



Building Deep Relationships: How Trusted Partnerships Among South Texas Emergency Managers and the National Weather Service Prepared Communities Prior to Flooding in 2015

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Regional Orientation

Texas' Rio Grande Valley

Cameron Co., TX	420,392
Hidalgo Co., TX	831,073
Starr Co., TX	62,955
Willacy, Co., TX	21,903

Total: 1,336,323

- **Median Income Per Capita: \$14,500**
US Average: \$28,155
- **Median Family Income: \$36,500**
US Average: \$53,046

37% of all persons live in poverty





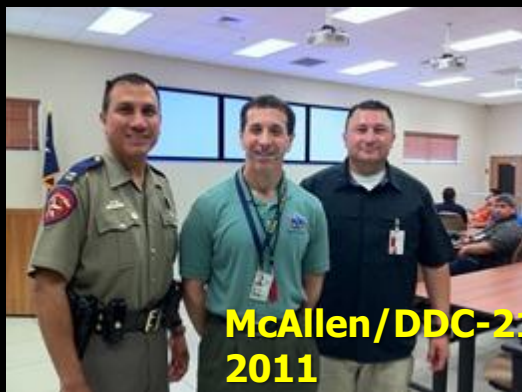
Before the Storm: Building Relationships

- Partnerships work best with **trust**
- Building trust means
 - Always being **"present"**
 - Meet casually and formally, **often and well before events** ("Sunny Day"). **Have a beer!** 
 - Stay in your lane, But **know the highway around you** (i.e. NIMS, ICS, local "connectivity")
 - Communicate **clearly**, at all times
 - As DSS Forecasters, be **damned good, if not great!**

