

# September 2019: Imelda's Flooding Rains Washington Post claims they were CO2-enhanced



**Bob Endlich**

**[bendlich@msn.com](mailto:bendlich@msn.com)**

**24 Sep 2019**

**Weather Climate and Climate Change—What the Data  
Tell Us**



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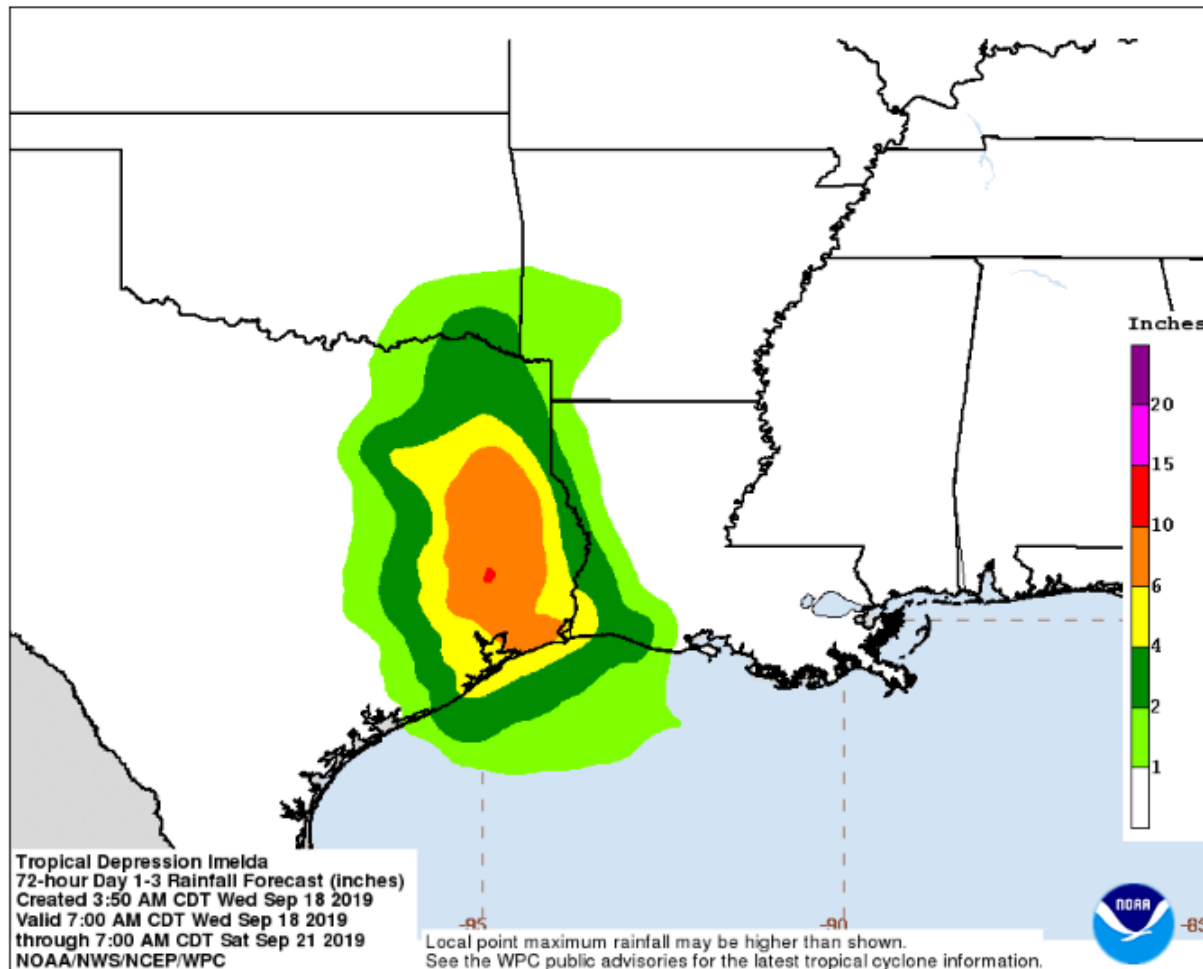
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## WPC QPF for Tropical Depression Imelda

QPF Period: 72-Hour Day 1-3 Forecast

Updated: 3:51 AM CDT Wednesday September 18, 2019

Valid: 7:00 AM CDT Wednesday September 18, 2019 - 7:00 AM CDT Saturday September 21, 2019



<https://www.washingtonpost.com/weather/2019/09/20/flooded-again-climate-change-is-making-flooding-more-frequent-southeast-texasthanks-part-climate-change/>

By **Andrew Freedman** and **Jason Samenow**

September 20

Tropical Storm Imelda enters the history books as one of the top five wettest tropical cyclones to ever strike the lower 48 states, with a maximum rainfall total of 43.39 inches. On Friday morning, floodwaters continued to block roads, damage homes and cause gridlock in the Houston metro area and especially in the vicinity of Beaumont and Port Arthur, where new flood warnings were issued for additional rainfall of up to four inches.

That this storm comes just two years after Hurricane Harvey dumped an almost [unimaginable 60.58 inches of rain](#) on the same general area is no accident. In addition, other major rain events in Southeast Texas in the past five years have caused extensive disruptions and damage.

<https://www.washingtonpost.com/weather/2019/09/20/flooded-again-climate-change-is-making-flooding-more-frequent-southeast-texas-thanks-part-climate-change/>

George Bush Intercontinental Airport, just north of downtown Houston, recorded 2.08 inches of rain in just 27 minutes late Thursday morning and 9.21 inches through the evening, making for its wettest September day on record and its fifth-wettest day in any month.

These are from the Washington Post article.  
I chose the maximum of the range given

Including Imelda, five exceptional rain events have occurred in the region in the last five years:

- In May 2015, the Houston area received 5 to 11 inches of rain in under 10 hours.
- In April 2016, “a flood event of excessive proportions” unloaded 5 to 17 inches on Houston in less than 24 hours.
- In late May 2016, parts of Southeast Texas between Houston and Austin saw 18 inches of rain in 24 hours.
- In August 2017, Harvey hit.

Harvey had 60.58 inches in eight days.





NOAA's National Weather Service

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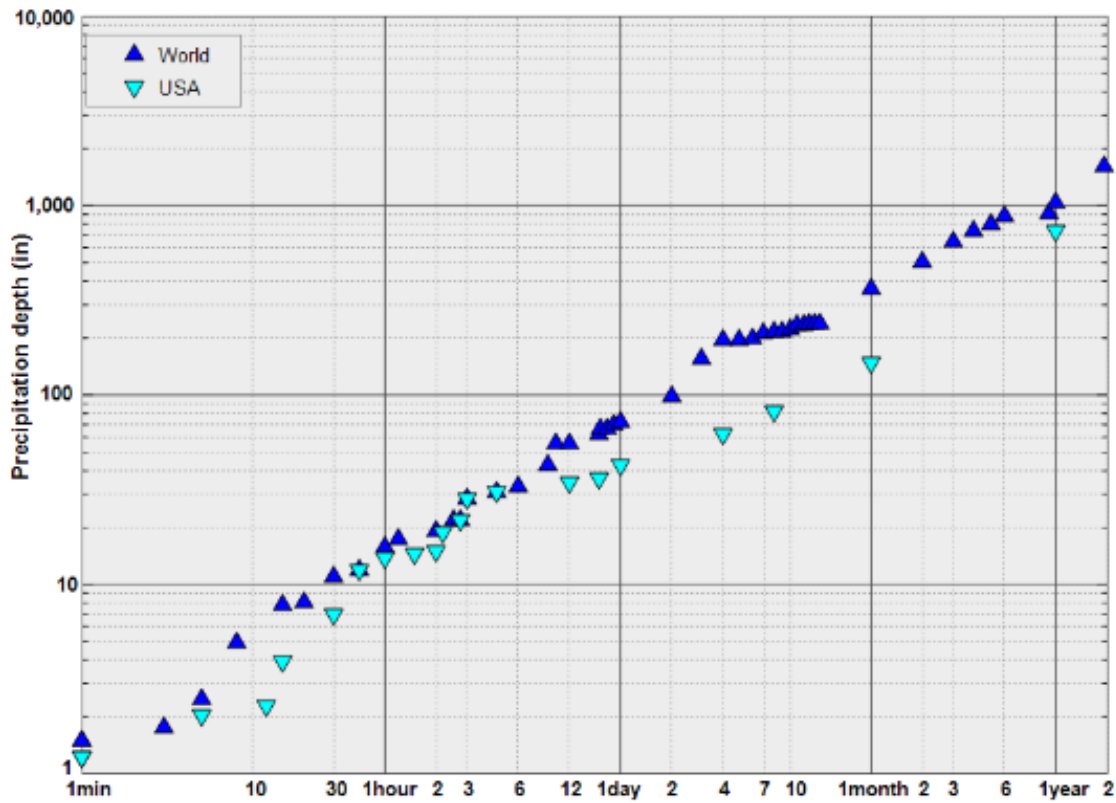
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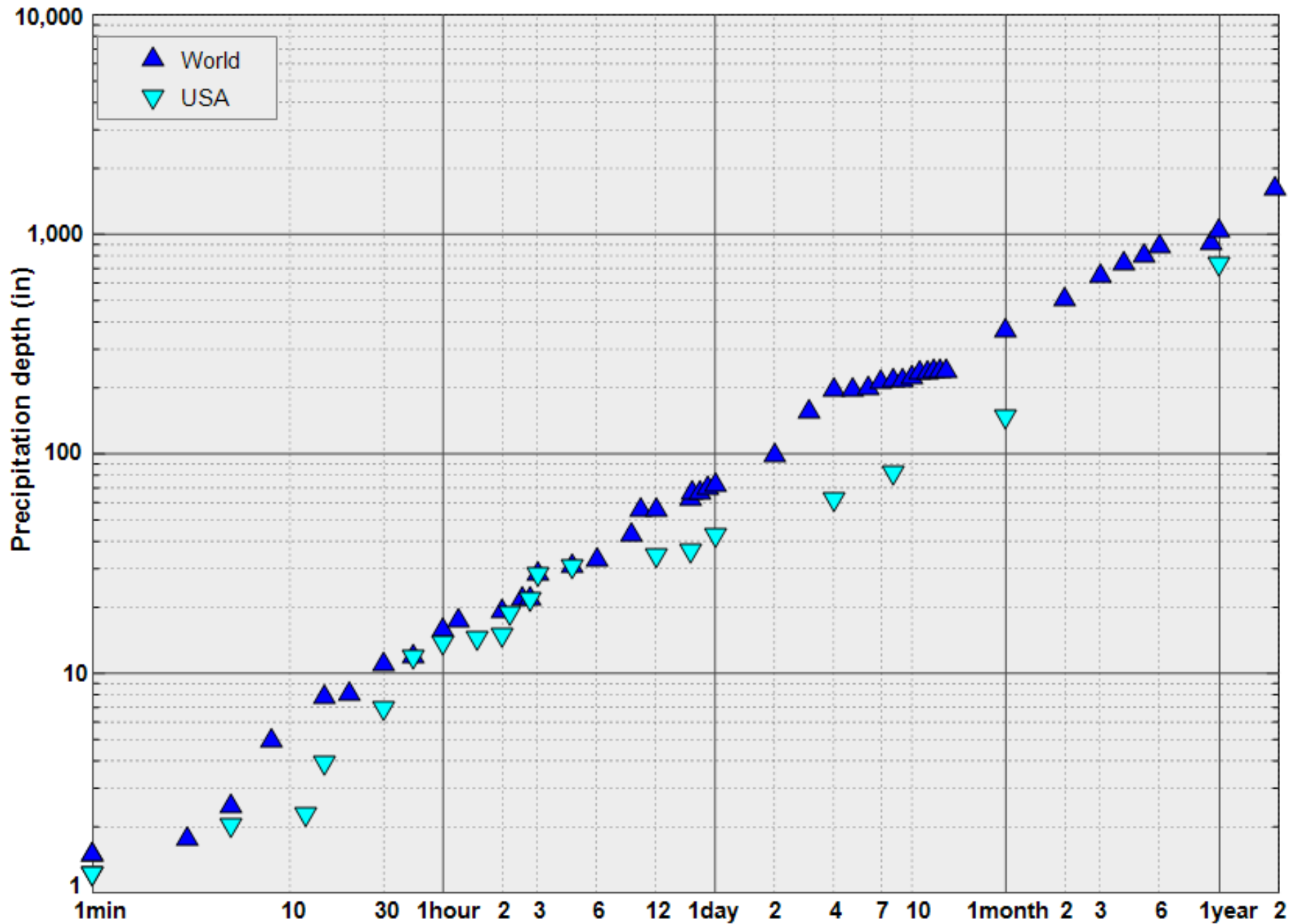
## Greatest observed point precipitation values for the world and the USA

