



South Texas Weather Journal



NWS Corpus Christi, TX

Winter 2012 Edition

Special points of interest:

- Did you know that every 3-4 years on average we have a freezing event at Corpus Christi?
- All about the 2012 Atlantic Hurricane Season.
- Is the Drought Improving?
- Find out more about our brand new marine page and Outdoor Safety videos!

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Significant Ice Storms That Have Affected Corpus Christi

Mike Buchanan — Science & Operations Officer

Since 1924, freezing rain and/or freezing drizzle have been observed on average every 3 to 4 years in Corpus Christi. The years in which freezing rain and/or freezing drizzle have been observed in Corpus Christi are 1924, 1940, 1946, 1947, 1948, 1949, 1951, 1956, 1961, 1962, 1963, 1964, 1973, 1978, 1982, 1983, 1985, 1989, 1990, 1994, 1996, 1997, 2007, and 2011.



Using meteorological data from the National Climatic Data Center along with socio-economic data from the Corpus Christi Caller-Times, 9 significant Corpus Christi icing events were identified since 1924. These icing events were significant because of the ice thickness, the longevity of the event, the number of fatalities and injuries, travel and communication disruption, economic losses, and business, airport and school closures. The 3 most significant ice storms which affected Corpus Christi occurred on December 19-25 1924, January 29-31 1951, and January 12-14 1985.

	12/19-25 1924	1/18-22 1940	1/29-31 1951	1/9-10 1973	1/12 1982	2/5-6 1982	1/12-14 1985	2/4-7 1989	2/3-4 2011
Ice Thickness	Unknown	Unknown	>1/10"	1/4-1/2"	Unknown	Unknown	1"	1/3-1/4"	1/4-3/8"
Total Liquid	1.45"	Unknown	0.10"	0.39"	0.05"	0.04"	0.57"	0.09"	0.05"
Event Duration	~4 days	6 hours	~42 hours	16 hours	2 hours	5 hours	30 hours	39 hours	14 hours
Freezing Duration	~72 hours	23 hours	96 hours	14 hours	31 hours	17 hours	32 hours	38 hours	37 hours
Fatalities	Unknown	Unknown	2	None	None	1*	2	None	None
Injuries	Unknown	Unknown	Multiple	>=10	Unknown	Dozens	>=27	Multiple	Multiple

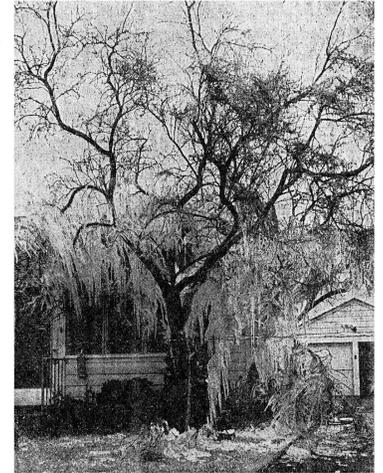
The 1924 ice storm actually occurred on 4 separate days on the 19th, 20th, 21st, and 25th. Freezing precipitation began about 9 hours after a very strong Arctic cold front moved through Corpus Christi during the morning hours on the 19th. A second Arctic cold front pushed through Corpus Christi on the 24th. Prolonged record-breaking cold air combined with persistent precipitation produced a long duration and significant icing event. Travel came nearly to a complete halt. Damage to crops and vegetation was extensive. Telephone lines were down for as long as 4 months! "A heavy coating of glaze" reported by the former MIC at the NWS office in Corpus Christi caused many tree limbs and wires to collapse due to the weight of the ice.



Freezing precipitation began falling around 19 hours after a very strong Arctic cold front moved through Corpus Christi in the early evening of January 28th 1951. A staggering 42 hours of freezing precipitation and 96 consecutive hours below freezing then ensued. As a result, the effects from this ice storm were major and included: 2 fatalities, countless injuries, 240 miles of wire needed to replace the 3800 broken wires and 2100 broken telephone poles, all flights and bus services cancelled, and most roads, schools, and businesses closed.



The 1985 ice storm began around 49 hours after a strong Arctic cold front moved through Corpus Christi on the morning of January 10th. After more than 30 hours of freezing precipitation, “a solid inch of ice” was reported on Nueces Bay Causeway.



Other effects included: 2 fatalities, more than 27 traffic accidents and injuries, closed bridges and roads for several days, cancelled airline flights, and schools closed.

It is worth noting that the ice storm which occurred on February 3-4 2011 was very similar to the January 9-10 1973 and February 4-7 1989 ice storms. For additional details on these and other past ice storms, look for an upcoming web page from your National Weather Service office in Corpus Christi,

Texas. (All Photo Credits: Corpus Christi Caller-Times; * North of Corpus Christi in George West)

Be prepared for a Winter Storm!

