THE COASTAL BREEZE

Brownsville/Rio Grande Valley

FALL 2022

IN THIS ISSUE

Happy Harvest Season!

As of putting together of this issue we have already hit our first taste of fall…and winter! In this issue we will find out what kind of weather can affect us during the fall season and look at the first cold snap we have received this season. We also will take a look at some table top exercises and deployments staff attended over the past few months.Explore some more weather myths with us and find out what some of the staff would have chosen for an alternate career.

ENJOY!

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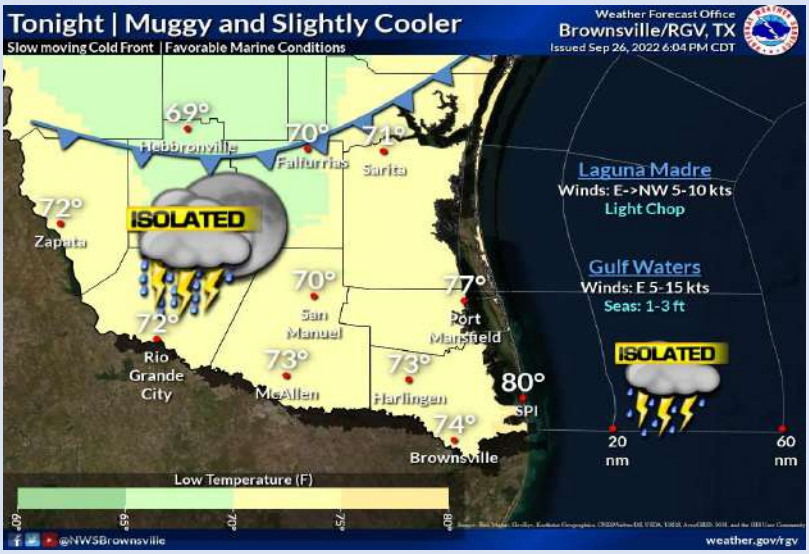
MIC Minute

By Mike Buchanan

Fall is here once again. That means longer nights and the first cold fronts of the season. This results in temperatures not quite as warm as summer. In the wake of these first few Fall cold fronts, cooler and drier temperatures are most noticeable during the overnight and morning hours. The first cold front of the season that passed through the entire Rio Grande Valley occurred on September 27, 2022. Several days of temperatures averaging 2-4 degrees below normal were experienced behind this particular cold front. Oftentimes, these early season cold fronts provide modest relief from the normally high humidity levels. These lower dew points contribute to the “cooler” temperatures you experience.



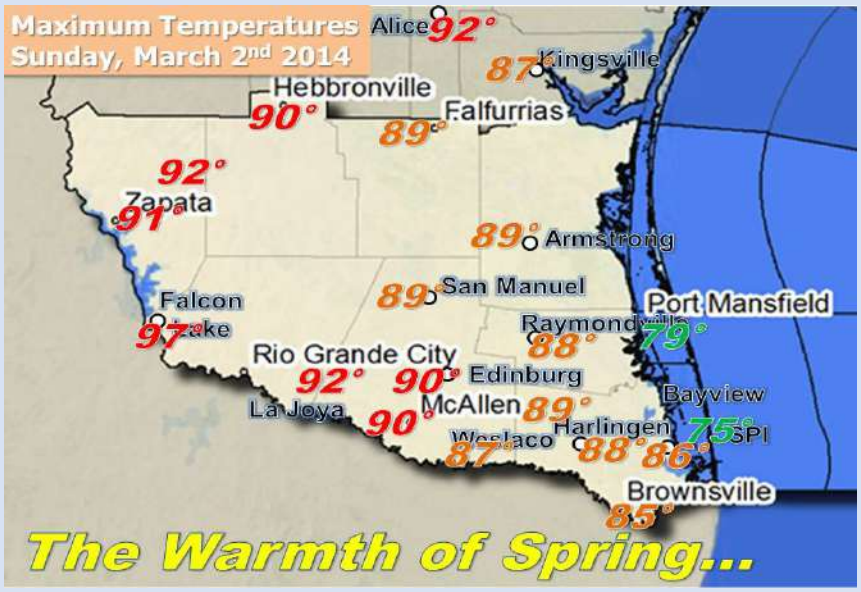
First Cold Front of the Season September 26 and 27,2022

