

Above: Damage/peel back to a tin roof at the Sun Valley Acres Retirement Park, just north of Interstate 2 in west Harlingen, from wind gusts near 60 mph after midnight on April 19th. Photo courtesy of Facebook via Dan Joseph at KGBT-CBS Channel 4.

Lightning (Wind, Rain, and Hail) Strike Fast April 18th "Classic" Spring Storms Strike West and East Part of RGV

After a relatively quiet start to April in Texas, featuring fair and warm weather with typical humidity and spotty rain, the pattern evolved at mid month to one of storminess. A slow moving but strong upper level disturbance across the southwest U.S. and southern Rockies that dumped several feet of snow in Colorado would "open up" into the southern Great Plains. Jet stream energy between the moist continental airmass and tropical

air drawn north from the still-warmer than average eastern Pacific Ocean ultimately created a band of intense thunderstorms across south Texas late on Sunday, April 17th and in southeast Texas, including the Houston metro area, on the 18th. At least 20 inches of rain in some areas created historic and deadly flooding on land and rivers/creeks, in some areas on par with the remnants of Tropical Storm Allison in 2001. A

pocket of energy moved into the Rio Grande Plains by late afternoon, and spawned a broken line of thunderstorms, many containing hail, from the Starr through northern Hidalgo County ranch country just before sunset. These storms would hook up with other development in Nuevo Leon and Tamaulipas, Mexico, to form a convective “system” during the early evening, which appeared to take the main threat with it. However, southwest moving boundaries from the initial Houston-area storms – boundaries which fired off a band of lightning and wind producing storms across the Coastal Bend during the early and mid afternoon of the 18th – progressed through the line and surged from northeast to southwest across most of the populated Rio Grande Valley from McAllen to South Padre Island between 5 and 7 PM.

Initially stabilizing the atmosphere and holding back development, when the continued flow from the east/northeast ran into northward moving boundaries from the “system” in Tamaulipas/Nuevo Leon, a “rogue” severe storm formed over Port Isabel and South Padre, with the first report of large hail at 845 PM. Soon after, outflow from this storm would link up with others from the Mexican system and a small but potent local convective system soon formed between Harlingen and Brownsville.

Downburst winds, perhaps from the developing difference in low and high pressure across the small convective system, reached 58 mph at Valley International Airport and knocked down a number of power lines, blew some shingles off one apartment complex, and may have blown off at least one poorly fastened carport on the east side of Harlingen, generally 2 to 3 miles from the Airport.

Farther south, intense rains dropped generally 2 to 4 inches in Brownsville, with several known poor drainage intersections seeing nuisance flooding, likely 1 to 2 feet of water depth (but no flooding of property). Frequent to continuous cloud to ground lightning was a prominent feature of these and other storms, enough to be a primary reason for nearly 20,000 Valley residents to lose power during the peak of the action.

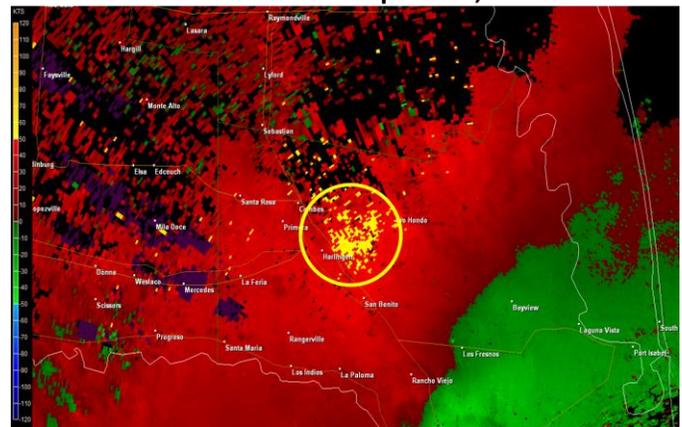
Though the rains ended and lightning faded, the impacts weren't quite done. As the Mexican convective complex became dominant around midnight, strong winds from the south – once again, due to the sharp difference in high and low pressure within the region – propagated through the Lower Rio Grande Valley. This “second wave” produced a 60 mph gust at Valley Airport just after

1 AM on the 19th, and caused additional damage to at least one tin roof (Bass Boulevard, west side) and at least one fence in town. Additional minor damage may have occurred in Brownsville during the same period, as the peak wind at Brownsville/South Padre International Airport reached 54 mph at 155 AM on the 19th.

