



# Texas Weather Wire



## Tropical Storm Bill

By Jason Runyen



*“Only takes one storm.  
Are you prepared?”*

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Tropical Storm Bill originated as an area of disturbed weather over the northwest Caribbean Sea, near Belize and the Yucatan Peninsula, on June 12<sup>th</sup>. The area of disturbed weather continued northwest into the Gulf of Mexico, where environmental conditions became favorable for development.

By late in the evening on June 15<sup>th</sup>, Tropical Storm Bill had formed over the northwest Gulf of Mexico. Bill did not have much time to strengthen before making landfall shortly before noon on June 16<sup>th</sup> on Matagorda Island, 25 miles southwest of Port O’Connor, TX. Bill had maximum sustained winds of 60 mph at landfall.

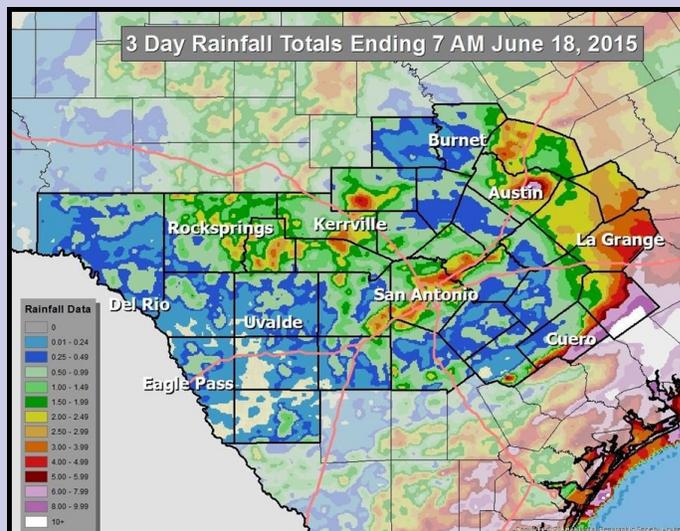
Story continues...

## Tropical Storm Bill...

Bill turned north and continued through eastern portions of South-Central Texas during the evening of June 16<sup>th</sup>, with the center passing near Hallettsville and La Grange. Bill weakened to a Tropical Depression during the early morning hours on June 17<sup>th</sup> as it passed east of Austin and headed towards Waco. Bill continued through North Texas and Oklahoma on the 17<sup>th</sup> and 18<sup>th</sup>, then headed northeast through the mid-Mississippi River Valley and eventually was declared a post-tropical low over the Ohio River Valley on June 20<sup>th</sup>.

As Bill tracked through South-Central Texas, heavy rain was primarily located along and east of the center of the track. However portions of the Interstate 35 corridor from San Antonio to Austin did experience heavy rainfall in outer rain bands on the afternoon and evening of the 17<sup>th</sup> as Bill pulled away from the area. Bill produced the heaviest rainfall across portions of Jackson and Lavaca counties in South Texas, where close to a foot of rain fell. 11.50 inches of rain was recorded in southern Lavaca County, and several roads were flooded across the county. Power lines were also blown down in several locations in Lavaca County, along with a roof blown off a barn. Across Lavaca County, peak wind gusts were estimated at 50 mph near where the center of Bill tracked. In DeWitt County, small tree limbs were also snapped, and isolated pockets of 8 to 10 inches of rain flooded several roads.

Farther inland across South-Central Texas, 2 to 4 inches of rain occurred, with isolated pockets of up to 8 inches, across Fayette, Gonzales, Travis, and Bexar counties. Flash flooding was observed in the Austin and San Antonio metro areas. Multiple high water rescues occurred in the San Antonio metro area, including along Salado Creek.



( Figure 1) 3 Day Rainfall Totals Map through 7 AM June 18, 2015

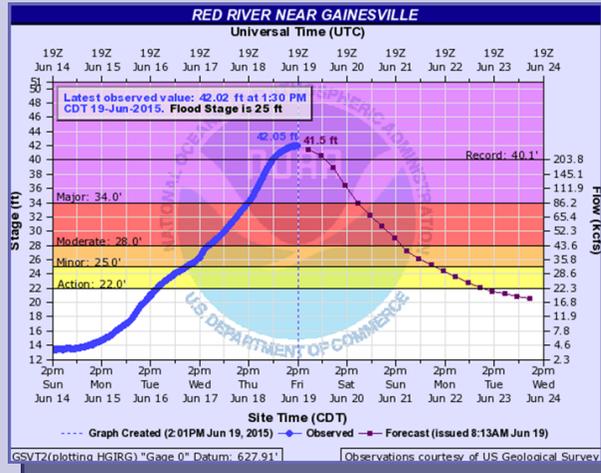
“Learn what to do before, during and after a hurricane”

Visit the following link <http://bit.ly/1JWD75A>  
#HurricanePrep  
#ItOnlyTakesOne

Storm Bill continues...

## Bill Makes History across Texas and Oklahoma

Heavy rainfall also fell across North Texas and Oklahoma, where between 4 and 8 inches was observed, with isolated pockets of up to 12 inches in Oklahoma. This produced flash flooding and major river flooding, including the Red River at Interstate 35 hitting a record crest.



(Figure 2) Hydrograph from the Red River near Gainesville as the event unfold

As of this writing 2 official deaths had been attributed directly to flooding from Bill, both in Oklahoma. Flooding associated with Bill was reported all the way up to Ohio, along with severe storms across the Mid Atlantic.

