



Lush green, *and growing*, grasses in Brownsville (photo from December 19th, 2014)

Green (and Growing) December 2014 in the Lower Rio Grande Valley A Few Reasons for the Unusual Growth Spurt

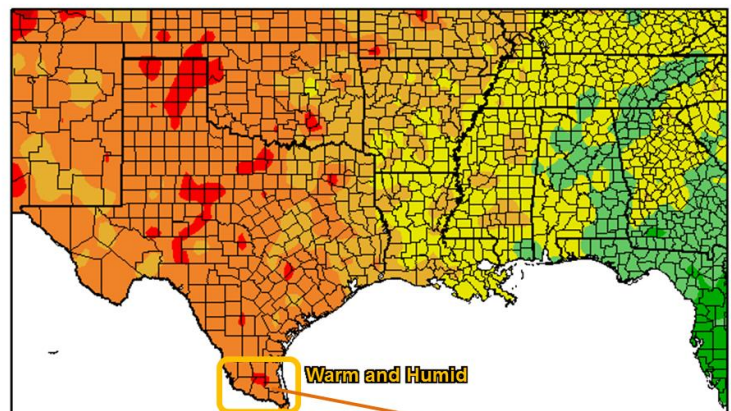
Was anyone else noticing that you were cutting the grass more often across much of the Rio Grande Valley – in **December**? While not unusual for the grass to remain green into December during years with ample autumn (September-November) rains, typically the grass will struggle to grow with the arrival of cool to occasionally cold temperatures, and intervals of sunshine and lower daytime humidity with cloudy and damp periods.

Temperature and Cloud Matters

For most of December 2014 (through the 21st) this has not been the case. Temperatures have been well above normal, with values roughly 6°F above the 1981-2010 average since the start of the month and generally 6 to 12°F above this average during the two week “growth” period of December 6-19 (right).

Further evaluation of the diurnal (day and nighttime) temperature may help better explain both the green and the growth. Persistent cloudiness, especially below 10,000 feet, acted like an insulating blanket for grasses and trees at night. Prevailing winds from the south and southeast increased the impact of said blanket by moving air from the tropics into the Valley. The blanket, which is typically not found for more than a day or two in a typical December,

Departure from Normal Temperature (F)
12/6/2014 – 12/19/2014

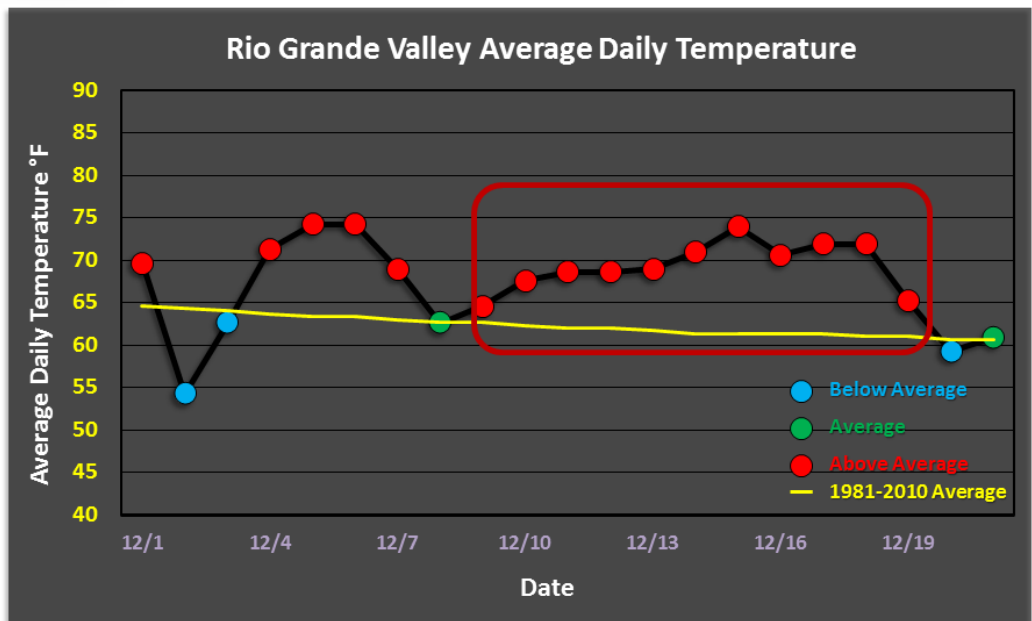


Generated 12/20/2014 at HPRCC using provisional data.

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held overnight temperatures well in the 60s and even lower 70s at times. Overnight low temperatures between December 6th and 19th averaged around 10°F above average (lower 60s observed vs. lower 50s, 1981-2010 average), more than double the departure from average during the day (mid 70s observed vs. lower 70s, 1981-2010 average). During evening periods when the clouds briefly lifted above 10,000 feet, dew formed on the very moist grass and brush and remained well into the morning as relative humidity held at or near 100 percent. This dew helped recharge the soil, further aiding grass and brush growth.

