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### **Severe Thunderstorm Warning Hail Criteria Becomes More Meaningful**

By: Daniel Noah

Since January 5, 2010, Severe Thunderstorm Warnings across the nation are now issued for 1 inch or larger hail instead of the previous 3/4 inch or larger size hail. The wind criteria of 58 MPH (50 knots) did not change.

Scientific research increasingly indicates that significant damage to real property does not occur until hail stones reach at least 1 inch in diameter. The results of these peer-reviewed articles are supported by damage reports from thousands of archived storm events.

Many in the media and the emergency management community were concerned that too many Severe Thunderstorm Warnings were being issued for marginal events and these warnings were desensitizing the public. The new 1 inch criteria will reduce the number of Severe Thunderstorm Warnings each season and will warn for a genuine risk of damage and a corresponding need to take protective action.

The 15 counties in west central and southwest Florida received 109 reports of 3/4 inch hail or larger over the past two years, and of these, only 35 hail reports were 1 inch or larger. The

National Weather Service will continue to issue Special Weather Statements for strong storms, but will limit Severe Thunderstorm Warnings to those storms expected to cause a real threat to life and damage to property.

National Weather Service Offices serving the state of Kansas have participated in a demonstration project of this initiative for the past four years, utilizing a 1 inch diameter hail size criterion for issuing Severe Thunderstorm Warnings, rather than the historical 3/4 inch threshold. The original 3/4 inch size limit for hail was developed for both the public and the military and was based on a 1952 study of the smallest size of hailstones that cause significant damage at airplane speeds between 200 to 300 MPH.



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## 2009 Tropical Season Wrap-Up

By: Jennifer McNatt

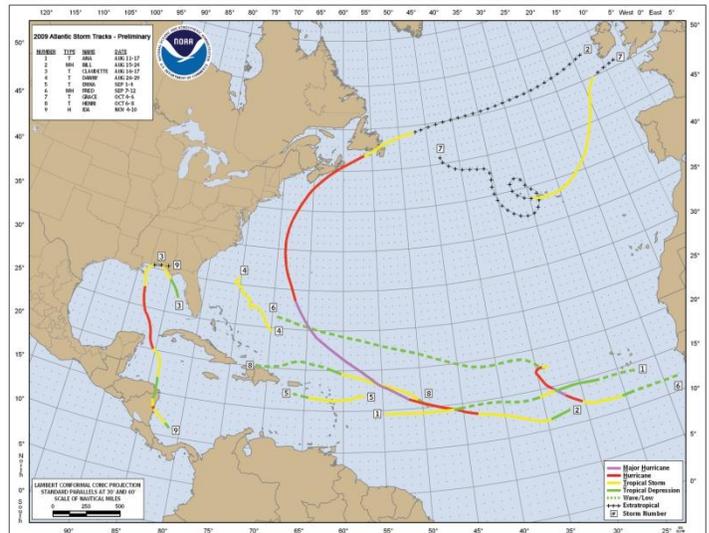
Are you interested in hurricanes? Love to track them and read the latest discussions from the National Hurricane Center? Thanks to El Niño, we saw a relatively quiet hurricane season in 2009...much to the chagrin of avid hurricane fans, but lucky for those of us that live where these storms may threaten. The 2009 season saw the fewest named storms and hurricanes since 1997 (when, if you remember, we were also in an El Niño period).

An average hurricane season will see eleven named storms and six hurricanes, including two major hurricanes (Category 3 or greater). In 2009, we saw nine named storms, including three hurricanes, two of which were major hurricanes. For the first time in three years, no hurricanes actually made landfall in the United States.

To the right, there is a graphic that depicts the tracks of all tropical activity in 2009. As you can see, Tropical Storm Claudette and Hurricane Ida were the only two storms to make it into the Gulf of Mexico.

Tropical Storm Claudette originated from a well-defined tropical wave that crossed the west coast of Africa on the 7<sup>th</sup> of August. It wasn't until the wave moved into the extreme southeastern Gulf of Mexico that the system began to develop, and just after midnight on the 16<sup>th</sup> it was designated as a tropical depression (a tropical depression has a maximum sustained wind speed of up to 38mph and a closed circulation). When it was given that designation, its center was approximately 50 nautical miles west-southwest of Sarasota. The system quickly strengthened into a tropical storm (a tropical storm has maximum sustained surface wind speeds that range from 39mph to 73mph) the morning of the 16<sup>th</sup>. It reached its peak intensity of 58mph in the early afternoon of the 16<sup>th</sup>, when centered about 35 nautical miles south of Apalachicola, FL. As it continues to head north, vertical shear began to increase, and this caused the storm to weaken. Claudette made landfall near Fort Walton Beach, FL just after midnight on the 17<sup>th</sup>, with maximum sustained winds of around 46mph. The highest storm surge reported was 3 feet at Indian Pass, FL (near Apalachicola). Claudette's impacts were generally minimal, with only minor damage to trees and sporadic power outages. Unfortunately, a 28-year old male drowned in Panama City Beach during the storm.

