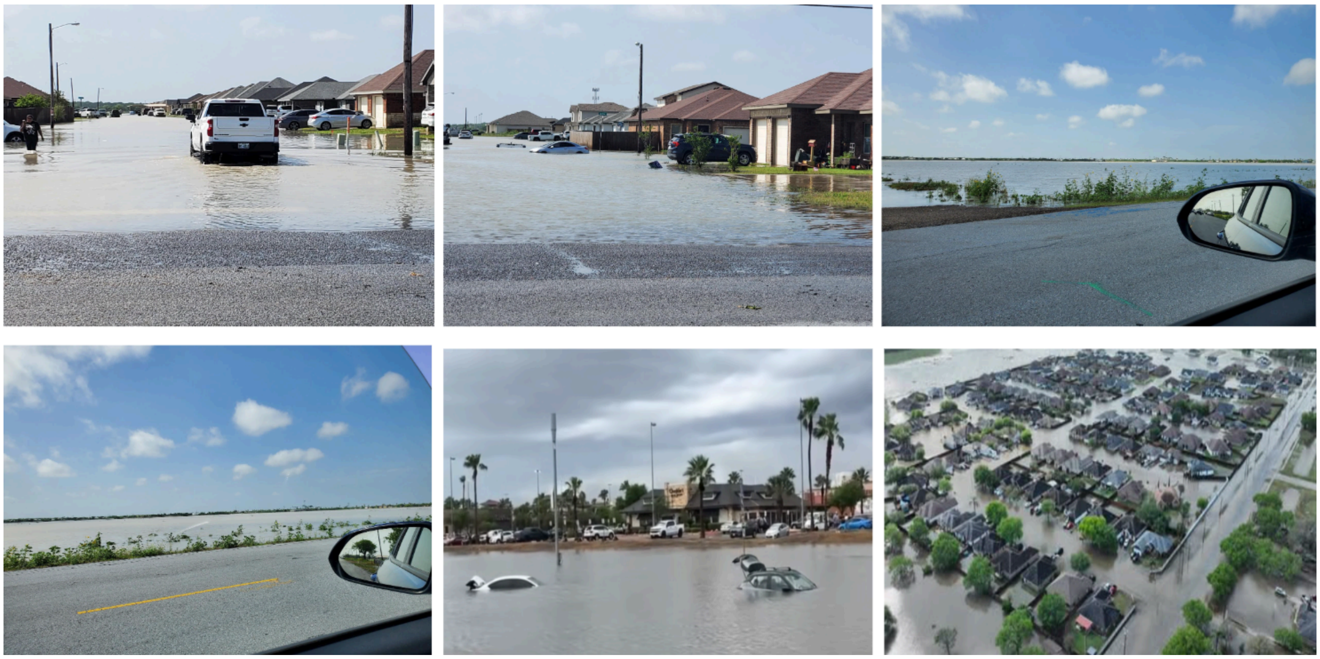
The Historic Flooding of March 26-28, 2025:
"Madness" Strikes the Rio Grande Valley in a Devastating Way

By Barry Goldsmith and Rodney Chai



Above: Widespread flooding across the populated Rio Grande Valley following excessive and record-breaking rainfall, from late March 26th until early on March 28th, 2025.

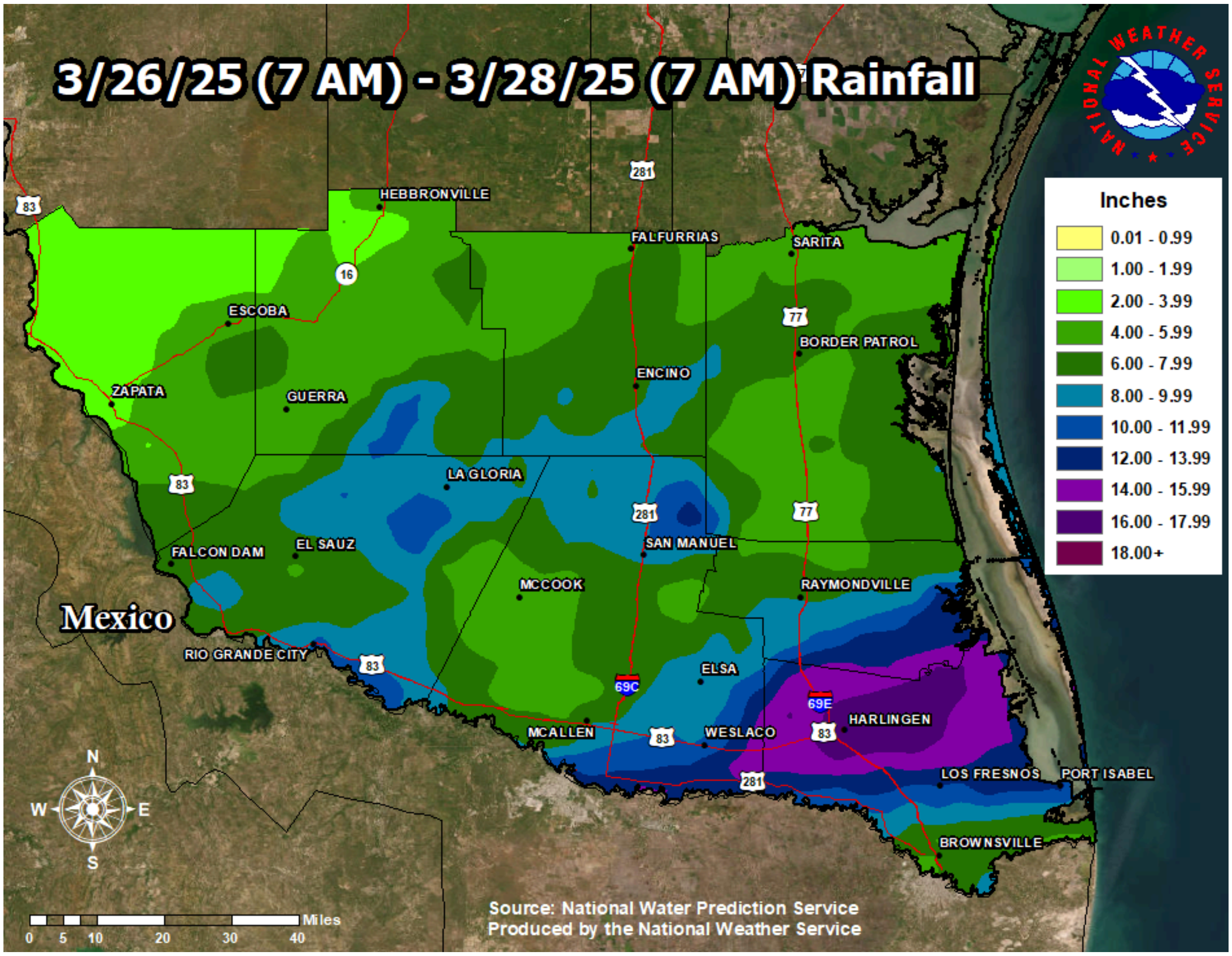


Figure 1: Bias-corrected radar-estimated rainfall map from March 26-28, 2025. For this event, the bias-corrected radar estimates were very close to the observed totals.

Overview

After nearly four weeks of repeated "dry" fronts and general warmth worsened drought to severe (level 2) to extreme (level 3) conditions and helped spread up to ten small wildfires between the 4th and the 22nd, the skies literally opened up with torrential rains between March 26th and early March 28th. Rainfall of nearly 20 inches (measured) and potentially just over 21 inches (radar-estimated) pummeled much of the Rio Grande Valley, from eastern Starr County through southern Hidalgo County and into northern Cameron County. The rainfall crushed prior daily, multi-day, and monthly (March) records at many locations, and rivaled all-time two-day records in a few locations - including those from tropical cyclones such as Labor Day 1933, Beulah (1967), Allen (1980), and Dolly (2008).

Unfortunately, the floods were devastating in dozens of neighborhoods across the Valley, with the most notable damage centered on northern Cameron County, where the heaviest rains fell. As of this writing, details were still being received as recovery efforts by local and state emergency services units were in full swing. However, a disaster declaration was provided by Texas Governor Abbott for the four-county Rio Grande Valley region, and FEMA was also being invited to join the damage assessment effort. Based on preliminary reports which suggested that this event rivaled that of the Great June Flood of 2018, damage and recovery totals from the flood were likely to exceed $100 million.

In addition to the flooding, there were several local wind damage events across the region. A surveyed EF0 tornado briefly touched down just east of Edcouch, a possible tornado may have done the same in La Feria, and straight-line winds lifted the roof off a shed in Santa Rosa (Cameron County). Gusty winds associated with an initial thunderstorm complex impacted portions of eastern Cameron County between Harlingen and Brownsville during the pre-sunrise hours on March 27th - more than 12 hours ahead of the prolonged flooding rains to come. Gusts reached 63 mph just before 6 AM.

Unfortunately, the event was not only historic in data, but tragic in human casualties. As of this writing, there were six known fatalities directly or indirectly related to the storms. Full details on the fatalities will be determined at a later date These included:

- Two persons who died in a trailer-type house fire in Sebastian (Willacy County) between 430 and 530 AM on March 27th, due to a suspected lightning strike.
- One person (a juvenile) who drowned after he was driven into a flooded canal in Hidalgo County near Edcouch following an encounter with US Border Patrol.
- Two more persons who drowned, also in Hidalgo County, based on reports from law enforcement.
- One person drowned across the border in Reynosa, Tamaulipas. Reynosa is on the other side of the Rio Grande from the cities of Pharr and Hidalgo (Hidalgo County).

Impacts and Response

The following is a preliminary summary of known impacts and response from the floods across the Rio Grande Valley as of March 31, 2025:

- Several hundred persons were rescued from the floodwaters between March 27th and 29th.
- At least a thousand buildings had inches to more than a foot of water inside them.
- The frontage roads along IH-69E between San Benito and Sebastian, and between Harlingen and Mission, were generally flooded and closed through March 28th, with up to four feet of water depth in the worst instances.
- At least a thousand vehicles were flooded out - ranging from compact cars to a few tractor-trailers.
- Hundreds of roads, ranging from neighborhood streets to state highways, were closed due to high water - in some cases 3 feet or more.
- At Harlingen’s (Rio Grande) Valley International Airport, flooded taxiways and sunken/soft pavement along runways forced cancellations of all flights through Monday, March 31.
- An unknown number of roads and bridges sustained structural damage due to the floodwaters.
- Emergency management response included dozens to hundreds of high-profile vehicles and watercraft to rescue people in homes and vehicles.

- At least a dozen shelters were opened across the region, with at least several hundred rescued residents staying in them until they could return to their homes.
- Community-based organizations and larger non-profits aided in sheltering and food/water provision to impacted communities. These included the American Red Cross, the Salvation Army, and the Food Bank of the RGV, among others.