Flooding from Bill across Texas and Oklahoma was exacerbated by already saturated soil and elevated river conditions caused by several heavy rainfall events in the month preceding Bill. In fact, May of 2015 was the wettest May on record for the state of Texas. Tropical Storm Bill also reminded us of several lessons associated with tropical systems:

1. *Every storm is different. With respect to Tropical Storms, some are big rainfall producers (Allison in 2001), some have strong winds (Hermine in 2010), and some are prolific tornado producers (Fay in 2008). Flooding is traditionally the most deadly weather related hazard here in South-Central Texas, an area often referred to as Flash Flood Alley.*
2. *Bill is also a lesson that tropical systems are not just coastal events. Flooding and wind effects can reach well inland, and in this case all the way to the Ohio Valley.*
3. *Bill could have been much worse across South-Central Texas. Just a deviation in the track by 50-100 miles to the west or east could have brought the 12 inch bullseyes of rainfall into the Austin/San Antonio and Houston areas respectively, potentially resulting in devastating flooding.*

It is because of these lessons that residents of South-Central must remain prepared, even for Tropical Storms.

*“Flash Flooding...#1 Storm-Related Killer across South-Central Texas”*

Tropical Outlook is next...

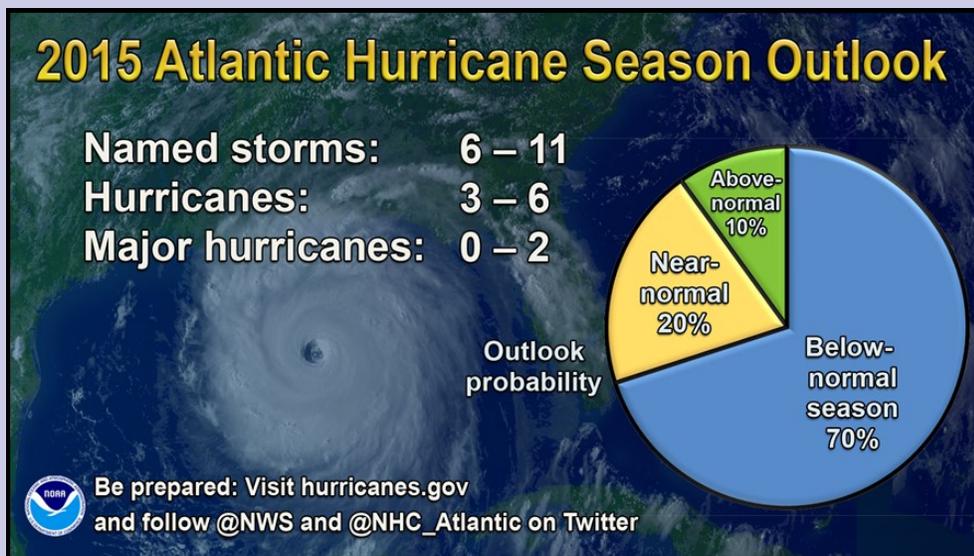
## Tropical Outlook (A Below Normal Hurricane Season)

By Aaron Treadway

On May 27<sup>th</sup>, NOAA's Climate Prediction Center released their prediction for the 2015 Atlantic Hurricane Season. Hurricane season runs from June 1<sup>st</sup> through November 30<sup>th</sup> with the most active part of the season occurring between August through October.

### Hurricane Forecasts By the Numbers

According to the National Hurricane Center, on average, each Atlantic hurricane season sees 12 named storms (tropical storm or hurricane), about 6 hurricanes, and 3 major hurricanes (Category 3 or greater). The forecast for the 2015 season can be seen below:



*Average Hurricane Season*  
 \*12.1 NS  
 \*6.4 H  
 \*2.7 MH

Organization	Named Storms	Hurricanes	Major Hurricanes
NOAA	6 – 11	3 – 6	0 - 2
Colorado State University	7	3	1
North Carolina State University	6	3	1
UK Met Office	8	5	No Forecast
<i>Average (1981-2010)</i>	<i>12.1</i>	<i>6.4</i>	<i>2.7</i>
<i>Record High</i>	<i>28 (2005)</i>	<i>15 (2005)</i>	<i>7 (2005)</i>
<i>Record Low</i>	<i>4 (1983)</i>	<i>2 (2013)</i>	<i>0 (2013)</i>

(Table 1) shows the different 2015 Atlantic Hurricane Season Forecast of additional agencies)

Tropical Outlook continues...

## Tropical Outlook Continues...

### Reasons for the Below Normal Season

The main culprit for the below normal Atlantic Hurricane Season is El Niño. To find out more about El Niño see this [article](#) from NOAA. El Niño, which has already brought us a very wet spring across Texas, is forecast to continue and possibly intensify through the Summer and into the Fall. Hurricanes like very warm water, with little wind shear, and rising motion. During El Niño the pattern across the Atlantic is one with increased wind shear, and more sinking motion. Sea surface temperatures are also forecast to be near normal this summer, resulting in minimal impact to the overall seasonal activity.

### It Only Takes One!

The important thing to remember is that although a below average season is forecast, this is a forecast of total tropical cyclone activity, NOT a landfall forecast. It only takes one storm to cause devastation during hurricane season. One notable example of this is 1992. Only 7 named storms formed that year, very similar to what is being forecast this year. Despite the below average season, the A named storm was a Category 5 major hurricane and made landfall in the United States, devastating South Florida. That storm's name was Andrew.