Stay Prepared at Home by Having:

- Extra food and water.
- A flashlight and extra batteries.
- A battery powered NOAA Weather Radio.
- A first-aid kit and extra medicines.
- An emergency heat source, such as a fire place, a wood stove, or a space heater.

Remember to be very careful and use these properly. Make sure to have proper ventilation to avoid carbon monoxide poisoning, and always have a fire extinguisher and smoke alarms close by.

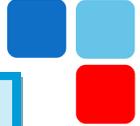
Make sure pets have plenty of food, water and shelter.

(Source: Winter Storms the Deceptive Killers, <http://www.nws.noaa.gov/om/winter/>)

Prepare your Vehicle by Having:

- High-calorie, non-perishable food and water.
- Flashlight and extra batteries.
- A first-aid kit and medicines.
- Blankets and extra clothing.
- Large empty can, bags, tissues and paper towels to use for sanitary purposes.
- A tool kit, battery booster cables and road maps.

***Avoid Overexertion**, such as shoveling heavy snow, pushing a car or walking in deep snow. The strain from the cold and the hard labor may cause a heart attack. Sweating could lead to chill and hypothermia.



NWS Forecast Offices Join Partners to Highlight Hurricane Preparedness Along Texas Coast



During the peak of the 2012 Atlantic hurricane season, National Weather Service forecast offices, media partners and the Insurance Council of Texas launched a week-long tour August 31 to highlight the need for tropical storm and hurricane preparedness.

Through dozens of radio, television and newspaper interviews in both English and Spanish, officials reached out to coastal communities from the Beaumont/Port Arthur market down to the Rio Grande Valley.

NWS staff from forecast offices in Houston/Galveston, Corpus Christi and Brownsville/Rio Grande Valley reminded audiences of the power of hurricanes, the need for awareness and preparedness, where to find local information on the Internet and how to communicate with NWS via social media. Multiple media outlets provided a potential reach to millions of Texas residents.

“The media tour was a great way to reach a large audience with important and timely information on how to prepare for a hurricane landfall and to give them a better understanding of how to interpret hurricane forecasts and warnings,” said **Dan Reilly**, Warning Coordination Meteorologist for the NWS Houston/Galveston office.

The arrival of Hurricane Isaac along the Louisiana coast in late August provided a backdrop which further emphasized the topics of the day. NWS staff frequently discussed the array of hurricane hazards, limitations of the Saffir-Simpson Hurricane Wind Scale, and the outlook for the remainder of the 2012 hurricane season.

In the Texas Coastal Bend region near Corpus Christi, Puerto Rican-born NWS Meteorologist **Alina Nieves** took advantage of her Spanish language fluency to reach out to help the Spanish speaking community to better understand the tropical cyclone threat.

“It’s important to me because I am part of the Spanish speaking community and I want them to understand and respond to the threat posed by hurricanes,” said Nieves.

Further south, NWS Brownsville Warning Coordination Meteorologist **Barry Goldsmith** and Forecaster **Maria Torres** picked up the torch to crisscross the Rio Grande Valley conducting dozens of additional interviews in English and Spanish.

“The annual tour is another great example of the public/private partnership among the National Weather Service, the Insurance Industry, and local media to remind residents that being prepared includes the family plan, survival kits, home protection, and peace of mind that comes from being fully covered by a variety of insurance policies,” noted Goldsmith.



(Source: NWSNews)



A LOOK BACK

Atlantic Hurricane Season 2012

Lara Keys — Meteorologist Intern

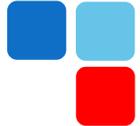
The 2012 Atlantic Hurricane Season was an active season, ending with 19 named storms, ten of which were hurricanes, and one of these a major hurricane. Overall, preliminary costs of damage estimates near 68 billion USD for the season. See Table I below for preliminary estimates of damage costs by individual storms. The 2012 season activity was above average for the number of named storms & hurricanes and below average for the number of major hurricanes. The 30-year average for named systems is 12. Of the 12 named systems, six are hurricanes and three are major hurricanes on average. Although the official hurricane season begins June 1 and runs through November 30, there were actually two storms that developed before the start of the official season: Tropical Storm Alberto on May 19 and Tropical Storm Beryl on May 26. Hurricane Michael was the one major hurricane this season, with a full lifecycle from September 3-11. On September 6 Michael reached major hurricane strength, remaining a low end Category 3 hurricane on the Saffir Simpson Hurricane Wind Scale (SSHWS) for less than 12

