



March 18th, 2020

Texas Water Specialist Training



Texas Parks & Wildlife

CoCoRaHS

“BECAUSE EVERY DROP COUNTS”





CoCoRaHS

Pronounced

Ko ko Ras

Breakfast Cereal

vs.

Rainfall Network

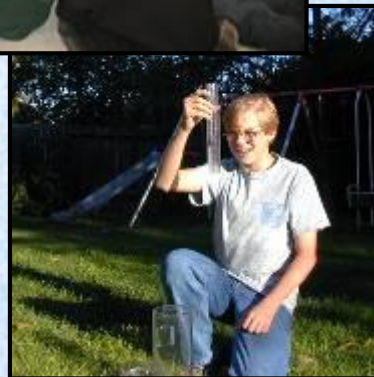
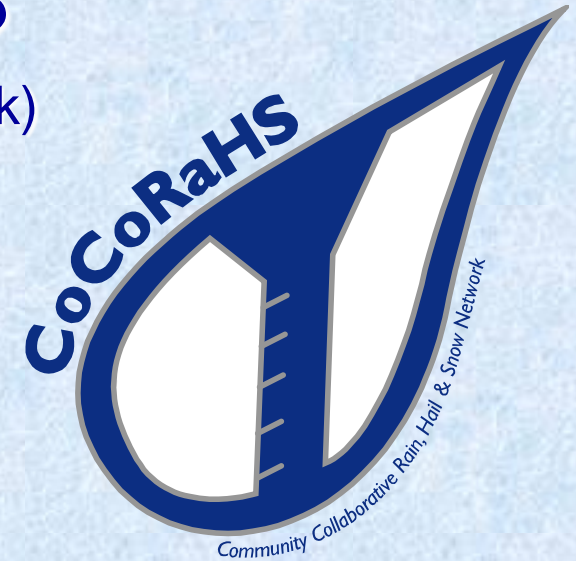


OBJECTIVE: You will be able to tell the difference between a Breakfast Cereal and a Rainfall Network!

What is CoCoRaHS?

(Community Collaborative Rain, Hail & Snow Network)

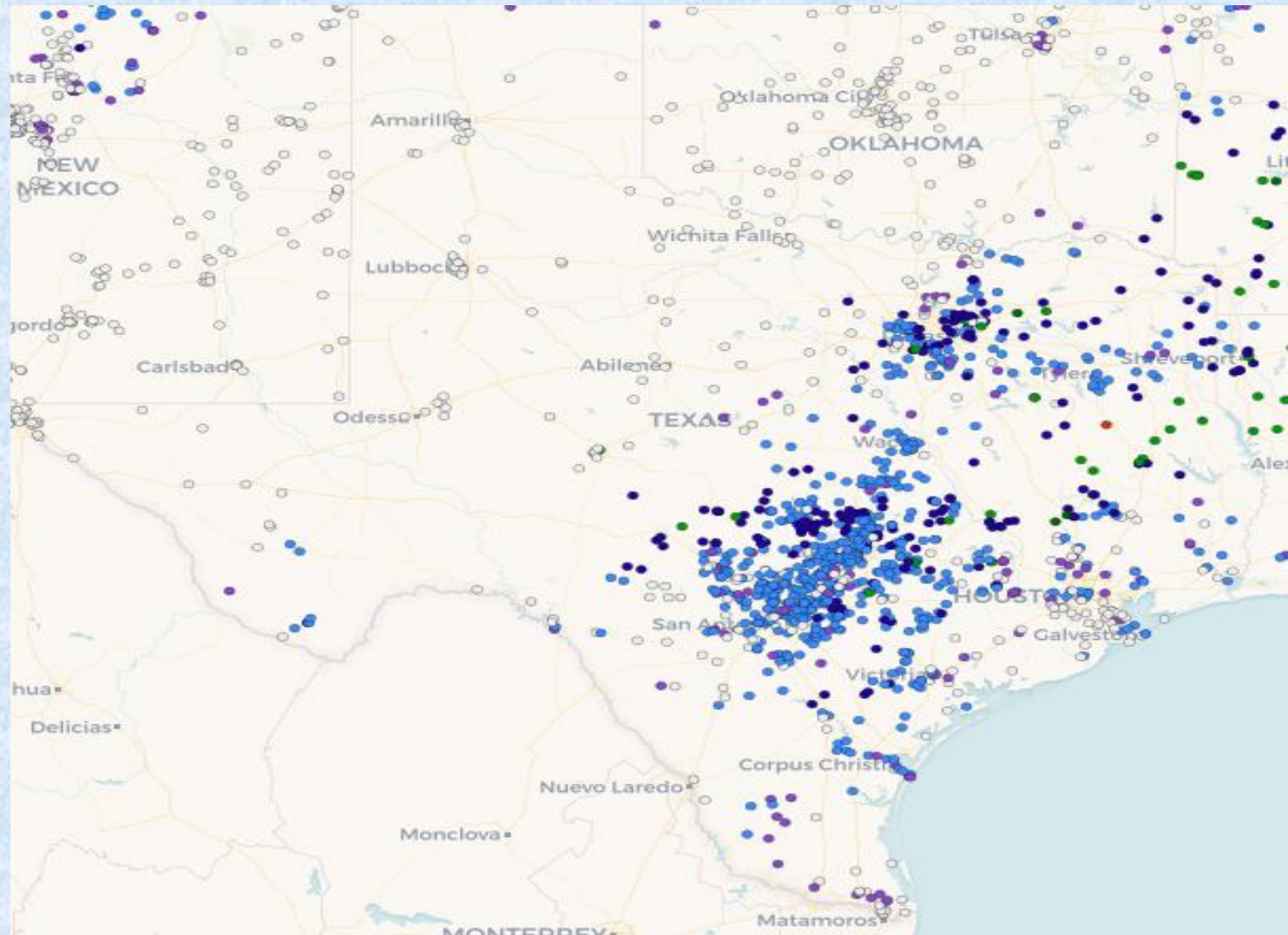
Volunteers who measure rain, hail and snow



VOLUNTEERS OBSERVING PRECIPITATION ACROSS TEXAS



Active Stations Across Texas



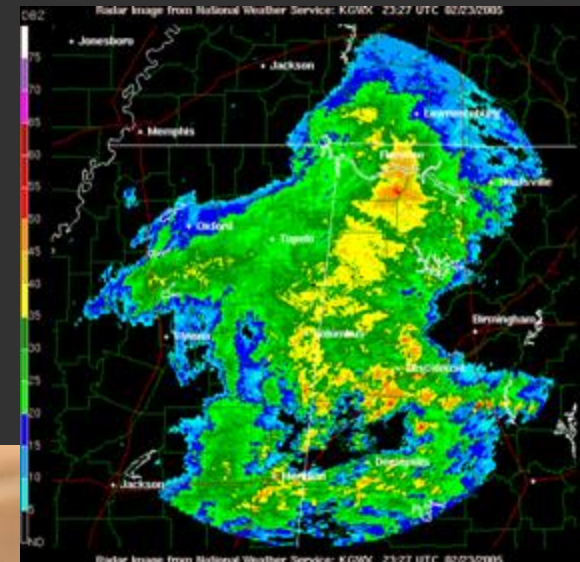
Poll Question # 1

Who uses CoCoRaHS Data?

CoCoRAHS DATA IS USED BY MANY

- National Weather Service
- Other Meteorologists
- Hydrologists
- Emergency Managers
- City Utilities
 - Water supply
 - Water conservation
 - Storm water
- Insurance adjusters
- USDA—Crop production
- Engineers
- Scientists studying storms
- Mosquito control
- Farm Service Agency
- Ranchers and Farmers
- Outdoor & Recreation
- The list of users grow daily

- Teachers and Students
 - Geoscience education tool
 - Taking measurements
 - Analyzing data
 - Organizing results
 - Conducting research
 - Helping the community



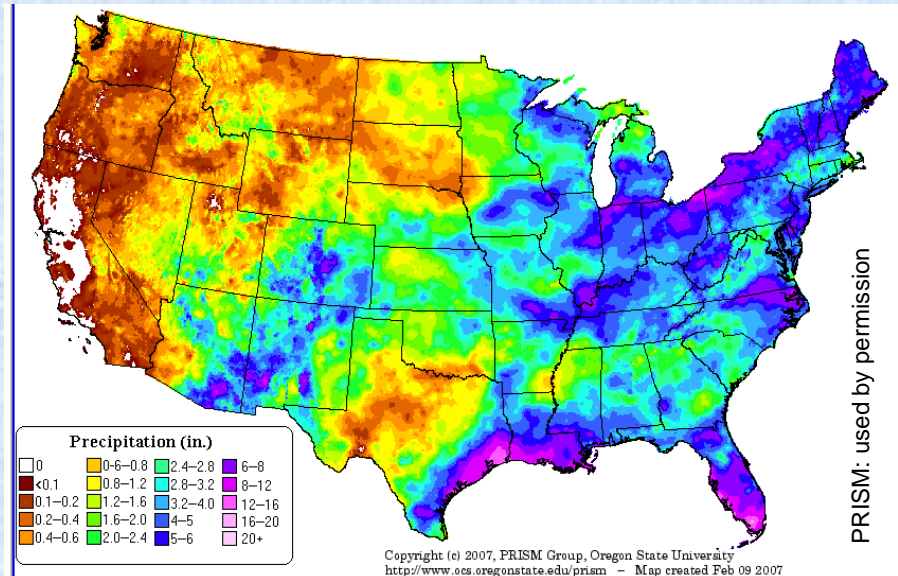
WHY CoCoRAHS ??



