

# CoCoRaHS

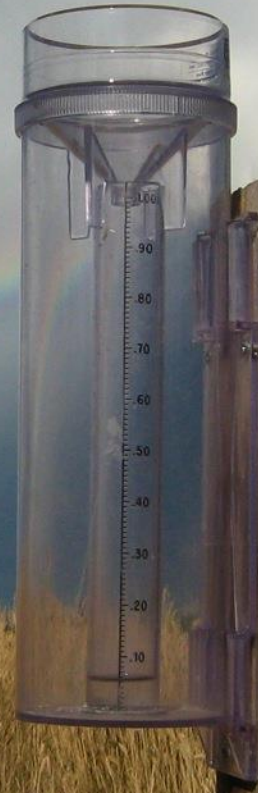
## "Because Every Drop Counts"



Michael Griesinger  
National Weather Service - Twin Cities



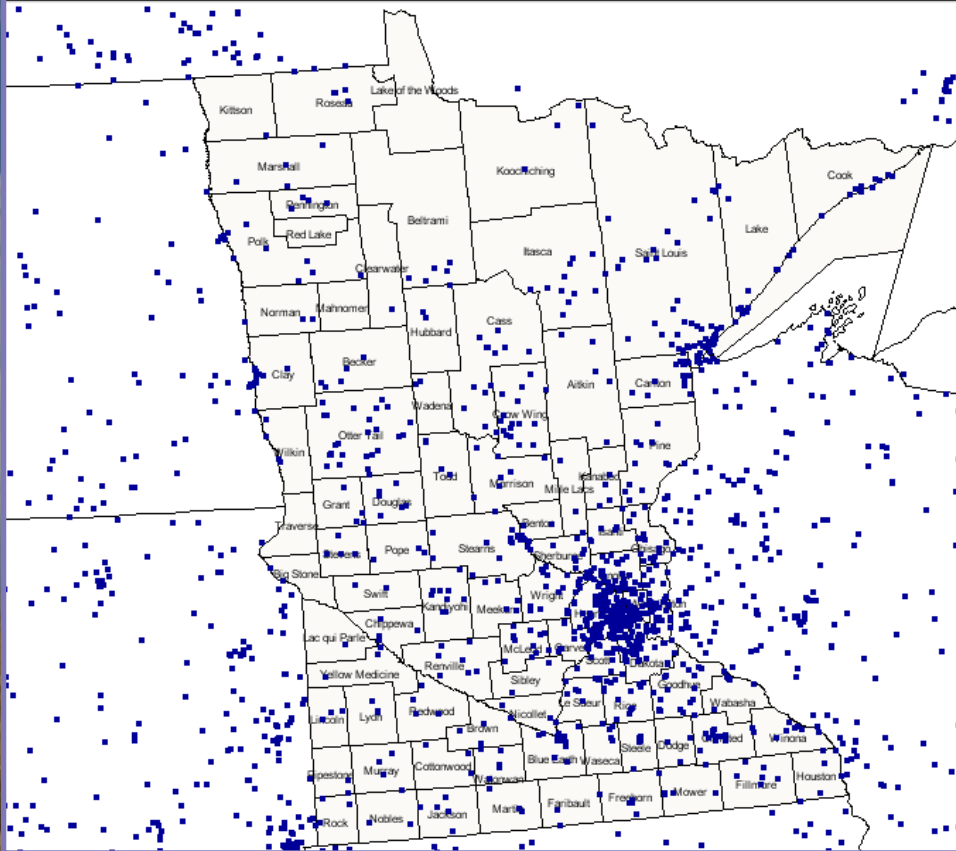
- ☞ Non-profit, community based network of volunteers
- ☞ Uses low-cost measuring tools
- ☞ User-friendly website to share data and provide training resources
- ☞ Provides high-quality data for natural resource, education and research applications
- ☞ Stations in all 50 states, Puerto Rico, U.S. Virgin Islands, the Bahamas, and Canada



Community Collaborative Rain, Hail, and Snow Network



Active Stations  
Minnesota



# CoCoRaHS in Minnesota:

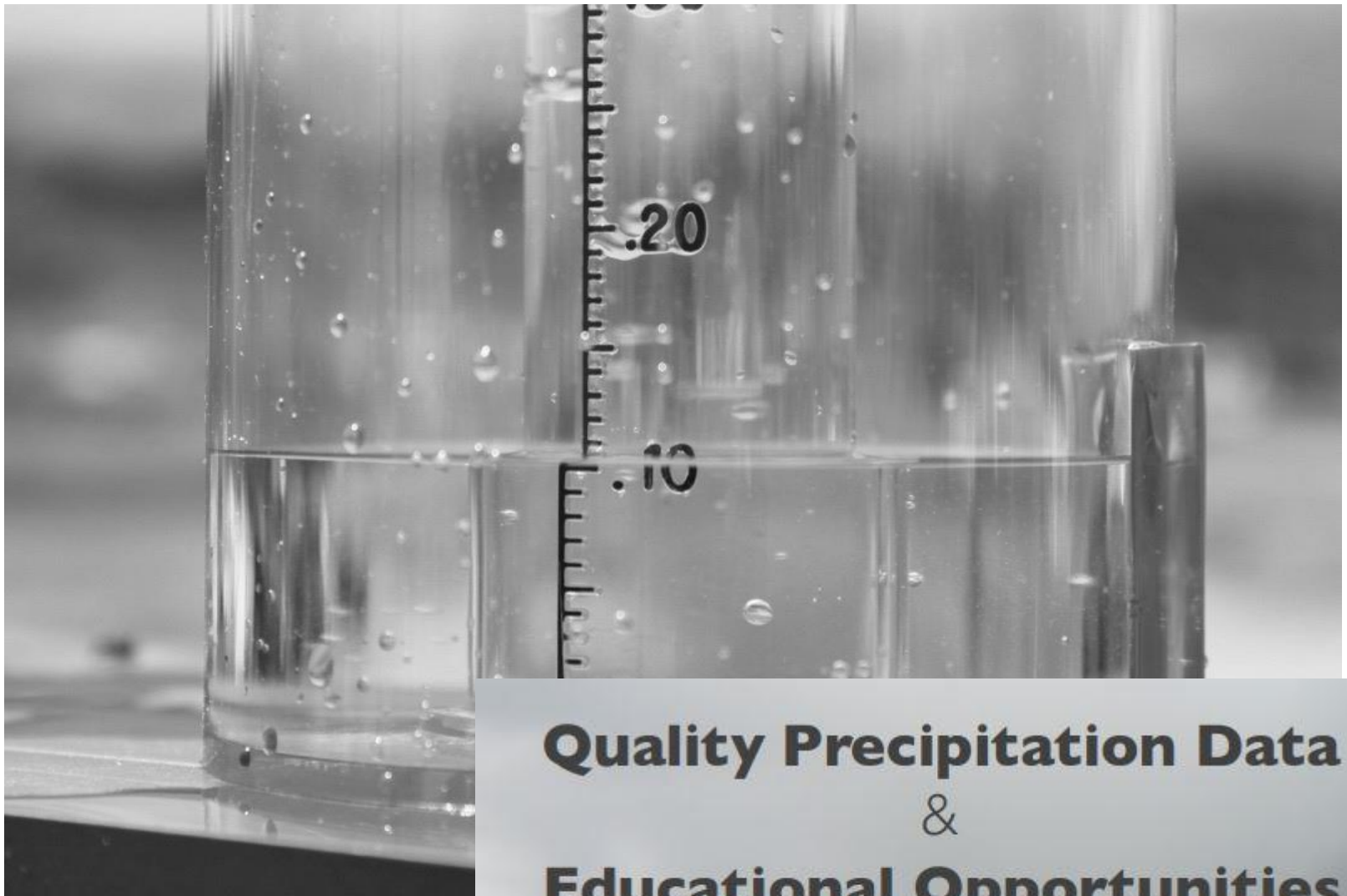
49<sup>th</sup> state to join network

Nebraska was 50<sup>th</sup> state – both had existing networks to incorporate

Minnesota joined in December 2009

Currently 878 CoCoRaHS Stations





# CoCoRaHS Mission:

**Quality Precipitation Data  
&  
Educational Opportunities**

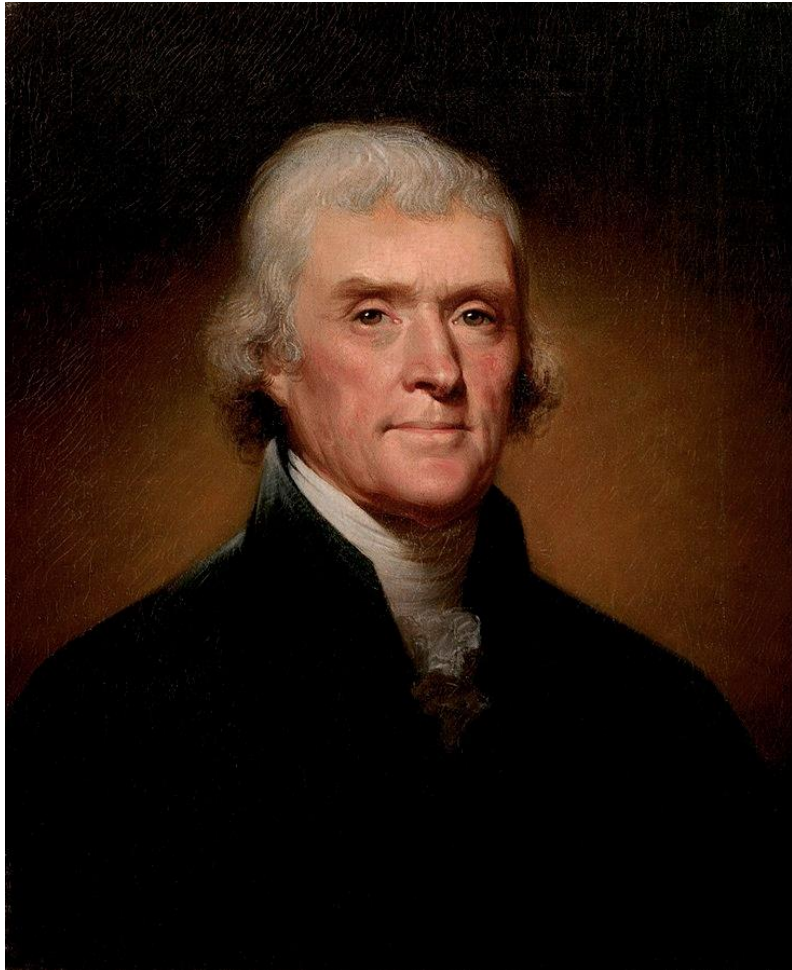
to help the public better  
understand weather and climate