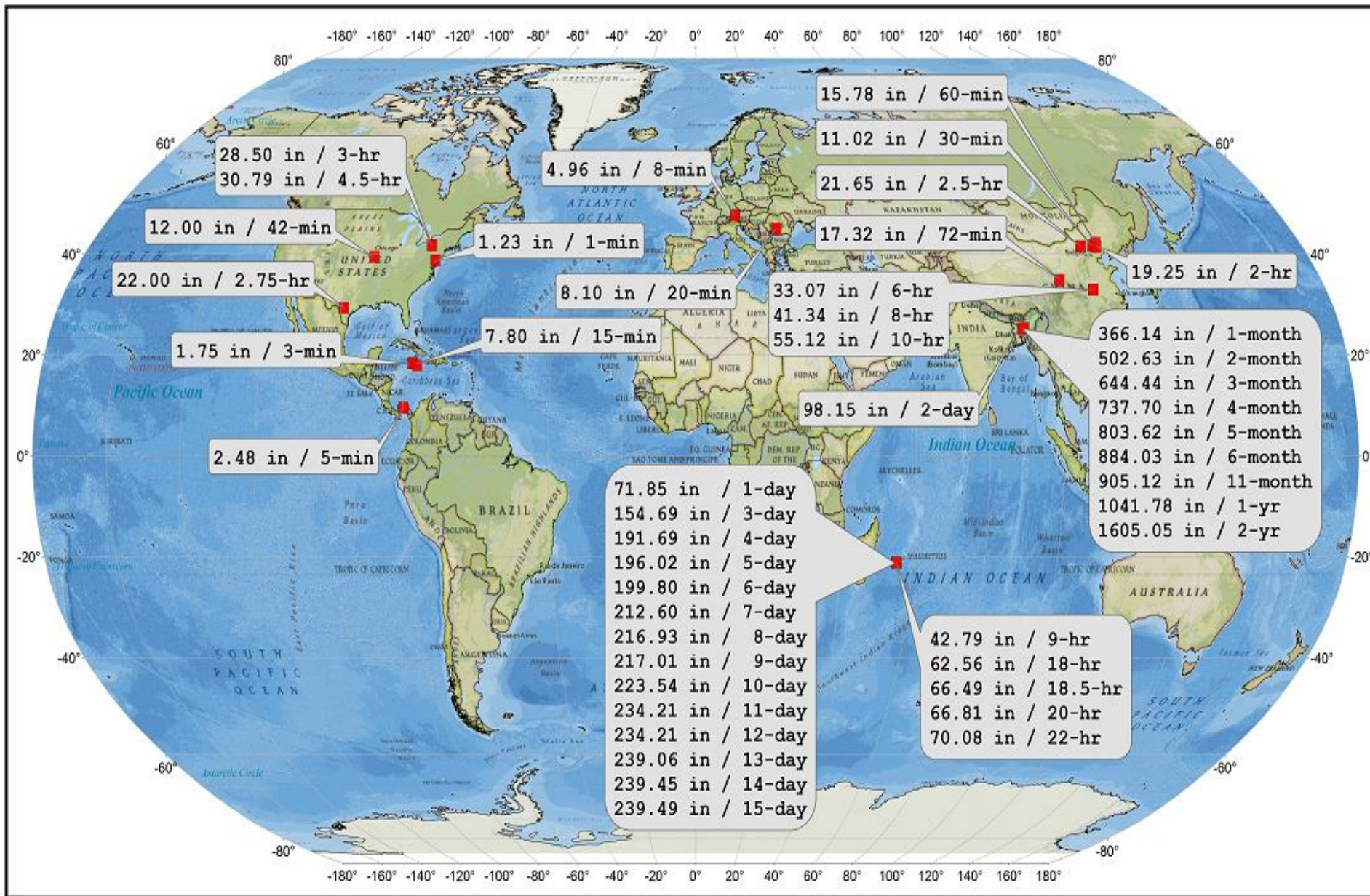


Comparison of the greatest point precipitation values for the world and the USA.

[World records \(map, table\)](#)

[USA records \(map, table\)](#)







## Do Rainfall Records confound the “heavy rainfall is increasing” claim by the Washington Post?

Right: the record book for extreme precipitation in the US.

[Extreme Weather: A Guide & Record Book – Christopher C. Burt – Google Books](#)

### U.S. Record Point Rainfalls

<i>Time</i>	<i>Rainfall</i>	<i>Location</i>	<i>Date</i>
1 minute	1.23"	Unionville, MD	7/4/1956
5 minutes	2.03"	Alamogordo Creek, NM	6/5/1960
12 minutes	2.30"	Embarrass, WI	5/28/1881
15 minutes	3.95"	Galveston, TX	6/4/1871
30 minutes	7.00"	Cambridge, OH	7/16/1914
40 minutes	9.25"	Guinea, VA	8/24/1906
42 minutes	12.00"	Holt, MO	6/22/1947*
1 hour	13.80"	Central WV	5/4-5/1943
1 hour 30 minutes	14.60"	Central WV	5/4-5/1943
2 hours	15.00"	Woodward Ranch, (D'Hanis) TX	5/31/1935
2 hours 30 minutes	19.00"	Rockport, WV	7/18/1889
2 hours 45 minutes	22.00"	Woodward Ranch, (D'Hanis) TX	5/31/1935*
3 hours	28.50*est.	Smethport, PA	7/18/42*
4 hours 30 minutes	30.70"	Smethport, PA	7/18/42*
12 hours	34.30"	Smethport, PA	7/17-18/1942
18 hours	36.40"	Thrall, TX	9/9/1921
24 hours	43.00"	Alvin, TX	7/25-26/1979
4 days	62.00"	Kukaiau, Hamakua, HI	2/27-3/2/1902
8 days	82.00"	Kukaiau, Hamakua, HI	2/27-3/6/1902
1 month	148.83"	Mt. Waialeale, Kauai, HI	3/1982
1 month (mainland)	71.54"	Helen Mine, CA	1/1909
1 year	704.83"	Kukui, Kauai, HI	1982
1 year	332.29"	MacLeeod Harbor, AK	1976
1 year (mainland)	204.12"	Laurel Mountain, OR	1996

\*constitutes a world record

The National Climate Assessment of late 2018 made the claim,

“Extreme Weather is Increasing” attempting to say that more atmospheric <CO2> is causing more extreme weather events.

Does the Washington Post claim about Imelda’s rainfall confirm that in this case Extreme Rainfall is increasing especially in Texas?

What do the data say?

**Do Rainfall Records confirm claims by the Washington Post?**

Sept 2019 totals

George Bush Airport:  
2.08" in 27 minutes

11" in 10 hours

17" less than 24 hours

18" in 24 hours

60.58" in 8 days Harvey

**U.S. Record Point Rainfalls**

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**We heard similar claims for Louisiana  
in 2016...**



# August 2016 Floods in Louisiana NOAA claims they were CO2-Enhanced



**Bob Endlich**

**[bendlich@msn.com](mailto:bendlich@msn.com)**

**Updated 24 September 2017**

**Weather Climate and Climate Change—What the Data Tell Us**

# **Outline**

**Background information on Louisiana**

**Floods and Flood History**

**News Stories: Aug 2016 “Historic” Louisiana floods**

**1927 Mississippi Flood in Louisiana**

**Floods of April-June 1953 in Louisiana and nearby states**

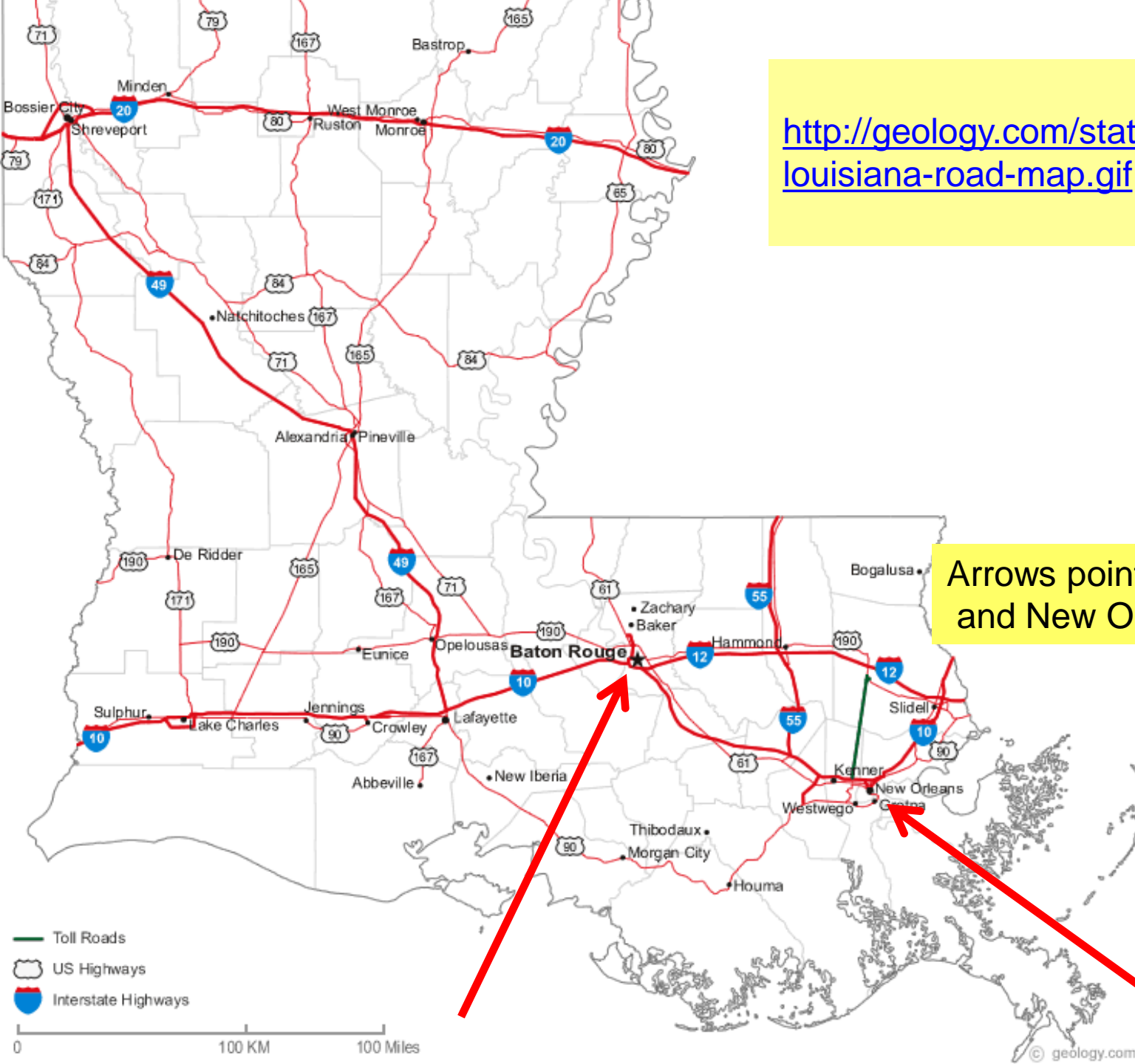
**Rapid attribution of the August 2016 flood-inducing extreme precipitation in south Louisiana to climate change**

