Suncoast Weather Observer

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National Weather Service and Emergency Management Team-up to Support the 2009 Super Bowl XLIII

By: Brian LaMarre

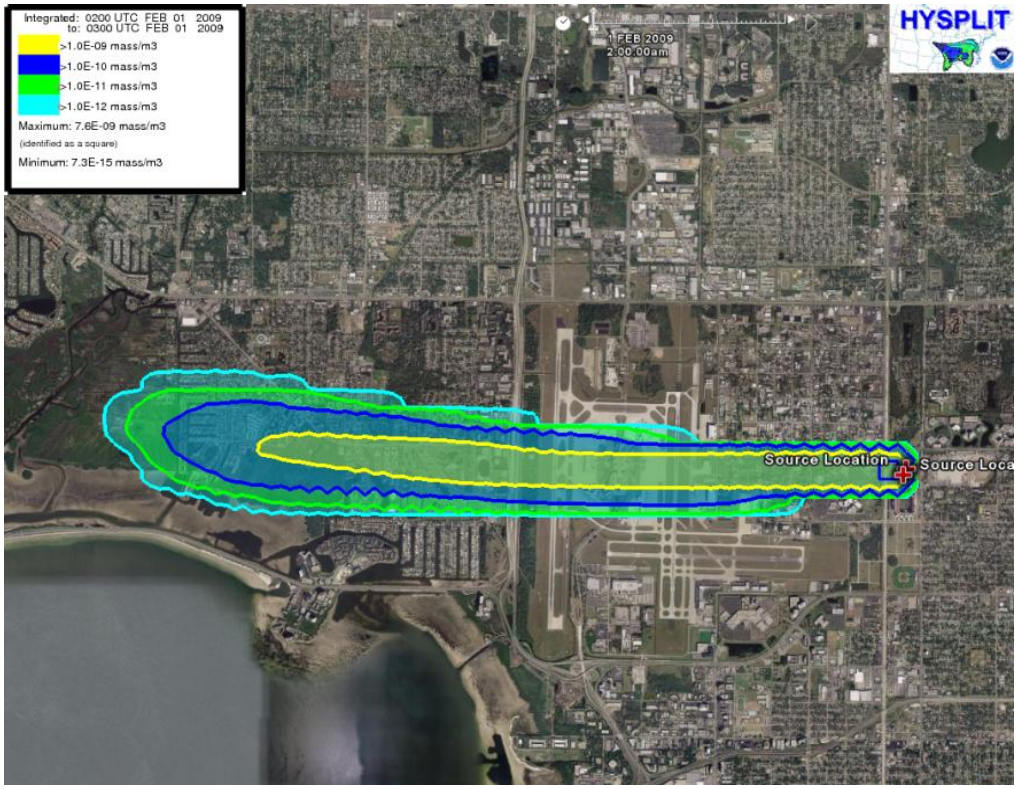
SUPER BOWL XLIII

TAMPA BAY 02.01.09

The National Weather Service (NWS) Tampa Bay Area office provided onsite, decision support services for Super Bowl XLIII—a National Special Security Event. The NWS team of emergency response meteorologists served as "technical specialists" in the Tampa, FL Super Bowl XLIII Emergency Operations Center (EOC). In an effort to maximize participation, the NWS team

operated a rotating schedule in the EOC from January 26 through February 1, 2009. During emergency response activities, operations are executed following FEMA's Incident Command System (ICS) structure. As part of an extensive office training plan, the NWS team completed a rigorous set of ICS courses enabling the office to secure a significant role in Super Bowl XLIII EOC.

In addition to the onsite decision support services provided by the team, daily and event-driven Incident Action Plans were developed that included weather forecast information and graphical HYSPLIT dispersion forecasts in the event of a hazardous chemical release or other high-impact event. The HYSPLIT dispersion model runs were provided in close collaboration with NOAA's Air resources Laboratory, NOAA's National Operations Center, and the Interagency Modeling and Atmospheric Advisory Center. "This was an excellent opportunity for the National Weather Service to collaborate with emergency management officials in support of the Super Bowl," said Brian LaMarre, Meteorologist-in-Charge (MIC) in Tampa. "The onsite decision-support services provided by our team of meteorologists helped ensure the safety of all those involved in this prestigious national event."



An example of a NOAA HYSPLIT dispersion forecast created by NWS emergency response meteorologists.