# A Brief History of Weather Observers in the US



John Campanius Holms took first known systematic weather observations in 1644 in Wilmington, Delaware

# A Brief History of Weather Observers in the US

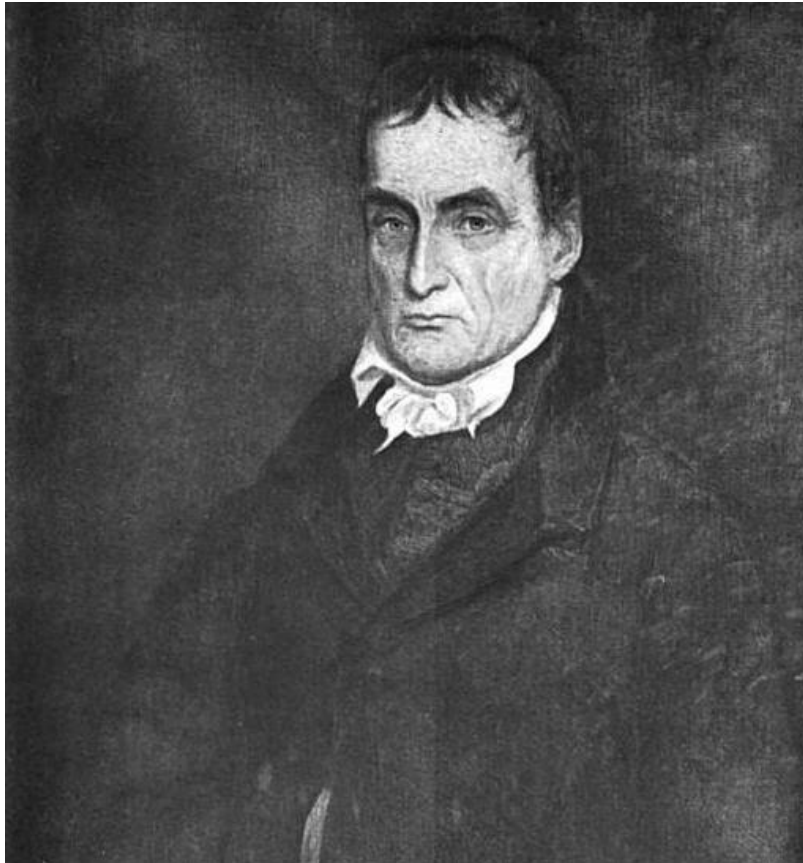


In 1776, Thomas Jefferson began recruiting weather observers across Virginia.

By 1800, there were volunteer observers in Massachusetts, Pennsylvania, New York, Connecticut, and North Carolina



# A Brief History of Weather Observers in the US



In 1814, surgeon general James Tilton issued order to conduct weather observations at all Army posts

This is often viewed as the first seed that was planted for what has become the National Weather Service

# A Brief History of Weather Observers in the US



In 1848, Joseph Henry (Smithsonian) initiated telegraphic network of 150 volunteer weather observers

By 1860 this network had grown to 500 observers



# A Brief History of Weather Observers in the US



1870, President Ulysses S. Grant signed legislation into law to create a national weather service

Brigadier General Albert Myer was first director of this weather operation in the US Signal Service Corps

November 1, 1870 at 7:35 am, first synchronized observations from across the nation were collected

1891, over 2000 volunteer weather observers existed and they were collected into what is the COOP weather observer program

# CoCoRaHS was born in response to the devastating 1997 Fort Collins, Colorado flood



## 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 1 a.m. today

## Wednesday



## July 30th 1997





# The flood pointed out:

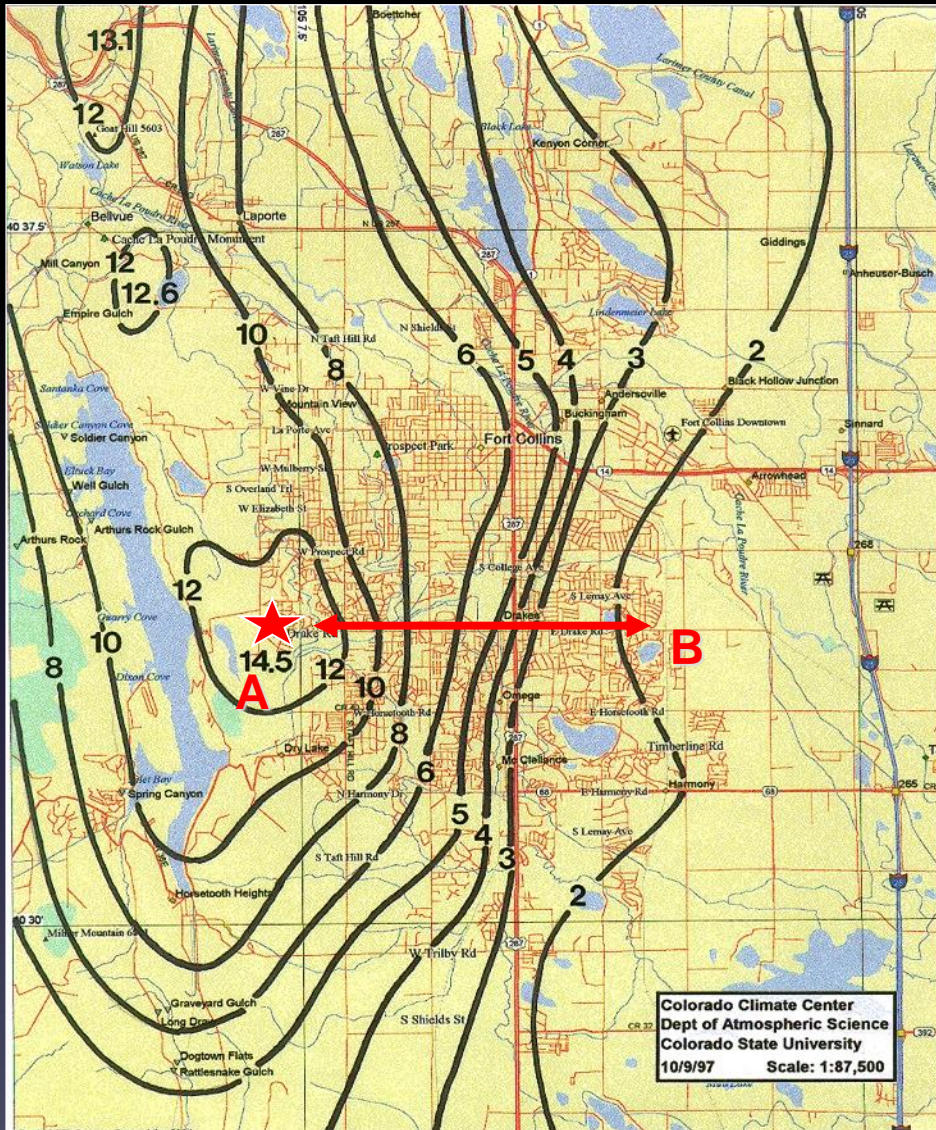


Figure 14. Rainfall (inches) for Fort Collins, Colorado, for 4:00 p.m. MDT July 27, 1997 through 11:00 p.m. MDT for July 28, 1997

1. Extreme local variations in rainfall
2. The important role individuals can play in measuring, mapping and reporting precipitation.