Dollar value assessments were ongoing to begin April. This article will be updated with those values in the coming months.

By The Numbers

The following table describes the historical relevance of the flooding, based on preliminary observations from NWS-managed platforms with multi-decadal periods of record. For all available locations, the three-day totals (March 26-28) ranked wettest all-time for March, and at or near the top at most locations along the IH-2 corridor for the calendar year.

Table 1: Three-day rainfall, in inches, and rankings for March and the calendar year, at NWS maintained locations..

Location	County	Since	Event Rainfall	March Rank	Annual Rank	Prior Record (year)
Harlingen/Cooperative	Cameron	1912	15.18**	1	3	17.07 (1991)
Harlingen/Valley	Cameron	1953*	13.98#	1	1	N/A
Bayview/Cam Co Airport	Cameron	1999	13.10	1	1	N/A
Port Isabel	Cameron	1896***	11.18	1	8	19.43 (1984)
Raymondville	Willacy	1911	10.60	1	5	14.39 (1967)
McAllen	Hidalgo	1942	9.13	1	2	9.42 (1980)
Port Mansfield	Willacy	1958	9.02	1	13	14.9 (2007)
Weslaco 2 miles east	Hidalgo	1914	8.60	1	4	15 (1933)
Brownsville	Cameron	1878	6.74	1	67(t)	24.16 (1886)
McCook	Hidalgo	1942	4.30	1	N/A	14.09 (1967)

Notes:
*Harlingen/Valley only included data from 1953-1962 and 1997-present.
**Rainfall between 7 AM March 27 and 7 AM March 28 was rounded to 10 inches, and likely an estimate.
***MIssing data between 1970-74 and 2015-2019.
#Lightning struck nearby and knocked the sensor offline before rains ended.

Some of the more impressive rainfall totals were observed by Community Collaborative Rain, Hail, and Snow (CoCoRaHS) observers. The following tables show their values for the four Valley counties, which had the most rainfall. A CoCoRaHS map of the entire area, including the Brush Country and Rio Grande Plains, is shown below.

Table 2: Cameron County CoCoRaHS observations from March 26th (7 AM) through March 29th (7 AM). The 25.50 inch value at Harlingen 0.4N appears to be an outlier, though it aligns with radar-estimated rainfall totals in the Harlingen area of 21 inches.

Station Number	Station Name	Daily Precip Sum in.	Multi-Day Precip in.	Total Precip in.
TX-CMR-85	Harlingen 0.4 N	25.50		25.50
TX-CMR-117	Lozano 1.4 S	18.70		18.70
TX-CMR-93	Harlingen 4.4 W	18.50		18.50
TX-CMR-123	Harlingen 4.7 W	16.73		16.73
TX-CMR-120	Harlingen 1.1 NE	16.36		16.36
TX-CMR-78	Harlingen 3.8 W	16.11		16.11
TX-CMR-121	Harlingen 4.2 W	15.69		15.69
TX-CMR-100	Harlingen 6.2 WSW	14.79		14.79
TX-CMR-130	Laguna Vista 0.7 NW	11.07		11.07
TX-CMR-21	Los Fresnos 0.3 NE	10.65		10.65
TX-CMR-101	San Benito 0.9 SSE	10.54		10.54
TX-CMR-58	Laguna Vista 0.3 N	10.23		10.23
TX-CMR-129	Los Fresnos 3.0 W	9.70		9.70
TX-CMR-135	Brownsville 2.2 E	9.50		9.50
TX-CMR-132	South Padre Island 1.6 NNW	8.86		8.86
TX-CMR-1	Rancho Viejo 0.7 E	8.40		8.40
TX-CMR-17	Brownsville 4.1 E	6.08		6.08
TX-CMR-43	Brownsville 4.1 ENE	5.92		5.92
TX-CMR-136	Rancho Viejo 2.3 ESE	0.16	5.34	5.50
TX-CMR-8	Brownsville 6.4 SE	5.20		5.20
TX-CMR-23	Brownsville 1.9 ESE	4.54		4.54
TX-CMR-98	Brownsville 4.3 NW	4.30		4.30
TX-CMR-61	Brownsville 6.4 WNW	4.17		4.17
TX-CMR-51	Brownsville 0.1 SSE	4.09		4.09
TX-CMR-89	Brownsville 1.7 NNE	4.09		4.09
TX-CMR-94	Brownsville 12.6 E	3.43		3.43

Table 3. Same as Table 2 except for Hidalgo County.

Station Number	Station Name	Daily Precip Sum in.	Multi-Day Precip in.	Total Precip in.
TX-HDL-54	Mercedes 1.9 SW	13.46		13.46
TX-HDL-19	Mission 4.3 WSW	0.14	8.25	8.39
TX-HDL-39	Mission 3.9 WSW	8.11		8.11
TX-HDL-14	La Joya 0.6 W	7.10		7.10
TX-HDL-61	McAllen 6.3 N	6.78		6.78
TX-HDL-57	McAllen 4.4 N	6.11		6.11
TX-HDL-5	La Joya 11.1 N	5.73		5.73
TX-HDL-59	Mission 1.1 E	5.65		5.65
TX-HDL-9	Mission 1.9 ENE	5.35		5.35
TX-HDL-50	McAllen 3.5 N	5.19		5.19
TX-HDL-60	McAllen 4.7 NNW	5.15		5.15

Table 4. Same as Table 3 except for Starr County.

Station Number	Station Name	Daily Precip Sum in.	Multi-Day Precip in.	Total Precip in.
TX-ST-3	Rio Grande City 13.8 NNW	7.51		7.51
TX-ST-8	Rio Grande City 3.5 ENE	7.49		7.49

Table 5: Same as Table 4 except for Willacy County.

Station Number	Station Name	Daily Precip Sum in.	Multi-Day Precip in.	Total Precip in.
TX-WC-8	Port Mansfield 1.1 SE	9.02		9.02
TX-WC-5	Raymondville 2.0 SSW	6.70	0.14	6.84

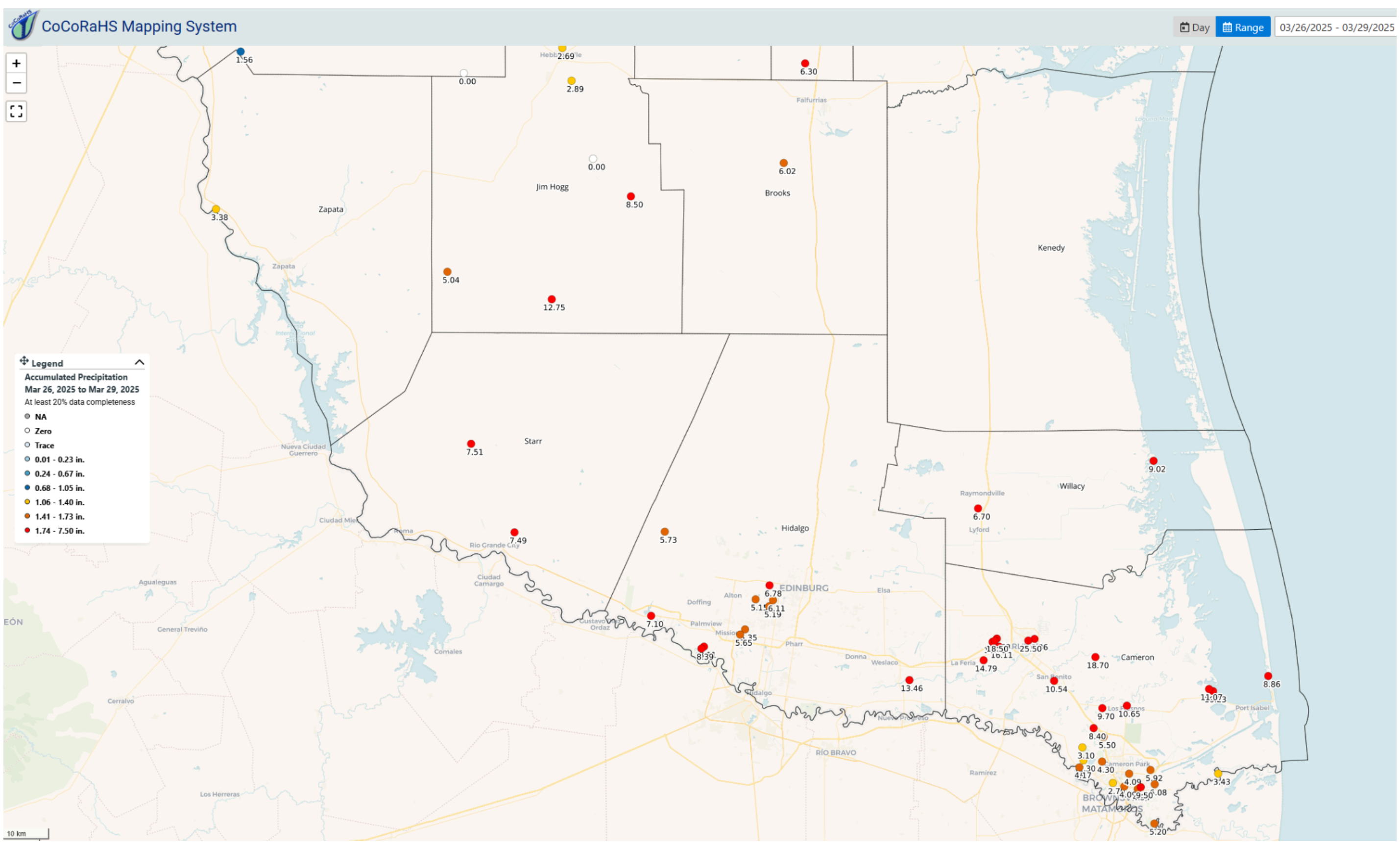


Figure 2: Map of CoCoRaHS three-day rainfall (morning of March 26 through the morning of March 29, 2025) across the Rio Grande Valley/Deep S. Texas ranchland region. Note values over a foot (12 inches) in northern Cameron, southeastern Hidalgo, and southern Jim Hogg County with peak values around Harlingen.

