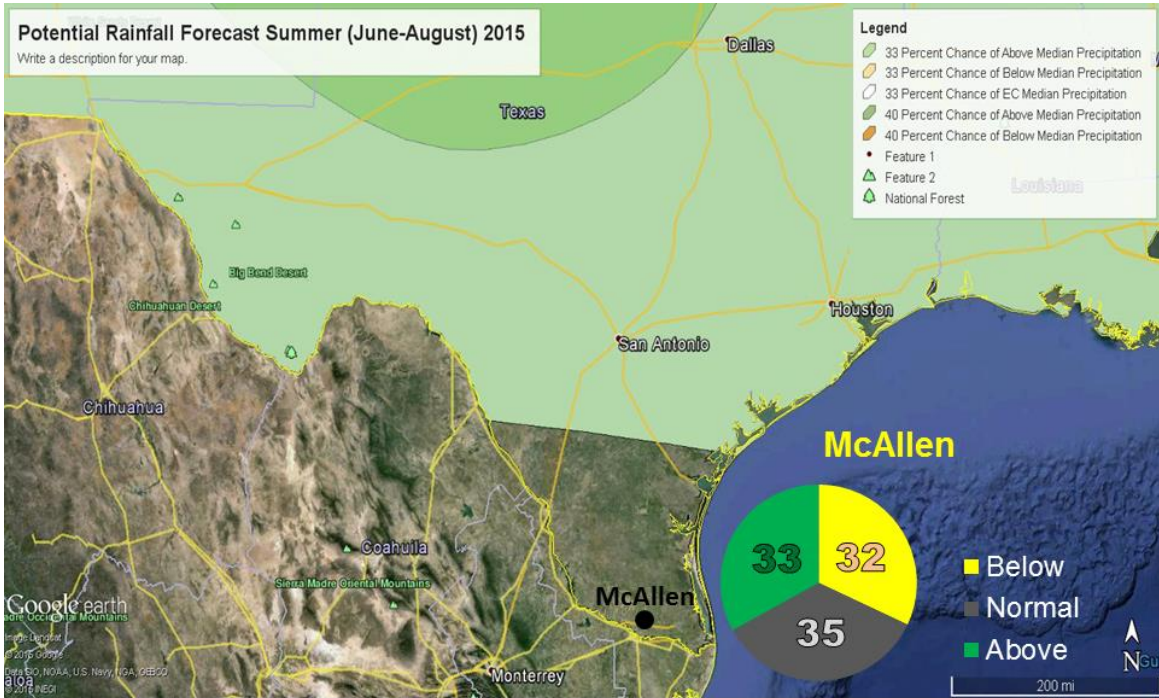
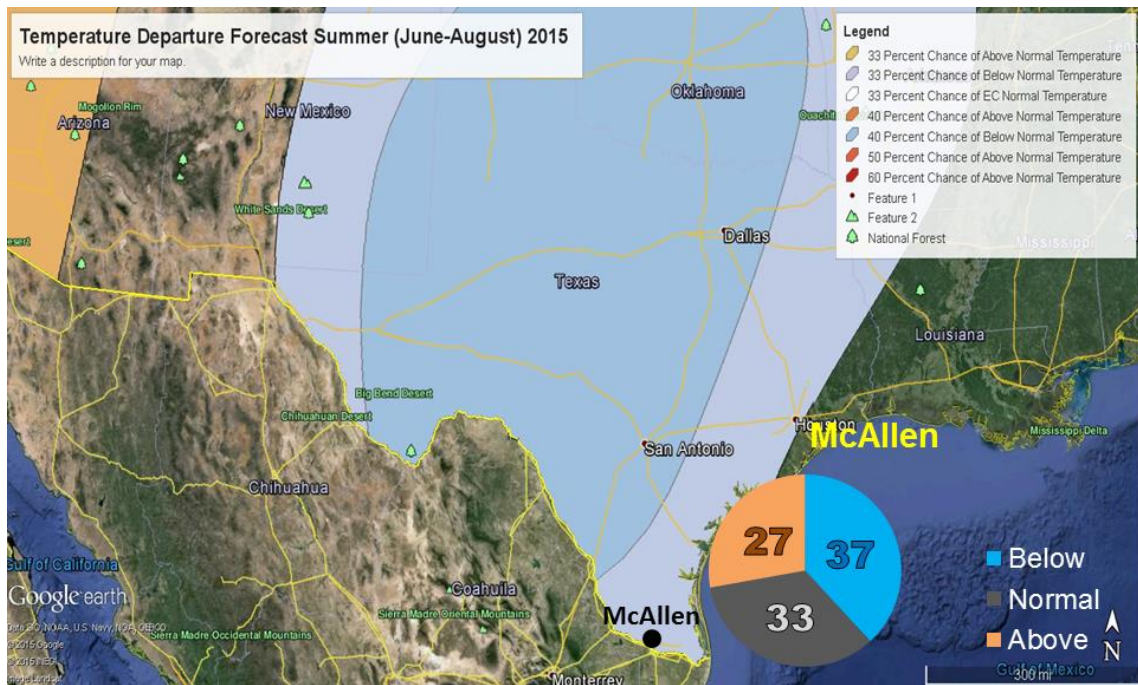


