

Rain, Beautiful Rain!

Week of Cool and Damp Weather February 4th – 12th Puts Dent in Drought

First Significant Rainfall since December

At last. The pattern of warm, humid, breezy weather which moved [January 2012 into the top twenty warmest](#) for a number of Rio Grande Valley locations, which continued for the first four days of February, was sharply broken by late afternoon of the 4th, when a cluster of strong storms (box, below right) pummeled the Lower Valley, dropping more than an inch and a half of rainfall in only an hour for portions of Cameron and Willacy County, as well as some hail north of Rio Hondo along the Cameron/Willacy County line. The cold front that spawned the heavy weather was followed by a chilly light rain overnight on the 4th and into early morning of the 5th, which dropped another ½ to 1 inch across the Lower and mid Valley.

The event during the [first weekend of February 2012](#) was the first in a series of rain makers, courtesy of repeated energy waves moving across northern Mexico and Texas for the next week (Figures 3 to 5, below). Then next round arrived on the evening of [February 7th and continued through the 8th](#). Another ¾ to 1 ½ inches of rain fell Valley- wide. A weak disturbance followed a day later, with another ¼ to ½ inches falling from the morning into the early afternoon [of February 9th](#). A final, weaker impulse ejected from northern Mexico on the 11th and linked up with a stronger disturbance farther north to produce light rain and drizzle for another 24 hours from early on the 12th through early on the 13th, adding another one tenth to one quarter inch to the growing monthly and weekly totals.

Total preliminary event amounts since February 4th (a shade less than monthly totals shown on the map) follows.

OBSERVATION TYPE: - COCORAHS

CITY/TOWN	COUNTY	EVENT TOTAL (4 TH -9 TH)
HARLINGEN 2.6 ESE	CAMERON	4.26
SAN BENITO 5.0 SSE	CAMERON	4.24

PALM VALLEY 2.2 SSW	CAMERON	3.95
RANCHO VIEJO 0.7E	CAMERON	3.81
BROWNSVILLE 3.5 N	CAMERON	3.74
BROWNSVILLE 1.9ESE	CAMERON	3.70
BROWNSVILLE 4.4NE	CAMERON	3.61
LOS FRESNOS 0.3NE	CAMERON	3.59
BROWNSVILLE 4.2 NE	CAMERON	3.52
BROWNSVILLE 5.0 NW	CAMERON	3.52
RIO HONDO 9.4 NE	CAMERON	3.51
HARLINGEN 4.3 WSW	CAMERON	3.48
BROWNSVILLE 2.2W	CAMERON	3.44
RAYMONDVILLE 5.8E	WILLACY	3.37
LA JOYA 11.1 N	HIDALGO	3.34
HARLINGEN 4.7WSW	CAMERON	3.30
BROWNSVILLE 4.1 ENE	CAMERON	3.27
BROWNSVILLE 0.1SSE	CAMERON	3.26
BROWNSVILLE 1.3WNW	CAMERON	3.09
BROWNSVILLE 6.4SE	CAMERON	3.09
RANCHO VIEJO 3.0 SE	CAMERON	3.06
ALAMO 1.5 NNE	HIDALGO	3.03
PHARR 5.1 N	HIDALGO	2.92
BROWNSVILLE 4.1E	CAMERON	2.67
LOS FRESNOS 0.8 SSE	CAMERON	2.64*
EDINBURG 1.1 WSW	HIDALGO	2.37
MISSION 1.9 ENE	HIDALGO	2.36
MCALLEN 2.4 NE	HIDALGO	2.28
MISSION 3.8 SW	HIDALGO	2.26
FALFURRIAS 8.9 SSW	BROOKS	2.23
FALFURRIAS 0.5 WNW	BROOKS	2.02

OBSERVATION TYPE: - ASOS/AWOS

AIRPORTS	COUNTY	EVENT TOTAL (4 TH -9 TH)
BROWNSVILLE/SPI (NWS)	CAMERON	3.37
HARLINGEN (VALLEY INTL)	CAMERON	2.92*
BAYVIEW/PORT ISABEL	CAMERON	2.60
WESLACO/MID VALLEY	HIDALGO	2.54
MCALLEN MILLER INTL	HIDALGO	2.43
EDINBURG INTL	HIDALGO	1.67*
FALFURRIAS/BROOKS CTY	BROOKS	1.40
HEBBRONVILLE/JIM HOGG	JIM HOGG	0.86
ZAPATA	ZAPATA	0.31

