Hurricane Harvey
and
What is to come

Eric Berger, Space City Weather
Today’s talk

• A word about Space City Weather
• Social media-rology
• A look back at Hurricane Harvey
• Why does Houston get “these” storms
• Rainfall rates
• A few words about threats from hurricanes
Space City Weather

- Worked 17 years at the Chronicle
- Left to cover space for Ars Technica in 2015
- Founded Space City Weather that night
- Kind of a hobby until Hurricane Harvey
- Philosophy of “no hype”
- Also, kind of pushing back against...
Key social media points

• Nature of communication is changing rapidly; print to TV (my parents) to internet (me) to social media to fake media (last five years) to God knows what
• Internet is great for timely information, it’s also great for misinformation
• Best practice: Be clear, concise, explain what you know, what you don’t
Social media-rology

Weather Alert Central.com shared a link.
5 hours ago · Edited

WARNING: Hurricane Threatens Gulf States Next Week
SHARE IMMEDIATELY IF YOU SEE THIS --

Weather Alert Central.com – Guidance is suggesting a Major Hurricane into the Gulf of Mexico by next week, which is during the time-frame Hurricane ...
See More

HURRICANE THREATENS GULF STATES NEXT WEEK
STRONG CONCERNS WITH THIS SYSTEM

Hurricane Threatens Gulf States Next Week
www.weatheralertcentral.com
Post Harvey example: fakery
Reading comprehension
It's actually best to use a variety of sources. Remember, a couple of days before Harvey hit Space City was predicting 2 to 4 inches of rain for Houston. It's always a crapshoot, the more sources the better.

That's not true. They were calling for 10"-20". While that's well below what a lot of places got, it's nowhere near 2"-4".
That's weird, cus the next day they posted this one (on top):

https://spacecityweather.com/tag/tropical-storm-harvey/

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Barring a major change in forecast, locations further up the Texas coast, including Houston, will see seas rise 3 to 5 feet above normal levels, gusty winds, and perhaps 2 to 4 inches of rain through Saturday.
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[-] FuckBancard 10 points 23 hours ago

You are conveniently ignoring the fact that he posted about 10 times on the 24th and 25th warning of heavy rain

[-] Kijafa Seabrook 21 points 1 day ago

Emphasis theirs:

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Barring a major change in forecast, locations further up the Texas coast, including Houston, will see seas rise 3 to 5 feet above normal levels, gusty winds, and perhaps 2 to 4 inches of rain **through Saturday.**
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Read the rest of the article. Below is the word for word takeaway list at the end.

- It’s probable that a hurricane will make landfall along the southern Texas coast late Friday or early Saturday. This will not have immediate drastic effects for Houston, and while intermittent heavy storms and gusty winds are possible through Saturday, conditions for travel seem OK at this time.
- By Sunday, running through about Wednesday, the greater Houston region will be at risk for very heavy rainfall and potentially widespread flooding, and coastal regions may be most at risk. If you are traveling later on Sunday or early next week, your flights may be delayed or canceled.
- The forecast for next week remains highly speculative for Texas, but ranges from bad to very, very bad in terms of flooding potential.
- The time to prepare is now. Here are some tips for dealing with inland flooding.
Key takeaways

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Now put the two together: A weird hybrid of social mediarology and misinformation.
What we tell readers

“Such social mediaroology plays on the fears of people, and therefore tends to get shared widely. If you’ll promise to not fall for these kinds of fear-mongering posts, we’ll make a pledge to you: *If we believe there is a credible threat to Houston, we will report that immediately*. And if we haven’t written about it, the post you’ve seen on Facebook is probably garbage.”
Hurricane Harvey review
Harvey at “peak” intensity in the Caribbean Sea on Saturday, August 19.

