National Weather Service
Tallahassee, Florida

In this newsletter:

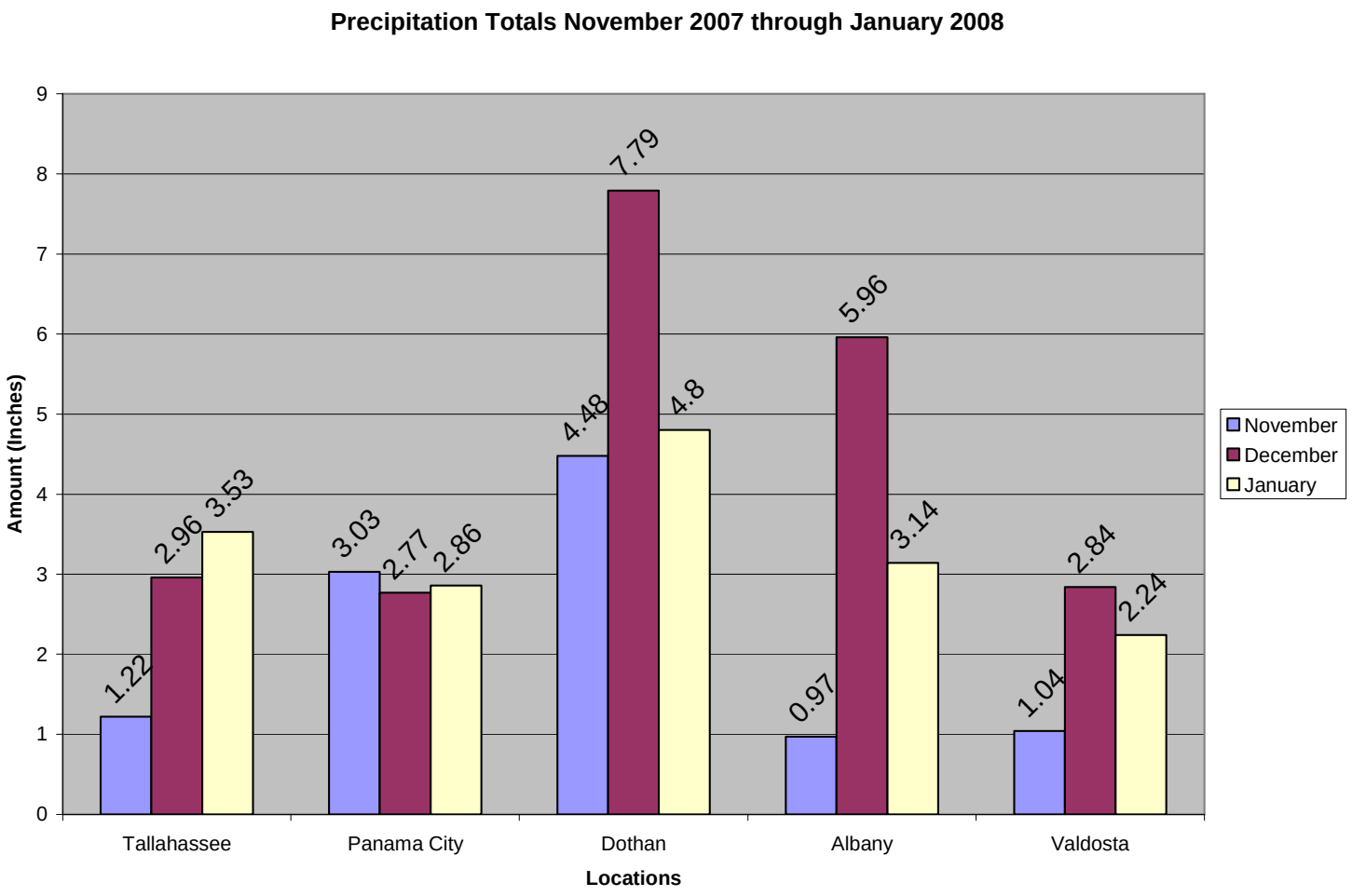
- How has La Nina affected our weather this winter?
- Upcoming Severe Weather Season
- How you can check severe weather threats in your area