### Where The Season Stands So Far

So far in the 2015 season we have already seen two tropical cyclones, both of which have made landfall. Tropical Storm Ana developed on May 8<sup>th</sup> off the coast of South Carolina and then moved northwest near the North/South Carolina border. On June 16<sup>th</sup> Tropical Storm Bill formed in the western Gulf of Mexico. It began moving west before turning to the north, moving through East and North Texas over the next few days. While we began with a fairly active season a large high pressure system has become centered over the Atlantic Ocean and eastern Gulf of Mexico, and we have not see any tropical development since Tropical Storm Bill as of the end of June.

For more information on hurricanes and specifically hurricane climatology visit this website: <http://www.nhc.noaa.gov/climo/> from the National Hurricane Center.

The full text of the outlook and the NOAA press release can be found here:

- \* <http://www.cpc.ncep.noaa.gov/products/outlooks/hurricane2015/May/hurricane.shtml>
- \* <http://www.noaanews.noaa.gov/stories2015/20150527-noaa-hurricane-outlook-below-normal-atlantic-hurricane-season-is-likely-this-year.html>

*“During El Niño the pattern across the Atlantic is one with increased wind shear, and more sinking motion”*

Social Media is next...

## Navigating the Social Media Storm

By Trevor Boucher

It's amazing how quickly things change in technology. I am only in my late 20s but I can remember a time when we didn't have "our phones", we only had "the phone". Most homes had dedicated land line telephones, and sometimes more than one if you didn't want to tie that line up to surf the internet using a dial-up modem.

Fast-forward to 2015 and just about everybody has not just a phone, but a *smart* phone. A device capable of getting you pretty much any information you could desire within seconds. Not only that, but information that is specific to *your* individual interests. Want to know how far it is to the nearest restaurant in a city you've never been? It can tell you that. Want to know the name of that song you just heard on the radio? It can tell you that. Want to settle that debate about whether or not an actor or actress was in that movie your friends are talking about? It can tell you that.

Want to know what the chances are that it's going to rain on you between 1 and 2 PM next Friday? Yes, it can even tell you that. No, it may not always be right, but you didn't have to wait through the entire newscast to get it, navigate through a webpage, or have to find your location on a radar. The convenience of the information in many ways outweighs the necessity for accuracy, especially when it comes to the forecast.

What about when things start getting bad though? When you are seeing the sky get dark and hear thunder rumbling in the distance, does your app give you the information to put your mind at ease? Does it update you every few minutes with what's changing in the forecast? Does it tell you what kind of actions you should take for the storms heading your way? Some of them can do some of these things, but in truth, when the weather really seems to be getting bad, people still want to get their information from someone they trust. When the situation becomes dangerous or worse, life and death, people want to know the RIGHT information, and that is when they turn to the sources that they trust, and that's usually a human.

Naturally, the first place many people turn to when severe weather is ongoing is their trusted television meteorologist. These folks spend hours upon hours trying their best to stay on top of the ever-changing weather situation over a large area and give YOU the information YOU need in order for YOU to be safe. But even with all the people they reach on the TV, there are so many folks that are on the go, not around a television or radio, that also need information for where they are. So where can these people get updates on the weather situation from a trusted person, when the situation turns dire? A whole different kind of media: Social Media.



Social media apps

**Social Media continues...**

## Social Media...

Facebook and Twitter have only been around for the last 10 years, but already they are some of the primary sources for information, not only in the weather world, but news in general. Just about every news channel these days gauges responses to major news with tweets from the public, obtain breaking information from the field by sifting through Facebook posts and tweets, and provide live-updates on site using new mediums such as Meerkat and Periscope.

The National Weather Service jumped into the social media world in 2011 and 2012 with the creation of NWS Facebook and Twitter pages across the country, and at the time, we weren't even sure how we would use it. Over the course of the next 3-4 years, offices across the country have been experimenting with graphics, formatting, strategies, and post frequency, all hoping to find that magic combination of things that will not only provide the best possible weather information, but information that you can use to make informed decisions.

In just the last couple of years, if you have been following the NWS Austin/San Antonio Facebook or Twitter accounts, you will notice two things: we try to update you as much as we can during severe weather, and if you ask a question, we will probably answer it quickly. That's because what we have learned over the last few years of giving social media a try, is that it only works when you are being social. Everytime we answer a question, post a radar update, or send out warning information, we are reminding you that we are watching and on top of things. Now people have the ability to pick up their phones, use their Facebook or Twitter app, and talk to a meteorologist from the NWS immediately. How awesome is that?

It doesn't end there either. Not only can you get essential weather information directly from a real meteorologist in the office, you can even be a part of the warning process! Now that everyone has a smart phone, everyone also has a camera, which means they can take a quick picture of what they are seeing and send it to the NWS. Why would you want to do that? Because it could help save a life!



(Fig. 3) NWS Austin/San Antonio tweet

*“That’s because what we have learned over the last few years of giving social media a try, is that it only works when you are being social”*

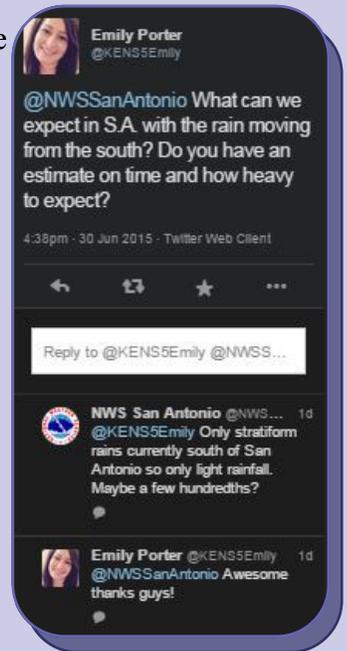
Social Media continues...

