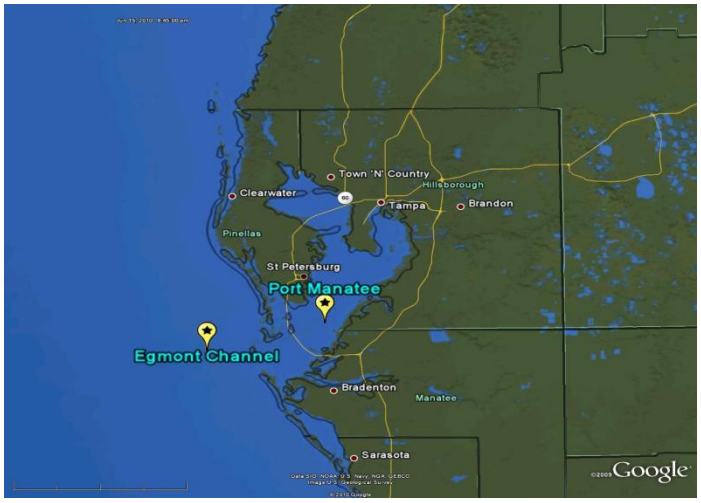
Visibility Sensors to Shed Light for Marine Vessels

By: Todd Barron

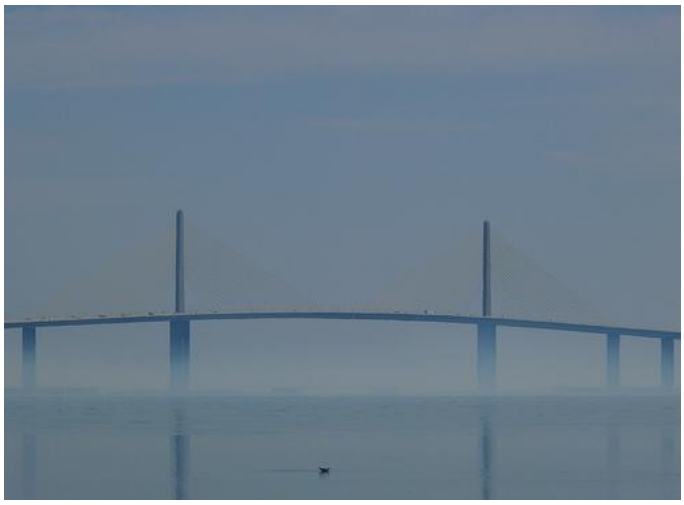
The port of Tampa is the largest port in the state of Florida and one of the largest in the nation. In addition to its sheer size, it also has a huge economic impact of about $8 billion a year and accounts for thousands of jobs. It's no surprise that because of these statistics, cargo ships, cruise ships, barges, etc. are all equally concerned with the unique weather conditions that affect Tampa Bay throughout the year.

While strong winds, blinding rain, excessive lightning, and rough seas are always a concern to Captains, low visibility due to sea fog is one of the top hazards. Sea fog typically develops during the cool months from around November through February, when warm, moist air moves over cooler Gulf and Bay waters. The waters help to cool the lower layer of the air-mass below its dew point, resulting in sea fog and low visibilities. Depending on the water temperatures and the air-mass over the water, visibilities over Tampa Bay can drop below 1/8th of a mile.

While there is an array of buoys and marine data in Tampa Bay and surrounding waters, there is currently no site which reports visibility from the waters. Because of the potential consequences that marine vessels could face while navigating the narrow channels of Tampa Bay with fog present, forecasters at the National Weather Service Tampa Bay have been assisting researchers at the University of South Florida (USF) in developing a new array of marine sensors which can determine visibility. USF has already purchased two sensors and testing has begun (see the map below for the location of the sensors). The sensors will be mounted a few meters above the water's surface and captures visibility from that single location. Once testing concludes later this year, data will be available for the NWS, Coast Guard, Tampa Bay Pilots, and Vessels Traffic Service at the Tampa Port Authority. After the installation and testing are completed, Tampa Bay will join a very small group of water bodies which reports visibility.



This map shows the anticipated location of the new visibility sensors. The Port Manatee sensor was installed May 21 and testing is under way.



Sunshine Skyway Bridge over morning sea fog.

Forecaster Spends a Month at the Southern Region Operations Center in Texas

By: Jennifer Colson

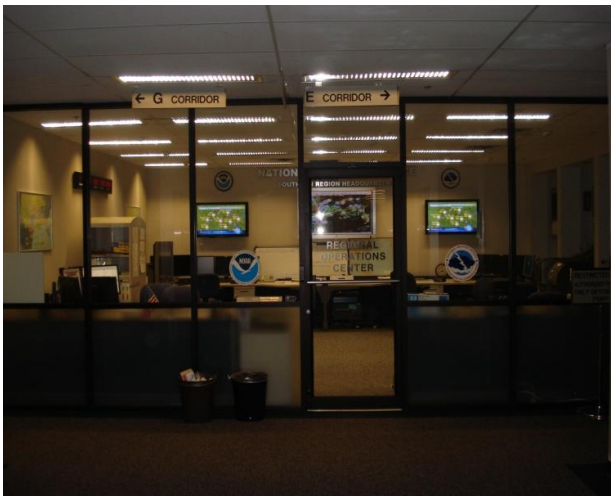
The National Weather Service (NWS) is divided into six regions across the nation, with the Tampa Bay Area (TBW) Weather Forecast Office (WFO) a part of the Southern Region (SR). Southern Region Headquarters (SRH), located in Fort Worth, Texas, is home to the Regional Operations Center (ROC). The ROC serves a unique function within the NWS, acting as a liaison between and information source for several different organizations. NWS TBW Forecaster Jennifer Colson traveled to SRH during much of the month of May to serve as the ROC Duty Officer.

The ROC has three main functions. The first is to support the 32 WFOs within SR in any way possible, acting as the liaison between the WFO and the personnel at SRH or elsewhere that can alleviate their need. The second is to support the state and federal partners of SR, such as state Emergency Operations Centers and FEMA Regional Centers, with weather and water decision information. Finally, the third function is to keep SRH, NWS Headquarters, and NOAA decision makers apprised of significant events.

The month of May saw some very active weather and events across the region, including the remnants of record flooding in and around Nashville, TN, significant tornado outbreaks mainly across OK and TX, flash flooding across southern and coastal TX, very large damaging hail across Oklahoma City, and the ongoing role of the NWS in the Gulf of Mexico oil incident. In addition, there were several activities and events that occurred in preparation for the nearing hurricane season.