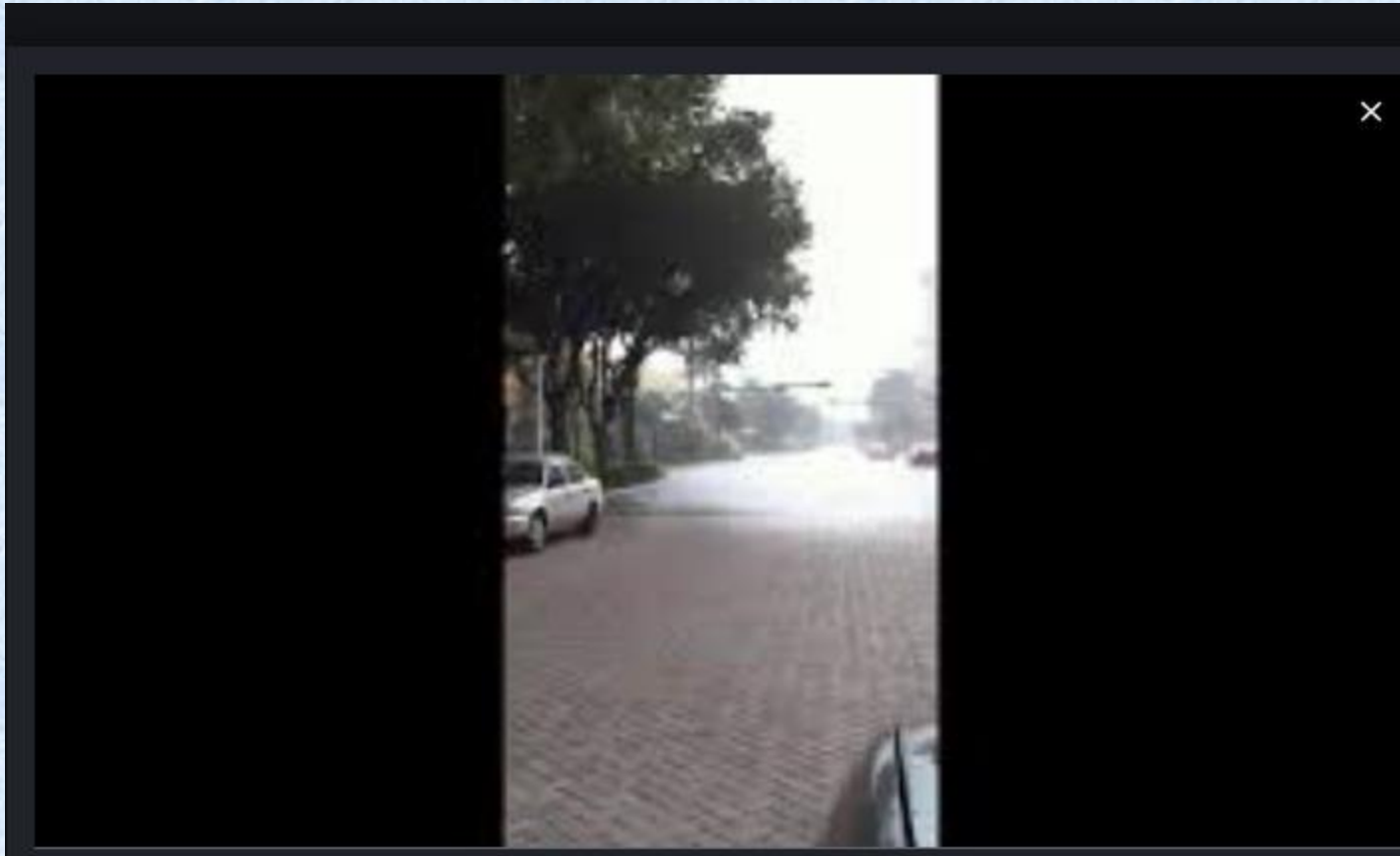
Precipitation is important and highly variable



Data sources are few and rain gauges are far apart



Rain falling on one side of the street and not the other!



Another example



CoCoRaHS Mission Statement

CoCoRaHS is a unique, non-profit, community-based network of volunteers of all ages and backgrounds working together to measure and map precipitation (rain, hail and snow).

We use low-cost measurement tools, *stressing training and education*, and utilizing an interactive Web-site, **our aim is to provide the highest quality data for natural resource, education and research applications.**

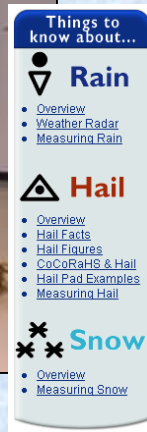
Once trained, our
volunteers collect data
using low-cost
measurement tools . . .



4-inch diameter
high capacity rain gauges



Aluminum foil-wrapped
Styrofoam hail pads



Training is important to assure
accurate, high quality data




and report their daily observations on our interactive
Web site: **www.cocorahs.org**

Main Menu

- [Home](#)
- [About Us](#)
- [Join CoCoRaHS](#)
- [Contact Us](#)
- [Donate](#)

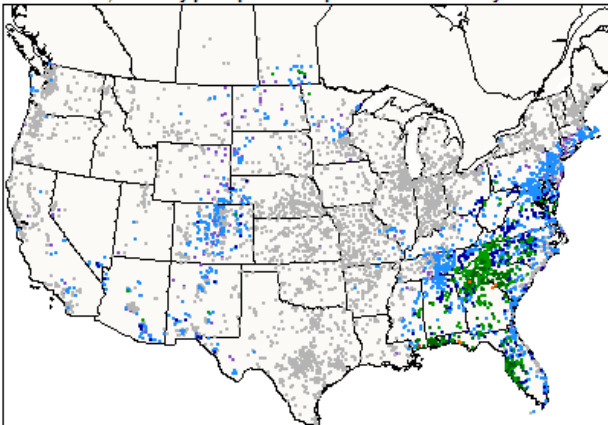
Resources

- [FAQ / Help](#)
- [Education](#)
- [Training Slide-Shows](#)
- [Videos](#)
- [Drought Impacts](#)
- [Evapotranspiration](#)
- [Volunteer Coordinators](#)
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- [Master Gardener Guide](#)
- [March Madness Contest](#)
- [State Climate Series](#)
- [WxTalk Webinars](#)
- [Sponsors](#)
- [Links](#)
- [CoCoRaHS Store](#)



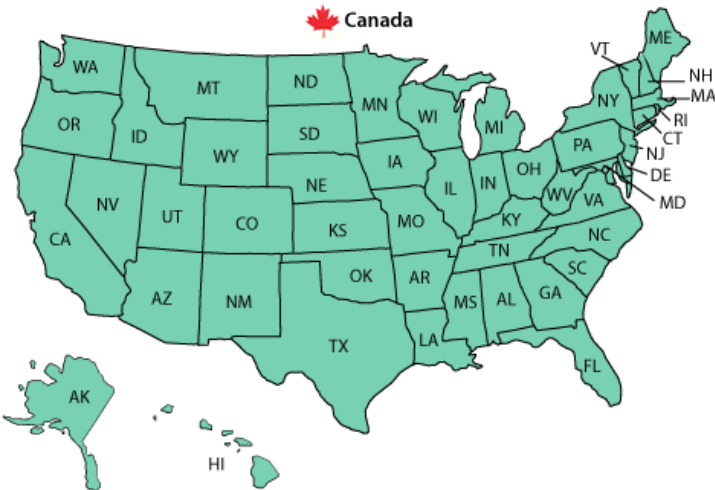
CoCoRaHS WxTalk Webinar Series

7,499 daily precipitation reports received today as of 8/19/2013 3:03 PM EDT




Daily Precipitation (inches x.xx)
USA
8/19/2013

0.0
Trace
0.00 - 0.28
0.29 - 0.56
0.57 - 1.40
1.41 - 3.35
3.36 - 5.02
5.03 - 5.57






JOIN CoCoRaHS



TRAINING SLIDE-SHOWS

Things to know about...

-  **Rain**
-  **Hail**
-  **Snow**

CoCoRaHS WxTalk Webinar Series

Purchase an official CoCoRaHS 4" Rain Gauge
"The official CoCoRaHS Rain Gauge supplier"

WEATHERYOURWAY.COM

Fast, Friendly service from a meteorologist and fellow CoCoRaHS Observer

educational opportunity!!

Welcome to the Texas Co-Staff	
<p>Editor 1</p> <p>Managing Editor 2</p> <p>Section Editors 3</p> <p>Contributors 4</p> <p>Graphic Artists 5</p> <p>Production Staff 6</p> <p>Advertising Sales 7</p> <p>Subscription Sales 8</p> <p>Business Office 9</p> <p>Executive Office 10</p> <p>Board of Directors 11</p> <p>Staff 12</p>	<p>The members of the Impact Fire Dept. water treatment facility, also known as Unit 1, treated contaminated water from the 1990s. The facility is located in the heart of Houston, Texas.</p> <p>The water of the spring is used for drinking water in the city of Houston, Texas. The water is also used for irrigation in the city of Houston, Texas. The water is also used for irrigation in the city of Houston, Texas.</p> <p>The water of the spring is used for drinking water in the city of Houston, Texas. The water is also used for irrigation in the city of Houston, Texas. The water is also used for irrigation in the city of Houston, Texas.</p> <p>The water of the spring is used for drinking water in the city of Houston, Texas. The water is also used for irrigation in the city of Houston, Texas. The water is also used for irrigation in the city of Houston, Texas.</p>

Texas State Newsletter

COMMUNITY COLLABORATIVE RAIN, FLOOD & SNOW NETWORK
"Because every drop counts"

Home / Status / View Data / Maps / My Data / My Account / Admin / Support

My Data Entry : View Daily Precipitation Report

New Reports

[Get Report](#)
[Download Report](#)
[Print Report](#)
[My Reports](#)
[Add New](#)
[Delete](#)
[Download All Reports](#)

1) Message of the Day:

Don't forget to remove the funnel and inner tube from your rain gauge if freezing weather is expected.

We realize that many of you have had to reenter your login information to get into our system recently. Apparently the server configuration changed with it caused a change in our cookies, which caused your saved login information to be lost. We apologize for the inconvenience and would like to thank everyone for the patience.

Now would be a good time to print out and save your login information in case this ever happens again. You can always have your user name and password sent to your e-mail address by clicking on the "Find your login info" link on the Login page.

Thanks

2) Confirmation:

- The Daily Precipitation Report was saved.

Daily Precipitation Report		Edit
Station Number: CD-LM-610	Station Name: Fort Collins, CO, NM	
Observation Date	12/12/2006 7:30 AM	
Submitted	12/12/2006 9:43 AM	

[Print Report](#)
[Download Report](#)
[Download All Reports](#)

[illegible]

Things to know about...

Rain

- [Overview](#)
- [Weather Radar](#)
- [Measuring Rain](#)