Summer 2015 Outlook



Average Rainfall: 6 to 7 Inches, Valley-Wide



Average Afternoon: ~90° Beaches, 95° Lower Valley, 97-99° Mid-Upper Valley
Average Wake-Up: ~78° Beaches, 74-77° Elsewhere
Average All Hours: 85-87°

El Niño Reigns. Or Is That “Rains”?

Will El Niño Bring Drier Weather, or Does the Atmosphere Have More Cards to Play?

June A Wild Card, but Will July/August Be Dry Across the Rio Grande Valley?

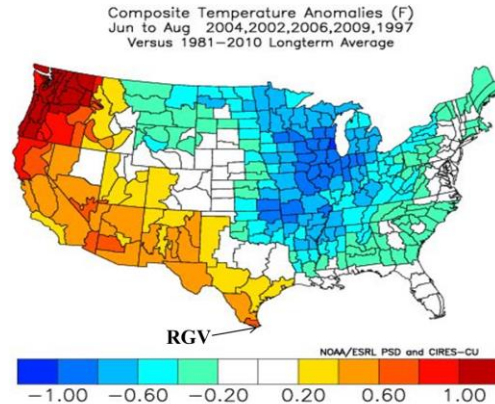
1997. 2002. 2004. 2006. 2009. **2015?**

That is the question for this summer (June-August) 2015. In each of the above summers, a mainly moderate ([Oceanic Niño Index](#), or ONI, ≥ 1.0) El Niño developed quickly. For the Rio Grande Valley, that typically meant above average temperatures with a “lean” toward below average precipitation (right). However, each season, El Niño or not, is different. After a [record wet spring](#) (March-May) across the Rio Grande Valley and Texas as a whole, “flipping the script” from wet to dry can seem a difficult prospect to comprehend. Even as the first week of June 2015 unfolded largely rain-free, there were signs that tropical moisture would make a comeback for the middle portion of the month. June is a tricky month to handicap as the winter/spring El Niño signal (typically wetter and sometimes cooler than average) transitions toward hot and largely rain-free weather for July and August. “Dry” is relative; the [mid-July through mid-August “La Canícula”](#) pattern drops average rainfall to a measly ~1 inch; any less rainfall is practically nil. The remainder of June and perhaps the tail end of August will determine how the summer will be remembered.