La Nina and its affects on our weather

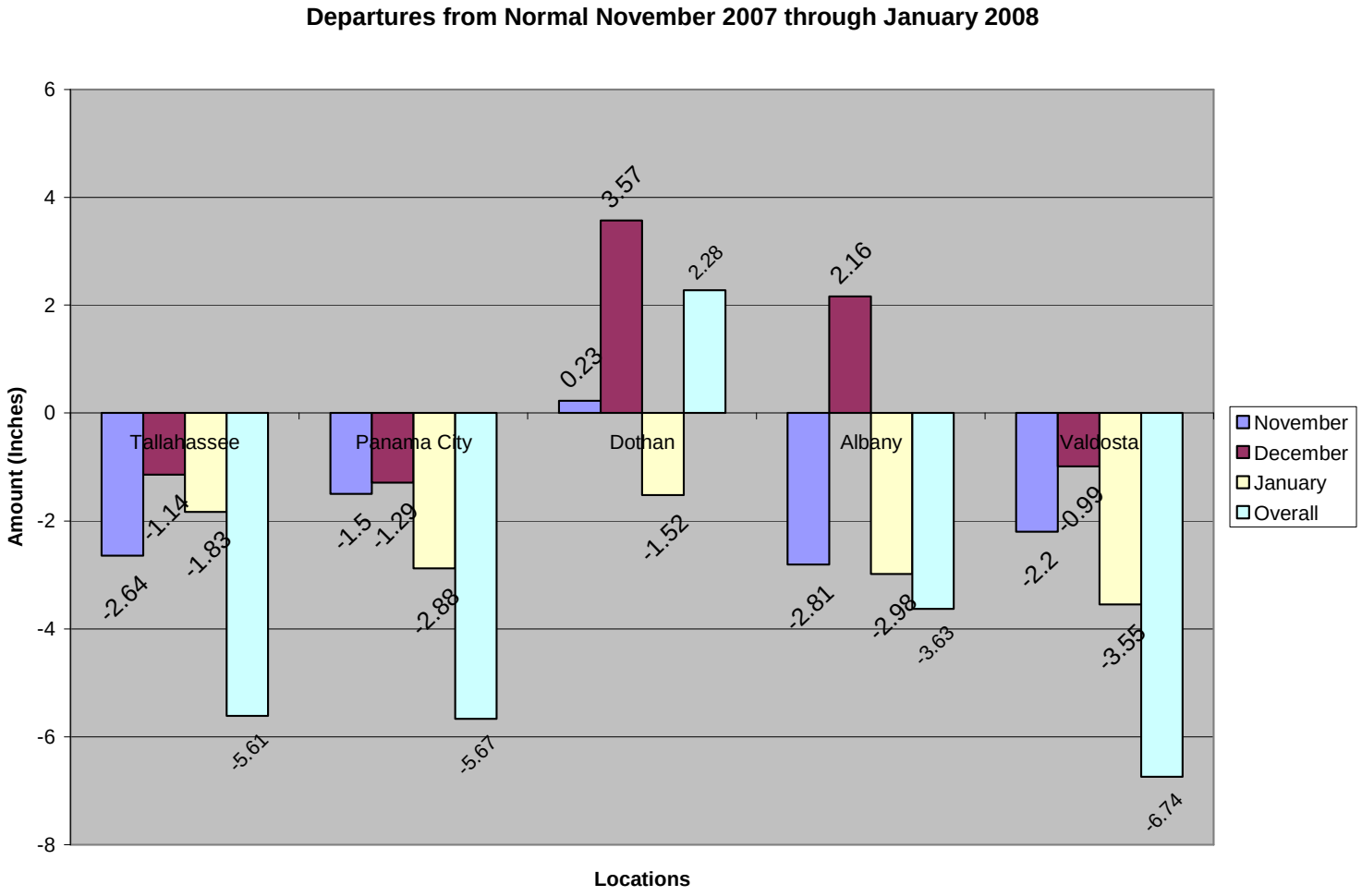
As we discussed in our November spotter letter, La Nina is associated with a circulation pattern known as ENSO, or the El Nino Southern Oscillation. ENSO takes place in the equatorial Pacific and consists of three distinct phases, El Nino, Neutral, and La Nina. These phases oscillate on a three to seven year cycle. El Nino or La Nina can be diagnosed by examining sea surface temperatures along the equator in the Pacific Ocean. When these sea surface temperatures are below normal for a period of time, a La Nina event occurs. Conversely, warmer than normal sea surface temperatures create an El Nino.