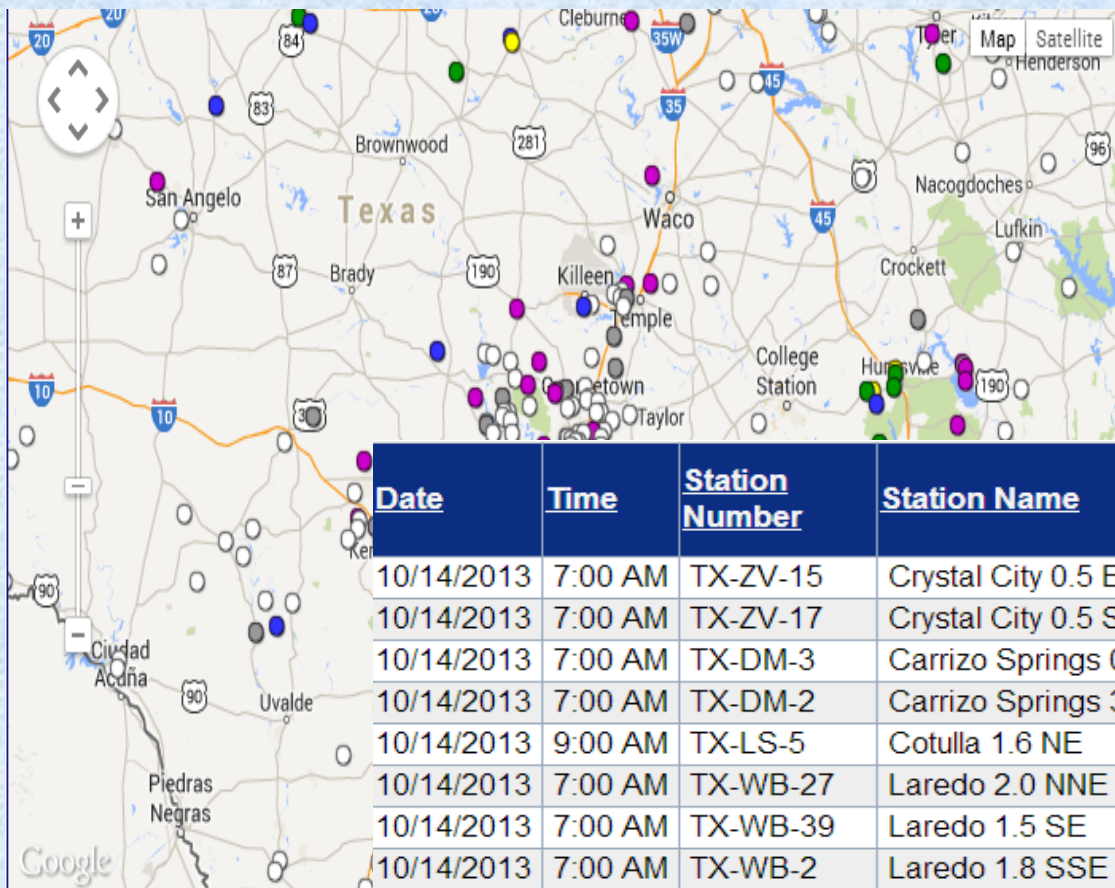
Hail

- [Overview](#)
- [Hail Facts](#)
- [Hail Figures](#)
- [CoCoRaHS & Hail](#)
- [Hail Pad Examples](#)
- [Measuring Hail](#)

Snow

- [Overview](#)
- [Measuring Snow](#)

***“HELPING TO PROVIDE THE PUBLIC WITH A
BETTER UNDERSTANDING OF WEATHER”***



**The Volunteer's
observations are
immediately available
in map and table form
for the public to view.**

<u>Date</u>	<u>Time</u>	<u>Station Number</u>	<u>Station Name</u>	<u>Total Precip in. ▲</u>	<u>New Snow in.</u>	<u>Total Snow in.</u>	<u>State</u>	<u>County</u>	<u>View</u>
10/14/2013	7:00 AM	TX-ZV-15	Crystal City 0.5 ESE	13.88	NA	NA	TX	Zavala	
10/14/2013	7:00 AM	TX-ZV-17	Crystal City 0.5 S	13.88	NA	NA	TX	Zavala	
10/14/2013	7:00 AM	TX-DM-3	Carrizo Springs 0.6 SSW	11.39	NA	NA	TX	Dimmit	
10/14/2013	7:00 AM	TX-DM-2	Carrizo Springs 3.0 NNE	9.57	NA	NA	TX	Dimmit	
10/14/2013	9:00 AM	TX-LS-5	Cotulla 1.6 NE	7.83	NA	NA	TX	La Salle	
10/14/2013	7:00 AM	TX-WB-27	Laredo 2.0 NNE	7.04	NA	NA	TX	Webb	
10/14/2013	7:00 AM	TX-WB-39	Laredo 1.5 SE	6.70	NA	NA	TX	Webb	
10/14/2013	7:00 AM	TX-WB-2	Laredo 1.8 SSE	6.24	NA	NA	TX	Webb	
10/14/2013	7:00 AM	TX-WB-37	Laredo 1.8 ESE	6.18	NA	NA	TX	Webb	
10/14/2013	7:00 AM	TX-LS-4	Artesia Wells 1.1 W	6.15	NA	NA	TX	La Salle	
10/14/2013	7:00 AM	TX-WB-23	Freer 29.5 WSW	6.02	NA	NA	TX	Webb	
10/14/2013	7:00 AM	TX-LS-6	Cotulla 0.1 NE	5.90	NA	NA	TX	La Salle	
10/14/2013	7:00 AM	TX-WB-6	Laredo 2.4 S	5.75	NA	NA	TX	Webb	
10/14/2013	7:00 AM	TX-WB-44	Laredo 2.8 ENE	5.37	NA	NA	TX	Webb	
10/14/2013	7:00 AM	TX-AS-5	Sealy 0.3 WNW	5.32	0.0	NA	TX	Austin	
10/14/2013	7:00 AM	TX-LS-9	Cotulla 9.7 NNE	5.30	NA	NA	TX	La Salle	
10/14/2013	7:00 AM	TX-CML-37	Canyon Lake 2.8 N	5.02	NA	NA	TX	Comal	
10/14/2013	7:00 AM	TX-WB-22	Laredo 23.7 ENE	5.00	NA	NA	TX	Webb	
10/14/2013	7:00 AM	TX-WB-28	Laredo 1.3 NNW	4.93	NA	NA	TX	Webb	



Our goals

- Provide accurate high-quality precipitation data to observers, decision makers and other end-users on a timely basis.
- Act as an umbrella for one-stop precipitation information nationwide.
- Our ambition is to increase the density of precipitation data available throughout the country by encouraging volunteer weather observing, as well as by collaborating with existing precipitation networks.
- Increase community awareness about our weather by inspiring and encouraging citizens to participate in meteorological science and have fun doing so...as citizen scientists.
- Provide enrichment activities in water and weather resources for teachers, educators and the community at large; thus, building a collective awareness of our climate and develop citizen's skills in scientific data collection.

Want to know more about CoCoRaHS?

Here are some interesting facts:

- **CoCoRaHS~ We are now in all fifty states, U.S. Territories, Canada and the Bahamas!**
- **CoCoRaHS~ has become the largest all-volunteer rainfall network in the WORLD...but we still need your help!**
- **CoCoRaHS ~ major sponsors are: NOAA (National Oceanic and Atmospheric Administration) the parent agency of the National Weather Service.
National Science Foundation.**
- **CoCoRaHS~ One of the neat things about participating in this network is coming away with the feeling that you have made an important contribution that helps others. By providing your daily observation, you help to fill in a piece of the weather puzzle that affects many across your area in one way or another.**
- **CoCoRaHS ~ is 22 Years old this year!**

Poll Question # 2

What is used to collect the Data?

4 Inch High Capacity Gauge

Why is it so important for ALL CoCoRaHS Observers to use the same type of rain gauge?





CoCoRaHS

Community Collaborative Rain, Hail & Snow Network

CoCoRaHS's purpose is to Collect Precipitation Data

Poll Question # 3

**Where and what year did
CoCoRaHS begin?**

STORM TOLL

Deaths - 5 confirmed
 Injuries - 40
 Missing - 16
 Rescued - 160

Damages - Tens of millions of dollars at Colorado State University; \$1.5 million to \$2 million to city roads and bridges; \$1 million to city parks and trails; no estimate for private property.

Source: Emergency Officials
 All information as of 9 a.m. today

Wednesday

FORT COLLINS COLORADOAN

City death toll at 5; damage in millions

July 30th 1997

CSU's book losses speak volumes

Rainfall breaks 20-year record

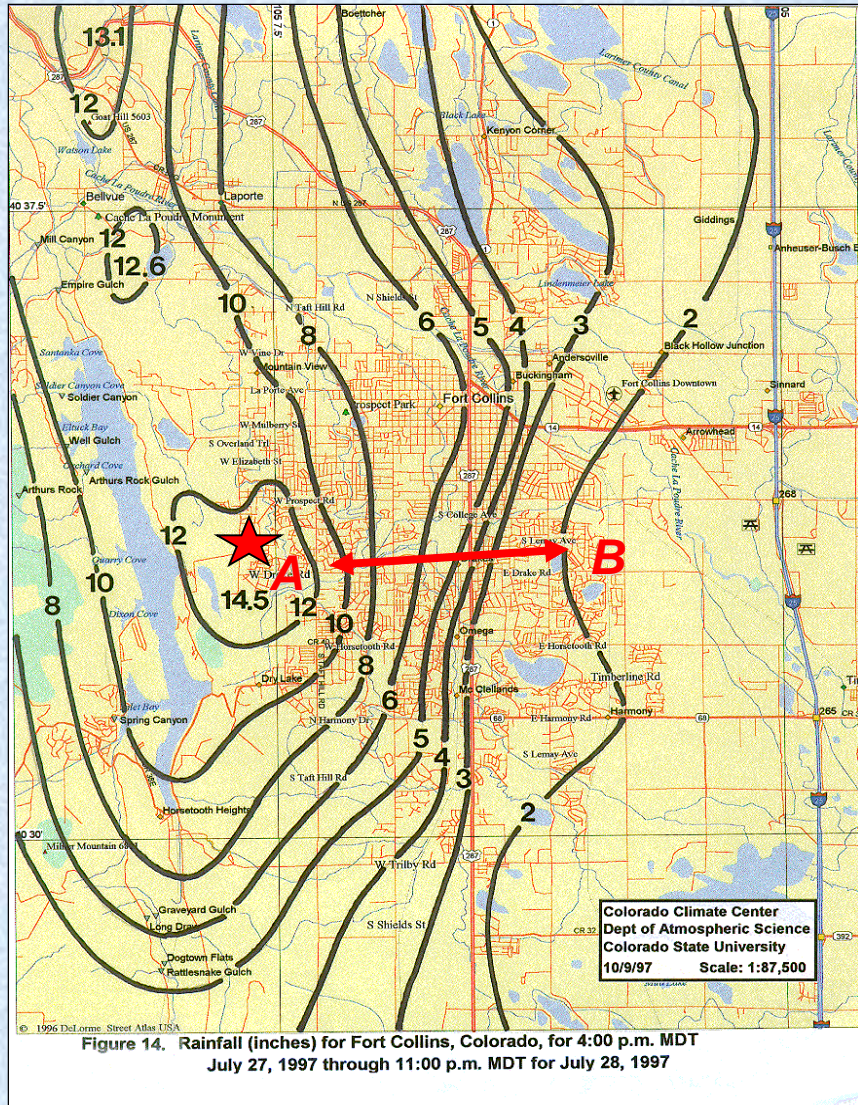


Storm reports can save lives!

**Ft. Collins Flood killed 5!
 Millions of \$ in damage!**



The Ft. Collins flood pointed out:



1. the extreme local variations in rainfall possible from convective storms.

2. the important role individuals can play in measuring, mapping and reporting precipitation.

Distance between A and B = 5 miles

A = 14.5 inches

B = 2.0 inches



***Texas Weather usually goes from
one extreme to the other...
and then back again!***

Welcome to Flash Flood Alley!





Drone Photo of Flooding



Pumphouse Restaurant and Grill

These are not isolated events!