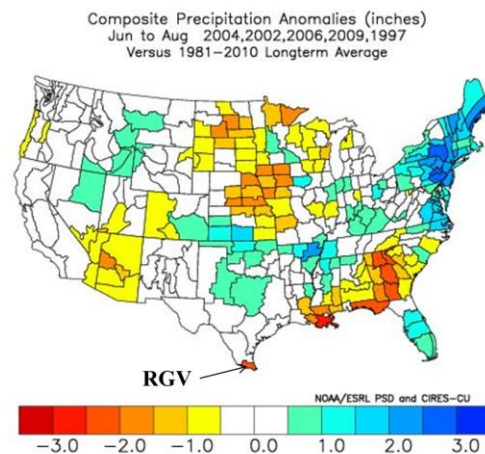
The table below shows similar El Niño developments during the 21st century; notice the change from neutral (or, in the case of 2009, La Niña conditions (blue shade)) prior to the El Niño development (red squares) during the latter half of the calendar year.

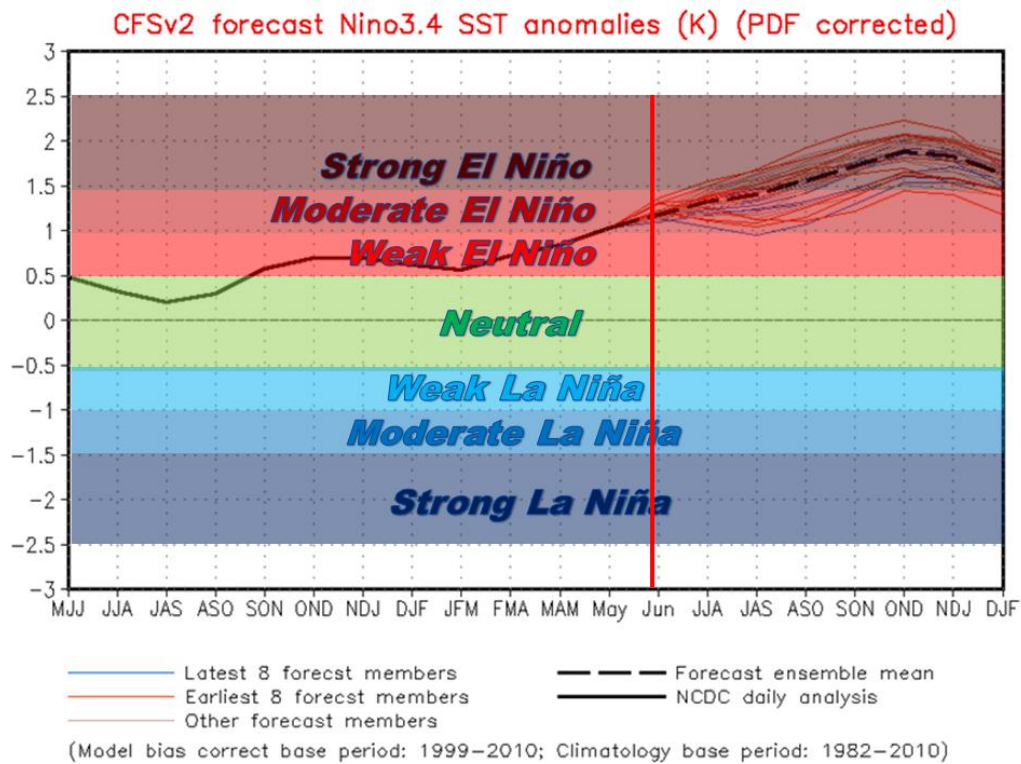
Year	DJF	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ
2003	1.1	0.8	0.4	0.0	-0.2	-0.1	0.2	0.4	0.4	0.4	0.4	0.3
2004	0.3	0.2	0.1	0.1	0.2	0.3	0.5	0.7	0.8	0.7	0.7	0.7
2005	0.6	0.4	0.3	0.3	0.3	0.3	0.2	0.1	0.0	-0.2	-0.5	-0.8
2006	-0.9	-0.7	-0.5	-0.3	0.0	0.1	0.2	0.3	0.5	0.8	1.0	1.0
2007	0.7	0.3	-0.1	-0.2	-0.3	-0.3	-0.4	-0.6	-0.8	-1.1	-1.2	-1.4
2008	-1.5	-1.5	-1.2	-0.9	-0.7	-0.5	-0.3	-0.2	-0.1	-0.2	-0.5	-0.7
2009	-0.8	-0.7	-0.5	-0.2	0.2	0.4	0.5	0.6	0.8	1.1	1.4	1.6
2010	1.6	1.3	1.0	0.6	0.1	-0.4	-0.9	-1.2	-1.4	-1.5	-1.5	-1.5
2011	-1.4	-1.2	-0.9	-0.6	-0.3	-0.2	-0.2	-0.4	-0.6	-0.8	-1.0	-1.0
2012	-0.9	-0.6	-0.5	-0.3	-0.2	0.0	0.1	0.4	0.5	0.6	0.2	-0.3
2013	-0.6	-0.6	-0.4	-0.2	-0.2	-0.3	-0.3	-0.3	-0.3	-0.2	-0.3	-0.4
2014	-0.6	-0.6	-0.5	-0.1	0.1	0.1	0.0	0.0	0.2	0.5	0.7	0.7
2015	0.6	0.5	0.6	0.7								