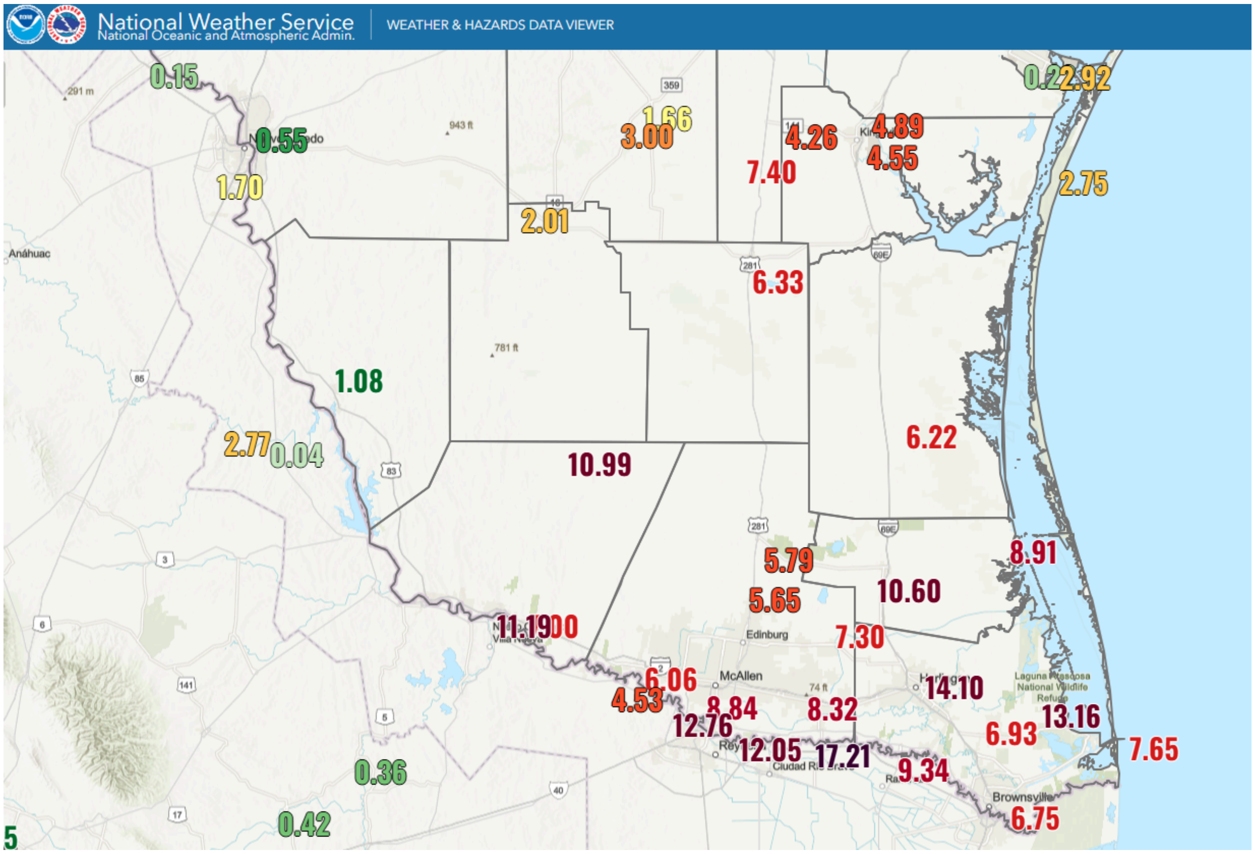


Figure 3: Map of three-day rainfall from other networks (non-CoCoRaHS) from March 26 through March 29, 2025. Note that some data are incomplete and others may not be shown.\

The combination of torrential, and in many cases unprecedented for March - following a period of “flash drought” that allowed more rapid runoff than might be expected - produced record gauge levels along the Arroyo Colorado near Harlingen, and unusually - in fact record - high levels for late March along the Rio Grande along the Cameron County/Tamaulipas border. The following graphics depict the peak river/stream gauge level, and historical crests. Note that for the Arroyo Colorado (Figure 1), the new record shattered those from direct inflows due to Hurricane Hanna (2020) and the Great June Flood (2018) and its sequel (2019), as well as that from the diversion into the Rio Grande Flood Control Project following Hurricane Alex (2010).

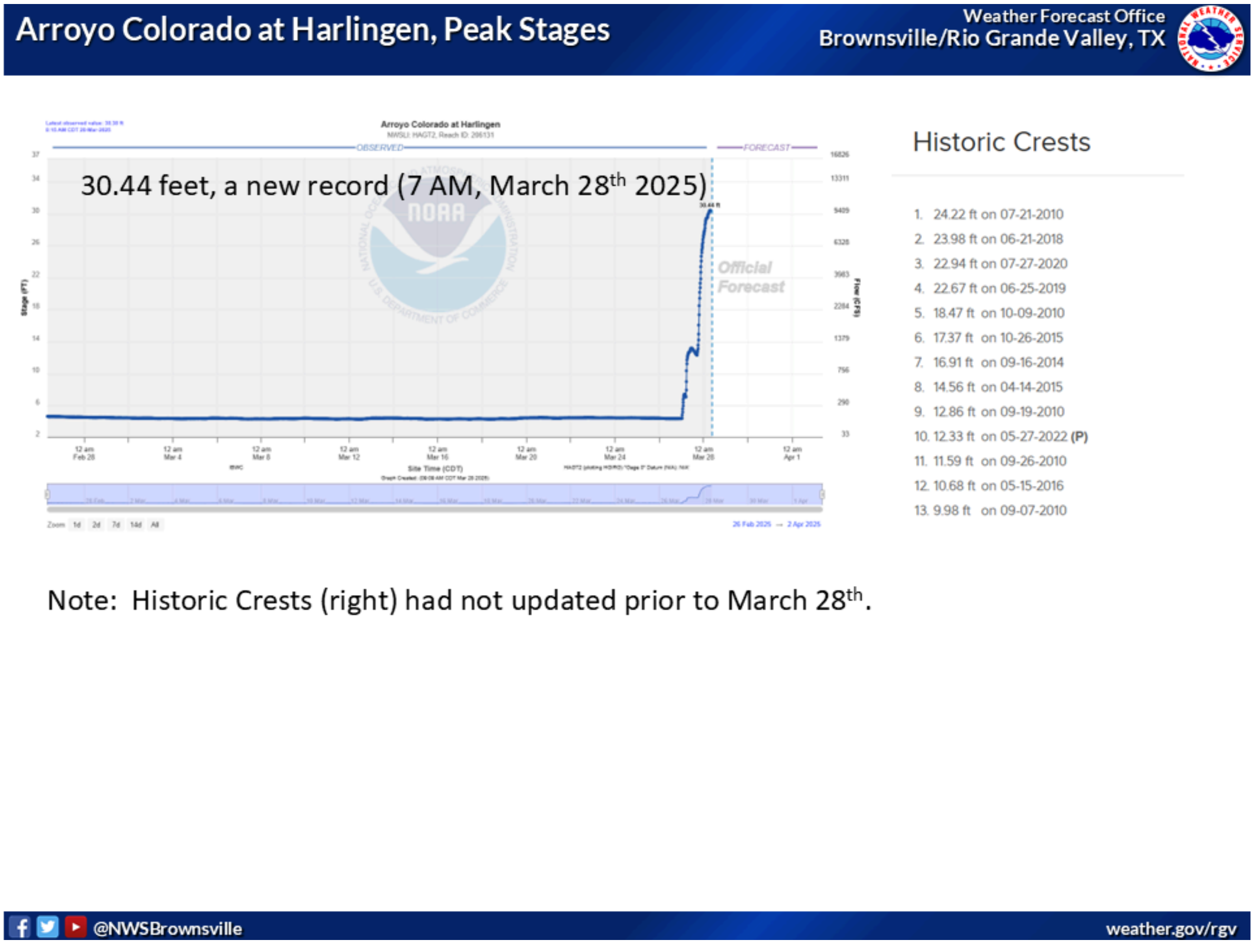


Figure 4. Arroyo Colorado hydrograph during the time of peak streamflow and peak gauge height on the morning of March 28th. Though this site is not used for nearby flood warnings due to overspill, we know from past experience that low-water bridges between west Harlingen and near the Weslaco/Mercedes line in Hidalgo County will have flooded.

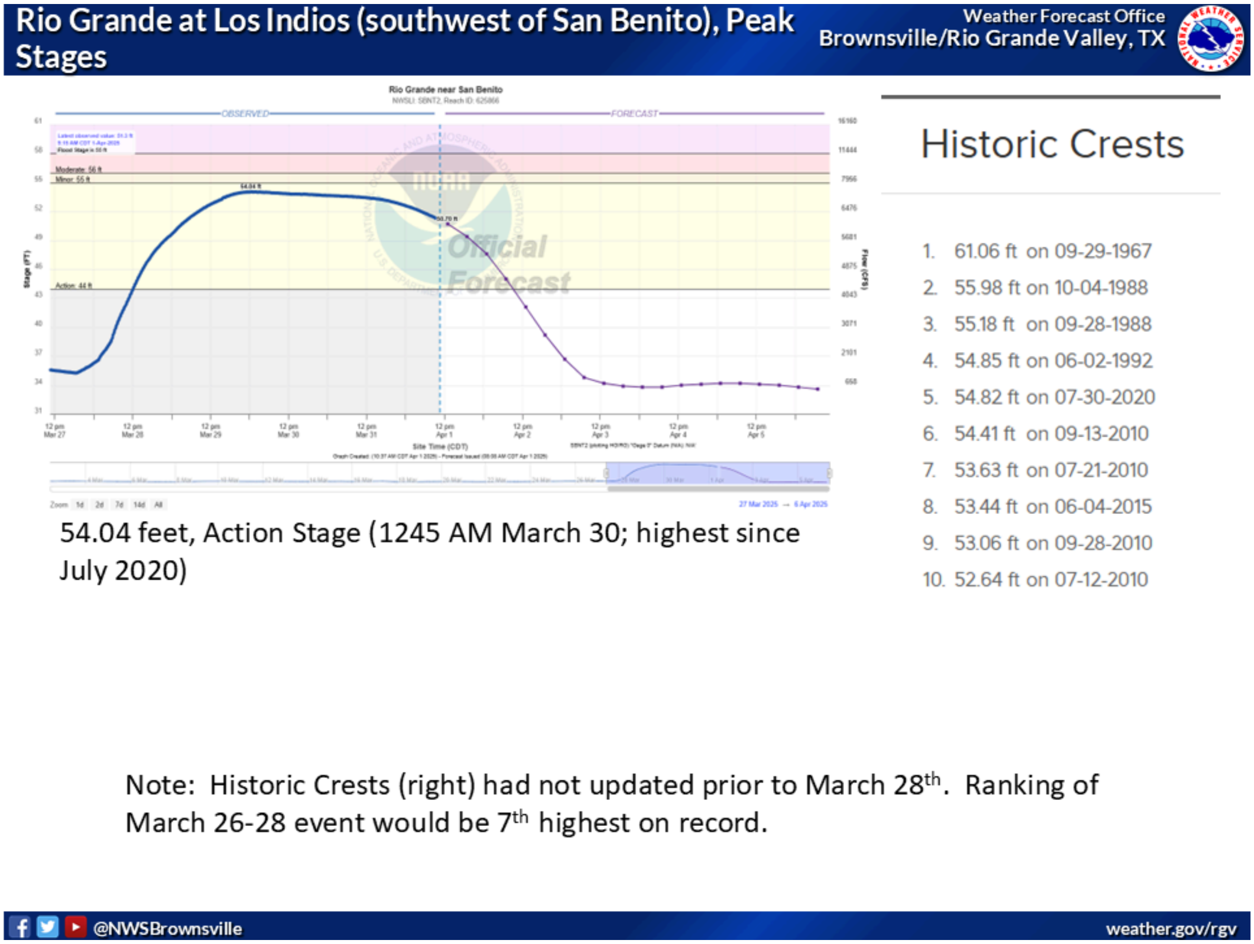


Figure 5. Peak river stage along the Rio Grande at Los Indios (southwest Cameron County) just after midnight on March 30th. The observed level of 54.04 feet was just below minor flood level (flood stage is 55 feet). While these levels remain inside the levee, they do affect US Border Patrol operations that normally occur when the river level is much lower.