Ida was classified as a Tropical Depression on the morning of November 4<sup>th</sup> in the southwestern Caribbean Sea. By 4pm that same day, it was upgraded to a Tropical Storm (and therefore given the name Ida) when an Air Force Reserve reconnaissance plane found 58mph winds as the system was nearing Nicaragua. Ida made landfall in Nicaragua on the morning of November 5<sup>th</sup> as a Hurricane with surface winds of around 75mph (a hurricane is classified as winds that equal or exceed 74mph). As Ida moved over land, it weakened to a tropical depression, and then moved over water again the night of the 6<sup>th</sup>. Once over water, Ida strengthened as it headed north, eventually becoming a Hurricane again just after midnight on the 8<sup>th</sup> of November as it moved in between Cozumel, Mexico and the western tip of Cuba. Ida strengthened to a Category 2 Hurricane with around 104mph winds as it headed north into the southern Gulf of Mexico the night of the 8<sup>th</sup>. The storm was headed into cooler waters and increasing shear, however, and on the morning of the 9<sup>th</sup>, it was again downgraded to a Tropical Storm with winds of around 69mph as it moved to a point around 280 miles south-southwest of Pensacola, FL. By the morning of the 10<sup>th</sup>, Ida was downgraded even further to a Tropical



Depression as it combined with a frontal system moving through the Gulf and made landfall near Dauphin, Alabama. Maximum sustained winds around landfall were around 35mph.

A special thanks goes to the National Hurricane Center which provided the bulk of the above information from their website.

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## Sea Fog: A Simple Tutorial

By: John McMichael

Sea Fog can cause significant visibility restrictions and dangers for mariners operating on the Gulf of Mexico waters, as well as for motorists if it moves inland. Sea Fog is an advection type fog that forms in warm moist air cooled to saturation as it moves over cooler water. Sea Fog over the Gulf of Mexico is most prevalent during the fall and winter months (October through February) when sea surface temperatures cool significantly.

In order for Sea Fog to form, a stable environment with relatively light winds is needed. In addition, the dew point (the temperature to which the air must be cooled for water vapor to condense) of the air over the water must be equal to or greater than the temperature of the Gulf water. When the dew point is close to the surface water temperature, Sea Fog can form because it will allow the parcel of air just above the water's surface to cool to saturated, condense, and produce the necessary droplets for the fog to develop. Microscopic salt particles act as condensation nuclei for the droplets and enhance the fog formation process. As with any form of fog, increasing surface winds, heating, or dry air intrusion will inhibit its formation.

Forecasting Sea Fog over the Gulf of Mexico can be very challenging and difficult for National Weather Service Forecasters due to the lack of coastal observation points over the water compared to the land areas. Forecasting when it will form or dissipate requires careful examination of temperatures, dew points, winds, and satellite imagery. Mariners, fishermen and all boating enthusiasts operating on the Gulf waters should always remember to check for the possibility of sea fog, especially during the fall and winter. If you must travel through sea fog, always proceed slowly and sound your boat horn often to alert other vessels to your presence.

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## NWS Ruskin Supports the American Cancer Society by Participating in Relay for Life

By: Ernie Jillson



The American Cancer Society (ACS) Relay For Life is a life-changing event that gives everyone in communities across the globe a chance to celebrate the lives of people who have battled cancer, remember loved ones lost, and fight back against the disease. At Relay, teams of people camp out at a local high school, park, or fairground and take turns walking or running around a track or path. Each team is asked to have a representative on the track at all times during the event. Because cancer never sleeps, Relays are overnight events and 18 hours in length.

The National Weather Service in Ruskin has been participating in Relay for Life since 2006. We have received fund raising awards in 2007 and 2008 for outstanding efforts and for being the top online fund raiser of the event. Each year we raise about \$2,000 for the ACS by participating in the event and have a bit of fun at the same time!



In 2010, we will once again have a team at the Relay for Life of SouthShore. This year's event is located at the Lennard High School in Ruskin. The event starts at noon on March 27<sup>th</sup> and continues through the night. You can visit our team web page at <http://main.acevents.org/goto/nwsruskin>. We invite you to come out and walk a few laps with us. Join us this year for a great cause!

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## NWS Ruskin Gives Back to the Community

By: Thomas Dougherty and Nicole Carlisle

The Combined Federal Campaign 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 of the 2009 Tampa Bay Area Suncoast Combined Federal Campaign was “Making a World of Difference” and the heroes of the Tampa Bay Area Weather Forecast Office contributed to this campaign wholeheartedly.

Twenty-two staff members donated \$17,990.44 and as such, the staff members of the Tampa Bay Weather Forecast Office have become a cornerstone of philanthropy for more than 2,500 charities around the world and 218 local agencies close to home. Six employees donated over \$1,000 each and were recognized with “Gold Eagle Awards”. The giving nature of the staff at the Tampa Bay Area WFO remains stronger than ever as they help others help themselves. It is remarkable that such a small number of dedicated employees donated so much. It truly is a pleasure to work with such caring and generous people.