OBSERVATION TYPE: - COOP

CITY/TOWN	COUNTY	EVENT TOTAL (4 TH -9 TH)
MCCOOK	HIDALGO	3.60
HARLINGEN	CAMERON	3.52
RAYMONDVILLE	WILLACY	3.15

ARMSTRONG	KENEDY	3.12
PORT MANSFIELD	WILLACY	2.89
LA JOYA	HIDALGO	2.76
PORT ISABEL	CAMERON	2.55*
SOUTH PADRE ISLAND	CAMERON	2.46*
MERCEDES 6 SSE	HIDALGO	2.32
SARITA 7 E	KENEDY	2.07
FALCON DAM	STARR	2.05
MCALLEN	HIDALGO	2.04
SANTA ROSA	CAMERON	1.87
RIO GRANDE CITY	STARR	1.67
SAN MANUEL	HIDALGO	1.65
HEBBRONVILLE	JIM HOGG	1.15
ESCOBAS	ZAPATA	1.12

OBSERVATION TYPE: - RAWS/MESOWEST

CITY/TOWN	COUNTY	EVENT TOTAL (4 TH -9 TH)
SANTA ANA	HIDALGO	4.21**
LAGUNA ATASCOSA	CAMERON	2.97
FALCON LAKE	STARR	2.21
LINN-SAN MANUEL	HIDALGO	1.88
HEBBRONVILLE	JIM HOGG	0.84

OBSERVATION TYPE - PUBLIC REPORTS

CITY/TOWN	COUNTY	EVENT TOTAL (4 TH - 9 TH)
LOS FRESNOS 4 W	CAMERON	3.79*
SHARYLAND	HIDALGO	2.94*

*RAINFALL UNDERESTIMATED OR IMCOMPLETE.

**RAINFALL MAY BE OVERESTIMATED.

OBSERVATION TYPE LEGEND:

ASOS - AUTOMATED SURFACE OBSERVING SYSTEM (NWS/DOD)

AWOS - AUTOMATED WEATHER OBSERVING SYSTEM (FAA/OTHERS)

COOP - COOPERATIVE OBSERVER (NWS)

RAWS - REMOTE AUTOMATED WEATHER SYSTEM

COCORAHS - COMMUNITY COLLABORATIVE RAIN HAIL AND SNOW NETWORK

How Now, Drought?

The combination of persistent rain, cool temperatures, thick cloud cover, and humidity generally at or above 75% most of the period allowed the water to soak into heretofore parched soils across the Lower and Mid Valley. The initial round of rain on the 4th and 5th improved conditions across portions of Willacy and Cameron County to "Extreme" (D3) from "Exceptional" (D4); later updates may bring the level down another category, to "Severe" (D2) or "Extreme" (D3). Regardless of how much – or little – improvement the Valley sees, the soaking rain will ensure a decent green-up during the last half of February and into early March, when the sun angle increases and plants, grasses, and trees bloom.

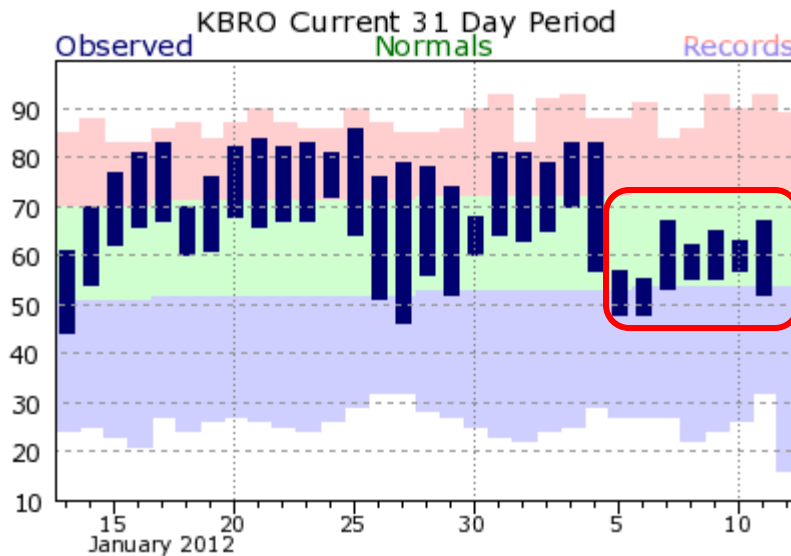


Figure 1. Observed high and low temperatures for Brownsville, mid January to mid February 2012. Red circled area indicates a limited range between highs and lows during the wet and cool period from February 5th through 12th.

La Niña? Arctic Oscillation? Something Else?