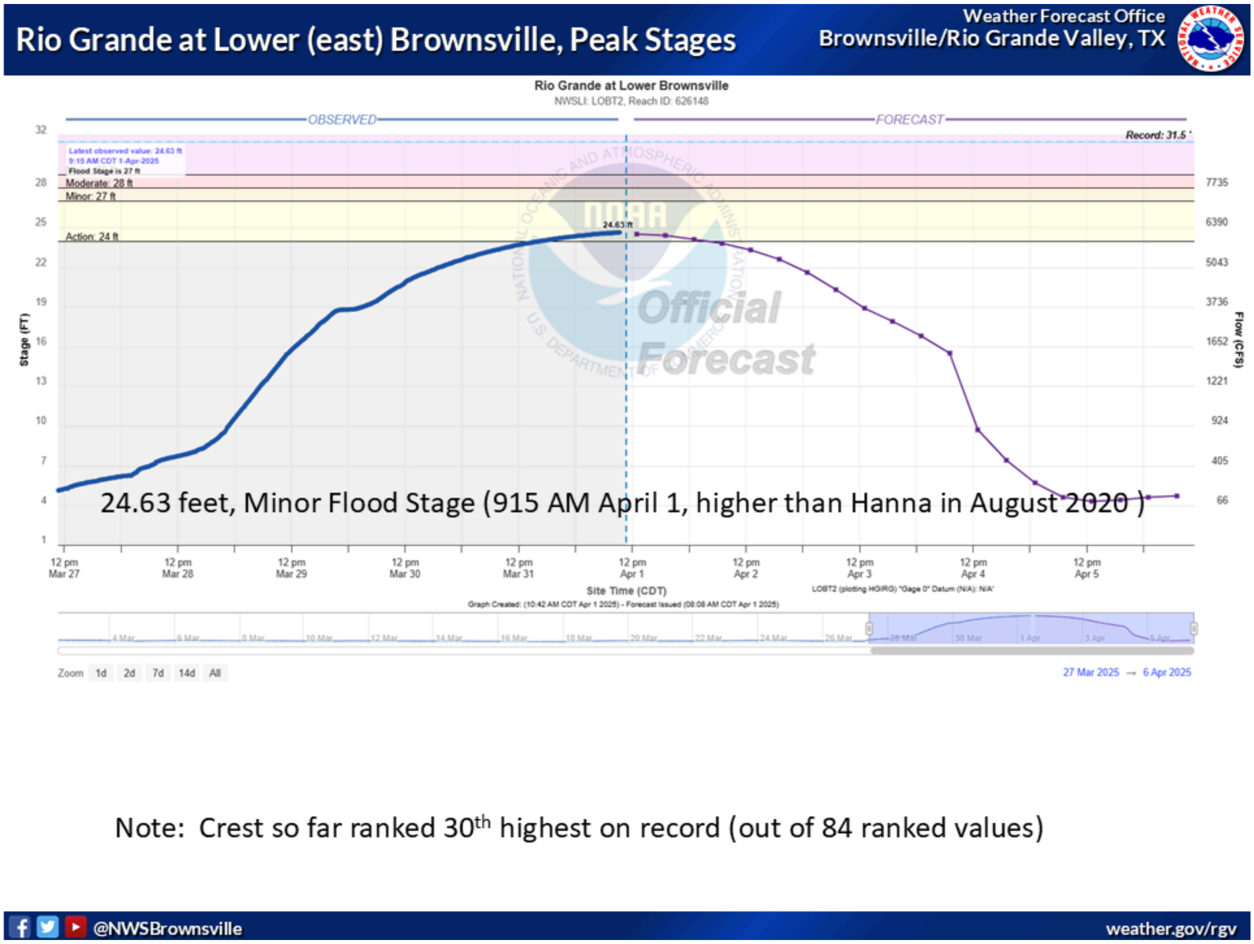


Figure 6. Peak river stage along the Rio Grande at Lower Brownsville (east of the city center) at 915 AM on April 1st. The observed level of 24.63 feet was just above action stage (action stage is 24 feet). While these levels remain inside the levee, they do affect US Border Patrol operations that normally occur when the river level is much lower.

The Numbers, In Context

For locations that experienced the highest rainfall and the worst impact of the flooding, the probability of occurrence based on NOAA's Atlas 14 showed a 1-in-200 to 1-in-500 value. Some very local spots may have exceeded the 1/500 probability as well. Other locations in Hidalgo, Starr, and Willacy (as well as southern Cameron) were generally in the 1-in-50 to 1-in-200 value range. These are commonly known as the "200 year" and "500 year" average recurrence interval (ARI), even though it actually means a .05 to a .02 percent chance of occurrence in any year. The range of return frequencies was seen for time scales on the 2-hour to 2-day period, depending on location and specific rainfall rate.

Case of Average Return Interval (ARI) for Harlingen

Weather Forecast Office
Brownsville/Rio Grande Valley, TX

PDS-based precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.457 (0.346-0.604)	0.547 (0.419-0.716)	0.695 (0.530-0.913)	0.816 (0.613-1.09)	0.982 (0.714-1.35)	1.11 (0.785-1.56)	1.23 (0.850-1.79)	1.36 (0.912-2.02)	1.52 (0.986-2.34)	1.64 (1.04-2.58)
10-min	0.724 (0.548-0.956)	0.867 (0.664-1.14)	1.10 (0.841-1.45)	1.30 (0.974-1.73)	1.56 (1.14-2.15)	1.77 (1.25-2.50)	1.96 (1.36-2.85)	2.16 (1.45-3.21)	2.40 (1.56-3.69)	2.58 (1.63-4.07)
15-min	0.925 (0.700-1.22)	1.10 (0.846-1.45)	1.40 (1.07-1.84)	1.64 (1.23-2.19)	1.97 (1.43-2.70)	2.22 (1.57-3.13)	2.46 (1.70-3.57)	2.71 (1.82-4.02)	3.02 (1.96-4.65)	3.25 (2.06-5.13)
30-min	1.33 (1.00-1.75)	1.58 (1.21-2.07)	1.99 (1.52-2.62)	2.33 (1.75-3.10)	2.79 (2.02-3.82)	3.13 (2.22-4.42)	3.47 (2.39-5.03)	3.81 (2.56-5.67)	4.26 (2.77-6.56)	4.60 (2.91-7.26)
60-min	1.72 (1.30-2.27)	2.06 (1.58-2.70)	2.62 (2.00-3.44)	3.07 (2.31-4.10)	3.70 (2.68-5.07)	4.17 (2.95-5.88)	4.64 (3.20-6.73)	5.14 (3.46-7.65)	5.81 (3.78-8.95)	6.33 (4.01-10.0)
2-hr	2.03 (1.55-2.66)	2.49 (1.91-3.20)	3.21 (2.47-4.18)	3.83 (2.90-5.05)	4.69 (3.43-6.36)	5.35 (3.81-7.47)	6.06 (4.20-8.69)	6.84 (4.62-10.1)	7.96 (5.19-12.1)	8.87 (5.64-13.9)
3-hr	2.19 (1.68-2.86)	2.72 (2.10-3.47)	3.56 (2.75-4.59)	4.28 (3.26-5.62)	5.30 (3.89-7.16)	6.11 (4.36-8.48)	6.98 (4.86-9.96)	7.98 (5.41-11.7)	9.45 (6.18-14.3)	10.7 (6.80-16.6)
6-hr	2.48 (1.92-3.20)	3.14 (2.43-3.94)	4.16 (3.23-5.30)	5.06 (3.88-6.58)	6.37 (4.72-8.52)	7.42 (5.34-10.2)	8.60 (6.02-12.1)	9.97 (6.79-14.4)	12.0 (7.89-18.0)	13.8 (8.79-21.1)
12-hr	2.78 (2.18-3.55)	3.57 (2.77-4.40)	4.75 (3.73-6.00)	5.83 (4.51-7.51)	7.42 (5.55-9.85)	8.75 (6.35-11.9)	10.2 (7.22-14.3)	12.0 (8.19-17.1)	14.5 (9.58-21.6)	16.7 (10.7-25.4)
24-hr	3.12 (2.47-3.95)	4.05 (3.15-4.91)	5.40 (4.27-6.74)	6.65 (5.20-8.48)	8.53 (6.44-11.2)	10.1 (7.41-13.7)	11.9 (8.45-16.5)	13.9 (9.59-19.7)	17.0 (11.2-24.9)	19.5 (12.5-29.2)
2-day	3.56 (2.84-4.46)	4.62 (3.63-5.54)	6.16 (4.92-7.62)	7.60 (5.99-9.60)	9.75 (7.44-12.7)	11.6 (8.56-15.5)	13.6 (9.73-18.6)	15.9 (11.0-22.2)	19.1 (12.7-27.7)	21.8 (14.1-32.3)
3-day	3.87 (3.10-4.82)	5.00 (3.96-5.98)	6.66 (5.35-8.20)	8.20 (6.50-10.3)	10.5 (8.04-13.6)	12.4 (9.21-16.5)	14.6 (10.4-19.8)	16.9 (11.7-23.5)	20.2 (13.5-29.1)	23.0 (14.9-33.8)
4-day	4.11 (3.31-5.10)	5.28 (4.22-6.32)	7.02 (5.67-8.62)	8.61 (6.86-10.8)	11.0 (8.42-14.1)	12.9 (9.61-17.1)	15.1 (10.8-20.4)	17.5 (12.2-24.2)	20.9 (14.0-29.9)	23.7 (15.4-34.7)
7-day	4.67 (3.79-5.75)	5.90 (4.78-7.06)	7.78 (6.34-9.48)	9.45 (7.58-11.7)	11.9 (9.15-15.2)	13.8 (10.3-18.1)	16.0 (11.6-21.5)	18.4 (12.9-25.3)	22.0 (14.7-31.2)	24.9 (16.2-36.2)
10-day	5.13 (4.18-6.28)	6.41 (5.24-7.67)	8.40 (6.88-10.2)	10.1 (8.17-12.5)	12.6 (9.75-16.0)	14.6 (10.9-19.0)	16.8 (12.1-22.3)	19.2 (13.5-26.3)	22.8 (15.4-32.2)	25.8 (16.8-37.3)
20-day	6.51 (5.36-7.89)	7.95 (6.61-9.52)	10.3 (8.53-12.4)	12.2 (9.96-15.0)	15.0 (11.6-18.7)	17.0 (12.8-21.9)	19.3 (14.0-25.4)	21.7 (15.3-29.4)	25.3 (17.1-35.3)	28.2 (18.4-40.2)
30-day	7.60 (6.29-9.16)	9.18 (7.71-11.0)	11.8 (9.85-14.1)	13.9 (11.4-16.9)	16.9 (13.2-21.0)	19.1 (14.4-24.3)	21.3 (15.6-28.0)	23.8 (16.9-32.0)	27.3 (18.5-37.9)	30.1 (19.7-42.6)
45-day	9.03 (7.52-10.8)	10.8 (9.16-12.9)	13.8 (11.6-16.5)	16.2 (13.3-19.6)	19.5 (15.3-24.1)	21.9 (16.6-27.8)	24.4 (17.9-31.7)	26.9 (19.1-35.9)	30.5 (20.7-41.9)	33.2 (21.8-46.7)
60-day	10.3 (8.57-12.2)	12.2 (10.4-14.5)	15.5 (13.1-18.5)	18.2 (15.0-21.9)	21.8 (17.2-26.9)	24.5 (18.6-30.9)	27.1 (19.9-35.1)	29.8 (21.2-39.5)	33.3 (22.7-45.6)	36.0 (23.7-50.4)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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Figure 7. NOAA Atlas-14, showing average recurrence intervals (ARI) for rainfall in Harlingen. Green shaded boxes indicate the best ARI for the 24-hour and 2-day totals, which are a good match for the better observations received via multiple networks.