In addition to the fund-raising, a few special events also took place. A scramble Golf Tournament took place at MacDill Air Force Base where a 4 person team from the office entered into the event, and a 5 K running race took place at the Bay Pines Veterans Affairs complex in St. Petersburg, where a few staff members also competed.



Pictured (from left) Meteorologist Intern, Nicole Carlisle, Lisa Dougherty, HMT Tom Dougherty, and Lead Forecaster, Rick Davis.



HMT Tom Dougherty and General Forecaster Jen Colson

## **El Niño to Increase Possibility of Hazardous Weather in Florida this Winter**

By: Brian LaMarre and Dan Noah

An active weather pattern is expected to setup over Florida this winter due to a strengthening El Niño weather pattern. El Niño refers to the warmer than normal tropical waters in the Pacific Ocean which shifts the patterns of tropical rainfall in the Pacific. These changes in turn alter the strength and position of the jet stream, as well as storm systems over the United States - with potentially significant impacts over Florida. According to Meteorologist-in-Charge Brian LaMarre, "the jet stream this winter is expected to impact Florida which will increase the potential for hazardous weather." As a result, the winter outlook for Florida calls for below normal temperatures and above normal precipitation.

El Niño weather patterns have struck Florida many times in the past. Since 1892, the ten deadliest tornado days during the Florida dry season resulted in 119 deaths, which is 79% of tornado fatalities during the dry season. Of these ten events, six occurred across the Florida peninsula (south of 30 N), all of which were El Niño years. During the February 23, 1998 and February 2, 2007 Florida tornado outbreaks, 63 lives were lost, with 62 of the fatalities occurring within mobile homes, recreational vehicles or automobiles.

In addition to the increased severe weather risk, Florida citizens and visitors are exposed to considerable societal vulnerability, especially during El Niño years. According to the 2000 census, Florida had 847,141 mobile homes with more residents living in these homes than any other state. The majority of this vulnerable housing was built prior to the enhanced building codes which went into effect in 1995. El Niño tornado impacts in Florida typically occur during the November to April period, when housing occupancy rates are greatest. This peak in rates includes mobile home parks and campgrounds and is due to a peak in seasonal residents and tourists. Most El Niño tornadoes occur at night and result in reduced public awareness, as tornado watches and warnings are often issued after residents and visitors retire for the evening. For this reason, it is highly recommended that all residents have a NOAA Weather Radio. "During an emergency, information is your greatest asset", LaMarre said. "When the power is out, NOAA Weather Radio can be your personal alert to life-saving weather information - allowing you to make informed decisions for both you and your family." NOAA Weather Radio broadcasts originate from National Weather Service offices, providing weather forecasts and severe weather and flood warnings 24-hours a day. NOAA Weather Radio receivers are widely available at electronics and discount stores.

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## NWS Ruskin to Host an Open House

By: Jennifer Colson and Karen Brown

On March 6, 2010 from 10AM to 2PM, the National Weather Service office in Ruskin, FL will be open to the public. To commemorate the 15<sup>th</sup> anniversary of being in this building and the 35<sup>th</sup> anniversary of being in the Ruskin area, we are hosting an open house. Everyone is invited to visit the office, located at 2525 14<sup>th</sup> Avenue S.E. in Ruskin, and tour our facilities. Come and see all of the equipment we use to provide you the best possible forecasts and warnings. Learn all of the different types of forecasts we issue and how we serve not only the citizens of West-Central and Southwest Florida, but also other local, state, and national government organizations. Watch a weather balloon release and enter for a chance to win a NOAA Weather Radio or a rain gauge.

In addition, we are creating a public appreciation wall collage, and are asking for your help. If you have any interesting weather photos taken from the area and would like to donate them to be included in the collage, please follow the guidelines below.

Weather related photos only. Please identify location and date photo was taken, (if known) name of the person donating, and if you want to be identified somewhere on or around the photo. Images should be high-resolution, and must be a minimum 300 dpi at 8" x 10". (That means at least a 1MB file). All photos will be Credited, personal or work-related (no copyright infringements).

Please either mail your photos: c/o Karen Brown, 2525 14<sup>th</sup> Ave. SE, Ruskin, FL 33570, or email the file to: [sr-tbw.webmaster@noaa.gov](mailto:sr-tbw.webmaster@noaa.gov) or [karen.a.brown@noaa.gov](mailto:karen.a.brown@noaa.gov). Please use "Public Appreciation" in the subject line for the email. The deadline to receive photos is February 19, 2010.

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## "Disponible en Español" ...Spanish Services Keep on Growing!

By: Anthony Reynes

The Spanish outreach efforts of the National Weather Service in Tampa Bay (NWS Tampa) continue to expand in order to better serve our great media partners from the local television and radio stations. Earlier last year we began introducing Spanish versions of several articles published in the "Top News of the Day" section of the NWS Tampa website in order to facilitate the use of the information by the Spanish media. The articles highlight expected or ongoing events that could have a significant adverse impact in our area, and also showcase climate information of general interest (see Figure 1). With these dedicated Spanish versions of

weather-related articles, the information can be processed and delivered to the Spanish audience faster and with more accuracy in its scientific content.

