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SPECIAL FEATURE: Can It Snow In West Central Florida? A Look Back at the Freeze of January 18-20, 1977

2008-2009 Winter Outlook

By: Paul Close

At the present time sea surface temperatures across the eastern and central Pacific are about neutral. The climate prediction center is expecting these conditions to continue through the upcoming winter and into early spring 2009.

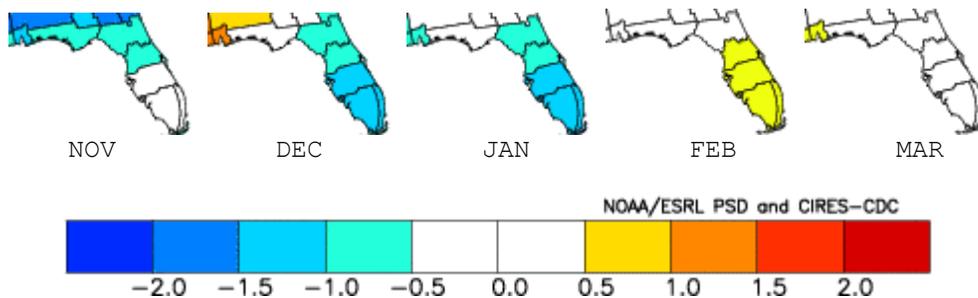
During neutral phases of ENSO (El Niño/Southern Oscillation), the details for such things as temperature and rainfall can be highly variable. Research over the years has shown that the impact of other oscillations such as the North Atlantic Oscillation (NAO), Arctic Oscillation (AO), Pacific-North America Oscillation (PNA), and the Madden-Julian Oscillation can play a major role in the weather across Florida during the winter and early spring. They can act to enhance or suppress the impact of ENSO, or cause extreme variability in the weather across Florida.

So what does this mean for west central and southwest Florida this winter?

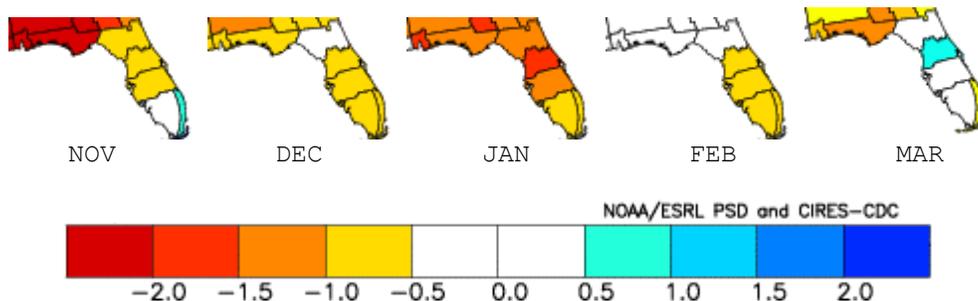
In general, for the winter of 2008-2009 (Dec/Jan/Feb), we are looking for temperatures to be near to slightly below normal with rainfall below normal. However, as mentioned above, conditions from week to week can be highly variable depending on the phase of some of the other oscillations.

If we further dissect these parameters by month and compare the predicted ENSO conditions for the upcoming winter to other similar years since 1950, it appears that most of these winters started out cooler than normal into January, then turned warmer than normal as we moved into February. Rainfall followed a similar track with below normal amounts occurring for most of the winter then returning to slightly above normal in March. Below are composite images for each month during similar ENSO years.

COMPOSITE TEMPERATURE ANOMALIES (°F) FOR SIMILAR YEARS:



COMPOSITE PRECIPITATION ANOMALIES (INCHES) FOR SIMILAR YEARS:



Therefore, it looks like overall we should see rather cool dry weather into January, then milder and slightly wetter conditions could return by March. The last ENSO that had similar neutral conditions was during the winter of 1996-1997.

Residents of west central and southwest Florida should remain informed of potential weather events this upcoming winter and early spring. Stay tuned to local media outlets, NOAA Weather Radio, and our website for the latest weather information.

Wintertime Severe Weather

By: Todd Barron

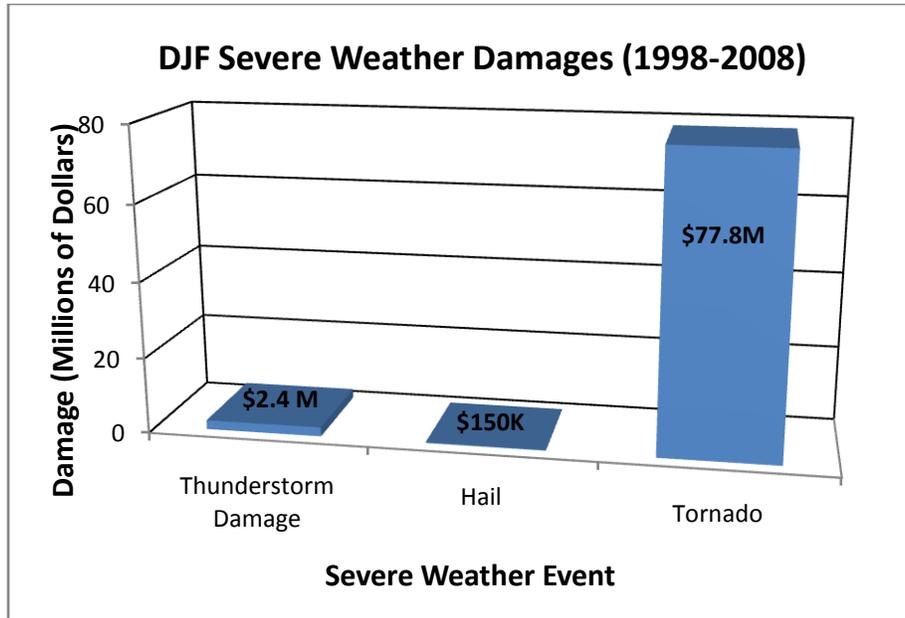
It's no surprise why the Tampa Bay area is a haven to many northerners during the winter. Wintertime in West Central Florida typically brings comfortable temperatures, mostly clear skies, and reduced severe thunderstorm activity.