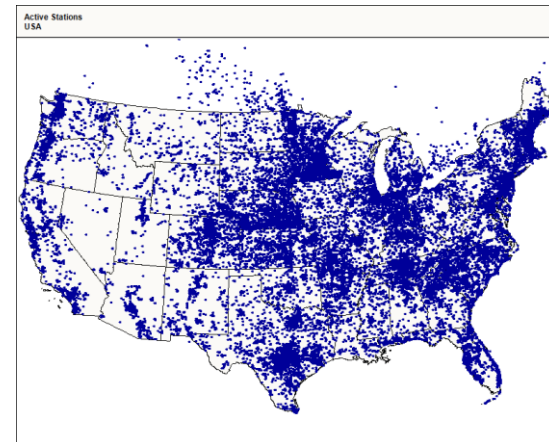
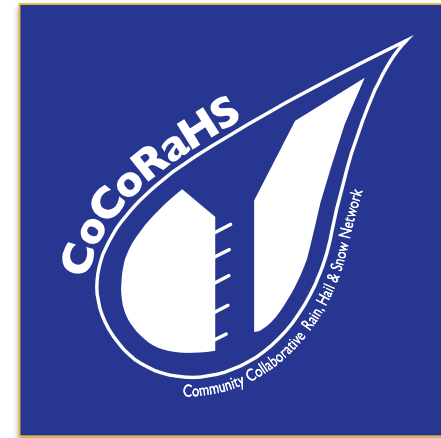
Point A = 14.50" of rain  
Point B = 2.00" of rain

Distance between A and B = 5 miles

# 1998



# Today

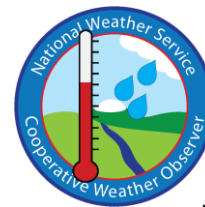
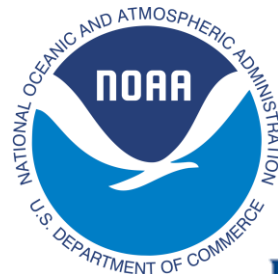


A few dozen volunteers  
in Northern Colorado

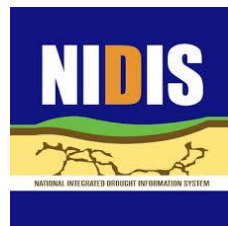
20,000+ volunteers in all  
50 states, Canada, Puerto Rico,  
the U.S. Virgin Islands and the Bahamas



CoCoRaHS and a simple rain gauge can become a “lowest common denominator”, opening all kinds of doors for partnerships and collaborations with many organizations. We strive to supplement and enhance their missions.



National Operational Hydrologic Remote Sensing Center



North American Drought Monitor

The goal is to help others succeed by providing quality data that they can use in a variety of ways

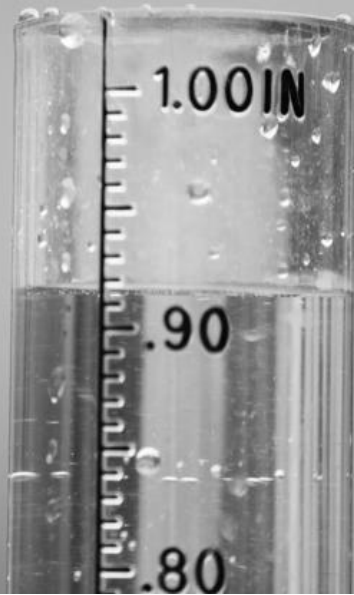
Volunteer observers report daily  
~7:00 AM local time



Observations between 5:00 AM and 9:00 AM are ideal

# Simple, easy-to-use low cost equipment

Cost approximately  
\$33.00 (U.S.)



Gauge measures to 0.01" (0.2mm),  
holds 11.30" (260 mm) of precipitation.

The 4" diameter high capacity  
plastic rain gauge



Everyone uses the same rain gauge for consistency of observations.



# Rainfall data

CoCoRaHS has quickly become the largest source of daily precipitation measurements in the United States



# Snowfall data

CoCoRaHS Volunteers measure both snowfall (new and accumulated) as well as the water content of the snow



# Hail data

CoCoRaHS has become one of the largest repositories of hail data in the United States



# Snow Measurements

Two ways in which snow is measured

Our observers measure:

1. Liquid water content of snow
  - from the gauge
  - from a core sample
2. Depth of snow
  - 24 hour snowfall accumulation
  - existing snow depths



What is your landscape's current

# CONDITION?

Tell us by submitting a "CoCoRaHS Condition Report"

**WET?**  
**NORMAL?**  
**DRY?**



Dry ←————→ Normal ←————→ Wet

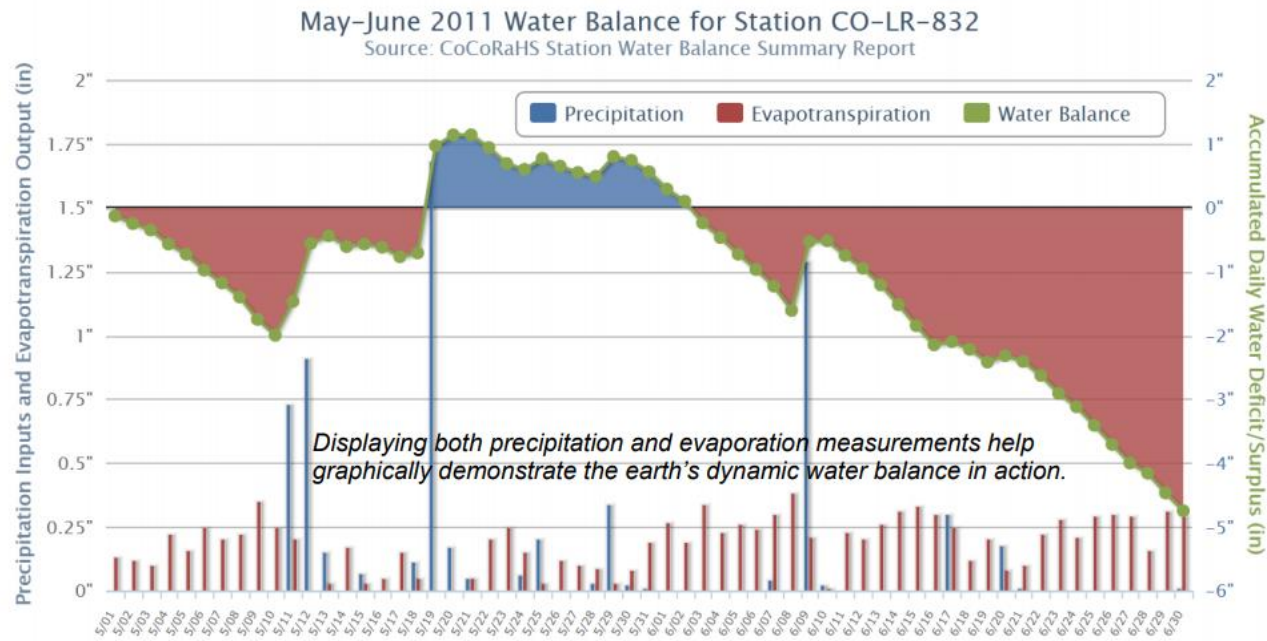
## A Guide to Monitoring your Local Conditions



# Evapotranspiration – “ET gauge”



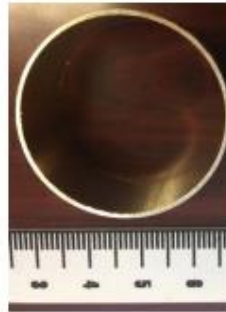
## CoCoRaHS graphical Water Balance display



Precipitation variable, ET<sub>o</sub> fairly consistent

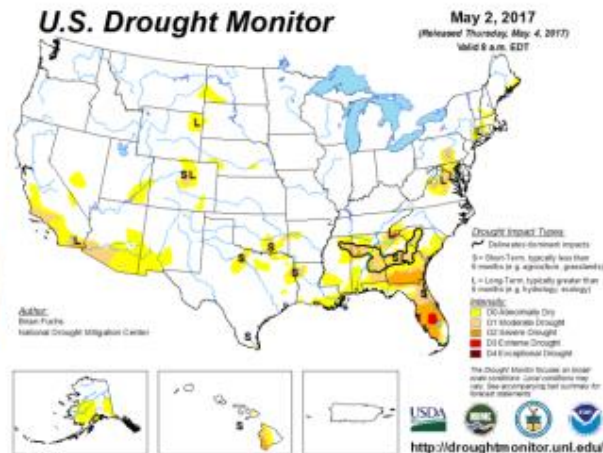


# CoCoRaHS Soil Moisture Monitoring



## Why Soil Moisture?

The 0-2" soil samples have the potential to be used in calibration-validation effort by the National Aeronautics and Space Administration's (NASA) Soil Moisture Active-Passive Satellite (SMAP). The 7-9" samples are suitable for aiding in the drought monitoring process, which is an operation lead by the United States Department of Agriculture (USDA). This is also a great opportunity to play outside, get your hands dirty, and learn something!



## Getting Equipped:

CoCoRaHS will be providing soil moisture measurement kits for the cost of \$50.00. These kits include a brass ring for soil coring (1), a graduated cylinder (2), and a CoCoRaHS scale (3).