The National Weather Service's Climate Prediction Center monitors and analyzes trends in ENSO. In their latest report, they state that a moderate La Nina continues to occur in the Pacific and the latest models predict that this moderate La Nina will continue through early April before transitioning to a weak La Nina as we head into the summer months. With this expected pattern, the Climate Prediction Center is indicating the potential for below average precipitation across the Southern United States, particularly in the Southeast. This pattern will also favor slightly above normal temperatures in the Southeast.

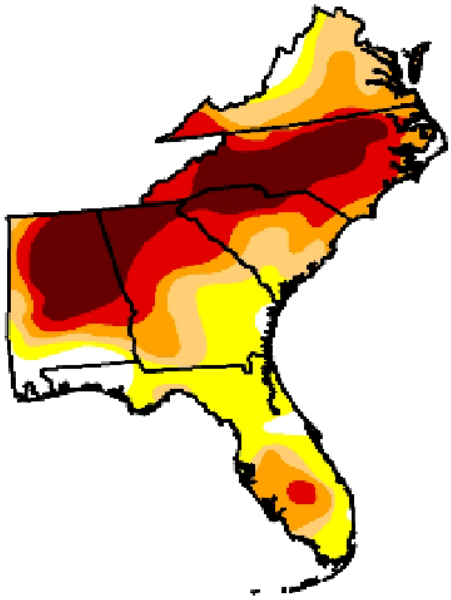
In November, we looked at several past La Nina events dating back to 1955. The majority of these events produced below normal precipitation during the winter months. This month, we are going to look at our winter precipitation totals through the end of January as well as examine trends in the drought across our region.



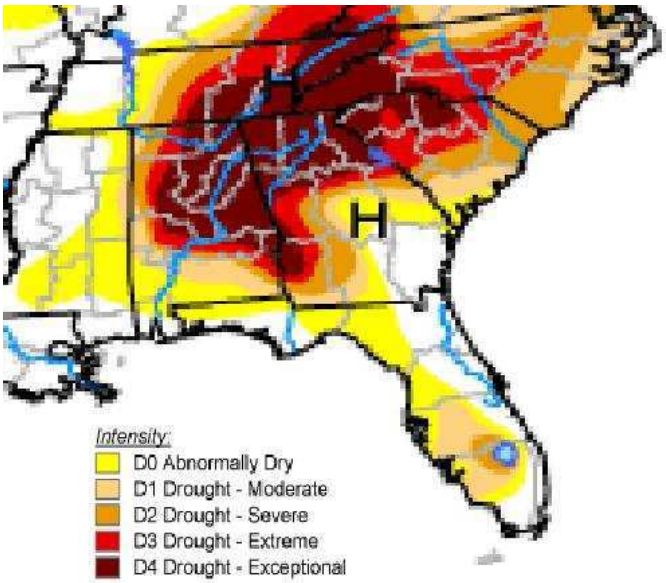
The chart above shows monthly precipitation for five sites across our region. Notice how December (dark red) at nearly all sites features higher precipitation. The chart on the next page will show departures from normal for the same time period. For these three months, only one site, Dothan, Alabama, reported above normal precipitation. In the chart on the next page, the light blue bar represents the total departure from normal for the three month period November through January. The surplus total at Dothan, compared to the deficits at the other four sites is likely due to many of the storm systems moving through our region and weakening by the time they moved into Southern Georgia and North Florida.



Even though the below normal precipitation was seen at almost every site in our forecast area, the drought conditions have only marginally improved in the east, but have shown more improvement in the west. On the next page, you will see the latest drought map for the southeast. The drought map from early November is included for comparison.



