THE COASTAL BREEZE

Brownsville/Rio Grande Valley

FALL 2021

IN THIS ISSUE

Fall is in the air and cooler weather is on its way to Deep South Texas, so snuggle up with this edition of the the Coastal Breeze.

In this issue we visit with our Meteorologist-In-Charge Mike Buchanan who reminds us that hurricane season is not quite over. We also have stories about recent deployments and tabletop exercises, flood mitigation, and changes in the National Weather Service over the years. We will introduce you to our pathways intern and bid farewell to our Electronics System Analyst. Finally, we attempt to tickle your funny bone with some of our favorite weather jokes and puns.

So sit back, relax and enjoy our fall issue!

Find us on Social Media and the Web

@NWSBrownsville

@NWSBrownsville

@NWSBrownsville

weather.gov/rgv

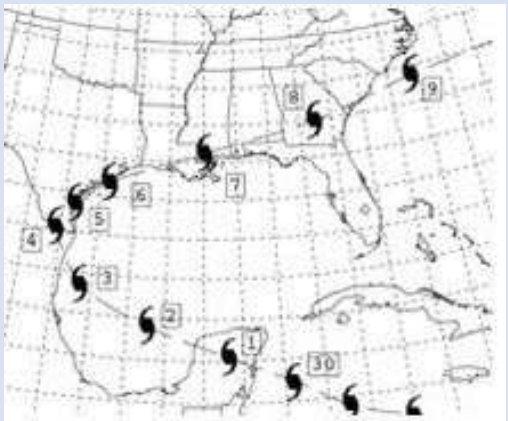
MIC MINUTE

By Mike Buchanan, Meteorologist in Charge

As we head into the months of October and November, many of you may be wondering if we still need to be concerned with hurricanes affecting Deep South Texas during October and November. *Has Texas ever been impacted by a hurricane during the months of October and November?* The answer is Yes. Texas has indeed been impacted from hurricanes during the months of October and November. There have been ten October hurricanes and two November hurricanes that have impacted Texas.

October hurricanes have impacted Texas in the following years: 1837 (Racer's Storm), 1842, 1848, 1867, 1871, 1886, 1912, 1949, 1989 (Jerry), and 2020 (Delta). The four October hurricanes that directly impacted Deep South Texas were the Racer's Storm of 1837, the 1848 hurricane, the 1867 Category 2 hurricane, and the 1912 Category 2 hurricane. The Racer's Storm made landfall near Matamoros, Mexico on October 3, 1837 and ultimately affected the entire Texas coastline. Since the Racer's Storm slowed down as it neared northern Mexico and Deep South Texas, prolonged hurricane conditions continued for several days. Many ships sank as a result. On October 17, 1848, a hurricane made landfall near the mouth of the Rio Grande. Two feet of water flooded Brazos Santiago Island along with several ships lost near Port Isabel. On October 2, 1867, a Category 2 hurricane made landfall over the mouth of the Rio Grande. Brownsville was on the western side of the eyewall. Severe impacts occurred in Brownsville and Port Isabel. The last October hurricane to make landfall in Deep South Texas was the Category 2 hurricane which made landfall on Padre Island in Kenedy county on October 16, 1912. This storm forced the SS Nicaragua, a Mexican cargo ship, to run aground during the storm. Near mile marker 50 on the Padre Island National Seashore, two of the ship's boilers are still visible to this day in the surf zone when the tide is low.

Racers storm Approximate track by WPC



Raymondville recorded its all-time wettest 24-hour October rainfall record while Brownsville recorded its 4th wettest 24-hour October rainfall record during the 1912 storm. Considerable damage due to strong winds and storm surge occurred in the Valley with the 1912 hurricane.

Path of the 1912 Hurricane. Image from Wikipedia

November hurricanes have impacted Texas in the years 1527 and 1839. The 1527 storm remains unofficially catalogued as a hurricane. This storm sank a ship off Galveston Island, killing up to 200 people. The only other known November Texas hurricane made landfall on November 5, 1839 in Galveston.

So, while an October Texas hurricane is rare and a November Texas hurricane is even rarer still, it will happen again. One more thing, the old adage that a cold front ends the Texas hurricane season is simply not true. Several weeks prior to the landfall of the 1912 hurricane, several cold fronts had pushed through Deep South Texas.