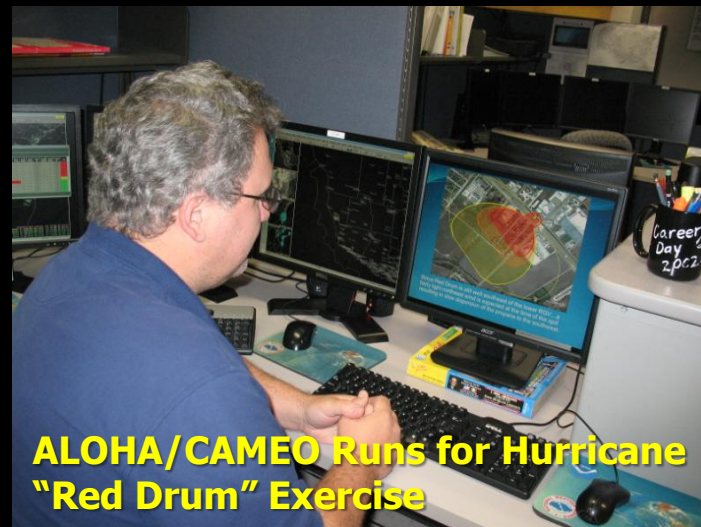


Before the Storm: Exercising

Hurricane "Red Drum" Exercise/USCBP, July 2012



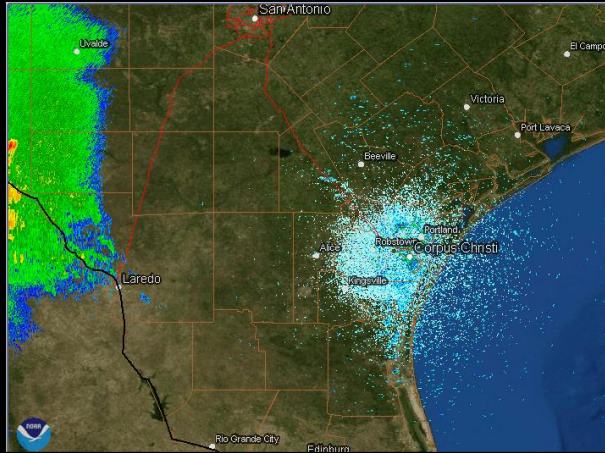
McAllen/DDC-21 AirEvac Exercise, 2011



ALOHA/CAMEO Runs for Hurricane "Red Drum" Exercise



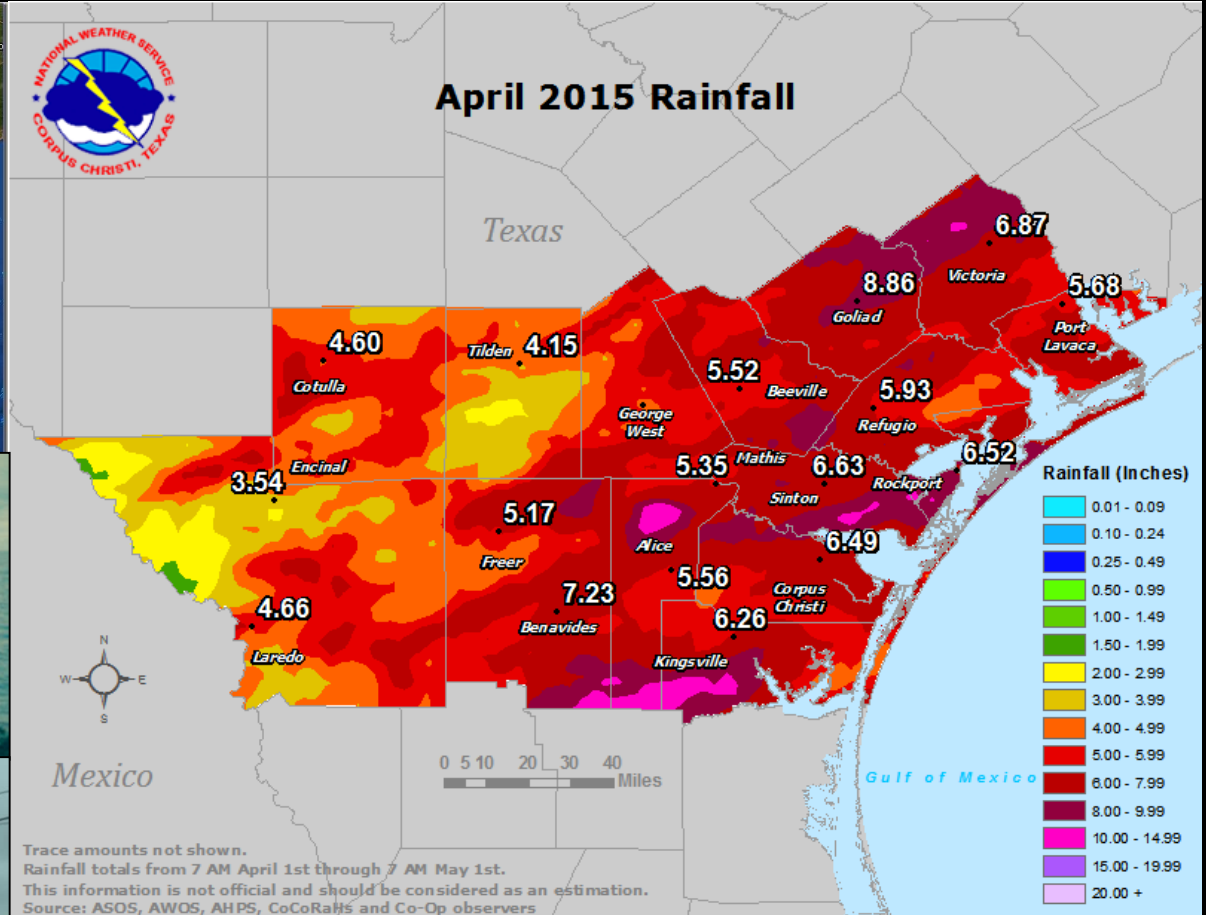
The Spring 2015 Floods: South Texas/Coastal Bend