Drought Map for January 29, 2008



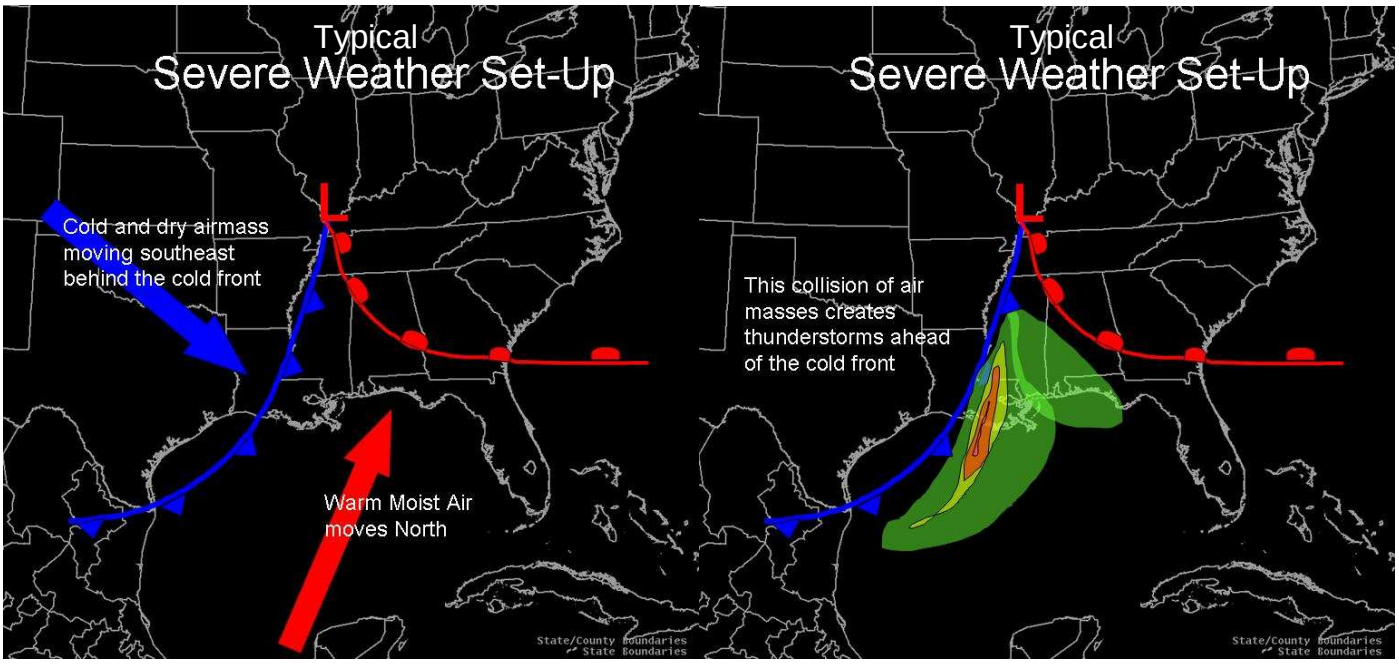
Drought Map for November 1, 2007

As you can see in the images above, the drought situation in Southeast Alabama and the Florida panhandle has improved considerably with portions of these regions no longer being analyzed in a drought.