During her reign as ROC Duty Officer, Jennifer composed and updated over 20 significant event and for-the-record reports related to the above events, presented roughly 25 written and oral weather briefings to state and federal partners, provided support and assistance to ten WFOs, updated the ROC Duty and Tropical ROC Duty Manuals, and participated in SRH conference calls, briefings, and trainings on various subjects.

Deputy Regional Director Steven Cooper presents NWS TBW Forecaster Jennifer Colson with a Certificate of Appreciation



The Regional Operations Center at Southern Region Headquarters

Busy 2010 So Far for Spanish Outreach

By: Anthony Reynes

National Weather Service in Tampa Bay (NWS TBW) continued its local and national Spanish outreach activities during the first half of 2010, including the Spanish version of the official NOAA Lightning Awareness Brochure, the Hurricane Hunter Tour in Sarasota, Florida, and in-depth interviews with local and regional Spanish networks regarding the past winter season and the upcoming hurricane season.

Meteorologist and Spanish Services Liaison Anthony Reynes from NWS TBW collaborated with Mary Fairbanks and Donna Franklin from NWS Headquarters to create the Spanish versions of the official Lightning Awareness brochure and other Lightning Awareness Week material (see Fig 1), available at the following link: http://www.lightningsafety.noaa.gov. With this initial collaboration we hope to continue to expand the current NOAA/NWS inventory of Spanish products, which are becoming very popular in outreach activities across communities with large Hispanic presence.

Figure 1. Official Spanish version of the Lightning Awareness brochure, product of the active collaboration between NWS TBW and NWS Headquarters in Silver Spring, Maryland.

Another Spanish Outreach highlight happened on April 30th, 2010 when NWS TBW hosted the Hurricane Hunter Tour. The plane made its final stop at the Sarasota-Bradenton International Airport in Florida. As expected, the event generated great interest from the public and the media, including most of the local and national Spanish media outlets. Meteorologist Anthony Reynes conducted on-site live and taped Spanish interviews with the Orion P3 Hurricane Hunter plane as backdrop (see Fig 2). Well known news personalities like Sergio Gonzalez from Telemundo Orlando, Gonzalo Alvarado from Univision Tampa, and others attended the event. Also, many members from the Spanish printed media, like 7 Dias and Hola Ciudad helped in giving regional and national attention via paper and electronic (internet) outlets.

Figure 2. Left: Media personalities conduct simultaneous TV interviews with crew members of the NOAA Orion P3 Hurricane Hunter plane, Bill Read (Director of the National Hurricane Center in Miami), and Anthony Reynes (Meteorologist NWS TBW). Right: Gonzalo Alvarado and staff members from Univision of Central Florida conduct an interview with NWS TBW Meteorologist Anthony Reynes.

With this event, NWS TBW had a unique opportunity to reach the Hispanic audience with the message of awareness and preparedness for the 2010 hurricane season, which could be a very active one.

To end the spring and early summer awareness campaigns, NWS TBW also participated in several in-depth interviews with Bay News 9 en Español of Tampa, and Univision Fort Myers. Coordination with Bay News 9 en Español news director Patricia Pomales, and news anchor Roy de Jesus provided the opportunity for several interviews regarding the impacts of the El Niño during the record-breaking cold winter, and the potential for Tsunamis in the Gulf and western Florida, which became a hot topic in the wake of the Haiti and Chile earthquakes (see Fig. 3). The Tsunami 15 minute in-depth interview was showcased on the popular "On-Demand" services during the months of March and April.

Figure 3. Baynews 9 En Español News anchor Roy de Jesus (left) conducts an interview as part of their special "On Demand" channel programming. Coordination with Patricia Pomales, Baynews9 En Español News Director (right) made it possible for NWS TBW to expand its outreach to the Hispanic community across the Tampa Metro Area.

Also, we had the opportunity of participating in another installment of the talk show "Acción Hispana with Jackie Figueroa", which airs weekly in Univision Fort Myers, and is one of the most popular shows across Southern Florida. The 30 minute show once again helped in educating the Hispanic audience about hazardous weather, and promoting awareness and preparedness.

Figure 4. Talk show host Jackie Figueroa interviews NWS TBW meteorologist Anthony Reynes during the taping of the popular show "Acción Hispana".

For the second half of 2010, the National Weather Service in Tampa will continue to proudly participate in media collaborations, as well as develop new and innovative ways of reaching out to our rapidly growing Hispanic community in the Tampa Bay Area.

¡Hasta la próxima!

CQ's the Word! TARC and CERT Clubs Join NWS Outreach Efforts

By: Anthony Reynes

As part of the expanding Skywarn and HAM Radio programs, NWS TBW teamed with the Tampa Amateur Radio Club (TARC), and the Sun City Center Community Emergency Response Team (SCC CERT) chapter in order to provide training for new Skywarn Spotters, and to promote preparedness and awareness for the ongoing hurricane season.

On April 25th, 2010 NWS TBW Meteorologist Anthony Reynes conducted a Skywarn Training session at the Hillsborough Emergency Operations Center (HEOC) in Tampa, FL. The class was composed of members of the TARC and various emergency response organizations (see Fig. 1). A total of 33 new Skywarn Spotters were certified that evening, which will add to our ever growing network of weather spotters. The event was coordinated by TARC Board Directors Keating Floyd (KC4HSI), and Jodi Percoraro (KI4FWJ). NWS TBW also often participates in the TARC net every Tuesday at 8 pm, available to the HAM radio community on the 147.105 repeater (+600 input, 146.2 tone). This is in addition to the weekly Skywarn NWS Net show, which airs every Tuesday at 9 pm on the NI4CE repeater system at 145.430(-)(100hz), where the

HAM radio community has the opportunity to interact with meteorologists from the NWS TBW (located in Ruskin, FL) during the Q & A session.

<u>Figure 1</u>. The April 26 2010 Skywarn Class at the HEOC in Tampa, FL. A total of 33 new Skywarn spotters, mostly members of the TARC, received their certifications to become part of the official network of weather spotters for the NWS Tampa Bay Area.

NWS TBW also joined the training efforts of the SCC CERT chapter in West Central Florida, which is part of the Citizens Corps Organization coordinated nationally by the Department of Homeland Security's Federal Emergency Management Agency (FEMA). Meteorologist Anthony Reynes participated in a comprehensive seminar about hurricane awareness and preparedness for the 2010 season that runs through November 30. Figure 2 shows Mr. Dick Tattarelli (Vice President SCC CERT), Meteorologist Anthony Reynes, and William “Bill” Barron (President of the Hillsborough CERT), as Anthony was presented with the official SCC CERT shirt, thus becoming an honorary member of the SCC CERT chapter.