**Rainfall Records: from Burt’s book, NOAA data, Oxford, England**

**Flood Records: 500 years of flood marks from Germany and Austria since Little Ice Age**

# Background Information on Louisiana

<http://geology.com/state-map/maps/louisiana-road-map.gif>



Arrows point to Baton Rouge and New Orleans



<http://www.lgs.lsu.edu/deploy/uploads/gengeotext.pdf>

# Generalized Geology of Louisiana

## **Louisiana Geological Survey staff**

Louisiana is underlain by geologically young sedimentary sequences deposited in /adjacent to rivers and deltas in a coastal-plain setting.

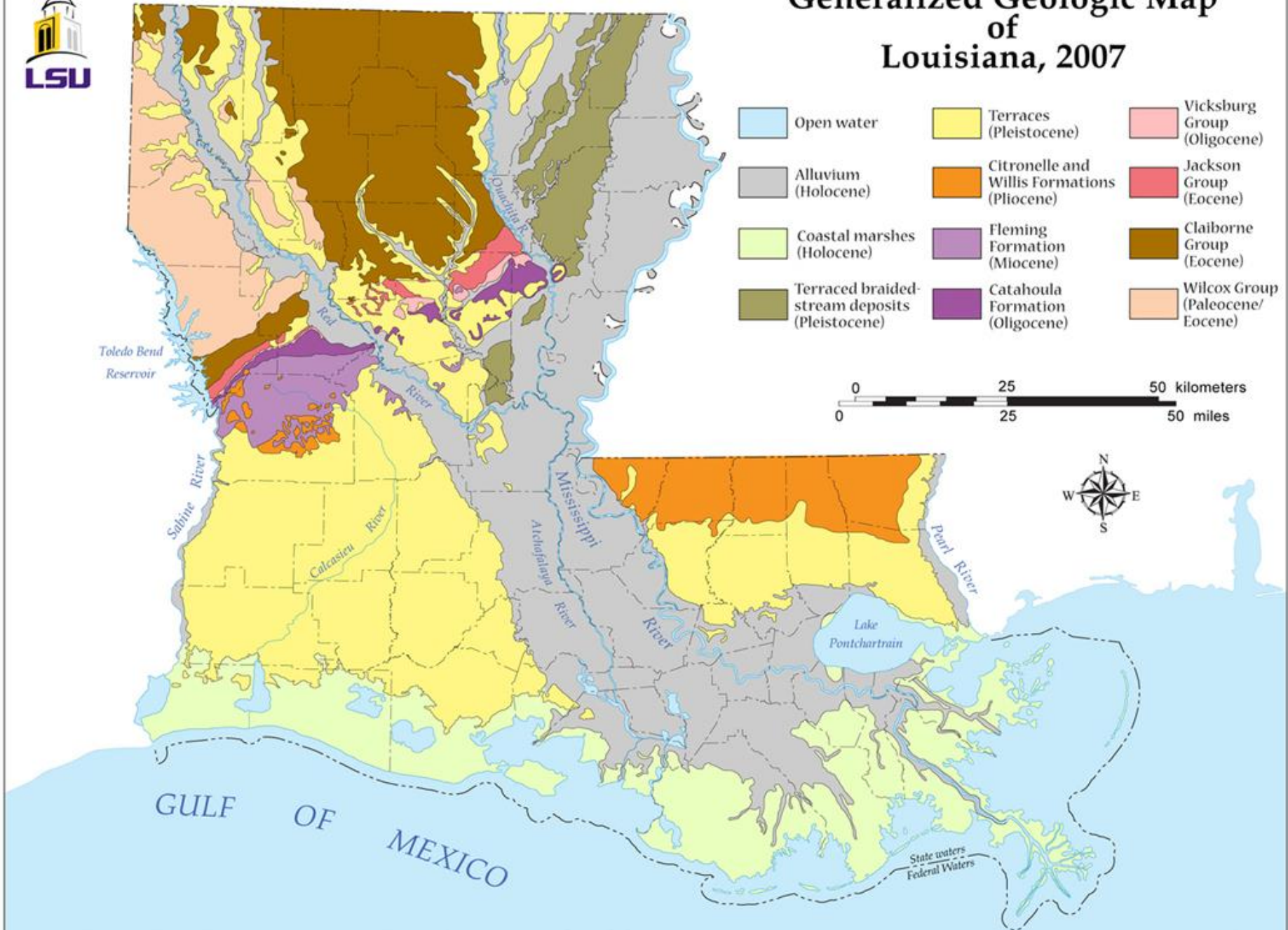
A major river system corresponding to the Mississippi has persisted at least since the Gulf of Mexico began to form by the separation of North America from South America. (Jurassic-- 200 million years ago)

Exposures in Louisiana consist of Quaternary (Pleistocene and Holocene) sediment.

**Holocene (Last 10K years) deposits-- alluvium of the Mississippi, Red, Ouachita, and other rivers/tributaries, and coastal marsh deposits, occupy about 55% of the surface.**



# Generalized Geologic Map of Louisiana, 2007





<http://geology.com/lakes-rivers-water/louisiana.shtml>

**Louisiana Lakes, Rivers and Water Resources**



# **2016 Baton Rouge floods:**

## **Introductory Concepts and Ideas:**

**Heavy Rainfall and existing rainfall records**

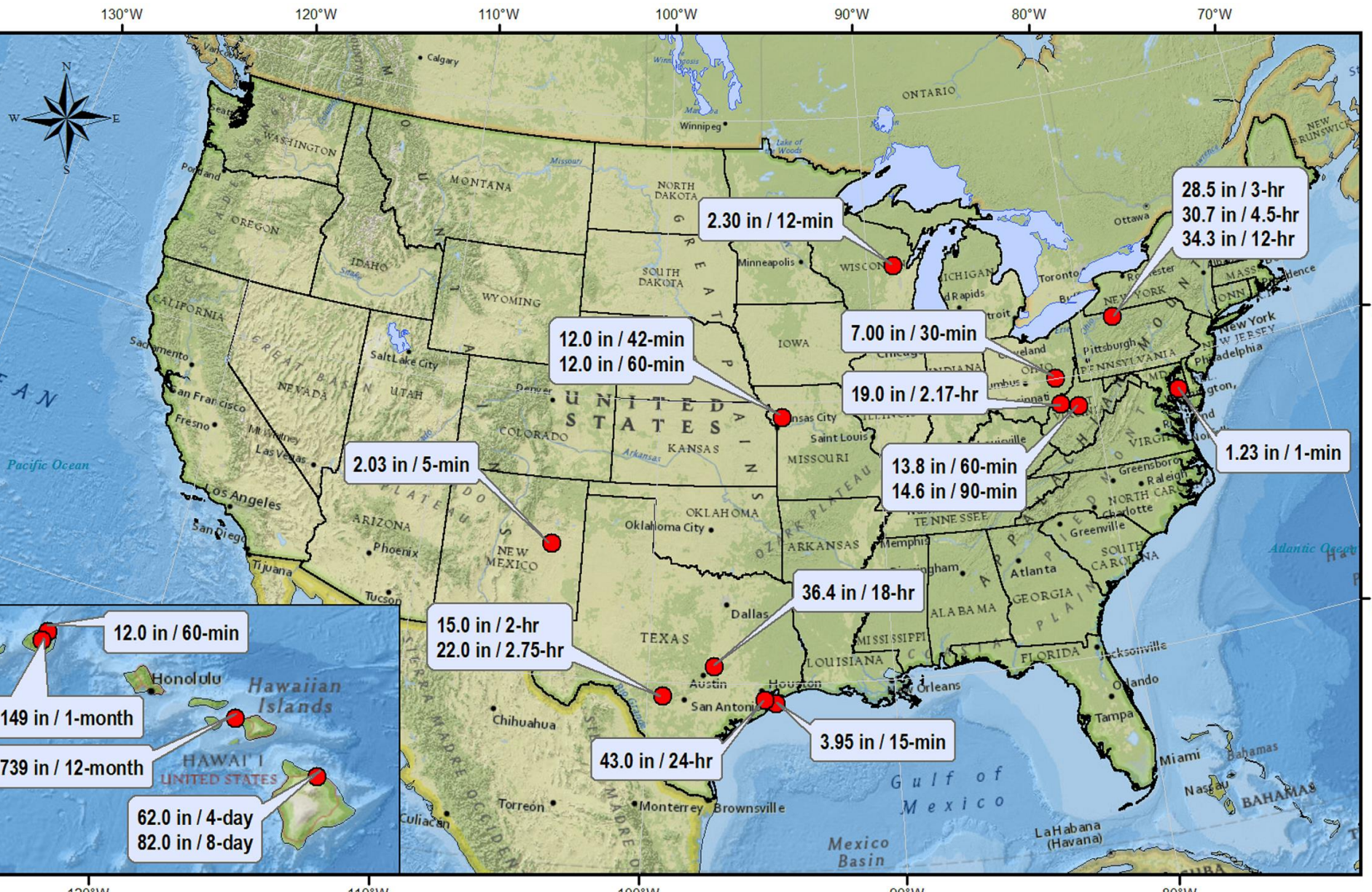
**Flood records are mostly based on newspapers and history**

**Flood Marks from Europe**

**Warm season rains are not the reason for record floods in Louisiana and the Mississippi Valley**

**By far, the most extreme floods occurred in the Little Ice Age, NOT 20<sup>th</sup>/21<sup>st</sup> Centuries**







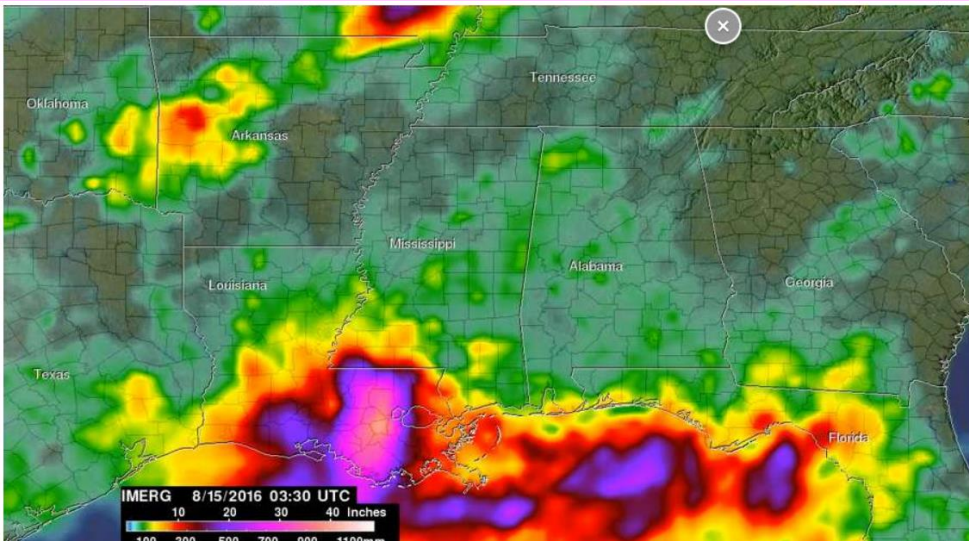


# LOUISIANA'S HISTORIC FLOODS

By Jim Sergent, Ramon Padilla, Janet Loerkhe, George Petras, Mitchell Thorson, USA TODAY  
August 23, 2016

## HISTORIC RAINFALL

“Over the course of Aug. 8-15 storms in south central Louisiana and southern Mississippi, many towns received more than 20 inches of rain.”

