THE COASTAL BREEZE

Brownsville/Rio Grande Valley

SPRING 2022

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SPRING HAS SPRUNG!

Spring is here (but feels like summer some days), and we are back with another edition of the Coastal Breeze! We have a great issue we hope you enjoy. We look at severe weather across Deep South Texas including a look back at the infamous McAllen hailstorm of 2012. We are also starting a new quarterly segment where we will take a look at some weather myths to find out if there are any truths to these. You will get to know some of us a bit better by finding out what we like to do outside of the office, welcome (back) our new Electronics System Analyst and SO much more.

HAPPY READING!

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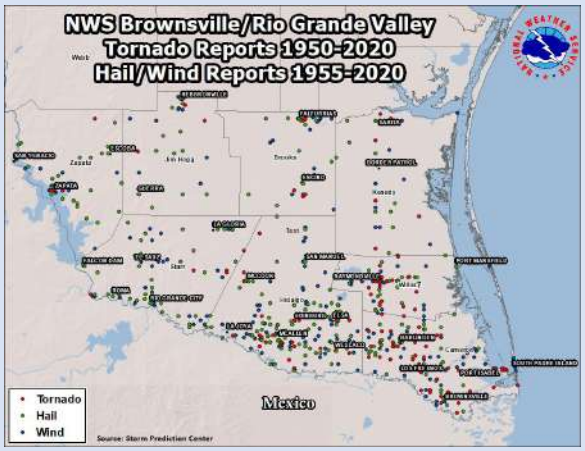
weather.gov/rgv

MIC MINUTE

By Mike Buchanan

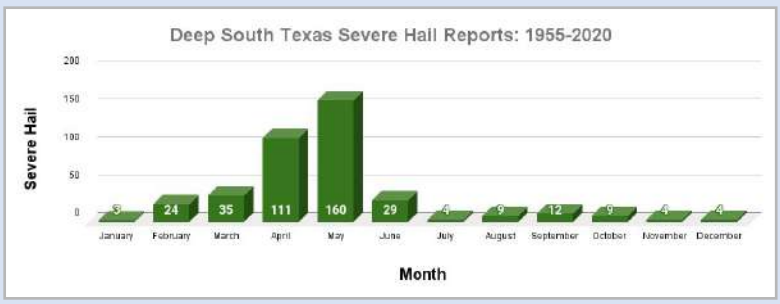
Spring is here and that means a greater potential for severe weather to impact Deep South Texas. The official definition of a severe thunderstorm is a thunderstorm that can produce a tornado, produce winds of at least 58 mph, and/or produce hail of at least 1" in diameter.

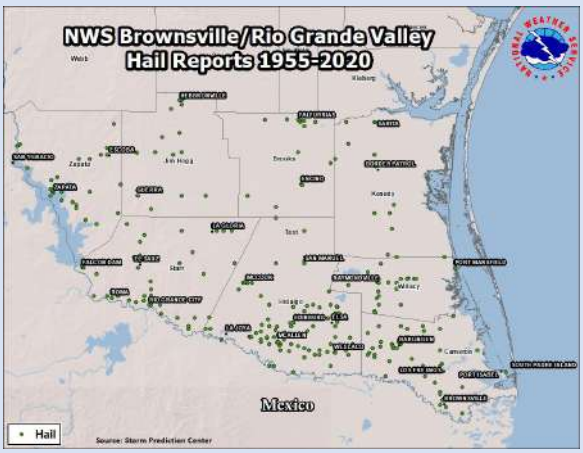
Large hail is most likely to occur during the months of April and May (peak month). Severe and/or damaging thunderstorm winds are most likely to occur between the months of April and June with May being the peak month. As for tornadoes, they typically occur between the months of April and September (peak month). One of the reasons for the September tornado peak is due to increased tropical cyclone activity affecting the area. Between 1955 and 2020, 404 severe hail and 470 severe wind reports (including damaging wind reports) were observed in Deep South Texas. Between 1950 and 2020, there were 137 tornado reports.