<u>Figure 2.</u> From left to right: Dick Tattarelli (Vice President SCC CERT), NWS Tampa Meteorologist Anthony Reynes, and William "Bill" Barron (President of the Hillsborough CERT) as part of the June 23rd CERT Meeting in Sun City Center, FL.

The seminar stressed the importance of having a contingency/response plan for what could be a very busy 2010 hurricane season, and the crucial role of communications during and after a hurricane.

Efforts like these are essential in promoting and fostering collaborations between the National Weather Service and the many different organizations in our community who constantly show their support to our main mission of protecting life and property during hazardous weather events.

Decision Support Services Preparing the Public for the 2010 Hurricane Season

By: Brian LaMarre and Jennifer Colson

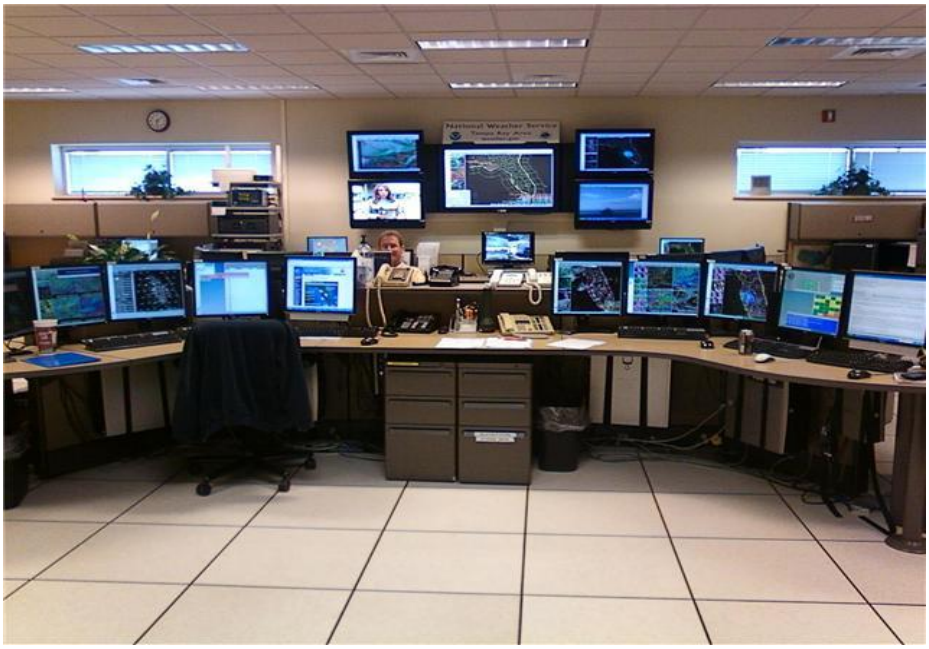
The latest NOAA hurricane season outlook predicts a very active season for the Atlantic Basin – forecasting 14 to 23 named storms predicted, including 8 to 13 hurricanes, of which 3 to 7 may become major hurricanes:
http://www.noaanews.noaa.gov/stories2010/20100527_hurricaneoutlook.html

The National Weather Service (NWS) Tampa Bay Area (TBW) Weather Forecast Office in Ruskin, FL, along with many other coastal NWS offices across the country, has developed and implemented several new products and services to help prepare the public for an active season and to better serve and protect the citizens across west-central and southwest Florida.

More specifically, the NWS TBW office implemented a daily "Videocast" for their web customers, highlighting the weather conditions for the next several days, as well as providing interesting facts and educational information relevant to the area. When a hurricane threatens the forecast area, these Videocasts will be an exciting tool to not only keep residents apprised of the latest forecasts, but also provide extra information, such as pre-, during, and post-storm safety information and significant storm reports. This can be found at http://www.weather.gov/tampa

When a hurricane threatens any portion of the forecast area, NWS TBW initiates routine webinar briefings with emergency response officials, occurring as often as the scheduled updates from the National Hurricane Center (NHC). These briefings keep the emergency management community apprised of the latest forecasts and information available on expected impacts for each county, to assist them in making the best decisions possible for the residents in their county concerning things such as evacuations and shelter openings.

Inside the Weather Forecast Office, NWS TBW has undergone a re-design to increase decision support activities and overall forecaster collaboration. In addition, the office designed and implemented a modernized Situational Awareness Display (SAD), and centered the operations around this new briefing system. Numerous sources of information can be shown on the five screens that make up the SAD, such as satellite, radar, models, and even area webcams and television stations. This display allows the forecasters to quickly ensure warnings are delivered to local media in an effort to broadcast the message to the public, and see the video evidence of storm damage various media may report to the public. This is a very useful tool to the operational team, not only during hurricanes, but for all hazardous weather events.



Modernized decision-support center and Situational Awareness Display at the NWS Tampa Bay Area, FL Weather Forecast Office

In advance of hurricane season, the NWS TBW team participated in numerous hurricane awareness and preparedness events. The largest of these occurred on April 30th at the Dolphin Aviation area of the Sarasota-Bradenton International Airport, when NWS TBW hosted the final stop of the Hurricane Hunter P-3 Aircraft on the 2010 Hurricane Awareness Tour. Hundreds of students, area residents, media and emergency response officials, as well as elected officials were able to tour the aircraft, speak with the pilots and meteorologists who pilot the plane into the eyes of hurricanes, and meet with the NHC Director, Bill Read and many NHC officials.

NHC Director Bill Read interviews with local media during the 2010 Hurricane Awareness Tour

NOAA Meteorologist, Nancy Ash, explains to students how weather data is collected on the aircraft

Hurricane Climatology

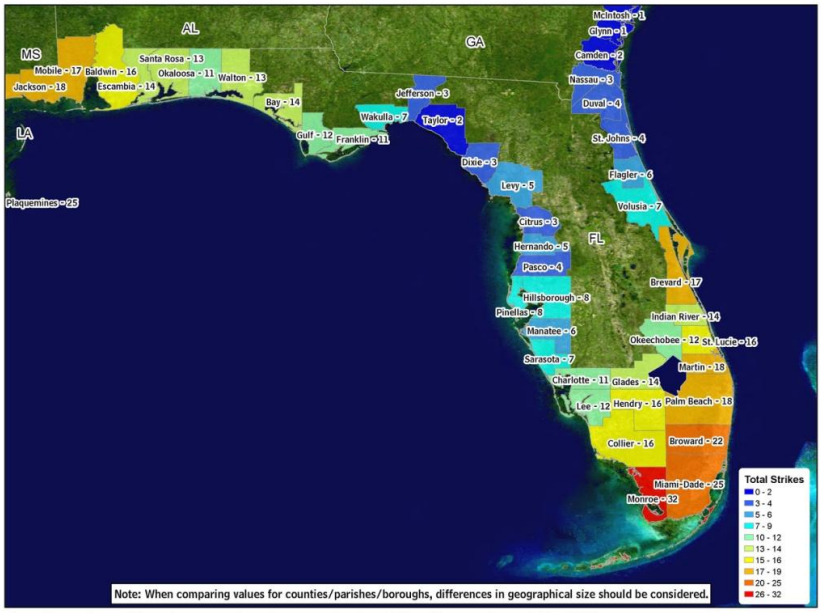
By: Jennifer McNatt

With the start of the Hurricane Season on June 1st, it's a good time to take a look at the past and see how and when hurricanes have affected the local area.