As we progress through the Fall months, cold fronts will generally increase in frequency and strength across Deep South Texas. Fronts with strong temperature drops associated with them often produce strong wind gusts. These wind gusts can exceed 40 mph or higher at times. Rainfall amounts, on average, tend to lessen as we progress through the Fall months. However, we can still experience heavy rainfall and flooding during the Fall. The most recent example occurred on October 1, 2021 when more than 8 inches of rainfall fell in a two-hour span just north of the NWS Brownsville/Rio Grande Valley office and caused flooding in portions of Brownsville.

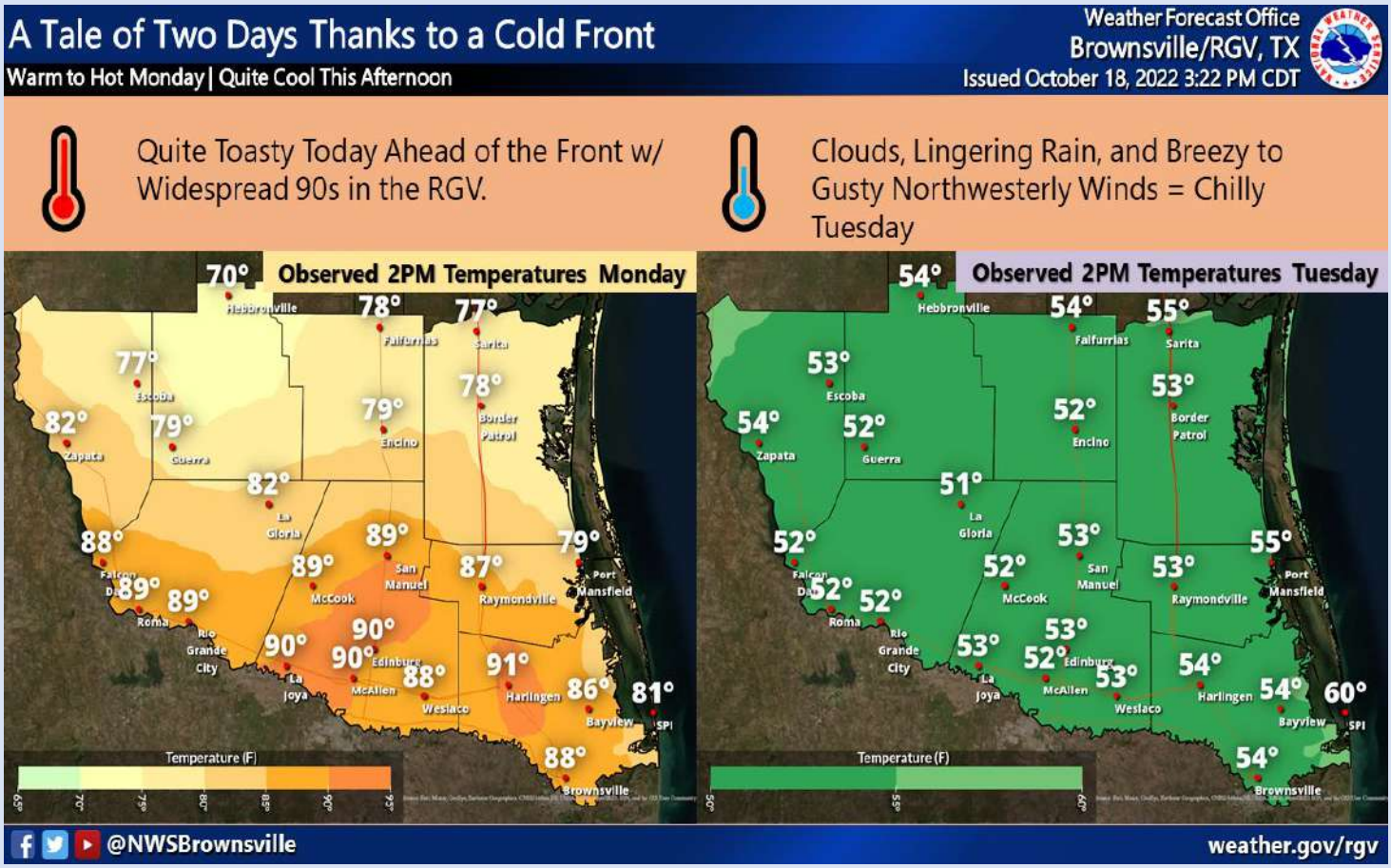
Typically, Fall brings an end to our hurricane season. However, there have been ten October hurricanes that have directly impacted Texas since 1837. Two November hurricanes (1527 - unofficially cataloged as a hurricane and 1839) have impacted Texas.