For more information on Hurricane Preparedness and Safety please visit:

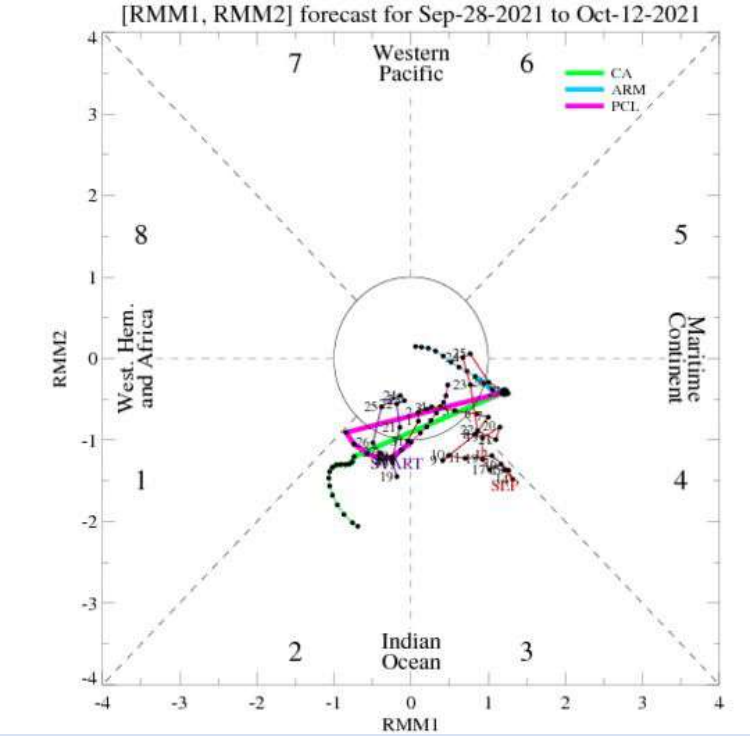
https://www.weather.gov/wrn/hurricane-preparedness

THE MADDEN-JULIAN OSCILLATION

by Angelica Soria

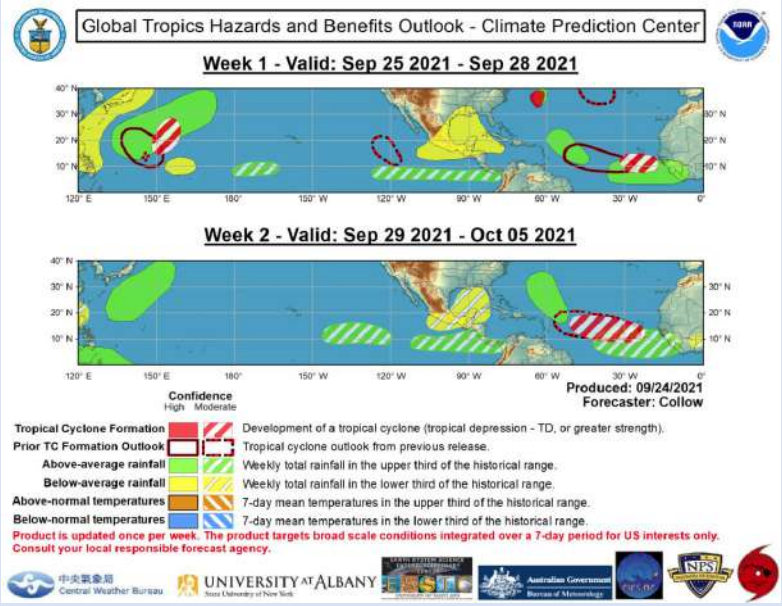
The Madden-Julian Oscillation (MJO) is a disturbance in the tropics centered around the Equator. Since the area of convection is constantly moving, it is called an oscillation. This oscillation moves at about 5 meters per second and takes 30-60 days to travel from the western Indian Ocean to the western Pacific Ocean. Since the duration of this oscillation lasts over the span of a month or even two months, it is referred to as “intraseasonal tropical climate variability.” This means that the MJO varies on a weekly basis and can have several “MJO events.” The MJO exists in either a suppressed phase or an enhanced phase and during the enhanced phases is when we see MJO events. The enhanced phase consists of enhanced convective rainfall over a certain area while the suppressed phase leads to drier, suppressed areas without rainfall.

These two phases of the MJO are then composed into eight phases based on the location of the MJO in the tropics. Phases 1 and 8 represent the Western Hemisphere and Africa, 2 and 3 represent the Indian Ocean, phases 4 and 5 represent the Maritime Continent, and phases 6 and 7 represent the Western Pacific. Using these phases to help predict where the MJO is at a given time helps meteorologists forecast for upcoming changes in the large-scale weather pattern up to two weeks in advance. Having this large amount of lead time is crucial for forecasting tropical activity during hurricane season.



Statistical Models Phase Diagram from the Climate Prediction Center.

The Climate Prediction Center (CPC) issues a Global Tropics Hazards Outlook and Discussion at least once a week during hurricane season. This outlook provides a week 1 and week 2 graphic and a discussion explaining what the graphics entail. The graphics show areas of high or moderate confidence of certain weather variables over the tropics. These variables include tropical cyclone formation, above or below average rainfall, and above or below average temperatures. The discussion below explains the graphics and goes into detail about the areas of confidence. The main topic of the discussion into the explanation of where the areas of confidence are placed comes from the MJO. The CPC relies heavily on the behavior of the MJO to predict where they believe tropical activity will form next. Then, the National Hurricane Center uses the CPC's two-week outlook in preparation for what might be an active period in tropical cyclone activity within the next 7-10 days.



The Global Tropics Hazards Outlooks from the Climate Prediction Center.