Several interviews and special assignments were conducted by members of the media in the NWS Tampa facilities, including collaborations with Bay News 9 Español, Univision Tampa and Telemundo Orlando.



**Figure 1.** Breaking news articles in the NWS Tampa "Top News of the Day" section are now available in Spanish ("disponible en Español") as the red arrows indicate.



**Figure 2.** Sandra Pinto, Evening News Anchor of Bay News 9 Español, discusses with Meteorologist Anthony Reyes the impacts of El Niño on the upper levels of the atmosphere.

Sandra Pinto, Evening News Anchor for Bay News 9 Español, visited the NWS Tampa office on November 2009 following the NWS Tampa October Press Release for a special assignment program regarding the potential weather hazards that a strong El Niño event could bring to Florida during the winter months (see Figure 2). Carolina Serna, from Univision Tampa (see Figure 3) also joined the Spanish outreach efforts by conducting an interview about lightning safety following the tragic events of the 2009 fatal lightning strike on Independence Day. Both interviews aired as the openers for the evening news shows respectively.

Many Spanish radio stations and newspapers also joined our expanding list of partners, including WLCC 760 in Brandon, and Nuevo Siglo in Tampa. Erika Espitia, from Top Line Broadcasting, conducted a half hour taped Spanish interview which covered many topics regarding safety and preparedness for the Spanish speaking communities in the Brandon and Riverview, FL areas. Olga Aymat, the recently appointed Anchor Woman of Telemundo Orlando, also joined the partnership by conducting a phone interview about winter weather hazards awareness.

In 2010, the National Weather Service in Tampa will continue to proudly develop new and innovative ways of reaching out to our rapidly growing Hispanic community in the Tampa Bay Area.



**Figure 3.** Carolina Serna, Univision Evening News Anchor discusses with Meteorologist Anthony Reynes why sometimes lightning can strike from a distance.



**Figure 4.** Roy de Jesus from BN9Esp conducts a Spanish interview with Meteorologist Anthony Reynes about the rare multi-waterspout event of July 27, 2009.

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## SPECIAL FEATURE:

# January 2010 Cold Spell

By: Paul Close

The weather pattern from late December into the first half of January was anything but what is expected during a typical El Niño winter (Figure 1). In general, winter El Niño episodes feature a strong jet stream and storm track across the southern part of the United States, and less storminess and milder-than-

average conditions across the North. However, during December other factors began to take over and overshadowed the El Niño.

Now no one can say for sure what caused the cold spell, but there is one factor known as the Arctic Oscillation (AO), that has been shown to

have a big influence on temperatures across the eastern two-thirds of the United States during the winter months. The AO is a rather short term change usually on the order of a few days to a few weeks, compared to El Niño/La Niña which last for months, sometimes years when it comes to La Niña. During mid-December into mid-January the AO dropped well into the negative phase and stayed there for over four weeks (Figure 2). It is known that there is a teleconnection, or strong statistical relationship between the weather in the Arctic and weather in the mid-latitudes, especially during the winter months. When the AO is in the negative phase there is higher-than-normal pressure over the polar region and lower-than-normal pressure at about 45 degrees north latitude. The negative phase allows cold air to plunge into the Midwestern/Eastern United States and Western Europe, and storms bring rain to the Mediterranean. The positive phase brings the opposite conditions, steering ocean storms farther north and bringing wetter weather to Alaska, Scotland, and Scandinavia and drier conditions to areas such as California, Spain and the Middle East. The correlation of negative AO to colder than normal temperatures in the Midwestern/Eastern United States can be seen in the bottom image of Figure 3.