# Significant Weather Reports

## Data Entry : Significant Weather Report Form




| Significant Weather Report  |  | Submit Data  | Reset |
|---|--|--|-------|
| Station Number : MN-CV-2  |  |  |       |
| Station Name : Chaska 0.7 ESE   |  |  |       |
| * Denotes Required Field  |  |  |       |
| 9/26/2019   |  | * Observation Date   |       |
| PM  |  | * Observation Time   |       |
| Minutes   |  | Time duration that the report covers   |       |
| Rain  |  |  |       |
| in.   |  | New Rain and Melted Snow that has fallen during the report duration, in inches to the nearest <b>hundredth</b> |       |
| in.   |  | Total Precipitation, rain and melted snow, since storm began, in inches to the nearest <b>hundredth</b>        |       |
| Snow  |  |  |       |
| in.   |  | Depth of New Snow that has fallen during the report duration, in inches to the nearest <b>tenth</b>            |       |
| in.   |  | Total depth of snow and ice on ground at the time of this observation to nearest <b>half inch</b>              |       |
| Additional Information  |  |  |       |
| <input type="radio"/> Yes <input type="radio"/> No Report was taken at registered location? |  |  |       |
| Was There Flooding?   |  |  |       |
| <input type="radio"/> No  |  |  |       |
| If Yes, how severe?   |  |  |       |
| <input type="radio"/> Minor (typical). Street or field flooding.                            |  |  |       |
| <input type="radio"/> Unusual street or field flooding (only see this every few years)      |  |  |       |
| <input type="radio"/> Severe Flooding   |  |  |       |
| <input type="radio"/> Extreme (never seen it this bad before)                               |  |  |       |
| Observation Notes <small>(This will be available to the public)</small>                     |  |  |       |
| <input type="text"/>  |  |  |       |
|   |  | Submit Data  | Reset |

# Reporting Daily Observations



CoCoRaHS Observer

 Precipitation Report  
MN-CV-2 (english)  
Chaska 0.7 ESE

Observation Date: 2018-03-20

Observation Time: 08:00

Rain/Melted Snow (in): 0.00

Trace  NA

[Click To Specify Snow & Flooding Info](#)

optional notes

SUBMIT

## My Data Entry : Daily Precipitation Report Form

**Precipitation Report Form** Submit Data Reset

Station Number : CO-LR-610

Station Name : Fort Collins 3.5 SW

\* Denotes Required Field

8/16/2011 \*Observation Date ?

7:00 AM \*Observation Time ?

1.09 \*Rain and Melted Snow to the nearest hundredth inch that has fallen in the gauge during the past 24 hours ?

Yes  No Report was taken at registered location?

Observation Notes: (This will be available to the public) ?

Heavy thunderstorms overnight. Intense lightning and gusty winds. Many tree branches fallen in my backyard.

**New Snowfall**

NA Accumulation of new snow in inches to the nearest tenth ?

NA Melted value from core to the nearest hundredth ?

**Total Snow and Ice on Ground at Observation Time**

NA Depth of total snow and ice (new and old) in inches to the nearest half inch ?

NA Melted value from core to the nearest hundredth ?

**Duration Information**

# CoCoRaHS Website



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

Select Language ▼

Home | Countries | States | View Data | Maps | My Account | Admin | Logout

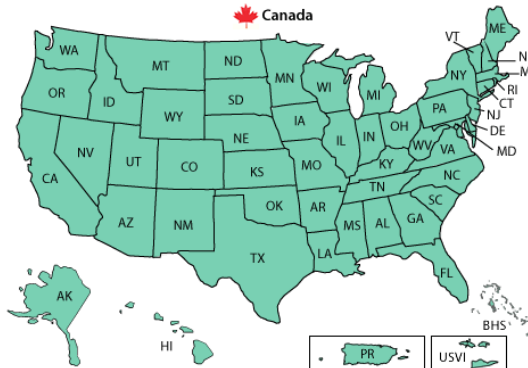
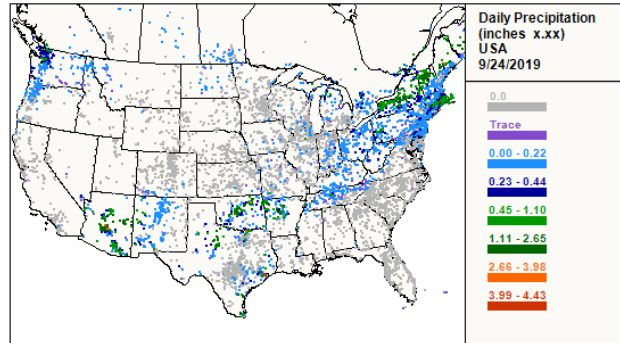
Welcome to CoCoRaHS! "Volunteers working together to measure precipitation across the nations."

- Main Menu**
- Home
  - About Us
  - Join CoCoRaHS
  - Contact Us
  - Donate
- Resources**
- [FAQ / Help](#)
  - [Education](#)
  - [Training Slide-Shows](#)
  - [Videos](#)
  - [Condition Monitoring](#)
  - [Evapotranspiration](#)
  - [Soil Moisture](#)
  - [Volunteer Coordinators](#)
  - [Hail Pad](#)
  - [Distribution/Drop-off](#)
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  - [State Climate Series](#)
  - [March Madness](#)
  - [WxTalk Webinars](#)
  - [Sponsors](#)
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  - [CoCoRaHS Store](#)

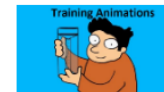
## Who uses CoCoRaHS Observations?

Reports received today 9/24/2019 as of 4:05 PM EDT

| Daily | Multi-day | SigWx | Hail | Condition | ET  |
|-------|-----------|-------|------|-----------|-----|
| 9,391 | 131       | 2     | 0    | 20        | 115 |



JOIN CoCoRaHS



Things to know about...

- Rain
- Hail
- Snow



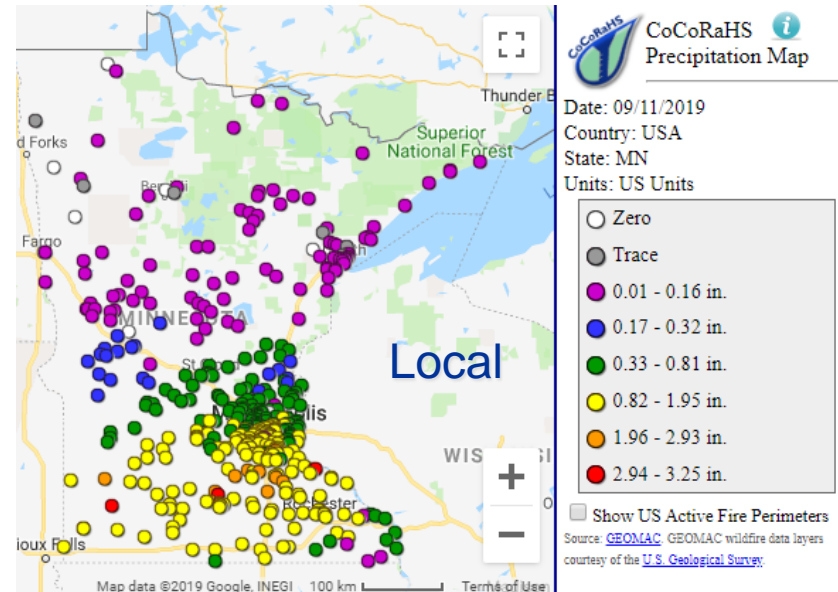
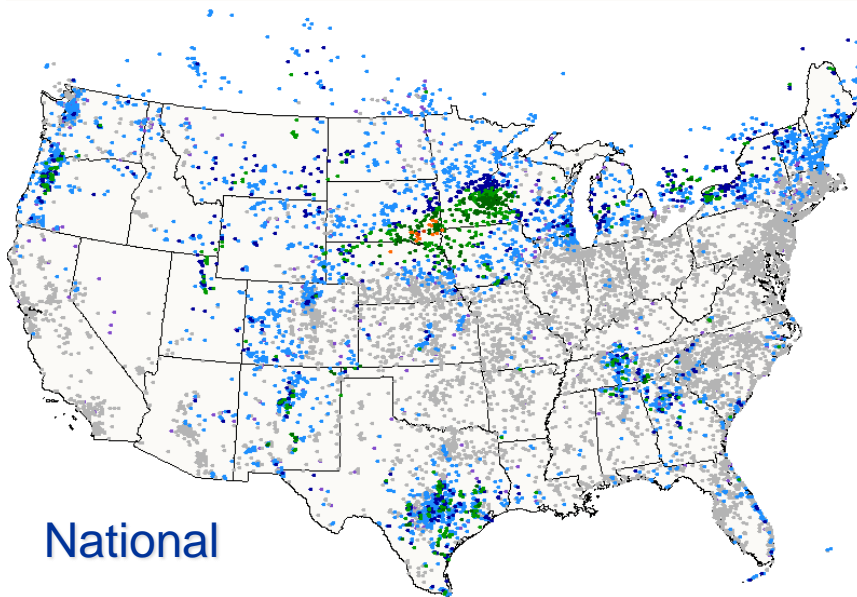
Purchase an official CoCoRaHS 4" Rain Gauge



[www.cocorahs.org](http://www.cocorahs.org)

| Date      | Time    | Station Number | Station Name     | Total Precip in. ▲ | New Snow in. ❄️💧 | Total Snow in. ❄️💧 | State | County     |
|-----------|---------|----------------|------------------|--------------------|------------------|--------------------|-------|------------|
| 9/11/2019 | 8:00 AM | MN-GH-1        | Red Wing 4.4 SE  | 3.25               | NA   NA          | NA   NA            | MN    | Goodhue    |
| 9/11/2019 | 7:00 AM | MN-NC-9        | Kasota 4.0 SW    | 3.05               | NA   NA          | NA   NA            | MN    | Nicollet   |
| 9/11/2019 | 7:00 AM | MN-MY-5        | Tracy 7.8 SSW    | 3.00               | NA   NA          | NA   NA            | MN    | Murray     |
| 9/11/2019 | 7:00 AM | MN-BU-11       | Mankato 2.9 WSW  | 2.67               | NA   NA          | NA   NA            | MN    | Blue Earth |
| 9/11/2019 | 7:00 AM | MN-CV-35       | Carver 1.1 NW    | 2.64               | NA   NA          | NA   NA            | MN    | Carver     |
| 9/11/2019 | 1:30 PM | MN-GH-30       | Goodhue 0.2 S    | 2.56               | NA   NA          | NA   NA            | MN    | Goodhue    |
| 9/11/2019 | 7:00 AM | MN-LS-13       | New Prague 1.0 S | 2.47               | NA   NA          | NA   NA            | MN    | Le Sueur   |