The MJO can give meteorologists timely information depending on its phase and location in the tropics. Weather doesn't just happen unexpectedly; many factors have to be aligned for a hurricane to form in the ocean. The MJO's activity is the prelude to whether or not the environment has all the variables aligned in order to sustain tropical development. Studying and monitoring the MJO can be beneficial when trying to forecast the areas of favorable tropical storm formation.

AREA MARITIME TRAINING AND EXERCISE PROGRAM EXERCISE

By Brian Miller

On July 14, 2021, Senior Meteorologist Brian Miller represented National Weather Service (NWS) Brownsville/RGV at the U.S. Coast Guard sponsored Area Maritime Training and Exercise Program (AMSTEP) tabletop exercise.

AMSTEP is a community-based antiterrorism exercise program that was created to address the exercise requirements of the Maritime Transportation Security Act of 2002. AMSTEP focuses on the preparedness for external, community-based, anti-terrorism measures covered by the South Texas Area Maritime Security Plan. The exercise brings together federal, state and local law enforcement and emergency management partner agencies in addition to regulated oil, natural gas, and chemical facilities to test the South Texas Area Maritime Security Plan and assess the response to security incidents.

To ensure all ports are exercised within the Corpus Christi zone, Coast Guard Sector Corpus Christi conducts AMSTEP exercises on a rotating annual basis in each of its port regions. The last time the exercise was held in Brownsville prior to this year was in 2017. This year, the quadrennial exercise was hosted by Keppel AmFELS and focused on the Brownsville Ship Channel in Cameron County, Texas.

Senior Meteorologist Miller is a member of a cadre of highly trained meteorologists designated as “deployment ready.” Deployment ready meteorologists undergo rigorous training and must regularly participate in exercises to maintain their certification. Additional recognition goes to Pablo Gonzalez, NWS Brownsville/RGV Information Technology Officer, for ensuring that the deployment kit and associated laptop software was ready for deployment.

Senior Meteorologist Brian Miller with NWS deployment kit. Photo by Pablo Gonzalez

DEPLOYMENT TO SURFSIDE, FL CONDO COLLAPSE

By Rick Hallman

Early on June 24th, 2021 a 12-story beachfront condominium in Surfside, FL partially collapsed. Shortly after search and rescue efforts began, Meteorologists from the National Weather Service office in Miami started to provide routine briefings and alerts for any expected weather impacts to first responders. Nearly a week after the collapse, tropical weather also threatened the region, with Hurricane Elsa prompting the weather office to begin tropical operations and deploy meteorologists to the search and rescue site. Additional meteorologists from the NWS were sent to Miami to alleviate the strain this placed on staffing.

For the second half of July, I was sent from NWS Brownsville to NWS Miami, located within the National Hurricane Center, to assist them in supporting Surfside and serving South Florida. By the time I had arrived, efforts had switched from search and rescue to recovery, with truckloads of debris being sent to a second location near the Miami International Airport by police escort. My trip between the airport and hotel was halted by one of these convoys, a quick reminder of the mission.

We maintained a 24/7 weather watch over both locations the entire time I was deployed, alerting crews to heat indices over 100 degrees, any wind gust over 45 mph, lightning within 10 miles, and potential flooding rainfall. While the tropics remained quiet through the end of July, moderate to heavy thunderstorms occurred daily along the seabreeze and roaming convective boundaries. Unfortunately, across local beaches, 4 people were struck by lightning through 10 days, with 1 death. A lightning strike also occurred at the Surfside site, with all first responders and recovery crews safely waiting out the weather delay at the time and no injuries reported.

NWS Miami Office. Photos by Rick Hallman

Before I returned to Texas, I traveled to the former site of Champlain Towers South to pay my respects and found the Lone Star Flag on the makeshift memorial. An emotional but fitting way to bring my deployment to a close. It was an honor to help support our colleagues the Miami office, the recovery efforts at Surfside, and the people, property, and economy of South Florida.

Surfside condo collapse memorial. Photo by Rick Hallman

RECENT FLOOD EVENTS SPUR MITIGATION ACTION ACROSS THE VALLEY

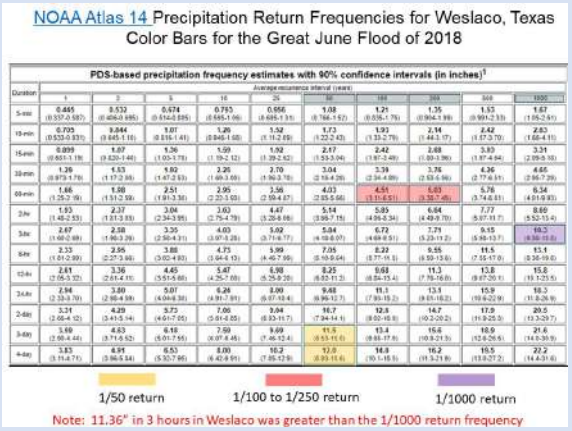
By Barry Goldsmith, Warning Coordination Meteorologist

The Great June Flood of 2018 reminded residents across the Rio Grande Valley that heavy rainfall can create widespread water issues, even when there is no named tropical storm or hurricane present. That event, which likely left over $200 million in property and agricultural damage and included local events with return frequencies 1/250 to >1/1000 probability, spurred Hidalgo County into action. Over the next few months, the County Commission, working with the County drainage districts, crafted "Proposition A" – a referendum for a $190 million bond to support drainage improvements across the County. The bond vote passed by a sizable 2:1 majority, with more than 150 thousand votes cast.