Austwell



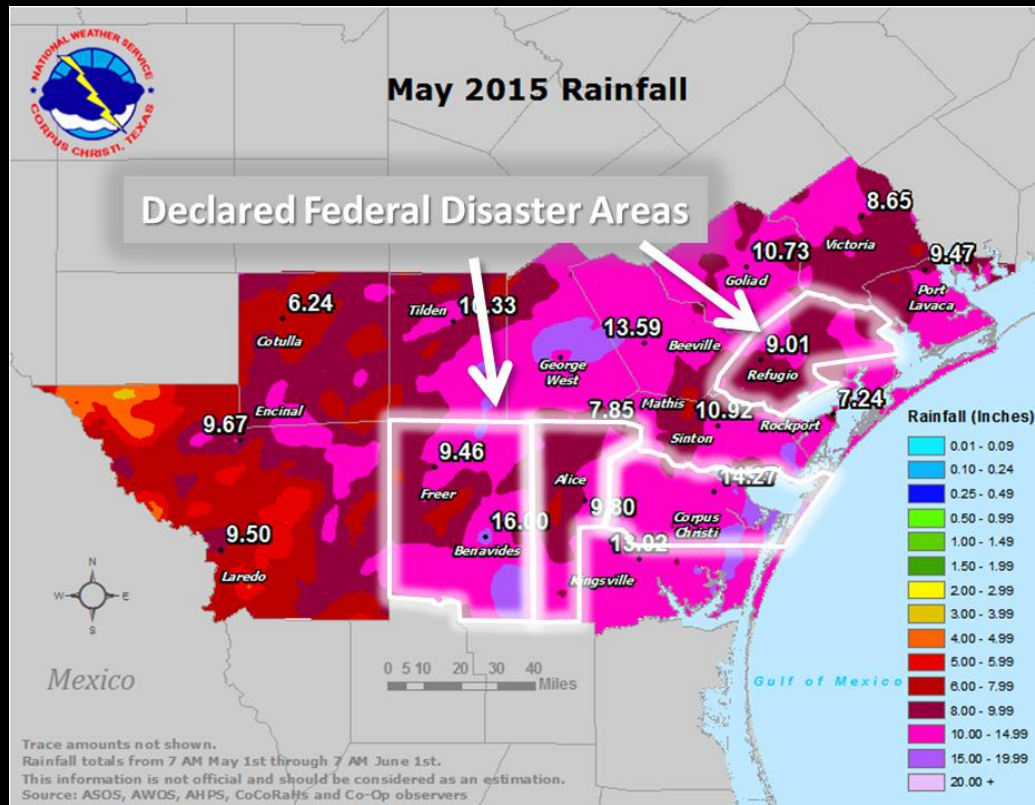
Robstown



14 Days of Measurable Rainfall (Two > 1")



The Spring 2015 Floods: South Texas/Coastal Bend



Corpus Christi



Downstream River Flood Impacts



Calallen - May 19, 2015
Nueces River Flooding

11th Highest Crest
May 25, 2015

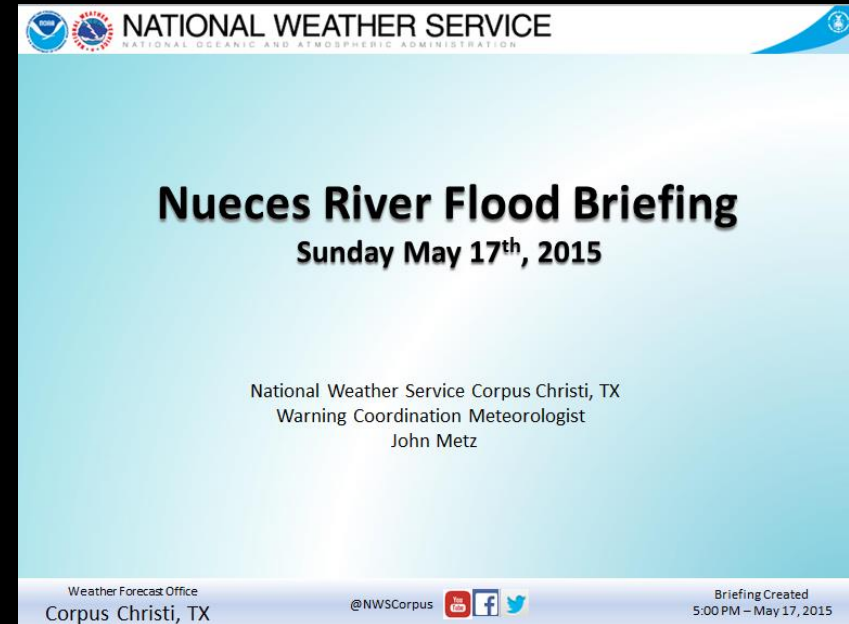
**Petronila May 11-12, 2015
Flooding**





NWS Corpus Christi Decision Support, Spring Flooding

- Provided numerous contingency forecasts & reservoir inflows.
- Twice daily Nueces River flood briefings May 17 to June 22, 2015.
- Sent by email, with follow-up conference calls, and many in person briefs at EOC.

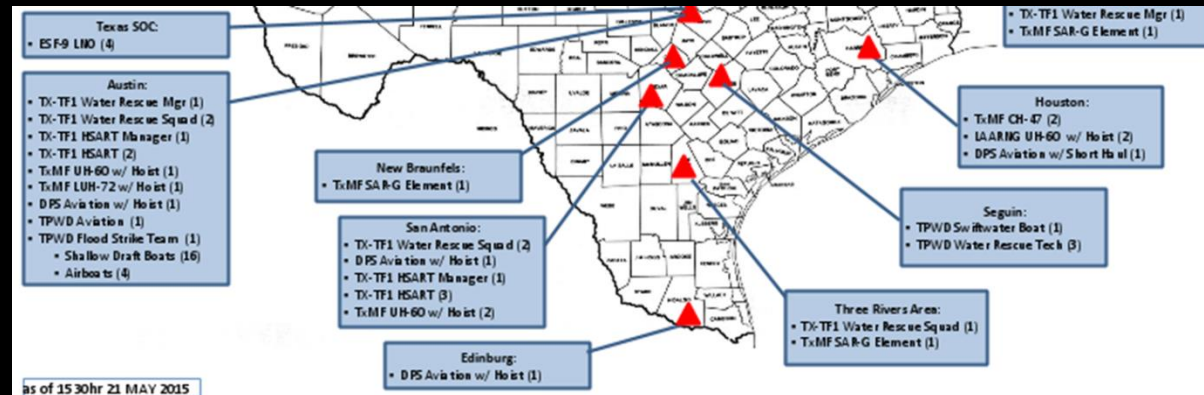


- Collaborated with EMC's and Updated call to action statements on the fly to better define impacted areas.