Severe Weather Reports for Deep South Texas

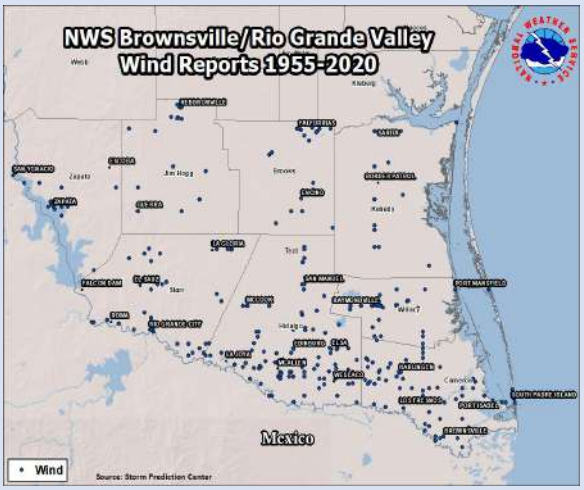
Although rare, hail of softball to grapefruit size has been observed across Deep South Texas on 5/11/1971 (Brownsville), 4/29/1991 (Pharr, Weslaco), 3/14/1997 (Mission), and 4/20/2012 (McAllen). The 4/20/2012 event produced around $10M in damages while the 5/11/1971 event produced $2.8M in damages. The 5/11/1971 hail event damaged crops, cars, homes, greenhouses, and trailers.

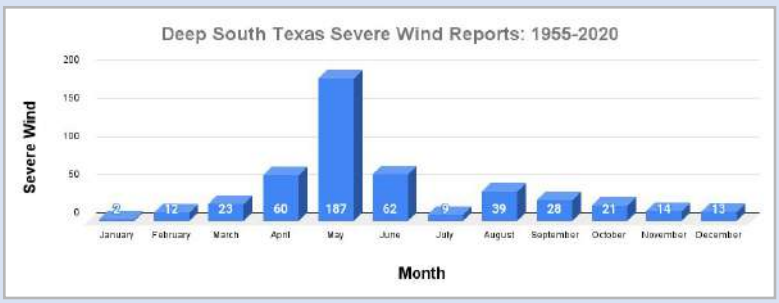




Above: Graph of severe hail reports 1955-2020.
Right: Location graphic of severe hail reports 1955-2020.

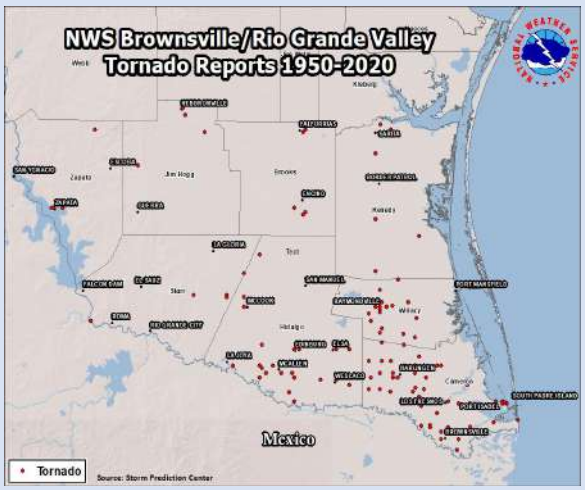
Across Deep South Texas, the strongest observed severe thunderstorm winds occurred during the evening hours on 5/2/2000. A supercell thunderstorm moved southeast across the communities of Laguna Vista, Laguna Heights, Port Isabel, and South Padre Island. A measured wind gust of 122 mph was observed with this severe thunderstorm as it moved across South Padre Island. Extensive damage occurred to roofs, awnings, garage doors, signs, canopies, and marinas. Windows were shattered. 50 power poles were blown down along with downed power lines and trees. Several RVs were blown over at Isla Blanca Park on SPI. $5M in damages occurred with this event. Other significant severe thunderstorm wind events that measured winds of 90 mph or greater occurred on 5/24/1975, 5/31/1976, 5/17/1982, 6/3/1988, 5/12/1997, 5/30/2005, 5/8/2012, and 5/31/2016.