Meteorology

Models were way off on the rainfall amount and placement

The biggest challenge for this event was the prolific amount of rainfall. Jet dynamics more typical of higher latitudes such as the Mid Atlantic and the Northeast U.S. led to highly efficient recharging of the atmosphere for repeated rounds of rainfall, along with severe weather. It is noteworthy that the typical Convection-Allowing Models (CAMs) did not have a handle on just how prolific the rainfall would be. In fact, the Weather Prediction Center had advertised that bull's eye of the rainfall some 150 miles to our north. And NWS Corpus Christi County Warning Area (CWA) was placed under a level 3 of 4 Moderate risk of excessive rainfall whereas much of the NWS Brownsville CWA were only in a level 1 of 4 Marginal risk of excessive rainfall. The Hi-Resolution Ensemble Guidance (HREF), which is a blend of five hi-resolution guidance averaged over two time steps, had traditionally been reliable to pinpoint the amount and placement of heaviest precipitation both in the warm and cool seasons. The Probability Matched Mean (PMM) 48 hour rainfall wrongly placed the bulls' eye over our northern zones, from Kenedy county towards Victoria, TX. And even then, the bulls' eye of 7-10 inches fell way short of the actual maximum rainfall amount, i.e. 15-20 inches that was observed. To add insult to injury, the I-2 corridor from McAllen to Harlingen, TX that saw catastrophic flooding were only forecast to receive 1-2 inches per the HREF PMM, which is considered the NWS gold standard for convective rainfall modeling. Even the absolute worst case scenario, which is even worse than the reasonable worst case scenario, did not quite stick the landing as the worst hit areas were forecast to receive 5-7 inches over 48 hours. In reality, areas like McAllen and Harlingen saw that amount in just 2 hours, leading to hundreds of stranded residents, workers, and motorists on the afternoon of March 27.

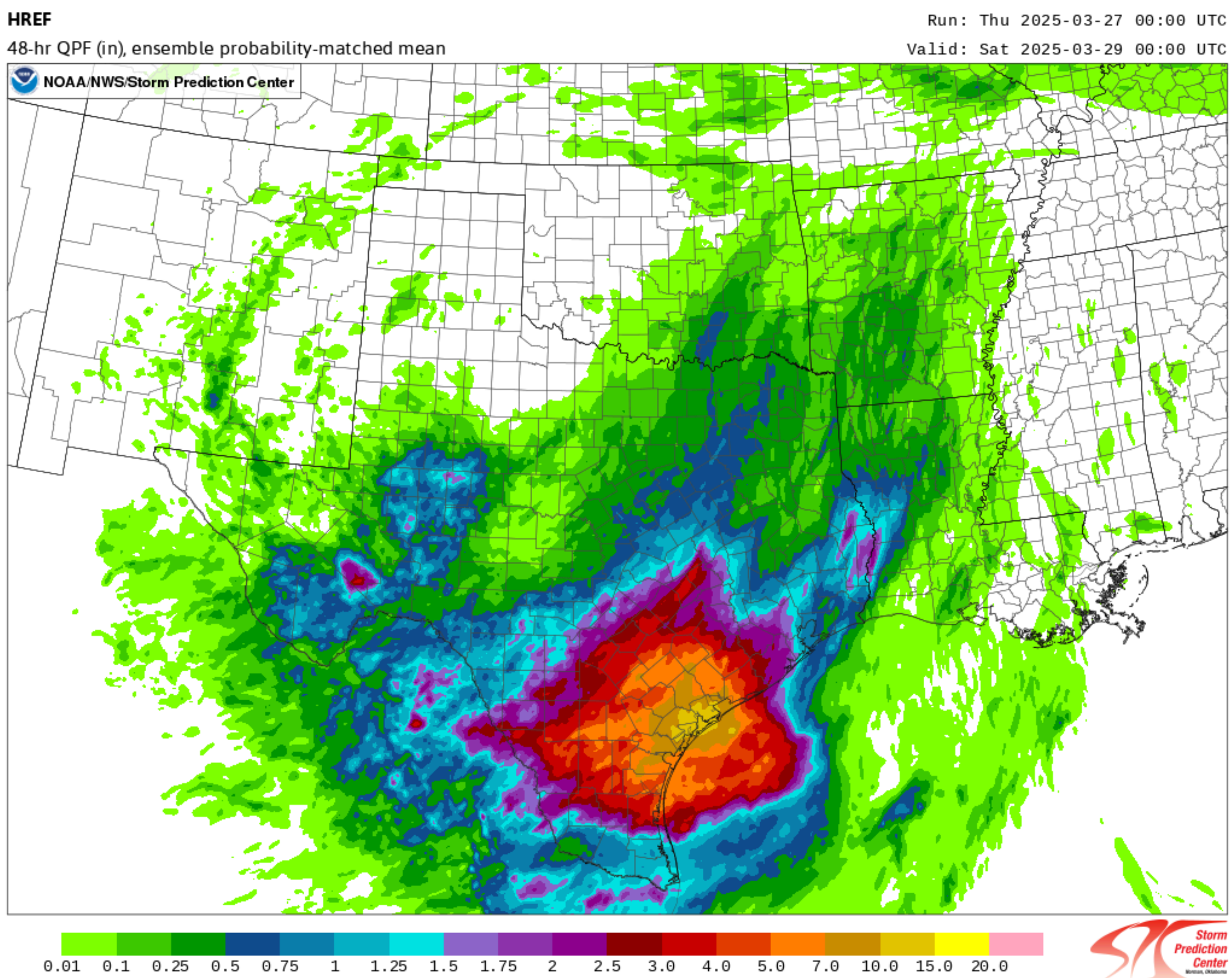

Figure 8. HREF PMM 48 hour rainfall forecast (March 27 00z run)

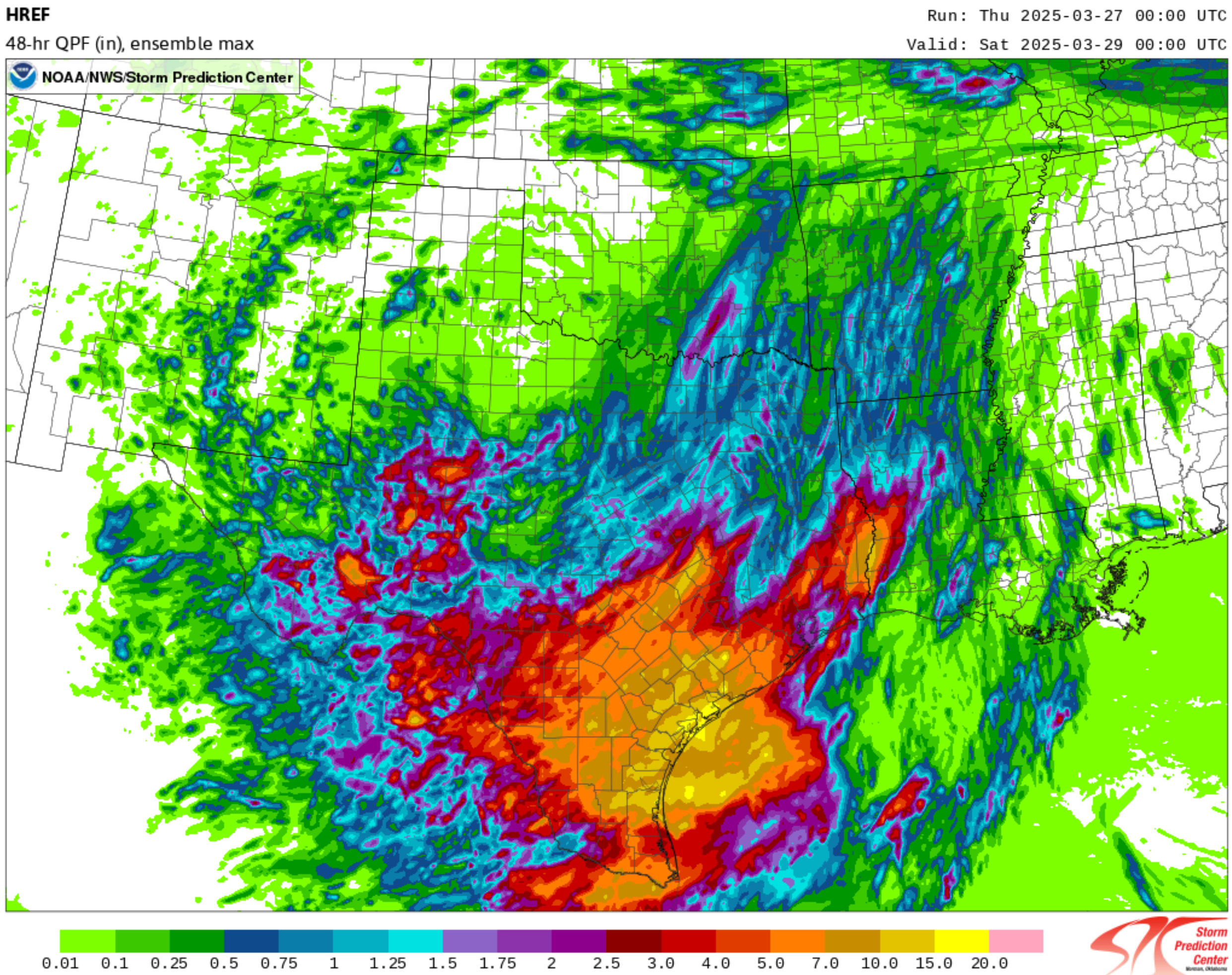

Figure 9. HREF Ensemble Maximum 48 hour Rainfall Forecast (March 27 00z run)

