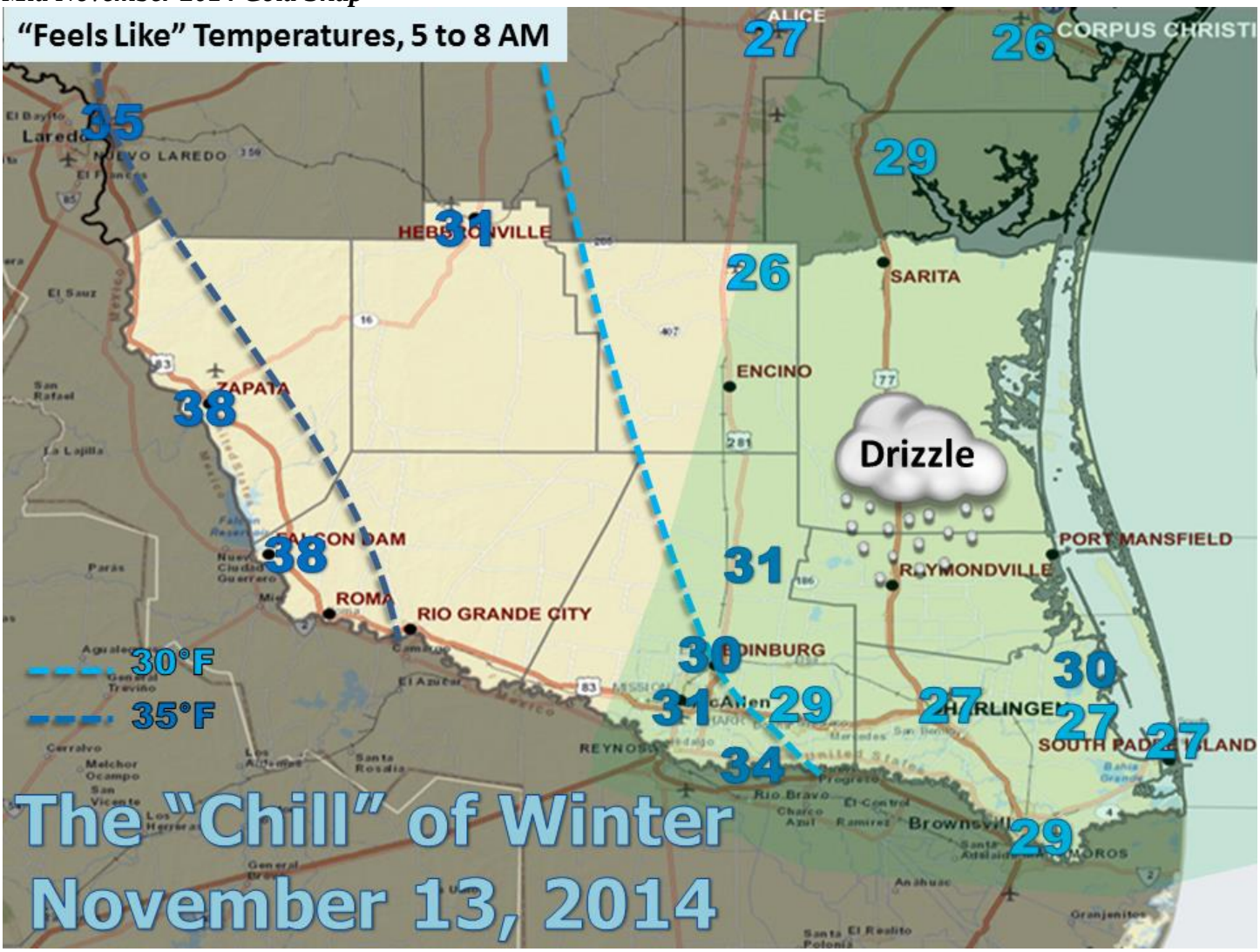
Mid November 2014 Cold Snap



Novem-brrrrr!