 **December 2014 (through Dec. 21)**



Average based on full day, typically maximum + minimum / 2. Red boxed area shows persisten above average temperatures from December 6-19, 2014

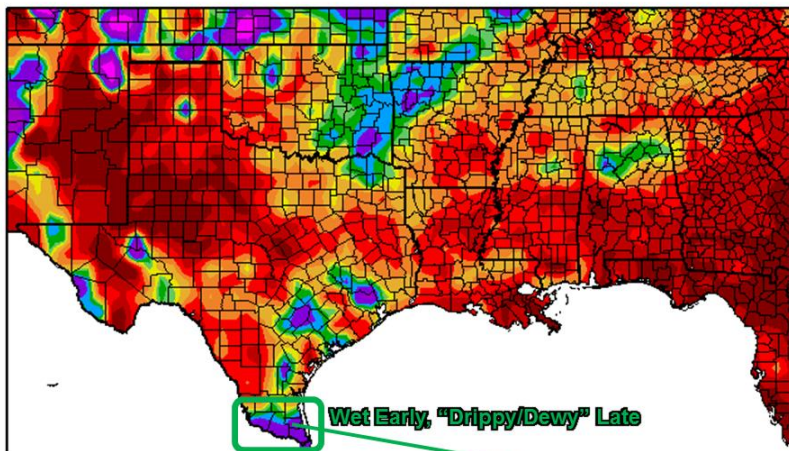
Humidity Matters, Too

Pure sunshine was virtually unseen through the period, a result of the persistent flow of humid air from the tropics which combined with periodic atmospheric disturbances to maintain the daytime clouds which both held temperature down and kept relative humidity high. Late night and early morning relative humidity was at or near 100% in most areas on most days during the two week period (December 6-19), but more importantly were the mid afternoon values, which rarely fell below 60 percent on aggregate, and never fell below 40 percent, including typically drier areas of the Upper Valley and Rio Grande Plains (below, in Hidalgo County).

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Relative Humidity for 14 days // Dec 6, 2014 - Dec 19, 2014														
Local Hour of Day	Dec 06	Dec 07	Dec 08	Dec 09	Dec 10	Dec 11	Dec 12	Dec 13	Dec 14	Dec 15	Dec 16	Dec 17	Dec 18	Dec 19
00	-	99%	99%	96%	99%	81%	86%	99%	97%	96%	97%	80%	91%	100%
01	98%	99%	99%	98%	98%	81%	87%	97%	98%	97%	98%	85%	92%	100%
02	98%	99%	99%	97%	97%	91%	88%	99%	100%	96%	98%	86%	94%	100%
03	98%	99%	99%	99%	98%	93%	89%	99%	100%	97%	99%	87%	94%	99%
04	99%	99%	100%	99%	98%	98%	90%	98%	100%	98%	99%	90%	95%	99%
05	99%	99%	100%	100%	98%	94%	93%	97%	100%	99%	99%	93%	96%	99%
06	100%	99%	100%	100%	96%	93%	97%	98%	100%	99%	99%	96%	96%	99%
07	100%	99%	100%	100%	96%	94%	98%	100%	100%	99%	100%	96%	97%	99%
08	100%	99%	99%	97%	96%	90%	99%	99%	99%	97%	94%	97%	96%	99%
09	100%	99%	99%	91%	93%	88%	94%	97%	93%	94%	76%	94%	97%	98%
10	100%	99%	99%	84%	82%	84%	82%	91%	84%	89%	68%	82%	93%	96%
11	97%	99%	97%	65%	73%	74%	64%	75%	74%	83%	62%	74%	91%	94%
12	74%	97%	93%	60%	72%	65%	59%	65%	61%	71%	61%	64%	93%	90%
13	71%	96%	89%	59%	69%	63%	58%	66%	59%	64%	55%	62%	94%	94%
14	66%	96%	86%	56%	61%	62%	60%	63%	53%	60%	56%	59%	95%	90%
15	66%	96%	86%	58%	60%	64%	66%	60%	54%	59%	59%	58%	89%	88%
16	79%	98%	84%	61%	59%	67%	58%	59%	55%	59%	60%	64%	93%	85%
17	77%	99%	83%	61%	65%	72%	63%	66%	58%	63%	63%	70%	94%	85%
18	96%	98%	84%	79%	72%	75%	69%	72%	65%	68%	65%	75%	96%	85%
19	99%	99%	87%	85%	79%	78%	76%	79%	68%	77%	68%	81%	93%	84%
20	99%	99%	89%	88%	80%	79%	80%	91%	80%	87%	71%	83%	98%	81%
21	98%	99%	90%	94%	86%	83%	89%	97%	88%	91%	73%	85%	99%	82%
22	98%	99%	92%	94%	89%	83%	96%	94%	93%	93%	76%	86%	99%	84%
23	98%	99%	95%	97%	84%	85%	98%	96%	95%	96%	76%	90%	99%	83%