Florida: 40% of all U.S. Hurricanes have hit somewhere along the Florida Coast. 83% of all Category 4 or 5 Hurricanes have hit either Florida or Texas. Whether you are a life-long Florida resident or a relative newcomer, you are most likely aware of the threat that Hurricanes bring to the state. Looking at climatology from 1851 – 2009, there have been 114 hurricanes to make landfall somewhere along the Florida coast (out of 288 total storms that made landfall somewhere along the United States coast). Of the storms to affect Florida:

- 44 were Category 1 storms
- 33 were Category 2 storms
- 29 were Category 3 storms
- 6 were Category 4 storms
- 2 were Category 5 storms

See the graphic to the right that details how many storms from 1900 – 2009 have made landfall in each of Florida's coastal counties.



Total number of hurricane strikes by counties/parishes/boroughs, 1900-2009

Data from NWS NHC 46: Hurricane Experience Levels of Coastal County Populations from Texas to Maine. Jerry D. Jarrell, Paul J. Hebert, and Max Mayfield. August, 1992, with updates.

Homosassa: The last hurricane to directly hit the Homosassa area was Hurricane Gladys...a Category 2 storm in 1968. The last major storm to directly hit Homosassa was Hurricane Easy, a Category 3, in 1950.

Tampa/St. Petersburg: The last hurricane to directly hit the Tampa/St. Petersburg area was a Category 1 in 1946 (no formal names were given to storms prior to 1950). The last major hurricane to directly hit the Tampa/St. Petersburg area was back in 1921...a Category 3.

Sarasota: The last hurricane to directly hit the Sarasota area was a Category 1 in 1946. The last major hurricane to directly hit the Sarasota area was a Category 3 in 1944.

Fort Myers: The last hurricane (and major hurricane) to directly hit the Fort Myers area was Hurricane Donna...a Category 3 in 1960.

What time period is more favorable for hurricanes?

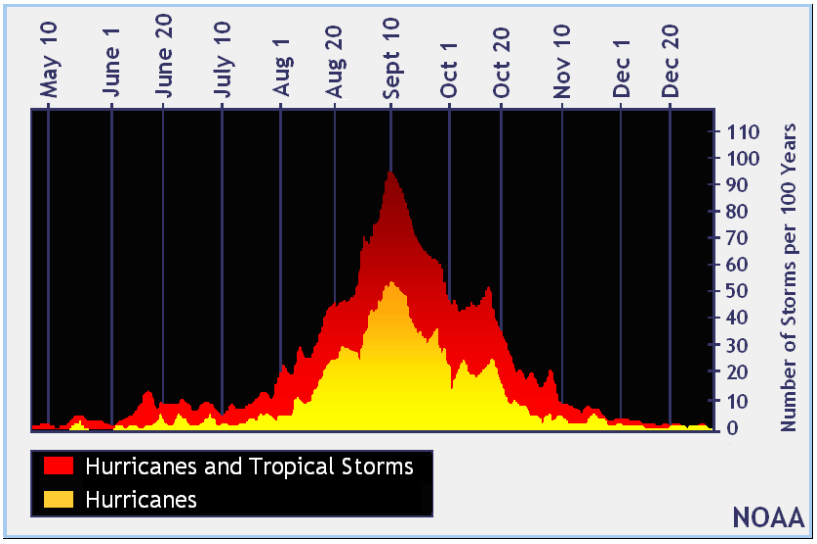
Hurricane Season runs from June 1st through November 30th, although several storms have developed outside these dates. These dates however have typically encompassed 97% of all activity.

As you can see from the graphic below, both Hurricane and Tropical Storm activity peaks in September (this is total activity, not just Florida-related). In fact, from 1851 – 2009, the following are totals of Major Hurricane (Category 3 or greater) direct hits to any portion of the United States coastline:

- June – 2 storms
- July – 5 storms
- August – 26 storms
- September – 46 storms
- October – 17 storms

For Florida, the numbers tell a similar story:

- June – 0 storms
- July – 2 storms
- August – 6 storms
- September – 19 storms
- October – 10 storms



No matter where you are located in Florida, or what month it is...we should all be prepared this time of year for a hurricane! For more information on hurricanes and how to prepare for them, visit www.hurricanes.gov/prepare or www.Ready.gov.

2010 Hurricane Outlook

By: Jennifer McNatt

NOAA's Climate Prediction Center has forecasted 2010's hurricane season to be "active to extremely active". Across the entire Atlantic Basin, NOAA is projecting a 70% probability of the following ranges:

- 14 to 23 Named Storms (winds of 39mph or higher), including
- 8 to 14 Hurricanes (winds 74mph or higher), of which:
- 3 to 7 could be Major Hurricanes (Category 3, 4 or 5 – winds of 11mph or higher)

The seasonal average is 11 named storms, six hurricanes and two major hurricanes.

For more information on the seasonal forecast, including factors that go into a more active season, visit http://www.noaanews.noaa.gov/stories2010/20100527_hurricaneoutlook.html.

SPECIAL FEATURE:

So What Has Happened To The Summer Thunderstorms That You Can Usually Set Your Watch By?

By: Paul Close

As many people have noticed over the last several years the typical mid to late afternoon "set your watch by it" thunderstorms seem to not be occurring as often. We've been seeing storms develop at different times of the day and not always moving in the "typical" east to west direction. Now this isn't uncommon, but it seems to be happening more often than in the past. The primary reason for this has to do with the location of the mid/upper level troughs and ridges which in turn effect where the surface ridge sets up.