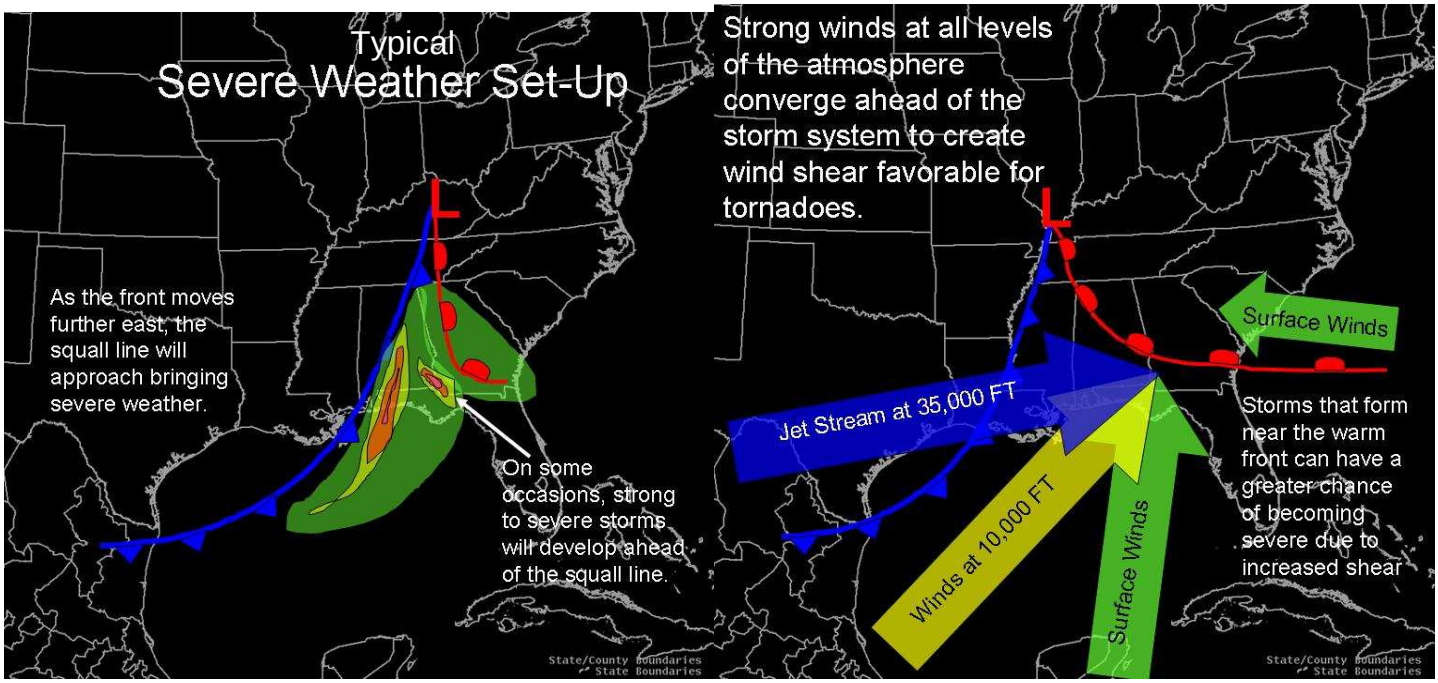
With continued below normal rainfall expected through the spring months, drought conditions may worsen again and lead to a particularly dangerous fire weather season, similar to what was observed in South Georgia in Spring 2007.

Upcoming Severe Weather Season

As we move into early February, it is time once again to focus on the upcoming severe weather season in our region. What makes this time of year prone to severe weather? Typically, it is this time of year, through early April, when strong cold fronts move through the southeast bringing the potential for severe weather. The next few graphics will help illustrate what makes this time of year favorable for severe weather.



In the graphics above, the approach of a low pressure system is drawn. Typically, for a widespread severe weather event in our region, we need the surface low to be no further north than the Ohio River. Showers and thunderstorms (darker colors) will develop ahead of the cold front as warm moist Gulf air surges northward. These storms will likely form into a squall line ahead of the front creating the threat for damaging straight line winds and tornadoes.