Summertime thunderstorms around the area are notorious for causing a substantial amount of damage due lightning, heavy rainfall, strong winds, hail, and tornadoes. Fortunately, the region gets a break from the daily threat of thunderstorms during the months of December, January, and February (DJF). This reduction in thunderstorm activity is mostly contributed to the reduction of available atmospheric moisture. Typically during October or November, the Tampa Bay area begins to get hit by stronger cold fronts dropping down from the North. Behind these cold fronts, strong high pressure systems build in and help to filter dry air into the region from the north, which in turn will limit thunderstorm activity. The key word is limits, not eliminates, thunderstorms. On occasion during DJF, southerly flow ahead of a passing cold front will provide enough tropical heat and moisture to generate a line of thunderstorms that can become severe.

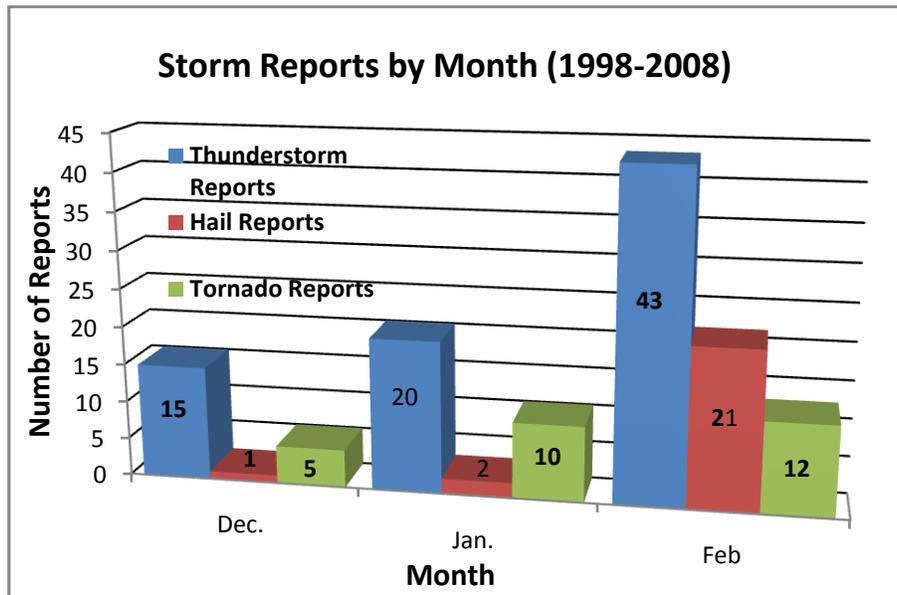
Over the past 10 years, severe thunderstorms during DJF have caused approximately \$80.4 million in property damage across the Tampa Bay Area. Significant damages from wintertime severe weather come from thunderstorm wind damage, hail, and tornadoes. Of these three phenomena, it's no surprise that tornadoes have caused, by far, the most the most property damage of the region (see graph 1). Of the \$80.4 million in damages, over half was from the 2007 Groundhog Day EF-3 tornado that tore through The Villages in Sumter County.

While it's not uncommon for severe weather to strike during any winter month, the month that experiences the most severe weather events (from the past decade) is February (see graph 2). A few factors contribute to why February has seen the most events. The main factor is due to the stronger (colder) cold fronts during the late winter interacting with a seasonally warm and moist tropical air mass. Southerly flow ahead of an approaching strong cold front will typically create this initial air mass. As the two air masses collide, rapid convection along or ahead of the front can occur and produce strong, severe, or tornadic thunderstorms.

While the majority of winter days in West Central Florida will be extremely pleasant, the threat of severe weather still exists. Millions of dollars of damage over the past 10 years has been caused by wintertime severe weather. So when out enjoying Florida's sunny skies during this winter, remember that the weather conditions can turn hazardous quickly. Much like during the summer months, it is advised to try and stay informed about the changing weather conditions through our website, NOAA weather radio, or the local media.



Graph 1: Monetary Damages for Each Type of Severe Weather



Graph 2: Number of Storm Reports for Each Month

2008 Hurricane Season Summary

By: Ryan Sharp

This hurricane season brought about a return to more active and intense tropical cyclones, compared to the 2007 season. The season had a total of 16 tropical storms (above the average of 11 storms per season), 8 storms became hurricanes (average is 6), and 5 of those hurricanes became major hurricanes (average is ~2.5 a year). The table below provides the names for each storm this season as well as the dates each occurred and the maximum sustained wind speed.

The numbers are on the upper end of the range predicted by NOAA's Climate Prediction Center back in May of this year (12-16 storms, 6-9 hurricanes, and 2-5 major hurricanes). The above normal forecast was based on the strong La Nina conditions that had occurred earlier in the year, combined with a longer-term upswing in Atlantic activity based on the multi-decadal scale oscillation.