The population of the Tampa Bay region is about 2.7 million residents, with more than 330,000 of them living in Tampa. On February 1, Super Bowl XLIII was held in Tampa's Raymond James Stadium, which has a maximum capacity of just over 74,000. As this year's event was expected to draw more than 100,000 visitors to the area, the need for accurate, up-to-the-

minute weather information became crucial to local decision makers. “Tampa Fire-Rescue was glad to help the Bay area prepare for a safe and successful Super Bowl experience,” said Tampa Fire Chief/Emergency Manager Dennis W. Jones. “Working with the National Weather Service and all our partners in the emergency management and public safety community, we were hoping and working for the best, but planning for the unwelcome and unexpected.”

The Tampa team included MIC Brian LaMarre; WCM Dan Noah; Science and Operations Officer Charlie Paxton; Senior Meteorologists Rick Davis, John McMichael, Michael Cantin, Paul Close, Nick Petro; and Meteorologists Jennifer Colson and Ernie Jillson.

NWS Forecasters Mike Cantin (left) and Paul Close monitor radar and lightning detection systems at Tampa Emergency Operations Center during Super Bowl Week.

2009 Hurricane Season Outlook

By: Ryan Sharp

Hurricane forecasts continue to improve as models take advantage of faster computers and more knowledge of the inner workings of hurricanes. As such, the amount of lead time before a storm strikes as well as the error in track forecasts gets

better each year. The hurricane seasonal forecast, recently issued by NOAA's Climate Prediction Center, calls for near normal activity, with 9-14 named tropical storms, 4-7 becoming hurricanes, and 1-3 of those becoming major hurricanes.

While those numbers are below the amount of storms that developed the past two seasons, do not take comfort. It only takes one single hurricane to cause a major disaster in your area. There are still preparations that must be made by everyone well ahead of time, such as developing a family disaster plan, so that when a storm approaches the impact to life and property can be minimized. The main elements needed within this plan include creating a disaster supply kit, having a place to go if necessary, securing your home from the hazards a hurricane brings, and having a plan for your pets. For more information on creating this plan, please refer to the websites listed at the end of this article.

Storm Surge Information Changes

New for this year, the National Hurricane Center (NHC) will no longer tie down surge threat with the Saffir/Simpson Hurricane Scale. Storm Surge comes in too many "flavors" to be tied down with the traditional wind levels. Hurricane Charley was a Category 4 hurricane when it made landfall, but the storm was so small and had spun up so rapidly that it had surge more associated with a Category 1 hurricane. Hurricane Ike from last season was only a Category 2 at landfall, but the surge area was so large, that forecasters knew Category 3 type surge would move ashore. Your NWS office will work with the NHC and county emergency management officials to ensure that coastal residents are informed of any threat from storm surge. Make sure and heed mandatory evacuation orders as they may in fact save your life!

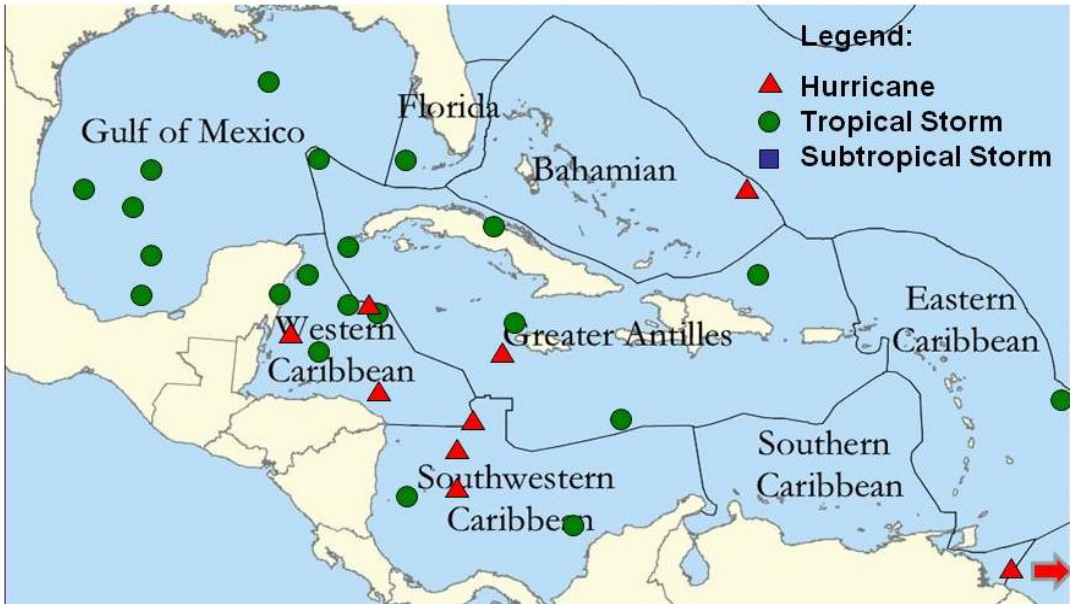
Another change to the storm surge program will be in the way surge information is described in products issued by the NHC. This year, look for the products to describe amount of inundation expected in coastal communities. In years past, storm surge was referred to as feet above normal astronomical tide levels. This year, NHC advisories will specifically talk about how many feet above ground level the water will rise along the coast as well as how far inland the storm tide could penetrate.