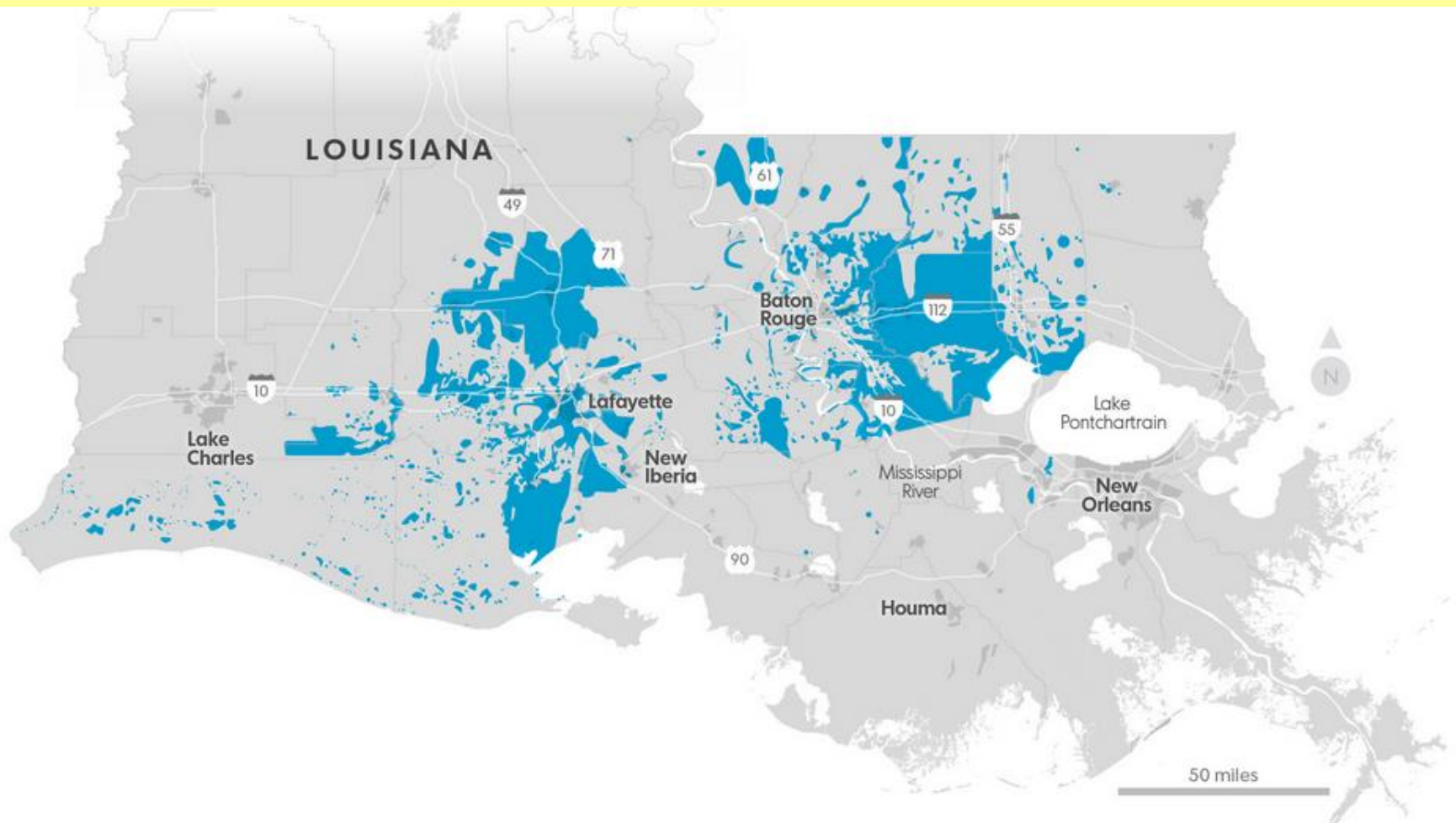


“In fact, more rain fell during the storm than in recent hurricanes.”

Not mentioned by USA Today:  
in 1979 Alvin, TX, got 43” rainfall in 24 hours

## Large areas of 2016's flooding

Widespread flooding has occurred across the state of Louisiana, as seen in this map compiled by geographers at Louisiana State University



**USA Today, flagship paper for Ganett, Las Cruces Sun-News, Alamogordo News reports that the August 2016, rainfall and flooding in Louisiana is “historic.”**

**...implies that it is somehow a rare event.**

**Let’s look at historic floods in this part of the country.**

**Do they occur in summer with hurricanes?**

**Or, do they occur with winter’s cold-core storms?**

**What do the data say?**





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# Mississippi River flood of 1927

AMERICAN HISTORY

**Mississippi River flood of 1927**, also called Great Flood of 1927, [flooding](#) of the lower [Mississippi River](#) valley in April 1927, one of the worst natural disasters in the history of the United States.

More than 23,000 square miles (60,000 square km) of land was submerged, hundreds of thousands of people were displaced, and around 250 people died.





Receiving water  
from a famp  
kitchen area in  
Baton Rouge,  
1927



# Great Mississippi Flood of 1927

From Wikipedia, the free encyclopedia

The **Great Mississippi Flood of 1927** was the most destructive [river flood](#) in the [history of the United States](#),<sup>[1]</sup> with 27,000 square miles inundated up to a depth of 30 ft.

To try to prevent future floods, the federal government built the world's longest system of levees and floodways.

Ninety-four percent of the more than 630,000 people affected by the flood lived in the states of [Arkansas](#), [Mississippi](#), and [Louisiana](#), most in the [Mississippi Delta](#).



Photographs are used with the permission of the Louisiana History Museum.



## Events

The flood began with extremely heavy rains in the central basin of the Mississippi in the summer of 1926.

By September, the Mississippi's tributaries in Kansas and Iowa were swollen to capacity. On Christmas Day of 1926, the [Cumberland River](#) at [Nashville, Tennessee](#) exceeded 56 ft 2 in (17.1 m), a level that remains a record to this day, higher than the [devastating 2010 floods](#).

Flooding overtopped the levees, causing Mounds Landing to break with more than double the water volume of [Niagara Falls](#).

The [Mississippi River](#) broke out of its [levee](#) system in 145 places and flooded 27,000 square miles (70,000 km<sup>2</sup>).

This water flooded an area 50 mi (80 km) wide and more than 100 mi (160 km) long.

The area was inundated up to a depth of 30 ft (9 m).

The flood caused over US\$400 million in damages and killed 246 people in seven states.

**The Great Mississippi River Flood, worst on record, was caused by “extratropical” storms, cold core storms, the storms that cause rain and snow in the USA: fall, winter spring, and into early summer.**

[http://www.nola.com/175years/index.ssf/2012/01/the\\_1927\\_flood\\_the\\_times-picay.html](http://www.nola.com/175years/index.ssf/2012/01/the_1927_flood_the_times-picay.html)



If the great flood of 1927 was the worst on record, and it happened in April, 1927, then it was before “global warming,” and is a feature of winter and spring storms, and not CO<sub>2</sub>-enhanced.



### **A Fateful Decision**

On Good Friday, April 15, 1927, 15 inches of rain poured on New Orleans within 18 hours, causing water to rise four feet in parts of the city. A power outage had knocked out electricity to the Wood pumps, which would normally have drained the water. As the storm continued, members of the city's banking community met with Marcel Garsaud, the manager of the Dock Board. He noted that he could guarantee the safety of New Orleans by dynamiting a levee elsewhere -- if the men agreed. While that action would endanger the rural areas around the levee, the bankers had heard from financial institutions concerned about the city's safety and their investments in it. "Only dynamite will restore confidence," one of them said. Butler cemented the decision when he concluded, "I believe the appropriate step at this point is to involve the authorities."