Storm Name	Dates	Max Wind (1 min., mph)	Storm Name	Dates	Max Wind (1 min., mph)
TS Arthur	5/31-6/1	45	TS Josephine	9/2-6	65
Bertha (Cat. 3)	7/3-20	125	Kyle (Cat. 1)	9/25-29	85
TS Cristobal	7/19-23	65	TS Laura*	9/29-10/1	60
Dolly (Cat. 2)*	7/20-25	100	TS Marco	10/6-7	65
TS Edouard	8/3-6	65	TS Nana	10/12-14	40
TS Fay*	8/15-26	65	Omar (Cat. 3)*	10/13-18	125
Gustav (Cat. 4)*	8/25-9/4	150	TD 16	10/14-15	30
Hanna (Cat. 1)*	8/28-9/7	80	Paloma (Cat. 4)*	11/5-10	145
Ike (Cat. 4)*	9/1-14	145			

Source: National Hurricane Center Official Cyclone Reports

* Official NHC report not received as of 12/6

A few unique statistics about this hurricane season and the active long-term period we are in:

- Set a record for most consecutive-named storms making landfall in the U.S. (at 6 with Dolly through Ike). The previous record was 5, set 5 times before in 2004, 2002, 1985, 1979, and 1971.
- With 6 U.S. landfalls this year, we now go to 42 landfalls from 2001-2008. The previous record for a decade was 40 from 1931-1940.
- Have had 11 years in a row of 10 or more Tropical Storms in a season. The previous record for consecutive years was 4, set from 1942-1945.

- A major hurricane was in the Atlantic basin each month from July through November, the first time that has been recorded.
- Cuba was hit by 3 major hurricanes, Gustav, Ike, and Paloma. Gustav and Ike hit 8 days apart.

As mentioned above, several systems affected the U.S. In addition to the 6 storms above, Cristobal came close to a landfall just off the Outer Banks of North Carolina and Kyle made landfall just east of Maine. As of the time of this writing, tropical cyclones from this busy season caused \$40-45 billion in damage and killed at least 129 people in the U.S.

As for storms that affected Florida, Tropical Storm Fay was known to many Floridians because of the slow motion of the storm after it made landfall over southwest Florida. After landfall in Naples (Fay's second as the first was over Key West), Fay travelled northeast toward Lake Okeechobee and then over the East Coast near Melbourne. During this trek, Fay dumped up to 16 inches of rain just east of Fort Myers in Lee county and then up to 25 inches of rain near Melbourne. Fay moved

into the Atlantic and drifted north before turning west and making landfall again over the northeast Florida coast. Fay moved across north Florida, again dropping almost a foot of rain in some locations, before making a quick trip over Apalachee Bay. She made her fourth and final landfall near Carabelle before dissipating over Alabama and Mississippi.

Two other systems had an indirect effect on the west and southwest coasts of Florida. Hurricanes Gustav and Ike each had a devastating impact on the island of Cuba before moving into the central Gulf of Mexico. As these storms moved toward the northwest Gulf, swells propagated towards our coast, causing dangerous surf conditions, strong rip currents with numerous rescues, as well as some minor coastal flooding.



Rainfall totals over a foot in Southern and Eastern Lee County caused sheet flooding that took almost two weeks to dissipate.

Local Meteorologist Surveys Hurricane Ike Damage

By: Daniel Noah

As Hurricane Ike approached and moved over the Houston metropolitan area in mid September, it forced hundreds of thousands to evacuate, destroyed thousands of homes, and left some areas without power for weeks. Daniel Noah, the Warning Coordination Meteorologist at the NWS in Ruskin, FL, was sent to the Houston area as part of a NWS damage assessment team where he interviewed people who had lost their homes and saw the damage first hand. It was surprising the number of people who did not evacuate. Of the 500,000 people in the mandatory evacuation area, only 300,000 left. Of those, 40,000 were left to contend with the worst of the storm surge. The death toll in the Houston/Galveston area was 32 and over 300 people remained missing. Many may never be found.

The center of Hurricane Ike moved directly over Galveston Bay just after 2 AM

CDT on September 13th and produced sustained winds of 110 MPH (CAT 2) and a storm surge of at least 14 feet. However, the surge could have reached over 25 feet if Ike would have moved ashore just 20 miles to the southwest of Galveston. In short, the devastation for those near the water could have extended much further inland with the potential to take many more lives.

Outside of the storm surge, the Houston area experienced a tremendous amount of downed trees. These trees fell on homes, blocked roads, and knocked out electricity. Other wind damage included shingles off homes, broken windows, and damage to signs. Inside the storm surge, some homes were completely washed off their foundations. This type of damage was found on the barrier islands to 30 miles up Galveston and Trinity Bays. Tampa Bay will be no different when our time comes.



Aerial photo of Bolivar Peninsula, TX before and after landfall of Hurricane Ike.

“Making a World of Difference” at WFO Ruskin

By: Thomas Dougherty

Another outstanding year of Combined Federal Campaign (CFC) contributions was seen at the National Weather Service Forecast Office for the Tampa Bay Area. The CFC is the annual fund-raising drive by Federal employees in the workplace each fall. It remains the largest and most successful employee workplace giving campaign in the world. The theme for this year’s CFC Campaign was "Making a World of Difference" and the goal for the office was set at a lofty \$16,000. The employees at the Tampa Bay - Ruskin, FL WFO gave generously to the CFC again this year allowing the office to exceed its goal once again. Twenty one employees stepped up to the plate and gave a total of \$16,086.22 making this one of the best years in the history of the Tampa Bay Area WFO.

Four employees in particular gave \$1,000 or more and were awarded Gold Eagle givers. A hearty congratulations goes out to the staff of the Tampa Bay WFO for making a world of difference to those in need.

2008 SKYWARN™ Recognition Day

By: Nick Petro

The 2008 SKYWARN™ Recognition Day (SRD) was celebrated at the National Weather Service (NWS) Tampa Bay Area Weather Forecast Office (WFO) in Ruskin, FL on Friday and Saturday, December 5th and 6th, 2008. The event was a huge success, as several SKYWARN™ volunteers and amateur radio operators stopped by the office for tours and to help operate the Ruskin WFO amateur radio station, WX4TOR.