Preliminary 2012 Hurricane Season Statistics

Name	Peak Category	Dates	Peak Wind (mph)	Minimum Pressure (mb)	Damage (USD/millions)	ACE
Tropical Storm Alberto		May 19 - 22	60	995	None	1.38
Tropical Storm Beryl		May 26 - 30	70	992	0.148	2.16
Hurricane Chris	1	June 19 - 22	75	987	None	2.72
Tropical Storm Debby		June 23 - 27	60	990	308.7	2.45
Hurricane Ernesto	1	August 1 - 10	85	980	None	7.71
Tropical Storm Florence		August 3 - 6	60	1002	None	1.51
Tropical Storm Helene		August 9 - 19	45	1004	17	0.245
Hurricane Gordon	2	August 15 -20	110	965	Minimal	8.19
Hurricane Isaac	1	August 21 - September 1	80	968	2K (billion)	9.47
Tropical Storm Joyce		August 22 - 24	40	1006	None	0.245
Hurricane Kirk	1	August 28 - September 2	105	970	None	7.51
Hurricane Leslie	1	August 30 - Sept. 11	75	968	Unknown	14.8
Hurricane Michael	3	September 3 - 11	115	964	None	16.5
Hurricane Nadine	1	September 11 - October 4	90	978	Minimal	25.8
Tropical Storm Oscar		October 3 - 5	50	997	None	0.970
Tropical Storm Patty		October 11 - 13	45	1005	None	0.528
Hurricane Rafael	1	October 12 - 17	90	969	2+	7.14
Hurricane Sandy	2	October 22 - 29	110	940	65.6K+ (billion)	12.5
Tropical Storm Tony		October 22 - 25	50	1000	None	1.17
Totals					68K+ (billion)	123

Table I: Preliminary 2012 Hurricane Season Statistics

hours. The first hurricane to make landfall for the season was Hurricane Isaac on August 28-29. Although Isaac was a low end Category 1 system, it produced significant storm surge flooding and damages across the Louisiana coast. Even with the high number of tropical systems that formed this season they were all steered away from the South Texas coast. Hurricane Isaac was the last system to move into the Gulf of Mexico for the 2012 season.



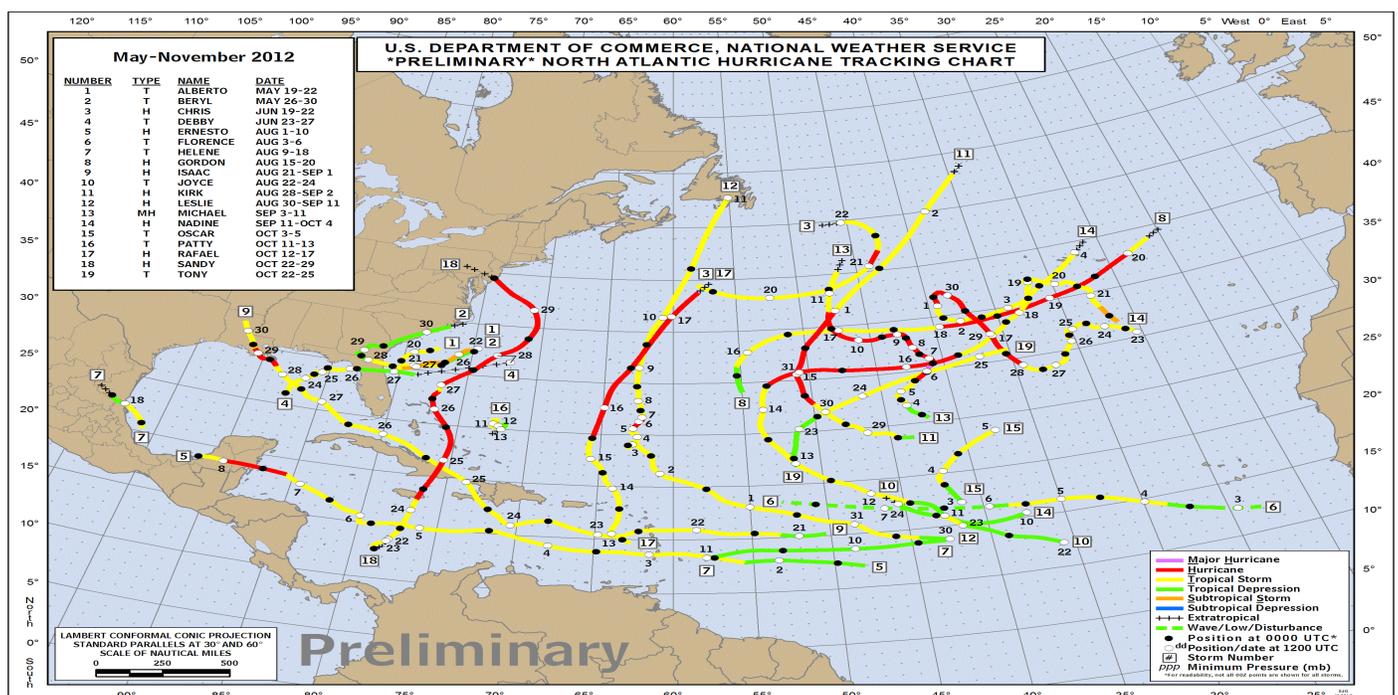
Summary of Sandy

Just as it appeared the impactful portion of the 2012 Atlantic Season along the U.S. coastline would be limited to one marginal tropical storm (Debby) and the "I" storm (Isaac) for a second year in a row, a large envelope of tropical energy began festering in the central Caribbean sea around the 19th/20th of October. By the 22nd, the energy organized into Tropical Storm Sandy, and early on the 24th would wrap up into a tight center of hurricane force winds. The center strengthened rapidly and made landfall with winds estimated near 110 mph in eastern Cuba as pressure crashed to 957 mb. As Sandy tracked northward through the Bahamas, dry air entering the system would reduce the winds to 70 to 75 mph, but pressure would remain formidably low, only rising to 970 mb. Soon after, puzzle pieces fell into place to transition Sandy from a hurricane with a small core and a large circulation into a storm of epic proportion:

- *Size: The initial large girth of Sandy, as much as 205 miles in the northern semicircle while passing the Bahamas, allowed larger atmospheric energy sources to feed, rather than destroy, the cyclone.*
- *Steering: A developing, strong negative phase of the North Atlantic Oscillation and Arctic Oscillation, coincided with Sandy's march up the eastern seaboard. This teleconnection aided the development of a high amplitude blocking pattern. The block provided necessary energy, known as baroclinicity for lowering surface pressure and the eventual curl into the mid Atlantic coast.*
- *Gulf Stream: Sandy's track near the Florida east coast, initially curving northeast parallel to the southeast U.S. coast at increasing distance, was largely over 81 degree waters, which added additional fuel.*

The rest is history. Sandy broadened in scope to include gale force winds more than 500 miles northeast of the center, built up the Atlantic Ocean to 25 to 35 feet for hundreds of miles, expanded in size to cover more than 1,000 miles, and intensified to a record low pressure for a storm east of New Jersey. Through landfall, and especially during high tide, storm surge destroyed or severely damaged thousands of homes and hundreds of miles of roads, bridges, tunnels, and more across the most densely populated corridor of the U.S. More than 8 million customers lost power during the peak of the storm. As of the end of November, damage estimates had soared to \$63 billion (U.S.), making Sandy the second costliest weather even on record— so far. At last count, 253 persons died related to Sandy, including 131 in the U.S. A full report will be available from the National Weather Service in 2013.

(Credit: NWS WFO Brownsville)





LOOKING AHEAD

Hopes for an El Niño Winter Diminish: Drought Conditions Likely to Continue for Some Time

Greg Wilk — Lead Forecaster

Unfortunately, hopes for a winter El Niño (and above normal rainfall) that were forecast this past summer have diminished dramatically. Officially, an El Niño episode begins when the three month average sea-surface temperature departure exceeds 0.5°C in the east-central equatorial Pacific (between 5°N-5°S and 170°W-120°W). The Climate Prediction Center (CPC), which previously forecast likely El Niño conditions to develop by the Northern Hemispheric winter 2012-2013, now forecasts that a more ENSO neutral (El Niño/Southern Oscillation neutral) pattern will continue through the upcoming winter, and probably through the middle of 2013.

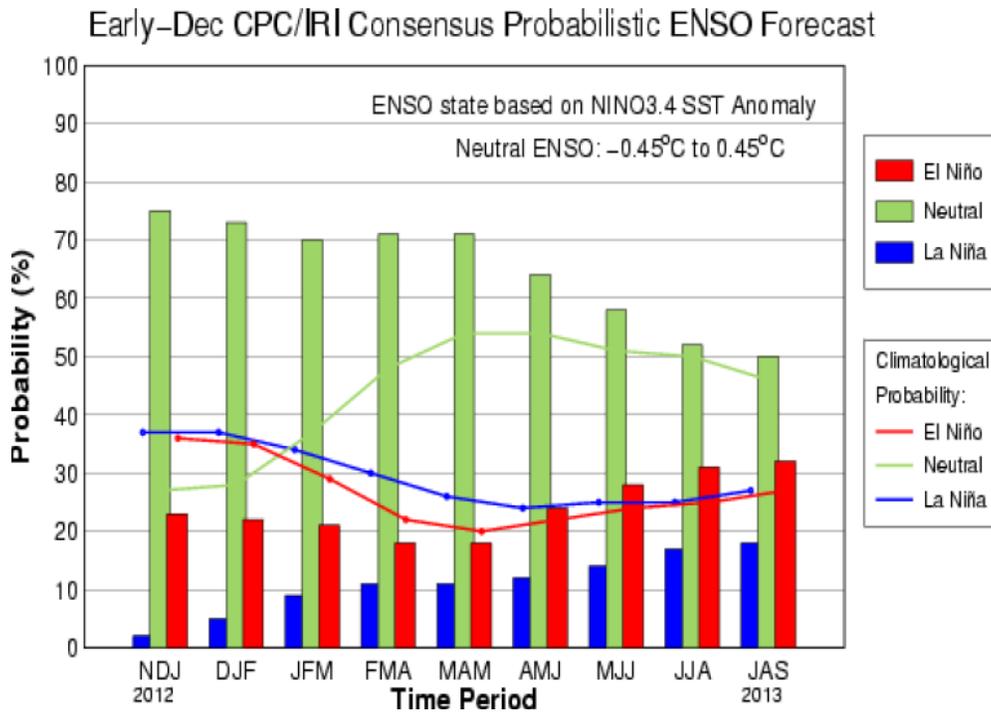
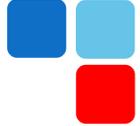


Figure 1: Cumulative probabilities for El Niño, La Niña and ENSO Neutral conditions to develop for each three month period Nov-Dec-Jan 2012/2013 through Jul-Aug-Sep 2013. Clearly ENSO-Neutral conditions are the most likely though the middle of 2013.