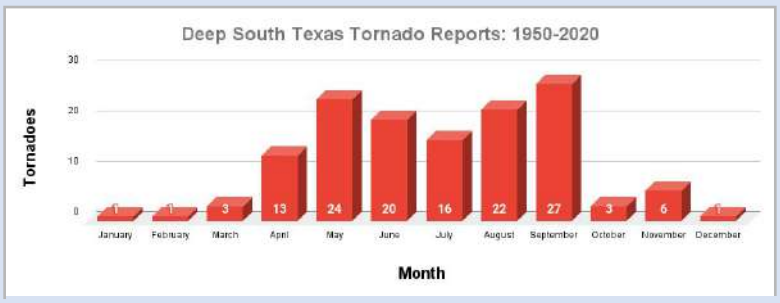
Above: Graph of severe wind reports 1955-2020.
Left: Location graphic of severe wind reports 1955-2020.

Several strong tornadoes (defined as EF-2 or EF-3 strength) have been observed since 1950 across Deep South Texas. Strong tornadoes have occurred on 1/26/1950, 9/7/1956, 6/1/1962, 4/19/1965 (EF-3), 6/5/1965 (EF-3), 5/12/1969 (2 EF-3 tornadoes), 5/23/1970, 5/24/1970, 8/9/1980 (Hurricane Allen), and 5/5/1991. No violent tornadoes (EF-4 or EF-5) have ever been recorded in our area. The vast majority of tornadoes (91%) that typically affect our area are considered in the weak category, meaning they are rated as either EF-0 (40-72 mph estimated



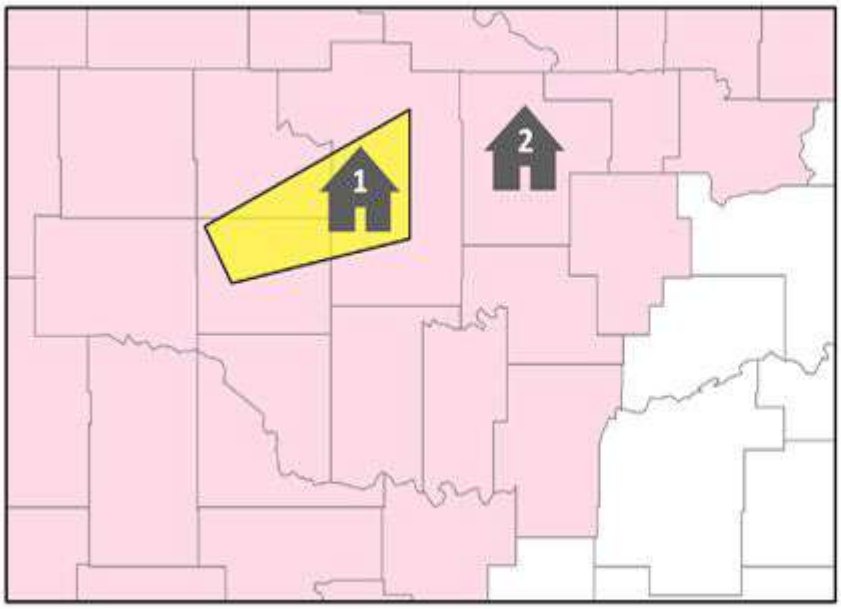
Location graphic of tornado reports 1955-2020.

winds) or EF-1 (73-112 mph estimated winds) intensity. But weak tornadoes can and often do produce light to moderate amounts of wind damage.



Graph of tornado reports 1955-2020.

Although severe weather is not as common in our area as it is in geographical areas well to our north, it can still occur and be quite significant at times. So, be prepared to take action if our office issues a severe thunderstorm warning or a tornado warning for your area.



Severe Weather Products

Severe Thunderstorm Warning

Severe storms expected! Seek shelter. Large hail or damaging wind is occurring or will shortly at this location on the map.

Severe Thunderstorm Watch

Severe storms possible. Be prepared. Weather conditions favor thunderstorms capable of producing large hail or damaging wind at this location on the map.