Record Cold, Low Wind Chill Bring Winter Early to Valley in 2014

Yes, it really ***was*** that cold.

Before November 2014 reached the halfway mark, temperatures, and "feels like" temperatures crashed to levels typically seen between December and February during the period beginning November 12th and continuing through November 15th. From midnight on the 12th through the 14th, temperatures failed to rise above 60°F across the entire region; early on the 13th, the combination of temperature and wind chill made it feel below freezing (32°F) for the entire Lower and Mid Valley, extending through the King Ranch and into the Coastal Bend (above). A biting light rain and drizzle added to the unusually early winter gut-punch, and several new records (top of next page) were set across the region, based on preliminary data. The prolonged stretch of cold weather this early in the fall/winter season is rare indeed. Typically, the first "Gray 'Norther" fronts arrive in the Rio Grande Valley between late November and early December (calendar day temperatures failing to reach 60°F). For this event, both Brownsville and Harlingen failed to reach 50°F on November 13th. On average, the first date for such an occurrence is the day after Christmas (Dec. 26); in fact, one-fifth of years in the record for Brownsville (based on 137 seasons) did not have a day that remained below 50°F! November 22-24 2013 saw a similar temperature crash.

Preliminary **Minimum Temperatures and Records, November 13 2014 (as of Noon)**

Location (since)	County	Minimum Temperature	Rank	Previous Record (year)
Brownsville (1878)	Cameron	39	2	38 (1986)
Harlingen/Cooperative (1911)	**Cameron**	**38**	**1 (tie)**	**38 (1968)**
McAllen/Miller (1961)	**Hidalgo**	**40**	**1(tie)**	**40 (1976, 1986)**
McAllen/Cooperative (1941)	Hidalgo	40	3	38 (1942)
Edinburg (2000)	**Hidalgo**	**38**	**1**	**50 (2013)**
Falcon Dam (1962)	Starr	42	3	38 (1968)
Port Mansfield (1958)	**Willacy**	**37**	**1**	**43 (1976)**
Raymondville (1913)	**Willacy**	**36**	**1**	**37 (1932)**
Rio Grande City (1897)	Starr	42	16	29 (1968)
Santa Rosa (1987)	**Cameron**	**39**	**1**	**47 (1987)**
Sarita (1910)*	Kenedy	35*	1*	43 (2002)*
South Padre Island (1992)	**Cameron**	**41**	**1**	**50 (2000)**
Falfurrias (1907)	Brooks	37	4	30 (1932)
Weslaco (1914)	**Hidalgo**	**39**	**1**	**40 (1986)**
Armstrong 4 SE (1958)**	Kenedy	36**	1**	38 (1978)**
San Manuel (2000)	**Hidalgo**	**38**	**1**	**47 (2009)**

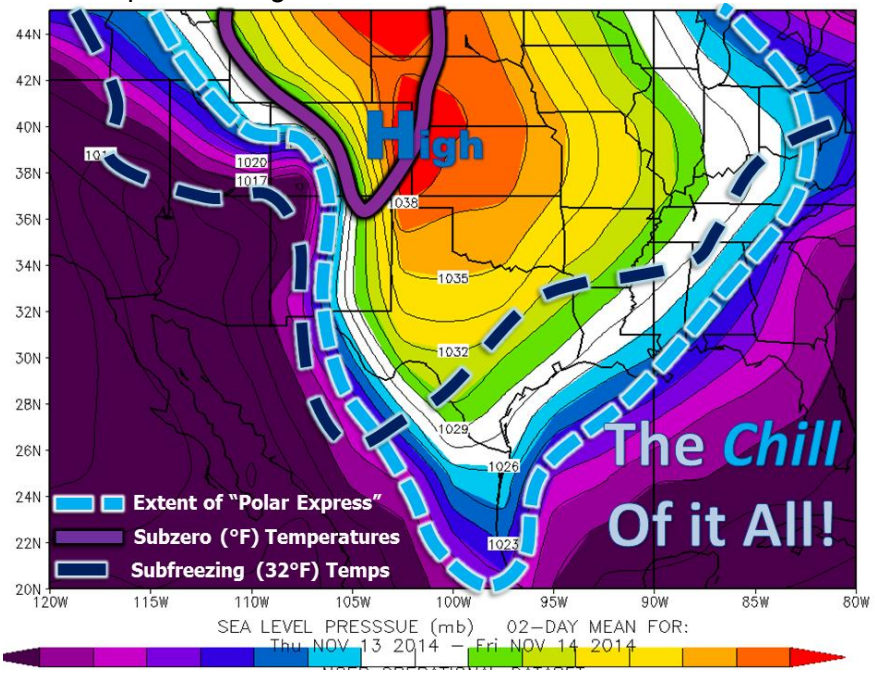
*Incomplete: Missing Most Data Prior to 2000
**Incomplete: Missing Data from 1979 to 2001