The NOAA/NCDC Climate Division Dataset has been updated to a newer version



The NOAA/NCDC Climate Division Dataset has been updated to a newer version



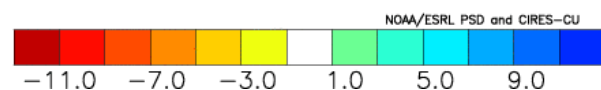
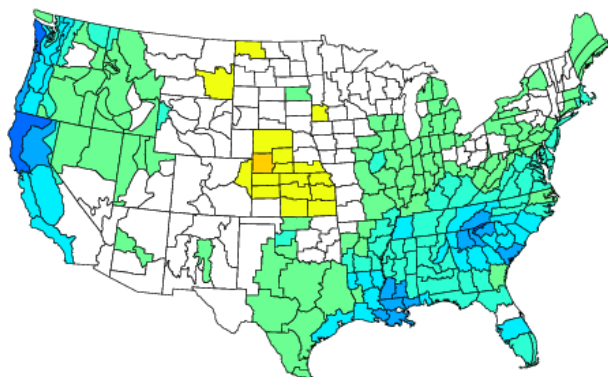


Unlike the El Niño that was forecast but paused during the summer of 2014 the current El Niño, underway since autumn 2014, has shown clear signs of strengthening this spring and is now expected to become moderate (ONI of +1.0 to +1.4) or strong (ONI ≥ 1.5) by late summer or early autumn 2015 (above, dashed black line).

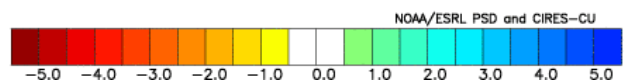
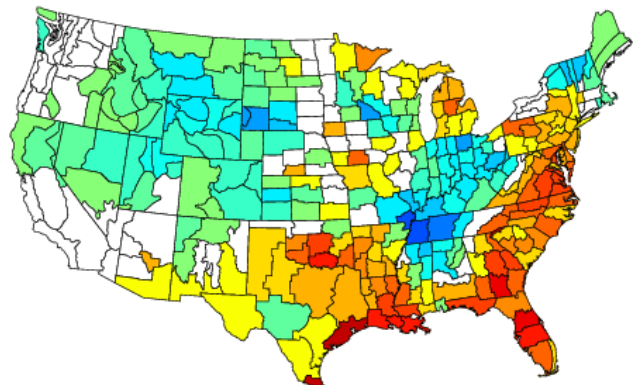
Easing into Summer

A “La Canícula” preview? One might think so, but for most across Texas and the Rio Grande Valley, the start of June 2015 was welcome relief from shattered May rainfall records with too much of a good thing: Widespread river, creek, and lowland flooding, a major urban flood in the Houston metro area, nearly two dozen fatalities, and likely several billion dollars in property, crop, and livestock damage/loss. As mentioned above, June being a transition month from the combination of late spring’s El Niño influence and several other factors, possibly including the strongly positive phase of the [Pacific Decadal Oscillation](#), which hadn’t been in such a state since 1997/98 – when a similar El Niño produced widespread rainfall across Texas through the southeast U.S. from January to May (below left) before being replaced by much drier conditions from June to August (below right). There may also be a connection with a persistent positive phase of the Arctic Oscillation, but details are sketchy at this time.