While the official NWS outlook for the Oct-Dec 2022 period calls for drier and warmer weather for our area, we will still experience cold fronts during this period. For the forecast of cold fronts through our area, to find out about other weather phenomena, or to obtain a weather forecast, please follow us on Social Media (NWSBrownsville), on NOAA Weather Radio, or on our webpage at weather.gov/bro.

Residents of the RGV are accustomed to warm autumns and mild winters, overall. But they're also aware of occasional sharp temperature changes that can turn balmy summer-like temperatures and tropical breezes into brisk and cold wintry weather in hours, with changes from one afternoon to the next as much as 30 to 50 degrees in actual temperatures, and more than 60 degrees in apparent, of "feels-like", temperatures!



Above: While this event occurred in early spring (March) 2014, similar events have occurred in the past decade in November and December. In this case, actual temperatures fell 45 to 50℉ and apparent ("feels-like") temperatures more than 60℉!



Above: The first "sharp change" event of autumn 2022. Actual temperatures between 2 PM on the 17th and 2 PM on the 18th fell more than 35℉ in some areas; when combined with the wind, the difference was a little more than 40℉

Why does this happen here? It's the where (geography), combined with the how (a dash of meteorology).

The Where

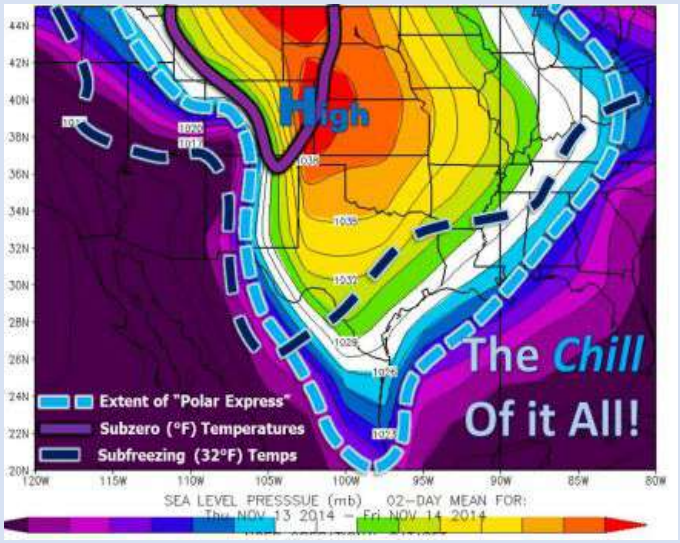
The southern tip of Texas is located just 180 miles north of the Tropic of Cancer (23.5° North latitude), which places us among the southernmost locations in the Lower 48 States. The nearby Gulf of Mexico helps maintain mild to warm temperatures from October through March, and the nearby Sierra Madre Oriental mountain range in eastern Mexico creates a natural pressure difference between land and sea that creates south to southeast winds on most days - winds that pump warm and humid air into the area.