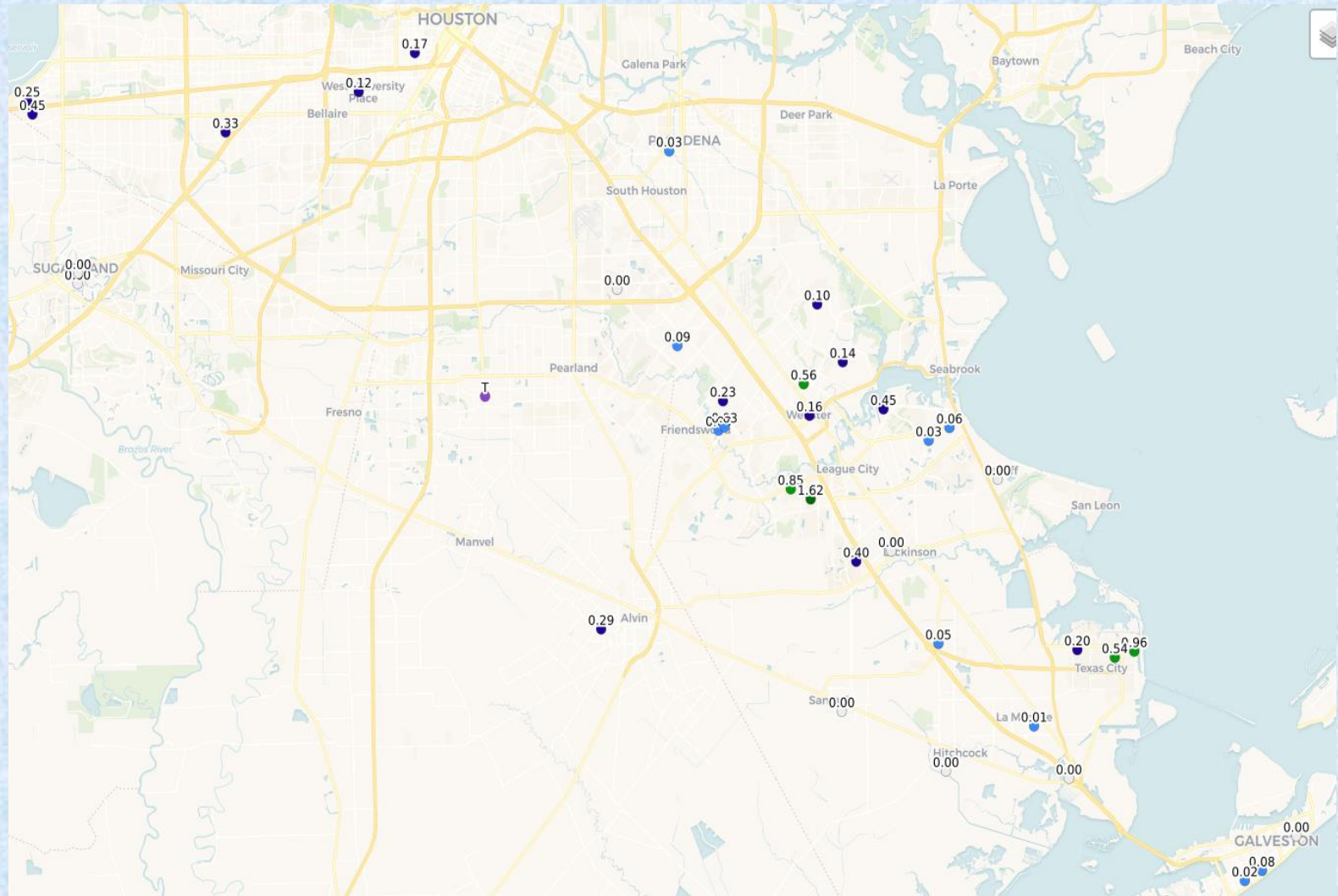


Nearby Guadalupe River in Harvey's Wake 32' above Flood Stage

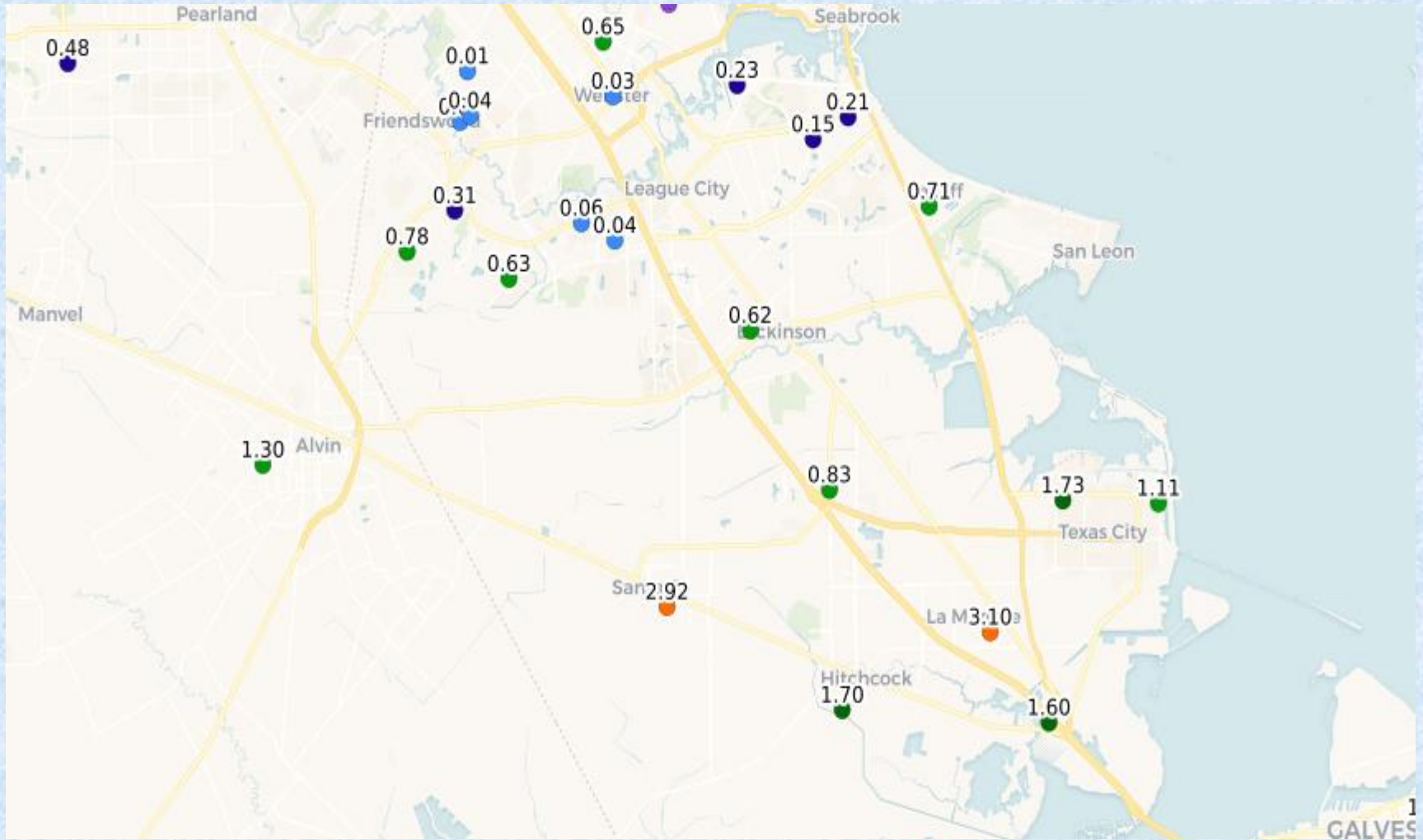




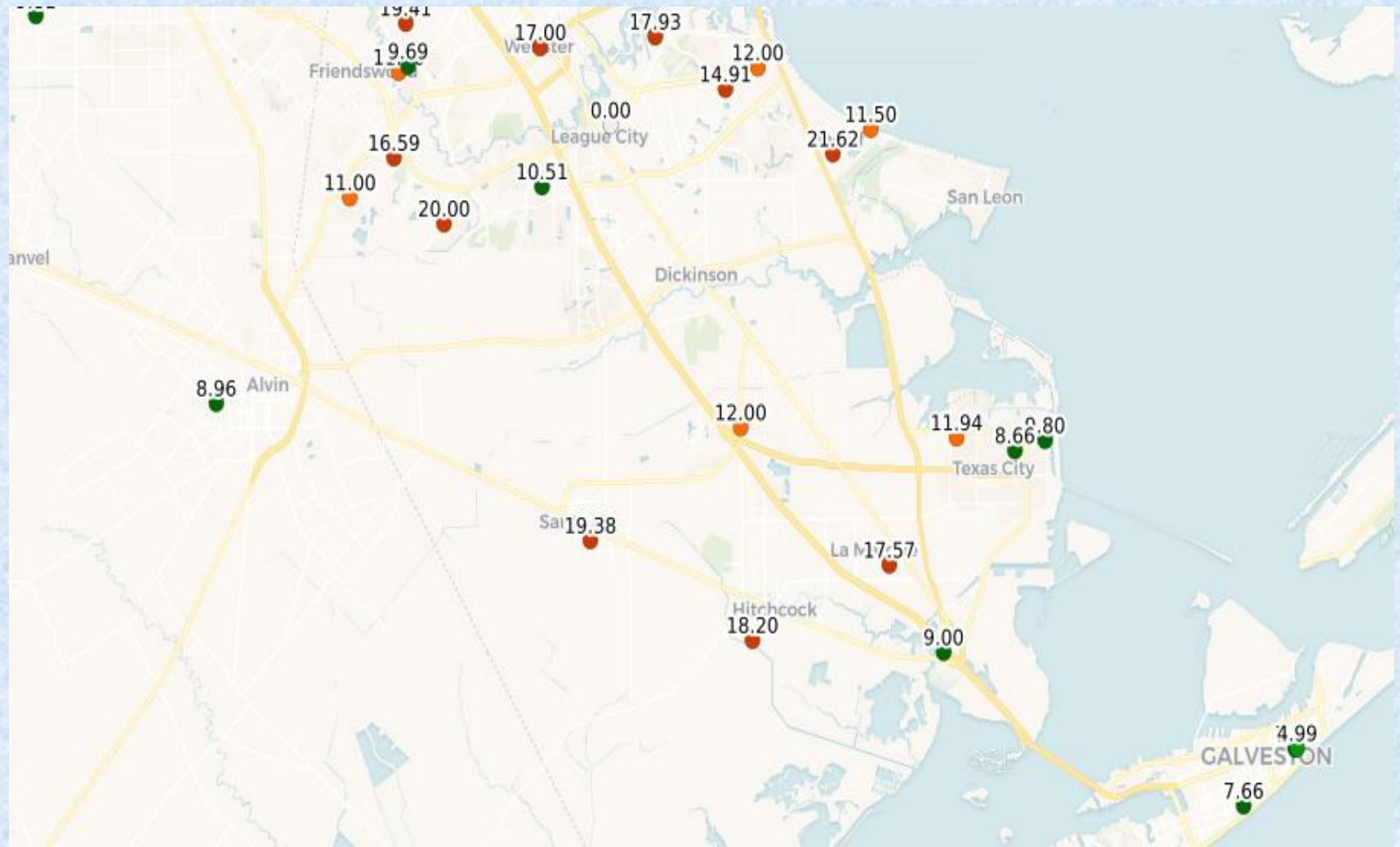
Friday 8/24/2017



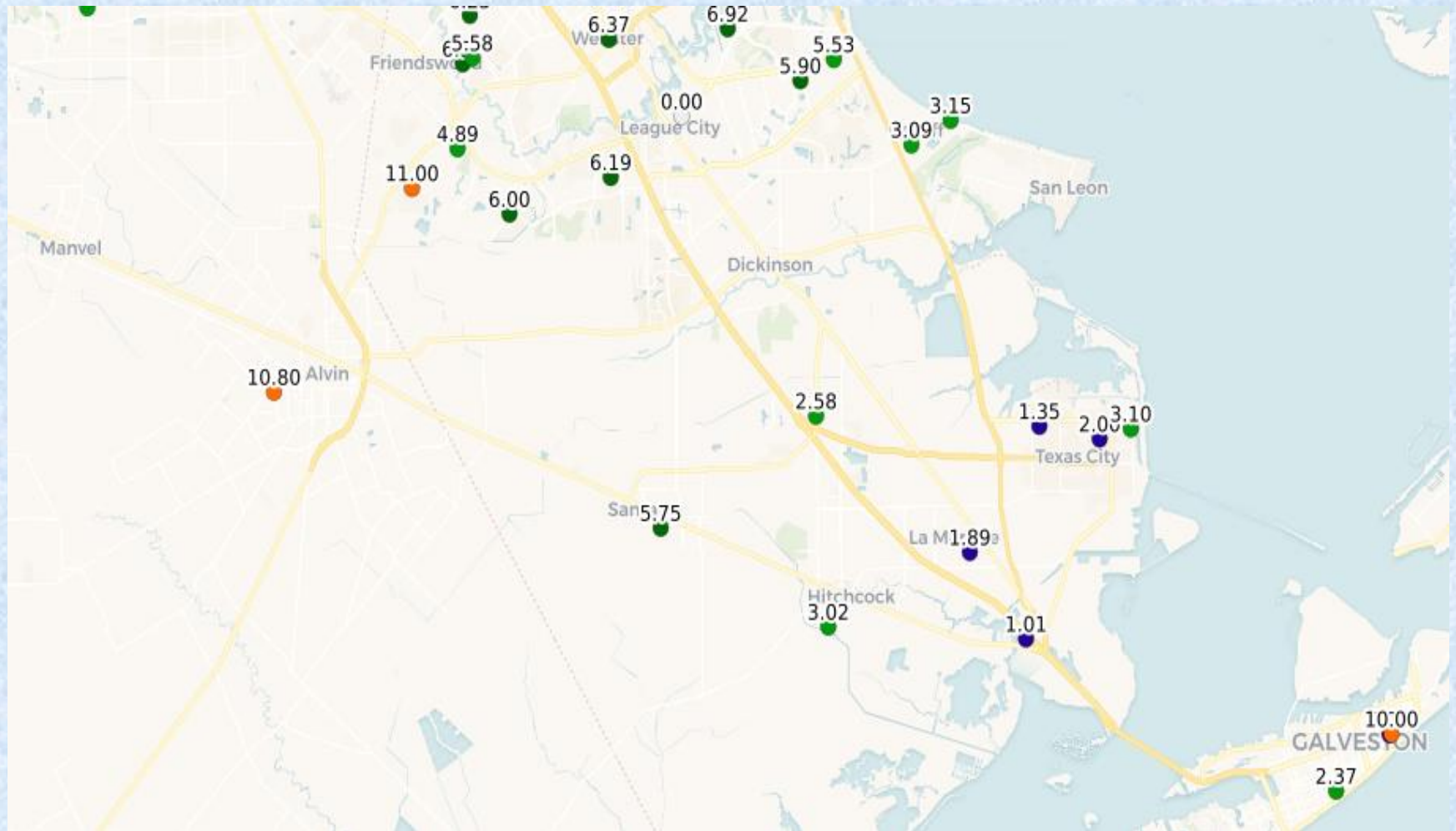
Saturday 8/25/2017