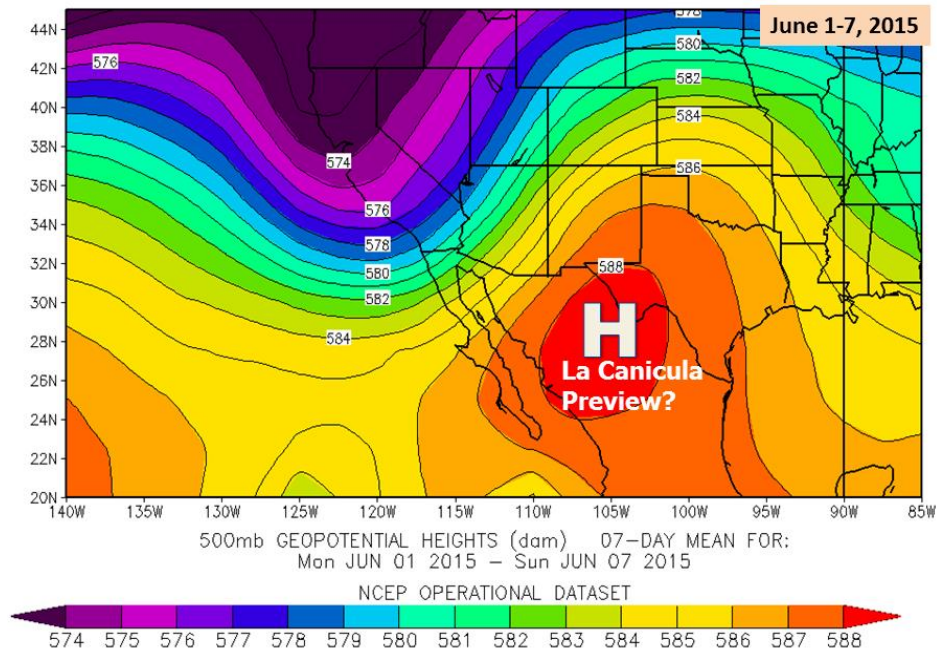
NOAA/NCDC Climate Division Composite Precipitation Anomalies (in)
 Jan to May 1997,1998
 Versus 1981–2010 Longterm Average



NOAA/NCDC Climate Division Composite Precipitation Anomalies (in)
 Jun to Aug 1997,1998
 Versus 1981–2010 Longterm Average



Summer 2015 Harbinger?