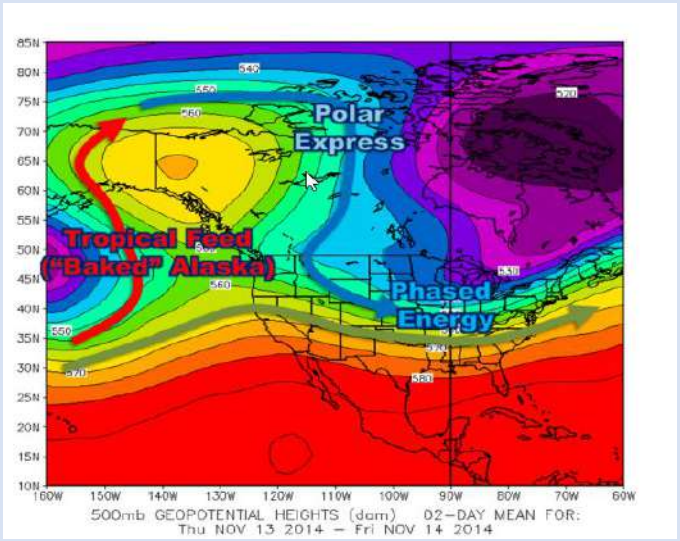
Those same mountains, however, provide two elements that assist cold air plunges during autumn, winter, and early spring: first, they are not a temperature-moderating water source on the west side of the RGV; in other words, we may be located at the same latitude as the southern Florida Peninsula, but we do not have large bodies of semi-tropical water on both sides. Second, the mountains act as a conduit to allow cold air from source regions in the arctic to surge southward on their east side, and sometimes remain trapped for several days once the air has arrived.

The How

The southern extent of the RGV provides the baseline heat due to our proximity to the tropics and the naturally warmer surface (due to stronger sun) and atmospheric temperatures. For the region to experience the sharp temperature drops, three things need to be present:

- ***A Cold Airmass from Canada.*** During autumn, and especially from late autumn through early spring (early March), very cold air can build up in northwestern Canada. We look for these air masses first.
- ***The Atmosphere Giving the Airmass a "Push"***. Upper-level winds that flow from north to south in central and western Canada are a sign of the atmosphere 'opening the door' to allow the cold to bitterly cold air pooling near the ground to surge southward. The upper level flow does not need to extend very far south into the United States to allow the cold airmass to break free, since cold air is much more dense than the warm air it will replace and can shove it out of the way much farther south than the extent of the upper level winds. The Rockies, and eventually the Sierra Madre Oriental, act as "guard rails" to keep the cold air traveling quickly down the Great Plains and ultimately well into eastern Mexico.
- ***The Atmosphere Along the Lower Rio Grande "Lifting" Moisture Over the Cold Airmass.*** The "dip" in the upper level pattern rarely extends into south Texas, but the shallow cold air near the ground easily displaces any warm air here. At the same time, the flow above the cold air - in general, one thousand feet and above - may continue from the south, bringing warm and humid air overtop. North winds on the ground surging cold air are coupled with this warm, humid air above to create a dense, low overcast and sometimes light rain - or if cold enough, light ice - just 24 hours after warm temperatures were observed. Events such as these are when the sharpest temperature drops are found - as much as 50℉ actual and more than 60℉ "feels like" temperatures! Less intense, but still notable, drops can occur with lesser contrasts.





Above left: The surface pressure pattern following a strong cold front on November 13-14, 2014. Apparent, or "feels-like", temperatures plunged from near 90℉ at 2 PM on the 11th to around 38℉ at 2 PM on the 12th. Above right: One example of the upper-level steering pattern that allows very cold air to plunge from northwestern Canada southeast through the entire Great Plains and well into eastern Mexico, from November 13-14, 2014.