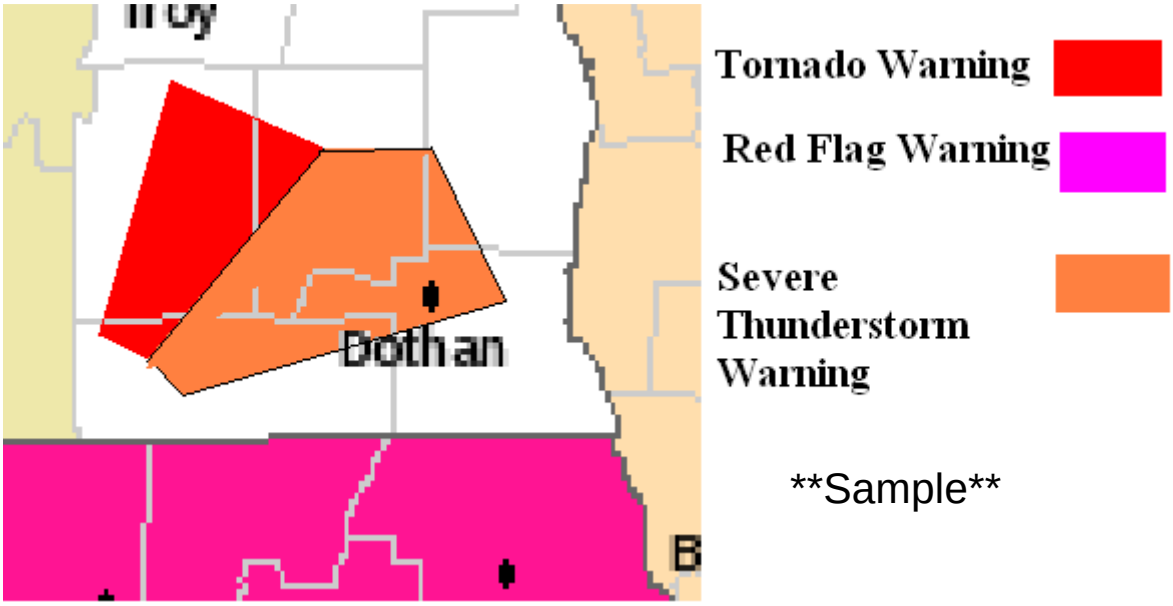
As the storm system moves further east, the squall line will approach our region. In some instances, storms will form ahead of this line and become strong to severe. The proximity of the warm front (red line with half-circles) enhances the possibility of these storms to become tornadic. In fact, it is believed the proximity of a warm front helped generate the tornado that eventually affected Enterprise, Alabama on March 1, 2007. The panel on the right indicates winds at all levels of the atmosphere. North of the warm front, surface winds may be blowing from the east, whereas south of the warm front, the surface winds will be from the south. As you head higher into the atmosphere, the winds begin to shift to southwest and then to west. This turning of winds with height creates wind shear, which is a necessary component for thunderstorms to become severe. The strength of the winds as you rise through the atmosphere, affect the magnitude of the wind shear. The greater the magnitude of the wind shear, the higher the probability of severe weather.

If you recall from your spotter training, the four necessary characteristics for severe weather are: lift, moisture, wind shear, and instability. One thing we have not yet discussed is the factor instability plays in the development of severe weather. First, what is instability? You may read in our discussions from time to time about an unstable or stable atmosphere. For severe weather you need an unstable atmosphere. To achieve this, you need to have warm temperatures and plenty of moisture. In many instances, we may have three of the four ingredients, but instability is either limited or non-existent. The most recent example of this was on January 31, 2008 when the wind shear was more than sufficient, but instability was very limited.

When looking for severe weather, our forecasters check to see if all four of these ingredients will be present at the same time. On March 1, 2007, all these ingredients came together to produce a major severe weather outbreak. Next month, we will take a look back at that outbreak and what made it so significant.