As of this writing, should Brownsville fail to reach 60°F on November 15th, it would mark the first time since 1907 (November 11 to 15) that four or more consecutive days remained below 60°F this early.

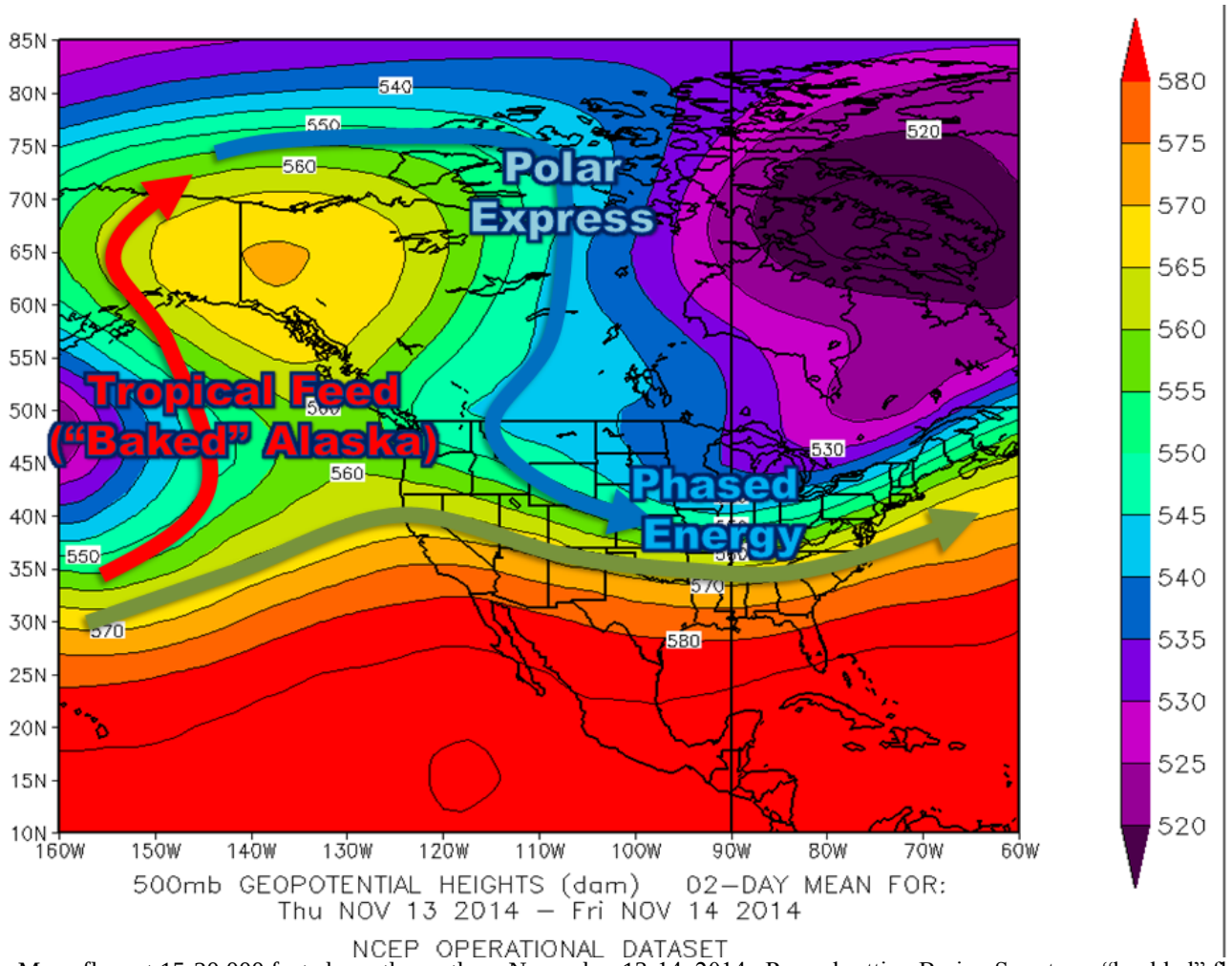
Why So Cold So Soon?