Daily Precipitation (inches x.xx), for the 24 hour period ending ~7:00 am  
USA 9/11/2019

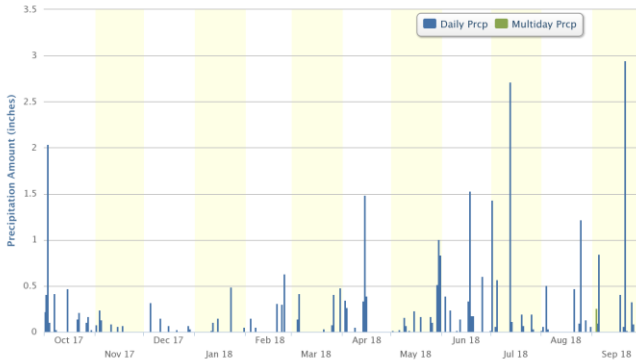


Observations are immediately available in maps and tables at:  
**CoCoRaHS.org**

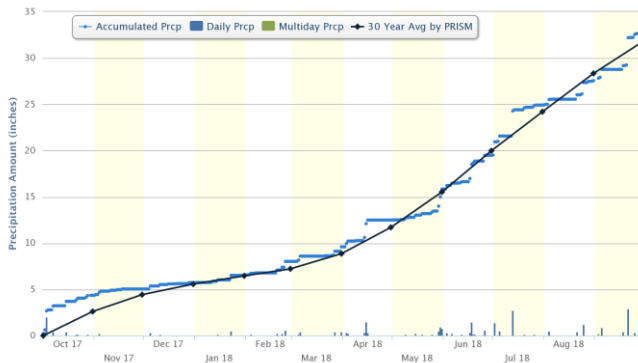


# CoCoRaHS data are permanently archived and available in a variety of summary reports

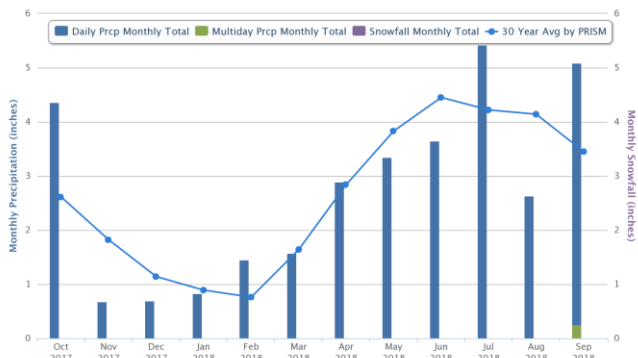
2018 Water Year (Oct 2017 – Sept 2018) Daily Precipitation  
Station: MN-AA-31 Ham Lake 2.2 E



2018 Water Year (Oct 2017 – Sept 2018) Accumulated Precipitation  
Station: MN-AA-31 Ham Lake 2.2 E



Monthly Precipitation for the 2018 Water Year (Oct 2017 – Sept 2018)  
Station: MN-AA-31 Ham Lake 2.2 E



## Minnesota 2018 CoCoRaHS Water Year Summary



Download the Minnesota 2018 water year summary report as an Excel file with station totals

| Station Number | Station Name        | Days Covered By All Reports | Total Pcpn | Daily Reports | Multiday Reports | Display Options   |
|----------------|---------------------|-----------------------------|------------|---------------|------------------|---|
| <b>Aitkin</b>  |                     |                             |            |               |                  |   |
| MN-AT-1        | McGrath 2.8 SSE     | 198                         | 28.50"     | 19            | 12               | <a href="#">HTML</a> <a href="#">Charts</a> <a href="#">Excel</a> |
| MN-AT-2        | Hill City 0.9 N     | 35                          | 28.53"     | 35            | 0                | <a href="#">HTML</a> <a href="#">Charts</a> <a href="#">Excel</a> |
| MN-AT-4        | McGregor 7.3 N      | 364                         | 36.80"     | 361           | 1                | <a href="#">HTML</a> <a href="#">Charts</a> <a href="#">Excel</a> |
| MN-AT-5        | Tamarack 1.4 SW     | 364                         | 29.79"     | 360           | 2                | <a href="#">HTML</a> <a href="#">Charts</a> <a href="#">Excel</a> |
| <b>Anoka</b>   |                     |                             |            |               |                  |   |
| MN-AA-4        | Saint Francis 4.0 E | 196                         | 26.73"     | 184           | 6                | <a href="#">HTML</a> <a href="#">Charts</a> <a href="#">Excel</a> |
| MN-AA-5        | East Bethel 3.1 NE  | 185                         | 24.78"     | 185           | 0                | <a href="#">HTML</a> <a href="#">Charts</a> <a href="#">Excel</a> |
| MN-AA-6        | Blaine 2.4 W        | 35                          | 19.89"     | 35            | 0                | <a href="#">HTML</a> <a href="#">Charts</a> <a href="#">Excel</a> |
| MN-AA-13       | Coon Rapids 1.4 ESE | 214                         | 25.60"     | 150           | 11               | <a href="#">HTML</a> <a href="#">Charts</a> <a href="#">Excel</a> |
| MN-AA-14       | Andover 3.0 SSE     | 47                          | 4.16"      | 27            | 6                | <a href="#">HTML</a> <a href="#">Charts</a> <a href="#">Excel</a> |
| MN-AA-15       | Lino Lakes 2.5 SW   | 107                         | 15.66"     | 28            | 5                | <a href="#">HTML</a> <a href="#">Charts</a> <a href="#">Excel</a> |
| MN-AA-16       | East Bethel 1.1 NNW | 203                         | 18.40"     | 155           | 4                | <a href="#">HTML</a> <a href="#">Charts</a> <a href="#">Excel</a> |
| MN-AA-18       | Andover 2.1 NNW     | 2                           | 2.94"      | 2             | 0                | <a href="#">HTML</a> <a href="#">Charts</a> <a href="#">Excel</a> |
| MN-AA-19       | Coon Rapids 3.2 WNW | 31                          | 4.48"      | 28            | 1                | <a href="#">HTML</a> <a href="#">Charts</a> <a href="#">Excel</a> |
| MN-AA-20       | Blaine 0.4 S        | 198                         | 26.41"     | 159           | 11               | <a href="#">HTML</a> <a href="#">Charts</a> <a href="#">Excel</a> |
| MN-AA-21       | Ham Lake 1.2 NW     | 195                         | 19.50"     | 145           | 5                | <a href="#">HTML</a> <a href="#">Charts</a> <a href="#">Excel</a> |
| MN-AA-31       | Ham Lake 2.2 E      | 363                         | 32.65"     | 360           | 1                | <a href="#">HTML</a> <a href="#">Charts</a> <a href="#">Excel</a> |
| MN-AA-33       | Fridley 1.8 SE      | 0                           | 0.0"       | 0             | 0                | <a href="#">HTML</a> <a href="#">Charts</a> <a href="#">Excel</a> |
| MN-AA-36       | Ramsey 1.9 E        | 183                         | 20.03"     | 128           | 9                | <a href="#">HTML</a> <a href="#">Charts</a> <a href="#">Excel</a> |
| MN-AA-39       | Fridley 1.8 ESE     | 31                          | 5.88"      | 23            | 2                | <a href="#">HTML</a> <a href="#">Charts</a> <a href="#">Excel</a> |
| MN-AA-52       | Blaine 1.5 N        | 1                           | 0.15"      | 1             | 0                | <a href="#">HTML</a> <a href="#">Charts</a> <a href="#">Excel</a> |
| MN-AA-54       | Anoka 1.3 SSE       | 361                         | 30.47"     | 287           | 21               | <a href="#">HTML</a> <a href="#">Charts</a> <a href="#">Excel</a> |
| MN-AA-56       | Blaine 2.2 NNW      | 324                         | 28.93"     | 283           | 13               | <a href="#">HTML</a> <a href="#">Charts</a> <a href="#">Excel</a> |
| MN-AA-61       | Coon Rapids 1.7 WNW | 13                          | 3.95"      | 13            | 0                | <a href="#">HTML</a> <a href="#">Charts</a> <a href="#">Excel</a> |
| MN-AA-66       | Anoka 1.6 NW        | 46                          | 20.87"     | 46            | 0                | <a href="#">HTML</a> <a href="#">Charts</a> <a href="#">Excel</a> |

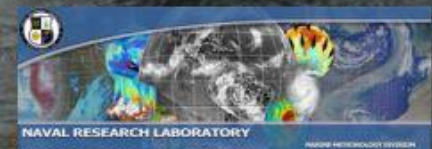
# Water Year Summary October 1st thru September 30th