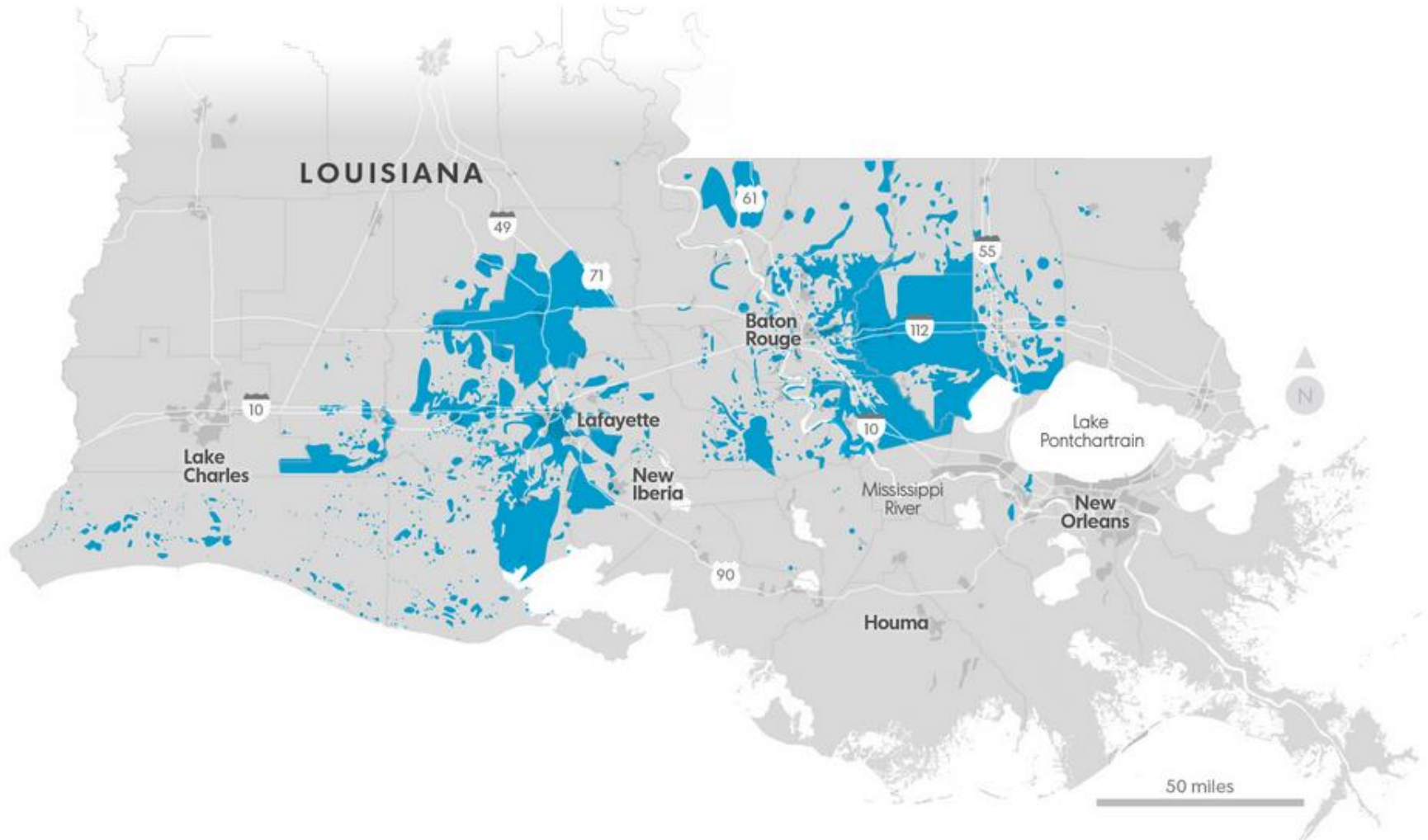


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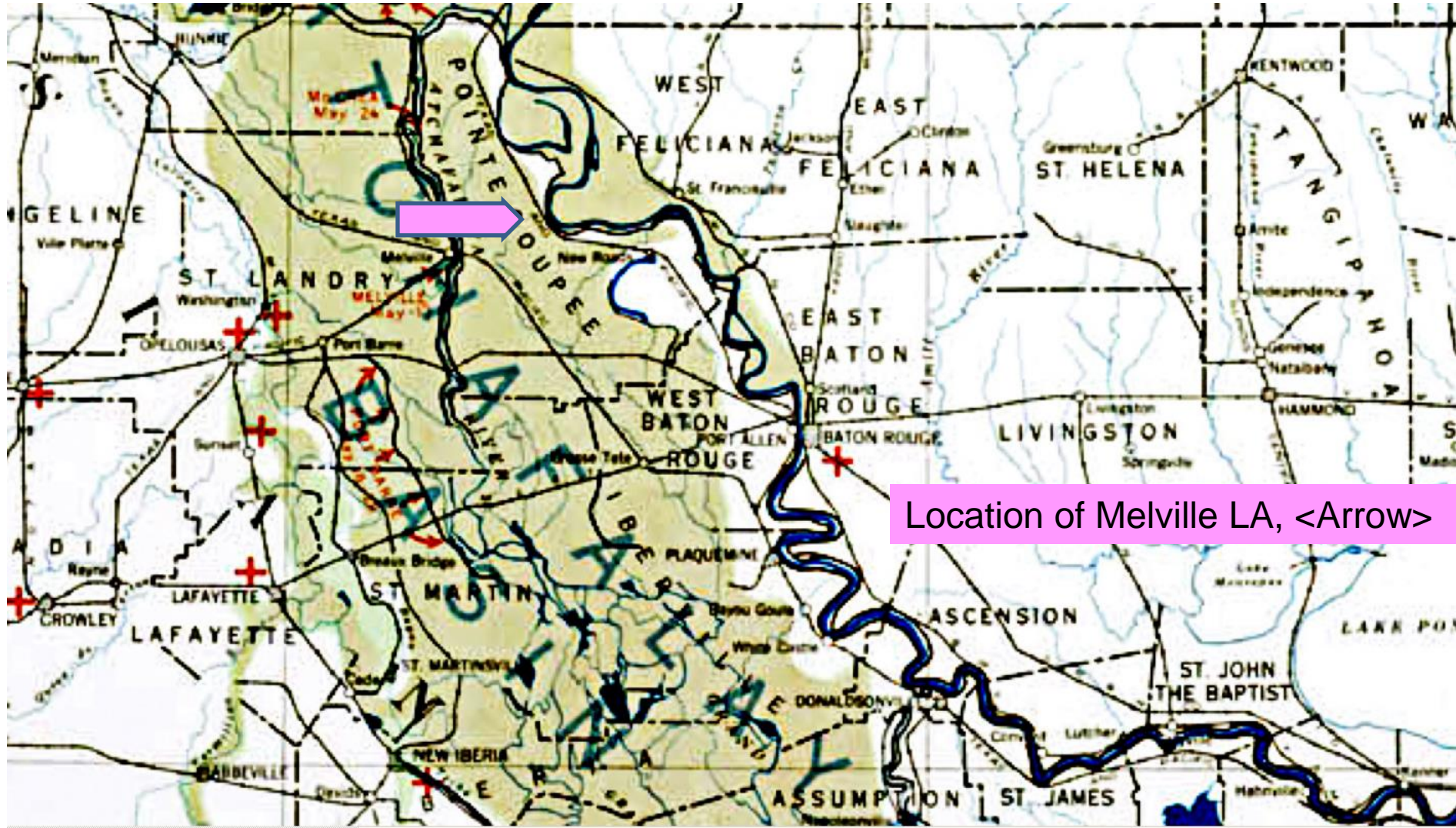


Widespread flooding has occurred across the state of Louisiana, as seen in this map compiled by geographers at Louisiana State University.





[https://en.wikipedia.org/wiki/Great\\_Mississippi\\_Flood\\_of\\_1927](https://en.wikipedia.org/wiki/Great_Mississippi_Flood_of_1927)



Location of Melville LA, <Arrow>

## Great Flood of 1927

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### Image Gallery

The following images are related to the topic discussed in this entry. We invite you to explore these images.

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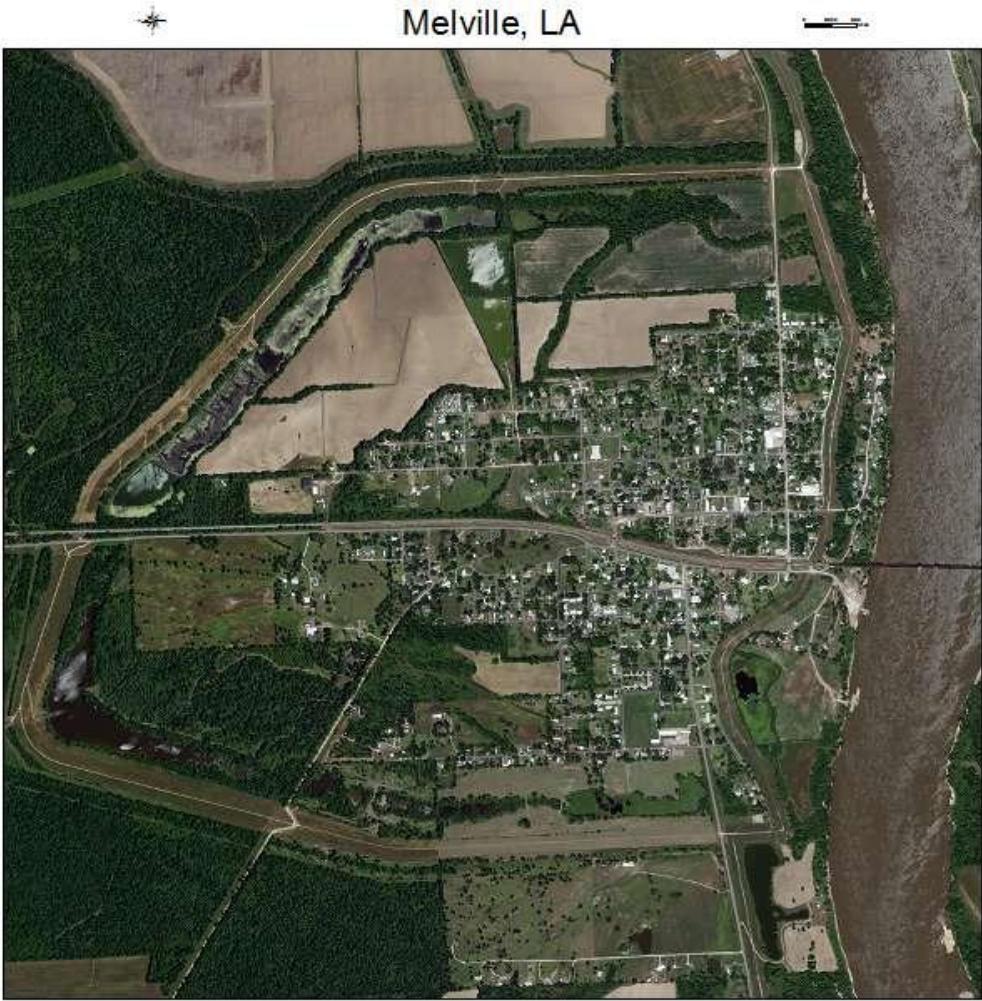
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Location of Melville in Louisiana



Melville, LA







**1927 Flood - Photograph - Flooded home in Melville, Louisiana.**  
A photograph depicting flooding in Melville, Louisiana during the Great Flood of 1927.

Written on photo: One of Melville's finest homes; M-82.  
It's the residence of the McNeils at Melville – It's a two-story house.



<https://realclimatescience.com/2017/09/plummeting-september-15-temperatures-in-the-us/>



<http://pubs.usgs.gov/wsp/1320c/report.pdf>

# Floods of April-June 1953 In Louisiana and Adjacent States

FLOODS OF 1953

*Prepared under the direction of J. V. B. WELLS, Chief, Surface Water Branch*

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GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1320-C

April – June 1953, another spring transition storm, and before “global warming.”