SRD was developed in 1999 by the NWS and the American Radio Relay League. It celebrates the contributions that volunteer SKYWARN™ radio operators make to the NWS, and ultimately, to the general public during significant weather events. Over 100 NWS offices participated in SRD this year.

One of the main components of SRD featured communications with amateur radio operators all over the world. Their goal was to try and contact as many NWS stations as possible. The Ruskin WFO logged 137 contacts and reached radio operators all across North America, including 39 different states, one Canadian province, and 20 different NWS offices.

Special thanks is extended to everyone who helped make this event a success, including the NWS staff who worked shift during the event, and those who helped operate WX4TOR:

- Jason Triolo, KD4ACG – SKYWARN™ Volunteer
- Rudy Rude, KE4EXL - NWS Forecaster
- Todd Barron, KJ4FUF – NWS Met Intern
- Tony Reynes, KJ4FUO – NWS Forecaster
- Nick Petro, WX3H – NWS Sr. Forecaster

Special thanks is also extended to Dave Chaffin, NWS Electronics Tech, who extended our radio antenna cable into the conference room, and to Bud Fislar, NWS Electronic Systems Analyst, who helped resolve networking issues for setting up the Echolink program on our ham radio computer. The Ruskin WFO is unique in that 12 of its 26 staff members are licensed amateur radio operators.

Amateur radio was the only means of communication immediately after the land fall of hurricanes Katrina and Charley. When ordinary communication methods fail, amateur radio steps in to provide critical communication links. Given that 90% of all presidentially declared disasters are weather related, the Ruskin WFO recognizes the need for trained amateur radio operators among its staff, who will be able to better communicate with other amateur radio operators in times of crisis. The Ruskin WFO has HF, VHF, UHF, and digital radios, and is able to communicate both short and long distances on amateur radio frequencies and using emergency backup power. The radio station is routinely used for SKYWARN™ spotter operations and informational weather nets. For more information about the Ruskin WFO SKYWARN™ and amateur radio programs, please visit the SKYWARN™ link at: <http://www.weather.gov/tampa>

Amateur radio operators who participated in the 2008 SKYWARN™ Recognition Day can send in their contact log information for a 8 ½" x 11" certificate which recognizes their participation in the event based on how many NWS stations were contacted. For more information, please visit the SKYWARN™ Recognition Day web site at: <http://hamradio.noaa.gov>



Nick Petro, WX3H, on the left utilizing Echolink to make contacts. Jason Triolo, KD4ACG, on the right making local contacts on VHF.

Rural Weather Spotters Needed

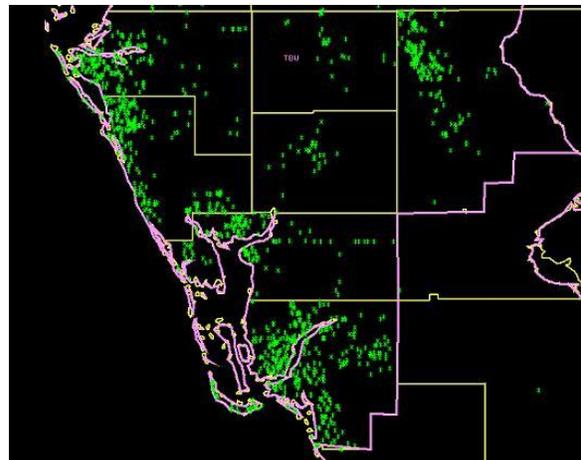
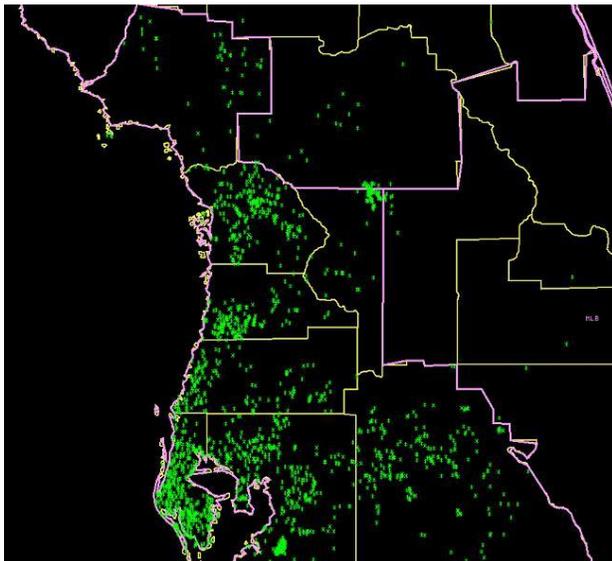
By: Michael Cantin

Your National Weather Service office in Ruskin utilizes a vast network of volunteers, called weather spotters, to make more accurate and timely warnings during a severe weather event. Weather spotters are individuals who keep an eye to the sky during events and report severe weather occurrences to our office here in Ruskin. Many times we actively call the spotters as a storm approaches, or after one has passed, to get the latest information on storm phenomena. The information we gather from spotters is placed directly into our warning products so that we can provide the most accurate and up-to-date information on the storms as possible. In addition, their reports help us calibrate our radar system, so future storms can be better understood.

Over the years our spotter network has grown to nearly 3,500 volunteers, including individuals, families, and businesses. The

vast majority of these spotters reside in well traveled, and highly populated urban/suburban areas. Currently our office is making a strong push to locate people who would like to volunteer as a spotter in many of the less populated areas in west-central and southwest Florida. Below are maps of the area depicting where our current spotters are located (green stars). As you can see there are many empty areas that need filling if our warning program is to reach its full potential.