The Los Fresnos Overflight (drone) photo. Provided by Cameron Co. Office of Emergency Management.

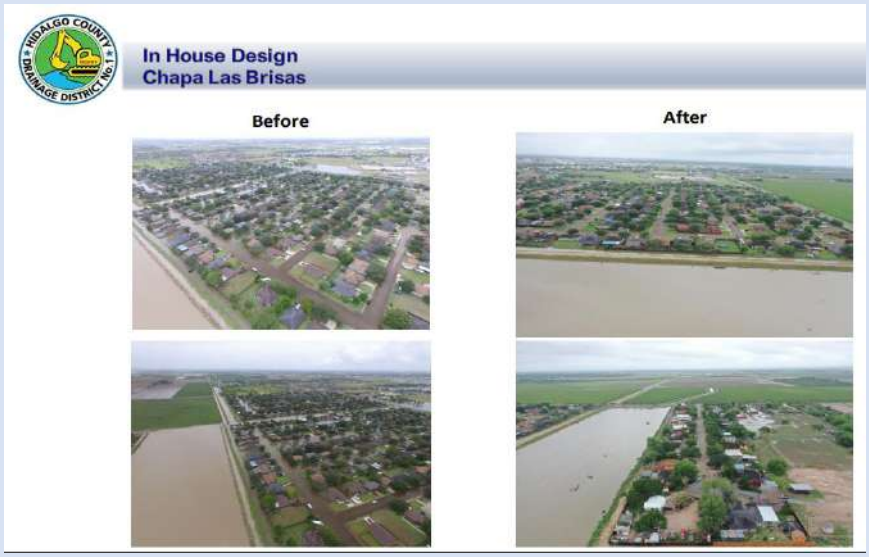
Since the 2018 vote, additional significant floods on June 24, 2019, July 26-27, 2020 (Hurricane Hanna), and between July 6 and 9, 2021, bolstered the need for flood drainage improvement projects – both for Hidalgo County but for the tri-county region including Willacy and Cameron County – which combined have an extensive interconnected drainage system. Each flood exposed varying flood resilience levels. For example, within a general 1/100 ("100 year") return frequency zone are neighborhoods with return frequencies as low as 1/5 ("5 year"). Return frequencies are only statistical averages; as shown in October 2015 (Weslaco) and again each summer from 2018 through 2021, the atmospheric pattern will determine how much rain will occur for a given event, and at what intensity (rainfall rate) it will fall.

Photo was taken by the City of Weslaco Office of Emergency Management following June 20, 2018

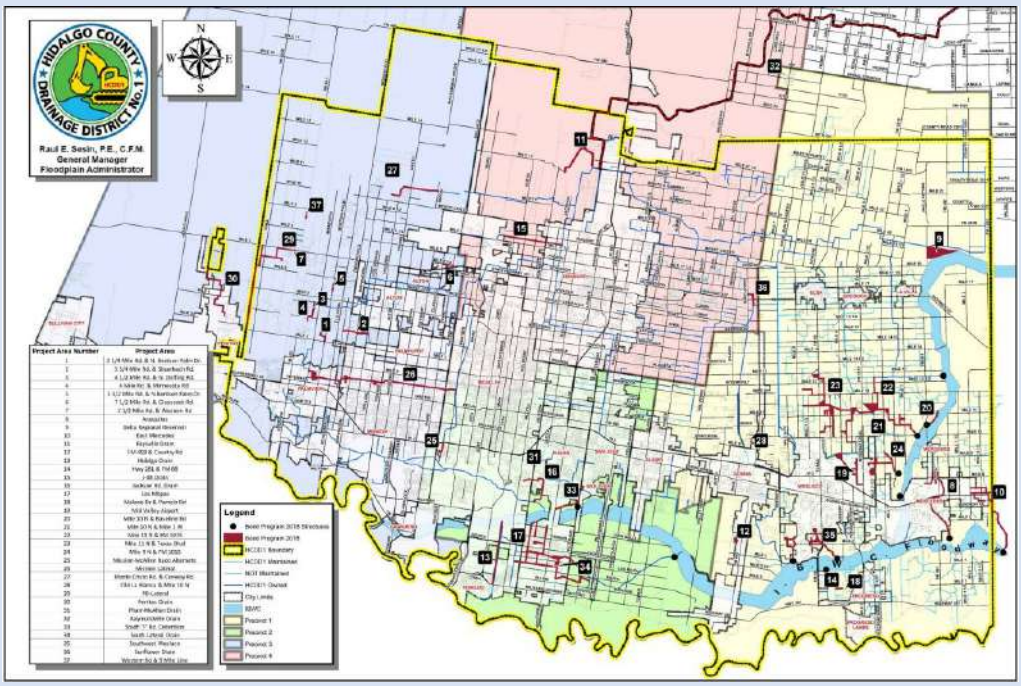


The Atlas 14 chart shows the return frequencies for Weslaco and the June 2018 flood event.