State and Local Response to NWS Corpus Christi Briefings, Spring Floods

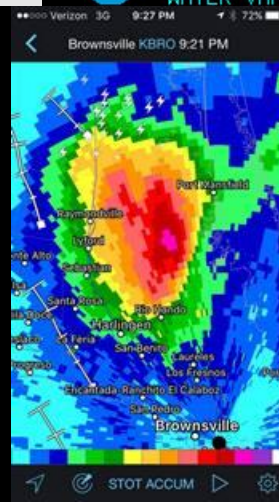
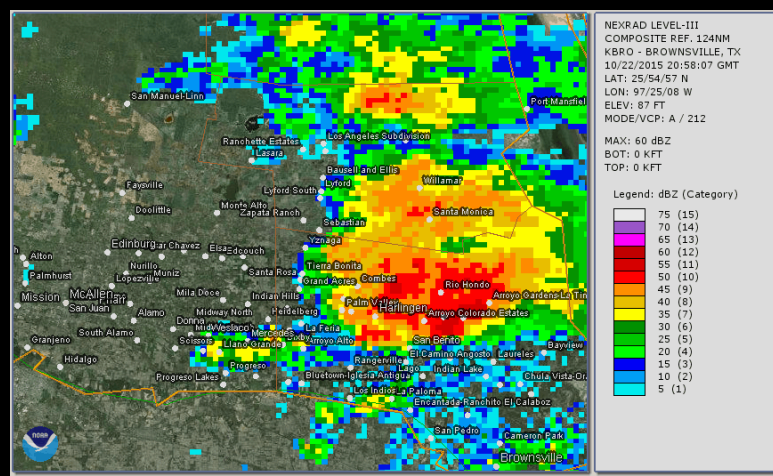
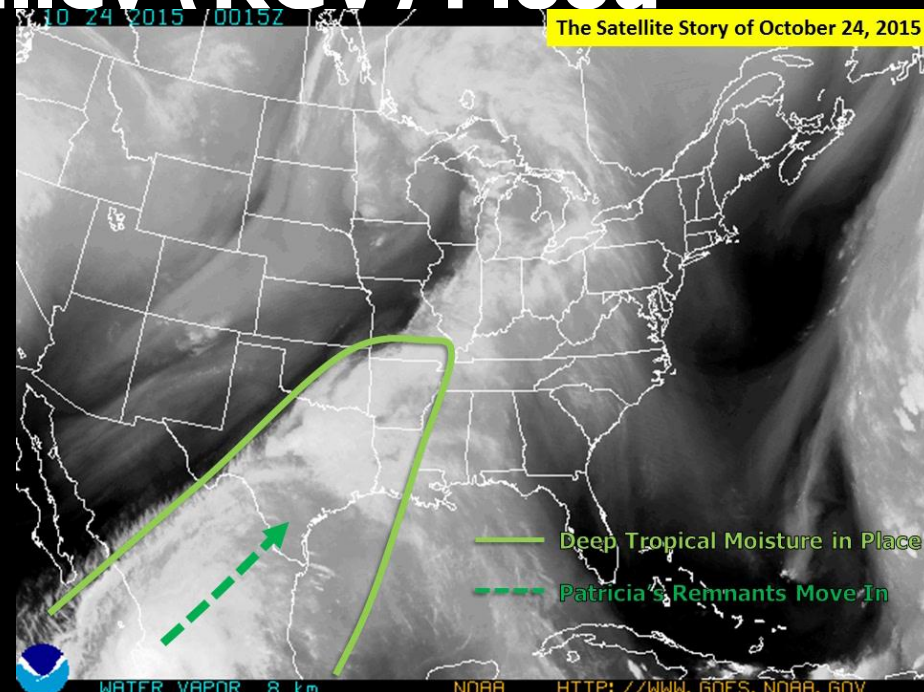
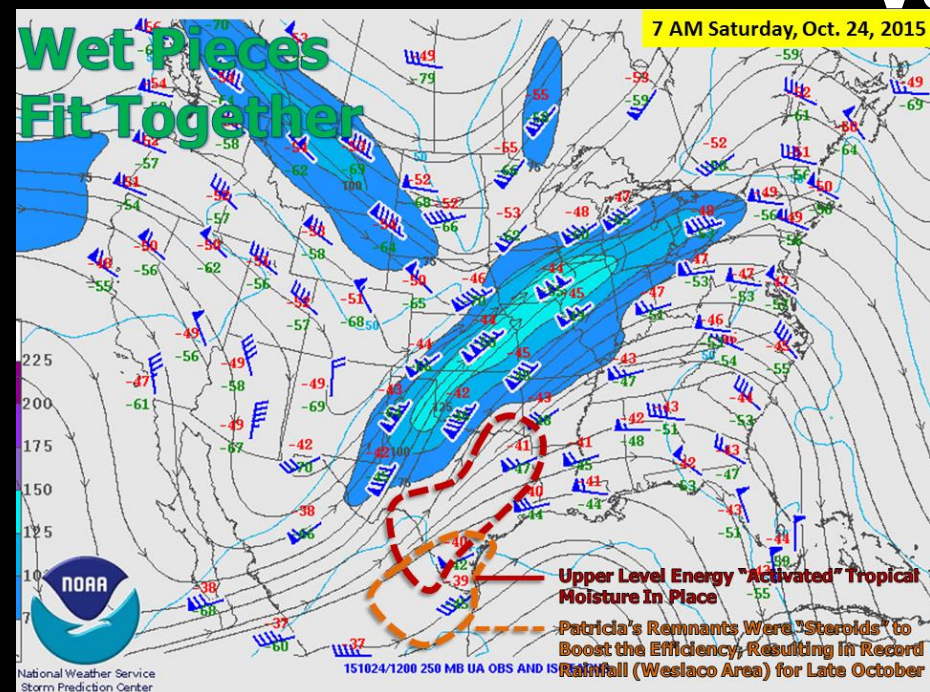
- Search and Rescue assets were pre-positioned in Three Rivers, Texas (Texas Task Force 1)
- Shelter locations were identified in case of evacuations (to support local communities)