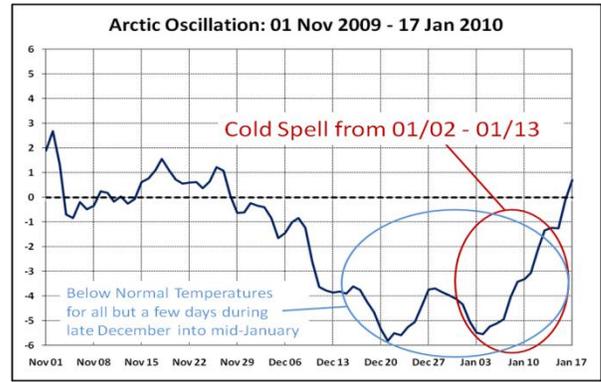


Figure 2: Observed Arctic Oscillation Index

DJF Temperature Anomaly (°C) by AO PHASE

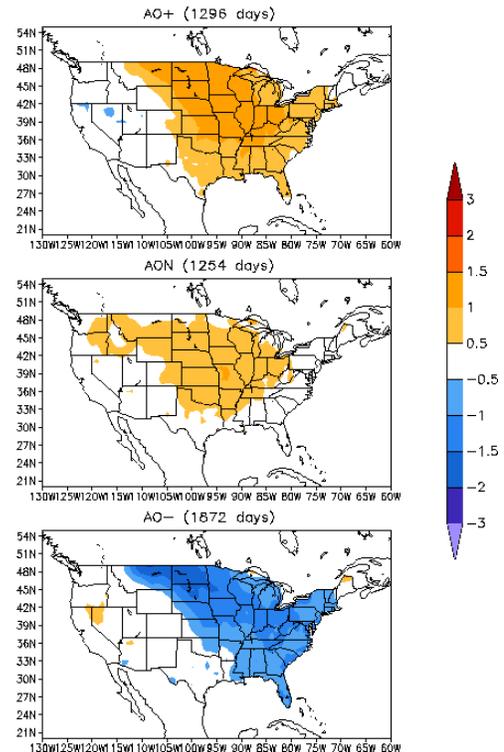


Figure 3: Temperature Anomaly by AO Phase for December through February

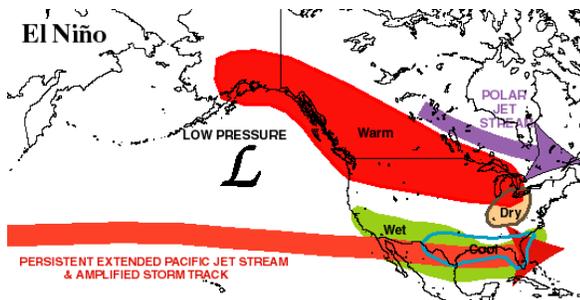


Figure 1: Typical Winter El Niño Pattern

If we take a look back at the two previous record long cold spells, December 29, 2000 to January 5, 2001 and December 21 to 28, 1995, we can see in the graphs below (Figures 4 and 5) that the AO index during these time periods was well into the negative range for a few weeks.

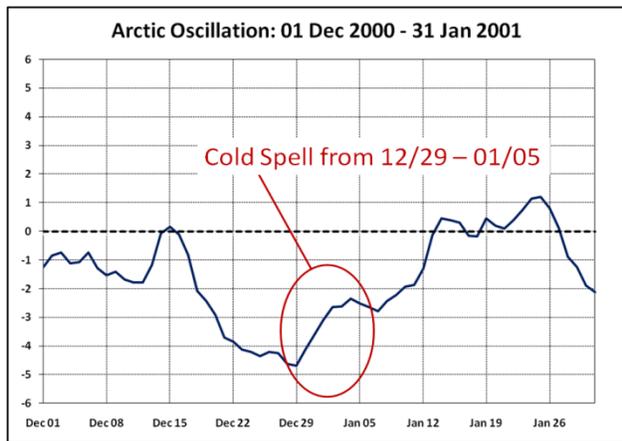


Figure 4: Observed Arctic Oscillation Index December 1, 2000 through January 31, 2001

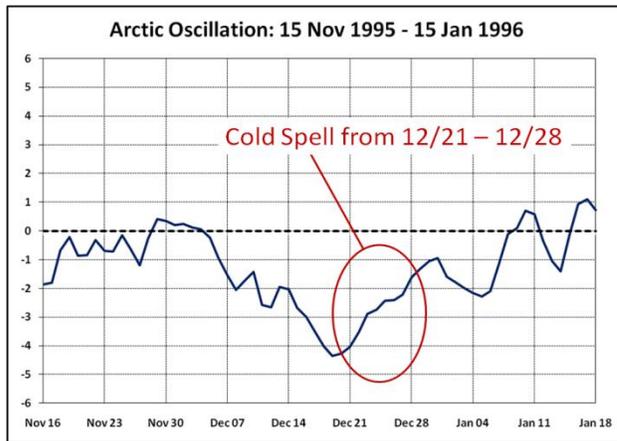


Figure 5: Observed Arctic Oscillation Index November 15, 1995 through January 15, 1996

And of course anyone who has lived in West Central and Southwest Florida for any length of time has heard about the infamous day it snowed across much of the Florida peninsula, January 19, 1977. If we take a look back at the AO during this time period we see that the index had dropped well below zero, in fact to its lowest daily reading then and now of -7.433 on January 15, 1977. Along with the snow there were also five days in a row, January 18 to 22, where temperatures dipped below freezing in the Tampa area, the most consecutive number of days since records began in 1890.