Since the bond was approved, 37 projects have been funded with nearly 98 percent of the bond funds ($186 million out of $190 million) by the end of May 2021. One had been completed, and the remaining 36 were under construction or under design. For details on the status of the bond projects, check out the Hidalgo County Drainage District #1's 2018 Drainage Bond Dashboard.



Images from a presentation by Raul E. Sesin, PE, CFM, Hidalgo County Floodplain Administrator.
https://rgvstormwater.org/wp-content/uploads/2021/06/Day-1-Raul-Sesin.pdf



Additional funding of more than $25 million has also been targeted for the Valley by the Texas Water Development Board. In addition to local funding in Hidalgo County, additional, sizable projects have been funded for parts of Willacy and Cameron County, which also had substantial flooding since June 2018. Funding in 2021 included:

- More than $10 million for watershed flood protection and mitigation projects, including Palm Valley (Cameron County) and Weslaco
- Nearly $10 million for Willacy County for improvement/mitigation projects
- More than $4 million for the City of Pharr for improvement projects
- $250,000 for a flood planning study in La Villa (Hidalgo County)

Meeting of the Mayors

In early August 2021, the mayors of Edinburg, McAllen, Mission, and Pharr – the four largest cities in Hidalgo County – met to form the Hidalgo County Municipal Drainage Committee. City Managers joined the mayors in a collaborative effort to "improve drainage, storm water retention and mitigation, and flood reduction" among the cities. The plan also includes linking up with unincorporated portions of the county to mitigate against flooding – with the end goal to reduce risk for tens of thousands of residents who are demanding improvements.

Coming in the 2020s: Flood Risk Research

At the same time flood mitigation strategies are being executed by local communities across the Valley, other resilience studies have begun that are aimed to both inform many of the projects underway, as well as help combine forecast rainfall and rain-rate data into a probabilistic risk assessment for communities across the Valley. As projects gradually improve the region's risk reduction profile, there will still be a need to constantly assess where conditions are at any given time, and how forecast rainfall and rainfall rate could impact communities with completed projects, projects under construction, and without projects. Each flagship state university (University of Texas and Texas A&M University) has initiatives underway; the Texas A&M Institute for a Disaster-Resilient Texas Risk Communication and Perception program is just one example. Details on these will be available as more information and results are available in the coming years.

THEN AND NOW

By Amber McGinnis

Weather has always been important to our way of life with records dating back to the earliest settlers. The United States Weather Bureau was officially established 1890 and adopted the name The National Weather Service in 1970. Currently there are 122 Weather Forecast Offices (WFO's) around the United States, Puerto Rico, and Guam.

There have been many changes in the NWS throughout history and I decided to sit down with meteorologists Tim Speece and Angelica Soria to talk about the changes at the NWS over the last 30 years. Tim is a Lead Meteorologist who started his career in Waterloo, IA in 1990, and Angelica started her career as a Meteorologist this last March here in Brownsville, TX.

Becoming a meteorologist at the NWS requires years intense school work. When Tim went to college many of the core classes required to attain employment were the same as what is needed today, like physics, calculus, programming and various Meteorology classes. The look of these classes are different now (for example programming in the 80s was done with Fortran and now the primary programming language is Python) and the length of schooling differs. Back in 1990 a four-year degree was sufficient enough to gain employment in the field. Today, though you can still gain employment in the NWS with a four-year degree, a master's degree, previous meteorology experience or military experience is more common.

When Angelica applied for the position in Brownsville the entire application process was electronic, the interview process was all done via Google Meet and she received an email as the first contact of a job offer. Tim, on the other hand, had to hand fill out forms and mail them in, his interview was over the phone and he was notified by letter of the job offer.

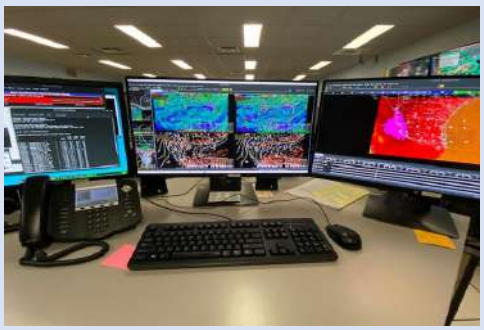
When Tim started his career, the NWS looked a lot different than it does now. The office he started at was known as a WSO (Weather Service office) where they did aviation briefings, took observations and issued weather warnings. The WSFO (Weather Service Forecast Office) was located in Des Moines and they provided the daily forecast. Today WSOs are rare as most have been converted into WFOs where all of these duties are performed.

