THE COASTAL BREEZE

Volume XI, Issue 2 SPRING 2023

Brownsville/Rio Grande Valley

Spring has Sprung!

We have been busy at the National Weather Service for the past few months! In this issue we highlight some of the events that have taken place and our Meteorologist in Charge gives us an overview of what kind of severe weather affects our region, and boy, have we seen it so far! We will also look at more weather folklore, discover some of our staff's most significant challenges, and more!

We want to hear from you!

Do you have suggestion for articles or weather photos you want to show off? Send them our way! For any photos make sure to include: date, time, location and name of photographer for credit!

Email us at sr-bro.awareness@noaa.gov

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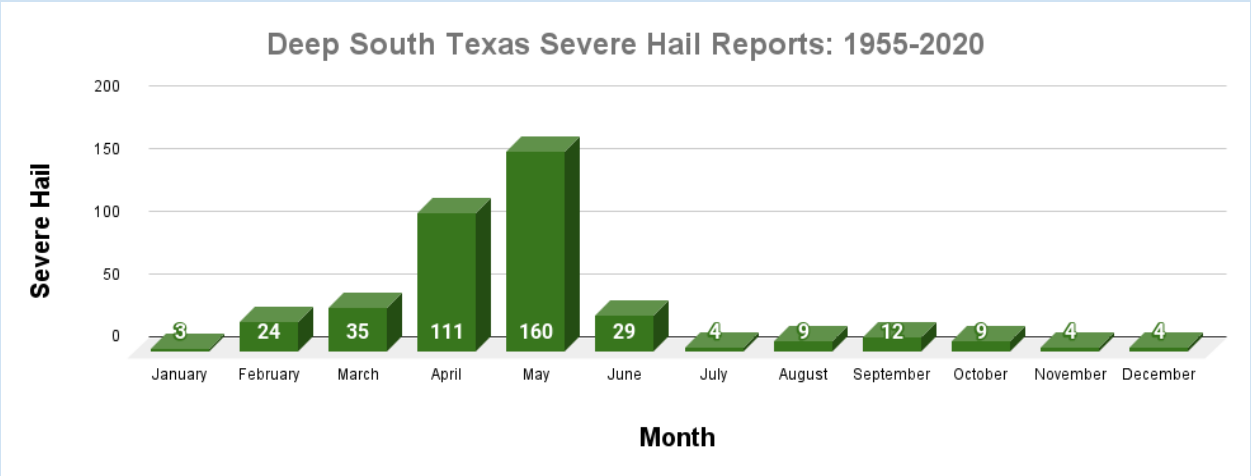
MIC Minute