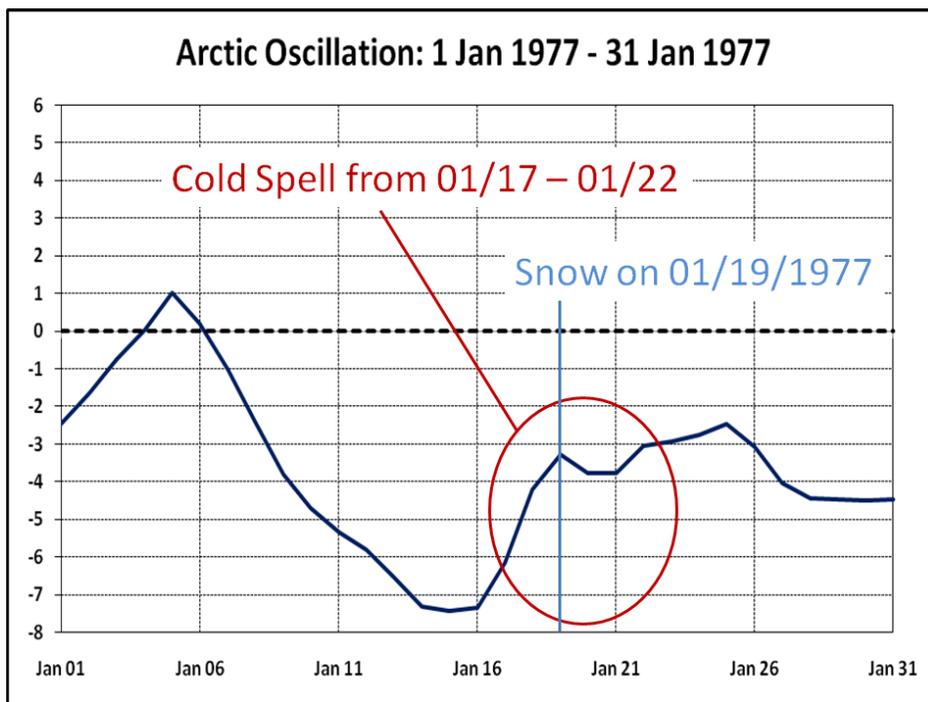


Figure 6: Observed Arctic Oscillation Index for January 1977

The effect on the weather pattern of the most recent negative AO can be seen in the 500 millibar charts (Figures 7-11) from a few days during late December 2009 into mid-January 2010. During this time, a deep upper level trough setup across the eastern two-thirds of the United States with a series of cold fronts sweeping south across Florida.

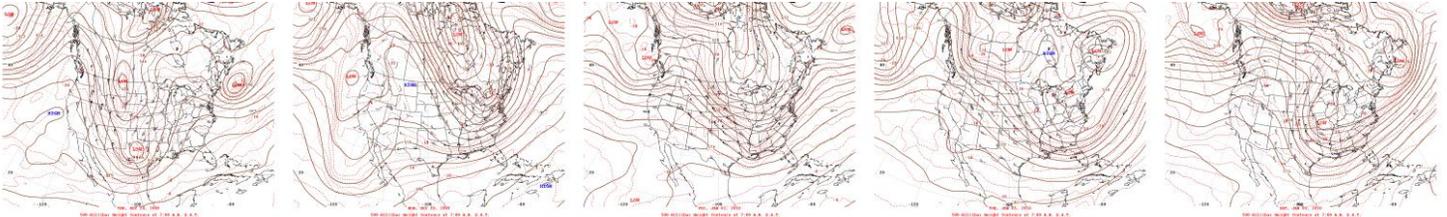


Figure 7: December 24, 2009 Figure 8: December 28, 2009 Figure 9: January 1, 2010 Figure 10: January 5, 2010 Figure 11: January 9, 2010

Although it is not unusual for West Central and Southwest Florida to see freezing temperatures each winter, it is rare that the cold weather last as long as it did. From January 2 through January 13 temperatures were anywhere from 10 to almost 30 degrees below normal across the region. The length of this cold spell, 12 days, set new records at many locations across the area with others only having one mild day in the middle of the streak right before another cold front moved across the region. This can be seen in the tables below that list the record number of consecutive days at or below 60 degrees (except at Fort Myers where 65 degrees was used) at a few sites across the region.

Tampa Consecutive Days Temperature <= 60 (° F) Years: 1890-2010		
Rank	# Days	End Date
1	12	01/13/2010
2	8	01/05/2001
2	8	12/28/1995
3	7	01/14/1956
3	7	02/02/1900
4	6	01/22/1977
4	6	01/29/1940
4	6	01/04/1918
4	6	12/21/1901
5	5	02/05/1980
5	5	12/23/1975
5	5	01/31/1966
5	5	01/24/1960
5	5	02/20/1958
5	5	12/24/1930

St. Petersburg Consecutive Days Temperature <= 60 (° F) Years: 1914-2010		
Rank	# Days	End Date
1	12	01/13/2010
2	8	01/05/2001
2	8	12/28/1995
3	6	01/14/1956
3	6	01/29/1940
4	5	12/26/1989
4	5	01/14/1981
4	5	02/10/1978
4	5	01/22/1977
4	5	12/23/1975
4	5	01/14/1973
4	5	01/24/1960
4	5	02/20/1958
5	4	02/18/2007
5	4	01/28/2000

Sarasota-Bradenton Consecutive Days Temperature <= 60 (° F) Years: 1911-2010		
Rank	# Days	End Date
1	8	01/05/2001
2	6	01/07/2010*
2	6	01/23/1977
2	6	01/14/1956
2	6	01/29/1940
3	5	01/13/2010*
3	5	12/26/1995
3	5	12/24/1975
4	4	12/27/1993
4	4	12/26/1989
4	4	01/15/1984
4	4	02/05/1980
4	4	01/31/1978
5	3	02/05/2009

\* Would have been 12 consecutive days, but temperature climbed to 63° on January 8.