# Examples of CoCoRaHS data users

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

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

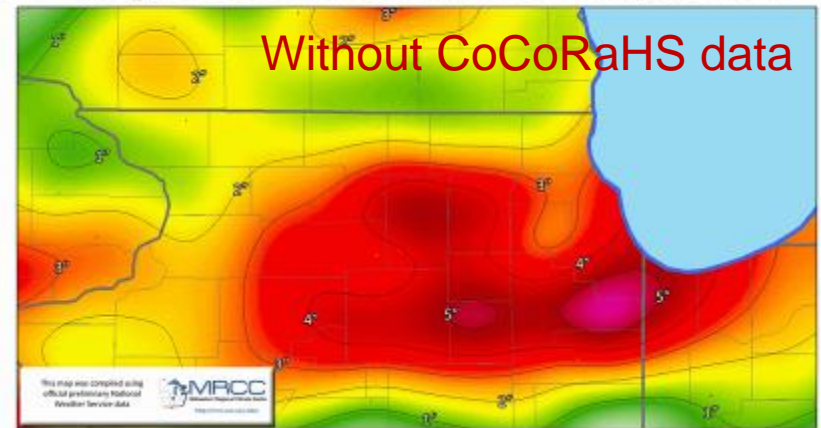




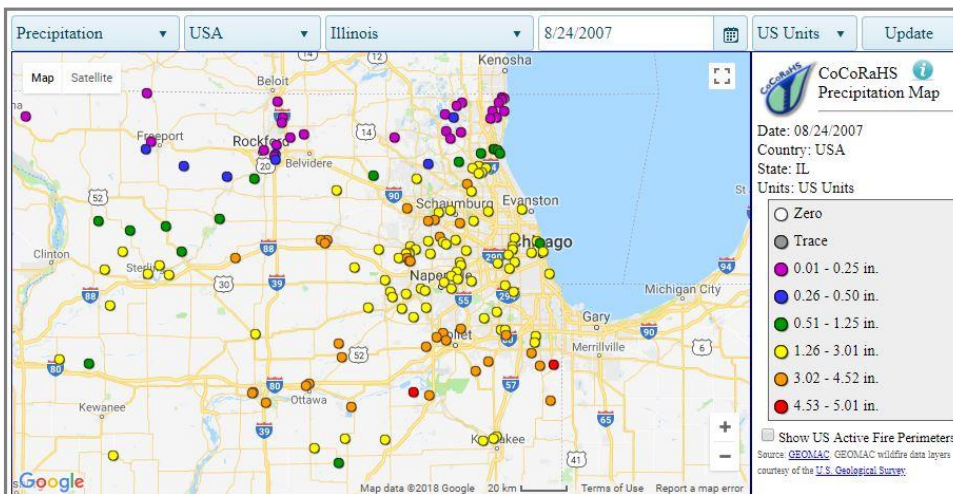
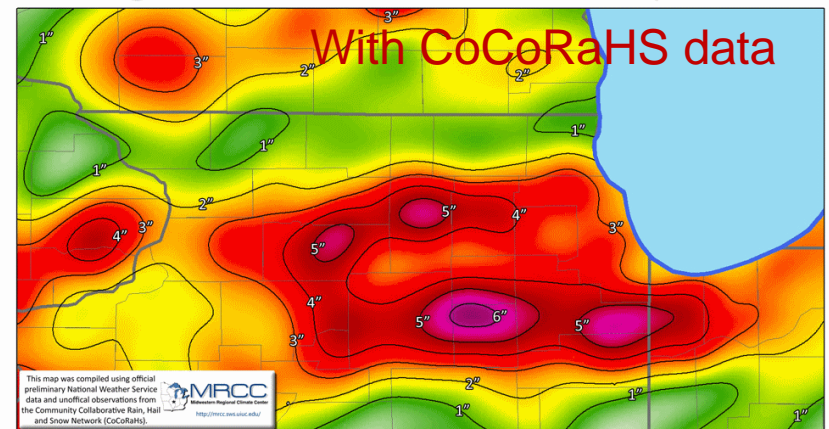
# CoCoRaHS helps provide a finer resolution of data by supplementing other networks (like COOP).

*“It’s like increasing the number of pixels on your digital camera. You get a much clearer picture!”*

(A) August 23 & 24 Accumulated Precipitation



(B) August 23 & 24 Accumulated Precipitation



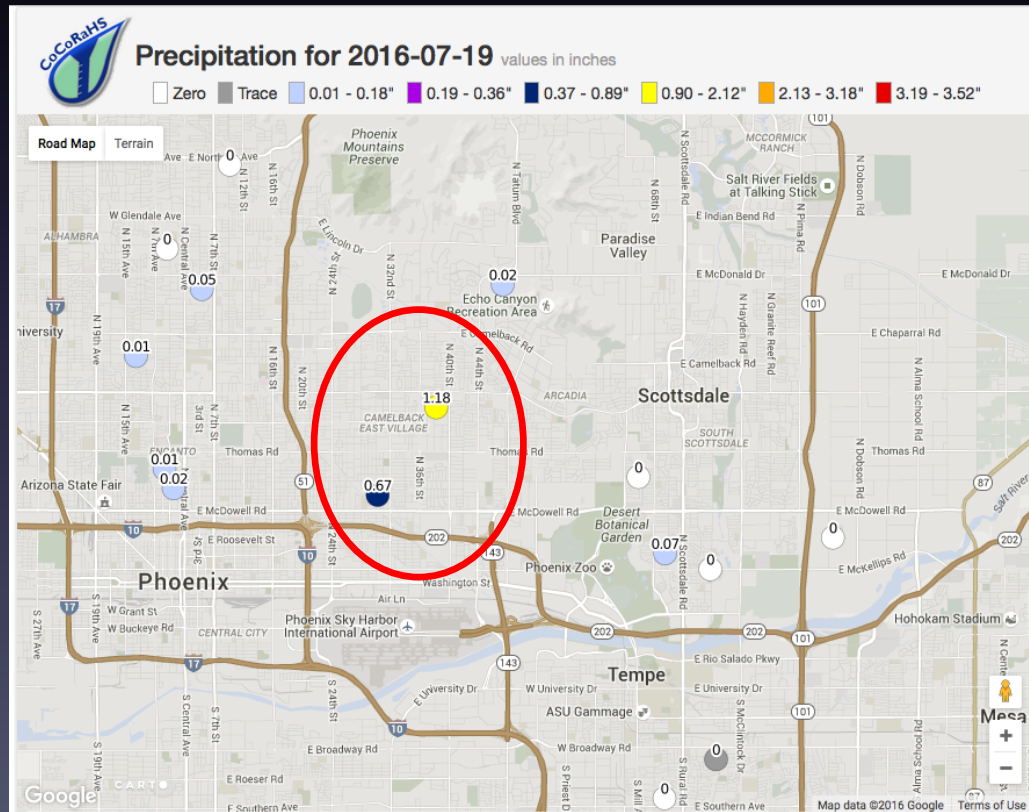




Credit: Jerry Ferguson



Credit: Jerry Ferguson

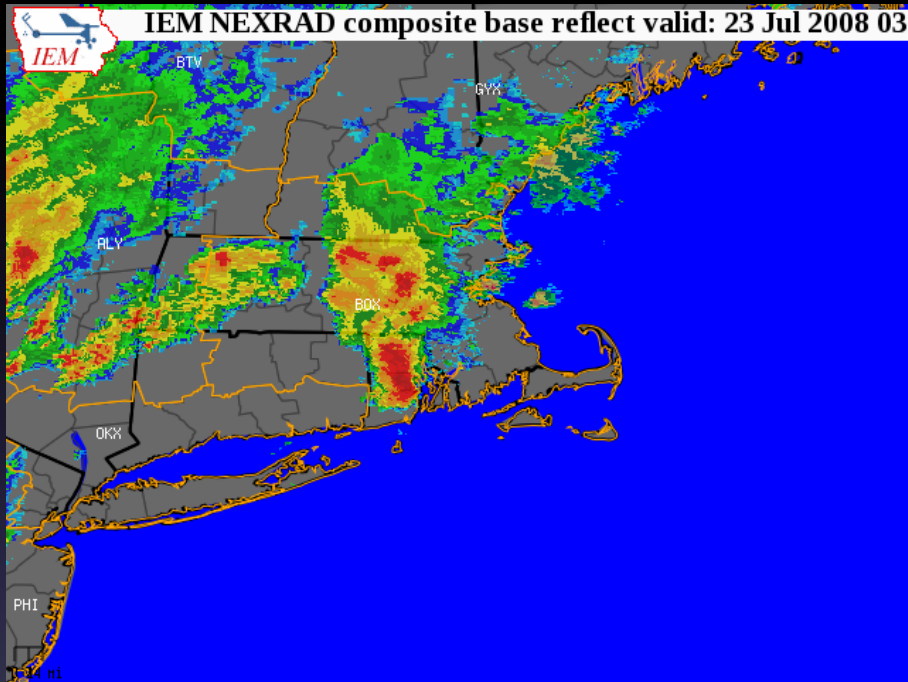


# Phoenix Microburst July 18, 2016

# Significant Weather Reports



Advanced warning to the National Weather Service regarding potential flash flooding  
Sends and alarm to National Weather Service workstation



## View Data : View Significant Weather Report

### Significant Weather Report

|                               |                   |
|-------------------------------|-------------------|
| Station Number:               | RI-WS-1           |
| Station Name:                 | Hope Valley 3.7 S |
| Date:                         | 7/23/2008 3:15 PM |
| Submitted                     | 7/23/2008 3:23 PM |
| Notes:                        |                   |
| Taken at Registered Location: | True              |
| Precip Duration Minutes:      | 15                |
| New Precip Amount:            | 1.00              |
| Total Precip Amount:          | NA                |
| New Snow Depth:               | NA                |
| Total Snow Depth:             | NA                |
| Flooding:                     | No                |