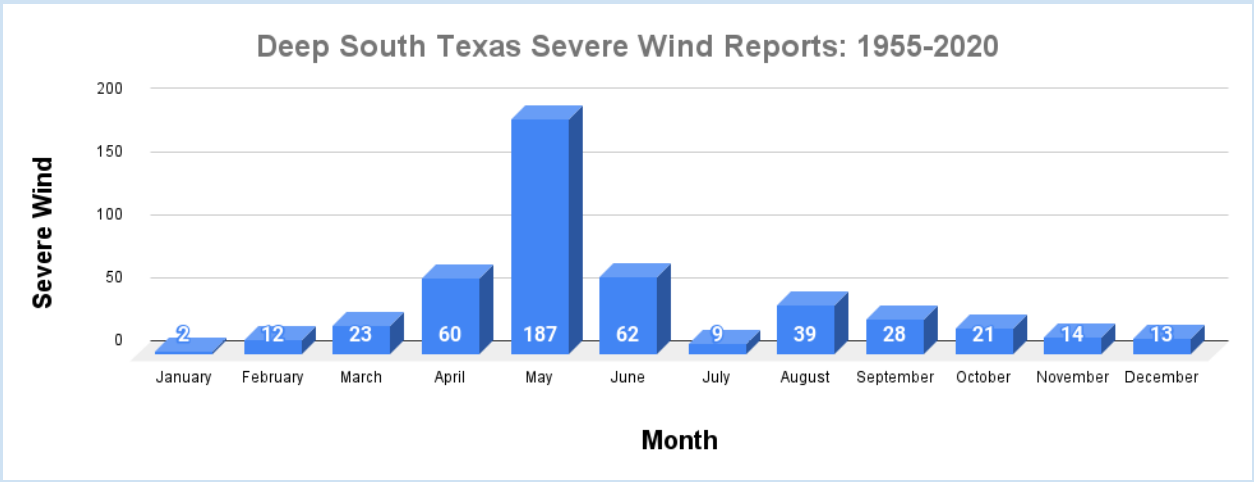
By Michael Buchanan

Spring is here, and that means warmer and windier conditions for Deep South Texas. Spring also means increased chances of observing severe thunderstorms across our region. Severe thunderstorms are thunderstorms that produce hail of 1” size diameter or larger, winds greater than or equal to 58 mph, and/or a tornado. May is the peak of the severe weather season across Deep South Texas.

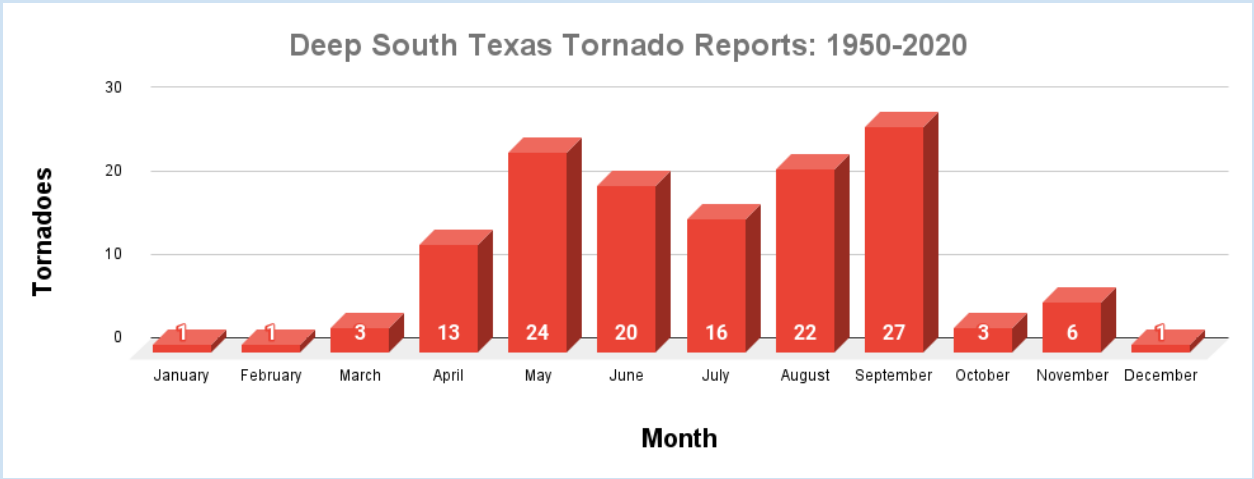
While cold fronts can still affect and move through the region, the strongest winds during the Spring are typically from a southeasterly direction. Our southeasterly winds are primarily driven by persistent low pressure that forms to the east of the Rockies. Many of these low pressure systems are associated with large-scale storm systems that sweep eastward across the Plains. Our office will issue a Wind Advisory when we expect sustained winds of 30 to 39 mph, and/or occasional wind gusts of 40 to 57 mph, for ≥ 2 hours in a 12 hour period. Every so often, we need to issue a High Wind Warning for sustained winds of 40 to 57 mph or higher for ≥ 2 hours within a 12 hour period, or for any non-convective wind gusts of 58 mph or higher within a 12 hour period. Two high wind warnings were issued in 2022 (March 21, 2022 and April 12, 2022) and so far one high wind warning was issued in 2023 (January 24, 2023) due to strong southerly wind gusts between 60 and 65 mph.



Severe Hail Reports in Deep South Texas 1955-2020



Severe Wind Reports in Deep South Texas 1955-2020



Tornado Reports in Deep South Texas 1955-2020

Of course, Spring also means warmer temperatures. By the time we reach early to mid May, most of Deep South Texas except for the coastal areas experience average high temperatures in the 90s. Across the upper valley and the Rio Grande Plains, average high temperatures in the 90s generally occur by late April. High temperatures at or above 100 degrees can also occur as we go through the Spring months even for locations near the coast. On April 6, 2022, the Cameron County Airport (KPIL) recorded a high temperature of 100 degrees. The hottest Springtime temperature ever recorded was 114 degrees on May 14, 1995 at both Falcon Lake Dam and Zapata.