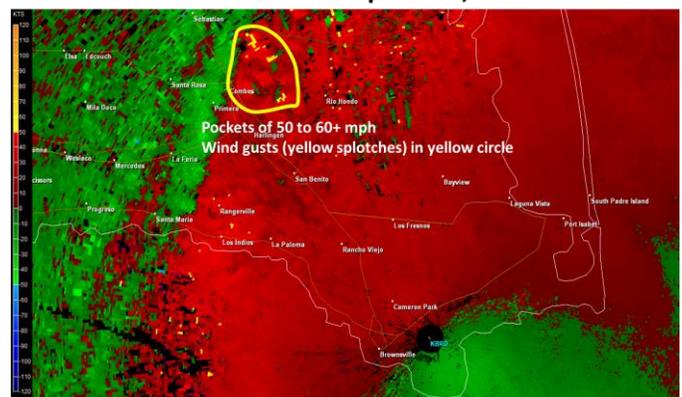
Rain Wonders...Rain Woes

Meteorologists typically describe events like these “scattered” thunderstorms when less than half of a coverage area like the Rio Grande Valley is impacted. The map clearly shows two notable rain pockets – eastern Starr County, and “jackpot” in the south and southeast Cameron County (tip of Texas region). For both areas, rainfall in just a few hours **doubled** the full April average (Brownsville/South Padre Island Airport, 2.3” vs. monthly average of 1.54”; other locations in the city were over 3” for the storm). Where the rain missed, just a few hundredths – or less – fell, keeping monthly totals well below average (McAllen and Harlingen/Valley Airport).

Around 1014 PM April 18th, 2016



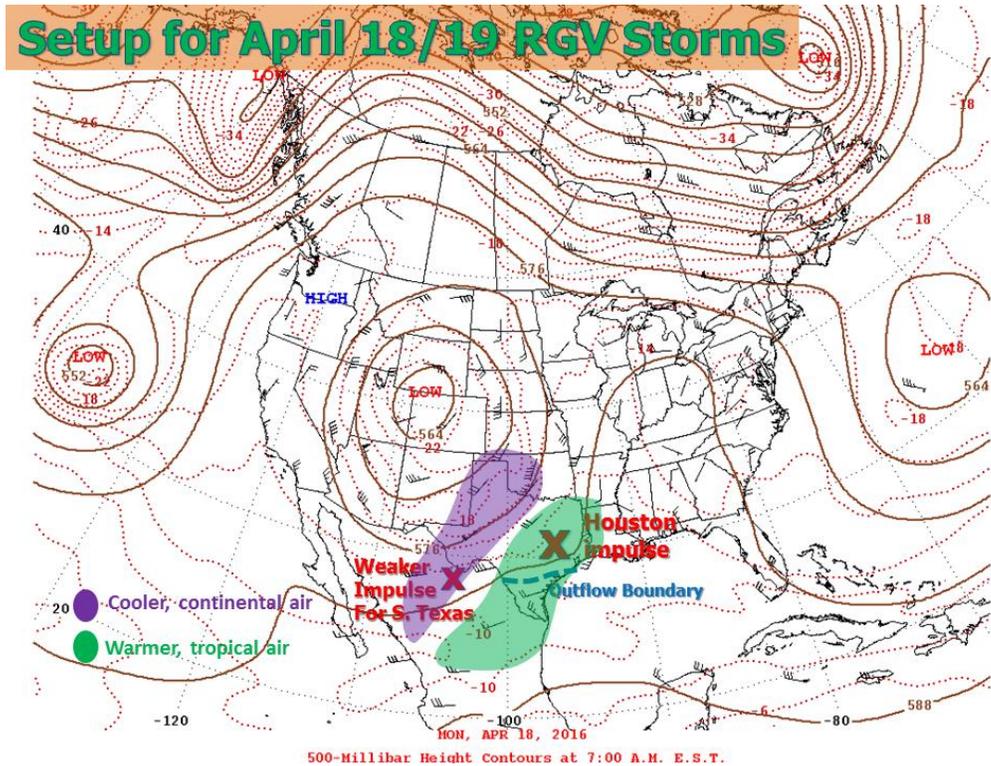
Around 107 AM April 19th, 2016



Winds, far from storm core: Two separate “wake low pressure” events, one directly associated with southward moving storm that dropped 2 to 4 inches of rain in Brownsville and a second that propagated from second

convective system in northeast Tamaulipas, produced wind gusts to 60 mph or higher (mainly in yellow splotches) during the late evening (top) and just after midnight (bottom) across

Harlingen. Click [here for a full loop](#) of the late evening storm, and [here for a short loop](#) of the post-midnight winds to see how they quickly scooted across Harlingen.