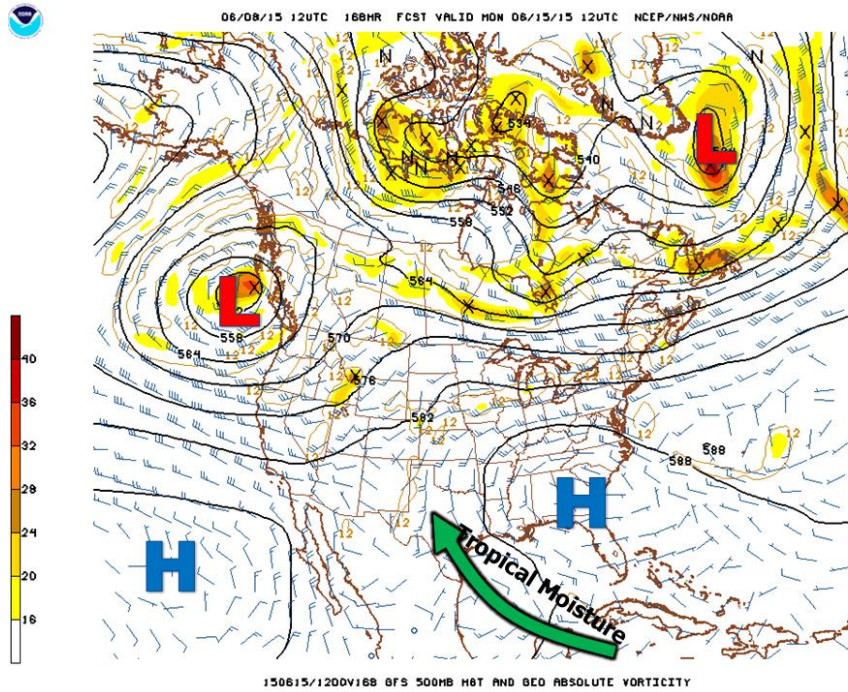


Above: June 2015 began with a much drier pattern that that which had dominated March-May 2015, as atmospheric high pressure and little to no rainfall replaced the repeated disturbances that brought tropical moisture and rain to much of Texas, especially in May.

Eye on the Tropics

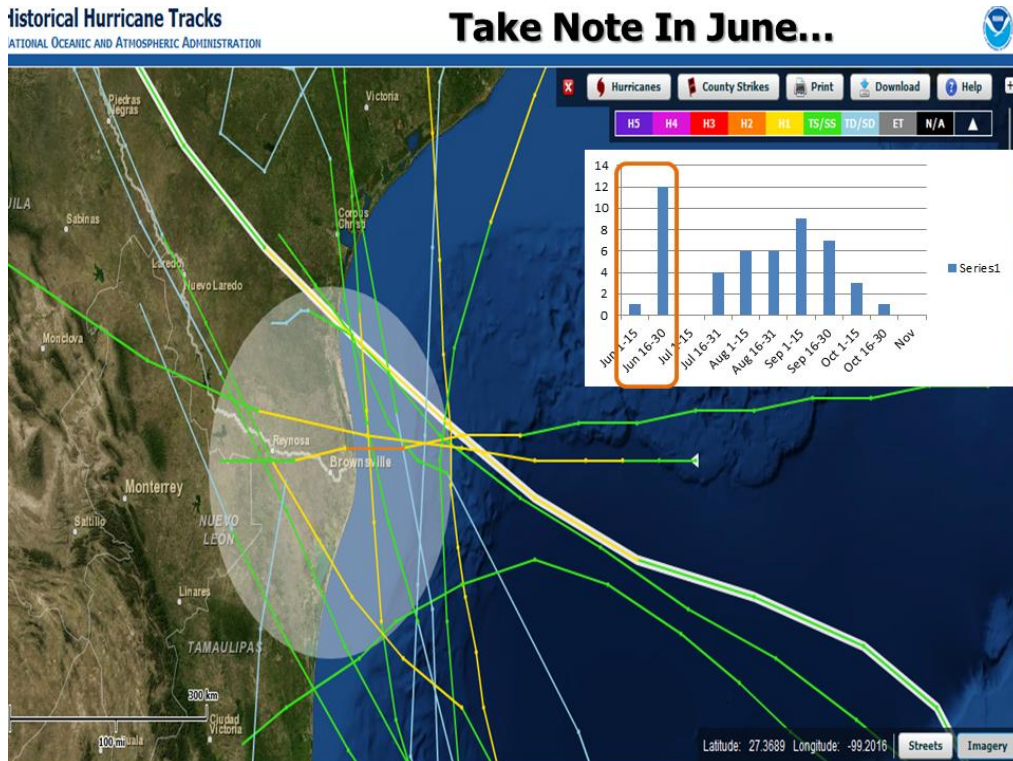
Atlantic hurricane season officially began on June 1. How will the season shape up, and what might it mean for the Rio Grande Valley? El Niño and the continued weak phase of the Atlantic Multidecadal Oscillation will play a significant role; a number of [seasonal forecasts](#) suggest a third consecutive season of below average number of cyclones than in recent years. [NOAA's forecast](#) of 6 to 11 cyclones, 3 to 6 hurricanes, and zero to 2 major (Category 3, 111+ mph wind) are among the lowest in recent memory. Still, no matter the seasonal forecast, it only takes one landfall to make someone's season. One only has to recall 1992, when there were "only" seven named storms, three hurricanes, and one major hurricane. That "major" was Andrew, which wiped out portions of south Florida with 200 mph wind gusts and left more than \$26 billion (1992 US Dollars; likely \$50 billion today) in damage from south Florida to Louisiana. Rio Grande Valley residents should be ready for the next Andrew; [prepare here](#).