- Local cities/counties conducted coordination meetings with local departments.
- Pre-staged barricades, high profile vehicles, portable signs placed throughout flood prone areas.
- Regular notifications given to city 9-1-1 center with relay to officers and firefighters on duty.
- Patrol units dispatched in advance to monitor flood areas.
- Printed large maps of impact areas for EOC Ops.



Setting the Stage: October 24 Rio Grande Valley (RGV) Flood



At Left: "Lake" Willacy after October 22 MCS (Priming the pump for October 24, above)



Setting the Stage: Decision Support Prior to October 24 RGV Floods



Sent: October 21, 945 AM,
72+ hours
before main
event

Good Wednesday morning everyone,

As promised, an update to the weather highlights for the remainder of the week and into the weekend. Bottom line up front? Rain increasing each day, fl Sunday, poor conditions all around for the beach and Gulf boating/fishing.

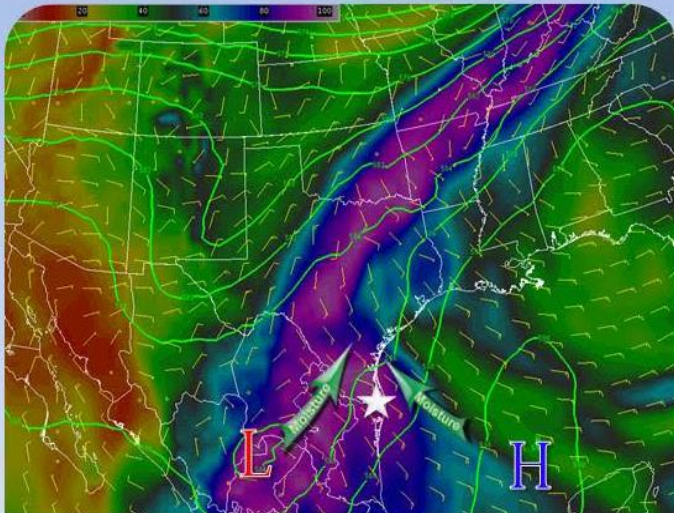
The Skinny

Favorable upper level pattern (see graphic below) brings increasing "deep" tropical moisture across most of Texas to close out the work week and at least begin the weekend. For the beaches, persistent easterly flow and long period swell will maintain tides near the dunes today through Thursday, and likely into the dunes for the Wednesday night high tide. Rainfall Thursday and Friday will be more nuisance than anything else, but could produce localized flooding in poor drainage area during and just after the morning commute/school bus ride each day. The remnant low that comes from Hurricane Patricia (eastern ****Pacific**** storm) which is expected to make landfall early Friday near Manzanillo, MX, then cruise past Guadalajara Friday night, will push very efficient moisture capable of producing torrential rainfall and more widespread flooding into South Texas beginning late Friday night and especially Saturday into Saturday night. Sunday's forecast is highly uncertain; rains could end quickly, skies clear, or rains and potential flooding could hang on. We should have a better idea on Sunday with the forecast tomorrow (Thursday).

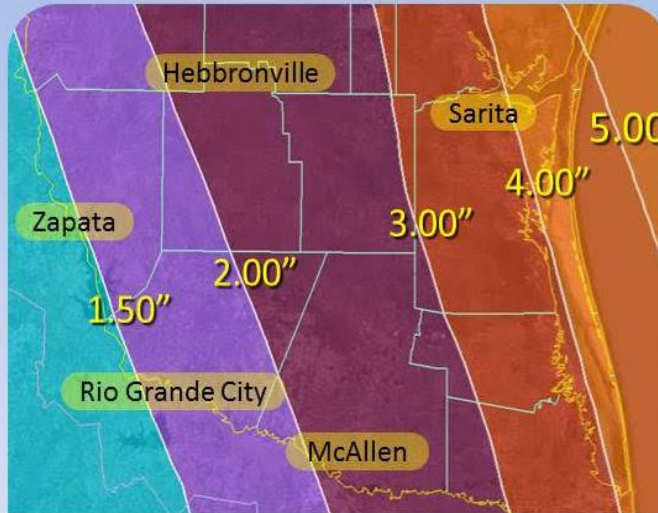


Heavy Rain Expected into the Weekend

Combination between mid-level disturbance
and surge of tropical moisture



Possible Rainfall Amounts through Monday
Morning



- Give 'em the "Skinny"!
- Blog-Style E-mail that tells the story, then defines potential impacts and recommended actions (next page)
- Numerous favorable reviews from core partners