A multitude of factors contributed to the repeated rounds of rainfall along with bouts of severe weather, most notably two rounds of Quasi-Linear Convective System (QLCS) with brief tornado threat. An anomalous vertically stacked upper level low pressure system was centered over the Mexican state of Chihuahua. At the base of the trough, there was a 80 kt jet streak and Deep South Texas into the RGV were located in the favorable left exit region, which led to excellent upper level divergence (as indicated by the magenta contours on the 300mb weather map).

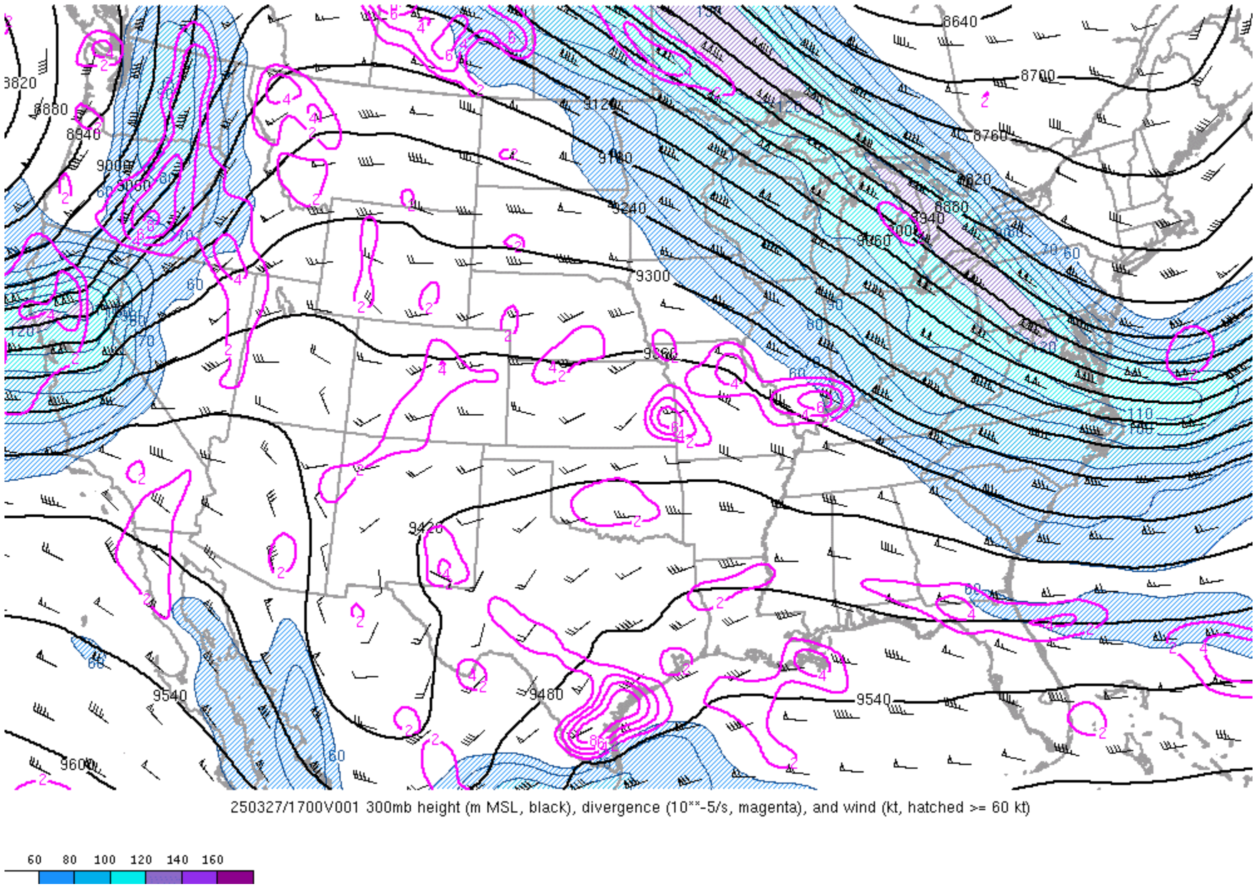

Figure 10: 300mb height (approximately 30000 ft ASL) map overlaid with jet streaks and regions of upper level divergence

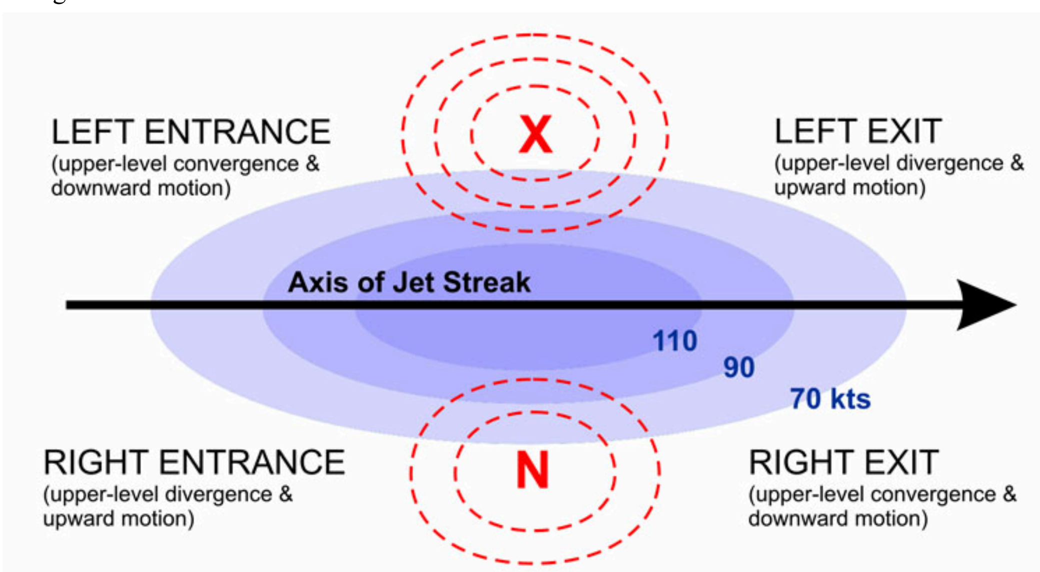

Figure 11: Idealized schematic showing the four quadrants associated with an upper level jet streak. Notice that Deep South Texas and the Rio Grande Valley were located in the Left Exit region.

With the upper level trough being neutral to slightly negatively tilted, the atmosphere was favorable for deep ascent of air parcels through a deep moist column. The 18z (1 PM) NWS Brownsville upper air sounding shows deep atmospheric moisture (red line or temperature close to the green line or dew point temperature) up to almost 650mb or 13500 ft. Not only is the atmosphere primed for efficient rainfall rates, the waves of vorticity or “energy” as well as the upper level divergence led to the constant recharge of the atmosphere, and as a result rounds of heavy rainfall even in the absence of diurnal heating. Additionally, the BRO sounding also showed a curved hodograph on the upper right corner. With 40 kt shear, 300 J/kg of low-level helicity and decent mid-level lapse rates (6C/km), there is plenty of spin in the atmosphere for storms to become severe once marginal daytime heating is in place. This was exactly what happened on the afternoon of March 27, when a couple of disorganized thunderstorms across Brooks county blossomed into a Quasi-Linear Convective System (QLCS) that impacted Hidalgo, Willacy and Cameron counties. Straight-line winds gusting over 60 mph led to downed trees and power lines. There were also brief tornadic circulation across the southern end of the QLCS, which led to a brief EF-0 tornado over Edcouch that was warned. Unfortunately, the moist atmosphere also meant that the storms were associated with heavy rainfall and efficient rainfall rates, which led to catastrophic flash flooding over the I-2 corridor from McAllen to Harlingen.