So, while you enjoy the warmer weather, you may also need to hold onto your hat due to gusty winds. You'll also need to be aware of any potential severe weather that may affect our region. For the latest weather forecasts, please visit our homepage at www.weather.gov/bro.

Learning About Prescribed Burning on the Escobar Ranch

By Barry Goldsmith and Rick Hallman

FALFURRIAS – On February 21st, 2023, several of the NWS Brownsville/Rio Grande Valley staff traveled to Brooks County to attend and participate in a meeting to discuss prescribed burning and fire weather. In addition to NWS Brownsville/Rio Grande Valley, speakers at the meeting included the Brooks County Judge's Office, the Natural Resources Conservation Service (NRCS), the Texas Department of Agriculture, and Quail Forever. In addition to the speakers and their respective organizations, attendees included many ranch owners from the South Texas Coastal Plains and Brush Country from Brooks, Jim Wells, and Kleberg County.

Above: Barry Goldsmith presenting at the Brooks County Prescribed Burn Program

Our presentation focused on the spring 2023 fire weather season and forecast, which was well underway on the day of the meeting which was hot, windy, and modestly humid. We discussed how the weather in March 2023 could be similar to March 2022 – and how March 2022 featured nearly 30 thousand acres burned in Brooks, Jim Hogg, and Kenedy County (and more than 80 thousand acres when including Kleberg). The presentation closed with an urgent appeal for wildfire prevention through "at least April" to reduce wildfire activity – particularly on ranch property, where a number of the large wildfires began in 2022.

Mr. Jose "Pepe" Martinez of NRDC demonstrating the use of a shovel to help suppress a prescribed burn (top) and taking a wind and temperature observation prior to making a decision to scrub a prescribed burn demonstration (bottom).

Most of the other presentations focused on prescribed burning, which is a critical component of wildland management and renewal of ranch and farmland for the betterment of crops and livestock, as well as a favorable environment for fowl stocks and hunting. After a discussion on the benefits of prescribed burns by Quail Forever, Mr. José "Pepe" Martinez of NRCS provided an overview of equipment and safety for prescribed burning. Prior to lunch, attendees headed out to land east of the ranch to witness a prescribed burn. The hot, windy conditions scrubbed the plans – though everyone was able to witness a brief demonstration of a very small area, including ignition of grass with a drip-torch and rapid suppression by shovel.

Following lunch, Mr. Martinez presented successful examples of multi-acre prescribed burns on grass and brush, which only last for minutes, not hours in favorable conditions. Successful prescribed burns include backfires (those lit to move into the wind), flank fires (those lit to spread parallel to the wind direction, in lines) and a head fire (the last fire lit, moving fastest and with the wind, but eventually running out of fuel from the previously burned area from a combination of the back and flank fires). Fire breaks, designed to contain the prescribed burn, was also discussed. His detailed presentation also included all of the requirements for a successful prescribed burn, including the burn plan, site preparation, weather monitoring, and resources.

As of this writing in April, we had only been informed of one large wildfire of a little less than one thousand acres in Brooks County in March. March 2023 was indeed similar to March 2022, with frequent warm to hot, breezy to windy, and low humidity days. While early April 2023 rains put a hold on fire weather season, perhaps our collective message of wildfire prevention and safety made a difference!

Above: Highly cured grass and brush on ranch property east of Falfurrias, including a fire break used for a prescribed burn

Howdy from Hebbronville

By Jeremy Katz, Brian Miller, and Pablo Gonzalez

On February 8, 2023, Brian, Pablo, and I (Jeremy) participated in a community outreach event (health fair) in Hebbronville, Texas. However, our first stop was at the Texas Department of Transportation maintenance facility in Hebbronville, where we met with Freddy Valderas, Jr., the station supervisor. We spoke about how we could improve communications, including how they could give us valuable road conditions during inclement weather, allowing us to better to warn the public about weather impacts. Next, we toured the maintenance facility with Freddy, who showed us how TxDOT uses various trucks and equipment to maintain the roads, including the application of herbicide to keep plant growth down and brine to keep ice off the roads. Freddy mentioned that the Hebbronville site was used as a stopover for transportation assets leaving the Lower Valley during a catastrophe like a hurricane.