Local Storm Climatology

According to records back to 1901, the west and southwest coasts of Florida get a landfalling tropical storm or hurricane every 2 to 3 years. The return period for a hurricane making landfall is once every 10 years. During the first half of the season, in the months of June through August, should a system move ashore, it is far more likely to be a tropical storm. The only exception during that period was when Hurricane Charley made landfall near Punta Gorda in August of 2004.

The activity for our side of the state heats up in the second half of the season, with more than 70% of all landfalls occurring from September through November. This period is also the main time for hurricanes to make landfall. The primary development region for hurricanes that eventually make landfall over west central and southwest Florida is over the Western Caribbean.

Formation Points for Hurricanes/TS Hitting the FL West Coast from the Gulf
September-November, 1901 through 2008



Atlantic Basin Storm Names for 2009

Ana	Larry
Bill	Mindy
Claudette	Nicholas
Danny	Odette
Erika	Peter
Fred	Rose
Grace	Sam
Henri	Teresa
Ida	Victor
Joaquin	Wanda
Kate	

Websites for protecting your home and developing your action plan

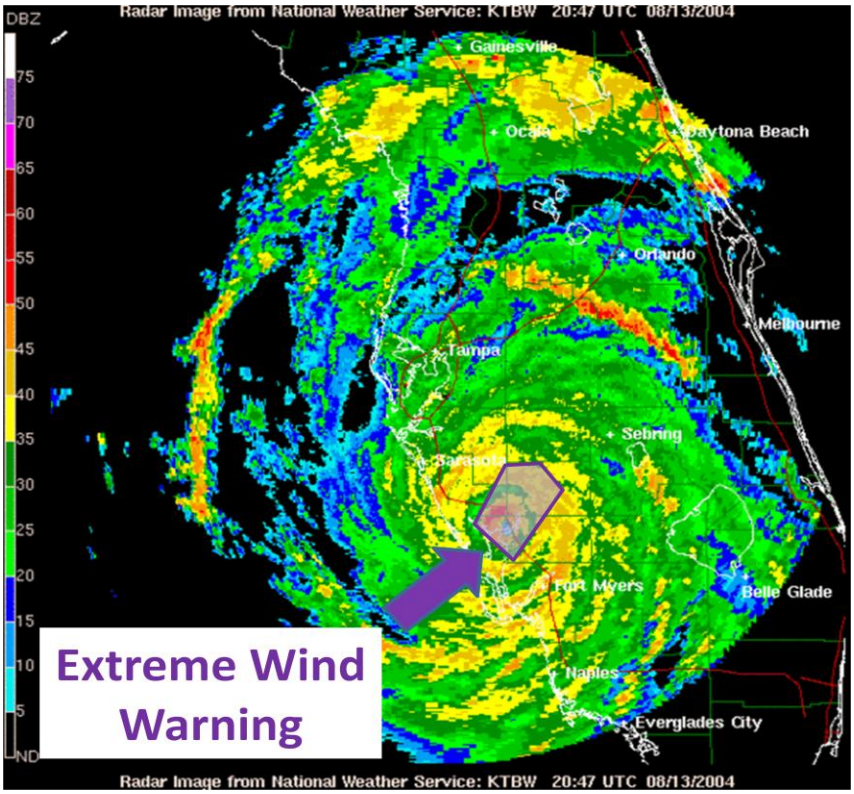
http://www.flash.org
http://www.floridadisaster.org/publicmapping/index.htm
http://www.nhc.noaa.gov/haw2/English/action.shtml

The Extreme Wind Warning

By: Ryan Sharp

Imagine you are in Punta Gorda in August of 2004. Your area is under a hurricane warning as Hurricane Charley is approaching the west coast of Florida, but the National Hurricane Center's forecasted "skinny black line" has the eye headed towards Tampa Bay, so you are not concerned. If you've turned off your sources of information, TV and radio media, then you would have missed the fact that the storm was taking a turn toward you and you might also have missed the news that it had strengthened to a category 4 hurricane with maximum sustained winds of 145 mph right around the center!