Sunday 8/26/2017



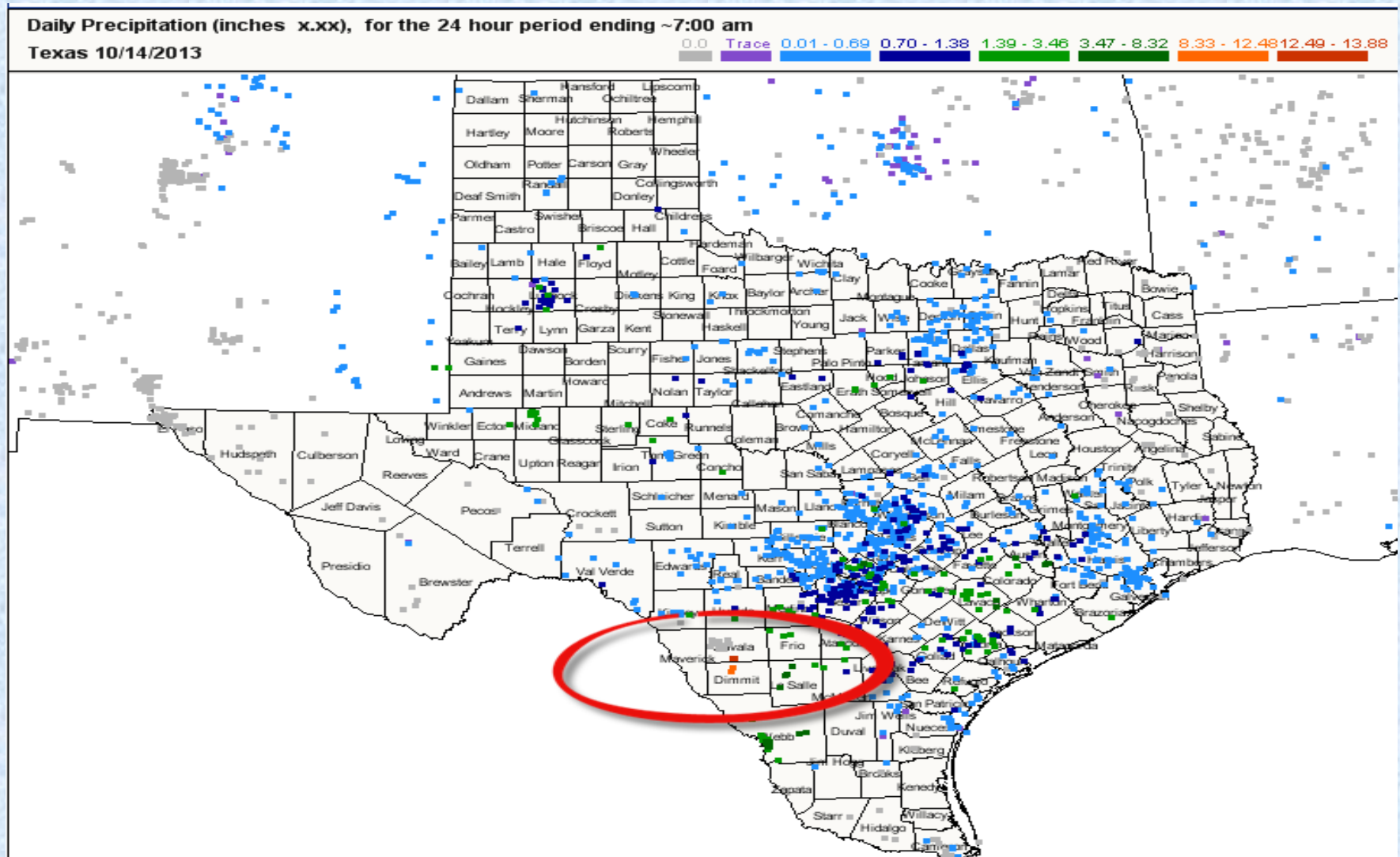
Monday 8/27/2017



**Another example
of extremely heavy rainfall
in South Central Texas!**

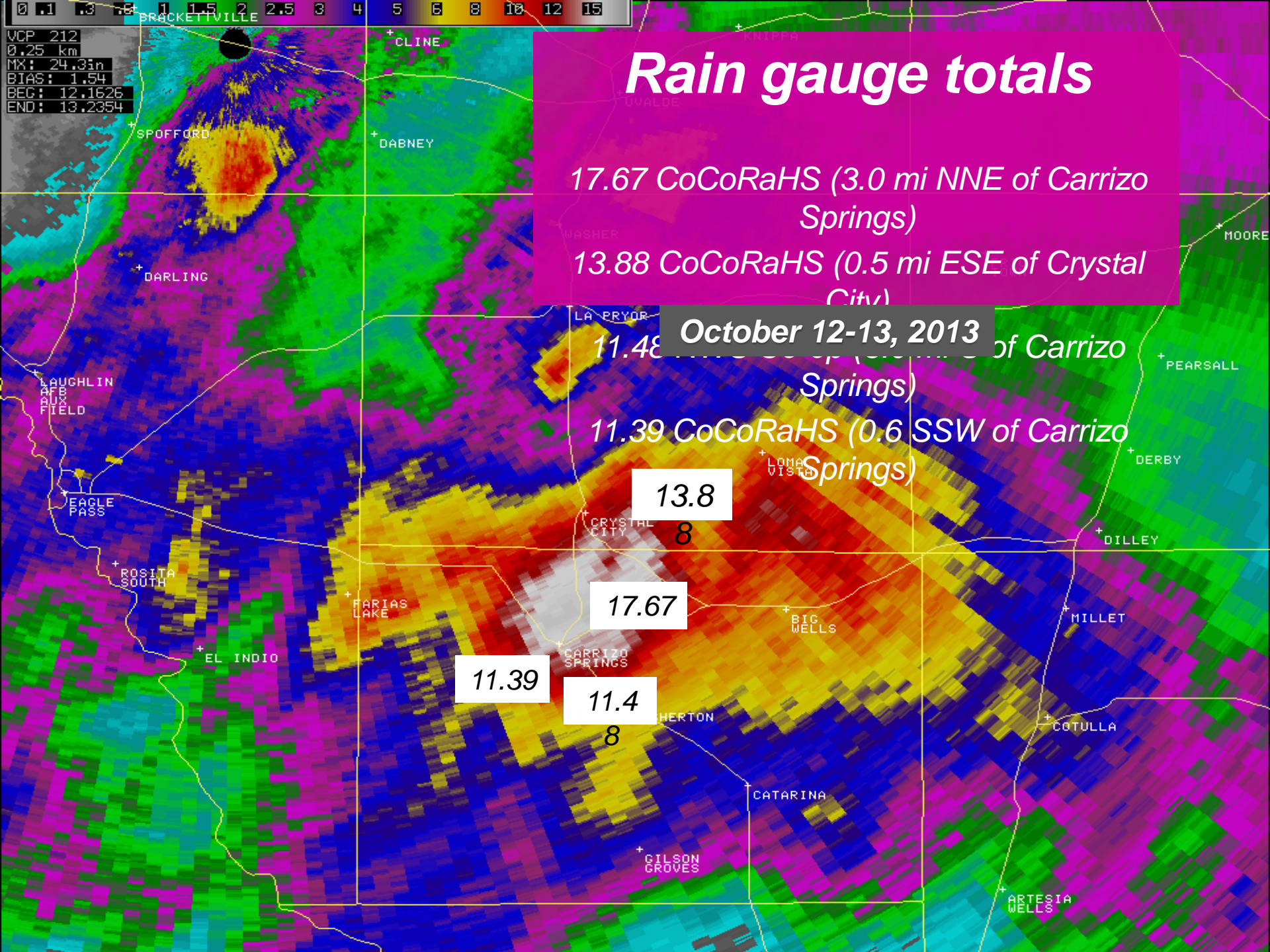
On October 14th 2013

To the Southwest of San Antonio...