Fort Myers Consecutive Days Temperature <= 65 (° F) Years: 1902-2010		
Rank	# Days	End Date
1	8	01/31/1940
2	7	01/14/1956
3	6	01/07/2010
3	6	02/24/1978
3	6	01/22/1977
3	6	01/24/1960
4	5	01/13/2010
4	5	12/26/1989
4	5	12/23/1975
4	5	01/14/1973
4	5	01/11/1970
4	5	02/20/1958
4	5	01/29/1938
4	5	12/23/1927
5	4	02/18/2007

\* Would have been 12 consecutive days, but temperature climbed to 71° on January 8.

Along with the long stretch of cold temperatures, there were also numerous daily record lows and a few daily record low maximums set during this time period. One of the coldest days we have seen in years occurred on January 9 when high temperatures were only in the upper 30s to lower 50s. These cold temperatures broke the daily record low maximums for the date set in 1970 at many sites. However, in reality a lot of the high temperatures for the day occurred at midnight with the actual daytime highs (7 AM to 7 PM) only in the mid to upper 30s. This was also the day that sleet and some snow was reported across many portions of West Central Florida, the first time since January 8, 1996.

The coldest morning across the region occurred on January 11, when readings dropped into the middle teens in some of the normally colder locations across the Nature Coast, with some readings around 20 even south into portions of eastern Hillsborough County and western Polk County. The following table lists the lows for January 11, most of which were new records for the date.

Location		Lows on Jan 11	Old Record Low	Records Began
Arcadia	:ARCF1	25	24 in 1959	1899
Archbold Bio Stn	:ACHF1	21*	22 in 1970	1969
Avon Park 2 W	:AVPF1	26*	28 in 1970	1901
Bartow	:BARF1	27*	28 in 1978/1970	1892
Brooksville Chin Hill	:BROF1	23*	26 in 1942	1892
Bushnell 2 E	:BSHF1	19*	23 in 1959	1948
Chiefland 5 SE	:CHIF1	15*	21 in 1982/1959	1956
Fort Myers - Page Field	:FMY	31*	32 in 1959	1902
Inverness 3 SE	:INVF1	18*	25 in 1959	1948
Lakeland Linder Field	:LLDF1	23*	31 in 1977	1948
Mountain Lake	:LWLF1	24*	25 in 1970	1935
Plant City	:PLCF1	24*	25 in 1959	1892
Punta Gorda 4 ESE	:PNTF1	28*	30 in 1970	1965
Sarasota-Bradenton	:SRQ	28*	29 in 1959	1911
St Leo	:STLF1	27	26 in 1927	1895
St Pete - Albert Whitted	:SPG	33*	34 in 1977	1914
Tampa	:TPA	25*	27 in 1982	1890
Tarpon Springs	:TRPF1	29	28 in 1942	1892
Venice	:VNCF1	32	28 in 1959	1955
Winter Haven	:WHNF1	27*	28 in 1970	1941