If a similar situation arises in 2009, forecasters at the National Weather Service have one last chance to warn you. It is the Extreme Wind Warning product. This product will activate your NOAA weather radio, if it's either on or put on standby, with an alert similar to when we issue a Tornado Warning. It will only be issued for areas that are within the eyewall of a major hurricane making landfall. When issued, it notifies the warned area that it is imperative to take immediate actions to protect yourself and your family, by moving to a safe room in a reinforced interior room away from windows. The majority of wind deaths are caused from wind-blown debris, causing blunt force trauma. By being in an interior room, under some kind of sturdy structure or mattress, you will have the best chance of being protected from such debris.



Example of a warning polygon that would have been used for Hurricane Charley as it made landfall near Punta Gorda, FL.

Spring 2009 Office Makeover

By: Charlie Paxton

With spring in the air, so were thoughts of spring cleaning. We took it to the extreme in early April though with a complete operations makeover! This had been in the works for a long time and the results were fantastic. Everyone in the office joined in! We tore old carpet off the walls then painted the walls a soothing color, and moved workstations. We included space for a media center and a decision support area. We hung five television/computer monitors on the wall to make up our new situation awareness display. Forecasters can now monitor up to 5 television stations or switch to web pages or to our operational Advanced Weather Interactive Processing System display. The display flexibility is terrific and keeps us in the loop.

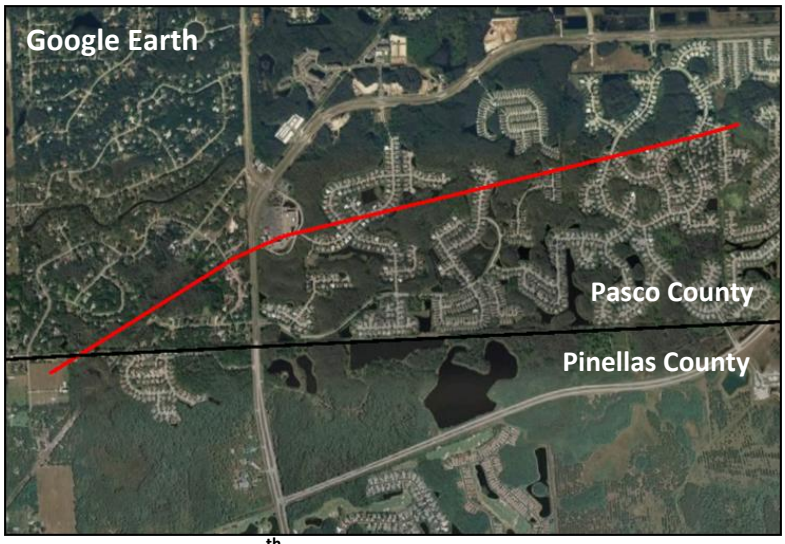
From left to right: Jen Colson, Tom Dougherty, Nicole Carlisle, Rick Davis.

The Operations area from another angle.

Active Late Spring for Tornadoes

By: Jennifer Colson

A few potent late season cold fronts pushed through the area this spring and brought with them some severe weather including three tornadoes. The first of these tornadoes occurred on April 14th, 2009. The tornado touched down at 8:28AM in extreme northern Pinellas County and moved northeast into Pasco County, finally lifting at 8:33AM. The tornado reached EF1 strength with winds estimated at 95mph, and left a 2.3 mile path of damage. Nearly 60 homes along the path received damage and numerous trees were snapped or uprooted. A map of the tornado's path is below.



April 14th, 2009 Tornado Damage Path

The second and third tornadoes that occurred happened on consecutive days as a stalling cold front slowly moved through the area. On May 12th, 2009 at approximately 5:00PM an EF0 tornado briefly touched down in Lakeland. Damage from this tornado was minimal with a path length less than 1 mile, and wind speeds were estimated at 85mph. Another EF0 tornado touched down the following day, May 13th, at 6:33PM in Temple Terrace. Damage along the 1 mile long path was limited to mostly snapped and uprooted trees, however one uprooted tree fell on a house and caused significant damage to the structure. Winds were estimated at 80mph with this tornado. A map of the approximate path is below.