The Texas season (western Gulf) is a tricky call in 2015 compared with 2014. Unlike in late May/early June 2014, when sea surface temperatures were some 3 to 6°F below average; values in early June 2015 were some 2 to 4°F above average, as they were across the western Atlantic between the Carolinas and Bermuda. The low confidence for a persistent La Canicula ridge combined with the uncertainty of the Arctic Oscillation, whose positive phase can sometimes lead to an early season "Bermuda" high pressure ridge (below), gives a mild opportunity for festering moisture in the Gulf to organize into a potential tropical cyclone at some point.

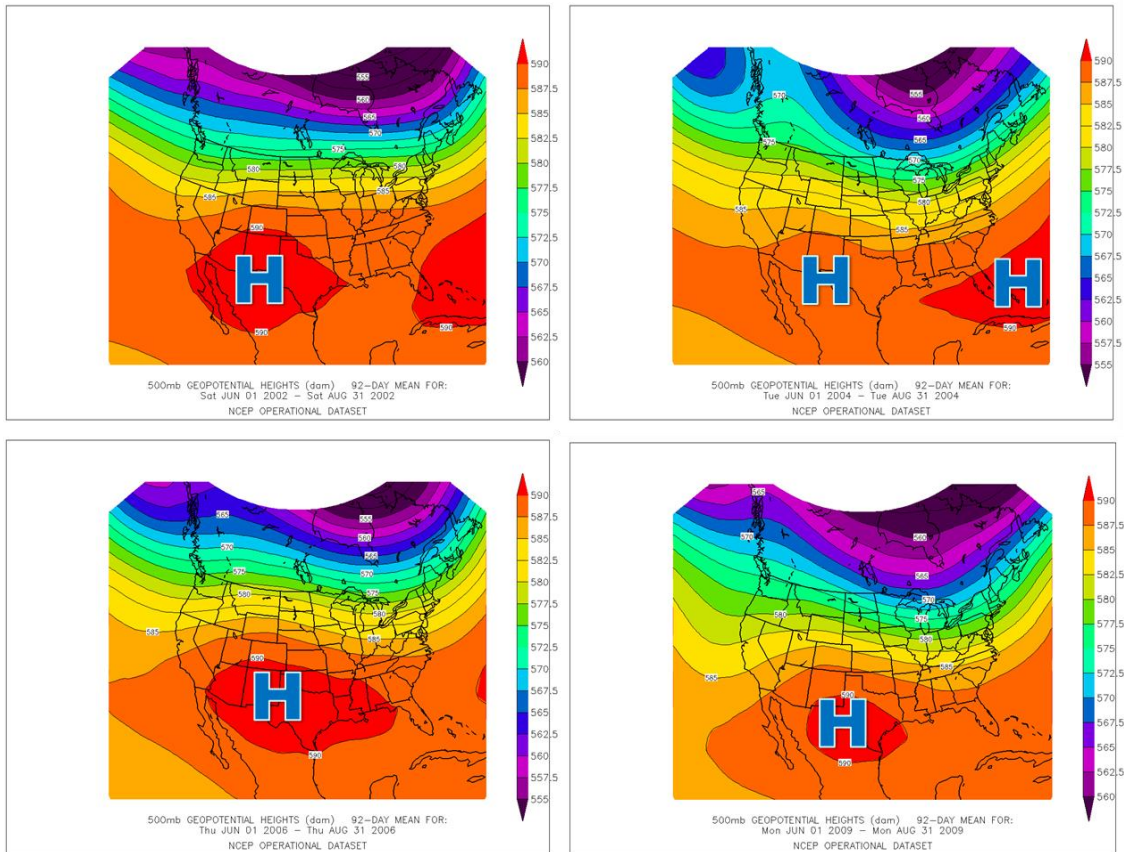


The "wild card" of late June 2015? If a southeast U.S./Bermuda upper level ridge (blue H) dominates the latter half of June 2015, significant rains will return to the east half of Texas, aided by persistent flow of tropical moisture from the western Caribbean and southern Gulf of Mexico. Widespread rain coverage could include the Rio Grande Valley.

June's history for tropical cyclones along or east of the Texas coast – most of them Tropical Storms with flooding rain the primary threat – makes it a month to watch closely before the expected onset of mid summer's "La Canícula." Historically, the last half of June (16-30) has the highest number (12) of tropical cyclones passing within 100 miles of Brownsville; El Niño's Reign may (still) feature rain, should tropical cyclones or easterly waves have the ability to move into any weakness between subtropical ridges (along Baja California and the southeast U.S.) or around the periphery of the southeast U.S./Bermuda ridge, should one dominate the latter half of June. Stay tuned, and use spring's memorable flooding rains as a guide for what could come to end June – and perhaps again in the more typical wet period that sometimes begins as August turns to September.



July is typically a quiet month for the Texas coast as strong high pressure typically dominates the southern Great Plains. Analog seasons of 2002, 2004, 2006, and 2009 (below) suggest a stronger (and longer) than average “La Canícula” (blue “H”), which would tend to keep tropical cyclones from the Texas coast well into August. Late August to late September would offer the best potential for a cyclone to “sneak into the crack in the window/door”, even during a moderate to strong El Niño.