Percent of Normal Precipitation (%)
12/6/2014 - 12/19/2014



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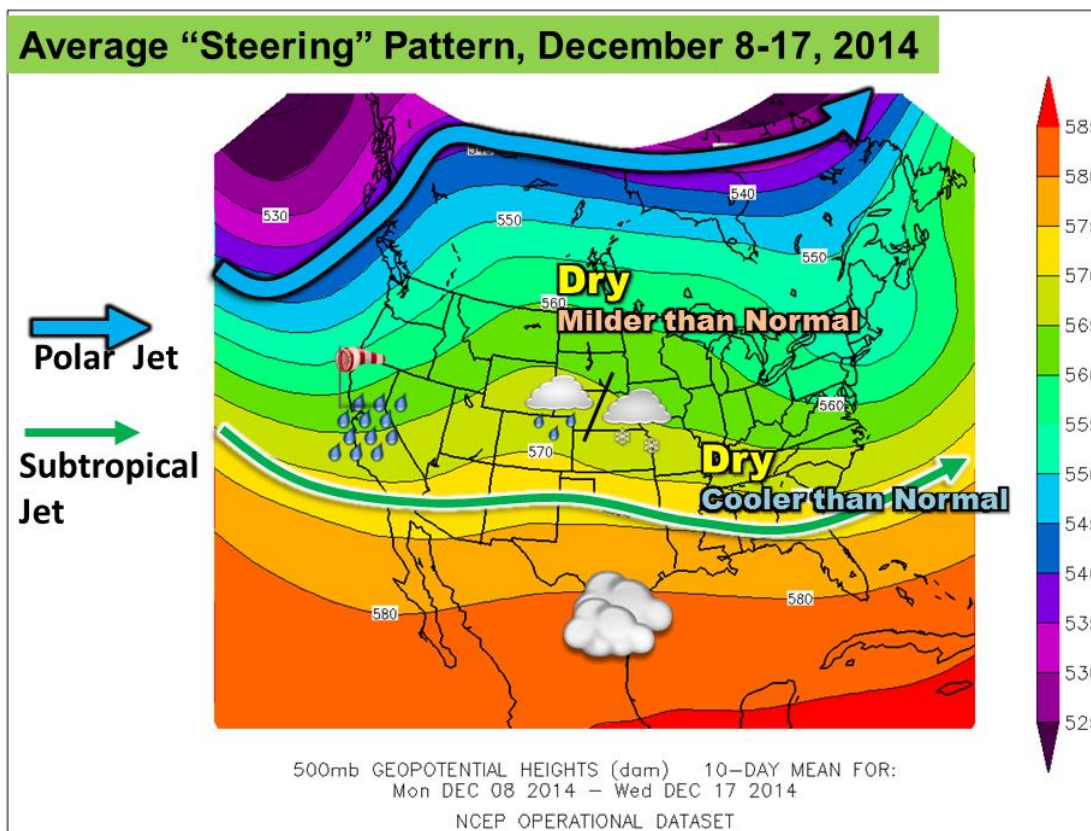
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Rainfall

December is one of the drier months of the calendar year, with generally an inch of rain for most areas on average. However, unusually heavy rain covered most of the populated Rio Grande Valley on the 6th with areas between McAllen and Harlingen/San Benito receiving 100 to 200% of their total monthly average in just 24 hours! The soaking rain, followed by the aforementioned cloudy, warm, and humid period, locked moisture into the ground and further aided the steady growth of grasses and other brush through the 19th. This one day rain, dotted with additional drips and drabs on other days during the period, maintained a 200-300 percent of rainfall for the two week period (left).

Pattern Matters

The same pattern (below) that brought the [first big winter rains in five years to California](#) – which, coincidentally, was the last time a moderate El Niño was active – aided the warm and humid weather across the Rio Grande Valley. With no threat of cold air from near the North Pole, shown by the receded polar jet well north into Canada (blue), the subtropical jet (green) was free to push multiple layers of mid and high clouds across Texas, which further blocked the sun from any possibility to break down the lower clouds. The polar jet need not dive far into the United States to punch low level chill deep into the Great Plains and ultimately through all of Texas – but it must show a “dip” southward to begin the process. The “dip” was nowhere to be found in west and central Canada, with just a slight dip across eastern Canada from December 8 to 17.