Setting the Stage: Decision Support Prior to October 24 RGV Floods

Rainfall/Flooding

- **Thursday:** Expect a difficult morning commute, especially along/near US 77 (IH 69E) but perhaps reaching into the US 281 expressway (IH 69C) area of the mid Valley. Torrential rains, not lasting much longer than 30 to 45 minutes, are expected with bands or "clusters" of showers (and a few rumbles/lightning flashes) from near daybreak through late morning. A quick inch or more could fall in the persistent/stronger bands. Showers should become more scattered, and we could see a complete break by late afternoon through mid evening in time for Thursday night (high school) football or any other activities.
- **Friday:** Repeat performance? Latest data suggest a little more intensity of the morning rainfall, but also "leaning" toward the mid/upper Valley with McAllen/Edinburg/Mission/Pharr extending to Weslaco/Mercedes (and points north) as the primary threat for heaviest rainfall/poor drainage flooding. Don't want to remove US 77/IH 69-E from consideration. 1-2" could fall ****locally**** in persistent/longer lasting bands. Expect some breaks in the afternoon, but "splash and dash" showers should continue just about anywhere as moisture remains "thick".
- **Friday Night - Saturday Night:** ****This is our biggest concern****. For Friday Night Football, there remains uncertainty on whether games will be complete "washouts" or just a persistent rain of varying intensity. At this point, we can't rule out nuisance flooding, but extensive life-threatening flooding is not expected right now. **Saturday and Saturday evening** look like the best chance for "jackpot" rain as the moisture from the remains of Patricia quickly fold into the equation. We could see area-wide rainfall of 2 to 3 inches, but locally 5+ inches - just about anywhere in the populated RGV. These rains, especially if falling on pre-saturated ground, could cause more extensive flooding with water depths perhaps reaching 3 or more feet in poor drainage locations and becoming a potential life or property threat.
- **Sunday:** A lot of uncertainty. Two "camps" for Sunday's weather - the GFS "camp", which hangs back upper level energy and continues to 'hook' in Patricia's moisture to maintain wet and potential flooding conditions. The Euro "camp", which moves the entire upper level system along and pushes the rain machine to the east/northeast, from southeast Texas to Louisiana, during the day - and brings clearing skies, winds from the northwest, and a comfortable afternoon. We should know a lot more on Thursday.

Potential Impacts/Recommended Actions

Flooding

- With "splash and dash" showers but most of time dry, **final preparations should be made today (Wednesday)** to build resiliency and reduce impacts from potential flooding late this week and especially on Saturday:
 - Clear drainage ditches, canals, sewers of brush and litter
 - Complete any repairs of drainage pipes or systems to allow full water flow during runoff
 - Homeowners: clear gutters/downspouts and any potential flood areas from brush/debris
- Have a Saturday outdoor event planned? Cancel or postpone it. Be ready to do the same for Sunday at this time tomorrow (Thursday) if the forecast leans wet.
- Drivers: Be ready for Thursday through Sunday -
 - Change rotted wiper blades, check brakes and repair if worn, check/repair/replace tires if tread is sufficiently worn, and inflate to proper pressures (listed on the sidewall) if in good condition
 - Do you know your alternate routes? Learn them in case your typical drive takes you on flooded roads during very heavy rainfall. At a minimum, you could stall out your vehicle. At worst, you could become trapped in rising water. Don't be those folks.
 - Why do we stress alternate routes? Check out [this article about the recent Columbia, South Carolina Floods](#). Most deaths occurred in vehicles near creeks that residents thought would "never flood like this".



Setting the Stage: Decision Support Prior to October 24 RGV Floods

**National Weather Service
Brownsville/Rio Grande Valley**

**Impact Weather Briefing
For October 23-25**

**Wet Weekend Ahead
Local Flooding the Primary Threat**

Will Some City/Town Look Like This Saturday or Sunday?

weather.gov/rgv f @NWSBrownsville YouTube NWSBrownsville

**National Weather Service
Brownsville/Rio Grande Valley**

Rain Forecast 7 AM to 7 AM Oct. 24-25 (Saturday/Saturday Night)

Saturday – Saturday Night:

- Patricia's Influence Felt Most Saturday Night through early Sunday Morning...
- ...but Can't Rule out Local Banding at Any Time Saturday
- Locally Heavy Rainfall in Bands Will Produce Urban Flooding and Perhaps Local 2-3 feet of water in poor drainage areas
- Heaviest rains, area-wide, expected across King Ranch (Brooks/Kenedy)
- Rain Activity should end at or before daybreak Sunday morning

In Summary/Impacts:

- "Nuisance" flooding and flash flooding in poor drainage areas in any persistent bands just about anywhere. **Note the higher rain totals if bands form**
- **Tornadoes?** Valley remains in "warm" sector through Saturday night with sheared southerly winds. Quick hitting small tornadoes can't be ruled out through midnight Saturday night

weather.gov/rgv f @NWSBrownsville YouTube NWSBrownsville

Noon Webinar, October 23

**National Weather Service
Brownsville/Rio Grande Valley**

Rain Forecast 7 PM October 23 (Friday) to 7 AM Oct. 25 (Early Sunday)