0 1 1.3 1.5 2 2.5 3 4 5 6 8 10 12 15

VCP 212
0.25 km
MX: 24.3in
BIAS: 1.54
BEG: 12.1626
END: 13.2354



Rain gauge totals

17.67 CoCoRaHS (3.0 mi NNE of Carrizo Springs)

13.88 CoCoRaHS (0.5 mi ESE of Crystal City)

October 12-13, 2013

11.48 CoCoRaHS (0.6 mi SSW of Carrizo Springs)

11.39 CoCoRaHS (0.6 SSW of Carrizo Springs)

13.8

17.67

11.39

11.4

Poll Question # 4

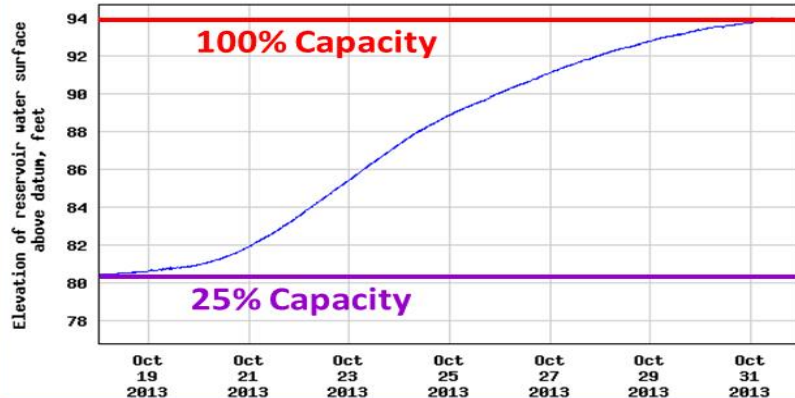
**Where did you first hear the
phrase “He who shovels snow early
shovels twice?”**

Excessive Rainfall from the Dimmit and Zavala Counties had a huge impact on Lake Corpus Christi



Nueces River Flooding – Lake Corpus Christi

Lake Corpus Christi Pool Level



- Lake Corpus Christi Reached Capacity Oct 31st, 2013.
- First Time Near Capacity Since September 2010
- 14 Foot Rise from Oct 19th to Oct 31st, 2013

Lake Corpus Christi October 19th



Lake Corpus Christi October 31st



weather.gov/corpuschristi



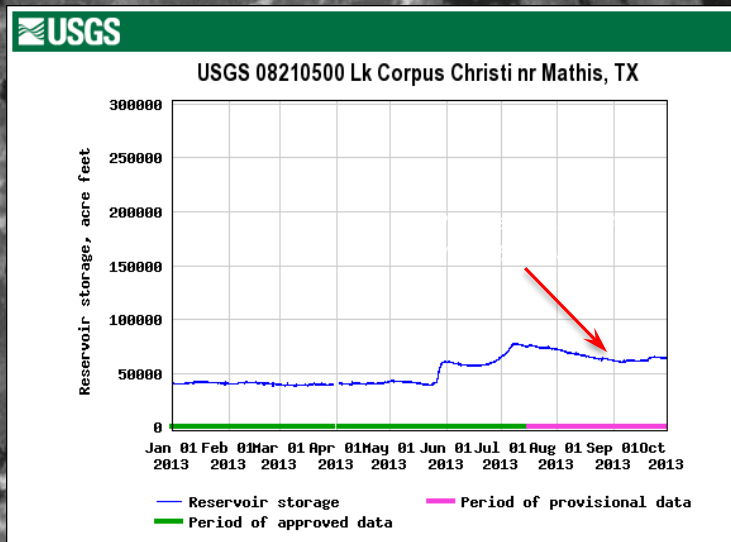
US National Weather Service
Corpus Christi



@NWSCorpus

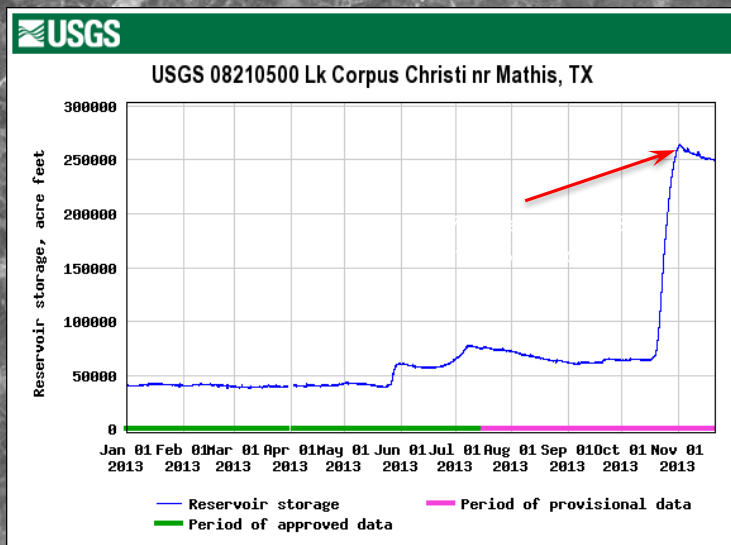


**NASA Landsat 8 OLI
Near IR Band
8/31/13 OCat 1203 CDT**



Mathis

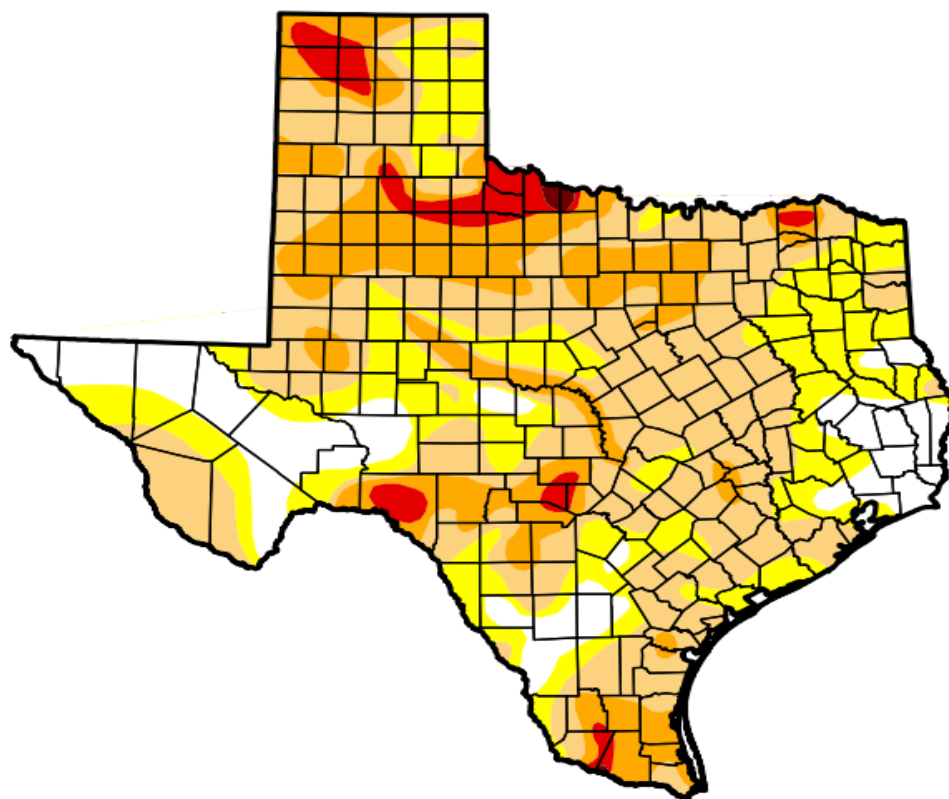
NASA Landsat 8 OLI
Near IR Band
11/3/13 at 1104 CST



Mathis

CoCoRaHS has become one of the Primary Sources of Data used by the National Drought Mitigation Center

U.S. Drought Monitor Texas



October 22, 2013





(Released Thursday, Oct. 24, 2013)

Valid 7 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	13.16	86.84	62.03	22.76	4.19	0.23
Last Week <i>10/15/2013</i>	9.10	90.90	65.25	21.73	3.19	0.12
3 Months Ago <i>7/23/2013</i>	0.62	99.38	92.54	67.42	28.31	6.35
Start of Calendar Year <i>1/1/2013</i>	3.04	96.96	87.00	65.39	35.03	11.96
Start of Water Year <i>10/1/2013</i>	6.62	93.38	70.95	25.08	4.01	0.12
One Year Ago <i>10/23/2012</i>	14.09	85.91	61.57	31.27	15.70	3.20

Intensity:

 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

Brian Fuchs

National Drought Mitigation Center



<http://droughtmonitor.unl.edu/>

National Drought Mitigation Center uses CoCoRaHS Data to Produce these maps!