What most people think of as the typical summertime pattern is when the surface ridge sets up either to the north of Florida (Figure 1), with a southeasterly flow across the entire peninsula, or at least between Jacksonville and the Tampa Bay area (Figure 3) with a southeast to south flow across the area. When this occurs, isolated storms develop in the early afternoon along the west coast sea breeze, with the more widespread thunderstorm development waiting until the east coast sea breeze pushes west and interacts with the west coast sea breeze. This can be

seen in Figure 2[1] and 4[1], where the most lightning in these patterns occurs along the west coast of the Florida peninsula. These storms usually develop during the mid-afternoon hours over Southwest Florida around Fort Myers and Punta Gorda, then spread north along the west coast as the sea breeze collision continues reaching the Tampa Bay Area and Nature Coast during the late afternoon and early evening.

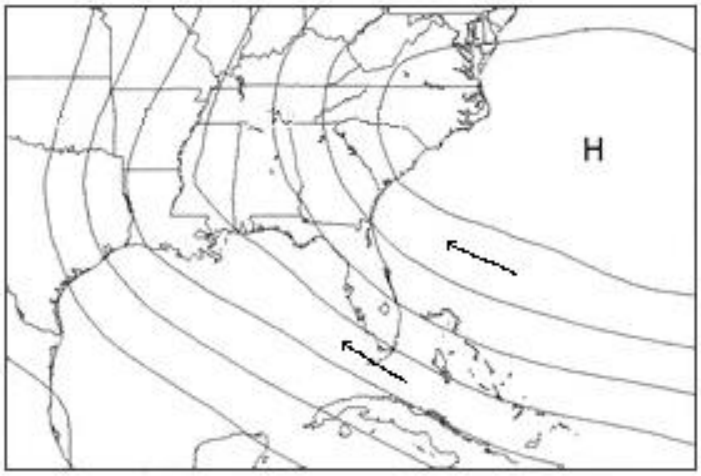


Figure 1: Surface Ridge to the north (Black arrows indicate surface wind flow)

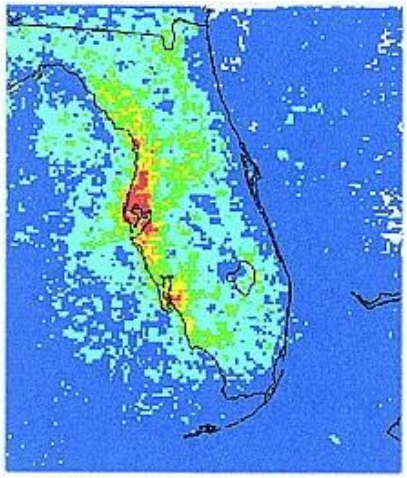


Figure 2: Lightning Flash Density for ridge to the north[1]

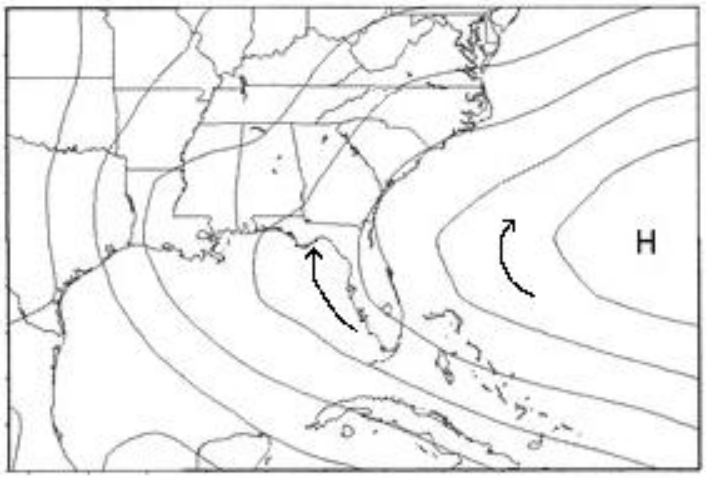


Figure 3: Surface Ridge between Jacksonville and Tampa Bay (Black arrows indicate surface wind flow)

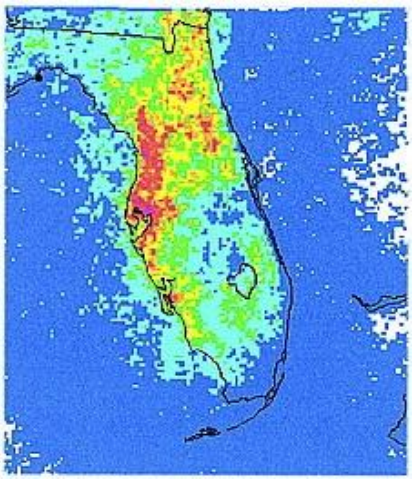


Figure 4: Lightning Flash Density for ridge between Jacksonville and Tampa Bay[1]

So why haven't we been seeing the more typical summertime pattern? Over the last few years there has been numerous times each summer when a mid/upper level trough sets up over the Eastern United States. This can be proven by looking at the monthly composite mean of the 500 mb heights, which represents the overall monthly average conditions in the mid levels. In this region, low pressure areas, or troughs, are easily identifiable. In the graphics below the left column is the monthly composite mean of the 500 mb heights for the individual summer months of 2009, and the images on the right are the 50 year monthly average 500 mb heights for these same months from 1960 to 2009. As you'll notice there was a deeper trough, or bigger

dip in the 500 mb heights over the Eastern U.S. and Florida during the summer months of 2009 compared to the 1960 to 2009 average.