Facebook: <https://www.facebook.com/NWSSanAntonio>  
Twitter: <https://twitter.com/NWSSanAntonio>

## Social Media...

You could ask every meteorologist who has ever had to issue weather warnings, what they could use to make their jobs easier and I am willing to bet every single one would say, “more information”. As amazing a piece of technology the doppler radar is with its dual-polarization technology and rapid scanning strategies, it doesn’t catch everything, and not every warning decision is a slam-dunk. Meteorologists are constantly seeking what we call “ground truth,” or the reality of what is actually happening on the ground. With our network of doppler radars, we have an IDEA of whats happening, but don’t ever know for sure until someone reports what they see.

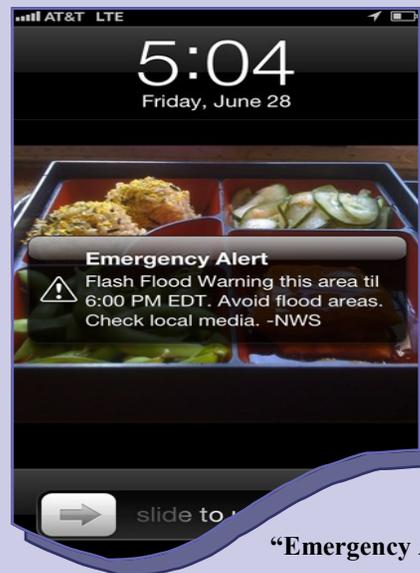
That's where YOU can come in. You can be our radar on the ground. All you have to do is snap a quick photo of whats happening in your area and post it on our Facebook page or tweet it to @NWSSanAntonio using the hashtag #ewxspotter. If you do that, our meteorologist in the office sees it immediately, without having to sift through the endless amounts of information on Twitter, and informs the radar operator of your report. If your report adds even the tiniest bit of confidence, it may be enough to pull the trigger on a warning that gives someone a few precious minutes to get to the center of their home. Who knew that something that sounds so funny like tweeting could be so powerful?



“NWS Austin/San Antonio responding to a public question”



“A tweeter report”



“Emergency Alert Message”

So, the next time you are out and about and see some hail, a funnel cloud, wind damage, or flash flooding, pull out the phone, snap a quick photo, and make sure to send it to us via Facebook or Twitter. You never know, you may have just saved a life by doing so.

Spanish Section is next...

## A la Vanguardia del Tiempo

Por Orlando Bermúdez

Las condiciones del tiempo a través del mundo son complicadas y en muchos casos difíciles de pronosticar. Ha esta complicación se le añade la geografía y topografía del lugar. Y como si esto fuera poco, el comunicado del tiempo puede ser interpretado diferente por residentes y visitantes. Pero, aun hay más, que usted piensa de los idiomas y dialectos. Me imagino que tienen una idea de lo difícil que puede ser la tarea de un meteorólogo o presentador del tiempo a la hora de transmitir la urgencia de las condiciones del tiempo.

Telemundo y Univision son dos de las cadenas televisivas en el Sur-Central de Texas. Estas mantienen la comunidad hispana informada como por ejemplo, noticias de última hora, entretenimiento, y por supuesto, el segmento de las condiciones del tiempo. En un esfuerzo para llevar la mejor y más precisa información a la ciudadanía hispana del Sur-Central de Texas, estas empresas han unido fuerzas con el Servicio Nacional de Meteorología. Esta colaboración continua creciendo y es mejor percibida en eventos de inundaciones significativas y tiempo severo.

Si notaron durante la celebración del fin de semana de La Conmemoración, el área local sufrió del embate de fuertes lluvias y tormentas severas. Las fuertes lluvias produjeron inundaciones repentinas y de ríos, como fue el caso de las desastrosas inundaciones a lo largo del Rio San Marcos, especialmente en el área de Wimberley. Ambas cadenas, Telemundo y Univision, estuvieron en vivo desde las instalaciones del Servicio Nacional de Meteorología en la ciudad de New Braunfels llevándole la más reciente información a medida que llegan los reportes.

Como las condiciones del tiempo no tienen límites ni fronteras, se llevarán a cabo adiestramientos del tiempo con presentadores del tiempo y meteorólogos del Servicio Nacional de Meteorología a través de las áreas metropolitanas de San Antonio y Austin para iniciar un nuevo proyecto. A medida que el proyecto valla creciendo, se añadirán más ciudades.

Estos adiestramientos comenzaran al final de este mes de Julio en el área de San Antonio. Por favor sintonice su cadena hispana de su preferencia para más detalles.

¿Que usted estará aprendiendo allí?

Durante estas charlas del tiempo, se hablara sobre los términos meteorológicos que se utilizan al aire y sus definiciones, como identificar tiempo severo y como reportar al Servicio Nacional de Meteorología y mucho más. Una vez, usted complete el adiestramiento, recibirá una certificación. Esta certificación le provee a usted un número de teléfono privado para reportar tiempo severo (vientos dañinos, granizos e inundaciones repentinas). Y sobre todo, estará ayudando a la verificación de las alertas/ avisos emitidos por el Servicio Nacional de Meteorología y al bienestar de la ciudadanía.