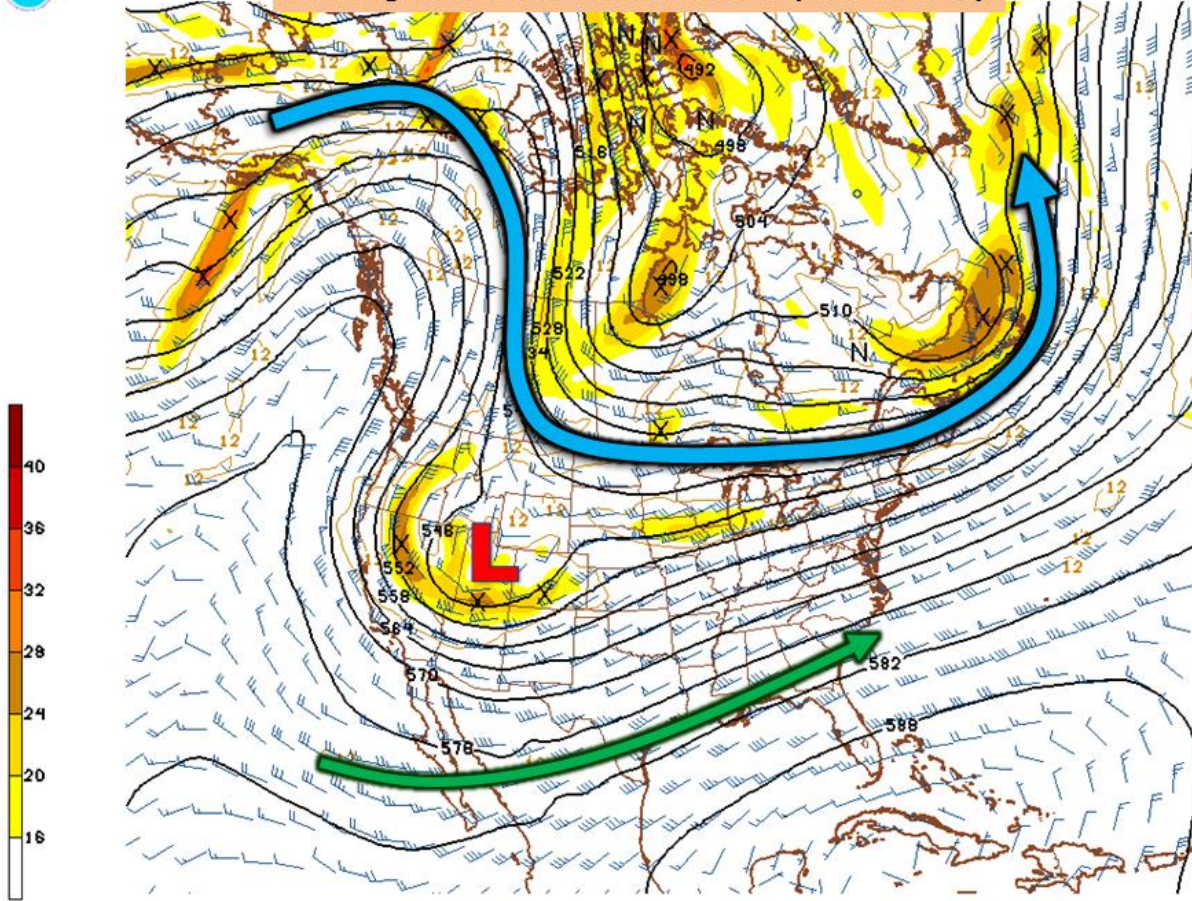


End of 2014 and Start of 2015: Back to “Normal”?

The polar jet appeared to be set to make a comeback to close out 2014 and begin 2015, while the subtropical jet would lurk. Christmas week will see several days of sunshine as a robust “dip” temporarily shoves the subtropical jet into the tropics, allowing the driest air of the month to arrive, followed by the coldest morning of December to occur on Christmas Day (30s for many). The initial dip picks up most of its air from southwest Canada, which will preclude any freezing temperatures or long duration low wind chill. A “split flow” pattern (top of next page) may develop toward the last days of the month, which would bring a combination of air originating from near the North Pole with a recovery of subtropical moisture. Should this occur, and there are indications that are making this more likely, New Year’s Eve and Day could be some of the coldest feeling weather since the early season [“Polar Express” of November 12-14, 2014](#). Stay tuned!



Steering Pattern Forecast for Dec. 29 (as of Dec. 22) JAN



141229/1200V168 GFS 500MB HGT AND GEO ABSOLUTE VORTICITY

GFS deterministic forecast of 500 mb (~18,000 feet) flow at 6 AM CST December 29. Blue indicates polar jet stream, with flow pulling air from the arctic region of Alaska and northern Canada south. Green indicates subtropical jet, which would become a player and help increase deep moisture to bring more rain to the Valley heading toward the 2015 New Year.