For more information on severe weather please visit:

https://www.weather.gov/safety/thunderstorm

REMEMBERING THE HISTORIC MCALLEN HAILSTORM, TEN YEARS LATER

By Tim Smith and Kevin Pagan, as told to Barry Goldsmith

It was an evening many will never forget: March 29th, 2012, the day the sky was literally falling over McAllen. A heavy-precipitation supercell thunderstorm, born from the collision of multiple boundaries from cells that moved southwest from the King Ranch and northeast from Tamaulipas and Nuevo León, Mexico and fed by a favorable upper-level jet stream, developed in the McAllen/Edinburg area, then sat on top of McAllen and Mission for about two hours between 830 and 1030 PM. Up to 45 minutes of hurricane-force wind-driven hail and 4 to 6 inches of torrential rains combined to cause widespread wind and water damage of $600 million. As of March 2022, the event remained one of the highest single-event damage producers in the Rio Grande Valley.

Warning Coordination Meteorologist Barry Goldsmith interviewed two important core partners: Tim Smith, Chief Meteorologist at KRGV-TV Channel 5, and Kevin Pagan, Esq., the Emergency Management Coordinator (EMC) for the City of McAllen at the time. Tim has served the Rio Grande Valley for more than 40 years, the past 39 as Chief Meteorologist. Kevin began work at the City of McAllen in 1994 and was the EMC from 2004 through his retirement in 2021.

Tim Smith, Chief Meteorologist at KRGV-TV Channel 5

Kevin Pagan, Esq., the Emergency Management Coordinator (EMC) for the City of McAllen

Barry Goldsmith: How do you remember the evening of March 29th, 2012?

Tim Smith: I remember things getting out of hand very quickly. We were anticipating strong to severe storms, but nothing like that. When the reports of how bad it was started to come in, it was hard to believe! We don't get storms like that down here . . . very often. And for it to hit densely populated north McAllen seemed surreal. I also remember driving home from work that night and deciding to drive through the affected areas. Besides being taken aback by the green streets, that is - the streets covered in the leaves which had been stripped from the trees, it was still difficult to get around because of the leftover flooding. A night we'll never forget.

Kevin Pagan: I remember the hailstorm in very personal terms, as my home in north McAllen was close to the "epicenter". My daughter and I were at the house when the storm hit, and I first recall noticing that the hail stones were getting increasingly large as the storm continued. Having grown up in "tornado alley," I was accustomed to pretty serious spring thunderstorms throughout my youth, but this one seemed to linger significantly longer than a typical thunderstorm and, especially, a hailstorm. Within a few minutes, the hail began to strike our house and windows with increasing force, to the point that we began to hear glass breaking. At that point, my daughter said "Dad, should we get in a bathroom or something?" As we started to move, hail began rolling down the interior staircase of the house, and we soon discovered that a skylight was destroyed and gaping holes were appearing in our ceiling/roof, and rain and hail was pouring into the house. The hail continued to blow with incredible force into the side of the house.

My wife, who was in south McAllen, called to check up on us. Her experience – mainly rain and some lightning – was much less impactful than ours and provided me with the first indication I had of the (thankfully) limited scope of the storm.

Once I judged that we were all safe, I quickly switched to Emergency Management mode. I tried to locate then Mayor Richard Cortez. Mayor Cortez lives only a block or two from me, so I presumed that he had experienced the storm much as I had. When I was able to reach him, he was concerned initially about his wife, who he had not been able to contact. I knew I would need the Mayor's guidance and direction, so we focused on ensuring he and his family were safe; once that was determined, I received his immediate permission to activate all necessary City resources. In reality, this "permission" was obtained after the fact; while I was unable to reach the Mayor as conditions rapidly deteriorated, I activated the City Emergency Operation Plan on my own authority, as I had been trained to do. From that point, my main focus was the City response, and praying that no one was seriously injured or killed.

With sunrise on March 30th brought a surreal scene. I was able to see in my own neighborhood the devastation the storm wrought! I had seen the aftermath of tornadoes, hurricanes, and floods, but this was unique. The entire area was completely stripped of foliage- not a leaf on a tree or a bush, and there were dead birds everywhere. The absolute, eerie silence of the outside environment that morning culminated an unforgettable moment in time.

Photo of damaged storefront in McAllen courtesy of National Weather Service Brownsville Storm Survey Team

Barry: How did you change your operations ahead of the event - for example, during the mid to late afternoon, either before or shortly after NWS Brownsville/Rio Grande Valley sent a quick email on the potential for severe weather and some flooding?