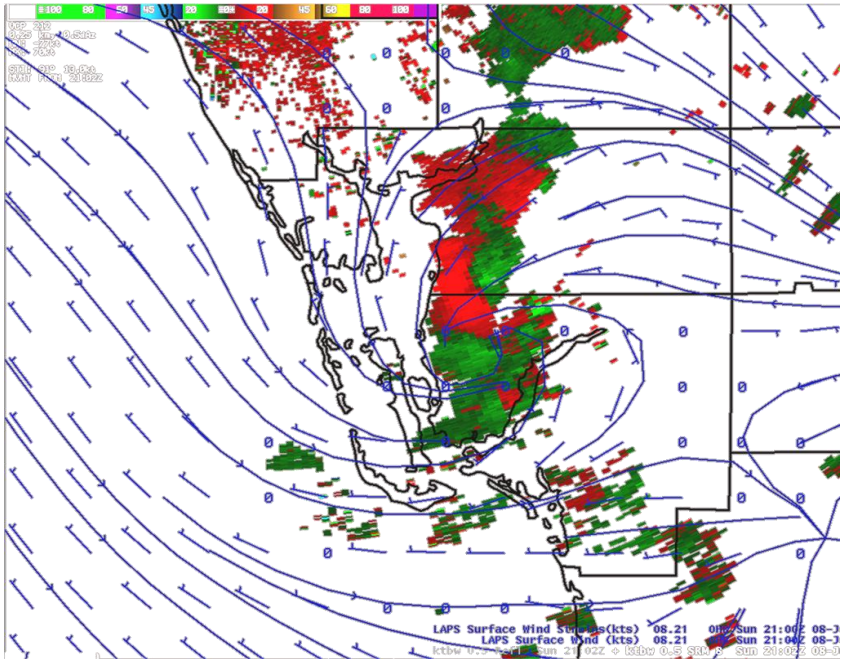
May 13th, 2009 Tornado Damage Path

Storm surveys for these tornadoes were conducted by Dan Noah, Mike Cantin, Jennifer Colson, Anthony Reynes, and Nicole Carlisle.

Southwest Florida Warm Season Tornadoes

By: Charlie Paxton

Charlie Paxton and Dan Noah teamed up with Professor Jennifer Collins and her student Alicia Williams from the University of South Florida Department of Geography to examine prediction and warning for warm season tornadoes. Tornadoes developing near the complex coastline of urban Lee and Charlotte counties in southwest Florida are often a challenge. Many of the tornadoes reported over southwest Florida develop as waterspouts and move onto the densely populated land area causing damage. Most of the warm season tornadoes that develop over southwest Florida are EF0 or EF1 on the Enhanced Fujita Scale but occasionally pockets of EF2 damage occur. Serious injuries and deaths are rare but property damage is often high – up to $2.5M. The four warm season cases examined show striking similarities in tornado development. These cases are under predominately easterly flow with significant convective development during the afternoon and evening. Southeast flow and gulf coast sea breeze development interact with local geography to create a cyclonic mesocirculation. This circulation leads to more predictable boundary collisions and enhanced convection with strong updrafts capable of supporting brief non-supercell tornadoes. The next step in this research is to investigate the process more thoroughly. This includes finding other similar tornado cases over Lee and Charlotte counties and also finding null cases where the pattern did not produce tornadoes. Then, the Weather Research and Forecasting model (WRF) will be utilized to examine moisture transport, stability profiles, and wind profiles. An understanding of these cases will lead to enhanced forecasting potential for operational meteorologists.



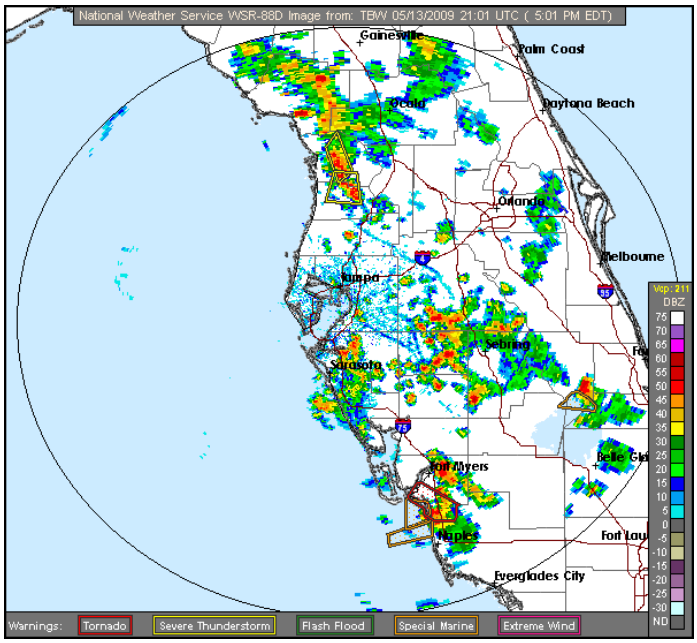
Typical cyclonic circulation that precedes tornado development over southwest Florida.