Be Ready

In local lore, one might say from "Aguas Frescas to Caldo" to describe the foods one might eat before and after the sharp change. In all seriousness, however, the sharp change can catch those not acclimated/prepared off-guard - and consequences can be dire for people without proper clothing or proper heat sources.

When we're forecasting such a change, be ready in the following ways:

- Take out the winter clothing, and prepare to dress in multiple layers when going out - or staying home, if there is no sufficient heat source
- Know the situation of your family and friends, especially those who may not have sufficient clothing, heat sources, or are infirm - and be ready to provide assistance or a means to get them to a warm and safe location.
- If using space heaters, be sure to check their operation and replace any frayed cords or plugs. Then, use them in locations well away from any flammable objects, and be sure to turn them off when not in use.

Operation Border Health Preparedness a Resounding Success

By Brian Miller, Amber McGinnis, and Barry Goldsmith

The old saying goes, "When life gives you lemons, make lemonade!" Indeed, WFO Brownsville/RGV was recently able to take advantage of a short notice opportunity to participate in a "live" exercise! Through John O'Valle's (still acting Disaster District Coordinator for DC-21) consultation with the Regional Health and Medical Operations Center (RHMOC) coordinator, Mr. Joseph Lucio, WFO Brownsville/RGV was provided a seat in the Emergency Operations Center (EOC) for the Operation Border Health Preparedness exercise at the RHMOC in Harlingen.

Photo left to Right: Electronics Technician Greg Saunders, Lead Meteorologist Brian Miller, Meteorologist Kirk Caceres

While this live exercise was a scaled-down operation (compared with an entire Level 1 DDC-21 operation, for example), it covered most Impact-Based Decision Support Services (IDSS) Professional Development Series (PDS) Professional Competency Unit (PCU) Seven (7) - Exercise and Evaluation items. Organizers designed the EOC as a small-scale Incident Command Center (ICS), with three of the four typical sections (Planning, Operations, and Logistics). As is often the case, the National Weather Service was placed in the Planning section.

According to the Texas Department of State Health Services (2022), "Operation Border Health Preparedness is a joint disaster preparedness exercise providing state and local government and nonprofit partners an opportunity to practice setting up and operating health clinics that may be needed in the case of a public health emergency. In 2021, the exercise provided 21,062 health services to 4,756 patients."

Meteorologist Kirk Caceres preparing to give a weather brief.

Logistics Team

This year, the exercise took place from July 25 to July 29. "Participating organizations include the Texas Military Department, Remote Area Medical Volunteer Corps, Cameron County Public Health, Hidalgo County Health & Human Services, City of Laredo Health Department, UTRGV Medical School, Texas A&M University, local nursing schools, and other nonprofit groups" (TDSHS, 2022). Health partners provided medical and dental services, Covid vaccinations, and veterinary services.

Initially, Brian Miller and Pablo Gonzalez took the lead in organizing personnel and equipment, especially on short notice early in the week. Brian and Pablo set up and tested a deployment kit inside the office, preparing it for a good "run" at the RHMOC. Brian, Pablo, and Greg Saunders set up and tested all equipment at the EOC on Wednesday, July 27. Overall, Kirk Caceres gave two remote and one on-site brief, while Brian Mejia and Amber McGinnis gave on-site briefs on Thursday and Friday, respectively. Angelica Soria also attended the Thursday briefing. Barry Goldsmith and Brian Miller helped with task-book evaluations. Meteorologists who complete task books are one step closer to being deployment certified.

Operation Border Health Preparedness was a resounding success again this year. The WFO Brownsville/RGV staff is looking forward to additional opportunities in the future. See the following link for more information.
https://dshs.texas.gov/news/releases/2022/20220721.aspx

Meteorologist Amber McGinnis with various participants in the exercise.

Meteorologist Brian Mejia
Prepares for a weather briefing.

Weather Fact or Fiction

By Amber McGinnis

Weather folklore has been around for centuries. Many of us grew up hearing the “old wives tales” about what causes weather phenomena or how to determine the weather ahead. Once again it is time to explore some of these common (and not so common) weather myths to determine if they are fact or fiction.