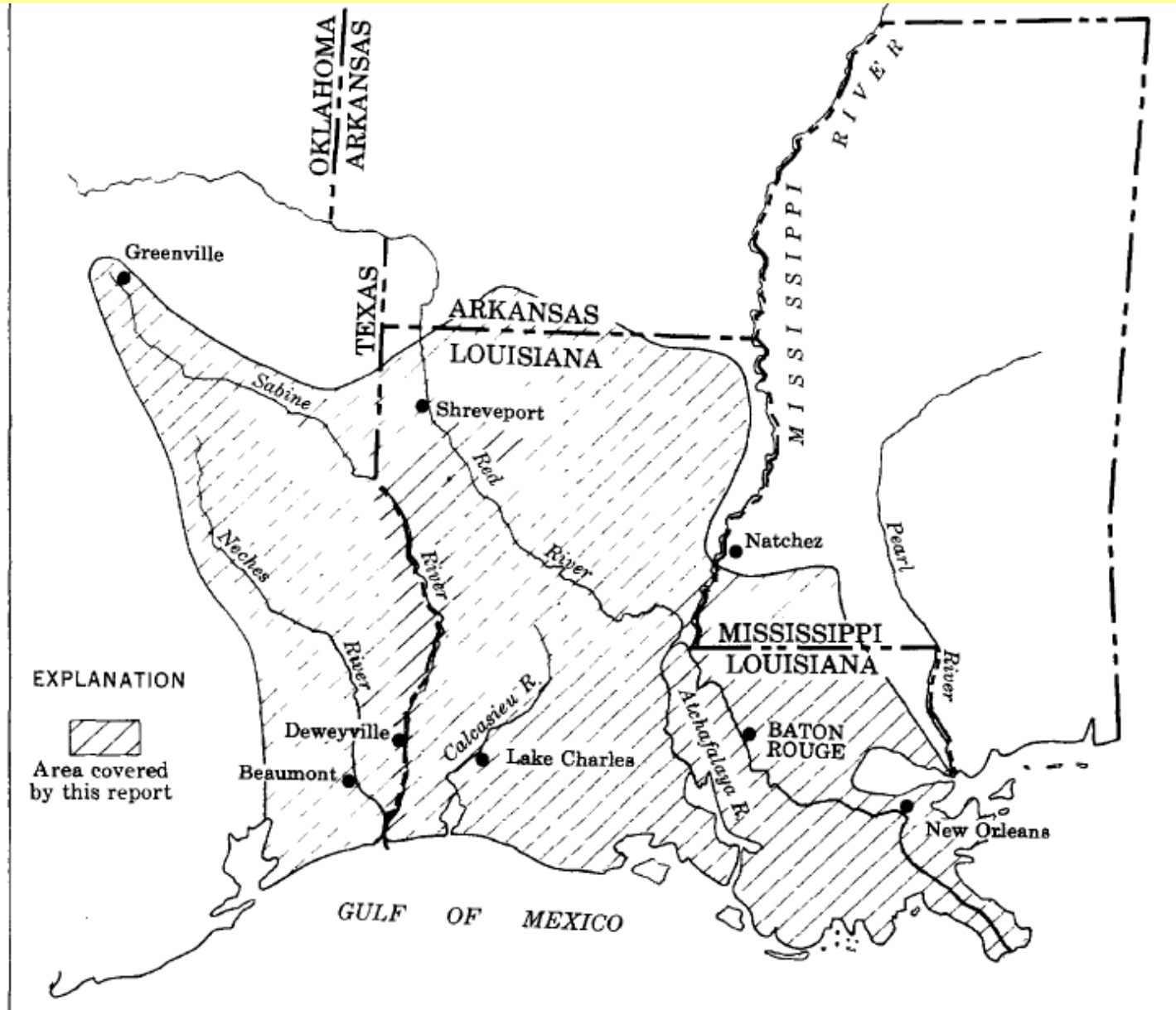


Figure 24. --Map of area covered by this report.



Twelve lives were lost in the floods of 1953. More than 4 million acres of land was inundated, and many homes were flooded. Highway and railroad bridges and roadbeds were destroyed (fig. 30).



During the crest of the flood, all major highways in central and southern Louisiana were closed at some point.

Direct damages to State roads and bridges were estimated by the Louisiana Highway Department to be \$2, 889, 000.

Of the larger cities in Louisiana, Lake Charles was the hardest hit.

At the crest of the flood, 60 percent of the area of the city was under water, 15,000 people were homeless, and 2,000 homes were flooded.

Figure 30. --U. S. 190 near Kinder, La., damaged by flood on Calcasieu River. Crest of flood covered road about 2 feet.



Figure 31. --U. S. 90 at Orange, Tex., flooded by Sabine River.  
Photo by Corps of Engineers on May 24, near crest of flood.





# NOAA: Global warming increased odds for Louisiana downpour

By **SETH BORENSTEIN** Sep. 7, 2016 12:24 PM EDT



In this Aug. 14, 2016 file photo, Danielle Blount kisses her three-month-old baby, Ember, as she feeds her and wait to be rescued from floodwaters by members of the Louisiana Army National Guard near Walker, La.

Man-made climate change about doubled the chances for the type of heavy downpours that caused devastating Louisiana floods in August 2016, a new quick federal study finds.

"We are now actually able to objectively and quantifiably say, 'yes, climate change contributed to this event'," Climate Central Chief Scientist Heidi Cullen said of last month's Louisiana downpours. "It's unequivocal."

Bob Comment:

Seth Borenstein, quoting Heidi Cullen of Climate Central



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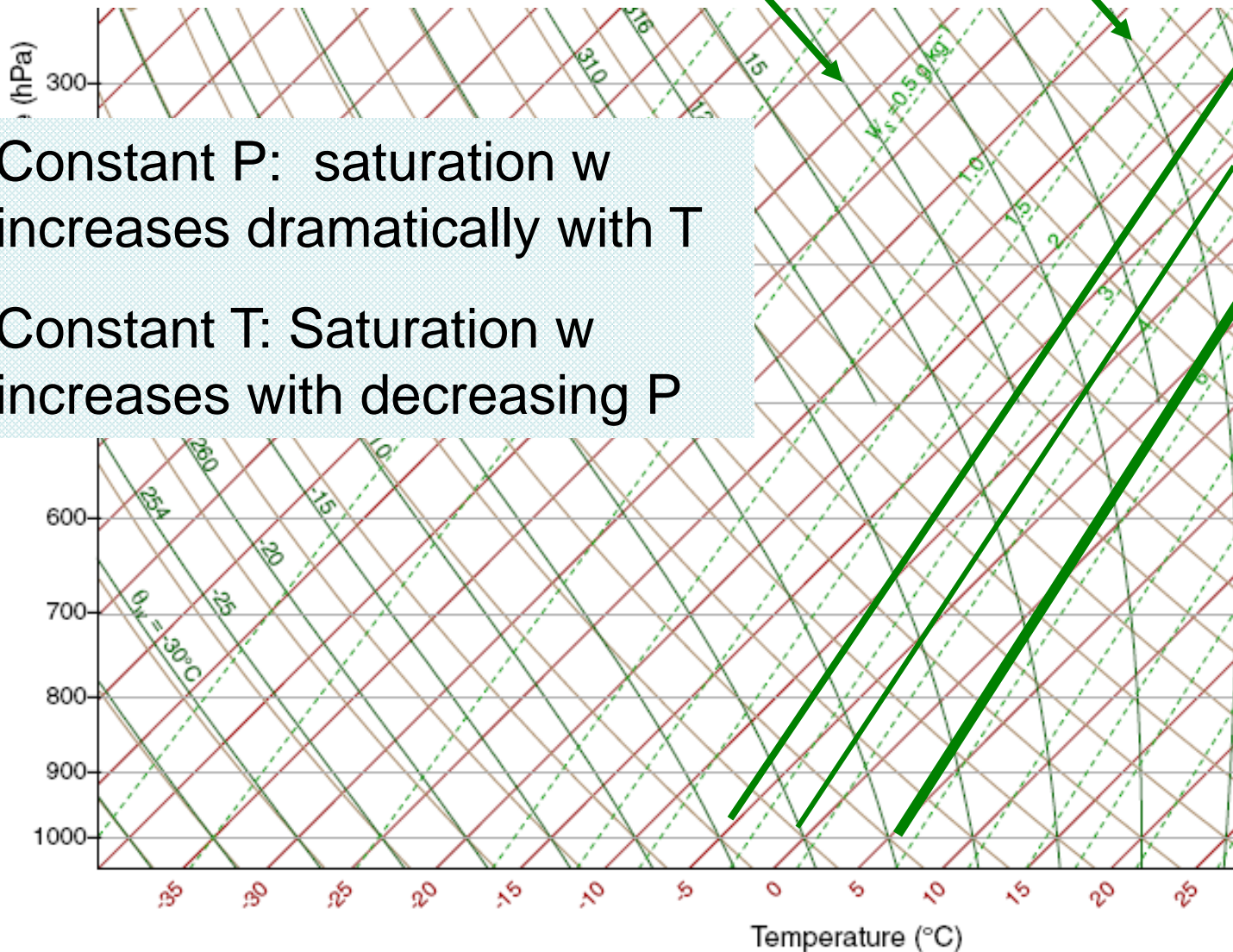


As air temperatures increase, so does the amount of water that air can contain; this is the **saturation mixing ratio  $w$**  and is described by the Clausius-Clapeyron Equation.

# Saturation Mixing Ratio

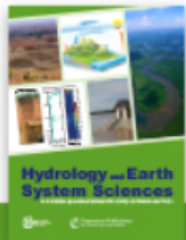
Constant P: saturation  $w$  increases dramatically with T

Constant T: Saturation  $w$  increases with decreasing P



Derived  
Using ideal gas law,  
and def. of saturation  
water vapor  
pressure

(Clausius-  
Clapeyron)



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doi:10.5194/hess-2016-448  
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Research article

**Rapid attribution of the August 2016 flood-inducing extreme precipitation in south Louisiana to climate change**

Karin van der Wiel<sup>2,1</sup>, Sarah B. Kapnick<sup>2</sup>, Geert Jan van Ojdenborgh<sup>3</sup>, Kirien Whan<sup>3</sup>, Sjoukje Philip<sup>3</sup>, Gabriel A. Vecchi<sup>2</sup>, Roop K. Singh<sup>4</sup>, Julie Arrighi<sup>4</sup>, and Heidi Cullen<sup>5</sup>

<sup>1</sup>Program in Atmospheric and Oceanic Sciences, Princeton University, Princeton, U.S.

<sup>2</sup>Geophysical Fluid Dynamics Laboratory (GFDL), National Oceanic and Atmospheric Administration, Princeton, U.S.

<sup>3</sup>Royal Netherlands Meteorological Institute (KNMI), De Bilt, Netherlands

<sup>4</sup>Red Cross Red Crescent Climate Centre, The Hague, Netherlands

<sup>5</sup>Climate Central, Princeton, U.S.

**Review**

This discussion  
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<http://www.hydrol-earth-syst-sci-discuss.net/hess-2016-448/>

## **Attribution of the August 2016 flood-inducing extreme precipitation in south Louisiana to climate change**

Objective of this study is to show the possibility of performing rapid attribution studies when both observational and model data, and analysis methods are readily available upon the start.

Using observational data, we find that the observed local return time of the 12–14 August precipitation event in 2016 is about 550 years (95 % confidence interval (C.I.): 450–1450).

The probability for an event like this to happen anywhere in the region is presently 1 in 30 years (C.I. 11–110).

We estimate that these probabilities and the intensity of extreme precipitation events of this return time have increased since 1900.

“Using observational data, we find that the observed local return time of the 12–14 August precipitation event in 2016 is about 550 years (95 % confidence interval (C.I.): 450–1450).”

550 years!

Could not find whether or not they had any idea of the return period of floods to New Orleans down-river from Baton Rouge is ~10 years.

What about a literature search by NOAA, their contractor, or USA TODAY?



# Rainfall Records

USA TODAY reported over 20 inches in 7 days as “Historic,” “CO2-Enhanced”

In 1935, Woodward Ranch, D’Hanis TX, got 22.00 inches in fewer than 3 hours!