As you can imagine, training new employees has changed in many ways over the years. Tim had to do much of his training through reading and studying manuscripts on the different program areas. Tim also had to take surface observations by hand, as well as print out and hand analyze maps. Angelica is able to do a good portion of her training through online courses and virtual trainings. The use of computers has made her training much more accessible and increased the speed at which a portion of training can be completed. Of course, plenty of hands on training has been required throughout the NWS's history and continues to be invaluable to a meteorologist's success.

The WSO Tim started at did not have an upper air program and did not produce written public forecasts. The training period before he was able to work solo shifts as a Meteorologist was approximately 3 to 4 months. Angelica on the other hand, has had to be trained on upper air and forecasting products (as well as a myriad of other duties) and will have 6 to 7 months of training before she is able to work solo shifts, even then some of her duties will be limited until she can complete the virtual Radar and Applications Course later this year. Once on shift Angelica will be one of at least 2 forecasters on duty at any given time. There are at least 2 forecasters on shift 24/7 here at WFO Brownsville. When Tim began his career at the WSO, the weekend, evening and overnight shifts were generally left to 1 person unless there was inclement weather.

Forecast duties have also changes through the years. In the 1990s forecasts were hand typed and there were more duties done by hand like map analysis (which is still done, just not as often), physically taking observations, phone and in person weather briefings, etc. There was no internet and email was just emerging, and many of the standard weather models we use today for our forecasts where not invented yet. Today, some duties are still done by hand, for example some observations and forecast discussions, but advancement in technology has allowed the NWS to streamline many duties where meteorologists can double check the data, make corrections as necessary and send through computer systems. We also have more model data, and resources instantaneously available at our fingertips through use of the internet. Offices in the 1990s had AFOS systems (Automation of Field Operations and Services) that did not have nearly the computing power or capabilities as our modern AWIPS (Advanced Weather Interactive Processing System). This advancement of technology and computing systems has helped the accuracy of forecasts, increased research across the NWS and helped provide more timely and accurate weather warnings.

AFOS displays at the NWS office in Topeka, KS



Current AWIPS display Brownsville, TX

This was just a quick overview of some of the changes we have seen in the last 30 or so years at the NWS. It is amazing how far we have come and it is exciting to anticipate what advancements and changes will come in the next 30 years. I will have to revisit this story in 10 to 20 years as technology and the NWS continues to evolve.

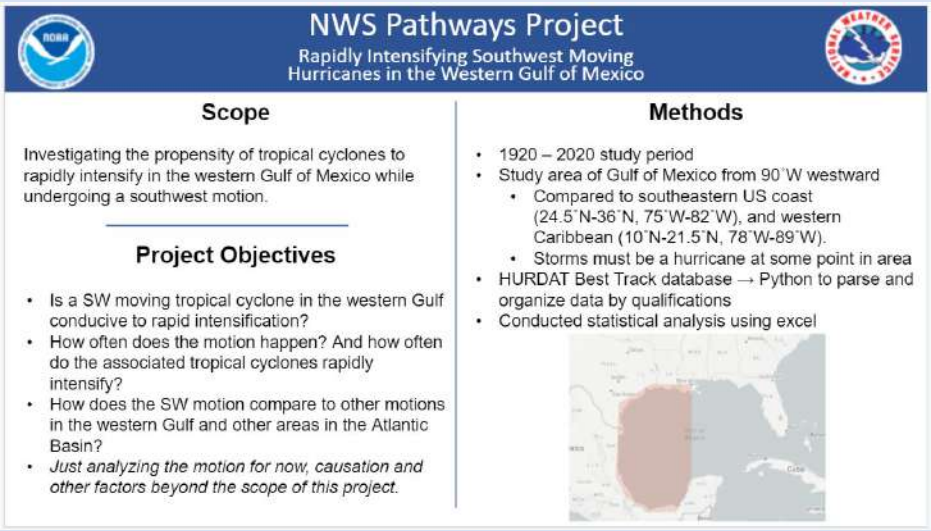
MEET OUR NEW PATHWAYS INTERN

By Mike Castillo

The NWS Brownsville/Rio Grande Valley forecast office was selected earlier this year to offer a Pathway Internship to college students who are interested in working for the National Weather Service after they graduate. It allows them to gain experience working for the agency and to explore a career in the United States federal government. After reviewing applications and conducting interviews earlier this year, our office selected Michael Lavallee, a Meteorology major at Texas A&M University working on his second baccalaureate degree. He is currently in his last semester at Texas A&M and will graduating in December 2021.

Michael and his wife.

Michael started his internship with our office this past summer. Unfortunately, due to COVID restrictions, he was not able to work here in person during the summer but he was able to work virtually from home in College Station, Texas. Michael has met with most of the forecast staff here virtually and learned a lot of the various program areas including tropical and marine. He also learned about our forecast operations as well as some of our forecast tools. Michael practiced creating aviation forecasts for our local airports in the Rio Grande Valley as well as practicing writing area forecast discussions. He also completed various online training and attended office and partner workshops (many tropical related) virtually. Michael also worked on a research project the office conducting a case study of the rapid intensification of southwest moving hurricanes in the western Gulf of Mexico which he presented to other forecast offices as well as here locally (virtual).