Meteorologists and climatologists are humbled by the increasing rainfall across Texas in January and February, despite a similar [La Niña pattern to that in 2011](#). Perhaps it is the general shift to a positive North Atlantic Oscillation (NAO, below) this winter compared with winter 2011? A positive NAO tends to lead to more upper level low pressure troughs in the west, and general upper level ridging across the east and southeast, which favors a warmer and less snowy winter across these areas. The positive NAO *may* be aiding the pattern we've seen repeat in December and February: Upper level troughs diving south from the Pacific Northwest-Gulf of Alaska region through the southwest U.S. on into northern Mexico before ejecting eastward toward Texas. These troughs aid lifting of lower level moisture into rain, showers, and embedded thunderstorms; the farther south a trough moves, the better opportunity for some of that moisture to produce precipitation in the Rio Grande Valley. This was the case through the week of February 5th through 12th.

It was *not* a sudden flip to [El Niño](#). El Niño flow patterns show a distinct subtropical flow of moisture, originating from the eastern Pacific tropics toward the equator. This flow can stretch eastward across [Mexico, south Texas, and Florida](#).

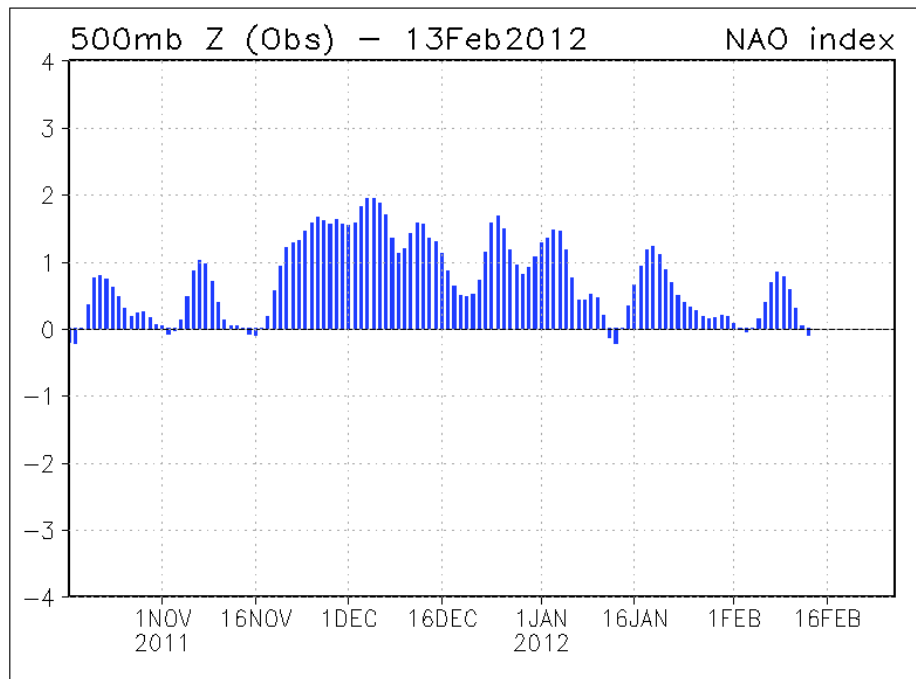
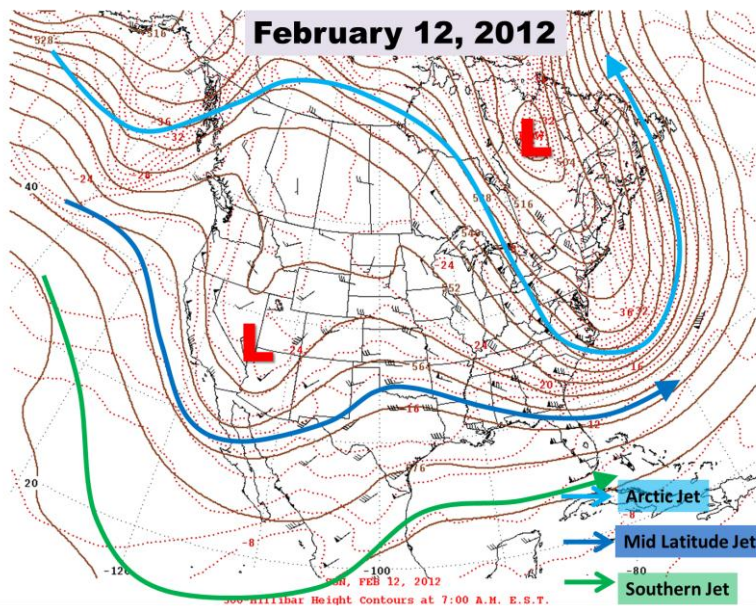
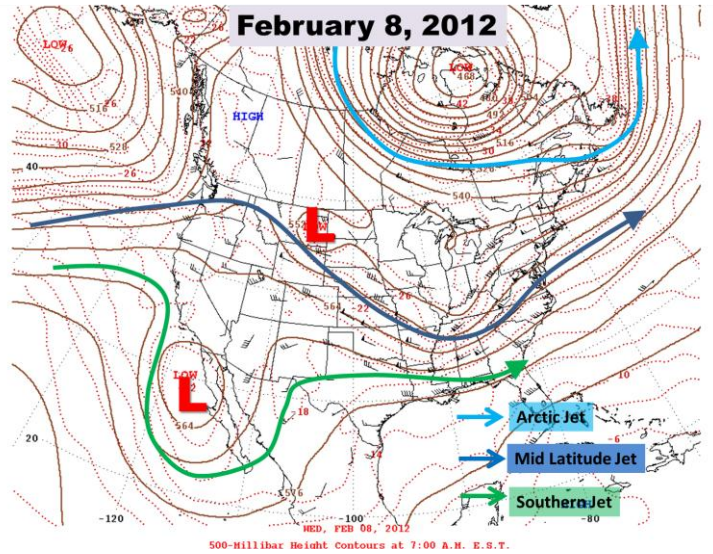
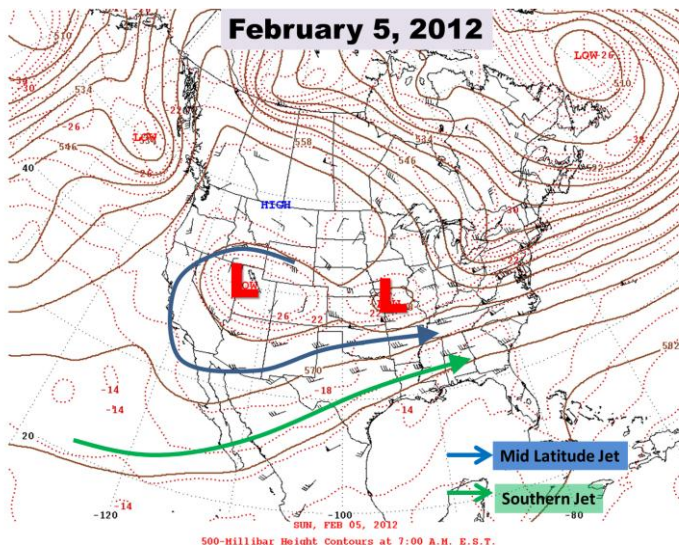