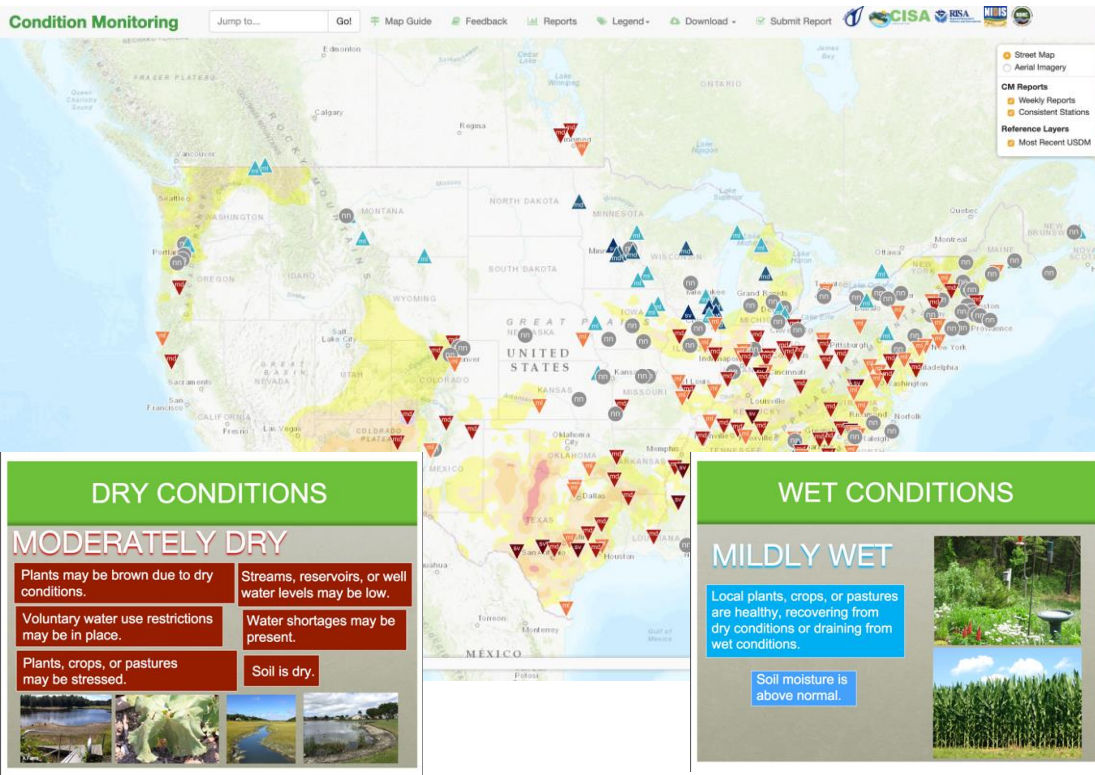
Wednesday at 3:15pm. Rush hour is coming...

July 23, 2008 – A CoCoRaHS observer in Hope Valley, RI provided an intense rainfall report which led to the issuance of a timely Flash Flood Warning. Life threatening urban flooding was reported in Warwick and Providence at the start of the evening rush hour, where several cars were stranded in more than 2 feet of water, requiring people to be rescued.

"Lead time would have been much less without the CoCoRaHS report." - Joe Dellicarpini, NWS Taunton, Massachusetts

## Examples

# Condition Reports provide valuable data for drought decision makers



## Carencro 3.9 ENE

|                       |  |
|-----------------------|--|
| <b>Station Number</b> | LA-LY-7  |
| <b>Report</b>         | Ground is cracking; daily watering required for all pot plants and many shrubs, flowers, etc. Grass is beginning to turn brown in spots. |
| <b>Condition</b>      | Moderately Dry   |
| <b>Date</b>           | Sat Sep 14 2019  |
| <b>Summary Data</b>   | <a href="#">CoCoRaHS summary data by week for this station.</a>  |



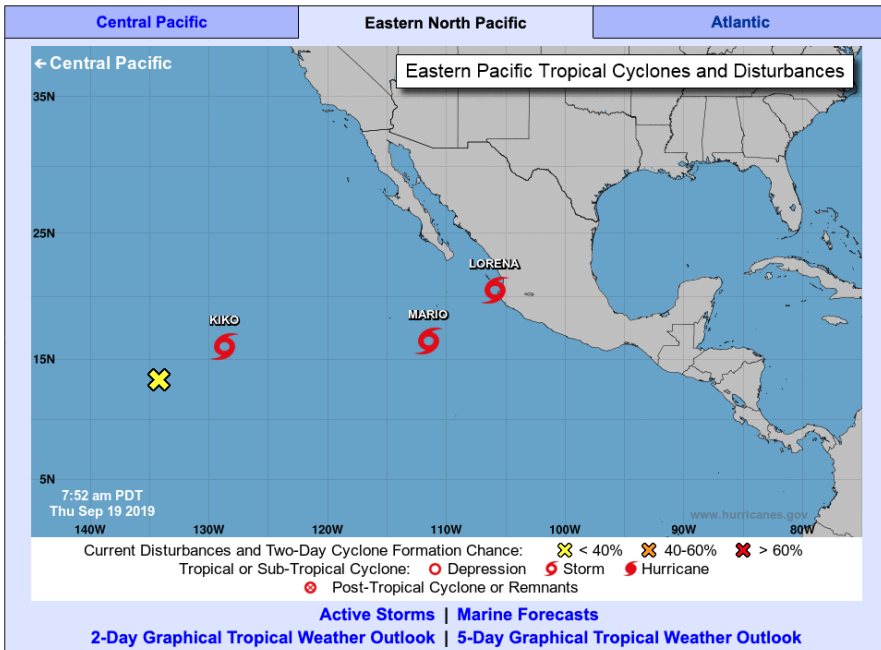
# Examples



ANALYSES & FORECASTS ▾ DATA & TOOLS ▾ EDUCATIONAL RESOURCES ▾ ARCHIVES ▾ ABOUT ▾

Top News of the Day... [view past news](#) Last update Thu

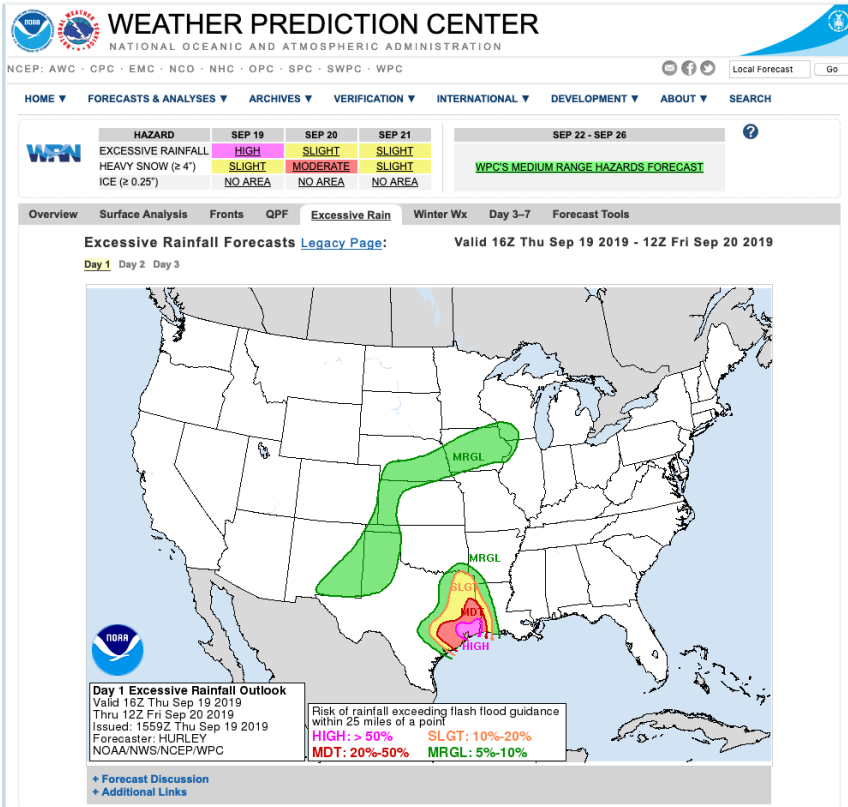
- NHC issuing advisories for the Atlantic on Hurricane Humberto and Hurricane Jerry
- NHC issuing advisories for the Eastern Pacific on TS Kiko, TS Mario and TS Lorena
- WPC is issuing advisories on Imelda
- Key Messages regarding Hurricane Humberto
- Key Messages regarding Hurricane Jerry
- Key Messages regarding Tropical Storm Lorena
- 4 hurricanes in 6 weeks? It happened to one state in 2004. Lessons learned then are valuable reminders today
- Video: What You Should...and Should Not...Do with the NHC Forecast Cone ( [download available here](#) )



"CoCoRaHS observations play a vital role in the National Hurricane Center's efforts to document tropical cyclone rainfall and impacts in the United States. In at least one case, these observations have led to a new state tropical cyclone rainfall record."

Daniel Brown  
Senior Hurricane Specialist/Warning Coordination Meteorologist  
NOAA/NWS/National Hurricane Center

# Examples



"CoCoRaHS data is invaluable to the forecast process. For example, forecasters at the WPC use CoCoRaHS data to understand what happened between the standard observation sites, which is critical for verify daily forecasts. Further the data are used to identify local extremes in major events, such as hurricanes and blizzards. Notable extremes are reported to key partners, the media, and the public. We are grateful for the community effort to measure precipitation."