Project Michael worked on this summer.

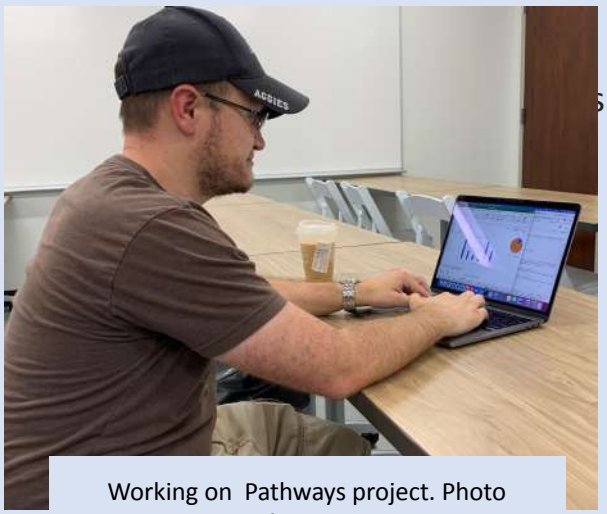
What is interesting about our Pathways Intern is the path he has taken to become a Meteorologist. Michael originally completed his first bachelor's degree in Broadcast Journalism from Texas Tech University. He always had an interest in weather and planned to work as a TV meteorologist on a news station and hopefully someday work for the Weather Channel. After graduating from Texas Tech, Michael briefly worked for a news station in Lubbock, Texas as a reporter but decided to take a different path. He went to work for HEB and after working for several years, realized he still had a passion for weather and always thought about going back to school and getting a degree in Meteorology but never really got around to it. Things all changed in 2017 when Hurricane Harvey hit the Houston area where he was living at the time with his wife.

"The storm's impacts to the city were incredible and it really was the event that pushed me into going back to school in order to pursue my passion and hopefully make a difference when people need it most," Michael Lavallee said.

In the time since, Michael has worked on becoming a meteorologist while also working full time.

" It hasn't been the easiest thing but it has been rewarding and I'm thankful for being able to intern and learn from the people working at the NWS Brownsville/Rio Grande Valley. Hopefully I will get the opportunity to continue working with and for the Rio Grande Valley community in the future; plus, you know, the fishing on the beach isn't bad either," Michael Lavallee said.

Michael currently lives with his wife and his two in College Station, Texas where he works as a store manager for HEB and attends school at Texas A&M University.



Working on Pathways project. Photo courtesy of Michael Lavallee

RETIREMENT OF ELECTRONIC SYSTEM ANALYST

By Amber McGinnis

At the end of July longtime Electronic System Analyst (ESA) Alan Del Castillo retired from the NWS Brownsville after more than 26 years of service. Alan has been an integral part of the Brownsville team since he joined the NWS here in Brownsville in 1994. In 2005 he moved to the Corpus Christi office before returning to the Brownsville office in 2018.

Over the years Alan has performed many duties and has had many accomplishments at both the Brownsville and Corpus Christi WFOs. Some of his accomplishments include, but are not limited to, assisting in the relocation the KCOT (Cotulla-La Salle County airport) ASOS and the KPIL (Port Isabel-Cameron County airport) ASOS, helping the staff at the Corpus Christi WFO complete an 11 hour AWIPS rack consolidation, also in Corpus Christi, he led the effort to get everyone trained on basic CPR (Cardiopulmonary resuscitation) and AED (Automated External Defibrillator) operations. He was instrumental in leading as assisting with numerous projects around the Brownsville WFO including with digging a trench to install a new water spigot, installing and keeping hundreds of software items installed and up to date on laptops and PCs, helped establish a new cell phone connection for the NOAA weather radio Pharr site and he came into the office on numerous occasions on his weekends or evenings if there were equipment issues, even if he had to come from out of town. This article could never cover all of the amazing work Alan has done for the National Weather Service and how integral he was to our day to day operations.

Alan is greatly missed and we can not thank him enough for his tireless dedication to the Brownsville and Corpus Christi WFOs and hope he enjoys his much deserved retirement.

HAPPY RETIREMENT ALAN!

Photos courtesy of Mike Castillo

Why shouldn't you start a fight with a cloud?

-It'll storm out on you!

What kind of shorts to clouds wear?

-Thunderwear!

HA!
HA!
HA!

Why did the cloud date the fog?

-Because he was so down to earth!

So many anticlimactic jokes!

What do you do with a weather ladder?

-Climate!

What do plumbers have in common with large bodies of water?

-They both have water spouts!

What's it called when its raining ducks and geese?

-Fowl Weather!

I tried to catch some fog one day.

-I mist!

Lightning storms are very striking

What's worse than raining cats and dogs?