Blame it on Nuri.

Nuri, the second most intense hurricane (known as a typhoon in the Western Pacific) in the world in 2014, eventually transitioned to a powerful and record-setting post-tropical cyclone across the North Pacific Ocean. Remnant latent heat energy (the "engine" that drives hurricanes) combined with a vigorous upper level disturbance to form the non-tropical cyclone, which brought record low pressure to the Bering Sea on November 8th, set off an atmospheric "chain reaction" that built an unusually strong high pressure ridge across eastern Alaska and western Canada. Flow over the top of this ridge crossed the North Pole, then "descended" southward and brought air from Santa's workshop with it. This air mass, which is very dense, acted like a "freight train" and plowed into much lighter, warm, and relatively humid air ahead of it and easily pushed it away, with cool to cold air reaching all the way down the east coast of Mexico by the 13th.



Subzero temperatures reached into the central Plains on the morning of November 13th, with subfreezing temperatures reaching into portions of South Texas. Thick clouds, created when just enough warm and relatively humid air rose up and over the cold dome, held temperatures above freezing elsewhere in South Texas, including the Rio Grande Valley.



Above: Mean flow at 15-20,000 feet above the earth on November 13-14, 2014. Record setting Bering Sea storm "buckled" flow into the very strong ridge with tropical air feeding into Alaska on its west side. Flow over top of the ridge brought frigid air from the Arctic and North Pole regions into the central Canada and the northern Plains (blue arrow). Phased energy of the mid latitude jet stream (green arrow) with the "Polar Express" provided heavy snow to the Upper Midwest and Great Lakes regions.

Does This Portend a Cold Winter?

Not necessarily. Typhoon Nuri and its remnants were a significant factor in the unique pattern than evolved during the week of November 11th to 18th. Hurricane Sandy (late October 2012) left over two feet of snow in the mountains of West Virginia when it helped the bigger atmospheric "puzzle pieces" fit together to produce a memorable and record producing event, yet winter snows (December 2012 to February 2013) were well below average in the same areas. In fact, as of this writing, the end of November looked to close a bit on the warm side compared to average (average highs for the last ten days of November are in the mid to high 70s).

Still, there are indications that a weak El Niño, combined with other favorable atmospheric patterns, could signal a below normal temperature and above normal precipitation winter. Whether the atmosphere finds a trigger to turn "upside down" as it has between the 11th and 18th remains to be seen, but we'll be watching.

One statistic we are assured of? After the week of cold, which will be 15 to 20°F below average (from the 12th through 18th, inclusive), November will be locked in as a "below average" month. A periodic warm up xpected to close out the third week of the month, and fluctuating weather into Thanksgiving week will be no match for the well below average values that start the final 12 days of the month, which in some cases will be 10 to 12°F *below* average through the 18th .

Cold and wet, indeed.