If you, or someone you know, resides in some of the “vacant” areas on the maps (in Levy, Citrus, Sumter, Hernando, Pasco, Pinellas, Hillsborough, Polk, Manatee, Hardee, Highlands, Sarasota, De Soto, Charlotte, or Lee County) and you would like to volunteer please contact our office at 813-645-2323 or contact Mike Cantin directly at michael.cantin@noaa.gov.



WFO Ruskin Hosts Orlando's Univision for Spanish Outreach

By: Anthony Reynes

On October 24, 2008 the National Weather Service (NWS) Office Tampa Bay Area office hosted members of Orlando's Univision affiliate channel 26. Weather Anchor and Reporter Olga Aymat spent much of the morning hours conducting interviews in Spanish with NWS Forecaster Anthony Reynes. The interview focused on the history and evolution of hurricane forecasting. The effort included a quick timeline of how technology has changed from the early days of ship reports and barometer readings to the current era of modernized satellites, reconnaissance aircraft and multi-dimensional weather graphics. A good portion of the script was dedicated to describing the role of the NWS during the crucial months of the hurricane season. In addition, the process of coordinating with the National Hurricane Center in Miami was discussed as part of

the forecasting and decision-making process that takes place at the local NWS office when a hurricane is approaching the coastline of Florida. An extended taping session followed the interview to capture media footage of the NWS Doppler radar tower, the NOAA Weather Radio system, and the NWS weather operations center.

The collaborative effort reinforced efforts of the NWS and the media for promoting and expanding public education about hurricane awareness and preparedness during a tropical season. It also presented a great opportunity to provide NWS services to the ever-expanding, Spanish-speaking community in Central Florida in partnership with Univision Orlando, one of the leading Spanish Media in the state.



NWS Forecaster Anthony Reynes and Orlando's Univision Weather Anchor Olga Aymat discuss the achievements and challenges in hurricane forecasting. *(Photograph by Brian LaMarre, Meteorologist-in-Charge)*



Left to right: Anthony Reynes, Forecaster and NWS Tampa Bay Area Spanish Liaison; Brian LaMarre, Meteorologist-in-Charge; Olga Aymat, Orlando Univision Weather Anchor; Charlie Paxton, Science and Operations Officer. *(Photograph by Karen Brown, Administrative Support Assistant)*

Input Needed on Possible Marine Weather Page

By: Michael Cantin

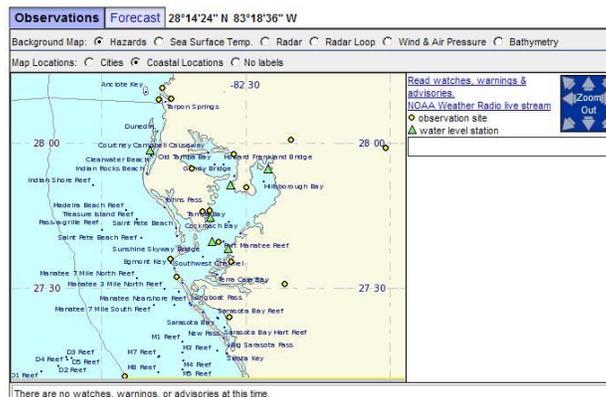
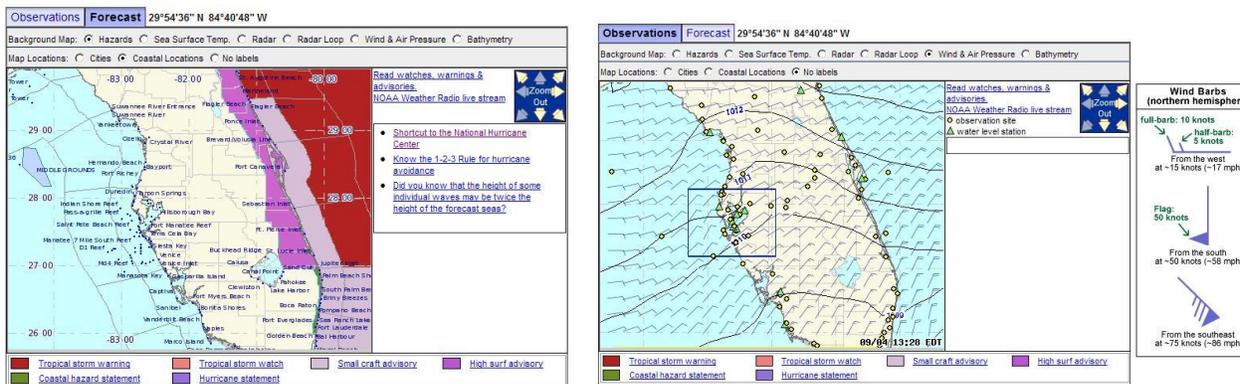
The Marine Weather Team at NWS Headquarters, along with coastal offices, has created a new website geared toward the many marine weather customers we serve. The new website is geared to be a comprehensive source of marine weather information in a user friendly design.

You can find the website by following this link:

<http://forecast.weather.gov/mwp/index.php?d=tbw&bg=basemap&pl=&fc=0&from=southeast>

Currently, this page is not linked directly from the main forecast page provided by our office, and we would like your input on whether we should make this page our new marine page. Please send your comments and suggestions about the page to michael.cantin@noaa.gov. Thanks, we look forward to hearing your thoughts.

Below are a few examples of the new page. The main feature is an interactive map, similar to the warning map on www.weather.gov/tampa. Warnings, advisories and other hazardous weather statements can be overlaid on the map, as well as observations, radar, winds, pressure, bathymetry and a vast list of locations. This information can be accessed by negotiating the tabs and other clickable areas on each page.