[Extreme Weather: A Guide & Record Book – Christopher C. Burt – Google Books](#)

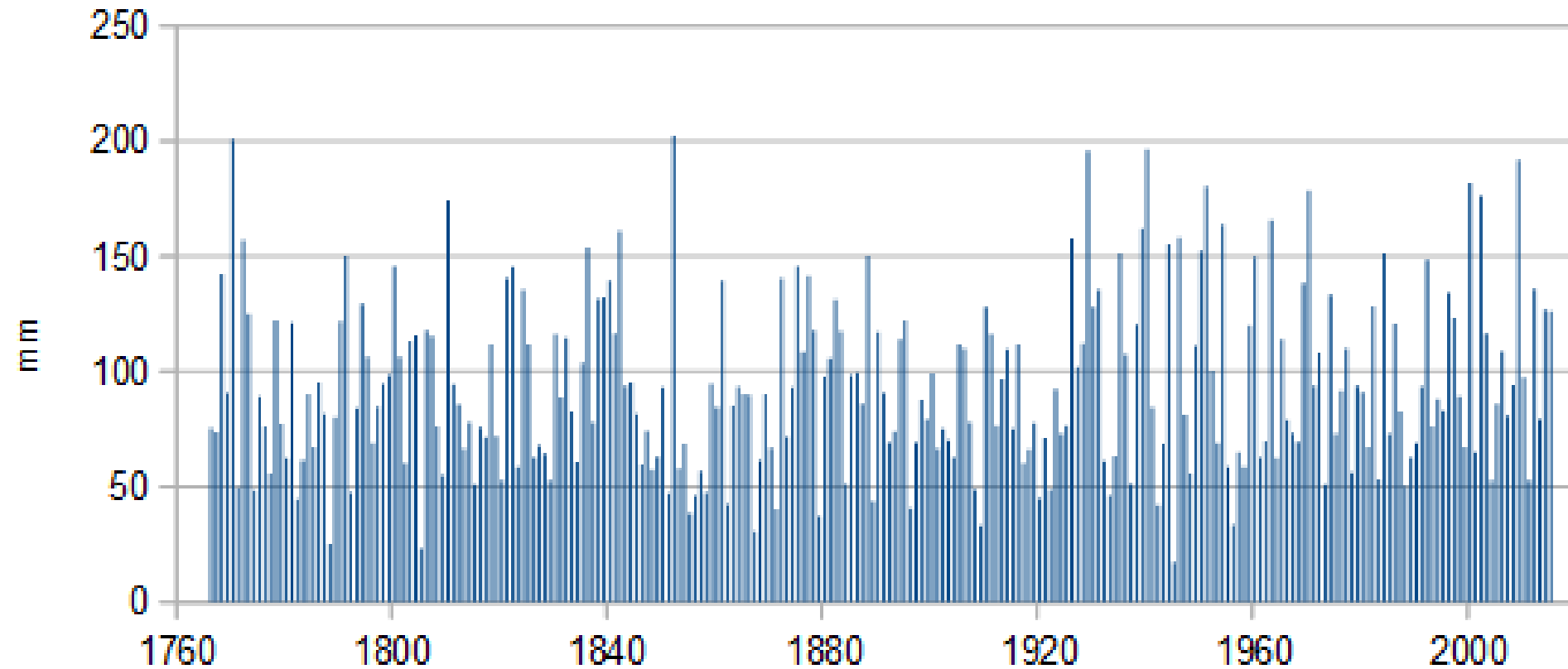
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1 hour	13.80"	Central WV	5/4-5/1943
1 hour 30 minutes	14.60"	Central WV	5/4-5/1943
2 hours	15.00"	Woodward Ranch, (D’Hanis) TX	5/31/1935
2 hours 30 minutes	19.00"	Rockport, WV	7/18/1889
2 hours 45 minutes	22.00"	Woodward Ranch, (D’Hanis) TX	5/31/1935*
3 hours	28.50*est.	Smethport, PA	7/18/42*
4 hours 30 minutes	30.70"	Smethport, PA	7/18/42*
12 hours	34.30"	Smethport, PA	7/17-18/1942
18 hours	36.40"	Thrall, TX	9/9/1921
24 hours	43.00"	Alvin, TX	7/25-26/1979
4 days	62.00"	Kukaiau, Hamakua, HI	2/27-3/2/1902
8 days	82.00"	Kukaiau, Hamakua, HI	2/27-3/6/1902
1 month	148.83"	Mt. Waialeale, Kauai, HI	3/1982
1 month (mainland)	71.54"	Helen Mine, CA	1/1909
1 year	704.83"	Kukui, Kauai, HI	1982
1 year	332.29"	MacLeeod Harbor, AK	1976
1 year (mainland)	204.12"	Laurel Mountain, OR	1996

\*constitutes a world record

## England & Wales Rainfall Series - November Precipitation

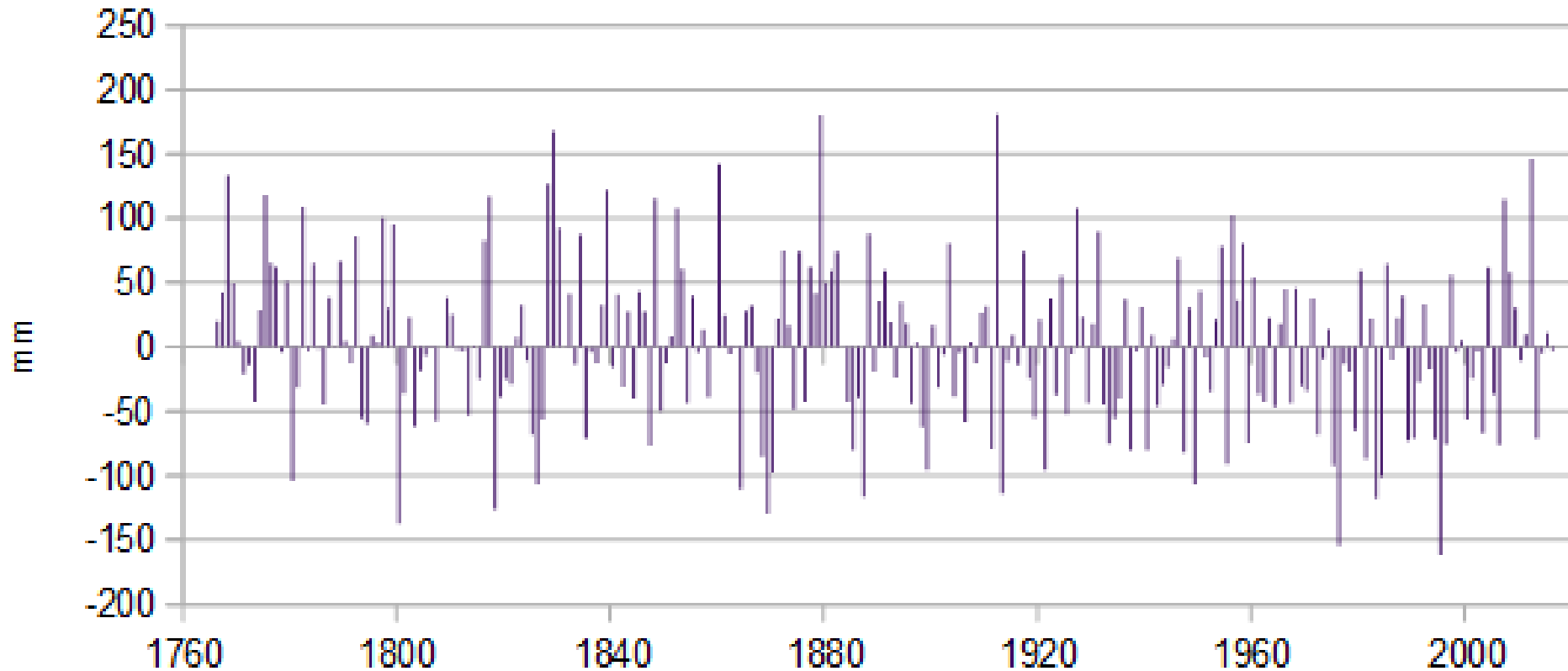
1766 to 2015



<https://notalotofpeopleknowthat.wordpress.com/2016/09/10/is-english-summer-rain-getting-more-extreme/>

## England & Wales Summer Rain 1766 to 2016

Anomaly v Mean





# Other Louisiana Flood Records

We use New Orleans: longest history

<http://www.pbs.org/wgbh/nova/orleans/struggle.html>

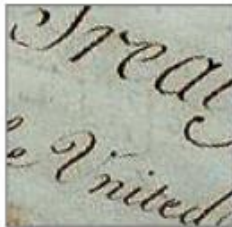


## A 300-Year Struggle

[Storm That Drowned a City homepage](#)



A FRENCH  
FOOTHOLD



LOUISIANA  
PURCHASE



LEVEES-ONLY  
POLICY



SPILLWAYS  
& SPRAWL



HURRICANE  
SEASON



MODERN  
TIMES

The French explorer Jean-Baptiste Le Moyne, Sieur de Bienville made a fateful decision in 1717 when he chose the site for New Orleans along a sharp bend in the Mississippi River. Bienville selected the site against the objections of his chief engineer, who realized that the area suffered from periodic floods. New Orleanians have been paying the price of Bienville's insistence ever since, from the first major flood shortly after the town's founding to the merciless juggernaut that was Hurricane Katrina. Here, follow the historical trajectory of New Orleans' ever-worsening struggle to keep out water.

—Peter Tyson

## A FRENCH FOOTHOLD

**1708**

A Frenchman visiting the Mississippi River near what would become New Orleans writes, "This last summer I examined better than I had yet done all the lands in the vicinity of this river. I did not find any at all that are not flooded in the spring. I do not see how settlers can be placed on this river."

**1717**

The French establish "Nouvelle-Orleans" on the site of an erstwhile Quinnipissas Indian village. (Indians first occupied sites in eastern New Orleans around 500 B.C.) Like the Quinnipissas, the French select the site because it's the highest and driest spot for several miles around. Within a few years slaves are put to work clearing land on the natural levee the French have selected for the town.

## **1816**

After a nearly month-long flood this year drives many poorer New Orleanians from their homes, Edward Fenner, a noted New Orleans medical authority, writes, "should not those in affluent circumstances come to the aid of their less fortunate fellow citizens, great indeed, we fear, will be the distress of the latter, from poverty, famine, and perhaps pestilence."

## **1828**

Another flood in New Orleans produces the highest water recorded up to the time. The deluge sparks a renewed bulwark-building campaign. Laws are now in place both regulating the dimensions and maintenance of levees and mandating a tax to pay for their construction.

## **1846**

Louisiana State engineer P. O. Hebert warns that New Orleans is in "imminent danger of inundation" annually: "Every day, levees are extended higher and higher up the river—natural outlets closed—and every day the danger to the city of New Orleans and to all the lower country is increased. Who can calculate the loss by an overflow to the city of New Orleans alone?"



# 1849

Two topographic engineers describe the flood of 1849 as the most destructive flood known. A breach in the levee on the east bank of the Mississippi 18 miles above New Orleans does an "immense amount of damage," they write, inundating the city for 48 days. Another flood the following year convinces the federal government to grant monies to build a continuous levee system.

SEARCH NOVA



# STORM THAT DROWNED A CITY

A 300-Year Struggle

[Storm That Drowned a City homepage](#)



A FRENCH Foothold



LOUISIANA PURCHASE



LEVEES-ONLY POLICY



SPILLWAYS & SPRAWL



HURRICANE SEASON



MODERN TIMES

The NOVA list continues...

From 1850-2016 there are 20 separate paragraph entries, or more than one significant flood event every 10 years.

...Louisiana Floods are not rare events.

# Flood High Water Mark Records

# EUROPE

What might European History tell us about floods?

Some European History is preserved in the buildings and monuments commemorating significant events which may have not found their way into the history texts or literature.

High Water Marks commemorate the marks left by floods on buildings along rivers

– usually a horizontal mark with the date – certainly this is the case in Europe.

Following: High Water Marks, “Hochwasser,” I found in my travels in Middle Europe, and the Internet



**High water marks for Bernkastel, Boppard, Frankfurt/Main, Miltenberg, Passau, Melk**



# High Water mark Bernkastel, Germany on the Mosel River

There are three sets of High  
Water Marks here.

at **<Red Arrow>** it says,  
“28 2 1784 mit Eisgang”

Translation for Americans:

Feb 28, 1784, was the date.

The water was full of ice  
when the Mosel flooded here.



Flood marks from River Rhine floods in Boppard, Germany.

Photo from 2013 by Dr Stephen Yeo, used with permission.