Tim: We always add extra meteorologists to shifts when significant weather is expected. But that night exceeded all expectations. We could've had everyone working and it wouldn't have been enough. So much information coming in so fast.

Kevin: I do not recall the City significantly altering operations prior to the storm. We were aware of the watches and warnings, so the Department of Public Works, Traffic Control, etc., were on alert, but we were not anticipating, to my knowledge, anything more severe than a heavy thunderstorm and perhaps street flooding.

Barry: How did your operations evolve during the event? What worried you most, as reports began coming in?

Tim: I was worried that people were getting hurt. That's always the fear. Our on-air verbiage had to be taken to a level we don't use very often. "This is a life-threatening storm!" "Get to your safe place NOW!" And I was talking on-air -directly to my friends! I know a lot of people who live and work in the affected area. When the hail was over, we morphed to ongoing flood coverage. It was no longer life-threatening, but still seriously impacting life - and the recovery effort.

Photo of trees debris and damage in McAllen neighborhood courtesy of National Weather Service Brownsville Storm Survey Team

Kevin: Operations at the City quickly evolved into both Search and Rescue response. Our primary concern was preservation of life, as we had no way of knowing how many people had been caught outside, or in vehicles, during the storm. My primary concern at that time was ascertaining if lifesaving efforts were underway and the extent of any injuries. It would take several hours, but I was beyond relieved to learn that there were, in fact, no deaths and very few injuries attributable to the storm. Given the large hail size and the ferocity of the wind, coupled with the duration of the event, this was nothing short of a miracle.

Barry, to Kevin: How long was the recovery process?

Recovery efforts melded into the response almost immediately with Public Works' removing

debris and clearing roadways. It's not often that you hear crews in McAllen say they can't access an area "due to ice," but this was the case for several hours as the thick layer of hailstones created a blanket of frozen insulation across the area. As it began to clear, crews in McAllen coordinated efforts to locate stranded motorists, clear streets, and generally expand the combined response/initial recovery process.

Recovery began in earnest the next morning as Public Works, Traffic, Public Utilities, Parks, and others worked together to clear streets, repair traffic signals, and generally coordinate with private sector partners (such as AEP Texas) to restore power and some sense of normalcy. The first phase lasted about 72 hours, but full recovery would take several weeks. Unique to this storm was the large number of automobiles that suffered hail damage and had to be removed for repair and replacement. Private sector recovery, damage repair, business restart, etc., would take months. In one area of town, we were told, virtually 100% of the roofs (residential and commercial) were heavily damaged or destroyed.

Barry: Did the event change your future operations for situations like this?

Tim: This storm really reinforced the need to expect the unexpected. At that point, I'd been in the weather business for 30 years and had never seen anything remotely like that storm. Hail storms yes, but for us, this was the mother of all hail storms. We've learned to never say "oh, that kind of weather never happens in the Valley."

A final thought: For years after the big storm, our viewers feared a repeat every time we had a severe weather threat. And while we did have another significant hail storm in the same area a few weeks later (April 20), storms like March 29th should be few and very far between. We hope.

Kevin: The storm, while unique and, for this part of the country, somewhat unexpected, did not radically alter the City of McAllen's operations or emergency preparations. We at the City had generally approached emergency management from an "all hazards" philosophy, so our communication, chain of command, etc. worked well during this event. It did, of course, make us more aware of thunderstorm, tornado, and related watches and warnings in the City, and the importance to take all of them seriously.

Barry: Thank you gentlemen for sharing your compelling stories with our readers! It's great to know that the communities and customers you serve can rely on your great work the next time a significant weather hazard affects McAllen – and the Rio Grande Valley/Deep South Texas region overall.

AREA MARITIME TRAINING AND EXERCISE PROGRAM MEETING

By Kirk Caceres

On March 15, 2022, Senior Forecaster Brian Miller and Forecaster Kirk Caceres represented the National Weather Service (NWS) Brownsville/RGV in the Initial Planning Meeting (IPM) for the Area Maritime Security Training and Exercise Program (AMSTEP) at the Robstown RMB Region Fairground.