Figure 2. North Atlantic Oscillation pattern, early November 2011 through mid February 2012. The oscillation was positive through most of the period, often opposite of the negative pattern in 2011.

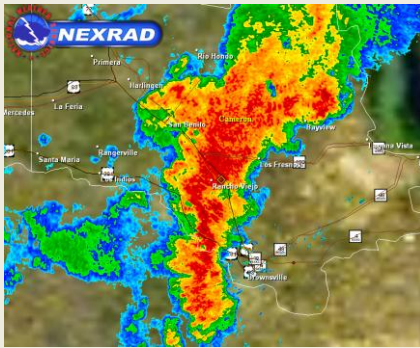


Figures 3-5. Upper level wind pattern across North America, February 5th (upper left), February 8th (upper right), and February 12th (above). Note the recurrence of the Southwest U.S. upper level low pressure system, which led to a persistent south to southwest flow of moisture rich air across northern Mexico into South Texas through the week. Unlike an El Niño winter, when the southern jet (green arrow) is more robust and “linked” to the eastern Pacific tropical zone, this version appeared to be fed by the southward moving upper level low pressure systems which originate in the Gulf of Alaska or off the western Canadian coast – a much different source region than the tropics.

Not our First Rodeo...

A cluster of storms (below, left) slowly crossed through Cameron and Willacy County between 2 PM and 530 PM February 4th, bringing torrential rains, frequent cloud to ground lightning, and gusty winds of at least 35 mph. The storms also brought an array of scary looking skies, including shelf clouds (below, right), “scud” clouds, and rain shafts which may have looked like tornadoes or funnels to the untrained eye. We’re still investigating reports of potential “gustnadoes” and even a possible landspout as of this writing. A report of quarter sized hail was received from the Cameron/Willacy County line about 1.75 miles north of Rio Hondo from an earlier storm cell.

The storms slammed into the Los Fresnos Rodeo shortly before the first competitions were to begin that evening; more than an inch of rain fell at the end of the pre-event carnival, with attendees having sheltered prior to the heaviest rains and lightning strikes. NWS Brownsville/Rio Grande Valley provided onsite and remote decision support to city officials prior to the arrival of the squall and helped keep visitors safe.



Radar depiction of approaching squall line. Photo taken about same time in North Brownsville ahead of the leading edge of the line.



Science and Operations Officer Doug Butts at NWS Booth, Los Fresnos Rodeo



Meteorologist-in-Charge Steve Drillette clearing out ahead of the gust front