... at the very top, February, 1784

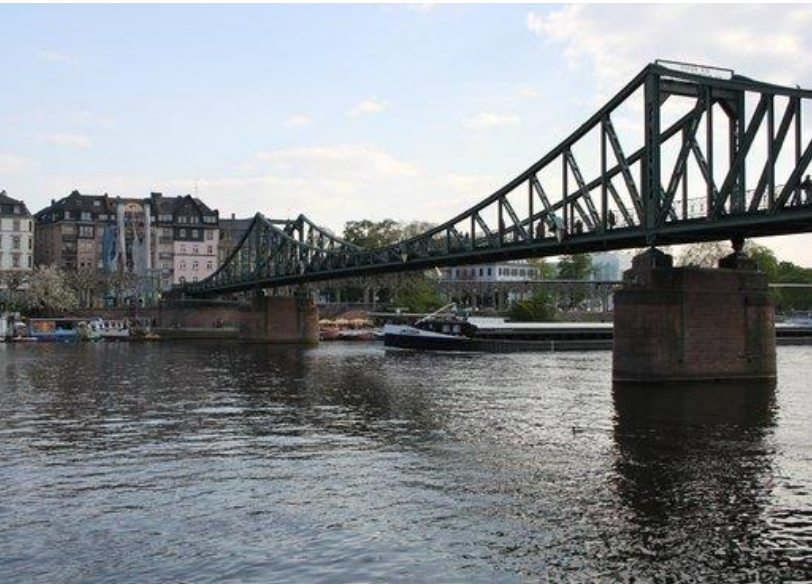




High water marks on the Eiserner Steg bridge in Frankfurt. "Vom Eise befreit sind Strom und Bäche" is from Goethe. Photo from 2005. Photo credit: D Weekly @ flickr

<http://floodlist.com/dealing-with-floods/flood-high-water-marks>

Eiserner Steg Bridge,  
Frankfurt/Main





**Photo taken in front of Old Town Hall,  
Miltenberg, Germany, on the Main River.  
High Water mark carved in stone on the Town Hall  
entranceway.  
Highest flood water was February 1784.**





## High Water Marks

Passau, Germany, on the Danube.

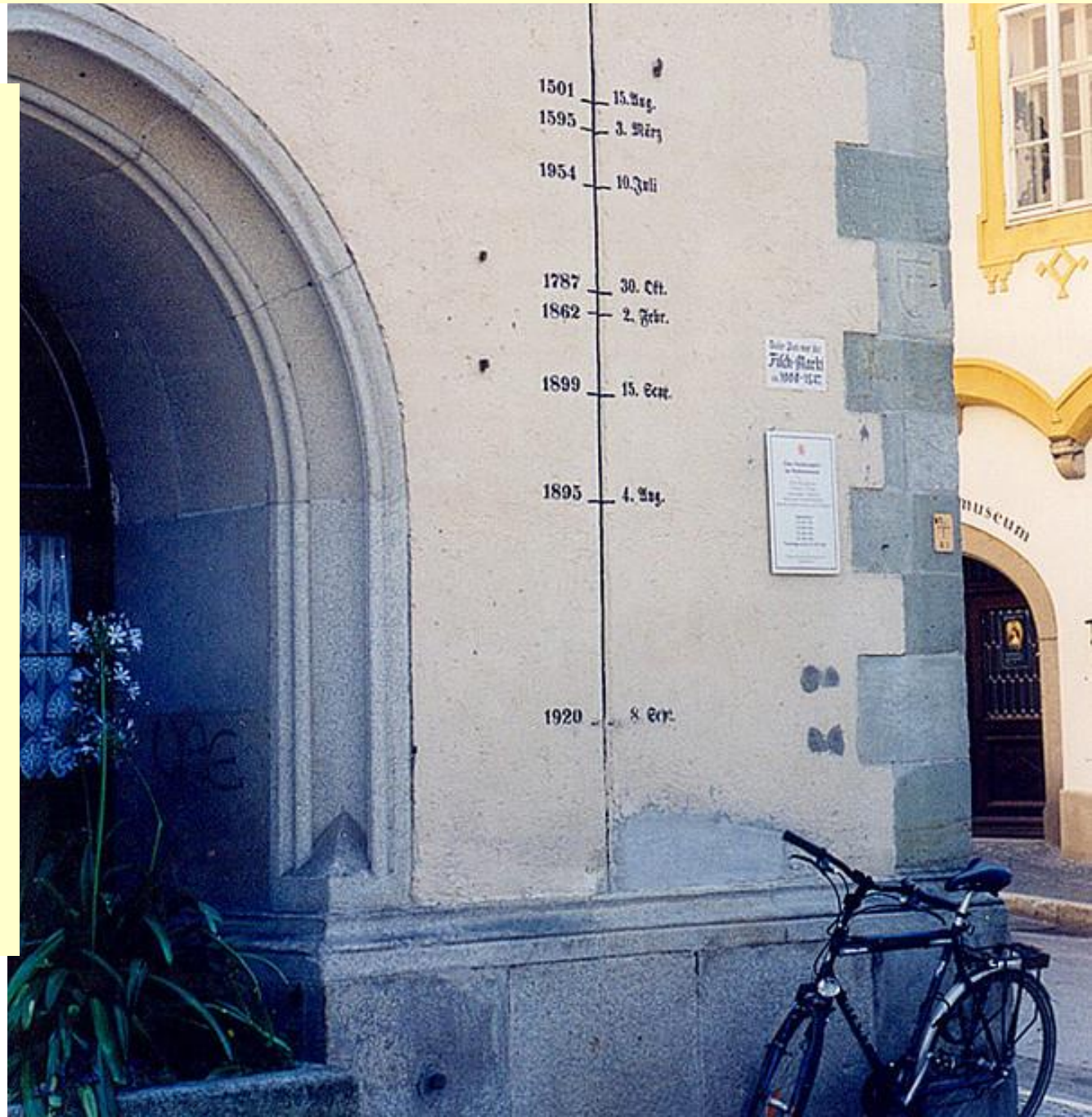
Three rivers come together at Passau:

From the South: INN

From the North: ILZ

Highest flood is in 1501

Second Highest 1595



Hochwasser in German, means high water.

This is a monument of high water marks measured at Melk, Austria.

This slide will mean a lot more after we get to the next slide.







HOCHWASSER





500 years of Flood Marks show the most severe floods occurred in the Little Ice Age

Bernkastel's 28 Feb 1784 flood mark is annotated "mit eisgang," meaning it was a cold year in the Little Ice Age

Highest flood in Frankfurt/Main is 18 Jan 1682

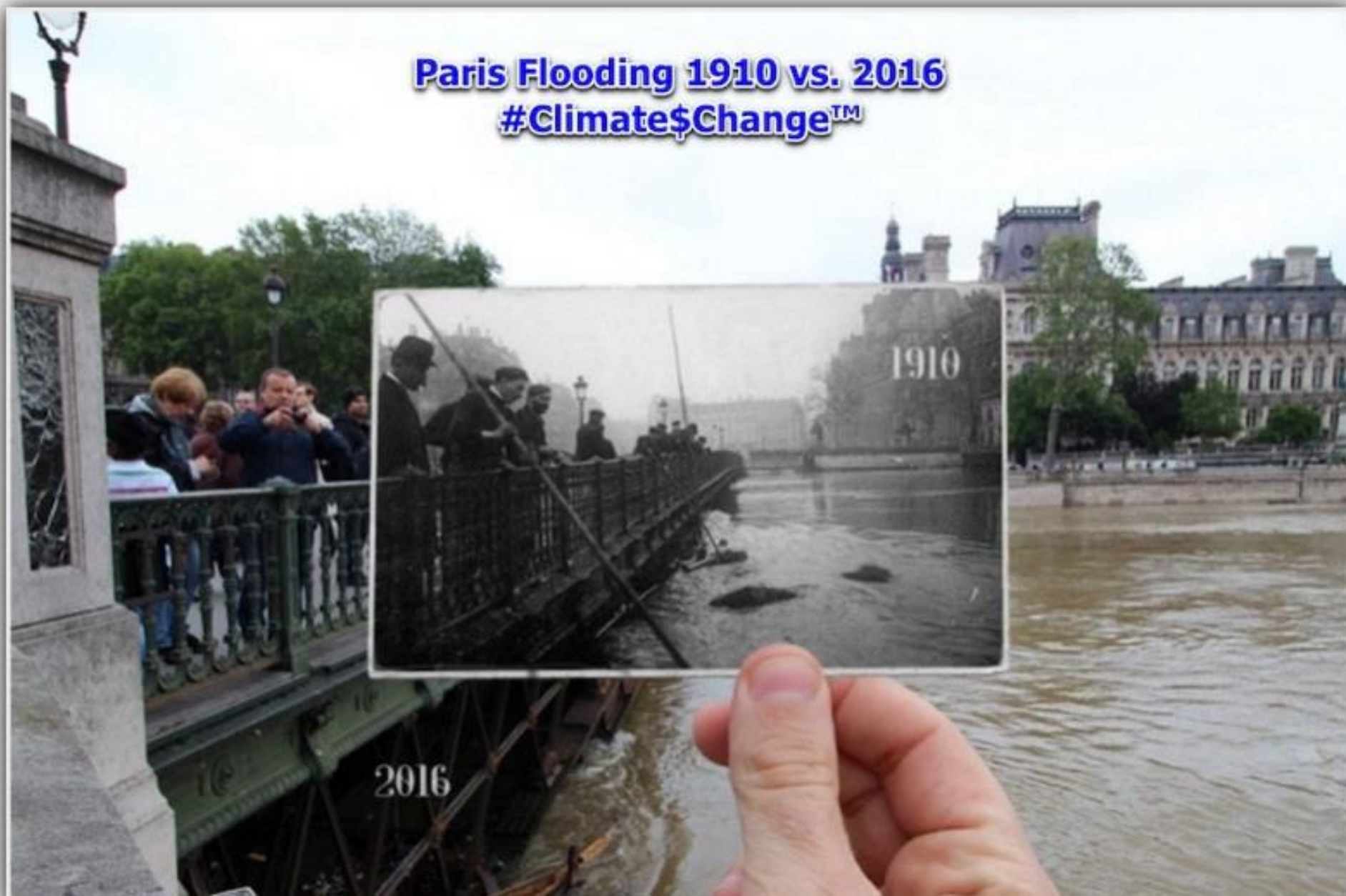
None of the highest flood marks were in the 20<sup>th</sup> or 21<sup>st</sup> Centuries.

Modern "Warming" shows no tendency for increased flooding, in fact the opposite seems the case

Rainfall records in England since 1766 show no modern increase in Heavy Rainfall events.

Little support for modern maxima in rainfall extremes is shown in Burt's book, Extreme Weather

**Paris Flooding 1910 vs. 2016**  
**#Climate\$Change™**



What have we learned?

It rains and floods a lot in Louisiana and the US Gulf Coast

The August 2016 rainfall was nowhere near a record; not “Historic.”

The worst river floods in the USA have been associated with winter and spring storms

The worst river flooding in the US was in 1927 and 1953

2016 flood area is small in comparison with the 1927 and 1953 flood events

Over 500 years of flood history are easily found in Europe.

20<sup>th</sup> and 21<sup>st</sup> century floods are small in comparison with known floods during the Little Ice Age.

Modern warm season rainfall does not compare with cold season and LIA floods!

The stories from USA Today and the Associated Press reflect poor scholarship, poor reporting skills, and lack of critical thought in story preparation.

<http://www.gallup.com/poll/185927/americans-trust-media-remains-historical-low.aspx>

Maybe they are more interested in selling newspapers.....