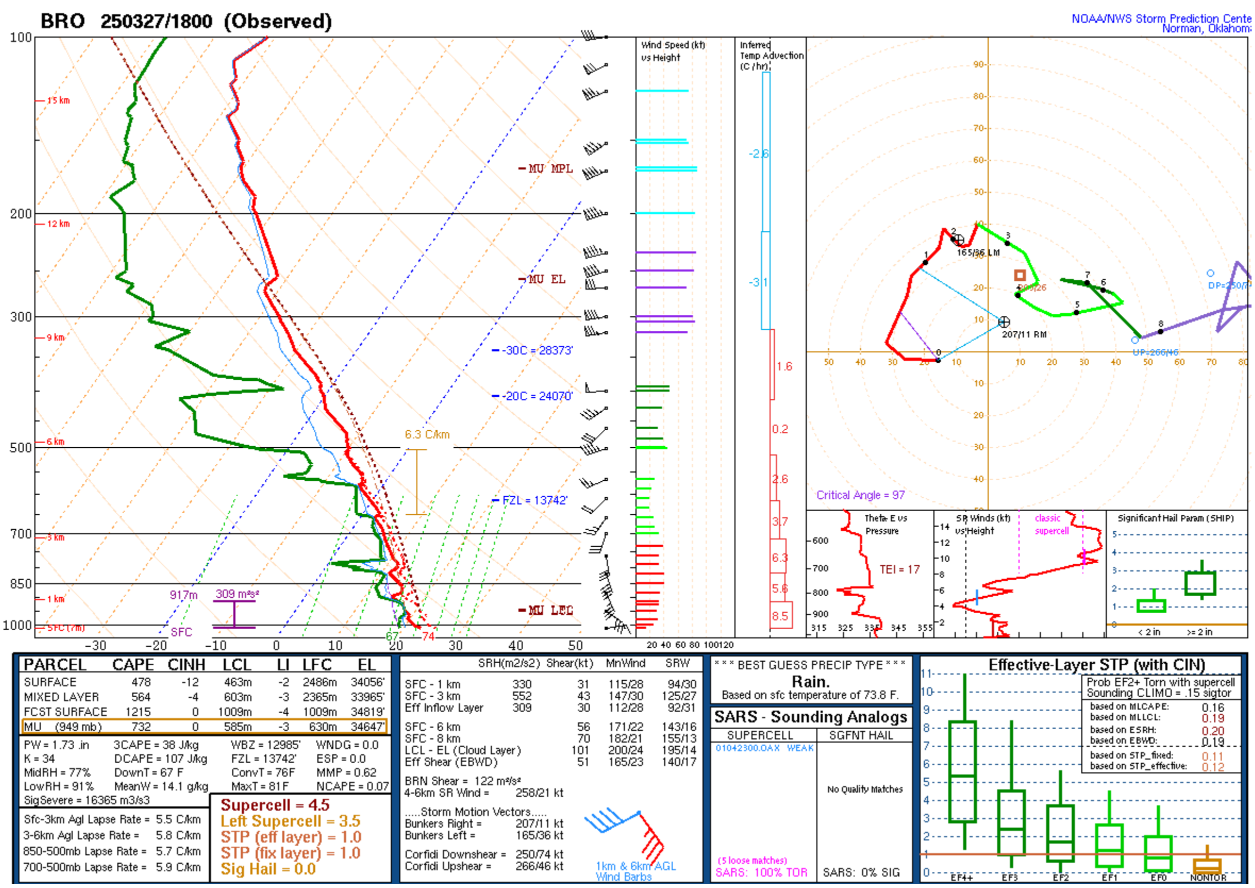

Figure 12: March 27 18z (1 PM) NWS Brownsville upper air sounding/balloon launch showing a deep moist atmosphere

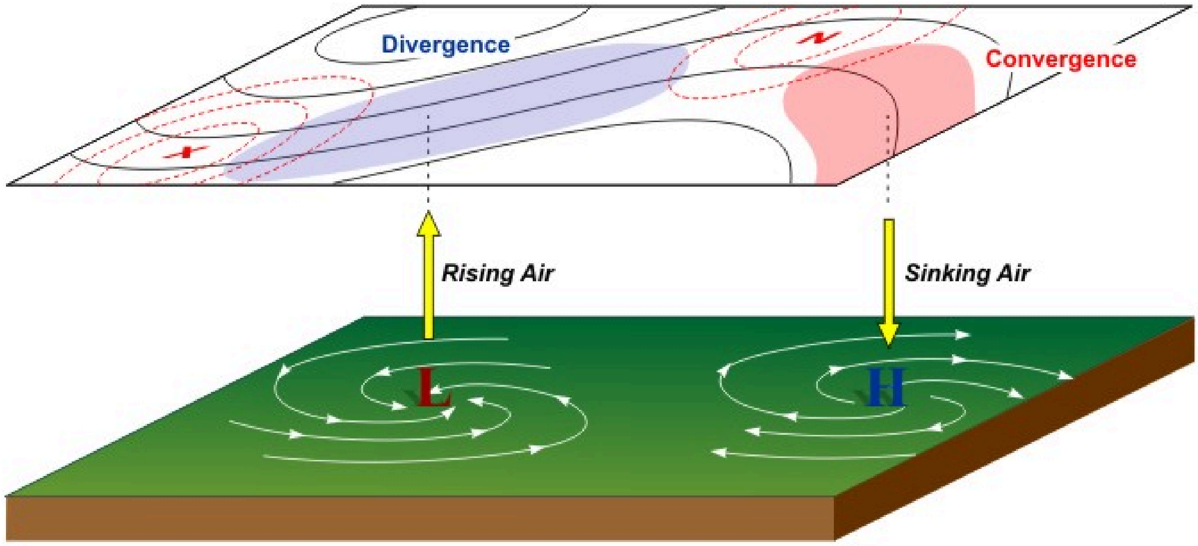

Figure 13: An idealized schematic showing how upper level divergence is associated with intense rising air motion, and as a result, constant regeneration of storms.

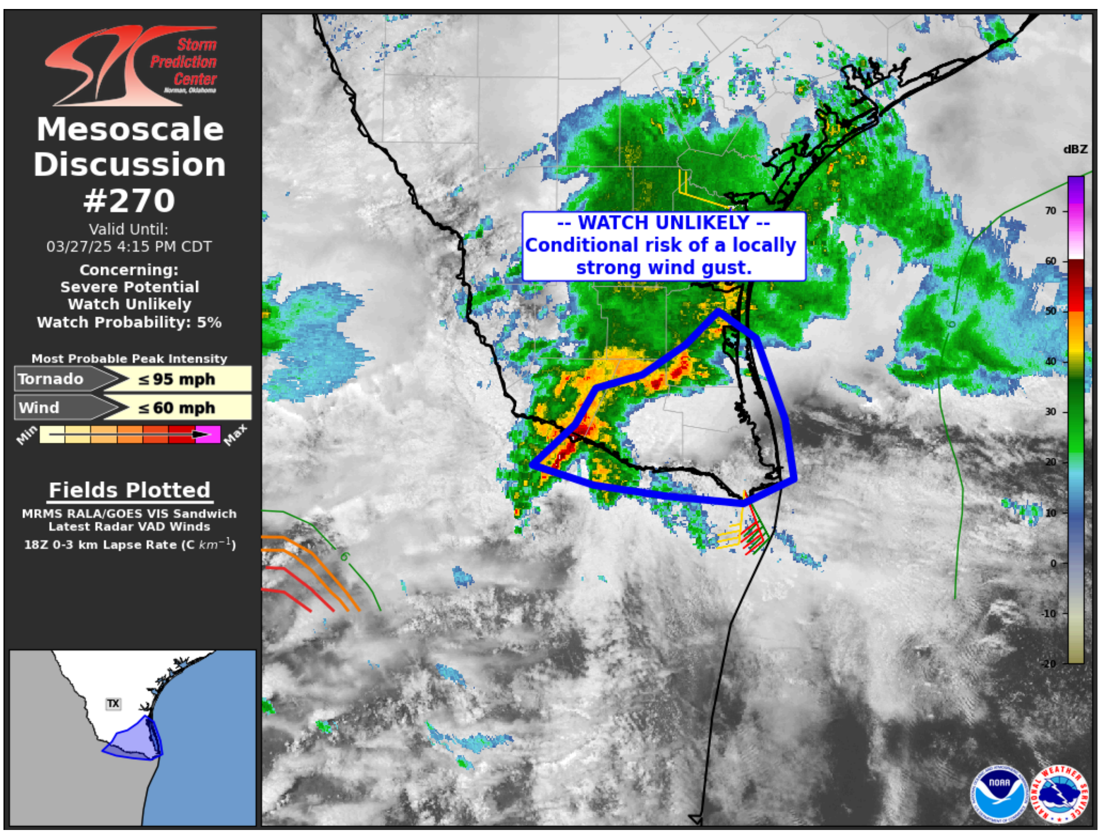

Figure 14 (continued below): Storm Prediction Center’s mesoscale discussion at 4 PM on March 27 explaining the favorable environment for a couple of Quasi-Linear Convective Systems (QLCS) for Deep South Texas and the Rio

Grande Valley. Even though they determined that a Severe Thunderstorm Watch was not warranted, NWS Brownsville forecasters issued dozens of Severe Thunderstorm Warnings for damaging winds up to 70 mph as well as several Tornado Warnings for brief spin-ups.

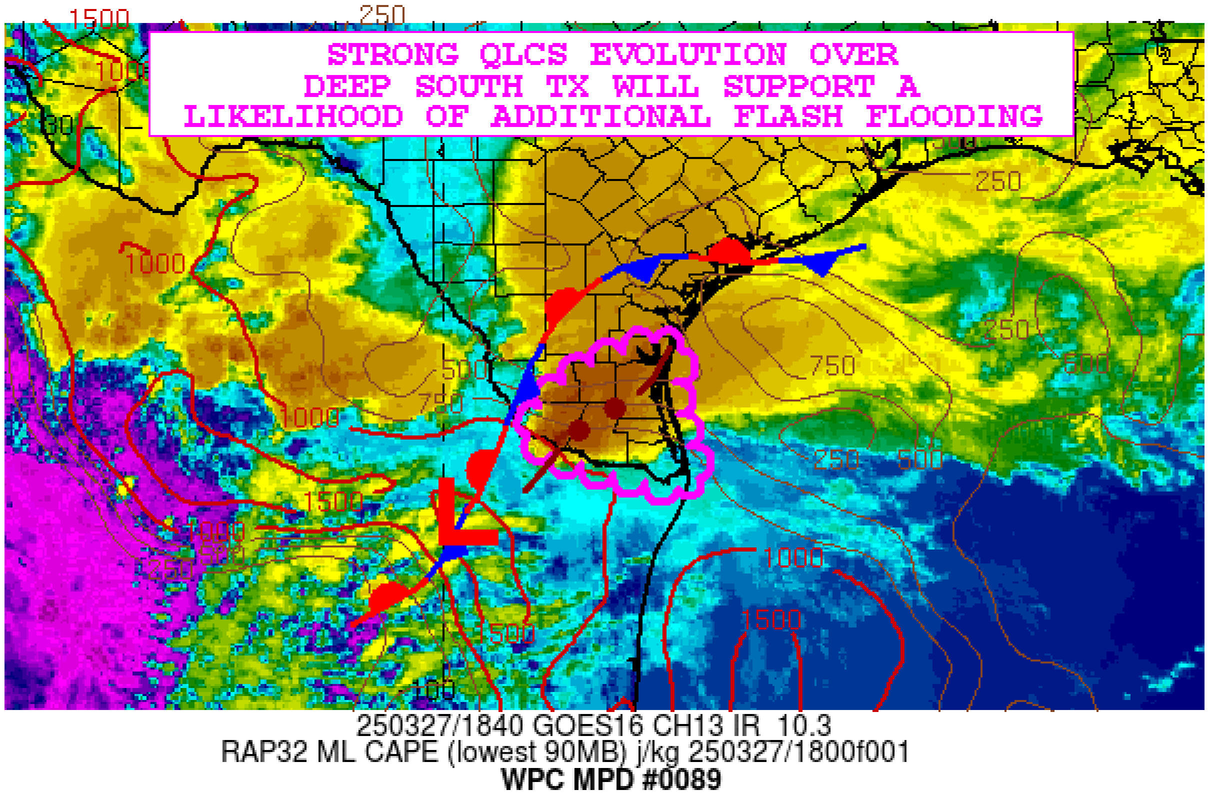

Figure 15: Weather Prediction Center's Mesoscale Precipitation Discussion issued on the afternoon of March 27 focusing on the entire Deep South Texas and the Rio Grande Valley.