After wrapping up the tour with Freddy, we moved to the American Legion Hall, where the health fair was taking place. We met with Judge Juan Carlos Guerra, who spoke about the health fair and directed us to where we would set up our booth. We also met with our Jim Hogg/Hebbronville adopt-a-community liaison Chantel Molina. Not too long after getting set up, we engaged with vendors at different booths including Veterans Affairs, H-E-B, the Food Bank, and many others. We met the new Fire Chief of the Hebbronville Volunteer Fire Department, Cody Smith, and discussed fire weather concerns and the potential for further collaborations. We showed Cody how to use our web-based fire weather spot request interface. Cody offered to invite our meteorologists to observe prescribed or controlled burns.

Soon more of the general public arrived at the fair, and we became pretty busy explaining how we forecast the weather. We displayed the weather balloon, explaining how it collects essential atmospheric data that improves our forecasting. Besides handing out brochures, we made sure to inform the public that we are open 24/7 every single day of the year to help them with the weather. Fun fact about this trip: Brian and I entered a Bingo contest, and we both won small door prizes.

Top Left: Jeremy, Chantel, and Brian (left to right). Top Right:Pablo, Brian, and Jeremyç (from left to right) at the NWS Booth.

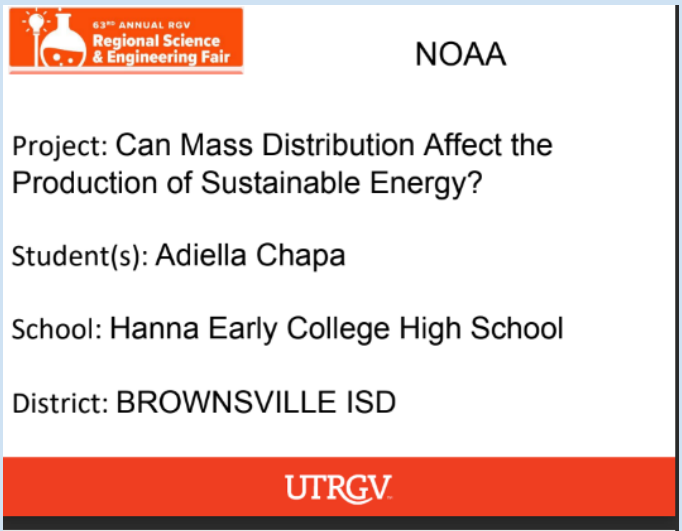
Bottom Left: Brian, Jeremy, and Freddy (left to right) in front of the Brine Truck. Bottom Right: Brian, Judge Guerra, and Jeremy (left to right).

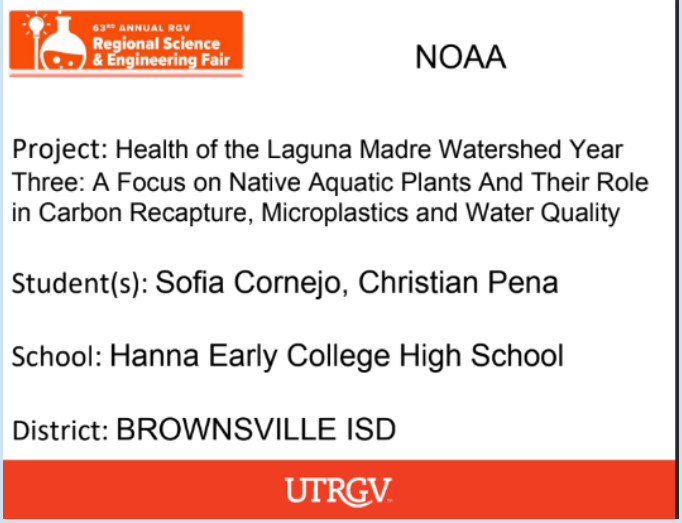
We Met You at the (Science) Fair!
NOAA "Pulse of the Planet" Award Given to Aspiring Brownsville Students