David Novak  
Director  
NOAA/NWS/ Weather Prediction  
Center

# CoCoRaHS Precipitation and Snowfall Reports Make a Difference!

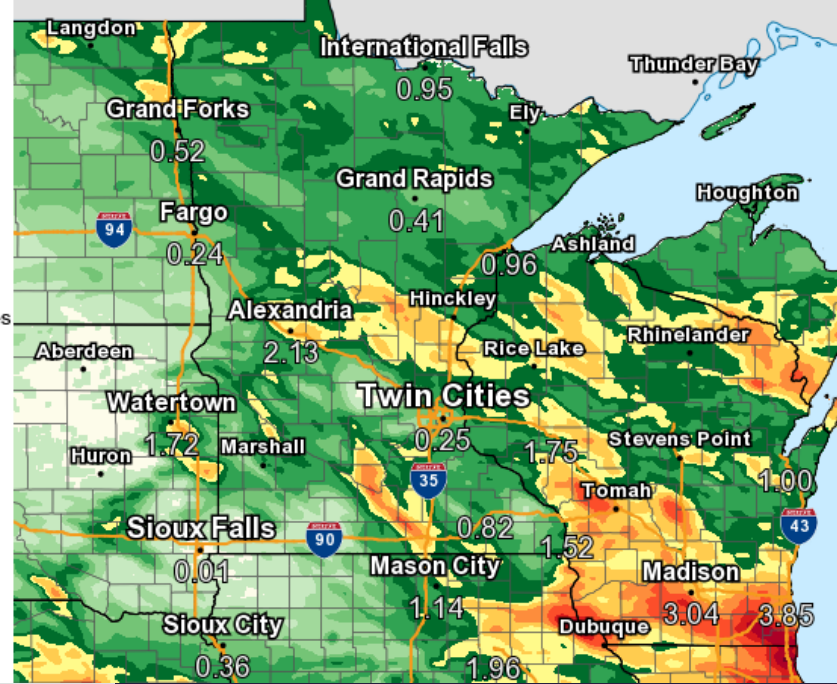


## Observed Precipitation

National Weather Service

Valid Ending Thursday July 13th, 2017 at 2 PM CDT

- Up to 0.1 inch
- 0.1 to 0.25 inches
- 0.25 to 0.5 inches
- 0.5 to 1.0 inches
- 1.0 to 1.5 inches
- 1.5 to 2.0 inches
- 2.0 to 3.0 inches
- 3.0 to 4.0 inches
- 4.0 to 6.0 inches
- 6.0 to 8.0 inches
- 8.0 to 10.0 inches
- 10.0 to 15.0 inches
- Greater than 15 inches

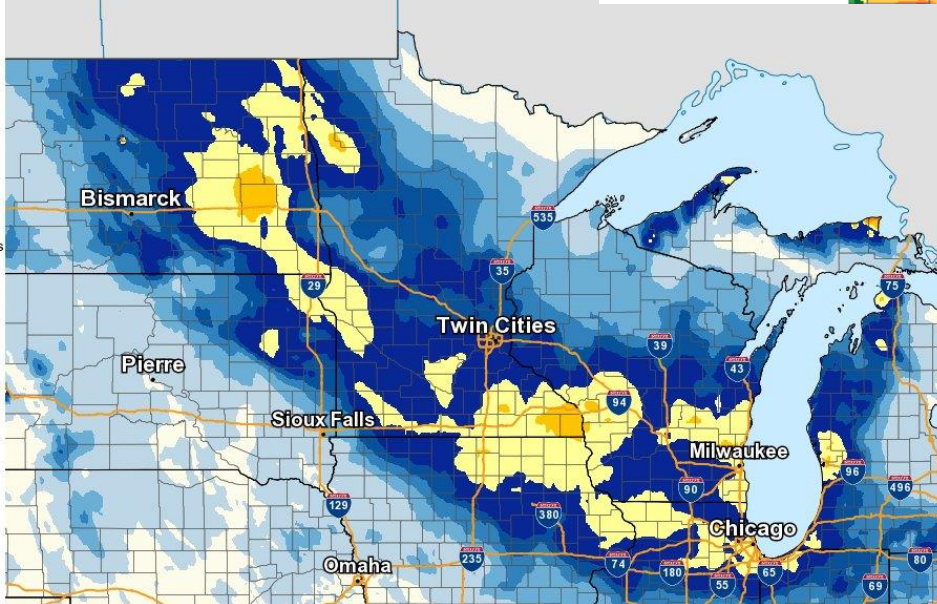


Graphic Created July 13th, 2017 2:13 PM CDT

## Observed Snowfall

Valid Ending Monday January 28th, 2019 at 6 AM CST

- Less than an inch
- 1 to 2 inches
- 2 to 3 inches
- 3 to 4 inches
- 4 to 6 inches
- 6 to 8 inches
- 8 to 12 inches
- 12 to 18 inches
- 18 to 24 inches
- 24 to 30 inches
- 30 to 36 inches
- Greater than 36 inches



Graphic Created January 28th, 2019 11:41 AM CST





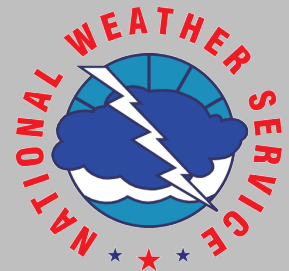
# CoCoRaHS Reports Significantly Increase the Amount of Available Data

Imagine the difference in maps, models, and the climate record without them!


...HIGHEST RAINFALL TOTALS FROM PAST 48 HOURS...

Rainfall measurements of 2.50 inches or greater from the past 48 hours are listed below. Thank you to our volunteer COOP and CoCoRaHS observers for the rainfall reports.





| Location            | Amount  | Time/Date     | Provider |
|---------------------|---------|---------------|----------|
| Hancock 4ENE        | 5.55 in | 0700 AM 07/20 | COCORAHS |
| Morris 1 SSE        | 4.66 in | 0700 AM 07/20 | COCORAHS |
| Chokio 1NNW         | 4.56 in | 0700 AM 07/20 | COCORAHS |
| Morris (AG Exp Frm) | 4.28 in | 0800 AM 07/20 | COOP     |
| Lake Lillian SSE    | 4.12 in | 0730 AM 07/20 | COCORAHS |
| Donnelly 2WNW       | 3.79 in | 0700 AM 07/20 | COCORAHS |
| Lucan               | 3.35 in | 0753 AM 07/20 | COCORAHS |
| Paynesville AP      | 3.19 in | 0655 AM 07/20 | AWOS     |
| Cosmos 1E           | 3.17 in | 0930 AM 07/20 | GOES     |
| Morris 4SW          | 3.09 in | 0924 AM 07/20 | CWOP     |
| New London 6WSW     | 3.05 in | 0700 AM 07/20 | COCORAHS |
| Clontarf            | 3.03 in | 0845 AM 07/20 | GOES     |
| Pennock 6NNE        | 3.01 in | 0700 AM 07/20 | COCORAHS |
| Benson              | 2.89 in | 0800 AM 07/20 | COOP     |
| Cobden              | 2.80 in | 0845 AM 07/20 | GOES     |
| Melrose             | 2.77 in | 0700 AM 07/20 | COOP     |
| St. Martin 1NW      | 2.74 in | 0900 AM 07/20 | HADS     |
| New Ulm             | 2.68 in | 0500 AM 07/20 | COCORAHS |
| Hoffman             | 2.63 in | 0845 AM 07/20 | GOES     |
| Alexandria 1ENE     | 2.54 in | 0700 AM 07/20 | COCORAHS |
| Benson              | 2.54 in | 0930 AM 07/20 | GOES     |
| Danube 2WNW         | 2.51 in | 0700 AM 07/20 | COCORAHS |
| Sveadahl 5NNW       | 2.50 in | 0655 AM 07/20 | COCORAHS |



# Become An Observer!



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

Select Language    

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| Observer Information   | Postal Address                                    |
|--|---|
| First Name <input type="text"/>  | Address <input type="text"/>                      |
| Last Name <input type="text"/>   | <input type="text"/>                              |
| Home Phone <input type="text"/>  | State <input type="text" value="Alabama"/>        |
| Day Phone <input type="text"/>   | County <input type="text" value="Select County"/> |
| Email <input type="text"/>   | City <input type="text"/>                         |
|  | Zip <input type="text"/>                          |
| <a href="#">Privacy Policy</a>   |   |
| Daily Internet Access: <input type="radio"/> Yes <input type="radio"/> No  |   |
| Station Location Information   | Station Address                                   |
| <b>Station Information:</b>  | <input type="checkbox"/> Same as Postal Address   |
| Location Description: (example: Gauge located at the 3rd house South of Fifth Ave on Vine.) <input type="text"/> | Address <input type="text"/>                      |
| Location Coordinates: (if available) in decimal degrees.   | State <input type="text" value="Alabama"/>        |
| Latitude (40.5993) : <input type="text"/>  | County <input type="text" value="Select County"/> |
| Longitude (105.1152) : <input type="text"/>  | City <input type="text"/>                         |
|  | Zip <input type="text"/>                          |

CoCoRaHS.org





# We're Cuckoo For CoCoRaHS!

For more information visit: [cocorahs.org](http://cocorahs.org)

Or contact: [michelle.margraf@noaa.gov](mailto:michelle.margraf@noaa.gov)  
National Weather Service – Twin Cities