Part of the reason for this revision is due to persistently cooler than normal sea surface temperatures along the Pacific Coast, and above average sea surface temperatures and sea level pressures in the North Pacific Ocean. These conditions tend to suppress an El-Niño from developing. CPC also notes that, while above normal temperatures still exist in the equatorial Pacific Ocean, the atmospheric circulation over the tropical Pacific is near average. As a result, while the tropical ocean and atmosphere may resemble a weak El Niño at times, it is unlikely that a fully coupled El Niño will develop during the next several months (although El Niño development cannot be ruled out). Thus, ENSO-neutral conditions are favored through the Northern Hemisphere winter 2012-13.



Since a full-blown El Niño event is unlikely, temperature and precipitation forecasts for the upcoming winter and spring have changed. When a weak to moderate El Niño was forecast in mid-August 2012, above normal rainfall was forecast for South Texas for the months January 2013 through March 2013. Now, CPC projects that there is an equal chance for either near normal, above normal, or below normal rainfall for this three month interval (see Figure. 2 below). Considering the large rainfall deficits over most of South Texas during the past year, and because the winter months normally do not provide a large percentage South Texas' yearly rainfall, it is unlikely that significant drought relief will come to our area over the next few months. The most recent Drought Outlook Product (see: <http://www.srh.noaa.gov/crp/?n=drought>), issued December 20 2012 and valid through the end of March 2013, calls for drought conditions to persist or intensify over current drought areas, and develop over areas not currently in drought. In fact, the rainfall outlook for the period March through May 2013 (not shown) indicates a greater likelihood for below normal rainfall over the western portions of South Texas, with equal chances for near/above/below normal rainfall elsewhere.