By Barry Goldsmith

EDINBURG – On February 18th, 2023, the 63rd Annual Rio Grande Valley Science and Engineering Fair (RGVSEF) was held at the University of Texas/Rio Grande Valley (UTRGV) Edinburg Campus, the first in-person fair since 2019. Several hundred aspiring junior and senior local high school students competed from across the Valley, including a sizable contingent from Brownsville. Each year, NWS Brownsville/Rio Grande Valley is invited to judge various submissions related to our science and technology functions. In 2023, we were selected to judge the National Oceanic and Atmospheric Administration's (NOAA) Taking the Pulse of the Planet Award. The award recognizes outstanding science fair projects in ocean, coastal, Great Lakes, weather, and climate sciences.

This year, the award was provided to two worthy recipients: First, Ms. Adiella Chapa of Hanna Early College High School in Brownsville was awarded for her project, *Can Mass Distribution Affect the Production of Sustainable Energy?* The project looked at ways to improve the ability to make wind energy more powerful by experimenting with additional moving mass within wind turbines to generate more energy than would be generated by turbines without additional mass. Her experiment used downscaled wind turbine models, built of Styrofoam. The moving mass versions used ball bearing attachments as the mass source; tests revealed a statistically-significant increase in energy output than from those without the additional mass.





Innovative methods to increase energy production without adding to the world's greenhouse gas output are critical to the ability of a modern energy infrastructure to meet goals to reduce anthropogenic global warming. NOAA's 2022-2026 Strategic Plan unequivocally supports such efforts, and future young scientists such as Ms. Chapa are critical to our success.

The second recipients were Ms Sofia Cornejo and Christian Peña, also from Hanna Early College High School in Brownsville, for their multi-year project on the *Health of the Laguna Madre Watershed, Year Three: A Focus on Native Aquatic Plants and Their Role in Carbon Recapture, Microplastics, and Water Quality*. This project earned the Taking the Pulse of the Planet at the 62nd RGVSEF, and was deemed worthy of a successive award. The most recent project supplemented efforts from year 1 (health of the lower Laguna Madre marine environment) and year 2 (impact of industry and agriculture on lower Laguna Madre marine biology). The year three project focused on the impact of microplastics on the lower Laguna Madre watershed, and the discovery that healthy mangrove stands can help to "clean" these and similar coastal bays and estuaries.

Above: Barry Goldsmith presenting one of the NOAA Taking the Pulse of the Planet Awards to Ms. Adiella Chapa of Brownsville.

The discovery that healthy mangrove stands can reduce the impact of microplastics on the coastal marine environment matches the third plank of the Strategic Plan – promoting economic development while maintaining environmental stewardship with a focus on advancing the New "Blue" Economy.

Each Taking the Pulse of the Planet Award recipient also placed among the finalists for their respective RGVSEF categories: Ms. Cornejo and Mr. Peña's project won first place in the Earth and Environmental Sciences Senior Division; Ms. Chapa's effort won third place in the Environmental Engineering Senior Division.

Congratulations to these award recipients, as well as others who competed for the NOAA award and other awards. The Valley's young scientists offer great promise for future innovations here, in Texas, the Nation, and the World.
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Weather Fact Or Fiction

By Amber McGinnis

Hurricanes and tornadoes are the most deadly type of weather.

-Fiction. While these events get the most media attention, it is not the deadliest. In the U.S., heat is the deadliest weather phenomenon. On average, heat kills about 135 people per year.

Lightning only strikes tall objects

-Technically, this is fiction. Lightning finds the easiest path to the ground. If a tall building is close enough to this path, it will be hit, but if it is too far from its path, it will hit an object closer to the ground.

The wooly worm can predict whether it will be a mild winter.

-Fiction. It's often heard the black wooly worm means a severe winter, and the brown wooly worm means a mild winter. In fact, the fur color of these worms (fuzzy caterpillars) has more to do with how old they are, their species, and what they have been feeding on.

When leaves show their undersides, rain is on the way

-Partially Fact. This is mostly true and applies to deciduous trees. When there is high humidity, their soft stems become limp, allowing winds to flip them easily. High humidity tends to precede stormy weather, especially in the other parts of the country where deciduous trees (like Oak trees) are more prevalent.