Descriptive Terms for Rain Chances

By: Ryan Sharp

For those of you who are very familiar with our public weather products, you may notice a subtle change in the wording used to describe our rain chances between the summer and the winter seasons. During the summer months, you will see more phrases like “Isolated showers” or “Scattered showers and thunderstorms”. During the winter season, phrases such as “Slight chance of showers” or “Chance of showers and thunderstorms” are more common. So what is the difference? The latter set of terms refers to uncertainty. Cold fronts that make it down to Florida in the winter sometimes have rain ahead of them, but other times they can be dry. The forecaster will use all available computer models to determine what kind of certainty they have for issuing their rain forecast. The descriptive terms we use in the office during this time of year, ranging from least chance for rain to highest (with probability ranges in parenthesis), are “slight chance” (10-20%), “chance” (30-50%), “likely” (60-70%), “definite” or just “showers/storms” (80-100%).

The other set of terms refers to areal coverage. When moisture is present here in Florida during the summer, which it often is, the question is no longer about the certainty of development of showers and storms, but instead how many showers and storms we will get. Thus instead of using uncertainty to describe the rain chances, the forecaster use the following areal descriptors, with the wording again ranging from least coverage to greatest (with ranges in parenthesis): “isolated” (10-20%), “scattered” (30-50%), “numerous” (60-70%), and “widespread” (80-100%). An example image from our radar taken from mid May, shown below, is what we would consider scattered showers and thunderstorms.



Scattered showers and storms across our region as the rainy season got off to an early start.

Lightning Safety Week 2009

By: Jennifer Colson

With the summertime rainy season about to begin and summer outdoor activities in full swing, it is important to remember that West-Central Florida is the lightning capitol of North America. Lightning is one of the nation's deadliest weather phenomena. The state of Florida alone averages 10 deaths and 40 injuries each year from lightning strikes.

Lightning can strike up to 10 miles away from where it is raining. If you can hear thunder then you can be struck by lightning. The best way to protect yourself from being struck is to get indoors immediately when you hear the first rumble of thunder, and then remain indoors for 30 minutes after you hear the last rumble of thunder. Most victims are struck "out of the blue" from either the first or last lightning strike of a storm.

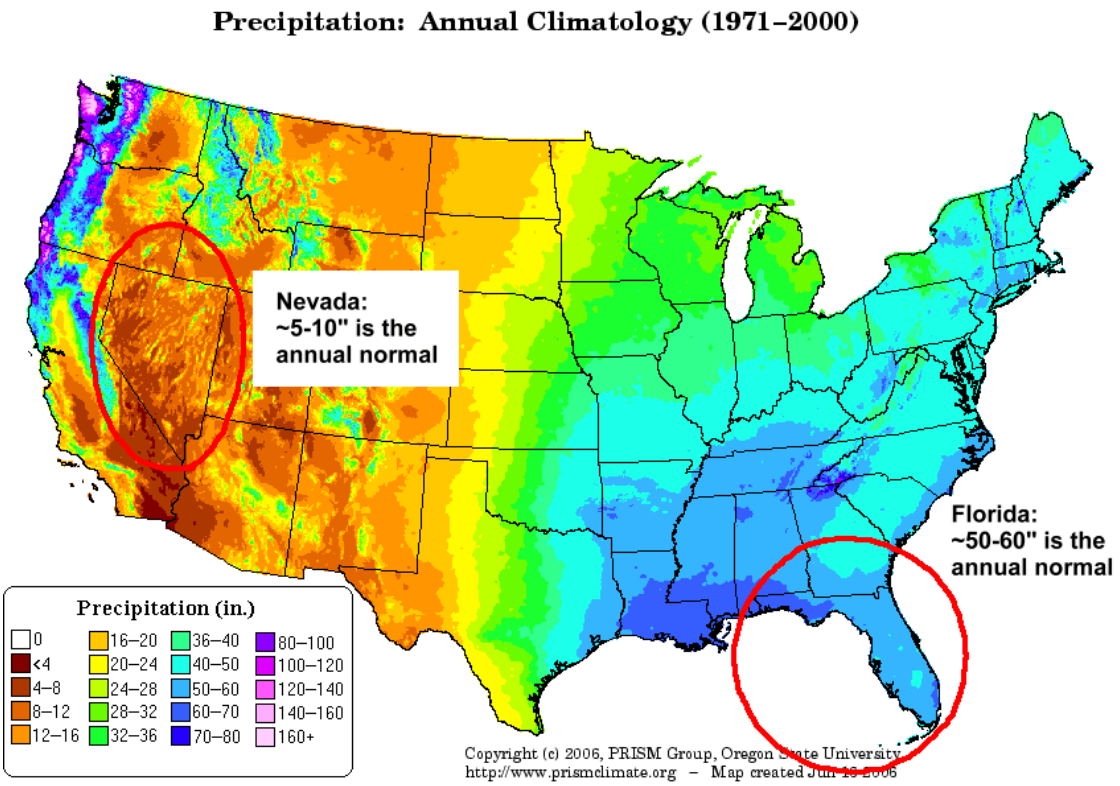
Lightning Safety Awareness Week is June 21st-27th, 2009. For more information on how to protect yourself from this deadly weather phenomena both indoors and outdoors, please visit the following website: http://www.lightningsafety.noaa.gov/

When Thunder Roars, Go Indoors!