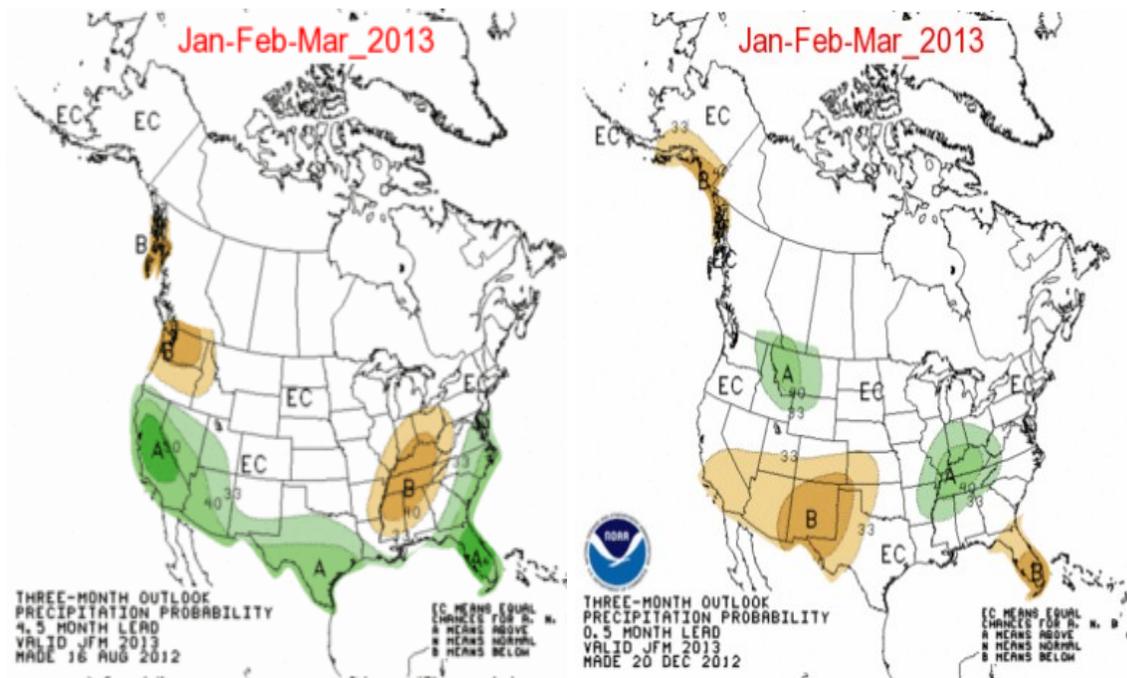


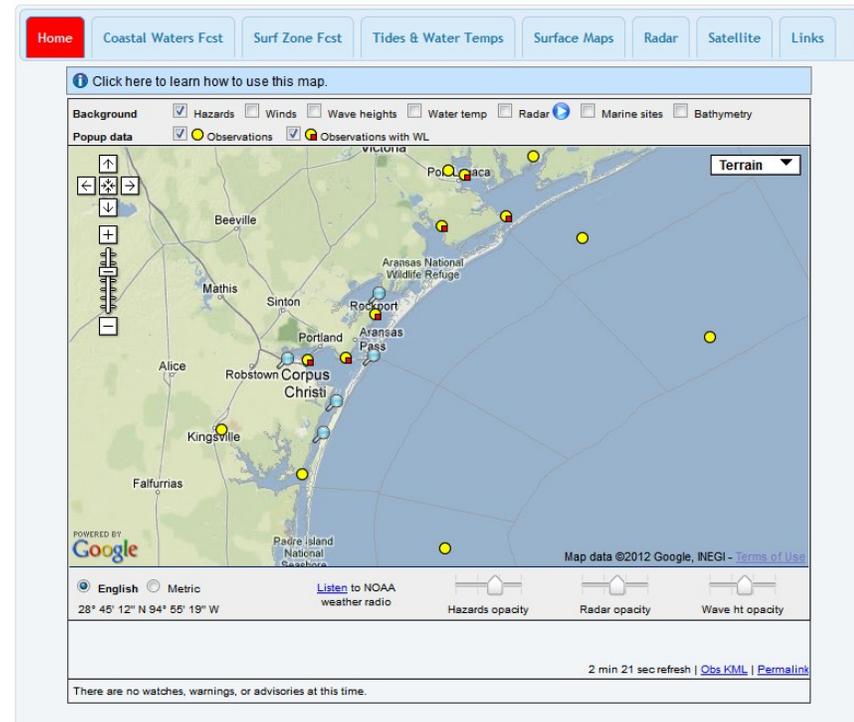
Figure 2: Three month precipitation outlooks for the period January 2013 through March 2013. The map on the left was the forecast made in mid-August 2012, while the map on the right was the forecast made on December 20 2012.

Does that mean that there is no chance for improvement in this devastating and long-term drought? Although prospects for a gradual and more persistent relief in drought conditions are not promising, one or two significant rainfall events (either in the form of a stalled out frontal boundary or nearly stationary upper level low) could bring some drought relief to South Texas residents. Also, there is still a chance that a weak, shorter-lived El Niño pattern could develop, and increase the probability for above normal rainfall. Until the time inevitably comes when more significant rainfall comes back to South Texas, residents should continue to conserve water, as this much needed and limited resource may become critically low (requiring harsh water restrictions) if much needed (and above normal) rainfall is not received in the upcoming months.



New Layout to Marine Weather Portal Webpage

Mike Buchanan — Science & Operations Officer



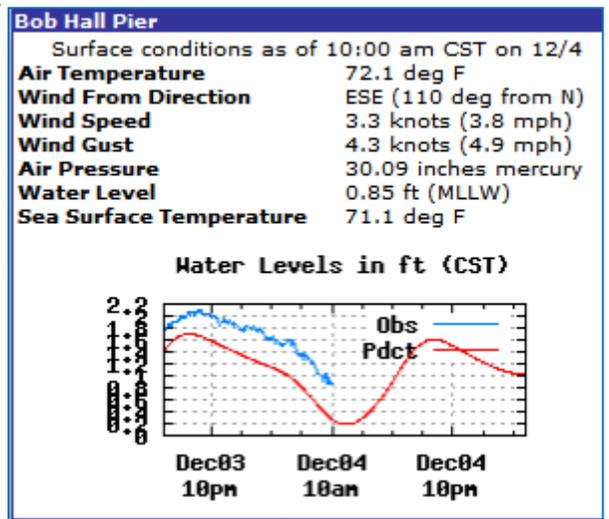
The National Weather Service (NWS) in Corpus Christi has developed a new marine web page at <http://www.srh.noaa.gov/crp/?n=marine>. The page is broken up into multiple tabs for quick and easy access to the latest marine observations and forecasts for the Middle Texas coastal waters.

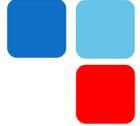
The home tab contains an interactive display of marine observations, which include one or more of the following: air temperature, sea surface temperature, wind, wave height, wave period, water level and air pressure. If a user performs a mouseover action over a marine observation site (one of the yellow dots on the map), a pop-up window showing the latest conditions will be displayed. If a single click is performed over a marine observation site, several graphs and a table depicting conditions over the past 48 hours will be displayed. If a single click is performed over the water but away from a marine observation site, then a detailed 5 day marine forecast from the NWS will be displayed on a separate page.