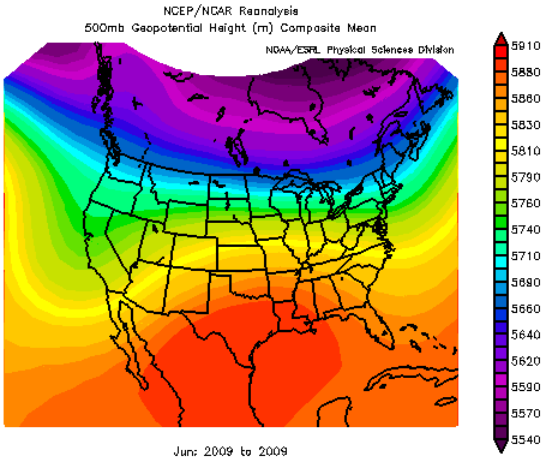


Figure 5: 500mb Height Composite Mean June 2009

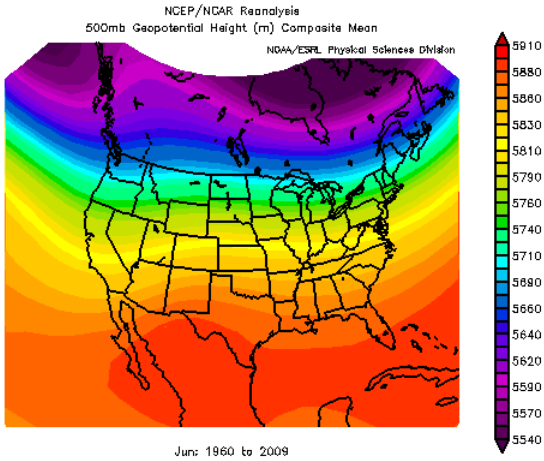


Figure 6: 500mb Height Composite Mean June 1960-2009

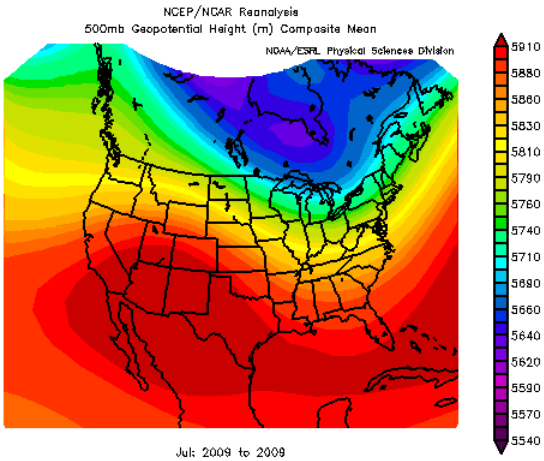


Figure 7: 500mb Height Composite Mean July 2009

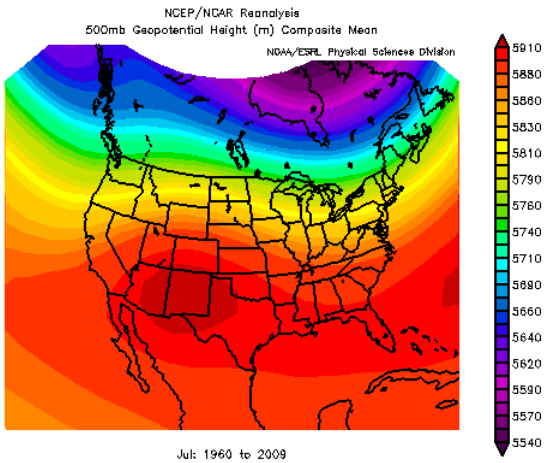


Figure 8: 500mb Height Composite Mean July 1960-2009

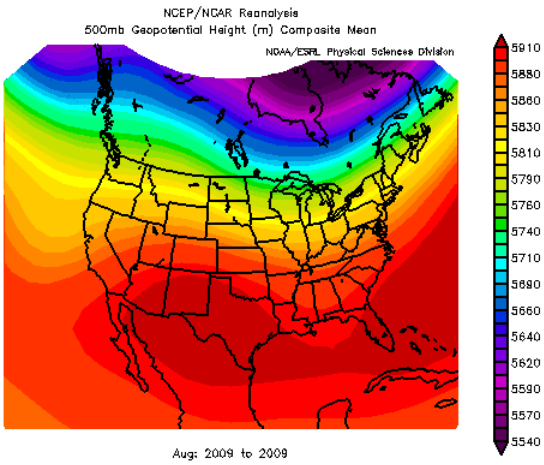


Figure 9: 500mb Height Composite Mean August 2009

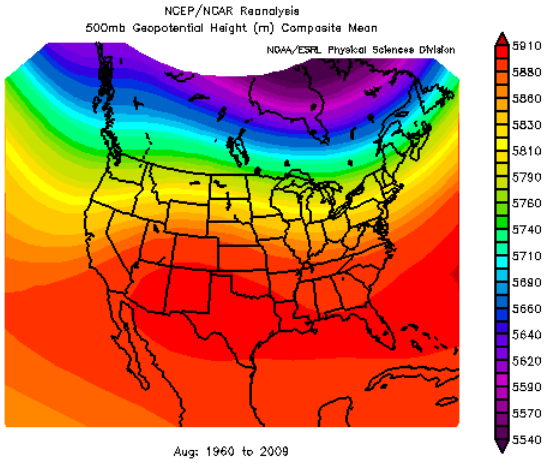


Figure 10: 500mb Height Composite Mean August 1960-2009

Therefore, when there is a mid/upper level trough over the Eastern U.S., the surface ridge is pushed further south setting up a more south to southwesterly flow across the region as illustrated in Figures 11 and 13. This in turn changes the timing and location of the thunderstorms over the Florida peninsula, so instead of the storms moving toward the west coast in the afternoon they move toward the east coast where the most widespread activity ends up occurring (Figures 12[1] and 14[1]). This isn't to say that we don't get any thunderstorms, but mainly that the timing of the storms tends to shift to the morning into the mid-afternoon hours over West Central and Southwest Florida.

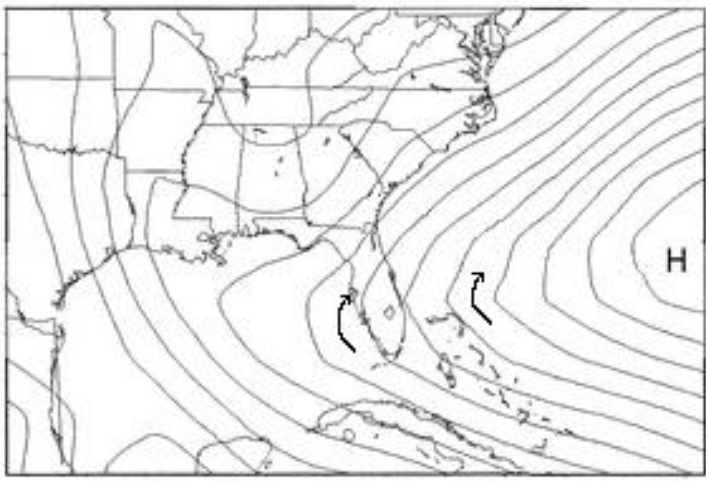


Figure 11: Surface Ridge between Miami and Tampa Bay (Black arrows indicate surface wind flow)

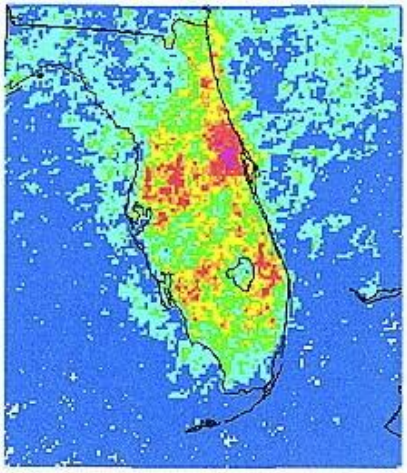


Figure 12: Lightning Flash Density for ridge axis between Miami and Tampa Bay[1]