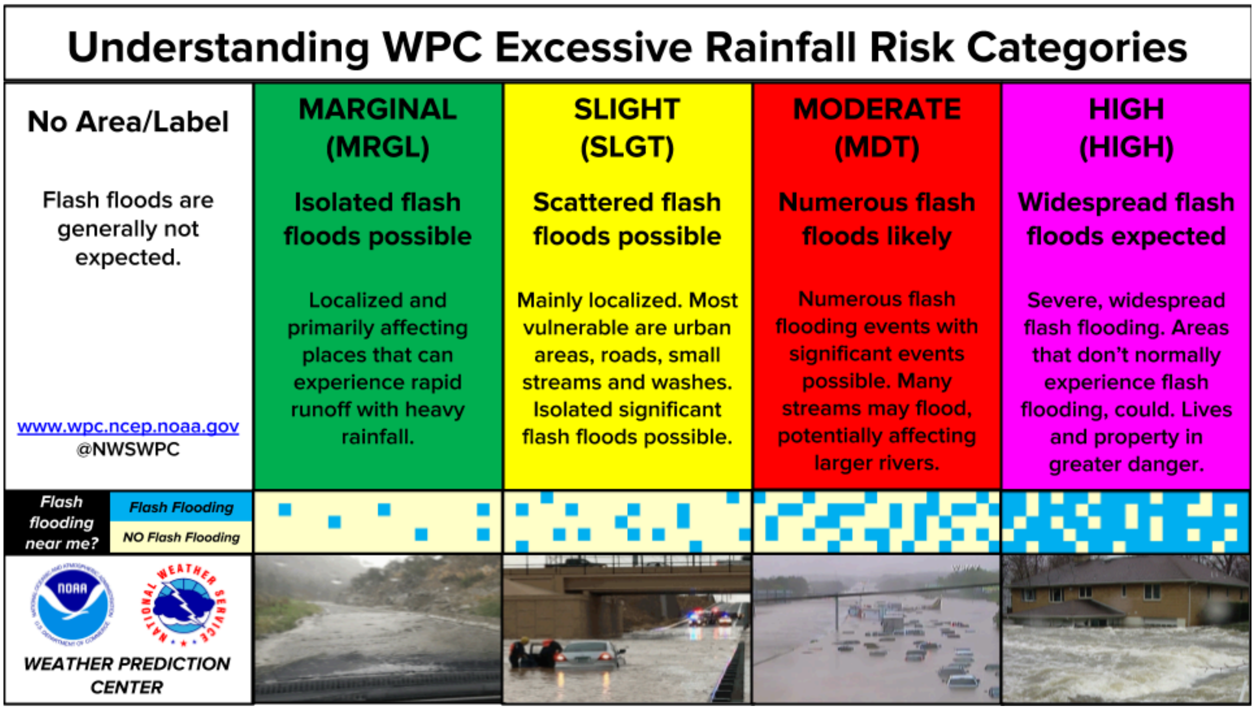

Figure 16: Infographic showing the 4 categories of WPC's Excessive Rainfall outlook. Much of Deep South Texas and the Rio Grande Valley were in level 3 of 4 Moderate risk, which means that numerous flash floods are likely to occur.

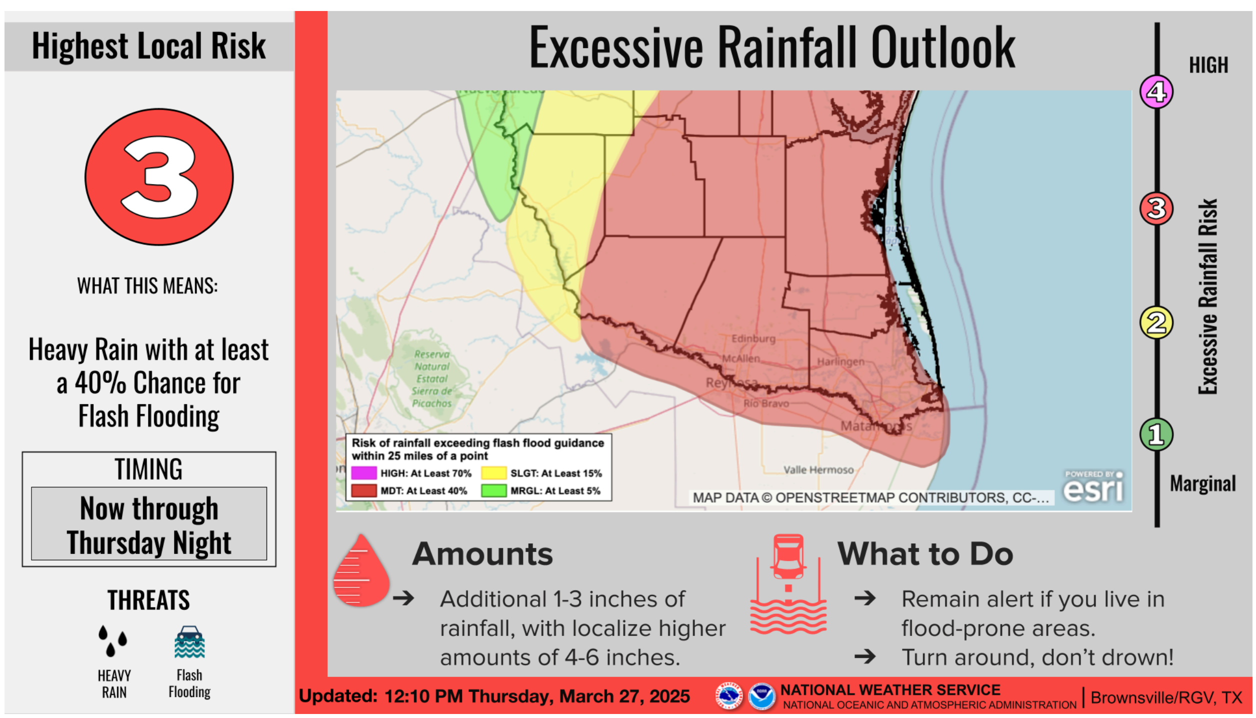

Figure 17: Graphic showing much of Deep South Texas and Rio Grande Valley in a level 3 of 4 Moderate risk Excessive Rainfall Outlook for March 27 (NWS Brownsville)

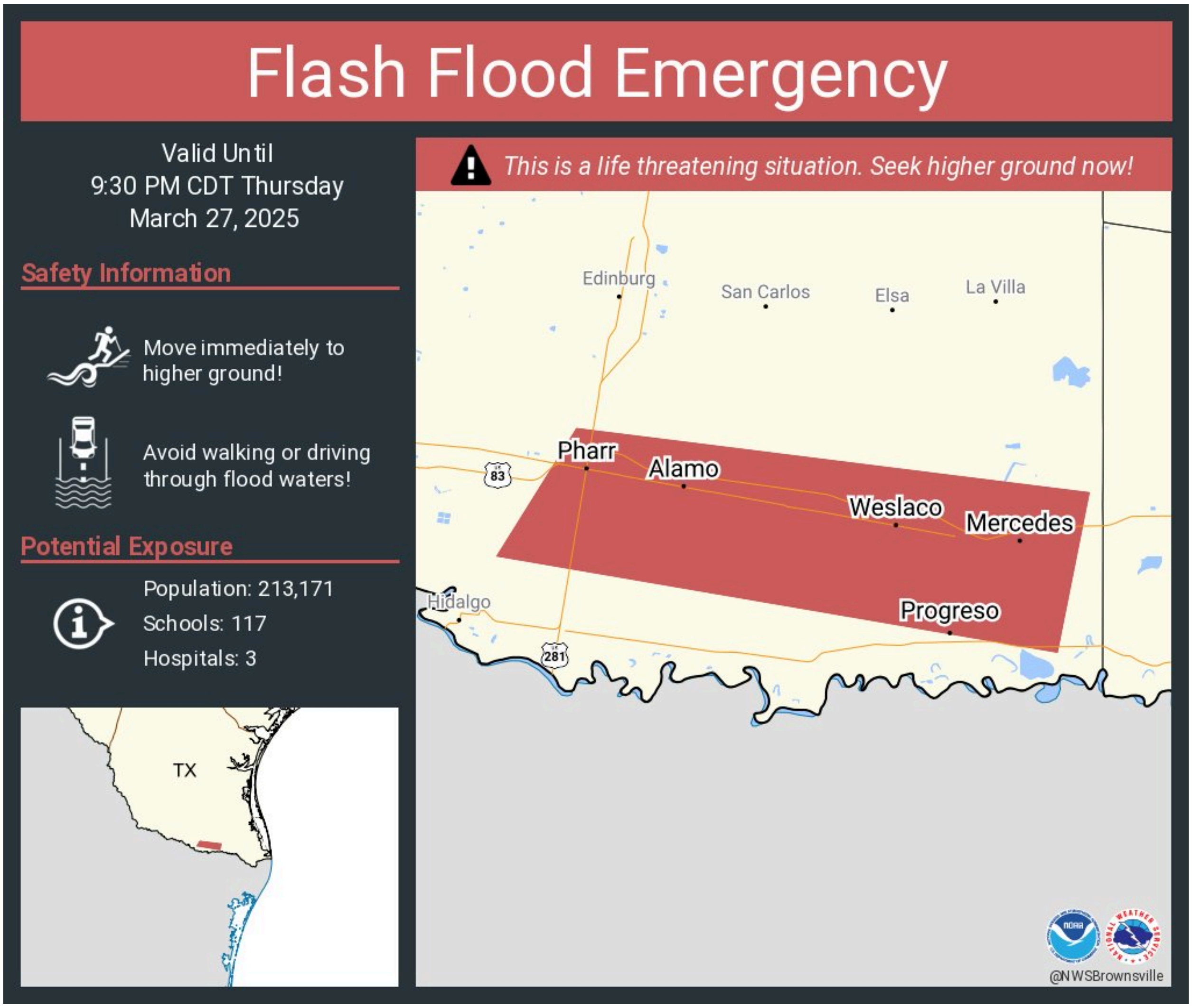

Figure 18: An exceedingly rare Flash Flood Emergency was issued for the populated I-2 corridor from Pharr to Mercedes, TX at 630 PM on March 27 with the rapidly rising flood waters stranding hundreds of motorists and coinciding with the evening commute. Additional flash flood emergencies were issued for western Cameron, including Harlingen, San Benito, Rio Hondo, La Feria, and Santa Rosa, later that evening.

Above: Debris from the crop dusting business building that received a direct hit from the EF-0 tornado in Edcouch, TX (NWS Storm Damage Survey Team)