AMSTEP is a functional exercise which is a fully simulated interactive exercise that tests the capability of an organization to respond to a simulated event. It is similar to a full-scale exercise but does not include equipment or deployment of existing field resources. AMSTEP 2022 will complete a four-year exercise cycle. The cycle includes activities in the three areas of the Corpus Christi Coast Guard Sector (Brownsville, Corpus Christi, and Port Lavaca) and an overarching functional exercise in the fourth year which includes all locations.

The IPM is one of a series of steps that must be taken before the full exercise can begin. The IPM addresses a number of strategic issues such as the objectives, participants, and roles and responsibilities. The IPM also clarifies or identifies major exercise objectives that apply to all three areas of the Corpus Christi sector. Some of the main objectives are to test Maritime Security (MARSEC) levels, correctly disseminate relevant information consistently, and to test a draft revision to the Area Maritime Security Plan. High-priority Transportation Security Incidents (TSI) include cyber threats, critical infrastructure threats, and specific vessel threats.

Two additional steps must be done before the AMSTEP can begin. A Mid-term AMSTEP Planning Meeting (MPM) is scheduled in June, and then a Final Planning Meeting (FPM) will occur in July. The functional three-day exercise will take place in August and will consist of a preparation day, an execution day, and an evaluation day. All events will take place at the Robstown RMB Regional Fairgrounds. The last time that this exercise was held was on July, 14, 2021 in Brownsville and was hosted by Keppel AmFels and with a focus on the Brownsville Ship Channel in Cameron County.

COOPERATIVE OBSERVER PROGRAM

By Geoff Bogorad

Did you know that over 8100 volunteers nationwide take daily weather observations? These volunteers are vital to the Nation's weather and climate data collection that set the stage for the long-term climate record. The Cooperative Observer Program (COOP) was formally created under the 1890 Organic Act, however volunteer weather reporting has a history going back to the founding of our country. The first network of cooperative stations was set up as a result of an act of Congress in 1890 that established the Weather Bureau, but many COOP stations began operation long before that time. John Campanius Holm's weather records, taken without the benefit of instruments in 1644-45, were the earliest known observations in the United States. Subsequently many persons, including George Washington, Thomas Jefferson, and Benjamin Franklin, maintained weather records. Thomas Jefferson maintained an almost unbroken record of weather observations between 1776 and 1816, and George Washington took his last observation just a few days before he died. Today, volunteers range from Grade School children to senior citizens collecting weather data from their backyards with many ranchers, institutions, water and electrical plants adding to a wide range of volunteers and locations.

Observers generally record temperature and precipitation daily and electronically send those reports daily to the National Weather Service (including the Brownsville/RGV office) and the National Climatic Data Center (NCDC). Many cooperative observers provide additional hydrological or meteorological data, such as snowfall, evaporation and soil temperatures. Equipment used at NWS cooperative stations are usually provided by the NWS, and installed on the observers property with the observer, or by a company or other government agency, as long as it meets NWS equipment standards.

Standard 8" Rain Gauge, Maximum/Minimum Temperature sensor (MMTS)

The National Weather Service in Brownsville/RGV currently has 19 volunteer COOP sites throughout Deep South Texas. There have been as many as 27 sites at the turn of the 21st century with a deep history of volunteer observers going back to the days of Fort Brown, in Brownsville (1846). Sites at the base of Falcon Dam, to the historic Kenedy Ranch and at South Padre Island, weather data collected over the decades provides a rich and diverse climate base that helps with understanding climate change and shows the wide range of weather that Deep South Texas encounters all year long.

Are you a weather enthusiast? Do you have what it takes to provide daily weather observations, no matter if it rains, shines, in cold or hot weather? Then this program may be for you. Although site locations are specific and may already be located near your location, if you are interested in participating in this rewarding program you can contact Geoff Bogorad, our acting COOP Program Leader. Locations that are in need of observers: La Feria, Mercedes, Santa Rosa, Sebastian, La Joya, Zapata, and Hebbronville.

COOP Site with Evaporation Pan and Totalizing Anemometer, 8” Standard and Fisher Porter rain gauges.