Storm Tide Explored in Cedar Key and Yankeetown

By: Daniel Noah

Storm tide can be one of the most deadly and damaging aspect of a tropical cyclone. Preliminary damage estimates from Hurricane Ike were \$32 billion and climbing, making it the third most costliest U.S. storm behind 2005 Hurricane Katrina (\$81.2 billion) and 1992 Hurricane Andrew (\$40.7 billion). Most of Ike's damage was caused by the storm tide. On November 12, 2008, your National Weather Service (NWS) in Ruskin visited with emergency response officials in Yankeetown, Cedar Key, and Levy County to discuss storm tide observing and forecasting. The storm tide is the storm surge plus the astronomical tide. A surge at low tide will not cause as much damage as a storm at high tide because the water level will be lower. Visit <http://tidesandcurrents.noaa.gov> to view live and historic tidal data.



Members of the National Weather Service and Cedar Key Councilman Pat O'Neal explore the instruments on the C-MAN station on Cedar Key. From left to right are Ernie Jillson and Brian LaMarre (NWS), Pat O'Neal, and Charlie Paxton (NWS).

WFO Ruskin Teams Up with USF to Study Details Surrounding 70 Car Pileup on I-4

By: Charlie Paxton

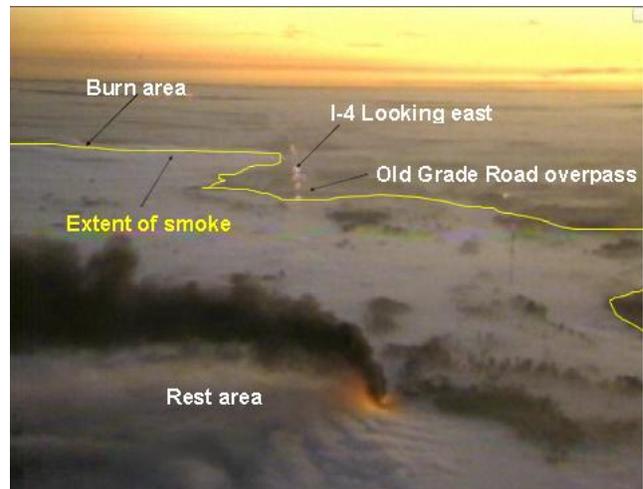
Drivers on central Florida's primary urban corridor, Interstate 4 (I-4) in Polk County, encountered a blinding mixture of smoke and fog that crept onto the highway during the early morning hours of 9 January 2008. Seventy cars and trucks collided near mile marker 47 resulting in five deaths and 38 injuries. Sheriff Grady Judd of Polk County described the conditions as "a wall of smoke and fog". The dangerous conditions were the result of a prescribed burn and ensuing smoke that lacked surveillance. Unfortunately, eight other similar smoke and fog accidents on major highways in Florida involving at least 109 vehicles have occurred since 1996 leaving 17 dead and 88 injured. Ruskin Meteorologists Charlie Paxton, Rick Davis, and Nick Petro began examining the individual events leading to the deadly pileup to provide suggestions on methods to reduce chances of a future repeat occurrence. Through another project, they realized USF assistant professor Jennifer Collins and her student Alicia Williams were working on similar research so they teamed up.



Looking north at fire on east side of Old Grade Road (Lakeland Ledger).

Although widespread fog occurred the morning of the accident, it was the smoke combined with fog, sometimes called "superfog" that created dangerously low visibility. It's a mixture of smoke and heated water vapor released from damp smoldering organic material mixing with cooler nearly saturated air that condenses dropping visibilities to zero. Under light wind conditions, the superfog meanders through low terrain areas. Control of the blaze was regained before sunset but smoldering and spot fires occurred overnight as fog began to develop. Under very light easterly surface winds, the smoke meandered through low lying areas but was partially corralled by a hill approximately 15 feet above the surrounding terrain. Pushed by light easterly winds, the blanket of smoke meandered across the flat terrain of varying vegetation then crept south along the hill and

The dangerous early morning limited visibility conditions were the result of a prescribed burn started the previous afternoon just 2 miles from the crash site. A freeze occurred a few days before the incident killing many of the plants that were already dry due to drought conditions. This additional dry fuel and low relative humidity provided ample opportunity for the proposed small 10 acre burn to blaze out of control to a size of 500 acres.



Aerial video capture of the accident scene around sunrise January 9, 2008. (BayNews9).

drained over the highway just after 400 AM. Visibility was further restricted as motorists drove around an inclined curve prior to reaching the smoke. Soon after, the carnage occurred.

The research team will present their findings in January at The American Meteorological Society Symposium on Urban High Impact Weather in Phoenix, Arizona.

WFO Ruskin Participates in the Great American Teach-In

By: Charlie Paxton

Ruskin meteorologists Ryan Sharp, Ernie Jillson, and Charlie Paxton participated in the Great American Teach In. The teach-in gives students a chance to learn about different occupations. The dynamic trio spoke to over 350 Hillsborough County students.

Ryan spoke to two 3rd grade classes and two 4th grade classes at Reddick Elementary in Wimauma. Ernie had a marathon day speaking to a class of Riverview High School students. He then spoke at Boyette Springs Elementary. He wrapped up the day at Rodgers Middle School speaking to several classes. Charlie and USF geography student Kortnie Pugh spoke to three classes at Gibsonton Elementary. Later in the week, Charlie spoke to three classes at Collins Elementary. The speakers were thrilled to receive wonderful thank you notes from many of the students.



Charlie Paxton shows a weather balloon to Collins Elementary students. Photo by Judy Vargas.