Average steering pattern during rapidly forming El Niño summers (clockwise from upper left): 2002, 2004, 2009, and 2006. The location of the upper ridge (blue H) puts a “stop sign” on north or westward push of any cyclone that might form, and often provides dry air sufficient to “kill” the cyclone.

Summer, in Summary

The story will be a mixed bag of possibilities:

- **Rain, or Not?** El Niño’s transition and the continued warming of the Gulf could be a recipe for periodic deep tropical moisture, enough to produce torrential rains and flooding, mainly in late June. Confidence is low to very low based on uncertainty in forecasting exactly how the early summer “puzzle pieces” might fit together.
- **Hot July and August.** If early June is any preview, a dominant La Canícula ridge would eventually bring persistent heat index, or “feels like”, temperatures back above 105°F for prolonged stretches. One saving grace? Abundant soil moisture and greenery, especially if the latter half of June end up somewhat or very wet. Energy required to evaporate (or evapotranspire) moisture from plants will reduce the ability for maximum heating; such a situation would increase the number of mid to high 90s day compared with 100°F (actual) days, and keep daytime values at or slightly below the already sweltering normal
- **No Drought, But...**there’s plenty of brush and high grass to burn, should hot, dry weather dominate July and August. It doesn’t take long at our latitude for the sun to dry out soil and brush, and a mid to late August day with temperatures in the lower 100s, humidity in the 20s or 30s, and wind gusting to 25 mph or higher could create a rapidly spreading wildfire.

Have a safe summer, and be a [force of nature](#)!

- Review [flood safety tips here](#), and consider purchasing [flood insurance](#). Remember to avoid flooded roads, but also consider home improvements to improve flood resilience, including:
 - Know your (flood) zone! If your neighborhood flooded during the March-May rains, it could flood a lot worse in summer storms fed by tropical energy, named storm or not.
 - Seal your foundation to make water-tight
 - Check room and window frames for leaks, and seal/repair when the weather is dry
 - Check sandbags for leaks and place in a dry but accessible location in case you need to use them
- Check out [heat safety tips here](#).
- Headed to the beach to seek relief from the heat? Learn how to avoid and be safe from [rip and longshore](#) currents.
- Finally, take precautions to [prevent wildfires](#).