If birds fly low, expect rain and wind

-Mostly Fact. While birds can fly low no matter the weather, when the air pressure is high, it is more dense and easier for birds to fly higher in the sky. Lower pressure and moisture lower the air density, so the birds fly lower. Low pressure is also a precursor to a storm.

Taping your windows during a hurricane will protect your home.

-Fiction. Taping your windows can create larger, more hazardous shards of glass. Taping also provides a false sense of security, leading people to be less likely to seek safe shelter or evacuate. Hurricane shutters, boarding-up windows, or impact-resistant windows are your best protection.

Harlingen Adopt a Community (AaC) Visit

By Brian Miller, David Woolweaver, and Kirk Caceres

On Tuesday, February 7, 2023, Kirk Caceres and I visited two locations in Harlingen to become more familiar with the Valley amateur radio communications infrastructure. Dr. David Woolweaver (K5RAV), the architect of much of the network, was our host. The 9-1-1 Call Center at Harlingen Fire Station Number 3 and Valley Baptist Medical Center had similar configurations, including a digital gateway and a Winlink operator station. The sites usually operate autonomously but can be accessed remotely as well. Backup power available at each location is crucially essential in a catastrophe.

Photo credits: Brian Miller

Many of you are familiar with voice communications. For example, a diagram of the STARLINK repeater topology is below. However, digital modes have now become the standard in Emergency Communications. The Winlink system, with its various digital modes, is the "go- to" system for use during a crisis. You can operate a Winlink station without the internet. However, the internet helps update Winlink and its programs, which occurs often and is why most operators leave their Winlink computers running 24/7. The Winlink system operates via a network of gateway stations. These stations use a Radio Mail Server (RMS) program to receive and transmit digital traffic. The gateways will route to the nearest functioning internet node first, but in some cases, they may need to use longer-range radio frequency transmission to find another gateway.

In the past, Valley Weather Net participants would deliver verbal weather reports to the Net Control Station (NCS), which would then pass them along to the NWS via E-Mail or another system. This method of reporting worked but was time-consuming and not as accurate as a purely written message system.

For example, NWS Brownsville has a WeatherChat messaging system (NWS Chat), an instant messaging program utilized by NWS operational personnel to share critical warning decision expertise and important weather information essential to the NWS's mission of saving lives and property. NWS Chat works well but relies on internet connectivity, as does the present Valley Weather Net's system of Emailing reports to NWS Brownsville.

The newer digital system based on Winlink has full coverage. Two VHF/HF RMS Winlink nodes, K5RAV and W5STX, provide intra-valley digital communication and state and nationwide coverage. Both RMS Winlink nodes have backup power and are online 24/7. In addition, these systems can provide high-speed data connections if the local infrastructure fails.

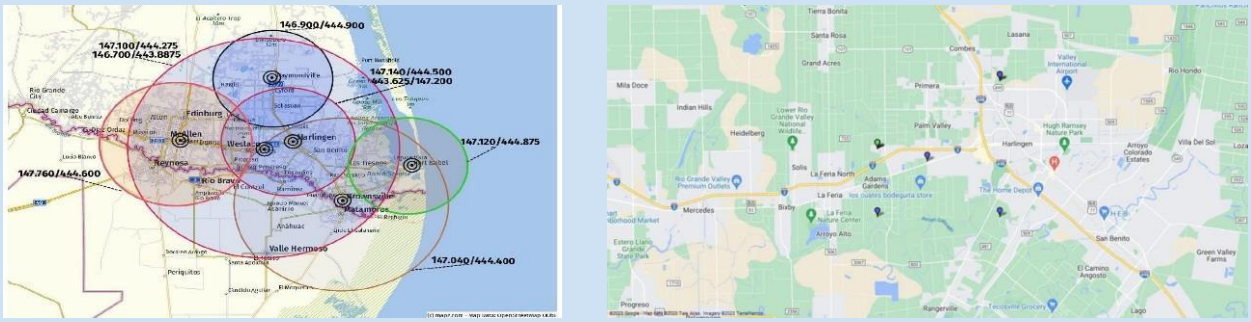
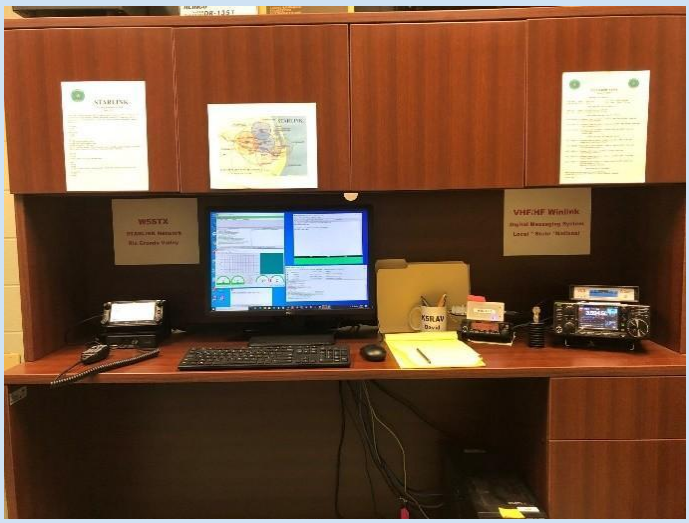