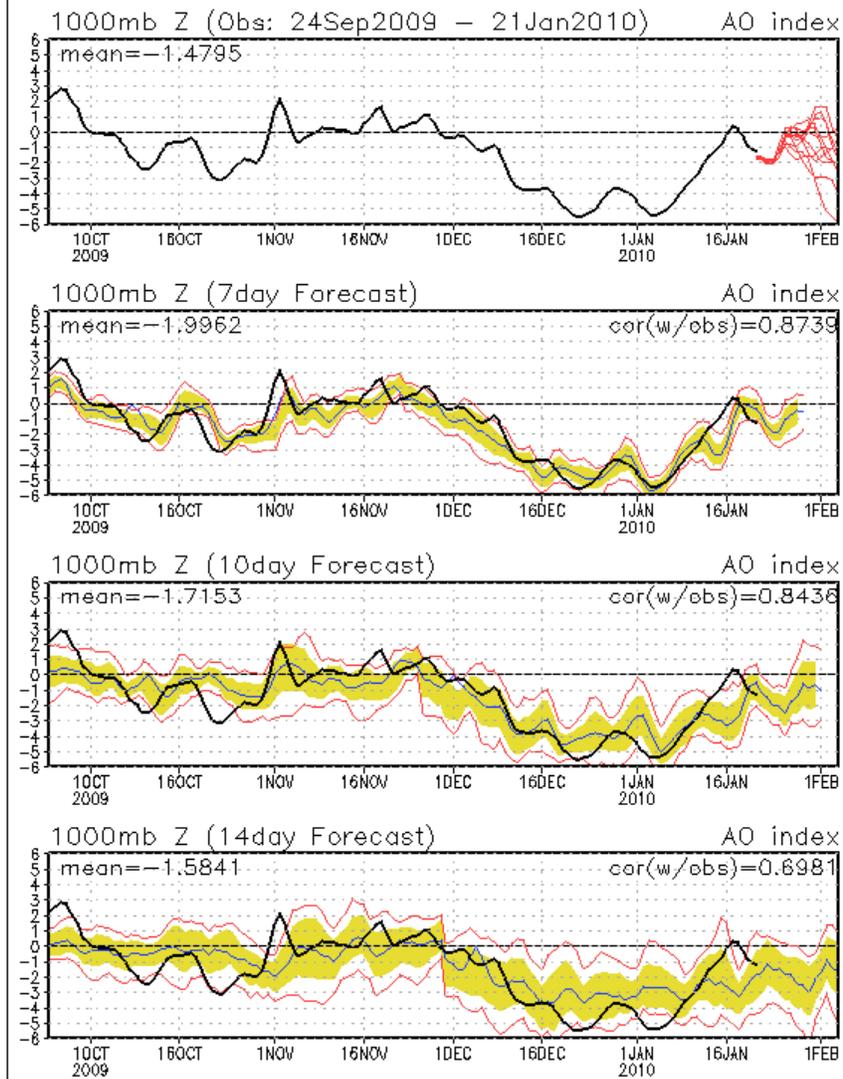
\* New Record Low for January 11

Below are some other low temperatures on January 11 from sites across the region.

Location	County	Low Jan 11	Location	County	Low Jan 11
Bronson (FAWN)	Levy	17	MacDill AFB (KMCF)	Hillsborough	27
Lower Suwannee River (RAWS)	Levy	20	Plant City Municipal (KPCM)	Hillsborough	27
Cedar Key (CMAN)	Levy	28	Peter O. Knight (KTPF)	Hillsborough	30
Holder (CW1327)	Citrus	14	Egmont Key (COMPS)	Hillsborough	36
Crystal River (KCGC)	Citrus	16	Kathleen (CW6582)	Polk	16
Inverness (KX40)	Citrus	18	Lakeland Highlands (NZ40)	Polk	22
Floral City (CW7082)	Citrus	24	Polk City (WC4PEM-9)	Polk	22
Brooksville (KBKV)	Hernando	14	Lake Alfred (FAWN)	Polk	26
Brooksville (FAWN)	Hernando	18	Bartow (KBOW)	Polk	27
Brooksville (K4TR)	Hernando	21	Dundee (WC4PEM-15)	Polk	27
Hernando Beach (CW6533)	Hernando	29	Frostproof (FAWN)	Polk	28
Bushnell (CW8067)	Sumter	22	Fort Green 12 WSW (FTGF1)	Manatee	24
The Villages (KVVG)	Sumter	23	South Bradenton (CW7601)	Manatee	27
North Dade City (CW2672)	Pasco	23	Bradenton (KB4SYV)	Manatee	31
Wesley Chapel (KB1ATL)	Pasco	24	Anna Maria (COMPS)	Manatee	36
Dade City (PMSFL)	Pasco	25	North Port (FAWN)	Sarasota	27
Aripeka (COMPS)	Pasco	27	Venice (CMAN)	Sarasota	31
Port Richey (COMPS)	Pasco	28	Ona (FAWN)	Hardee	25
Hudson (DW0745)	Pasco	30	Wauchula (Hardee Co EOC)	Hardee	28
Anclote Gulf Park (COMPS)	Pasco	31	Arcadia (FAWN)	Desoto	24
Palm Harbor (CW5072)	Pinellas	26	Venus (CW7827)	Highlands	23
Kenneth City (KF4KUL)	Pinellas	27	Desoto City 8 SW (DSOF1)	Highlands	28
Oldsmar (CW2932)	Pinellas	27	Lake Wales (RAWS Nr Sebring)	Highlands	29
Clearwater (N4BSA)	Pinellas	28	Sebring (FAWN)	Highlands	31
Clearwater Beach (Pier 60)	Pinellas	32	Port Charlotte	Charlotte	23
St Petersburg/Clearwater (KPIE)	Pinellas	32	Lehigh Acres (DW1790)	Lee	28
Tampa Executive (KVDF)	Hillsborough	19	North Fort Myers (CW0445)	Lee	29
Bloomingtondale (WX4DAN)	Hillsborough	19	Cape Coral (CW3609)	Lee	30
Dover (FAWN)	Hillsborough	22	Fort Myers - SW Int'l (KRSW)	Lee	30
Lithia (DW1923)	Hillsborough	22	Ding Darling NWR (RAWS)	Lee	33
Gibsonton (DW10460)	Hillsborough	23	Big Carlos Pass (COMPS)	Lee	34
Balm (FAWN)	Hillsborough	25	St James City (CW3181)	Lee	34
Ruskin (NWS Office)	Hillsborough	26	Bokeelia (DW2928)	Lee	35
Sun City Center (N1ZK)	Hillsborough	26			

So in general it would appear that if we monitor the trend in the Arctic Oscillation index during the winter months we may be able to forecast extended periods of cold weather and possible freezes with pretty good accuracy a week or two in advance.

## AO: Observed & ENSM forecasts



Thank You to all!

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