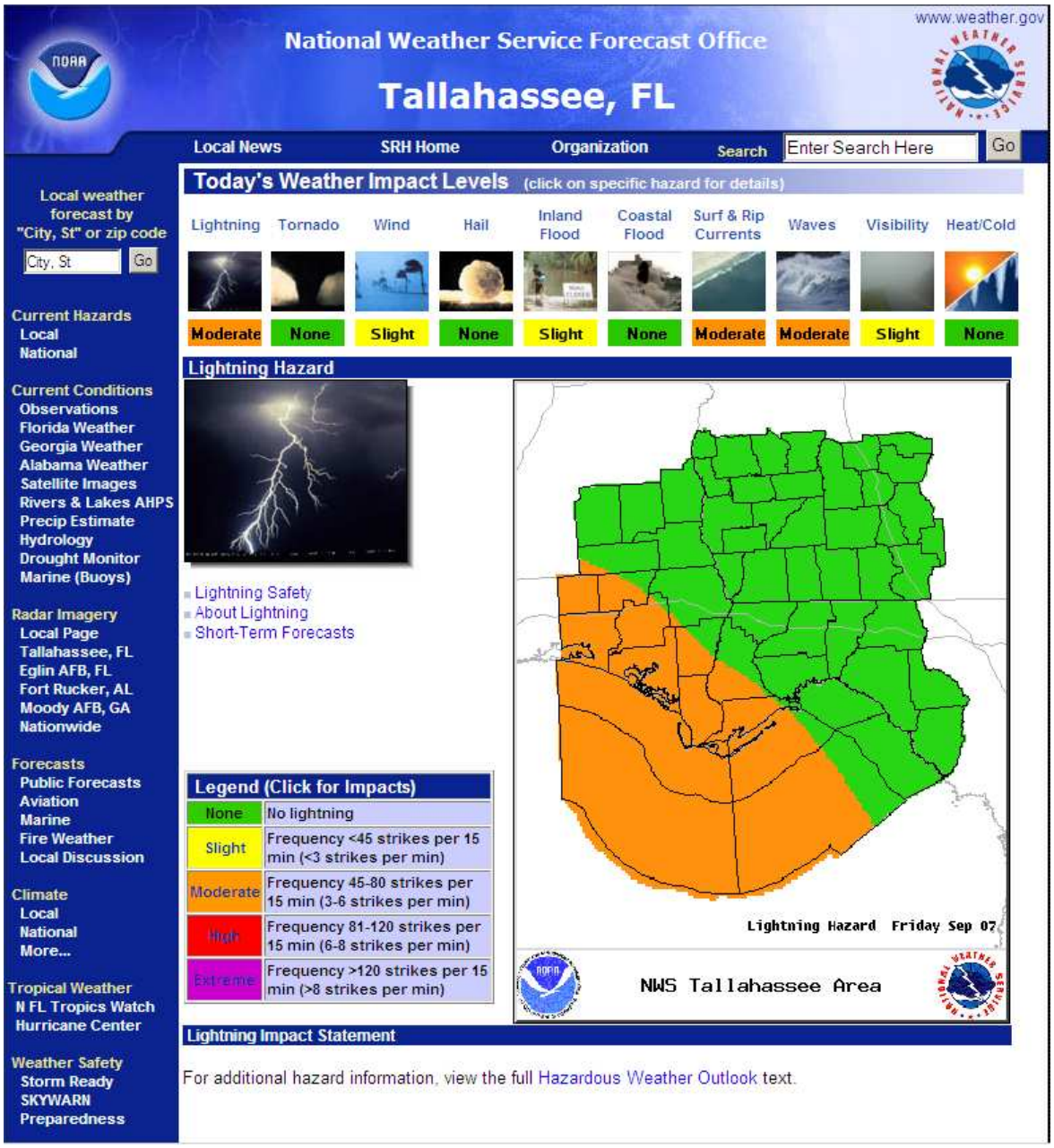
How can you check severe weather threats in your area?

Whenever severe weather threatens, information is a necessity. In October of 2007, the National Weather Service began issuing storm based warnings. These warnings, usually shaped like a cone, will appear on our website main page as well as on our radar site. An example of these warnings appears below.



These polygons now show where the threat exists within a county, compared to just a few months ago when a warning shaded in an entire county.

There are always questions about what threats a storm will bring before it gets to our region. Many of you may remember from your spotter training our hazardous weather outlook product. This product discusses the threat for severe weather over the next seven days. While we still create this product each day, we have added a graphical hazardous weather outlook that illustrates what type of hazardous weather each county in our forecast area can expect for the next 24 hours. On the next page, we'll take a look at this graphical hazardous weather outlook.



This is our graphical hazardous weather outlook main page. By clicking on any of the images across the top of this page, you will get a map that indicates the level of threat for each hazard. Additionally, when you first load the page, the icons across the top indicate the maximum threat for that hazard anywhere within our forecast area. You can find the link to the graphical hazardous weather outlook on our main page, www.srh.noaa.gov/tlh or you can go directly to the graphical hazardous weather outlook at www.srh.noaa.gov/tlh/ghwo.

Finally, one excellent way to ensure you receive all watches and warnings for your area is to have a NOAA Weather Radio on hand. These radios can be programmed to deliver watch and warning information for your specific county. For more information on NOAA Weather radio along with programmable county codes, you can visit our website at :

http://www.srh.noaa.gov/tlh/tlh/nwr.html

Once again I'd like to thank you all for being part of our Skywarn Program. I hope you find these newsletters informative and enjoyable. If you have any comments or suggestions about the Skywarn Program or this newsletter, please contact me at Kelly.Godsey@noaa.gov.

Kelly Godsey
Skywarn Program Leader