Myth: You can only get a sunburn in the summertime.

Pure **fiction**. Humans are exposed to the sun's harmful ultraviolet rays all year. While this tends to be a bit less in the winter, you can still get sunburn. Also, a cloudy day does not protect you from harmful UV radiation as up to 80% of UV rays can pass through a cloud. UV radiation can also be reflected from nearby surfaces onto your skin and cause sunburn.

Myth: The strength of the winds determines a hurricane's impact.

While a hurricane's category on the Saffir Simpson scale is determined by winds, it does not determine a hurricane's impact, so this statement is **fiction**. While these winds can be devastating, the most significant and longest-lasting impact is by flooding. The large amount of moisture these storms can pick up can cause persistent rain and heavy downspours that lead to large-scale flooding for days after the storm has passed. Impacts from flooding include crop damage, structure damage, fatalities and even illness through water-borne disease and bacteria.

Myth: Spiders spinning new webs means dry conditions are expected.

As surprising as this statement may be, it is **fact**! Spiders are very sensitive to humidity so when they sense low humidity they will spin webs. Dry conditions will not destroy their webs and so they will wait to spin them if there is a lot of moisture in the air.

Myth: A waterspout turns into a tornado only when it crosses onto land.

While this may sound true it is technically **fiction**. A waterspout is already a tornado when it is over water. The process that creates tornadoes over the water is the same as over land. The only difference is the surface on which it occurs.

Myth: When cows lay down in the field, it is about to rain.

This one is also **fiction**. Some of the theories behind this is that cows want to preserve a piece of dry land, but this has not been proven. In fact, according to The Dairy Alliance, cows can spend up to 12 hours a day laying down.

The medical field would be my answer. In my current field, I have kept systems healthy for Army, DoD, and NWS. The medical field is similar except the systems are organic.
-Pablo Gonzalez
Information Technology Officer

I'd be a drummer in a rock n roll band.
-Greg Saunders
Electronics Technician

I'd be a video game developer.
-David Reese
Meteorologist

This is still meteorology related...I would be a Meteorology and Oceanography Officer with the US Navy.

Non-meteorology related...I'd love to be a beach patrol lifeguard (preferably one that guards its beaches year-round). Or maybe an accountant because balancing numbers actually sounds kind of fun.
-Laura Farris
Meteorologist

If I wasn't a meteorologist, I'd either be a marine biologist or on stage as a musician somewhere - or both!
-Rick Hallman
Lead Meteorologist

If I were not a meteorologist, I would be an artist or marine biologist. I also always to be a profiler for the FBI, too. So many career choices, so little time.

-Amber McGinnis
Meteorologist

I would be an astronomer...it was actually my "first love" of the sciences.

-Joshua Schroeder
Science and Operations Officer

Either a sports journalist or a play-by-play announcer (radio) for hockey. Backstory: I applied to Syracuse University (accepted) for this purpose as a 'backup plan".

-Barry Goldsmith
Warning Coordination Meteorologist

If I wasn't a met, I think I would try to get into pro wrestling instead. Almost a completely different trajectory for life, but both meteorology and wrestling require good communication skills, which is something that I am always looking to improve on.

-Jeremy Katz
Meteorologist

South Texas Area Maritime Security Training Exercise Program (AMSTEP) 2022 Functional Exercise (FE)

By Brian Miller and Laura Farris

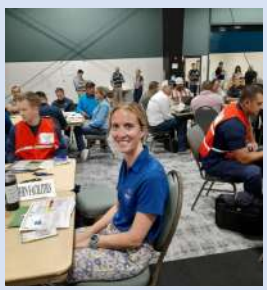
On August 3, 2022, Brian Miller and Laura Farris from the Brownsville/Rio Grande Valley Weather Forecast Office (WFO) participated in AMSTEP 2022. Since the scenario occurred near Port Aransas, Texas, the Corpus Christi Weather Forecast Office took the lead in providing weather, water, and climate information and interpretive services to the U.S. Coast Guard and partners. Brian and Laura assisted and learned during the exercise to be better prepared when AMSTEP returns to the Port of Brownsville or another site in the WFO Brownsville area of responsibility. Brian played the role of an exercise evaluator, and Laura participated as a technical specialist (meteorology) observer.