SPECIAL FEATURE:

Can it Snow in West Central Florida? A Look Back at the Freeze of January 18-20, 1977

By: Nick Petro

Can it snow in West Central Florida? You bet! Given the fairly cool fall season we've had thus far, many people are wondering what it would take to get some snow here. In fact, it actually has happened at least twice in the Tampa Bay area in the past fifty years. The most memorable was the snow that fell from January 18-19, 1977. A trace fell late on the 18th, and an additional 0.2 inches fell early on the 19th. However, this snow was associated with a much more significant event – a destructive widespread freeze event, which resulted in an estimated \$250 million in agricultural damage across the state¹ (nearly \$900 million in today's dollars adjusted for inflation).

So what lead up to and caused this freeze event? Perhaps the best weather record describing this event comes from a report issued by the Federal-State Agricultural Weather Service in February 1977. The italicized text below is a reprint of this report, with commentary in brackets.

The Freeze of January 18-20, 1977 ***Peninsular Florida***

The freeze of Jan 1977 was the first major freeze in peninsular Florida since January 1971. Perhaps the most unique aspect of this freeze was the snowfall that occurred across central southern FL on the evening of the 18th and morning of the 19th. Lakeland recorded its first measure snowfall since records began. Snow also fell in the Everglades, with a few flakes observed as far south as Dade County.

[In Tampa, snowfall on the morning of January 19 measured 0.2 inches, which was the most ever recorded.]

On the morning of the 20th, temps were nearly as cold over the south as they were over the north. While minimum temperatures and durations over north and central portions of the peninsula were comparable to other major freezes, this will probably rank as one of the worst freezes over south Florida in the 20th Century.

The first wave of cold air entered the state during the night of Sunday, January 16, with the front clearing the peninsula by daybreak on Monday, January 17. Temperatures that morning were in the 20s over north Florida, upper 20s to lower 30s in central Florida, and mid to upper 20s over south Florida. Moderate northerly winds prevented any frost.

¹ The Tampa Tribune, Wednesday, January 26, 1977

During the day of the 17th, cold air was still being advected into the state. Even with brilliant sunshine, daytime temperatures only reached the 30s over northern Florida, 40s across central portions of the state, and 50s over the south. The high moved eastward during the day, and was positioned over the peninsula by Monday evening. With light winds, temperature dropped rapidly after sunset. Minimums Tuesday morning (the 18th) were in the teens over north Florida, with durations of 26 degrees and below for 6 to 12 hours. In central Florida temperatures were in the low to mid 20s with durations of 2 to 6 hours. Over south Florida lows were in the upper 20s to lower 30s with very heavy frost in the Everglades.

Despite these low temperatures, even colder air was plunging rapidly southward from Canada. Skies became increasingly cloudy during the day as the colder air drew closer. The front passed through the state Tuesday afternoon and evening (the 18th), accompanied by wind gusts of 30 to 50 mph. Under cloudy skies, temperatures remained near freezing Tuesday evening over central Florida. Shortly after sunset, light snow flurries were reported over east-central Florida. As the night progressed, the extent of the snow increased, as well as its intensity. By daybreak, skies were beginning to clear over central Florida, and residents awoke to the sight of snow on the ground. Most of central Florida as far south as Lake Okeechobee had snow on the ground. Skies had not yet cleared over south Florida, and early Wednesday morning snow was reported (for the first time ever) at West Palm Beach. A few flakes were also observed as far south as Dade County before skies cleared over south Florida.

Temperatures Wednesday morning were nearly the same as Tuesday morning, except slightly higher south of the Lake. However, due to the cloud cover a good portion of the night, duration of 26 degrees and below were less than the previous morning. Durations were about 5 to 8 hours over north Florida and up to 5 hours in central Florida.

With high pressure centered over the lower Mississippi Valley on Wednesday, strong winds continue to bring very cold air in to the state during the day. High temperatures on Wednesday afternoon were only in the 30s through northern and central Florida and 40s in south Florida. Some of the stations set new records for lowest maximum temperatures ever recorded. As the high moved eastward, winds began to diminish, and by sunset temperatures were near freezing over a large portion of the peninsula. By 8 or 9 p.m., temperatures had dropped below 28 degrees, and they remained there until after sunrise Thursday. A few clouds drifted over the northern peninsula around 4 or 5 a.m., preventing temperatures there from dropping to even lower levels.

Minimum temperatures on the morning of Thursday, January 20, showed very little variation from north to south. Temperatures ranged from the low 20s over north-central Florida to mid 20's over south Florida. Durations of 26 degrees and below were mostly 6 to 12 hours over the area north of Lake Okeechobee, and in the Glades durations were 5 to 10 hours. Some stations along the Lower East Coast reported below freezing temperatures as long as 12 to 14 hours.

The Florida Crop and Livestock Reporting Service stated that by Thursday morning 98 percent of the oranges surveyed had ice, with 48 percent showing hard ice to the center

of the fruit. Most tender vegetables suffered 90 to 100 percent loss as far south as Homestead. Young sugar cane was killed back completely. Foliage plants and ornamentals were severely damaged in unprotected areas.

Although historical information and photographs documenting this snowfall are limited, there is one highly publicized photograph² of a woman in Tampa brushing snow off her car (Figure 1 below). In addition to the agricultural damage, there were reports of bridges in Tampa being impassable because of ice, schools were closed in seven counties in the central citrus belt, and snow fell at resort areas such as Daytona Beach, Cocoa, Vero Beach, Sarasota, Boca Raton, Fort Lauderdale, Palm Beach, and even in Miami.



Figure 1: A photo taken on January 19, 1977 of Yvonne Berry cleaning snow off of the windshield of her car in a parking lot in Tampa.