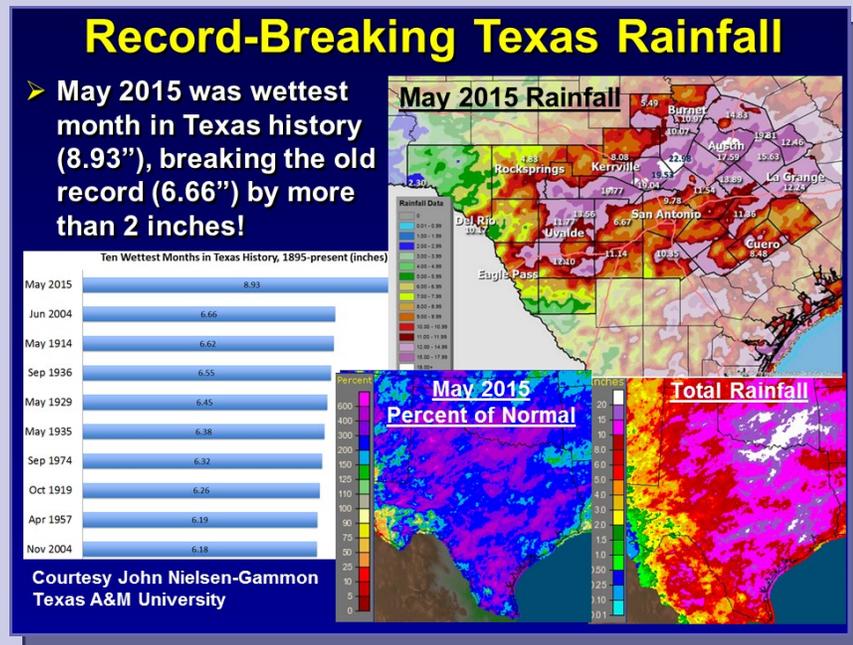
*“Adiestramientos comenzaran al final de este mes de Julio en el área de San Antonio”*

## South Central Texas Mid-Year Rainfall Review and Outlook

By Larry Hopper

The first half of 2015 has been much wetter than normal, with most rain occurring during April and May with several flash flood events, including catastrophic flooding over Memorial Day weekend. Austin-Camp Mabry received 39.14 inches of precipitation during the first six months of 2015, more than doubling their January-June average and shattering the 117-year Austin area record of 33.29 inches in 1900. In addition, San Antonio experienced their third wettest year since 1886 and Del Rio their sixth wettest year since 1906. May 2015 was wettest month in Texas history (8.93" average) according to John Nielsen-Gammon of Texas A&M University, breaking the old record (6.66") by more than two inches!. Most of the state doubled their average rainfall during May, with many spots receiving 3-4 times their monthly rainfall and some spots totaling over 20 inches. This record-breaking May rainfall combined with that from the rest of spring has eliminated drought conditions across most of Texas for the first time since late April 2010, with less than 5% of the state reporting drier than normal conditions over the past six months including part of northwest Llano County.

*“May 2015 was wettest month in Texas history (8.93" average) according to John Nielsen-Gammon of Texas A&M University, breaking the old record (6.66") by more than two inches!”*



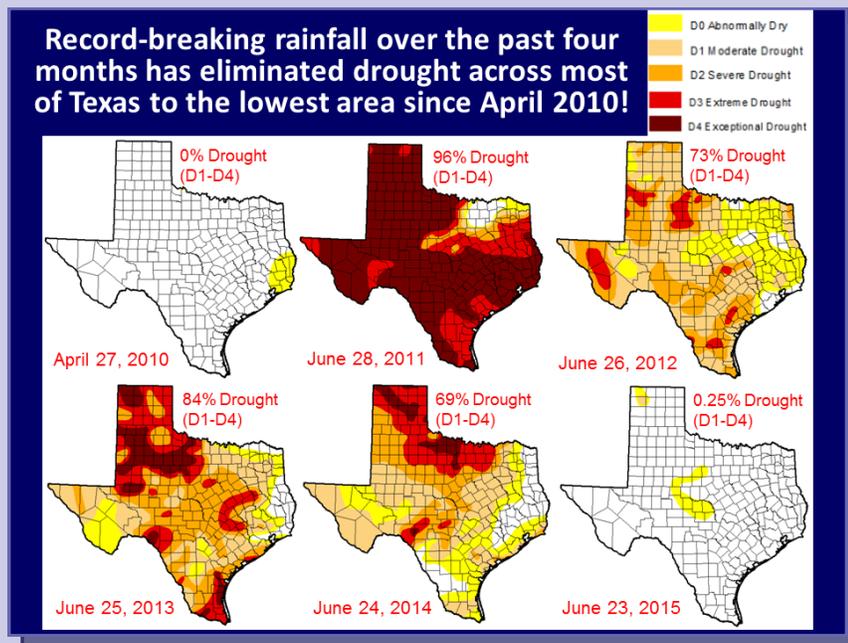
(Fig. 4) May 2015 is on the record book with the wettest month in Texas history

## Rainfall Review and Outlook Continues...

South Central Texas may get a relative break in rainfall during July and August, with the Climate Prediction Center predicting rainfall with a slight tilt towards below normal rainfall along and east of Interstate 35. However, wetter than normal conditions are predicted from September 2015 through April 2016, with a 55-60% chance of greater than normal precipitation this fall and next spring, and a 70-75% chance of greater than normal precipitation this winter. High confidence exists in these forecasts due to the likely persistence of moderate to strong El Niño conditions that may resemble those seen during the last strong episode in 1997-1998.

*“Therefore, NOAA is predicting a 70% chance for a below-normal season in the Atlantic Basin and a 70% chance for an above-normal season in the East Pacific”*

Finally, although summer rainfall in South Central Texas is not strongly affected by El Niño, hurricanes are typically less common in the Atlantic and Gulf Basins due to an increase in stability and vertical wind shear. However, hurricanes are typically more common in the East Pacific due to weaker vertical wind shear and warmer than normal sea surface temperatures. Therefore, NOAA is predicting a 70% chance for a below-normal season in the Atlantic Basin and a 70% chance for an above-normal season in the East Pacific. Moisture from East Pacific storms often causes flooding in Texas during fall when they interact with slow-moving fronts, including Odile last year, Raymond in 2013, Madeline in 1998, and Rosa in 1994. Therefore, South Central Texas will need to keep a careful eye on the East Pacific in addition to the Gulf.