What is a Drought?

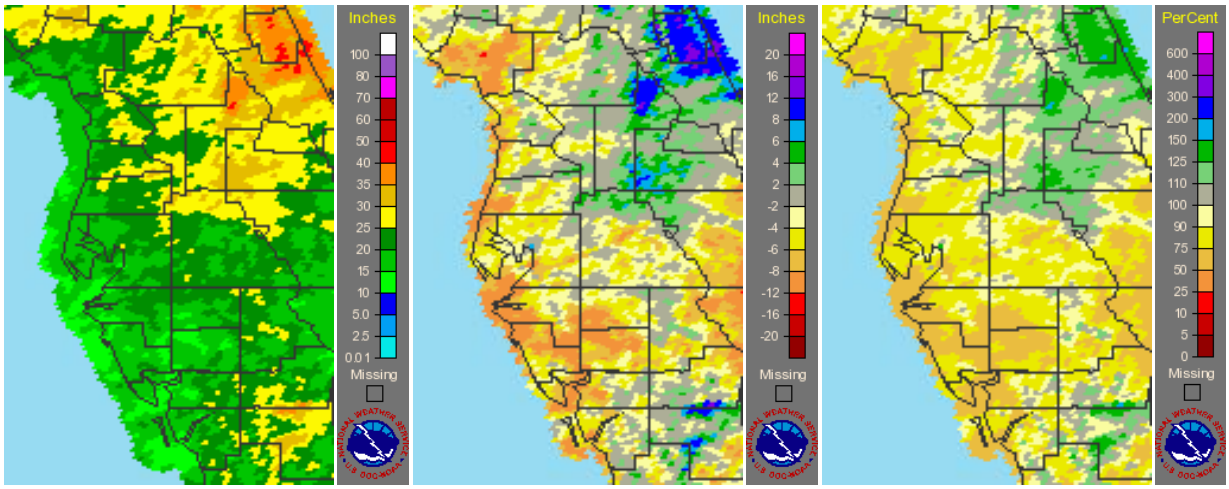
By: Paul Close

A drought is defined as a persistent and abnormal moisture deficiency having adverse impacts on vegetation, animals, or people. Droughts span an enormous range of time scales, from short term "flash droughts" that can have major agricultural impacts to multi-year or even decadal droughts (1930s, 1950s, etc.). There is even historical evidence from such things as ice sheets, tree rings, sediment, and rocks that suggests over the last 1,000 years parts of the U.S. have experienced "mega-droughts" that persisted for decades. As an abnormal moisture deficit, drought is typically measured against a benchmark, such as a thirty-year average of precipitation, or so-called normal.



Using this as a benchmark it is clear that the hurdle for reaching an abnormal deficit leading to the onset of drought differs substantially from one region to another. For example, looking at the graphic above, we can see that 50 percent of normal rainfall over 12 months would be a notable drought in Florida, while the same percent of normal in Nevada might only be unusually dry. Also, when considering the spatial extent of drought, it is important to recognize the high variability in the severity of drought that can occur over a short distance, due to terrain, weather patterns, and other effects. This underscores the need for good observations at the highest possible spatial resolution down to the county or even sub-county level.

So let's take a look at our area, West Central and Southwest Florida. During the last several months many areas have seen below normal rainfall, but thanks to the scattered to numerous thunderstorms during mid May into early June, the departures are not nearly as much as they could be. We can see in the images below that since last October we are still in a rainfall deficit of more than 8 inches in some locations or less than 75 percent of normal.