Total Rain Story:

- Patricia's Influence Felt Most Saturday Evening through early Sunday Morning...
- ...but Can't Rule out Local Banding at Any Time Saturday, including 7 AM to 2 PM
- Locally Heavy Rainfall in Bands Will Produce Urban Flooding and Perhaps Local 2-3 feet of water in poor drainage areas
- Rain Activity will end at or before daybreak Sunday morning

"Nuisance" flooding and flash flooding in poor drainage areas in any persistent bands just about anywhere. **Note the higher rain totals if bands form. Willacy County/Cameron County** under greatest threat for several feet of water depth

Tornadoes? Valley remains in "warm" sector through Saturday night with sheared southerly winds. Quick hitting small tornadoes can't be ruled out through midnight Saturday night

weather.gov/rgv f @NWSBrownsville YouTube NWSBrownsville

6 PM Update, October 23

- Front slide of webinar used visual cues
- Right: We (NWS) had to "scramble" to refine message with new QPF maps; initial safety margin forecast was maintained but increased (5+ inches)



The Aftermath: October 24 RGV Floods



Weslaco, Frontage Road West of Texas Blvd. (courtesy McAllen Monitor)



Aerial view of rural Willacy County



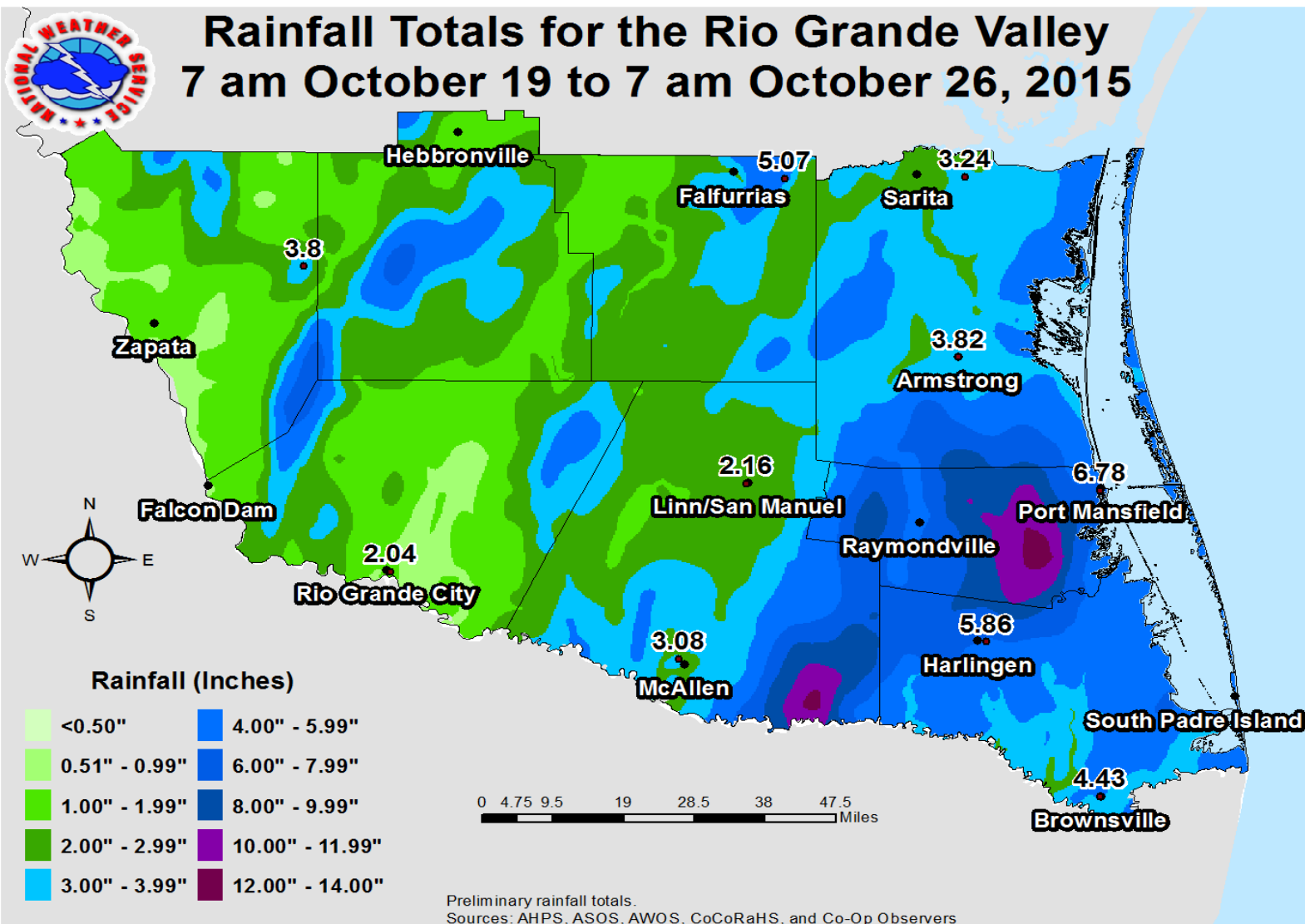
Weslaco, Frontage Road West of Texas Blvd. (courtesy McAllen Monitor)