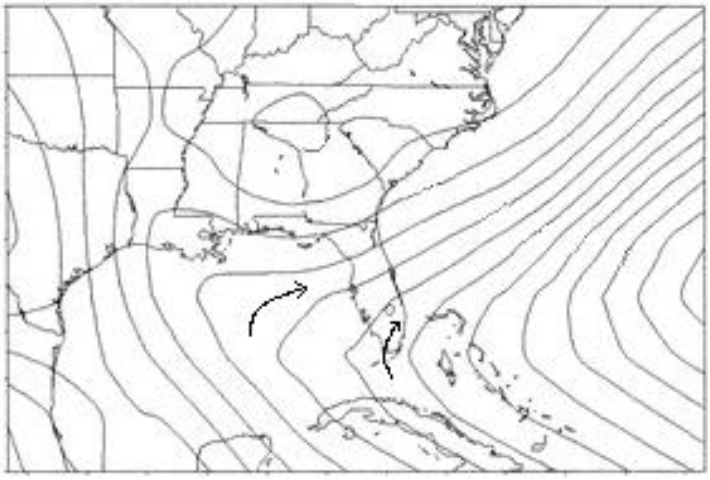


Figure 13: Surface Ridge to the south (Black arrows indicate surface wind flow)

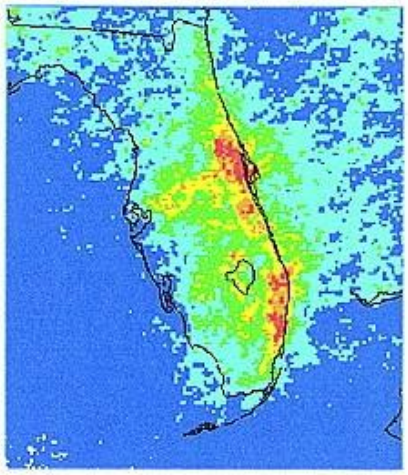


Figure 14: Lightning Flash Density for ridge axis to the south[1]

This type of surface pattern can be seen in the graphics below where the left column is the monthly composite mean of the Sea Level Pressure for the individual summer months of 2009, while the images on the right are the 50 year monthly composite mean of the Sea Level Pressure from 1960 to 2009. It shows up best in the June and July images how the surface ridge was suppressed further south than average.