(Fig. 5) Wetter conditions than normal to persist through 2016

2015 Memorial Day Weekend is next...

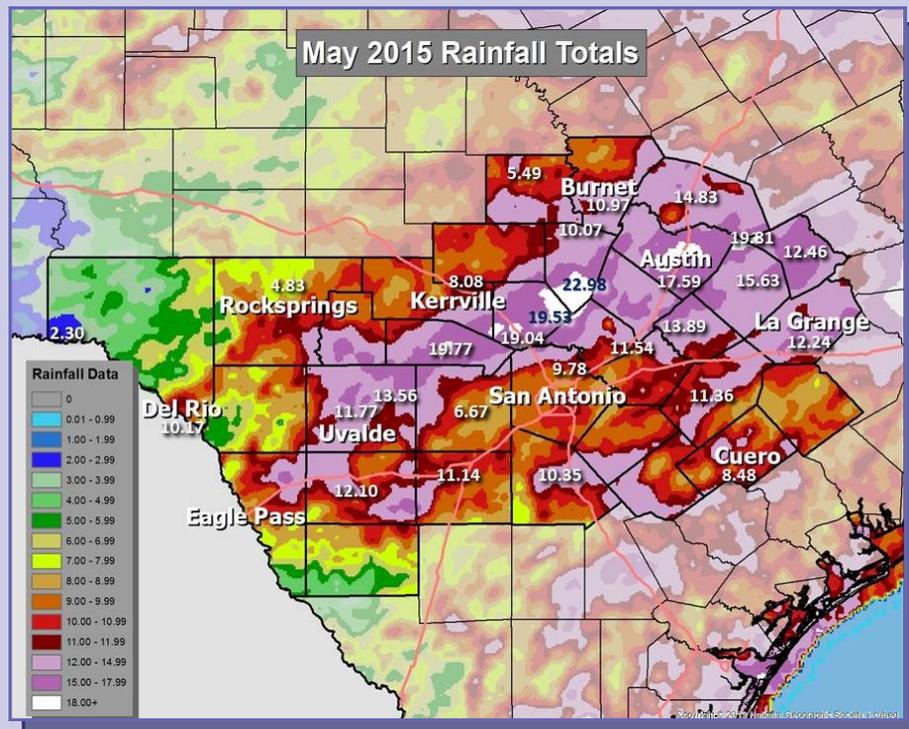
## Memorial Day Weekend Flood/Severe Storms

By Jared Allen and Jason Runyen

Flash flooding and historic river flooding occurred on Saturday, May 23rd and into Sunday, May 24th across portions of South-Central Texas. The Blanco and San Marcos Rivers were the hardest hit, especially in the communities of Wimberley and San Marcos. Severe impacts to life and property resulted from the flooding along these rivers. Additional flash flooding occurred on Memorial Day, May 25th, affecting large areas of Williamson, Travis, Bastrop, and Caldwell counties.

A persistent, wet weather pattern from the beginning of May set the stage for a more concentrated and impactful flash and river flooding event. May 2015 was officially the wettest May in Texas history. For the first two to three weeks of the month, most locations across South-Central Texas received well-above normal rainfall that saturated the soils. By the time Memorial weekend arrived, much of the region was at least 2-4 inches of rain above normal. These wet antecedent conditions meant that any new rain, and especially heavy rain, would become run-off directly into rivers, streams, and flash flood prone areas.

*“By the time Memorial weekend arrived, much of the region was at least 2-4 inches of rain above normal”*



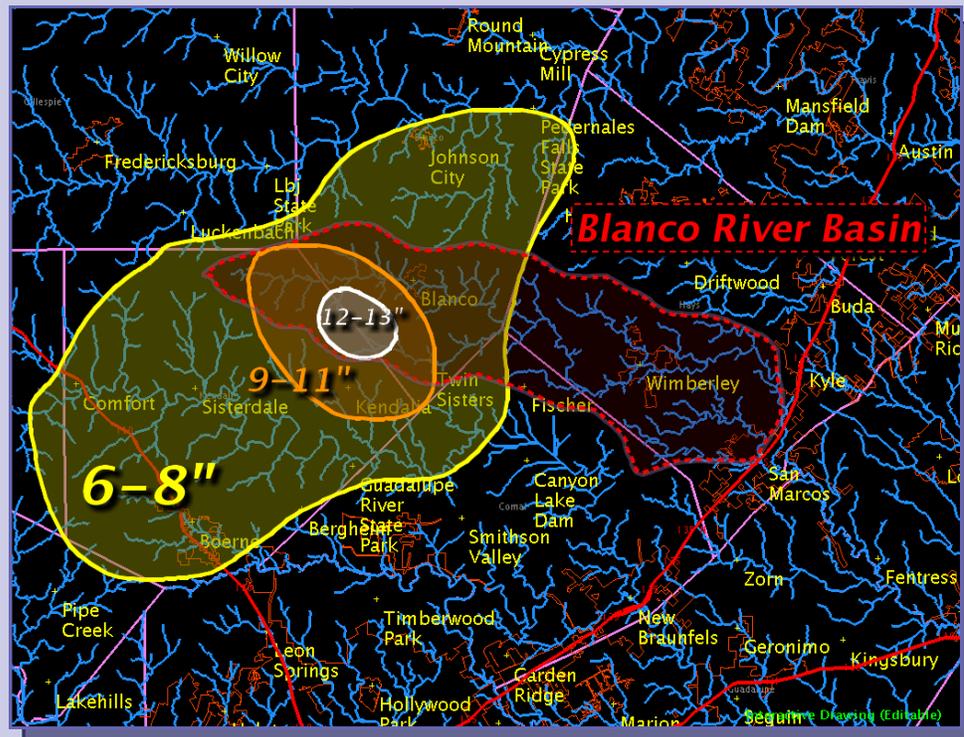
(Fig. 6) May 2015 Rain Totals, including the Memorial Day floods