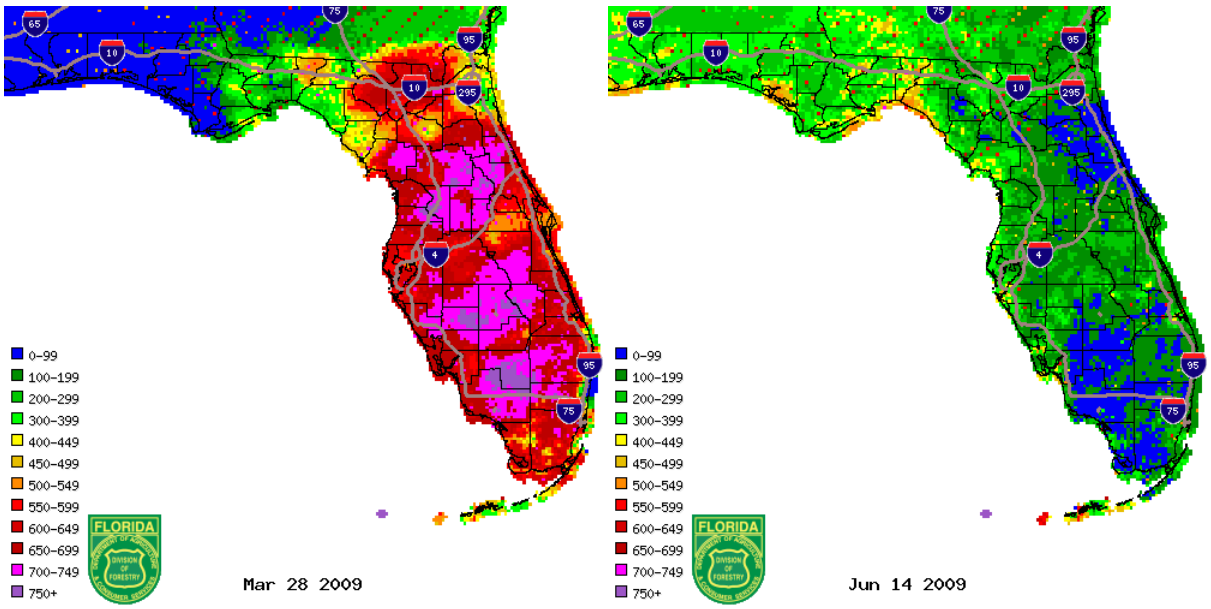


Total Rainfall
Oct '08-Jun '09

Departure from Normal
Oct '08-Jun '09

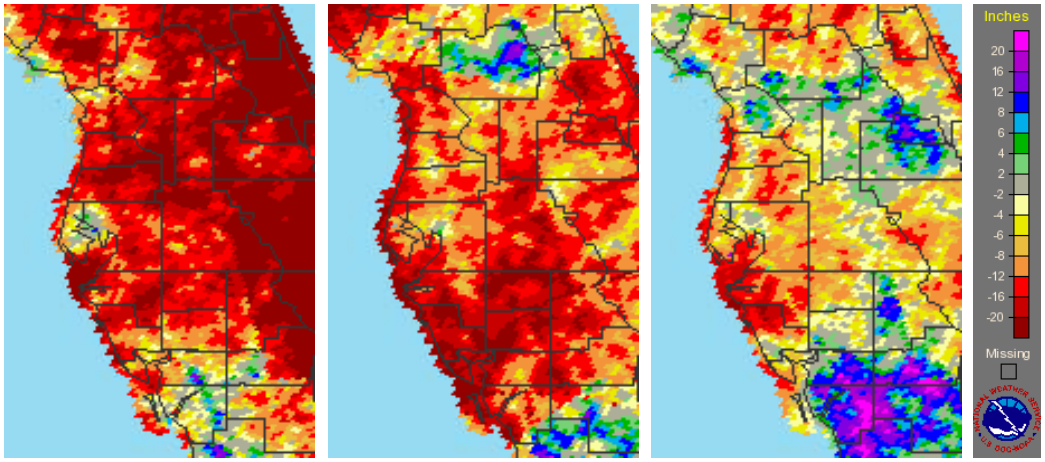
Percent of Normal
Oct '08-Jun '09

This is not to say that the rainfall in May and early June didn't help. It has brought an end to the short term drought effects by improving soil moisture substantially which has been good for the lawns and other plants. This improvement can be shown by looking at the Keetch-Byram Drought Index (KBDI). This index gives an indication of the dryness of the soil and surface fuels. It uses a scale that ranges from 0 (no moisture deficit) to 800. High values of the KBDI are an indication that conditions may be favorable for the occurrence and spread of wildfires. As seen below in the images provided by the Florida Division of Forestry, the KBDI values over most of West Central and Southwest Florida have now fallen below 300, an enormous improvement from just a few months ago when conditions were at their worst in late March.



Keetch-Byram Drought Index (KBDI)

However, as mentioned this improvement is only in the short term. If we look further back we can see in the images below that for the last few years we have had below normal rainfall each year across a good portion of the area. Some places across West Central Florida are now one to two feet or more below normal for the three year period, while others across Southwest Florida are only a few inches below normal to even few inches above normal.



2006 **2007** **2008**

Rainfall Departure from Normal

Therefore, even though it may seem like we are out of the drought, thanks to the abundant rains last month, we still have a long way to go to make up for the last three years of rather dry weather.

For more detailed information about Droughts visit the U.S. Drought Portal at http://www.drought.gov

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Thank You to all!

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