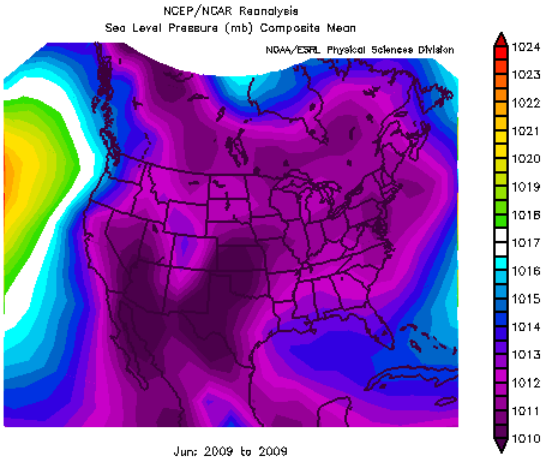


Figure 15: Sea Level Pressure Composite Mean June 2009

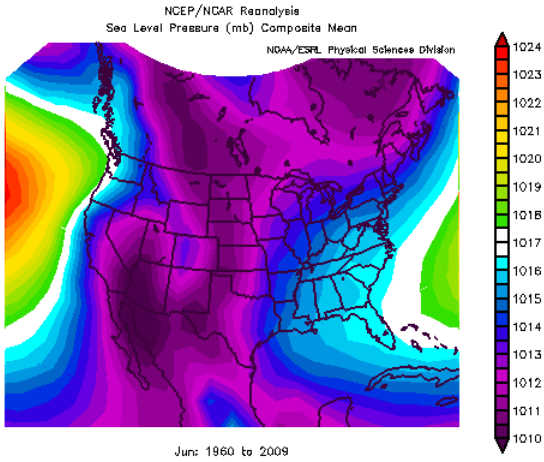


Figure 16: Sea Level Pressure Composite Mean June 1960 to 2009

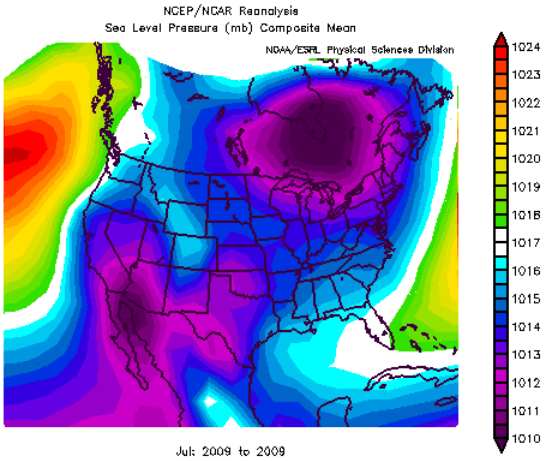


Figure 17: Sea Level Pressure Composite Mean July 2009

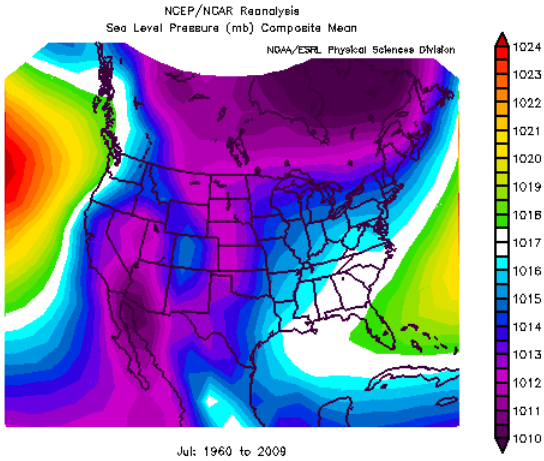


Figure 18: Sea Level Pressure Composite Mean July 1960 to 2009

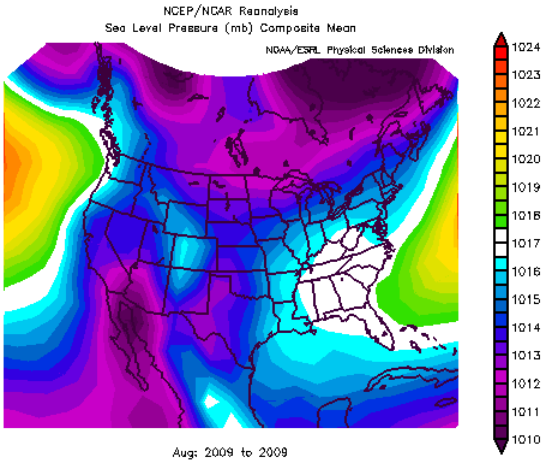


Figure 19: Sea Level Pressure Composite Mean August 2009

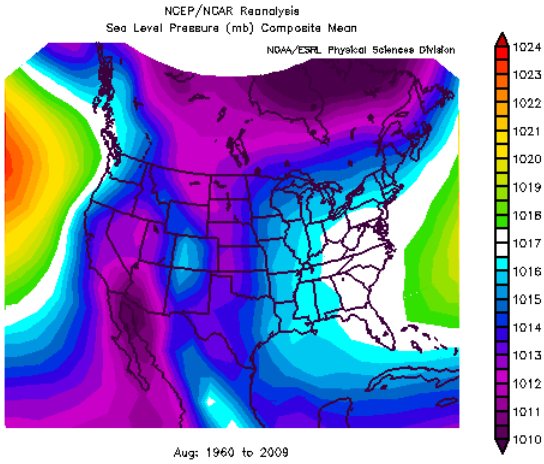


Figure 20: Sea Level Pressure Composite Mean August 1960 to 2009

As described above, the location of the surface ridge can also tell you when the most favorable time for thunderstorms will be. The graphs[1] below illustrate that the best time for storms across the west coast of Florida is during the afternoon and evening hours when the surface ridge is to the north or between Jacksonville and Tampa Bay. When the ridge is to the south, or between Miami and Tampa Bay, there is generally less thunderstorm activity and they tend to form earlier in the day during the mid to late morning hours near the coast and then move inland and continue into the early evening.

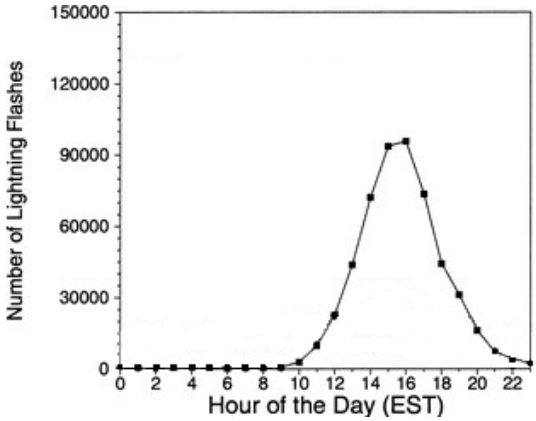


Figure 21: Lightning Flashes by Hour for ridge to the north[1]

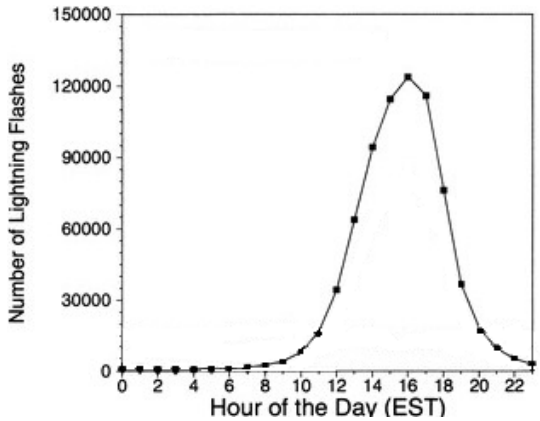


Figure 22: Lightning Flashes by Hour for ridge between Jacksonville and Tampa Bay[1]

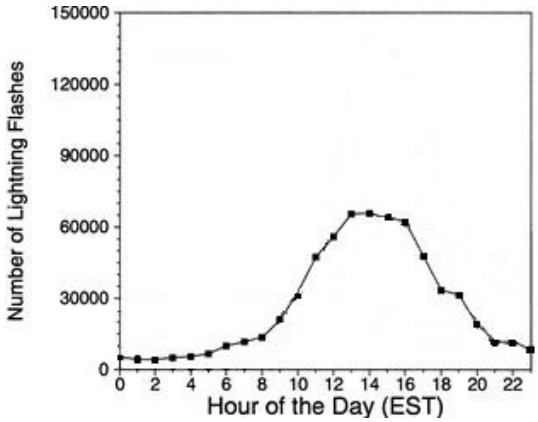


Figure 23: Lightning Flashes by Hour for ridge to the south[1]

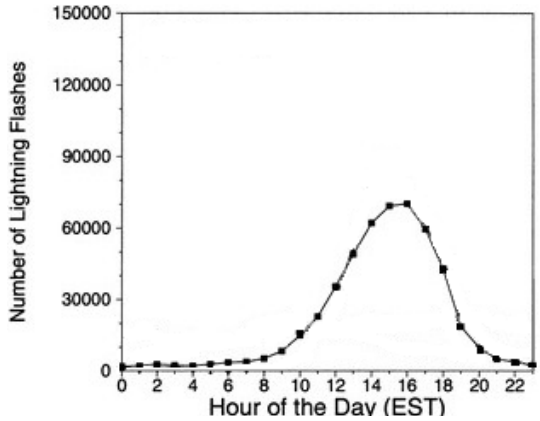


Figure 6: Lightning Flashes by Hour for ridge between Miami and Tampa Bay[1]

In summary, the position of the surface ridge plays an important role in the location and timing of thunderstorms across the Florida peninsula. When the ridge is north of the Tampa Bay area and the overall flow is from the southeast to south, the west coast of Florida sees the most thunderstorms. Meanwhile, when the ridge is south of the Tampa Bay area and the flow is generally from the southwest, there is less convection along the west coast with the majority of the storms occurring along the east coast. Of course, none of this matters if there isn't enough moisture in the atmosphere for thunderstorms to develop, but maybe this will help you better understand when and where thunderstorms could occur the next time you see or hear a meteorologist talk about the surface ridge or ridge axis.

[1] Todd P. Lericos, Henry E. Fuelberg, Andrew I. Watson, and Ronald L. Holle, "Warm Season Lightning Distributions over the Florida Peninsula as Related to Synoptic Patterns", Weather and Forecasting 2002 17:1, 83-98, [http://journals.ametsoc.org/doi/abs/10.1175/1520-0434%282002%29017%3C0083%3AWSLDOT%3E2.0.CO%3B2]

Thank You to all!

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