WEATHER FACT OR FICTION

By Amber McGinnis

We have all heard our fair share of weather myths. From open windows before a tornado hits, or your house will explode to lightning never strikes the same place twice. Some of these myths have been around for generations but how true are they, or are they true at all? Let's explore some common weather myths to find out-are they fact or fiction?

Myth: Red sky at night, sailor's delight. Red sky in the morning sailor's warning.

There is some truth to this saying. When the sun is near the horizon it passes through more dust and molecules which scatter more of the blue wavelengths away (read more about this in our Winter 2021 edition). When the sky is clear it results in more red and orange wavelengths making it through the atmosphere, which we can see, indicating high pressure is to your west and headed east toward you. High pressure is indicative of calm weather thus, red sky at night sailors delight. On the flip side a red sky in the morning indicates high pressure is to your east and low pressure is to the west and headed your way. Low pressure indicates more unstable weather.

Myth: Lightning can never strike the same place twice.

Lighting can, and has hit the same place twice, especially if it is a tall object. The Empire State building in New York gets struck by lightning on average of 25 times per year.

Myth: Flash Flooding only occurs near rivers and streams.

Flooding regularly occurs away from rivers and streams. Flash flooding happens when water rises rapidly, usually from heavy thunderstorms. In areas that have poor drainage, especially in urban areas, the water cannot soak into the ground or drain away fast enough causing the water to flood these areas.

Myth: Pressure change will cause your house to explode if you do not open your windows during a tornado.

It is the force of the wind that does damage during a tornado, not the pressure change. If you open your windows during a tornado, you are more likely to have damage inside the home due to the strong winds blowing items around and water blowing into the home. Also open winds will allow strong upward pressure on the roof of the home that could lead to roof damage, or destruction.

Myth: Crickets can tell the temperature by the frequency of chirps.

The chemical reaction that allows a cricket to chirp is determined by temperature-known as Dolbear's Law. While this is true, you will not usually hear a cricket chirp outside unless it is above 55 degrees fahrenheit. So how do you determine the temperatures when you hear crickets chirping? Count the number of chirps you hear in 14 seconds and add 40. This should give you the approximate temperature.

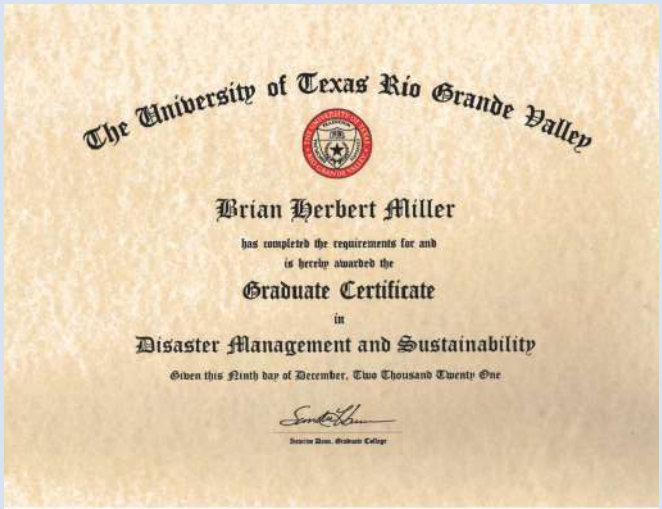
SKYWARN RECOGNITION DAY 2021

By Brian Miller

SKYWARN(TM) Recognition Day (SRD) 2021 was co-sponsored by the National Weather Service (NWS) and the Amateur Radio Relay League (ARRL) on December 3 and 4, 2021. SRD, first developed in 1999, is a fun annual event that recognizes certified severe weather spotters' contributions to the NWS mission of saving lives and protecting property. Many spotters are also licensed amateur radio operators (Hams) who provide vital communication between the NWS and emergency management. During SRD, Hams operate radio equipment at local NWS offices for 24 hours, making and recording as many contacts as possible. Besides just having fun on the air, NWS offices can earn recognition for the number of connections they make with other offices and other Hams.

Due to COVID-19 restrictions, the Weather Forecast Office (WFO) Brownsville SRD event, call sign WX5BRO, was run a little differently. Hams operated as WX5BRO from their own radio shacks instead of from the Brownsville weather office. Despite the change in procedure, SRD 2021 was a huge success. WX5BRO Hams made over a hundred contacts and earned the "Lightning Category" certificate for contacting seven to eight out of the over 30 NWS offices participating in the event.