Water Weekly

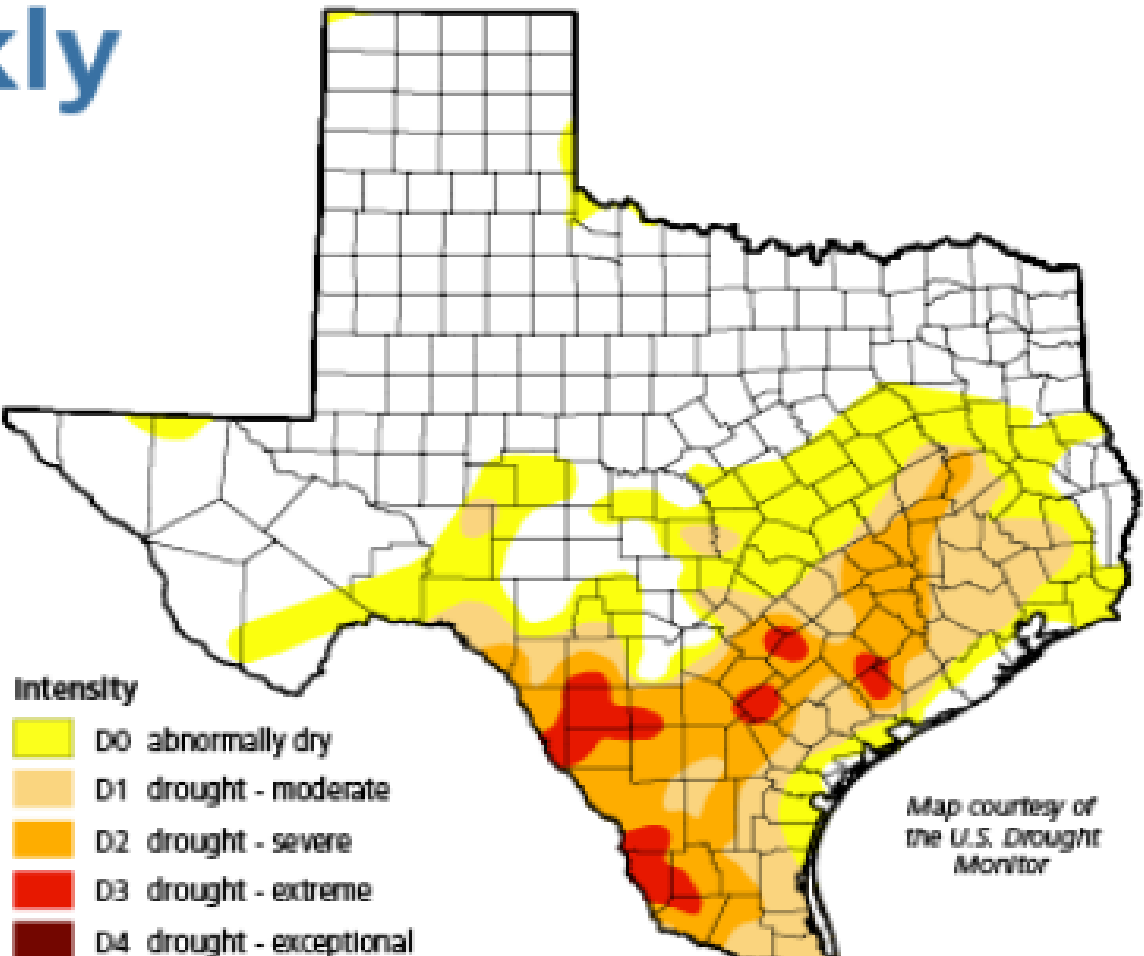
For the week of 02/24/20

Water conditions

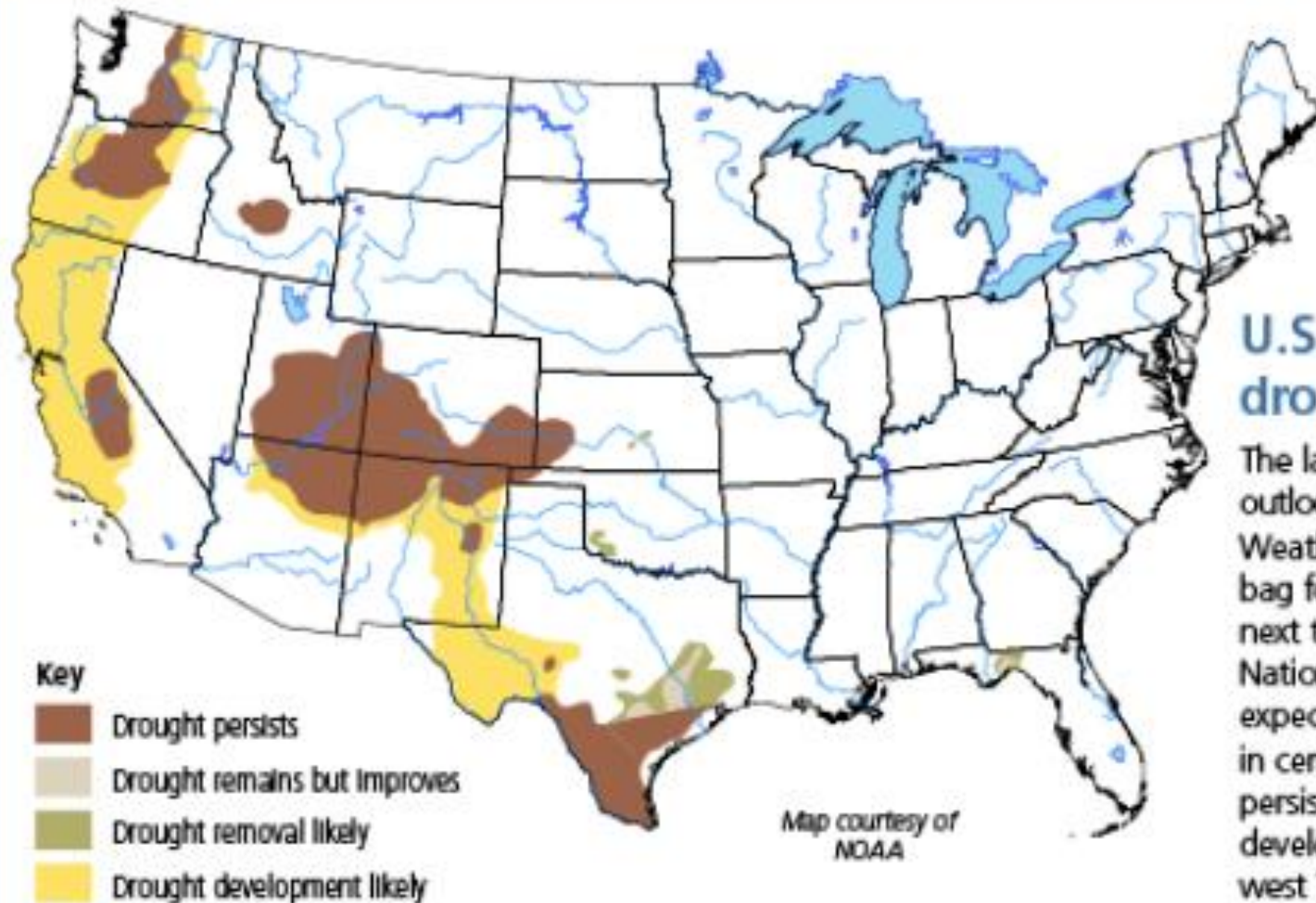
Drought continues to contract in the northern half of the state but expand and intensify in the south. As of February 18, the total area of the state impacted by drought is down dramatically, but extreme drought is up one percentage point and now impacts 3 percent of the state.