It dissipated that night.
Monday, August 21

“This weekend’s weather will largely be determined by the aforementioned moisture from Harvey. If enough of it moves into the Texas coast, we could see a couple of inches of rainfall or quite a bit more, and if not, it could be drier and hotter (mid-90s). Not a particularly helpful forecast, is it?”
Tuesday, August 22

“The model is illustrative of the fact that this is a tropical system that could very well move inland into Texas somewhere along the coast, more or less stall, and drop 10 to 15 inches of rain (or more) on someone’s head over a two or three day period. Widespread areas may see 4 to 8 inches. I’m not saying this is a repeat of Tropical Storm Allison, as that would be irresponsible. But these kinds of slow moving systems are the ones that often produce widespread flooding.”
Hurricane Harvey track models early Wednesday morning
Wednesday, August 23

“There is the potential for a major rainfall event from late Friday through Tuesday in Texas. For Houston, the heaviest rains would not probably begin before Saturday.”
Thursday, August 24

“We’ve been reluctant to post rainfall forecasts from individual models, because some of the have been really extreme (and it’s best not to trust individual model runs). But now NOAA’s Weather Prediction Center has started to put out accumulated precipitation forecasts to reflect the threat between now and next Wednesday.”
By Friday, we were really (really) concerned...

After looking at the latest forecast models, we feel pretty bad

Posted by Eric Berger at 3:15 PM on August 25, 2017

Key takeaways

- A very serious flooding situation is coming.
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- For some reason, the Governor of Texas said Friday afternoon that Houstonians should evacuate from the rain. Normally that decision is handled by local officials, who have advised residents to ride out the storm. That would be my advice as well for almost everyone in Houston—ride it out.

Matt will be posting the next update at around 7pm CT today. Hopefully he will be able to come up with some brighter outlooks where I have failed.

Posted at 3:15pm CT on Friday by Eric
Friday evening rain forecast
Saturday, August 26, 9pm

“Flooding begins as worst of TS Harvey’s moisture moves into Houston”
Saturday, August 26, 9pm

“Flooding begins as worst of TS Harvey’s moisture moves into Houston”
“Why we’re worried about the rest of tonight in Houston”
Sunday, August 27, 12:40am

“A bad situation in Houston has turned worse.

Much worse.”
Sunday, August 27, 2:10am

So we’re now under a “Flash Flood Emergency for Catastrophic Life Threatening Flooding”
Speaking of that, for the first time ever, the National Weather Service just issued what it is calling a “Flash Flood Emergency for Catastrophic Life Threatening Flooding.” And not to sound too flippant, but that sounds really bad. You should probably heed their advice—WHICH IS SIMPLY DO NOT TRAVEL. DO NOT IMPEDE WATER RESCUES IN PROGRESS.

Is that clear enough?
How does Harvey compare to Allison? It doesn’t.
Some Harvey thoughts

• That was probably about as bad as it will get
• Rains caused by slow moving hurricane, some evidence for slowing down
• If you didn’t flood during Harvey, you probably won’t flood, BUT
• Biggest determinant of flooding is rainfall rates, not 5-day totals (more in a bit)
• People have PTSD after Harvey, and we get that
• Flood scale to help manage expectations and anxiety
Why does Houston get these storms?

ARE WE JUST...

"LUCKY?"
Tropical Cyclone Tracks

Data from 1949 in the Pacific, from 1851 in the Atlantic
We are close to a high moisture source
So we get a lot of rainfall
A closer look at the Gulf coast

Houston averages 50 inches of rainfall per year.

2017 set all-time record with 79.66 inches. Thanks Harvey!
A closer look at the Gulf coast

100-year, 12-hour Rainfall event
Houston: 10-11 inches
Chicago: 4-5 inches
100-year, 1-hour Rainfall event

Houston: 4.5-5 inches

Chicago: 2.5-3 inches
Why rainfall rates matter

• A rainfall rate of 0.5″ per hour is considered heavy.
• Anything above 2.0″ per hour is intense. You might stop driving.
• Ditches and storm drains in Houston and Harris County can generally handle a rate of 1″ to 2″ per hour, for a few hours.
• Short duration rain above this intensity, or long-term at this intensity will flood bayous and creeks.
Three threats from hurricanes

Inland rainfall

• Claudette, 1979
• Allison, 2001
• Harvey, 2017
Three threats from hurricanes

Storm surge
  • Hurricane Ike, 2008
Three threats from hurricanes

Damaging winds

• Carla, 1961
Hurricane Ike, you say? 60-90mph
Some final thoughts

• No hurricane is the same.
• Don’t fight the last war
• You can personally prepare for winds, however
• Storm surge, inland flooding require regional solutions
• Don’t panic, major impacts only every 15-20 years historically
• Count on us to keep you in the loop
• SpaceCityWeather.com, @spacecitywx