2015 Memorial Day Weekend continues...

## More on Memorial Day Weekend...

Ingredients came together during the Memorial Day Weekend for the development of several rounds of very heavy rain and severe thunderstorms. Widespread 6-8 inches fell across Bandera, Kerr, Kendall, Blanco and far west portions of Comal and Hays counties, with a max of 10 to 13 inches of rain across southern Blanco and extreme northeast Kendall counties. Most of this rain fell from Saturday afternoon into the overnight hours of early Sunday morning, leading to a rapid rise in the Blanco and San Marcos Rivers.

*“Widespread 6-8 inches fell across Bandera, Kerr, Kendall, Blanco and far west portions of Comal and Hays counties, with a max of 10 to 13 inches of rain across southern Blanco and extreme northeast Kendall counties.”*

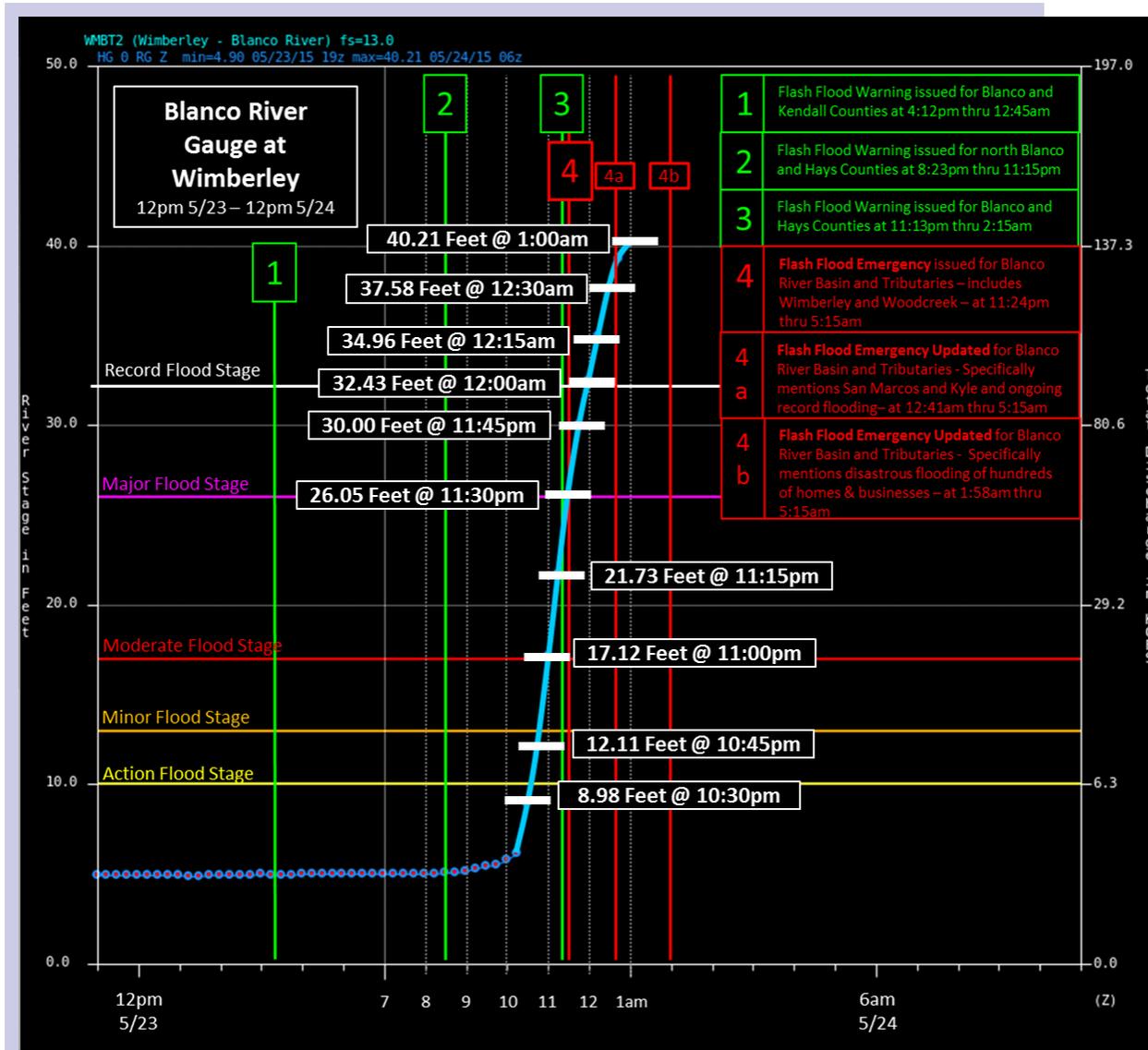


(Fig. 7) Rainfall estimated from May 23-24, with 12-13 inches occurring in the headwaters of the Blanco River Basin

The Blanco River at Wimberley rose from near 5 feet at 9pm to near 41 feet by 1am. The official crest was 44.9 feet, which equated to 175,000 cubic feet of water per second. One staggering statistic is that the river rose 5 feet every 15 minutes from 10:45pm to 11:45pm. This equates to a 20 foot rise along the river within a one hour time frame.