Drought conditions

- ◆ 24% now
- ◆ 33% a week ago
- ◆ 32% three months ago
- ◆ 7% a year ago



Current Seasonal Outlook

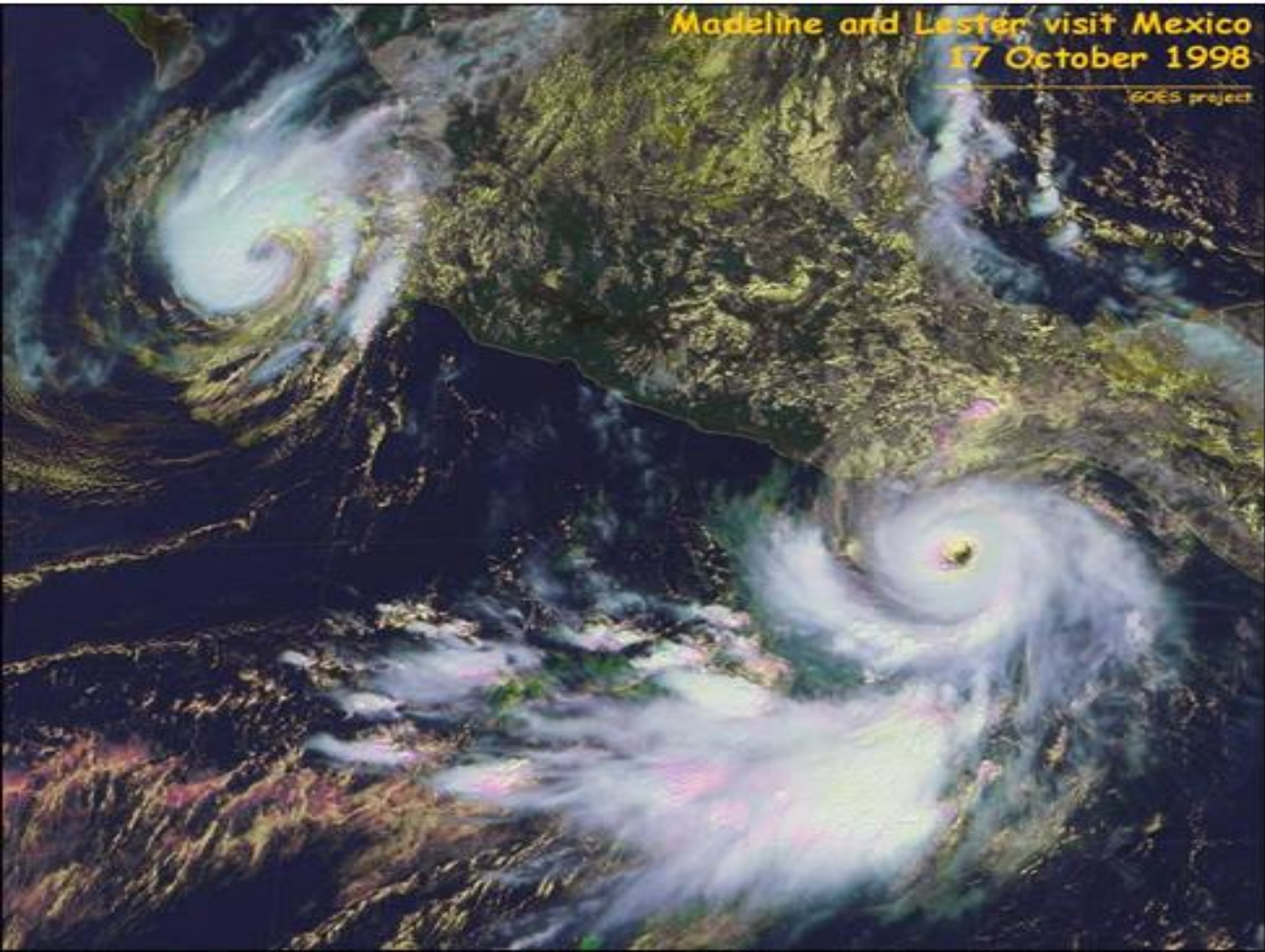


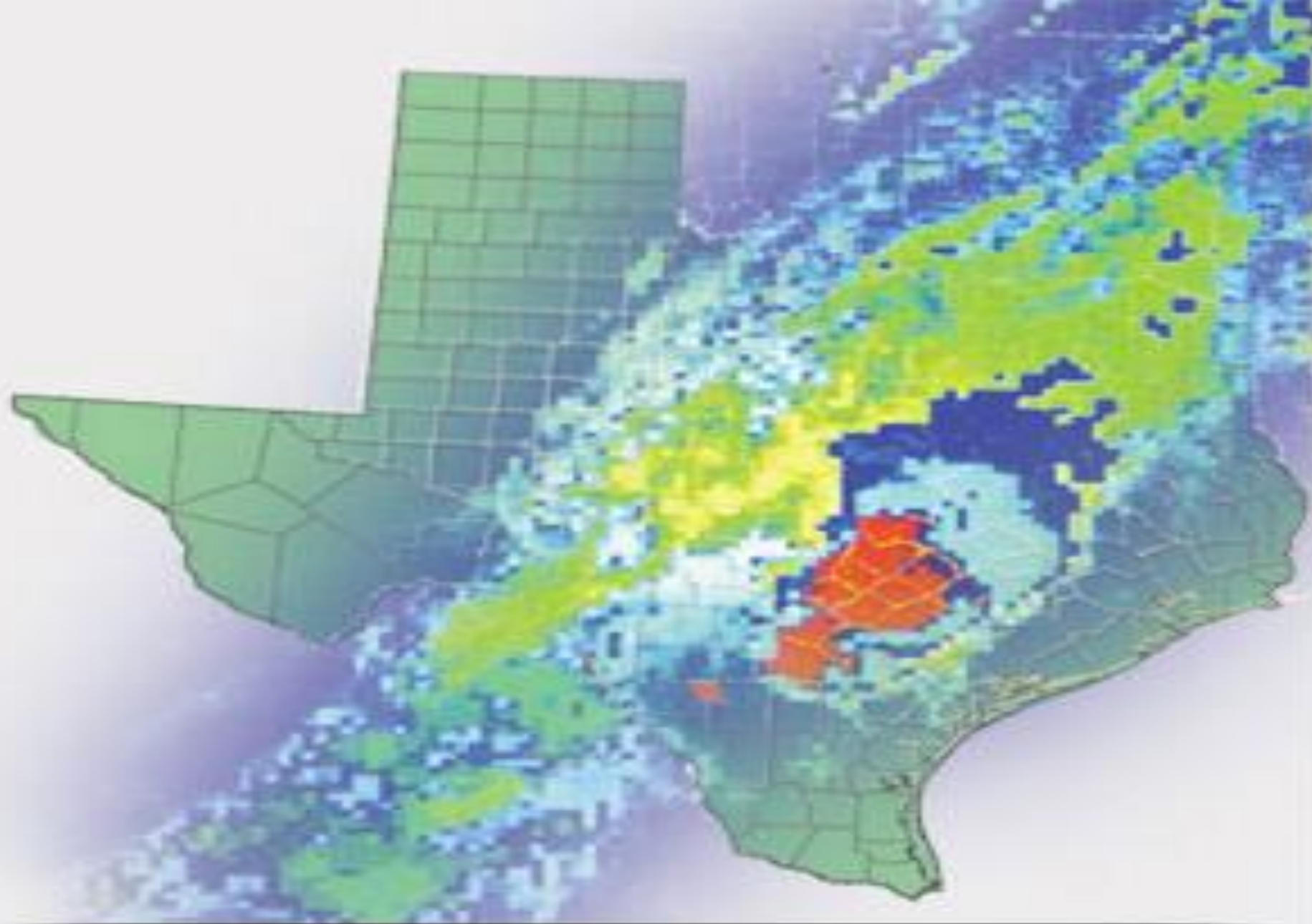
U.S. seasonal drought outlook

The latest seasonal drought outlook from the National Weather Service is a mixed bag for Texas. Over the next three months, the National Weather Service expects drought to contract in central and east Texas, persist in south Texas, and develop in new areas of west Texas.

Madeline and Lester visit Mexico
17 October 1998

GOES project





The storm that caused the 1998 floods in the Guadalupe River Basin covered much of the state of Texas.



Poll Question # 5

How often are Zeros reported?

Zeros are extremely important!!
Equally as important as an actual
recorded amount!

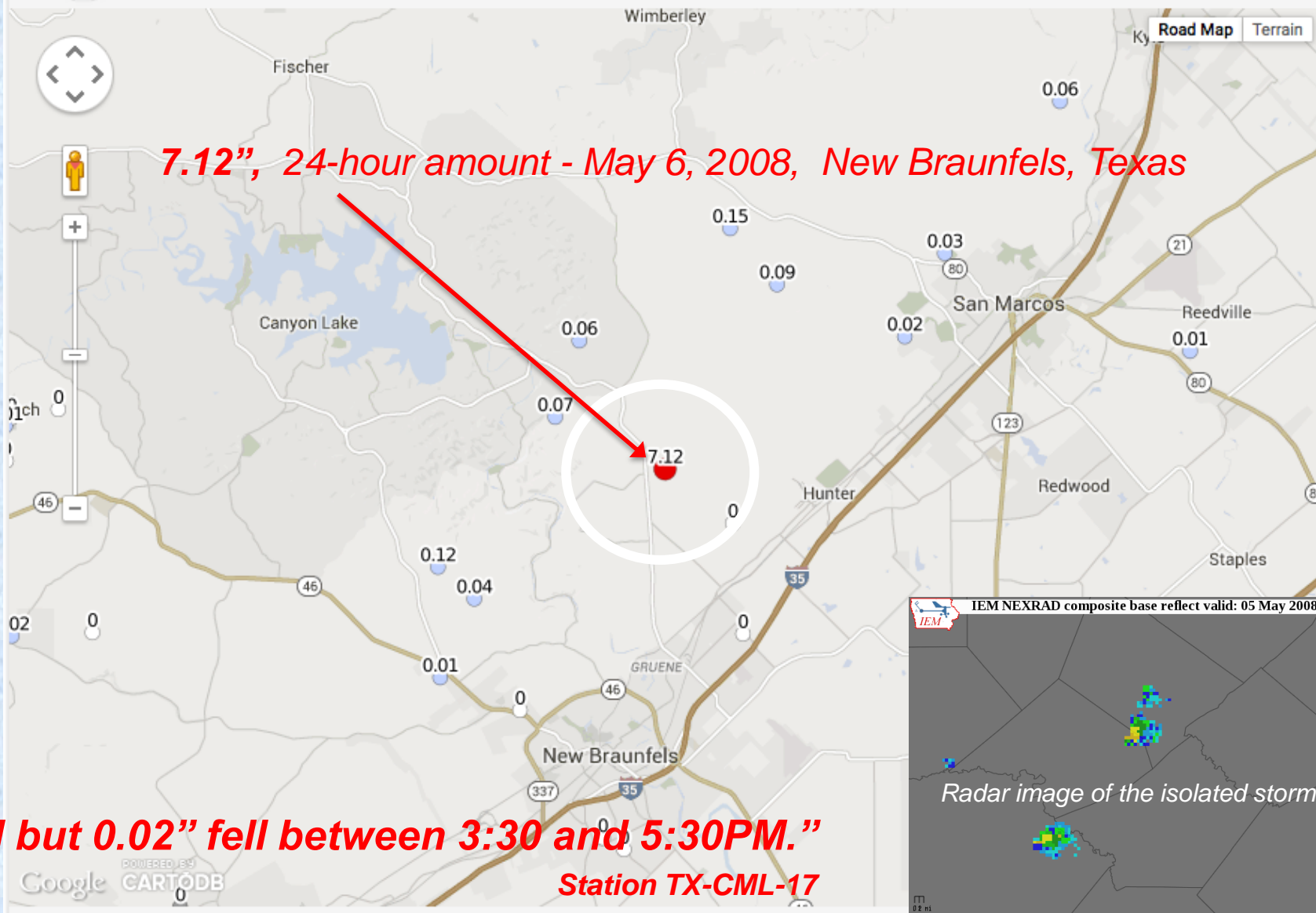
CoCoRaHS has become the Primary Source of Data
Used to Compile the Weekly and Monthly Drought
Maps!!





Precipitation for 2008-05-06 values in inches

Zero Trace 0.01 - 0.36" 0.37 - 0.72" 0.73 - 1.79" 1.80 - 4.28" 4.29 - 6.42" 6.43 - 7.12"



Your observation can make a difference!



I WANT YOU
FOR CoCoRaHS

CoCoRaHS hopes to one day achieve a network of . . .




one observer every square mile
in urban areas



one observer every 36 square miles
in rural areas

HOW CAN YOU BECOME PART OF THE NETWORK?

A clear plastic rain gauge is mounted on a wooden post in a grassy field. In the background, a vibrant rainbow is visible against a soft, hazy sky. The scene is peaceful and suggests a connection to nature and weather observation.

Five easy steps

*Simply sign-up on the
CoCoRaHS web page*

www.cocorahs.org

*Obtain a 4" plastic rain gauge
(info available on web site)*

***View the “training slide show” or
attend a training session...contact
State or Regional Coordinator.***

*Set-up the gauge in a “good”
location in your backyard*

***Start observing precipitation
and report on-line daily or by Smart
Phone App Daily!***

Volunteers take their readings once a day



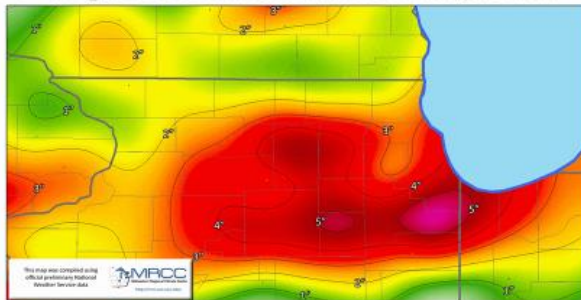
Observers can easily transmit their observations using mobile devices



CoCoRaHS observers help provide a much better post-storm analysis picture!

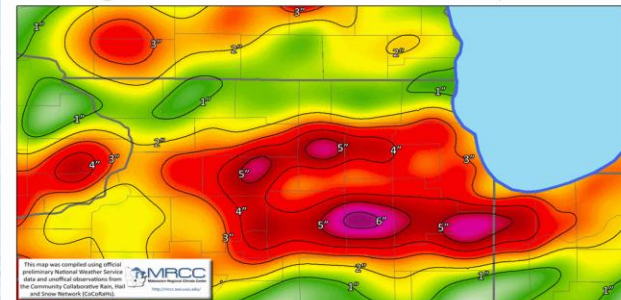
Without CoCoRaHS data

(A) August 23 & 24 Accumulated Precipitation



With CoCoRaHS data

(B) August 23 & 24 Accumulated Precipitation



The Most Interesting Man in the World says...



Master Naturalists & Master Gardeners

- ***Most TMN & TMG Chapters award Active CoCoRaHS volunteers ~ 4 hours credit each month toward their community service requirement.***
- ***Best Way to purchase 4" rain gauge is to make a group purchase...buy a case of 12 and receive approximately \$8 per gauge savings. (case of gauges is drop shipped from manufacturer.)***

Thank you for attending!

“Every Drop Counts...and so do Zeros!”

Questions???

Bill Runyon

Texas CoCoRaHS State Coordinator

New Email: texas@cocorahs.org

Twitter: [Texas_CoCoRaHS](#)