Weslaco, October 28 (+4 days)



The Rainfall: October 22-24 RGV Floods





The Aftermath: October 24 RGV Floods

- Weslaco
 - Three dozen boat rescues, 500 homes impacted including one high-end neighborhood
- Willacy
 - “Lake” Willacy covered most of the eastern third of the county, including numerous farms
 - Conditions exacerbated on October 30th
 - San Perlita (shown) under water for nearly two weeks; more than 100 homes impacted
- All
 - States of Emergency for all Lower RGV counties (Hidalgo, Willacy, Cameron)
 - Brownsville slammed with 5-7” on October 30th, with a dozen homes requiring assistance
 - At least \$50 million total damage



How Texas DPS District 21 Used NWS Information for Pre-Decisions

- After receiving NWS e-mails and participating in the October 23rd Webinar, Disaster District 21 Coordinator (O'Valle) coordinated with RGV Emergency Managers on Resource Status
- Included NGO Partnerships: American Red Cross, The Salvation Army, and Faith-Based Organizations for Mass Care Operations
- Disaster District 21 coordinated with TXDoT to quickly identify State Highways and Farm-to-Market Roads and to advise fellow Texans on the current road conditions.
- TXDoT promoted "Turn Around. Don't Drown." Safety message on social media and local media outlets.

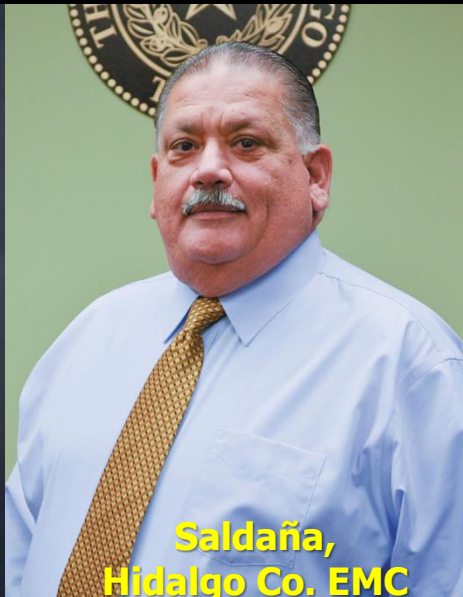
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How Texas DPS Region 3/District 21 Used NWS Information for Pre-Decisions



**Garrett
Weslaco EMC**



**Saldaña,
Hidalgo Co. EMC**

Pre-staging of search and rescue teams (shallow boats) and water pumps in Hidalgo County based on NWS Brownsville/RGV IDSS Forecasts October 21-23. **“We are over preparing. We have high profile vehicles and boats ready for evacuation.”** (Garrett/Saldaña)



Cuellar (left, City of McAllen), Leal (center, Brownsville EMC); O'Valle (right)

Local jurisdictions coordinated through a unified effort in sandbag distribution. Was key element to ensure citizens in the Lower RGV were receiving the proper message.



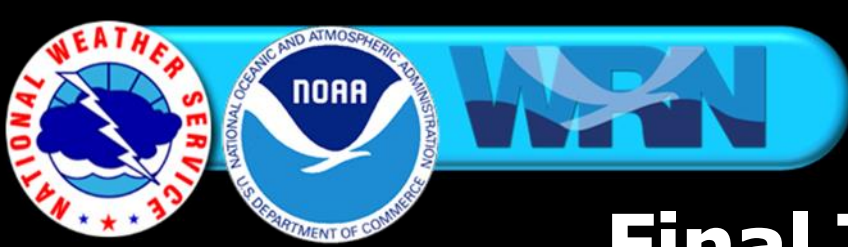
How Texas DPS Region 3/District 21 Used NWS Information for Pre-Decisions



Benavides, Cameron County Commissioner, Dist. 1

Cameron County Was Ready, Too

- Crews were working rural areas, checking to ensure that bar ditches are not blocked. “People have a tendency to put brush in there. Our crews check to see if there’s anything we can pick up...and we pick it up to **ensure we minimize flooding.**” – Sofia Benavides, October 21, 2015
- Pumps have been gassed [up] and put in place, to prevent flooding from occurring in various low level areas of Brownsville. Resaca water levels are being lowered, These preparations had been made **three days prior to Wednesday (Oct. 21), as soon as they were made aware of the possible impact of these storms.**



Final Takeaways

- Foundation of trust allows NWS IDSS to flourish
- Trust built through relationships *and* expert forecasting.
 - Combination creates the “EF Hutton” scenario
- 2015 floods put these concepts to the test, with successful outcomes
- *How* NWS communicated made a difference
 - Storytelling and “Event (Threat), Potential Impact, (Suggested) Action” protocol facilitated decision-making



Contact

Questions?
Thank You!

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