2015 Memorial Day Weekend continues...

## Memorial Day Weekend Major Flood...



*“At one point during the early morning hours of May 24<sup>th</sup> the Blanco River topped Interstate 35 in San Marcos, forcing a closure”*

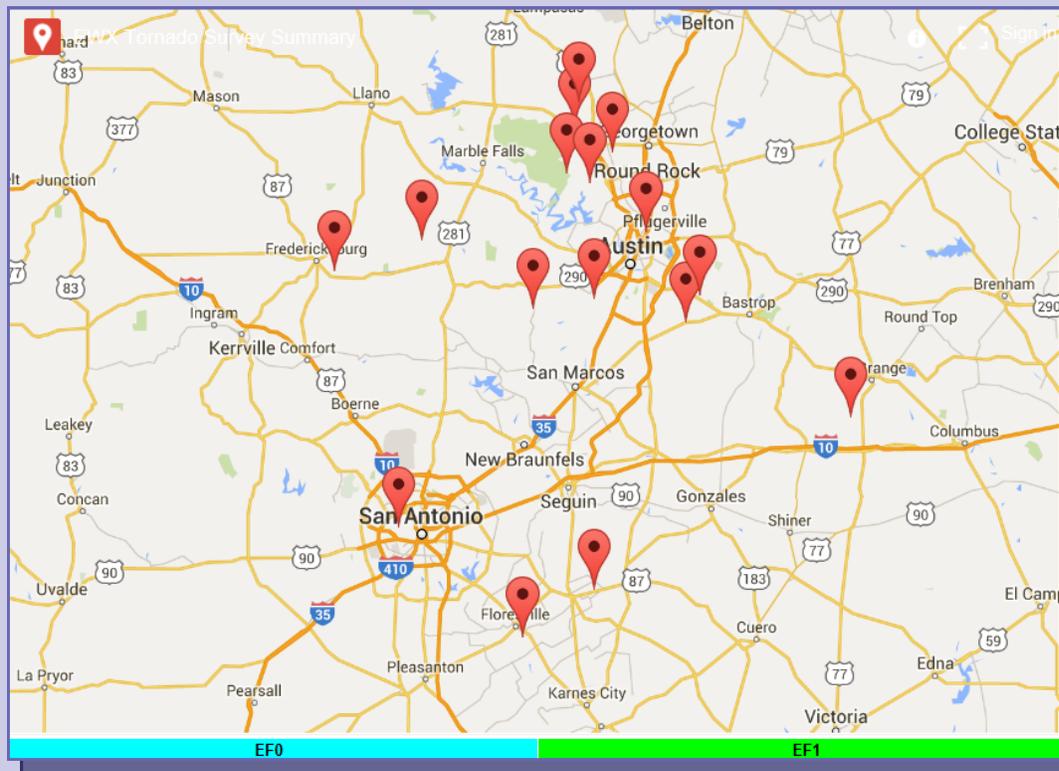
(Fig. 8) Hydrograph of the Blanco River Gauge at Wimberley

Numerous high water rescues occurred throughout the late evening and morning hours along the banks of the Blanco and eventually the San Marcos Rivers. At one point during the early morning hours of May 24<sup>th</sup> the Blanco River topped Interstate 35 in San Marcos, forcing a closure. 11 fatalities have been confirmed from the Blanco River flood. 321 homes along or near the Blanco River were reported destroyed in Hays County, with close to another 700 receiving damage.

2015 Memorial Day Weekend continues...

## 2015 Memorial Day Weekend, An Event to Remember for...

In addition to catastrophic flash flooding, several tornadoes touched down on May 23<sup>rd</sup> and again on May 25<sup>th</sup>. All together 16 tornadoes were confirmed, all EF0 or EF1 on the Enhanced Fujita Scale.



(Fig. 9) Locations of the 16 Tornadoes that Occurred on May 23<sup>rd</sup> and 25<sup>th</sup>

*“The thoughts and prayers of the staff at NWS Austin/San Antonio continue to be with those that have been impacted by these floods and tornadoes”*

The thoughts and prayers of the staff at NWS Austin/San Antonio continue to be with those that have been impacted by these floods and tornadoes.

More details on the Memorial Day weekend floods and tornadoes can be found at: <http://www.srh.noaa.gov/ewx/?n=wxevents>

For disaster relief information in Hays County visit: [www.sanmarcostx.gov/smtxfloods](http://www.sanmarcostx.gov/smtxfloods) and <http://www.cityofwimberley.com/>

NWS Austin/San Antonio Information is next...

*National Weather Service  
Austin/San Antonio  
Weather Forecast Office (WFO)  
2090 Airport Road  
New Braunfels, Texas  
Phone: 830-606-3617*

### National Weather Service Mission Statement

“The National Weather Service (NWS) provides weather, hydrologic, and climate forecasts and warnings for the United States, its territories, adjacent waters and ocean areas, for the protection of life and property and the enhancement of the national economy. NWS data and products form a national information database and infrastructure which can be used by other governmental agencies, the private sector, the public, and the global community.”



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**Austin/San Antonio National Weather Service Home Page**

<http://www.srh.noaa.gov/ewx/>

*Thank you for reading our newsletter!*

- *Are we expecting to see a wet pattern through winter?*

*Answers to this question and more will be included in the fall edition of the Texas Weather Wire*

*Have a great summer !*