The January 1977 freeze was not the only event which produced snow in the Tampa Bay area. There were numerous reports of light snow or flurries in the Tampa Bay area on December 23, 1989. Tampa International Airport reported a trace of snowfall for the day. A cold front had passed through the area the previous day, and cold high pressure was situated across the middle of the country. Colder air moved into our area behind the front, however deeper moisture lingered over the area as mid and upper level flow remained southwest with the trough axis still to our west. Figure 2 depicts the surface features on the 23rd, and Figure 3 is the corresponding mid level features.

These two events demonstrate that while snow is an unusual event for west central Florida, it can indeed happen. While it may seem obvious that a significantly cold air mass must be in

² Photo Credit: Courtesy of the Special Collections Department, University of South Florida. Digitization provided by the USF Libraries Digitization Center.

place over the area with adequate moisture, a weather pattern that supports snow occurring in our area is a longer term one. The chance for a snow event in west central Florida increases when the overall temperature trend for the cold season is well below normal with numerous freeze events, and cold air remains over the peninsula for a longer period of time.

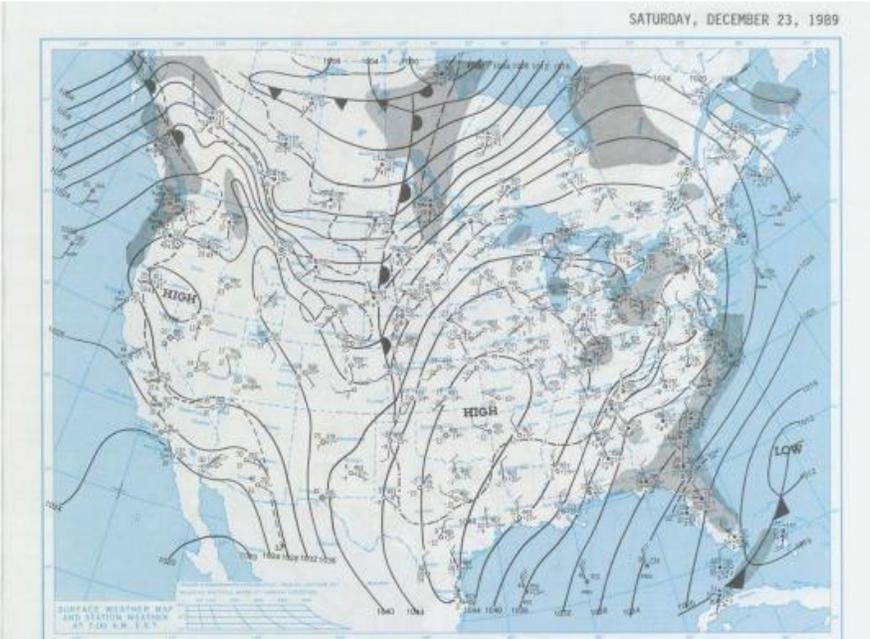


Figure 2: Surface weather features on December 23, 1989

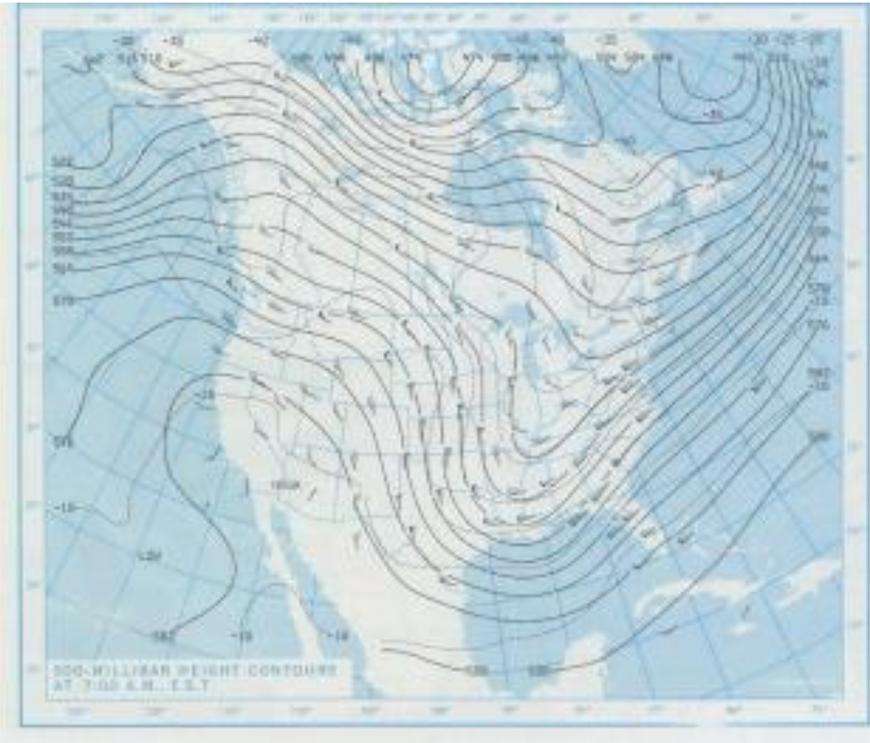


Figure 3: Mid level weather features on December 23, 1989

Thank You to all!

Editor: Jennifer Colson - Journeyman Forecaster

Contributors: Daniel Noah - Warning Coordination Meteorologist
Charlie Paxton - Science and Operations Officer
Michael Cantin - Senior Forecaster
Paul Close - Senior Forecaster
Nick Petro - Senior Forecaster
Ryan Sharp - Journeyman Forecaster
Anthony Reynes - Journeyman Forecaster
Thomas Dougherty - Hydrometeorological Technician
Todd Barron - Meteorologist Intern