Meteorologist Brian Miller wearing an Evaluator Vest

The U.S. Coast Guard, working under the Department of Homeland Security, manages AMSTEP. This year, Coast Guard Sector Corpus Christi conducted AMSTEP at the Richard M. Borchard Regional Fairgrounds in Robstown, Texas, as a FE. A FE simulates an emergency, short of moving resources. The exercise aimed to improve the effectiveness of the South Texas Area Maritime Security Plan.

AMSTEP may evaluate various scenarios. This year, the exercise involved a transportation security incident in the Port Aransas ship channel. The training highlighted the importance of the Coast Guard working with interagency partners from the federal, state, and local levels. One federal agency that works closely with the Coast Guard is the National Weather Service (NWS). In 2021, WFO Brownsville participated in an AMSTEP tabletop exercise at the Port of Brownsville, where a simulated incident occurred in the Brownsville ship channel.

Brian and Laura gained invaluable experience related to Impact-Based Decision Support Services (IDSS). IDSS is a new approach where the NWS provides forecast advice and interpretative services to help core partners, such as emergency personnel and public safety officials, make decisions when weather, water, and climate impact the lives and livelihoods of the American people. IDSS can be provided remotely, at an emergency operations center, or on-site at an incident, such as during AMSTEP.



Meteorologist Laura Farris at the Operations Section Table

The on-site experience allowed Brian and Laura to develop deeper relationships with core partners. Core partners are those whom the NWS has a legal mandate to support, whose actions involve national security concerns, have a highdegree of public safety authority, and can amplify NWS messaging to other NWS partners. Brian is certified as deployment-ready and has participated in numerous exercises and deployments. Laura is working toward completing her deployment-ready certification.

BLAST PROGRAM

By Rick Hallman

The National Weather Service is committed to continuing education and offers numerous training programs, courses, and opportunities in multiple aspects of the agency. As the NWS works to better serve partners and the general public, developing leaders is becoming a priority. Southern Region Headquarters offers a two-year program on leadership called BLAST (Building Leaders for A Solid Tomorrow). The objectives of BLAST are to develop the knowledge, skills, and abilities to:

- Foster growth and entrepreneurial mentality in meeting the NWS mission
- Meet the challenge of change
- Think outside the box
- Lead by serving
- Translate NWS Core Values into day-to-day reality
- Plan for the future

The program is designed to be utilized at both a regional and local office level, and is built to grow future leaders at all levels of the NWS. Anyone can be a leader, regardless of title or position, and all leaders should remain students of leadership, continually working to improve their skills, relationships, and self-awareness. By the end of the program, participants in BLAST will be able to:

- Use the challenges in the workplace to develop and exercise leadership
- Analyze required change and the participant's leadership style to emphasize positive change
- Learn how to build on the leadership training from the classroom to apply in real world settings
- Use leadership concepts to serve others
- Initiate a sustained leadership plan
- Use and build on the knowledge and experiences of other leaders

Senior Meteorologist Rick Hallman was selected to the 2022 BLAST class and attended the formal workshop in San Antonio in late August. During the week, 14 students worked with multiple leaders from other offices and Southern Region Headquarters to build leadership skills and tools through mostly shared experiences. Some of the topics included were active listening, adversity, change, communication, conflict, core values, diversity, empathy, equality, equity, failure, inclusion, innovation, personality types and differences, self-awareness, and perhaps most importantly, serving others. Over the next year, Rick will be working with a mentor to continue building his leadership skillset, while also leading a local BLAST team at NWS Brownsville to help others begin or continue their leadership journey.

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