Other features of the home tab include the display of bathymetry and current marine weather hazards (e.g., small craft advisory) which may be in effect. The home tab will refresh with new data every 5 minutes.

Direct access to local NWS marine text products such as the Coastal Waters Forecast, Surf Zone Forecast, and Tide Predictions & Sea Water Temperatures will be accessible on the 3 tabs to the right of the home tab. Additional tabs will depict the latest surface map analysis along with 7-day forecast surface maps, including the location of cold fronts. Radar loops and static images, satellite loops and static images, and various links to other marine web resources round out the marine page.

Hopefully, marine customers and partners will find this new web page a good “one stop shop” for all of their marine weather needs. If you would like to provide feedback or have comments on this new marine page, please email Mike.Buchanan@noaa.gov.



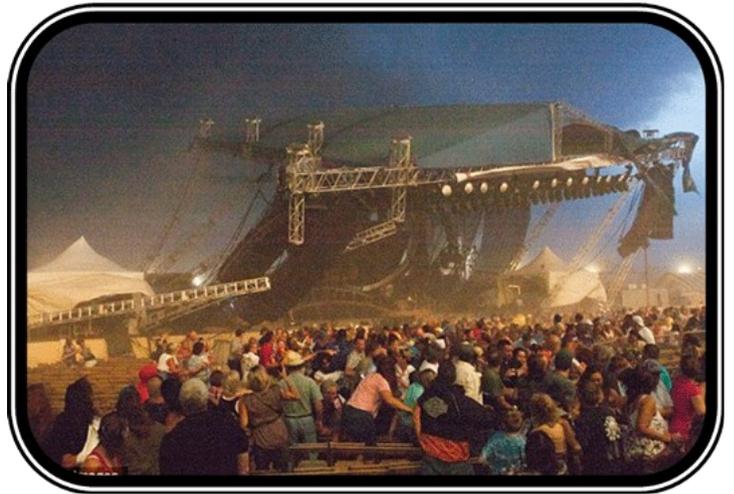


EVENTS, OUTREACH, & MORE

Weather Safety for Outdoor Events & Venues

John Metz — Warning Coordination Meteorologist

Have you ever attended an outdoor event such as a football game, or festival, surrounded by hundreds of people, when all of a sudden a thunderstorm moves in and you fear there is no safe place to take shelter? Over the past few years, there have been countless deaths and injuries at outdoor events across the nation when either spectators or event organizers did not have a plan for the approach of bad weather. Being prepared for hazardous weather at outdoor events is essential to everyone's safety. That is why the meteorologists at your local National Weather Service put together a safety video, brochure, and webpage to help event organizers better plan for such events. The video is broken down into three parts including: "Developing a Plan," "Monitoring the Weather," and "Postpone and Shelter." The goal is to save lives through increased awareness and proper planning. Check it out here:



http://www.srh.noaa.gov/crp/?n=outdoor_safety



STORM SPOTTER TRAINING

Across South Texas, dedicated volunteers provide first-hand severe weather reports to their local officials, and the National Weather Service (NWS) in Corpus Christi. Their reason: to help protect the lives and property of the citizens in South Texas.

Being a storm spotter not only means dedication, but also training. Each year the NWS in Corpus Christi trains members of police, fire department, emergency management, amateur radio, and other civic groups in the latest storm spotting techniques. The goal of the training is to prepare the spotter to identify hazardous weather conditions, how to report that information to the local NWS, and personal safety.

Most classes are taught during February and March. A complete class listing for 2013 will be posted by the end of January at <http://www.srh.noaa.gov/crp/?n=skywarn>. If your group is interested in hosting a Skywarn training session please contact Jason Runyen at Jason.Runyen@noaa.gov to coordinate setting up a class.

If you cannot attend a class locally, becoming a Skywarn Spotter has also become easier with the development of the online Skywarn Spotter Training Course. There are two new online courses, including: "Role of the Skywarn Spotter" and "Skywarn Spotter Convective Basics". These courses cover the basics of being a Skywarn Spotter. They are free and accessible from the METED website. <https://www.meted.ucar.edu/>