I like engaging my mind. I recently received a Graduate Certificate in Disaster Management and Sustainability from UTRGV. I like studying German, reading science fiction, and watching old television shows and movies. I volunteer as a tutor and as a tax preparer. I also was recently elected Vice President of the local National Active & Retired Federal Employees (NARFE) chapter. I work out at the gym with extra time, do home improvement projects, or travel.
-Brian Miller, Lead Meteorologist


The University of Texas Rio Grande Valley

Brian Herbert Miller

has completed the requirements for and is hereby awarded the

Graduate Certificate

in

Disaster Management and Sustainability

Given this Ninth day of December, Two Thousand Twenty One

Surfing, fitness activities (love training for triathlons), reading (mostly fiction), doing crafty things or home/apt. DIY stuff.
-Laura Farris, Meteorologist

My hobbies include: Fishing, camping,tubing down the San Marcos River, traveling, bike riding, hunting, swimming,watching as many New England Patriots' games as I can, barbecuing, visiting Mexico, attending Concerts.
-Mike Buchanan, Meteorologist-in-Charge

Outside of work I like to paint and am currently working on some paintings for an art exhibit at our local fine arts museum. I also like to watch horror and B movies with my husband (old sci-fi and Universal monsters are my favorite), bird and macro photography, going to the beach to look for sea shells, and sampling every taco the area has to offer.

-Amber McGinnis, Meteorologist

My hobbies include: reading (especially historical biographies), stargazing/astronomy, and following my native Illinois sports teams (Chicago Cubs, Chicago Bears, and University of Illinois Fighting Illini)!

-Josh Schroeder, Science and Operations Officer

My hobbies are travelling, exploring the outdoors, and history. I have been to over 15 countries and visited every state in the United States, except for Hawaii and Maine. I enjoy hiking, camping, mountain biking, and searching for waterfalls. I also like learning about history either from books or visiting museums.

-Kirk Caceres, Meteorologist

Hobbies outside of the office: Playing guitar, music, photography, visiting baseball stadiums. **-Rick Hallman, Meteorologist**

My hobbies are reading history, science, or action fiction. I also enjoy ranch work and building things. **-Pablo Gonzalez, Information Technology Officer**

Some who follow me on twitter may know me as @wxdancer. The "Weather Dancer", for short. My favorite hobby for more than 25 years has been social dancing. I've danced styles from latin to country/western, with my favorite styles being New York Hustle, West Coast Swing, and Tennessee Two-Step. I've attended more than fifty competitions and conventions, and competed in several of them - winning a little prize money on occasion. If you need a few basic tips, I can help! **-Barry Goldsmith, Warning Coordination Meteorologist**

RETURNING TO THE VALLEY AS AN ELECTRONICS SYSTEMS ANALYST

By Cesar Ochoa

Hello, everyone! I'm Cesar Ochoa, and I'm originally from Merced, CA. I joined the U.S. Air Force in 1999 as a backshop avionics technician after debating whether to enlist or head to college. After basic training (Lackland AFB, TX) and tech school (Lackland AFB, TX and Sheppard AFB, TX), I was assigned to the B-1B radar and electronic warfare backshop at Dyess AFB, TX for my remaining 5 years. I joined the Air Force to see the world and never left Texas!

After separating from the Air Force in 2005, I was hired by the Brownsville WFO as an Electronics Technician. I worked in that capacity until 2014, when I was selected to be the Electronic Systems Analyst at the Boulder WFO. Colorado was awesome, but my wife and I felt that our girls were missing out on too much being so far away from either family. So back to the RGV we came.

My hobbies include fishing, working on cars, and building computers. However, I don't do much of that anymore. I spend most of my free time playing with my girls nowadays. Girl dad all the way. I look forward to continuing my career at BRO, and helping move the office forward.

THE NATIONAL WEATHER SERVICE BROWNSVILLE/RIO GRANDE VALLEY
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NWS MISSION

Provide **weather**, water, and climate data, forecasts and warnings for the protection of life and property and enhancement of the **national** economy.

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