-Hailing Taxis!

Why is the Warm Front a better debater than the Cold Front?

-The Warm Front always rises to the occasion

What happens when winter arrives?

-Autumn leaves!

How do hurricanes see?

-With one eye!

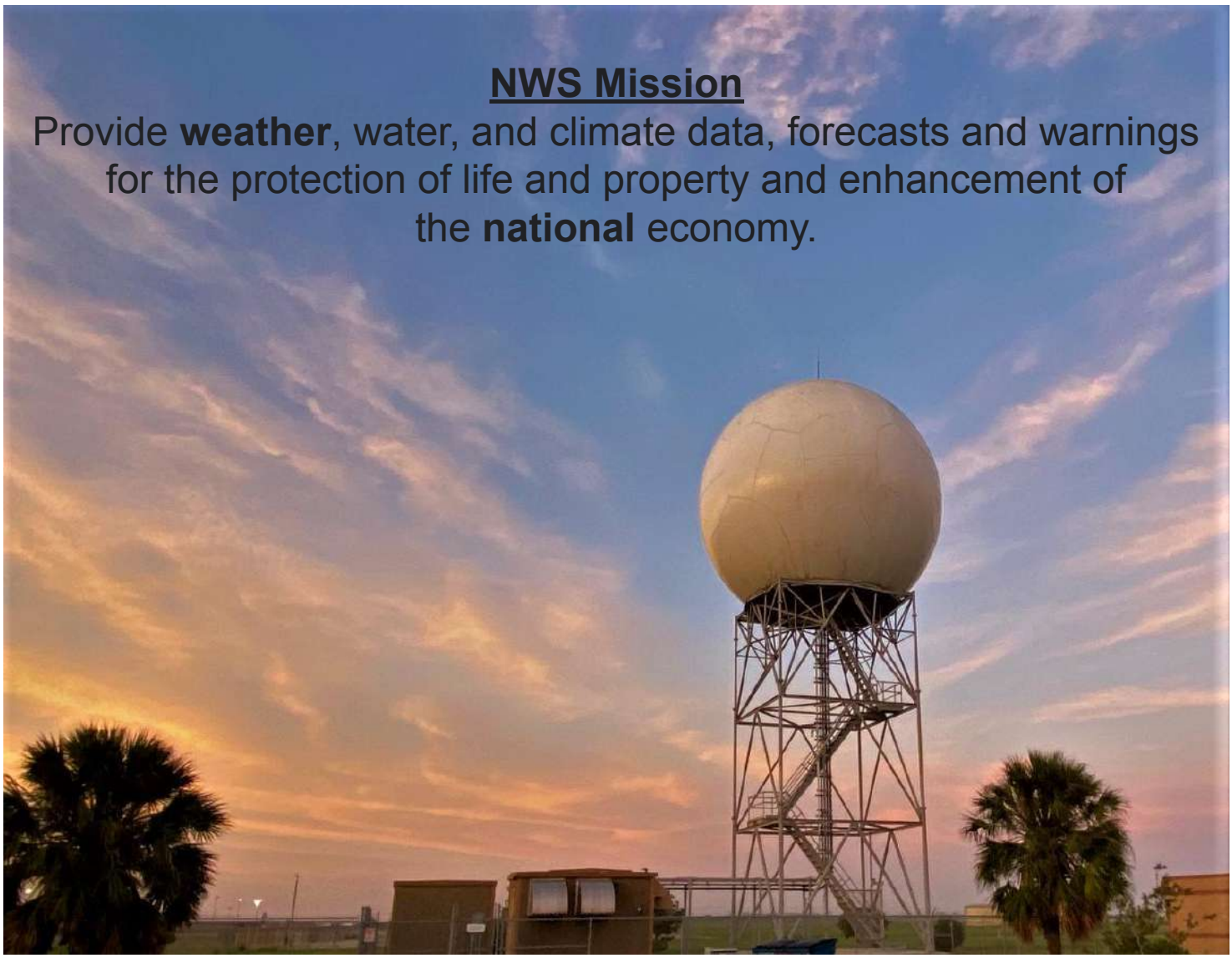
Did you ever hear the story about the tornado?

-There's supposed to be a big twist at the end!

When does it rain money?

-When there's a change in the weather!

THE NATIONAL WEATHER SERVICE BROWNSVILLE/RIO GRANDE VALLEY
20 S Vermillion Ave, Brownsville, TX 78521
(956) 504-1432



EDITOR-IN-CHIEF: AMBER MCGINNIS **ASSISTANT EDITOR:** KIRK CACERES

CONTRIBUTORS

MIKE BUCHANAN, BARRY GOLDSMITH, BRIAN MILLER, TIM SPEECE, MIKE CASTILLO, GEOFFREY BOGORAD, RICK HALLMAN, BRIAN MEJIA, AMBER MCGINNIS, BRIAN ADAMS, ANGELICA SORIO, DAVID REESE, MICHAEL LAVALLEE, GREGORY SAUNDERS, PABLO GONZALEZ