Image credits: David Woolweaver



Above: 9-1-1 call center gateway. Photo credit: David Woolweaver

NWS Brownsville is moving toward digital modes and will soon use a mailbox system, an internet-independent messaging system that will be simple and easy to use. Once NWS Brownsville receives a report, a MAPPING-GIS Local Weather Report message will appear in the "In Box" at NWS BRO (WX5BRO) and then be read and displayed using the Google map feature of Winlink Express.

What is one of the greatest challenges you have overcome?

My last 2 years of college at Texas A&M University probably qualify as one of the greatest challenges I've had to overcome in my life so far. I decided to do a program that allowed me to complete both the Bachelor of Science degree in the Department of Atmospheric Sciences Meteorology Program and the Master of Ocean Science and Technology degree in 5 years. The last 2 years of that degree plan were really challenging as I squeezed in my Masters classes with my senior year meteorology classes...either of which would have been a challenge of their own. On top of that, I was the student director of a Christian ministry on campus called Cru and an active participant in the Texas A&M Triathlon Club. I probably earned my first few gray hairs over that two year period, but it was so worth it! I learned so much through that program and now have my dream job with the National Weather Service where I'm able to incorporate both my meteorology and oceanography background as a forecaster and our Marine Services Program Leader.

-Laura Farris, Meteorologist

Overcoming academic difficulties during my freshman year and 'sticking with it' to eventually attain my degree in Meteorology, allowing me to fulfill my childhood dream of becoming a meteorologist.

Barry Goldsmith, Warning Coordination Meteorologist

What is one of the greatest challenges you have overcome?

My greatest challenge has been my pursuit of education. My parents were financially very limited, and they lacked education opportunity knowledge; they did not graduate from High School; life was even more limited/hard for them (part-time farm workers). Thanks to the Army and three years of service, I was able to gain the financial support to earn a college degree from the University of Texas at Austin in Computer Science.
The education drive did not end there. A few years later, I had two Masters Degrees (Mgmt Information Systems and Computer Science) under my belt; for these, I took night classes while working full-time for the Federal Government.
Along the way, I also worked on my IT related certifications which included the coveted CISSP and CEH.
My recommendation for students is to never give up on one's educational goals. The old saying that where there is a will there's a way to success is true, but one needs to be prepared to work for it.

Pablo Gonzalez-Information Technology Officer

My greatest challenge was returning to school in my mid-30s for a Meteorology Degree. At a time in my life when everyone around me (I lived in the Southeast) thought I should be starting a family, I decided to pursue a new career. I was scared, did not like math (I thought), and did not have the same energy I did 10-15 years prior. It was not easy; I struggled with the workload. I put my mind to it and completed my education much faster than I had initially anticipated. This experience taught me not to be afraid to pursue passions and that I can accomplish anything I put my mind to.

-Amber McGinnis, Meteorologist

Photos From the Field

A positive look at spring turning green in north Brownsville. Photo by Barry Goldsmith.

March 24th sunset photo by Rick Hallman

Photos From the Field

Sunset Photo by Laura Farris

Spring Garden photo by Amber McGinnis

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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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