Fitting the puzzle pieces together: Why did it pour in southeast Cameron County, somewhat unexpectedly? While the “Houston Impulse” that created massive flooding during the morning of the 18th slid away, an outflow boundary surged southward and was able to reach the Lower and Mid Valley. The weaker impulse (small red x) in north central Mexico helped induce activity over the Sierra Madre and ultimately into the Rio Grande Plains before sunset. The activity would organize just south of the border, but its outflow would hook up with that from the Houston event (dashed blue line) and form the initial storm on South Padre that would later be a catalyst for a mini-circulation (known as a mesoscale convective vortex, or MCV) which dumped 2 to 4 inches of rain on Brownsville.

PRELIMINARY LOCAL STORM [REPORT](#)...SUMMARY
 NATIONAL WEATHER SERVICE BROWNSVILLE TX
 1143 AM CDT WED APR 20 2016

..TIME...	...EVENT...	...CITY LOCATION...	... LAT .LON...
..DATE...MAG....	..COUNTY LOCATION..ST..	...SOURCE....
..REMARKS..			
0845 PM	HAIL	SOUTH PADRE ISLAND	26.08N 97.18W
04/18/2016	E1.00 INCH	CAMERON TX	PUBLIC
CITIZEN VIA SOCIAL MEDIA REPORTS QUARTER-SIZE HAIL AT WHATABURGER LOCATION ON SOUTH PADRE ISLAND.			
0848 PM	HAIL	SOUTH PADRE ISLAND	26.08N 97.18W
04/18/2016	E1.00 INCH	CAMERON TX	PUBLIC
CITIZEN VIA SOCIAL MEDIA REPORTS QUARTER-SIZE HAIL ON SOUTH PADRE ISLAND.			

1016 PM TSTM WND GST HARLINGEN 26.20N 97.69W
04/18/2016 M58 MPH CAMERON TX ASOS

1023 PM TSTM WND DMG HARLINGEN 26.20N 97.69W
04/18/2016 CAMERON TX LAW ENFORCEMENT

HARLINGEN POLICE DEPARTMENT REPORTS POWERLINE PARTIALLY DOWN AT THE 1500 BLOCK OF NORTH 25TH STREET DUE TO STRONG THUNDERSTORM WINDS. HARLINGEN FIRE DEPARTMENT ON THE SCENE.

1023 PM TSTM WND DMG HARLINGEN 26.20N 97.69W
04/18/2016 CAMERON TX LAW ENFORCEMENT

HARLINGEN POLICE DEPARTMENT REPORTS POWERLINES DOWN AT 809 WEST HANSON...1307 NORTH ANN STREET...1506 SOUTH G STREET...629 NORTH 13TH STREET...THE INTERSECTIONS OF TYLER AND L...25TH AND RIO HONDO ROAD...AND GRIMES AND MORGAN.

1056 PM TSTM WND DMG BROWNSVILLE 25.93N 97.48W
04/18/2016 CAMERON TX LAW ENFORCEMENT

BROWNSVILLE POLICE REPORTED THREE ELECTRICAL POLES DOWN ALONG U.S. HWY 281.

1058 PM FLASH FLOOD BROWNSVILLE 25.93N 97.48W
04/18/2016 CAMERON TX LAW ENFORCEMENT

BROWNSVILLE POLICE REPORTED WATER COVERING NUMEROUS ROADS WITH CARS BEING STUCK IN FLOOD WATERS...INCLUDING PORTIONS OF PALM...BOCA CHICA...ALTON GLOOR AND EXPRESSWAY 77.

1228 AM TSTM WND DMG BROWNSVILLE 25.93N 97.48W
04/19/2016 CAMERON TX NWS EMPLOYEE

NWS EMPLOYEE REPORTS 8 INCH DIAMETER TREE LIMB PARTIALLY BLOCKING THE ROAD NEAR THE INTERSECTION OF JAIME J ZAPATA AND RAY DAVID DRIVE.

0109 AM NON-TSTM WND GST HARLINGEN 26.20N 97.69W
04/19/2016 M60 MPH CAMERON TX ASOS

VALLEY INTERNATIONAL AIRPORT ASOS REPORTED A NON-THUNDERSTORM WIND GUST OF 52 KNOTS AT 0609Z