SKYWARN™ Recognition Day at the National Weather Service

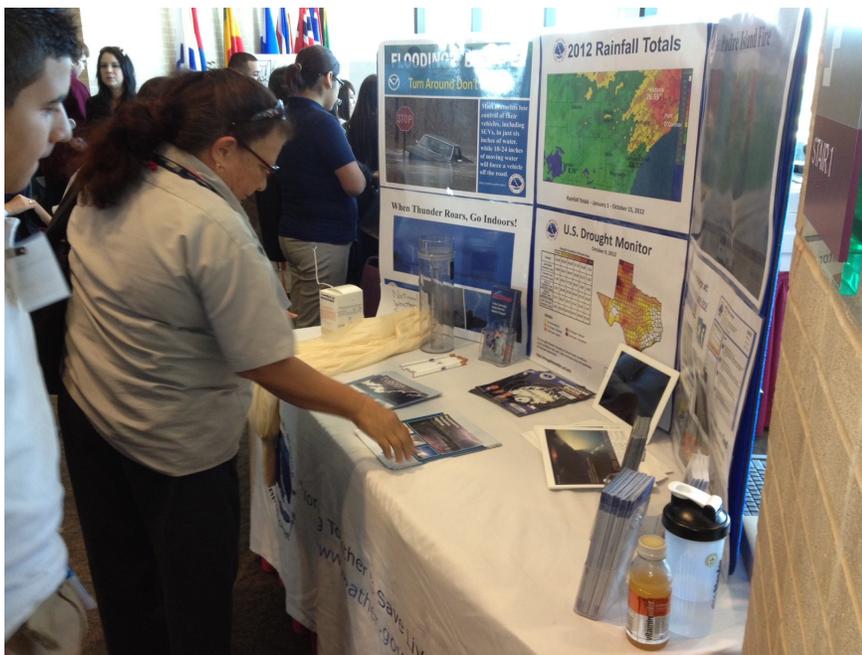
John Metz — Warning Coordination Meteorologist

Approximately 28 amateur radio operators from across South Texas attended SKYWARN™ Recognition Day at the National Weather Service, on Saturday December 1, 2012. This event celebrated the contributions that volunteer radio operators made to the National Weather Service in the past year. During the event, Warning Coordination Meteorologist **John Metz** provided a free luncheon to all volunteers and gave a presentation reviewing all of the severe weather events from 2012, the most active season in 25 years. As part of this special event, amateur operators also try to make radio contact with as many NWS Weather Forecast Offices as possible. Our local team received the Supercell Award given for contacting 22 offices. Thanks again to all amateur operators who donate their time to help us accomplish our mission of protecting lives and property from deadly storms. Your service to the community is greatly appreciated!

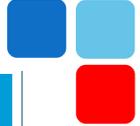


NWS Participates in Laredo Environmental Summit

John Metz — Warning Coordination Meteorologist



Meteorologists **John Metz** and **Alina Nieves** participated in the Laredo Environmental Summit on October 18, 2012 at Texas A&M International in Laredo. Several hundred students, faculty, and public officials were in attendance and discussed ways to address environmental needs and resources in the region. Alina spoke to students about the products and services offered by the NWS and distributed weather safety materials to students who visited our booth. John provided a detailed presentation on the drought conditions in South Texas, including a weather outlook for the upcoming winter and spring.



Regional and State Partners Meet to Discuss Drought Issues across South Texas

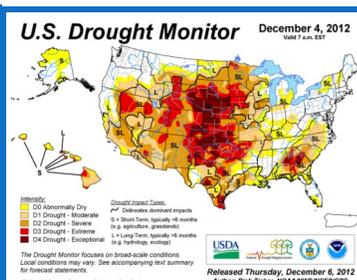
Jason Runyen — Lead Forecaster



On December 12 the National Weather Service in Corpus Christi hosted the 2012 South Texas Drought & Fire Weather Symposium on the campus of Del Mar College in Corpus Christi. The symposium provided an update on regional and state hydrologic, fire, and agriculture impacts from ongoing drought conditions. Highlights included Dr. John Nielsen Gammon, the Texas State Climatologist, discussing drought impacts and an outlook heading into 2013. Officials from the West Gulf River Forecast Center and City of Corpus Christi Water Department were present to discuss hydrologic and reservoir issues. In addition, state officials from the Texas A&M Forest Service were on hand to discuss wildfire issues across the region and state. The Texas Division of Emergency Management was also present to discuss the Texas Drought Management Plan. In all, nearly 70 partners attended the event. The symposium was well received and allowed key water, land management, agriculture, and emergency management officials to better plan for and mitigate impacts associated with the ongoing drought.



Above: Regional and state partners listen to a presentation from the Texas A&M Forest Service at the 2012 South Texas Drought & Fire Weather Symposium





STAFF SPOTLIGHT

NWS Corpus Christi Forecasters Receive Range Management Award

The Texas Society for Range Management presented Senior Forecaster **Jason Runyen** and Warning Coordination Meteorologist **John Metz** of NWS Corpus Christi with their Special Recognition Award. The award recognized Jason and John for their valuable fire weather and drought forecasting. Jason and John have lead several outreach efforts in South Texas to increase awareness of fire weather and drought resources and forecasting for both agriculture and land management partners. The award was presented to Jason and John at the 2012 South Texas Drought & Fire Weather Symposium.



Right: Dr. Lynn Drawe (middle) presents Senior Forecaster Jason Runyen (left) and Warning Coordination Meteorologist John Metz (right) with the Texas Society for Range Management's 2012 Special Recognition Award.



The Staff at the National Weather Service in Corpus Christi Wishes you a Merry Christmas and a Happy New Year!

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www.weather.gov/corpuschristi

